

NONPOINT SOURCE PROGRAM

As previously noted, the SDRWQCB has initiated a variety of activities to reduce nonpoint source pollution. The SDRWQCB's nonpoint source goals and activities are described in greater detail within this section. An overview of both the SDRWQCB's current activities and planned future activities is provided.

Nonpoint source (NPS) pollution, which includes but is not limited to polluted runoff, is the leading cause of water quality impairment to surface and ground waters in the San Diego Region, as well as statewide and nationwide. Unlike pollution from distinct, identifiable point sources (e.g., a municipal wastewater treatment plant), NPS pollution comes from many diffuse sources. However, the distinction between point source and nonpoint sources is not always clear. This is particularly true regarding urban runoff, which is clearly diffuse and nonpoint in origin, but is typically channelized and discharged through discrete pipes into receiving waters. Because it is typically channelized, often through a vast network of underground pipes, urban runoff is legally considered a point source discharge and is increasingly addressed through regulations in municipal storm water permits. The complex relationship between the nonpoint source origin of urban runoff, and its point source discharge from discrete storm drainpipes, presents the SDRWQCB with both significant challenges and opportunities. The fact that the San Diego Region is one of the fastest growing urban settings in the country serves to further magnify the challenges. Because NPS pollution is primarily the cumulative result of all our business, home, and recreational activities, the ultimate challenge is to all of us, as the residents and/or visitors to the area. It is a challenge that ultimately will rely on everyone taking individual responsibility for preventing and controlling NPS pollution.

The SDRWQCB Basin Plan includes a discussion of control of NPS pollution (chapter 4, pp. 66-85). A number of SDRWQCB resolutions related to NPS pollution have been incorporated into the Basin Plan (chapter 5, pp. 10 – 12). Topics addressed in these resolutions include erosion and sediment control, onsite disposal systems, waivers of waste discharge requirements, and dairy wastes.

SDRWQCB Funding

In contrast to NPS programs of most other RWQCBs, the NPS program of the SDRWQCB is still in its infancy, as a result of years of minimal funding. It is important that any evaluation of the SDRWQCB NPS program recognize the low level of NPS funding allocated to the SDRWQCB over the years. Most RWQCBs have had considerably higher levels of NPS funding for many years and, consequently, their NPS programs are further along than the SDRWQCB NPS program.

Over the last several years, the various annual updates of the SDRWQCB watershed management chapter have noted the need for additional NPS program funding. The FY 2000/01 allocation for the SDRWQCB NPS program for FY is 1.7 PY. That allocation is the highest that the SDRWQCB has ever received. Considerably more funding is needed for the SDRWQCB to do the variety of important NPS activities that are identified within the NPS section of the WMI Chapter, and shown in the proposed FY 2001/02 workplan (**Table NPS-7**).

Nonpoint Source Problems

Although laws, programs, and funding to protect water quality and beneficial uses have historically tended to focus on point source discharges of wastes and pollutants, many of the more vexing current water quality and beneficial use problems in the San Diego Region are attributable to nonpoint sources. Nonpoint sources are the major contributors of pollution to the streams, lakes, lagoons, harbors, bays, and coastal marine waters in the San Diego Region. Nearly all water quality impairments that have been identified in the San Diego Region are caused, in whole or in part, by NPS pollution.

The most significant known and suspected NPS pollution problems in the San Diego Region include bacteriological contamination of inshore coastal marine waters; heavy metal and pesticide contamination of inland streams, coastal lagoons, harbors and bays; nutrient loading and resulting eutrophication of streams, lakes, and coastal lagoons; and sedimentation impacts to streams and coastal lagoons. Many of the problems, threats, causes, sources and pathways relating to NPS pollution are identified in **Tables 8, 9, 10, and 11**. **Table NPS-1** contains a list of the specific water bodies and the problems / threats arranged by NPS management measure category. The state's NPS management measures are described in *California's Nonpoint Source Pollution Control Program* (1999). In the San Diego Region, the greatest NPS-caused water quality and beneficial use impairments are from activities associated with urbanization, agriculture, hydromodification, marinas and recreational boating. The SDRWQCB has identified the following high priority management measures for implementation in the San Diego Region:

- a) Management Measures for Urban Areas (3.1, 3.2, 3.3, and 3.6)
- b) Management Measures for Agriculture (1.0)
- c) Management Measures for Hydromodification (5.1, 5.3, and 5.4)
- d) Management Measures for Marinas and Recreational Boating (4.0)

Two major land use changes are occurring in the San Diego region: the conversion of undeveloped land to agricultural uses and the conversion of undeveloped and agricultural lands to urban uses. These land use changes have the potential to increase nonpoint source pollution loads into already impaired water bodies and to cause impairments where they do not exist. The NPS impacts of these land use changes are often magnified by the

changes in hydrology that are often associated with the use changes, e.g., increase runoff volumes and higher peak flowrates, as a result of increased percentage of impervious surface in watersheds (i.e., hardscaping). In addition to land-based sources of NPS pollutants, which contribute to polluted runoff, many coastal cities have extensive marinas and significant recreational boating, which contribute NPS pollution to many of the region's coastal embayments directly (i.e., even without runoff).

