2.0 REGIONWIDE ACTIVITIES

Regionwide activities include: Sections (2.2) planning and policy development; (2.3) monitoring and assessment; (2.4) Nonpoint Source Program; (2.5) wetlands and stream protection; (2.6) core regulatory programs, (2.7) groundwater resource management, and (2.8) geographic information system (GIS). Through our regionwide activities we address overall watershed problems that impact San Francisco Bay and problems that are common to more than one watershed. For example, management practices for urban runoff, environmental indicators for 303(d) listed water bodies, and updating groundwater beneficial use designations are the types of issues that we address on a regionwide scale. We are also continuing to re-evaluate our overall regional priority setting process, which is discussed in the following section.

2.1 HIGH PRIORITY ISSUES AND FUNDING NEEDS

Since the Watershed Management Initiative was first begun, Regional Board management and staff have participated in a number of priority-setting processes, based on the criteria of meeting water quality benefits, customer service, and program requirements. Although priorities have changed to some extent over the years, in response to regulatory mandates, critical water quality issues, and budget constraints, the major program elements have remained constant. Table 2-1 below of Water Quality Criteria describes the major priorities for Water Board staff efforts in 2004. Note: this table is also included as Table 1-1 in the Introduction Section.

Table 2-2 lists general priorities for watershed, agricultural and 319(h) grant funds that we, or our stakeholders, see as potential projects for improvement of water quality and beneficial uses within watersheds or region-wide. We have chosen to focus on general criteria for projects throughout the region, with specific focus on targeted watersheds for agricultural grant funding. Table 2-3 lists priorities specifically for Agricultural Water Quality Grants Program (AWQGP) funding.

Funding for projects is available from a large variety of state and federal agencies as well as private groups and these should be utilized as fully as possible even when a proposal involves addressing one of our water quality priorities. Funding source requirements should be carefully researched to ensure a good match with potential projects. Funding source links for grants and loans, including State Revolving Fund Loans, may be found on the State Water Resources Control Board (SWRCB) website at http://www.waterboards.ca.gov/funding/index.html.

A comprehensive California Watershed Funding Database may be accessed at http://calwatershedfunds.org/index.php.

Table 2-1
Water Quality Priorities

Our major water quality priorities are summarized below. In addition to Water Board priorities developed by the Board and staff, priorities are mandated by legislation, statute, regulation, the State Water Resources Control Board, Cal-

EPA, and the U.S. EPA. The following priorities are not necessarily listed in priority order; however, TMDL-related work is considered the highest statewide priority. The listed priorities are also highlighted in the watershed sections as appropriate. Grant funding may aid in addressing some of these priorities, by working in partnership with other agencies and stakeholders. The Water Board will also use its regulatory authorities, e.g. permitting, enforcement, etc., to implement these priorities.

- **Municipal Stormwater/Urban Runoff** – priorities include proposed development of a single regional municipal stormwater permit to replace six existing Phase I permits; compliance oversight of municipal stormwater permits, construction, Caltrans, and industrial stormwater permits; implementation of Phase II stormwater permits for smaller municipalities; review of new development post-construction stormwater controls; and actions to control pollutants of concern (copper, mercury, PCBs, pesticides, toxicity, and trash). Converting all stormwater reports from paper reports to web-based submittals to track permit compliance, evaluate BMPs effectiveness, and pollutant loads reduction is a high priority.

- **Total Maximum Daily Loads (TMDLs)** –Priority TMDLs include:
    - San Francisco Bay Legacy Mercury, PBDEs and PCBs
    - Regionwide Urban Creeks Diazinon / Pesticide Toxicity
    - Guadalupe River Watershed Mercury
    - Tomales Bay and Lagunitas Creek Pathogens
    - Walker Creek Mercury and Sediment
    - Lagunitas Creek Sediment
    - Napa River Nutrients, Pathogens, and Sediment
    - Sonoma Creek Nutrients, Pathogens, and Sediment
    - San Francisquito Creek Sediment
    - Pescadero and Butano Creeks Sediment

  See our TMDL website http://www.waterboards.ca.gov/sanfranciscobay/tmdlmain.htm for further details.