Table 10 contains a listing of the common impacts from different land uses and activities. The most significant effects of the four high-priority categories of land use activities that the SDRWQCB will address in its NPS program are also described in greater detail below:

Urban Development Impacts

The most significant NPS effects on many of the region's waters are from existing urban development and from the ongoing conversion of other land uses to urban uses. Impacts associated with urbanization include:

- Elimination of natural channels, including the loss of wetlands, wildlife, fisheries and riparian habitat;
- Increased sedimentation due to construction activities;
- Unmitigated changes in hydrology that upset the geomorphic equilibrium of streams, causing destabilization and erosion of channels and more frequent flooding;
- Introduction and perpetuation of non-native invasive species of plants and animals (from landscaping, aquaria, etc.); and
- Increased pollutant loads associated with urban human activity (nutrients, pathogens, pesticides, PCBs, PAHs, petroleum, salts, nitrates, metals, trash, sediment, etc.).

Table 9 contains a comprehensive listing of pollutants that typically enter waters of the region via urban runoff, among other pathways. Although the NPS impacts associated with urbanization can be quite severe to a variety of surface water types, some of the areas most sensitive to NPS impacts in the San Diego Region are the coastal beaches and the water supply reservoirs.

As noted previously, imported water comprises the majority of the water supply for the San Diego Region. Although most of the storage reservoirs for the imported water were intentionally constructed in rural, undeveloped areas of the region, urban development is now expanding into the watersheds of many of these reservoirs. New upstream urban development can pose a serious threat to the region's water supply.

A high incidence of beach closures continues to plague several coastal areas in the San Diego Region. Beach closures are attributable to both point source discharges from sewer overflows, and nonpoint, diffuse sources of polluted urban runoff.

Agricultural Development Impacts

In many ways, the adverse impacts to water quality and beneficial uses associated with agricultural land uses are similar to those of urban land uses. The adverse impacts from agricultural development in the San Diego Region include:

- Disturbance to the bed of natural channels, causing a loss of acreage and quality of wetlands, wildlife, fisheries and riparian habitat;
- Irrigation-related impairment of fish habitat, including reduced stream flows where surface water diversion and/or ground water pumping significantly reduce surface flow and quality;
- Increased sedimentation due to hillside clearing and road construction activities;
- Increased nutrient loads from animal rearing facilities, plant nurseries, and fertilizer runoff;
- Increased herbicide and pesticide loads from associated agricultural activity; and
- Introduction and perpetuation of non-native invasive species of plants and animals.

Hydromodification Impacts

Most new urban and agricultural development projects in the region involve some level of hydromodification. Hydromodification impacts are also caused by the construction of major highways and railways, utility projects, marinas, and flood protection projects for existing urban development. The adverse impacts to water quality and beneficial uses associated with hydromodification projects in the San Diego Region include:

- Elimination of natural channels and associated habitat complexity, including loss of wetlands, wildlife, fisheries and riparian habitat;
- Increased sedimentation due to construction activities;
- Changes in hydrology that upset the geomorphic equilibrium of streams causing destabilization and erosion of channels;
- Increased water temperatures;
- Introduction and perpetuation of non-native invasive species of plants and animals; and
- Decreased natural water quality purification functions that could otherwise intercept and assimilate or detoxify pollutants.

The impact of decreasing or eliminating the water quality purification functions of the region's streams is most pronounced in urban and agricultural settings, where such functions are most needed. The adverse downstream impacts of urbanization can therefore be magnified by the extent of hardscaping that is utilized within the drainage

systems of the developments. The extensive use of imported water in the region has led to significant increases in the dry-season flow of many of the region's inland streams, and these flows can contain associated urban and agricultural pollutants.