- **Wetlands and Stream Protection** priorities include Basin Plan amendments to include a stream protection policy and additional beneficial uses for stream and wetland protection; permitting and technical oversight of several large wetland restoration and enhancement projects in San Francisco Bay and coastal areas, including the North and South Bay Salt Ponds; mitigation tracking and monitoring for wetland projects; permitting of stream and wetland fill projects through 401 certifications and Waste Discharge Requirements; and outreach and education to municipalities, consultants, and non-profit groups on application of sound stream and river protection principles to hydromodification projects.

- **Rural Nonpoint Source –** priorities include permitting and oversight of

confined animal facilities (dairies, horse boarding, and other); application of sound management principles to vineyards and other agricultural land conversion activities; and oversight of existing Rural Wastewater and non-Chapter 15 Waste Discharge Requirements (WDRs).

- **Watershed Management –** priorities include continuing to work with watershed stakeholders in areas including Tomales Bay, Contra Costa, Alameda Creek watershed, and the Santa Clara Basin, while expanding and improving watershed partnerships in other key watersheds, particularly those with listed waterbodies where TMDLs are in process; developing capacity building and outreach for grant solicitations; and developing more cooperative working relationships with CalFed and other agency efforts. Internal priorities include increased coordination between surface and groundwater programs and making the nexus between these programs and the development and implementation of TMDLs.
- **Watershed Monitoring and Assessment** – priorities include the Surface Water Ambient Monitoring Program, Regional Monitoring Program, and coordination with other federal, State and local monitoring efforts.
- **Groundwater Protection and Toxics Cleanup**– priorities are to protect and restore groundwater quality for drinking water supply and other beneficial uses, through supporting local agencies, overseeing key contaminated MTBE sites and SLIC site cleanups, supporting Brownfield cleanups, facilitating cleanup and timely transfer of DOD/DOE sites, and regulating landfills.
- **NPDES Surface Water Protection** – priorities include reducing sanitary sewer overflows and beach closures; source control/pollution prevention; wastewater reuse; and permit compliance and reissuance.
- **Planning Activities –**priorities include development of stream protection policy (see above); development of site-specific objectives for copper, nickel, and cyanide; and updating Basin Plan surface water/groundwater maps and waterbody beneficial use listings.

Table 2-2
Targeted Projects, Needs or Activities

Introduction:
Region 2 is committed to promoting regional watershed partnerships for understanding and addressing regional needs and priorities. An important objective of the Water Board is to use a collaborative watershed partnership process in conjunction with regulatory actions, in order to maximize cooperation and improve regulatory process for the public and the environment. We believe that water management and watershed plans should be developed in an open, transparent process, with the collaboration and buy-in of all interested stakeholders. Our grant priorities are focused on the quality of the projects and applicants that meet the following watershed and planning criteria, rather than on defining targeted watersheds or specific projects.

Process for developing water management and watershed plans:

- Adoption of integrated regional water management plans should be done within an existing recognized watershed council in which the adoption is voted on and appears in its council minutes. We believe this is consistent with the watershed plan adoption process required by the integrated regional water management grant draft criteria.
- The watershed plan process should be transparent, with the inclusion of all interested stakeholders.

Criteria for Projects

- Proposed projects should contribute to addressing Water Quality Priorities as defined in the San Francisco Bay Region's Watershed Management Initiative 2004 Chapter.
- Proposed projects should maximize environmental benefits.
- Proposed projects should enhance and increase aquatic habitat values.

Proposals:

The format for grant proposals will be specified in the PSP (Proposal Solicitation Package). Region 2 believes that the following content should be included in proposals:

- Integrated water management plans should make linkages among resource management inventories and the science of resource management, the identification of issues, and proposed implementation alternatives. In other words, plans should be based on sound science, and the science, inventories and other data produced should be targeted to addressing well-recognized resource management issues, so that the information in the plans leads to implementation measures. The objective is to develop clear and useful plans that lead to implementation rather than to create requirements for producing

thick documents that remain on the shelf.