Marinas and Recreational Boating Impacts

Recreational boating opportunities exist along most of the region's 85 miles of coastline, as well as within several of the region's largest coastal embayments. Marinas and recreational boating activities contribute, or threaten to contribute, significant NPS pollution to San Diego Bay, Mission Bay, and several other smaller embayments. Due to the topography and semi-arid climate, there are few natural lakes in the San Diego region. Inland boating activities are primarily limited to the region's water supply reservoirs, where water purveyors impose strict controls over any boating that might be allowed. In contrast, typical impacts on lagoons, estuaries, or bays from marinas and/or recreational boats include:

- Elimination or reduction of natural lagoon, estuary, or bay habitat as a consequence of marina construction;
- Changes in hydrology caused by a marina that upset the stability of adjacent wetland areas;
- Reduced water circulation within marina areas, leading to increased incidents of stagnation and nuisance algal growth;
- Petroleum discharges from marina fueling stations and from vessels.
- Illicit sewage discharges from vessels and from faulty pumpout facilities;
- Release of biocides from boat hull paint through passive leaching and in-water hull cleaning activities;
- Release of pollutants during topside cleaning, maintenance, and repair activities;
- Discharges of fish wastes, spent zinc anodes, trash, and other vessel and marina material; and
- Introduction and perpetuation of non-native marine species from ballast water discharges.

Because of their on-water location, marinas and recreational boating present an ongoing and direct threat to surface water quality. Whereas NPS pollution from inland urban and agricultural sources may undergo natural purification processes prior to passing into nearby surface waters, no such treatment occurs with NPS pollution from vessels or marinas. There is no alternative better than an emphasis on pollution prevention. Boating and marina NPS control measures require a combination of good siting and design, diligent operation and maintenance, and active and ongoing public education.

In a 1996 report to the San Diego Bay Interagency Water Quality Control Panel (SDBIWQCP), PRC Environmental Management, Inc. (PRC) estimates the total annual

mass loading of copper to San Diego Bay, from both external and in-bay sources, to be 37,589 kg per year (82,818 pounds per year). The relative contributions to this loading are: 43% from passive leaching of antifouling hull paints, 34% from in-water hull cleaning, 6% from sediment to water transfer, 6% from ship and boat yards, and 11% from wet and dry weather runoff. To be effective, any effort to significantly reduce copper loading to San Diego Bay must place a high priority on reducing the 77% that is directly attributable to in-bay vessels.

Nonpoint Source Strategy

California's Nonpoint Source (NPS) Pollution Control Program (Program) has been in effect since 1988. A key element of the Program is the "Three-Tiered Approach," through which self-determined implementation is favored, but more stringent regulatory authorities are utilized when necessary to achieve implementation. The NPS program is being upgraded to enhance efforts to protect water quality, and to conform with Section 319 of the Clean Water Act (CWA) and Section 6217 of the Coastal Zone Act Reauthorization (CZARA). The lead State agencies for the NPS Program are the SWRCB, the nine RWQCBs and the California Coastal Commission. The long-term goal of the NPS Program is to "improve water quality by implementing the management measures identified in the California Management Measures for Polluted Runoff Report (CAMMPR) by 2013."

Long-term Nonpoint Source Management Goals

The SDRWQCB has four broad goals for nonpoint source management in the San Diego Region.

1. Monitor and assess ambient water quality and beneficial uses to determine the need for and performance of nonpoint source management measures throughout the region.
2. Ensure effective implementation of land-use specific nonpoint source pollution management measures throughout the region.
3. Facilitate implementation of watershed management plans for prevention and control of nonpoint source pollution throughout the region.
4. Provide technical assistance and education to the public, public agencies, and private landowners and other interested parties about prevention and correction of nonpoint source pollution problems.

Table NPS-2 links the four long-term goals of the SDRWQCB with the short-term objectives and the corresponding management measures that will be pursued by the

NPS program is being implemented through a three-tiered approach. The tiers are:

- Tier One: Self-Determined Management Practices;
- Tier Two: Regulatory-Based Encouragement; and
- Tier Three: Effluent Limitations.

Through a progression, as needed, through the three tier activities, each of the NPS goals will be achieved. The three-tier approach being utilized in the NPS program is nearly identical to the three tiers that have been established for the development of watershed management plans, described earlier in the section entitled "stakeholder involvement." The SDRWQCB's emphasis on a watershed management approach emphasizes active stakeholder involvement and facilitates self-determined management practices (tier one).

The SDRWQCB's incorporation of NPS-related activities into two new subregional, watershed-based units is expected to facilitate the three-tier approach and the expeditious implementation of necessary best management practices. After making the adjustments and going through the learning curves associated with reorganization, the increased internal coordination and integration of the SDRWQCB's NPS activities with those of related SDRWQCB programs is expected to facilitate each portion of the three-tier approach.

To be effective at addressing the multitude of known nonpoint sources of pollution, increased coordination will be needed among the numerous SDRWQCB programs and activities. Greater emphasis will need to be placed on outreach and education, with the traditional regulatory approach of the SDRWQCB being reserved for those situations where such regulatory-based encouragement is needed. The SDRWQCB must expand participation with local municipal governments on the review of new urban development projects. From the early planning and environmental review process, to the post construction management of development projects, the SDRWQCB should provide technical guidance to help ensure that new developments are designed and managed to reduce their potential for the short and long-term generation of nonpoint source pollution.

Tier One NPS Activities

The SDRWQCB will continue and (where possible within available funding) expand activities to encourage self-determined NPS management practices. As noted, to

enhance the effectiveness of the SDRWQCB in addressing the often diffuse, complex, and interrelated issues of nonpoint source pollution control, the SDRWQCB staff has recently undergone a significant organizational restructuring. The SDRWQCB reorganization includes two separate, watershed-based sections that will address all nonpoint pollution control and related activities on a watershed basis. Staff within each of these two subregional sections will be responsible for a variety of interrelated activities, including: environmental document review, water quality certification, NPDES municipal and construction storm water permit oversight, watershed management activities, public education and outreach, volunteer monitoring coordination, grant management, and a number of other nonpoint source related activities.

Tier one encouragement includes public education and outreach. SDRWQCB staff will continue to actively participate with local resource conservation districts, educational organizations, lagoon foundations, and others in providing information to the public on NPS pollution, the NPS program, appropriate management measures, and best management practices.

Meetings

There are a large number of NPS-related meetings in which SDRWQCB staff should actively participate. These meetings may be categorized as follows:

1. Meetings related to 319(h) project contract management
(**Table 6** lists San Diego region 319(h) projects);
2. Meetings related to San Diego region 205(j) projects
(**Table 5** lists San Diego region 205(j) projects);
3. Routine meetings of various NPS-related groups and projects
(**Table NPS-8** lists many (but probably not all) such meetings, as well as meetings related to 319(h) contract management and San Diego region 205(j) projects); and
4. Non-routine meetings with various groups, organizations, and agencies with interests, responsibilities, resources, programs, and/or projects that are NPS-related
(**Table NPS-9** lists many (but probably not all) such groups, organizations, and agencies);
5. Meetings related to San Diego region Proposition 13 grant contract management;
6. Meetings related to soliciting proposals for and developing and refining project concepts and proposals for 319(h), 205(j), Proposition 13, and other grants.

It is important for SDRWQCB staff to participate in such meetings (including public workshops, etc.) because working with other entities is pivotal to the NPS program. To some degree, this is true because the state's NPS strategy emphasizes a non-regulatory approach. More fundamentally, however, this is true because some NPS pollution simply

is not amenable to a traditional regulatory approach. The nature of NPS pollution is such that the San Diego Regional Water Quality Control Board will probably never have as much control over NPS pollution as it does over some other forms of pollution. In order to make progress on preventing and reducing NPS pollution, SDRWQCB staff needs to work with others who can control or influence the entities and activities that cause NPS pollution. Since the SDRWQCB NPS program is in its infancy, many meetings (particularly those in category 4 above) are needed simply to initiate and establish working relationships with the many groups and organizations with a role in NPS pollution prevention / control and to enable SDRWQCB staff to determine where additional contacts and more formal arrangements (e.g. MOUs) are most likely to be productive. Significant results from SDRWQCB staff participation in meetings is likely to occur only to the extent that such participation is frequent and consistent over the long term.

For a number of years, SDRWQCB staff has participated as the lead on the Agua Hedionda Lagoon Technical Advisory Committee in implementing best management practices to reduce the existing bacteriological contamination in lagoon waters near the shellfish growing grounds. Birds roosting on the facilities of the aquaculture business appear to be the primary source of the bacterial contamination. Given the limited NPS resources available to SDRWQCB staff and other higher priority issues, SDRWQCB staff plans to phase out its participation on this committee.

The SDRWQCB will also continue to support Tier One activities through active participation in the development, review, selection, and management of grants.

Grants

Federal grants are available for water quality planning and assessments under the authority of Clean Water Act section 205(j), and for nonpoint source implementation programs under the authority of Clean Water Act section 319(h). Proposition 13 Grants are available for similar activities. As previously noted, accurate monitoring and assessment of ambient water quality and beneficial uses is critical to identifying not only the presence and magnitude of existing problems, but also the effectiveness of all management efforts to correct those problems.

Only certain types of governmental and non-governmental entities are eligible to receive 205(j), 319(h), and Proposition 13 grant funds. Proposals must also meet certain criteria in order to be eligible for funding. Although these grants are discussed here, work funded by 205(j), 319(h), and Proposition 13 grants may also be applicable to the TMDL Program and/or the Wetlands Program, described separately within those respective sections.