- Plans should include identification of a range of alternative management strategies to be explored.
- Resource problems should be coordinated across agency lines and boundaries.
- Maximum public involvement should be an integral part of the plan. Successful implementation of plans should be based on participatory planning and buy-in from partners.
- Region 2's evaluation of proposals will give additional weight to proposals that address areas of critical resource management issues in areas where there are currently no adequate local partnerships in place to address such issues.
- We will encourage proposals that promote regional watershed partnerships for understanding and addressing regulatory needs and priorities.
- Proposals must clearly state how the project will protect and/or restore beneficial uses of the region's water bodies [see also Table 2-1 for regional Water Quality Priorities].
- Proposals must clearly state how they are multi-objective and not single purpose.

Administrative capability:

- Proposals should clearly demonstrate the administrative capacity of the applicants to manage a collaborative planning and implementation process.

- Applicants should describe their qualifications and their history of project management.

- Region 2 will also encourage use of strategies such as identifying a well-qualified fiscal agent who can provide organizational and management skills. In this vein, we are also willing to endorse proposals that consider "re-granting" of funds to smaller, locally based watershed groups by an entity with proven administrative skills.

Other grant funding priorities include, but are not limited to:

- Implementation of TMDLs (see Table 2-1 for priority TMDLs)
- Habitat restoration projects
- Implementation of storm water BMPs

See Table 2-1 Water Quality Priorities for more complete list of Regional Board priorities.

Table 2-3

Targeted Projects for Irrigated Agriculture in the San Francisco Bay Area

Although the San Francisco Bay Area is the fourth largest metropolitan area in the country, more than half of its land remains in agriculture and open space. In the North Bay counties (Napa, Sonoma, and Solano), major categories of irrigated agriculture, in terms of crop value and acreage, include wine grapes, irrigated pasture for dairy and livestock, and nursery stock and flowers. Dairies are the predominate category of irrigated agriculture in Marin County, and nursery stock predominates in Contra Costa County. In San Mateo County, mushrooms, nurseries, and floriculture are the primary categories of irrigated agriculture in terms of crop value. The cultivation of truck crops (e.g., artichokes, Brussels sprouts, strawberries, etc.) is also widespread in coastal San Mateo County.

Regional Board 2 Priorities for Funding under the AWQGP

With the funding available from Propositions 40 and 50, and 319(h), under the Agricultural Water Quality Grant Program (AWQGP), Regional Board 2 will give priority to projects that provide significant contributions to the implementation of total maximum daily loads (TMDLs), where we have identified irrigated agriculture as a potentially significant source of pollutant(s). These include TMDLs for the following:

Water Body	Pollutant(s)
Tomales Bay	nutrients, pathogens, and sedimentation
Walker Creek	nutrients and sedimentation
Lagunitas Creek	nutrients, pathogens, and sedimentation
Petaluma River	nutrients, pathogens, and sedimentation
Sonoma Creek	nutrients, pathogens, and sedimentation
Napa River	nutrients, pathogens, and sedimentation
San Gregorio Creek	sedimentation
Pescadero Creek	sedimentation
Butano Creek	sedimentation

With the funding available from the 319(h) program, Regional Board 2 will also prioritize non-point source pollutant control projects that contribute to implementation of multiple TMDLs.

For example, we have identified rangeland management to control pollutant discharges associated with livestock grazing on public parklands within Point Reyes National Seashore and Golden Gate National Recreation Area (within the Tomales Bay watershed) as a priority for funding because we postulate that such actions could achieve significant reductions in the total loads of pathogens, nutrients, and sediment being discharged into Lagunitas Creek and Tomales Bay. Furthermore, successful implementation of effective non-point source controls on grazed public lands would present an excellent opportunity for building partnerships with ranchers operating on private lands elsewhere in Lagunitas Creek and Walker Creek watersheds.

2.2 PLANNING AND POLICY DEVELOPMENT

Planning and Policy Development Activities

A major focus of our water quality control programs has been and continues to be on managing the influx of toxic pollutants to the larger San Francisco Bay Estuary aquatic system. Certain toxic pollutants remain a great concern even after decades of successful efforts in controlling wastewater sources of pollutants. This has resulted in raising the significance of other sources, such as urban and non-urban runoff and the continued significance of pollutants in the sediments (reservoir sources) and ongoing releases from historical sources (e.g., continued inputs of PCBs or organo-chlorine pesticides) of pollutants that have been banned for more than 20 years. There is an increased awareness that a number of the high priority issues or pollutants are the result of numerous, small inputs or cross-media issues where the initial release is not directly to water. This emphasizes the need for coordination between policy development and watershed activities to provide the appropriate tools to allow progress towards solutions for these difficult issues.

In terms of activities related to the Estuary itself, we are fortunate to have the San Francisco Bay Estuary Project at the Regional Board. In 1993, the Estuary Project reached its goal of developing a Comprehensive Conservation and Management Plan (CCMP), which contains over 140 recommended actions. Many of our priorities and activities are consistent with or are direct implementation of CCMP actions. As such, the Regional Board works cooperatively with the Estuary Project on several projects including: erosion control, vessel waste, invasive species, pollution prevention, urban runoff and watershed management planning, and the wetlands ecosystem goals project.

Many of our current planning and policy development activities stem from requirements and commitments associated with existing program areas. Examples include the Long Term Management Strategy (LTMS) for dredging and dredge spoil disposal, the Regional Monitoring Program (RMP), and the development of Total Maximum Daily Loads (TMDL) for specific pollutant or stressors. Other activities reflect new and emerging programs that have arisen as priority issues that merit region-wide strategies. The following list encompasses most of the high priority categories where specific activities are ongoing:

- Monitoring and assessment (SWAMP)
- TMDLs or mass-based waste load allocations for specific chemicals
- Bay dredging and disposal (LTMS)
- Regional Monitoring Program
- Interface with CalFed and other Regional Boards
- Effluent toxicity control program
- Basin plan updates including:
    - Site specific water quality objectives
    - Stream Protection Policy
    - Revision of water quality criteria
    - Beneficial use evaluation of groundwater basins
- Long-term mercury strategy (TMDL)
- Selenium strategy for petroleum refineries (TMDL)
- Reclamation strategy

- Erosion and sedimentation

Planning provides two basic functions to assist in the resolution of these high priority issues in the context of Watershed Management:
a) Resolving outstanding issues associated with regional implementation of federal standards and regulations and statewide implementation measures; and
b) Articulating new regulatory tools and approaches that emerge as we engage more and more in watershed management.

For each of these functions, we must ensure that new tools and policies are clearly articulated, receive a thorough public review, and move through the formal approval process.

Long-Term Planning Objectives

There are a number of long-term objectives for policy development and regulatory approaches that will help us to better implement the Watershed Management Initiative and further management of water quality on a watershed basis:

Planning Objective 1. - Refine existing regulations, policies, and implementation measures in order to define limits and requirements that are appropriate for local conditions in cases where federal standards and/or statewide implementation measures may not be appropriate.

At present, there is an existing template for deriving water quality based effluent limits and proposed or established numerical standards for the pollutants on the national priority list. There are, however, ongoing implementation problems with a small subset of these pollutants. The planning objective is to conduct region-wide troubleshooting for this subset of pollutants over the next two to four years. When finished, staff resources that are currently being spent responding to the same implementation problem in all permits can be redirected towards broader watershed issues. The following tasks fall under this objective:

- Resolve copper and nickel issues by:
  a) Developing Basin Plan amendments to include site specific objective for copper and nickel in South San Francisco Bay in the context of the Santa Clara Basin Watershed Management Initiative; and
  b) Complete the ongoing process of evaluating the copper-nickel levels in the embayments north of the Dumbarton Bridge. Four rounds of data collection have been completed and additional analysis is needed.