Each year, staffs of the SWRCB and the RWQCBs develop requests for proposals (RFPs) for 205(j), 319(h), and Proposition 13 grant projects. The RFPs are then made available to

interested parties by the SWRCB. The RFPs list projects for which proposals are specifically requested, but proposals for other projects may also be submitted. Staff of the SWRCB, and the RWQCBs (and USEPA, for 205(j) and 319(h) grants) evaluate the submitted proposals to determine eligibility, prioritize eligible proposals for funding, and determine which projects to fund. The SWRCB makes the final decision about which projects will be funded (subject to USEPA approval for 205(j) and 319(h) grants).

205(j) and some Proposition 13 grants are intended for water quality planning and assessment activities, such as determining the source(s) or cause(s) of water quality / beneficial use problems, development of watershed management plans, and other planning functions directed towards resolution of water quality problems or threats. Although 205(j) grants are often awarded for work applicable to a particular geographic area, staff of the SWRCB (not the local RWQCB) oversee all 205(j) grants. **Table 5** provides an overview of completed, ongoing, and pending 205(j) projects in the San Diego region. RWQCB staff will oversee Proposition 13 grants awarded for work in their respective regions.

319(h) and some Proposition 13 grants are intended for implementation of measures to reduce or prevent water quality and beneficial use impairments resulting from nonpoint source discharges of pollutants or to restore lost or degraded watershed resources. RWQCB staff oversee the 319(h) grants awarded for work in their respective regions.

Table 6 provides an overview of completed, ongoing, and pending 319(h) projects in the San Diego region. RWQCB staff will oversee Proposition 13 grants awarded for work in their respective regions.

The next RFPs for 205(j), 319(h), and Proposition 13 grant projects are scheduled to be made public in or about March of 2001. SDRWQCB staff is in the process of compiling a list of projects to be included in the RFP. **Table 7** is a preliminary list of such projects. (Also see subsequent section on Priorities and Allocation of Resources.)

Grant Management

Currently, the SDRWQCB staff oversees five 319(h) NPS grants. It is anticipated that five additional grants will be approved for implementation beginning in FY 01-02. Since two existing grants will end in FY 00-01, the total number of 319(h) NPS grants managed by SDRWQCB staff during FY 01-02 is expected to be eight. The status (completed, ongoing, or pending) of 319(h) projects in the San Diego region is identified in **Table 6**.

Since the submittal deadline for the first round of Proposition 13 proposals is after the date of preparation of this document, it is not known how many Proposition 13 grants SDRWQCB staff will manage.

Grant Development Review

SDRWQCB staff will assist in the development of the next RFPs, solicit and encourage project proposals for those RFPs, and review, evaluate, and rank those proposals which are submitted for funding. Staff will assist NPS grant applicants in developing project proposals that will effectively implement NPS control measures. Staff will encourage projects that will implement appropriate CZARA management measures.

SDRWQCB will continue to assist project proponents in receiving grant funding for the implementation of self-determined management practices. Although the SDRWQCB intends to utilize the Tier One, non-regulatory approach as much as possible, the SDRWQCB will shift emphasis to Tier Two and Tier Three regulatory approaches, if and when it appears that inadequate progress is being made toward eliminating NPS problems and threats.

Tier Two NPS Activities

The SDRWQCB will continue (and, where possible) expand, those activities that use regulatory-based encouragement to promote the implementation of appropriate NPS management practices. The threat of a stringent regulatory approach, and the potential for future enforcement actions by the SDRWQCB, can provide an additional incentive to commit to increased NPS pollution prevention and control. Through expanding the ongoing review of applications for Clean Water Act section 401 water quality certification, the SDRWQCB can require adequate structural and non-structural management practices be incorporated into all new urban development projects to reduce the future generation and impact of urban runoff. The waivers of waste discharge requirements, (which may be utilized in lieu of water quality certification), can be conditioned on the incorporation of adequate NPS control and treatment measures.

Even before implementation of the staff reorganization, the SDRWQCB began expanding its internal coordination of nonpoint source prevention and control activities with those of water quality certification and the NPDES municipal and construction storm water permits. Of most immediate and direct impact are the structural NPS measures that are being implemented to meet water quality certification requirements.