- Developing pollutant-specific strategies for mercury, PCBs, and selected pesticides:

  a) Waterbodies in the Region are impaired by mercury largely due to run-off from local mercury mines and Central Valley mercury and gold mines; other sources of mercury include atmospheric deposition of mercury from fossil fuels, storm water run-off, wastewater discharges, and erosion of contaminated bay sediments. We are currently developing TMDLs to address mercury in San Francisco Bay, the Guadalupe River

Watershed, which has what was once the largest-producing mercury mine in North America, and the Walker Creek Watershed, which drains to Tomales Bay.

The San Francisco Bay Mercury TMDL was adopted by the Board in September 2004 and requires several more State and Federal regulatory actions to be completed. The Guadalupe and Walker TMDLs are scheduled for Board consideration in 2005.

Many reservoirs and lakes in the Region, and across the State and nation, have mercury concentrations in fish that are too high to support the Beneficial Use of human consumption of sport fish. Statewide coordination to resolve issues concerning sources of atmospheric deposition and reservoir implementation actions (including fish consumption advisories) will continue, and may result in a statewide mercury TMDL for atmospheric deposition.

Our strategy is to approach each TMDL from the perspective that solution of the water quality problem is the goal (not the TMDL itself). Consequently, we encourage early implementation actions, such as a Proposition 13 Coastal Nonpoint Source Pollution Control grant recently awarded to evaluate methods to minimize mercury impacts in restored wetlands in the Bay. We coordinate a mercury watershed council, including workgroups focused on pollution prevention or source elimination, pollutant credit or trading mechanisms, and research priorities. Coordination with Region 5 to resolve issues concerning mining wastes that are transported to San Francisco Bay will continue. We also have an active mercury work group in the Guadalupe watershed where several early implementation actions have been completed and more are underway.

b) Sampling information on PCBs has been collected through the RMP and Bay Protection and Toxic Hot Spot Cleanup Program. The RMP chlorinated hydrocarbon work group has provided preliminary loading estimates. These estimates are based on data collected by the RMP and a model derived from work completed as part of the Great Lakes initiative and other work. This has served as the basis for identifying data gaps and a work plan to prioritize data needs to determine the source of PCBs in the estuary and take the first steps toward determining appropriate control measures for the sources that are identified. Evaluation of data collected near storm drain outlets and channels will be completed in the coming year. Additional data has been collected at selected locations within stormwater conveyance systems.

c) Continued evaluation of toxicity related to organo-phosphate pesticides in the Bay and urban streams, possible educational and management practices to ameliorate the problem.

d) Development of a strategy to provide information critical to the determination of the appropriate control measures for exotic or invasive species within the estuary. This could include improved data on vessel calls at Bay area ports, ballast water discharge volume estimates, and improved tracking of port of origin for vessels calling at Bay area ports.

Planning Objective 2. - Development of regulatory program tools that will facilitate the transition between point source discharge regulation and broader watershed and cross-media management;

- Develop and obtain public review on a pilot mass offset system for point to nonpoint permits to facilitate effective management of pollutants dominated by riverine or relic sources and airborne sources.

- Define water quality problems that are the result of land or air management.

- Refine the conceptual maps of mass loading and transport of pollutants of concern. A portion of this synthesis has been completed by the RMP sources and loadings workgroup and has been identified as a key issue to be addressed in the program re-design. Additional resources are targeted for this task in this fiscal year. Additional resources will be required to complete this task in future years.

- Develop and initiate Basin Plan amendment process specifically defining groundwater basin beneficial uses, protection, and development policies using detailed geological, land use, cleanup, and development data developed for each groundwater basin within the region. Data has been collected on 2 of the 32 basins and draft proposals for Basin Plan amendments have been prepared.