Caulerpa taxifolia Infestation Detection, Eradication, and Prevention

In June, 2000, an infestation of the invasive non-native marine alga *Caulerpa taxifolia* was found in Agua Hedionda Lagoon on the coast of the San Diego region. This was the first known infestation of *Caulerpa* on the west coast of North America. The *Caulerpa* infestation of the Mediterranean Sea has caused widespread destruction of marine ecosystems and is now considered to be out of control. In order to prevent such destruction in California waters, SDRWQCB staff, in partnership with several other organizations, including Santa Ana RWQCB staff, has directed substantial resources

(including most of the SDRWQCB NPS Program resources) to the efforts to detect, eradicate, and prevent *Caulerpa taxifolia* infestations. SDRWQCB staff intends to continue to do so, at least until such time as other agencies (e.g., Department of Fish and Game) are adequately funded and staffed for such efforts.

The SDRWQCB currently is the lead agency for *Caulerpa* response. SDRWQCB staff chair the Southern California *Caulerpa* Action Team (SCCAT), a group of representatives of various agencies involved in the *Caulerpa* response effort. *Caulerpa* poses an enormous threat to the beneficial uses associated with the native marine life of California waters. For this reason alone, involvement of the SDRWQCB and other RWQCBs is appropriate. However, RWQCBs have a particularly important role to play since *Caulerpa* infestations are believed to be attributable to discharges from saltwater aquaria and since eradication of *Caulerpa* requires chemical (e.g., chlorine) treatment of infested areas. As with many other NPS efforts, outreach and education is a key component of the *Caulerpa* response effort. SDRWQCB staff has played and continue to play an important role in the outreach and education component of the *Caulerpa* response effort. SDRWQCB staff has formed a *Caulerpa* Action Team (CAT, not to be confused with SCCAT), consisting of three senior level and three junior level staff, to focus on outreach and education. The CAT has hired a student to assist in these efforts.

Dealing with *Caulerpa* is now the highest priority for SDRWQCB NPS resources. The SDRWQCB *Caulerpa* response effort alone requires considerably more resources than the entire allocation available to the SDRWQCB for the NPS Program. SDRWQCB staff intends to pursue additional resources for *Caulerpa* response.

Water Quality Certification

By Federal law (Clean Water Act Section 401) every applicant for a Federal permit or license for an activity which may result in a discharge of fill into waters of the United States (including wetlands), must also request and receive State certification that the proposed activity will not violate water quality standards. Since nearly all of the large new residential, commercial, and industrial developments that are being proposed in the San Diego Region are required to have a Federal CWA Section 404 permit (individual or nationwide) from the U. S. Army Corps of Engineers, these same projects also need water quality certification from the State. Because water quality certification should be based on a finding that water quality standards will not be violated by either the short-term or long-term effects of a project, adequate NPS pollution prevention and control measures should be incorporated into the design of each project before the SDRWQCB can support such a finding. Without water quality certification, or a waiver thereof, the Federal license or permit can not be issued and the development project can not go forward. This need to provide, deny, or waive water quality certification imparts extensive responsibility, as well as extensive authority, to the SDRWQCB. Close coordination of the SDRWQCB's water

quality certification and NPS programs is essential to assure the long-term protection of water quality and beneficial uses.

SDRWQCB water quality certification activities are also described in a later section of this chapter, *Water Quality Certification (Wetlands) Program*.

Planning and Environmental Review Participation

Within severe funding constraints, the SDRWQCB has participated in the environmental review (e.g., CEQA) process for major urban development projects, to encourage and facilitate projects which incorporate measures to minimize the generation of the NPS pollutants and their effects. The SDRWQCB realizes that through good project design, many subsequent NPS problems can be avoided, thereby reducing the potential for future degradation of water quality and loss of beneficial uses. Although it currently receives no funding specifically for environmental document review, the SDRWQCB attempts to participate on the most significant projects. If funding becomes available for greater participation, the SDRWQCB intends to utilize the environmental review process as a major avenue to encourage and facilitate NPS management measures.

Under an expanded environmental review program, the SDRWQCB will be able to provide a more integrated and effective approach to NPS pollution prevention and control. It is anticipated that earlier participation in the environmental review process will reduce the number of development projects that must undergo later redesign in order to receive water quality certification, thus eliminating the time and costs that such changes would require. An effective, integrated program is also needed for urban development projects because of significant potential impacts resulting from both hydromodifications and generation of typical urban pollutants.

SDRWQCB water quality certification activities are also described in a later section of this chapter, *Water Quality Certification (Wetlands) Program*.

A similar Tier Two approach is planned by the SDRWQCB to reduce NPS pollutants and impacts from several other activities, including: horse manure management, non-native red fire ant suppression, nursery waste management, non-native invasive plant and animal introduction and perpetuation, agricultural erosion control, and golf course management. During the upcoming year the SDRWQCB intends to shift emphasis on marine invasive exotics from management practice development and implementation to monitoring and assessment. A recent statewide requirement that vessel ballast water be flushed prior to entering or returning to California waters may significantly lessen the threat of introduction of invasive marine species to the San Diego Region's coastal embayments. However, monitoring and assessment of the effectiveness of the flushing requirement is still needed.

Within funding limits, the SDRWQCB intends to initiate or expand Tier Two activities as described below:

Horse Manure Management

New and additional efforts are needed to reduce the amount of pollution that is being contributed by horse manure in the San Juan Watershed Management Area. This effort will implement a management measure similar to NPS/CZARA Management Measure 1B, but some modifications may need to be developed.

Horse manure has been found to be a problem for water quality in several areas of the San Diego region. It is believed that improper management of horse manure at stables and in numerous private residential horse corrals throughout the San Juan Watershed Management Area is directly contributing to the elevated fecal coliform levels of San Juan Creek. Discharges of horse manure wastes and wastewater is also contributing to elevated levels of nutrients and biochemical oxygen demand in the creek. The increased levels of nutrients and organics are also expected to contribute to the extensive growth of filamentous algae throughout lower San Juan Creek. Improved manure management practices need to be implemented in order to reduce water quality impairment in both the creek and in the ocean waters near the mouth of the creek. Information and experience gained from this effort in the San Juan Watershed Management Area would be transferred for use in other watershed management areas with similar horse manure and elevated coliform problems throughout the San Diego region and the state.

Non-native Red Fire Ant Suppression Pollutant Control

New efforts are needed to minimize the water quality impacts associated with the state's new and rapidly expanding efforts to control the introduction and spread of the non-native red fire ant. This effort will implement NPS/CZARA Management Measure 1D.

The recent introduction of the non-native red fire ant to the San Diego region has triggered concerns regarding the possible adverse effects of the resulting pest control measures on water quality and beneficial uses in the San Diego region. Non-native red fire ants have been found in the large ornamental nurseries of the southern Orange County portion of the San Diego region. Since runoff from these nurseries has already contributed to water quality reductions in the receiving water streams, increased pest management efforts to control non-native red fire ants could exacerbate the existing problems. SDRWQCB plans to focus initial efforts on the San Juan Watershed Management Area. The SDRWQCB plans to actively participate with other environmental and regulatory agencies to ensure that control of the red fire ants can be attained with minimal impact on the water quality of the surface and ground waters of the San Juan Watershed Management Area. Information and experience gained from this effort in the San Juan Watershed Management Area would be

transferred for use in other affected watershed management areas throughout the San Diego region and the state.

Nursery Runoff Pollutant Control

New and additional efforts are needed to reduce the discharge of pollutants from ornamental nurseries to the streams in the San Juan Watershed Management Area. These efforts would implement NPS/CZARA Management Measure 1D.

Runoff from the large ornamental nurseries of the southern Orange County portion of the San Diego region, particularly in the San Juan Watershed Management Area, has contributed to water quality degradation in several nearby streams. Nutrients have been found in elevated concentrations and excessive growth of filamentous algae is a problem in these streams. The pre-emergent herbicide oxadiazon has also been found in elevated concentrations near nurseries in both fish tissues and stream sediments. More effective control measures are needed at the nurseries in order to reduce the discharge and impact of nursery pollutants. San Juan Watershed Management Area is a UWA Category I priority watershed. Information and experience gained from this effort in the San Juan Watershed Management Area would be transferred for use in other affected watershed management areas throughout the San Diego region and the state.

Non-native Invasive Riparian and Fresh Water Species Control

New and additional efforts are needed to stop the introduction and spread of and to remove non-native invasive plants and animals throughout the riverine areas of the San Diego region. There are no existing NPS/CZARA management measures for the control of non-native invasive species of riparian and wetland vegetation or aquatic animals.

Non-native invasive species of vegetation have seriously degraded the beneficial uses of many streams and rivers of the San Diego region. The most significant impacts are being caused by giant reed (*Arundo donax*) and salt cedar (*Tamarix sp.*). Both of these species are rapidly displacing native streamside vegetation. Their significant adverse environmental effects have included: (a) dramatic reductions in wildlife habitat values and functions; (b) increases in flooding due to increased flow obstruction; (c) reductions in dry-season base flows within streams due to extensive increases in evapotranspiration water losses; (d) reductions in recreational uses due to physical restrictions to passage, reduced recreational and habitat values, and reduced areas of open water. With giant reed another insidious effect has been the conversion of the infected river's hydrologic regime from one that is flood dominated, to one that is fire dominated. Rivers that have become dominated by giant reed have more easily caught fire, and burned with an intensity that far exceeds

that which would ever occur with native vegetation. Salt cedar has the additional impact of creating saline soils. The salt exuded from salt cedar leaves during the course of transpiration creates soil salinities that inhibit the germination of native plants. Since land disturbances have been found to encourage the establishment of non-native vegetation, management measures must be developed and implemented which will ensure that land disturbances do not continue to exacerbate the problem throughout the San Diego region. Information and experience gained from this effort in various San Diego region watershed management areas would be transferred for use in other affected watershed management areas in the state.

Agricultural Erosion Control

New and additional efforts are needed to reduce the amount of soil eroded from agricultural land and discharged into streams within the Santa Margarita River Watershed Management Area. This effort will implement NPS/CZARA Management Measure 1A.

Erosion from agricultural soil disturbances has caused elevated sedimentation in numerous streams within the Santa Margarita River Watershed Management Area. The soil disturbance is associated primarily with citrus and avocado groves, and, to a lesser extent, with row crops. Information and experience gained from this effort in the Santa Margarita River Watershed Management Area would be transferred for use in other watershed management areas with similar erosion control problems throughout the San Diego region and the state. The SDRWQCB has a Memorandum of Understanding (MOU) (SDRWQCB Resolution No. 92-21) with the Resource Conservation Districts (RCDs) of San Diego County and the Elsinore-Murietta-Anza RCD (SDRWQCB Resolution No. 79-25) to coordinate agency responses to increased erosion, or threats of increased erosion, from agricultural activities. Per the MOUs, the RCDs will typically be the first responders to complaints of agricultural erosion, and the RCDs will provide technical assistance to the landowners to correct the erosive conditions. In those cases where the RCDs are unable to get cooperation from the landowner in implementing necessary corrective actions, the cases are referred to the SDRWQCB for consideration of formal enforcement action. It is through this regulatory-based (Tier Two) encouragement that agricultural erosion control may best be achieved. The SDRWQCB will continue to work with the RCD's to reduce erosion on agricultural lands utilizing Tier One and Two approaches, and when necessary, Tier Three enforcement actions to correct chronic problems.

Golf Course Management

New and additional efforts are needed to reduce the amount of pollutants, including nutrients, pesticides, herbicides, and organic materials, discharged from golf courses. Pollutant releases from golf courses are a contributor to reduced water quality in several areas of the San Diego region. Such impacts are most pronounced in those golf courses that were constructed decades ago when vegetative buffers were not a requirement for

receiving water quality certification from the state. In such older courses, turf grass is commonly manicured and maintained down to the edge of the creeks or rivers which traverse them. This direct connection between the streams and the manicured turf grass facilitates the transport of fertilizers, pesticides, and grass clippings into the streams. Such inputs can impact both surface and ground waters. The SDRWQCB will initiate focused activities on golf courses on the lower Sweetwater River, in the San Diego Bay Watershed Management Area. This effort will implement measures similar to NPS/CZARA Management Measures 1C and 1D for agriculture.

Pollutants from these golf courses contribute directly to impacts on the lower Sweetwater River and San Diego Bay near the river mouth. A major desalination plant is being constructed near the river mouth, and any increased nutrients discharged from the golf courses can be expected to exacerbate any impacts from the desalination plant discharge. The Sweetwater River is tributary to San Diego Bay, which is a UWA Category I priority. Information and experience gained from this effort in the San Diego Bay Watershed Management Area will be transferred and utilized by the SDRWQCB in other watershed management areas with similar golf courses.

Tier Three NPS Activities

Although the SDRWQCB actively encourages self-determined implementation of NPS control measures and practices, the SDRWQCB has utilized waste discharge requirements and enforcement actions, where appropriate efforts were not forthcoming. Enforcement actions have been taken for several kinds of activities, including: agricultural land clearing where the erosion control recommendations of the local RCD were being ignored, new urban construction projects where there were inadequate erosion control measures, green waste storage sites, horse corrals with inadequate runoff protection, and commercial nurseries where there were inadequate measures to prevent the discharge of contaminated irrigation runoff. To provide greatest regulatory control over nonpoint source pollution from dairies, the SDRWQCB continues to regulate all dairy facilities with waste discharge requirements. The waste discharge requirements address not only dairy barn wastes and wastewater, but also dairy corral runoff.

Statewide Activities

The SDRWQCB participates in several statewide activities as part of the Nonpoint Source Program. This participation includes NPS program roundtables, CWA section 401 water quality certification coordinating committee meetings, Urban Runoff Task Force meetings, and assistance in the annual preparation of the NPS and planning grant Request for Proposals.