Planning Objective 3. - Development of local policies and regulatory approaches for watershed management, such as a template for evaluating projects that involve modifications of sediment fluxes in individual drainages;

- Develop several sets of regional guidelines for projects involving hydrogeomorphological modifications of streams and channels in the region. Initial focus will be on defining flood management activities that have minimal potential to impact water quality or stream function and on the definition of acceptable modifications to streams in terms of protecting or enhancing stream function to protect the beneficial uses of the streams.

- Develop a stream protection policy to enhance the ability to protect the functions of streams that are necessary to preserve the beneficial use of the stream.

Planning Objective 4. - Development of TMDLs for pollutants and stressors of concern in addition to those noted in other tasks (copper, nickel, mercury, and PCBs);
[Please see Regional Board website www.waterboards.ca.gov/sanfranciscobay/tmdlmain.htm for the current schedule for TMDL development in our region.]

- Initial action plan for control of exotic species has been completed. While this identifies a TMDL target of zero for introduction of non-native species, implementation measures and timing are still being investigated and considered.
- Draft TMDL work plans have been developed for all water bodies and stressors included in the 1998 303(d) report adopted by the Regional Board.
- Develop strategy for prevention and control of toxicity caused by pesticides, particularly diazinon and chlorpyrifos and continue to work with Region 5, the Department of Pesticide

Regulation, municipalities, and other interested parties through the Urban Pesticide Committee and other forums.

- Develop regional strategy for sediment TMDLs with initial focus on the Napa River and Sonoma Creek watersheds.
- Continue to oversee implementation of selenium control strategies by the petroleum refineries.

2.3 MONITORING AND ASSESSMENT

In October 1999 the San Francisco Bay Regional Water Quality Control Board (Regional Board) developed a Regional Monitoring and Assessment Strategy (RMAS) in order to develop information for all waterbodies in the Region for the 305(b) report and for 303(d) listing. The RMAS was developed in cooperation with many stakeholders, such as the Bay Area Stormwater Management Agencies Association (BASMAA), San Francisco Estuary Institute (SFEI) and California Department of Fish and Game (CDFG). In July 2000, the governor approved funding for the statewide Surface Water Ambient Monitoring Program (SWAMP), which for the first time provided funding to the State and Regional Boards to perform ambient monitoring specifically for the 305(b) report and 303(d) list. Although the Regional Boards were directed to monitor and assess all hydrologic units in their region within five years, funding constraints have made it necessary to use a representative approach to selected waterbodies. Future assessment following the current fiscal year will depend on the funding available from the State.

The 4000 square-mile San Francisco Bay Region was divided into 47 "planning watersheds" for the purpose of implementing a rotating basin approach for monitoring and assessment on a finer scale than the seven hydrologic basins. These planning watersheds are between 30 and 200 square miles in area, with most between 50 and 100 square miles. Some of these planning watersheds are self-contained hydrologic units that drain to an estuary or the ocean (e.g., Sonoma Creek), and others have been either combined with adjacent watersheds (e.g., North San Mateo Coastal Creeks) or are subwatersheds within a larger drainage basin (e.g., Arroyo Mocho within the larger Alameda Creek). All planning watersheds are fully contained within one of the seven Hydrologic Units of the San Francisco Bay Region.

The goal of the SWAMP funded program in the San Francisco Bay Region is to monitor and assess water quality in all of the watersheds in the region to determine whether beneficial uses are protected. Data developed in this program will be used for evaluating waterbodies for the 305(b) report and the 303(d) list. Specific objectives of the monitoring program are to: 1) measure environmental stressors (pollutants or other water quality parameters), biological effects, and ecological indicators to evaluate whether beneficial uses are being protected, 2) use a design that allows for evaluation of spatial and temporal trends in the watersheds of the region, 3) identify minimally disturbed reference conditions, 4) determine if impacts are associated with specific land uses and/or water management, 5) use standard sampling protocols, QA procedures and the SWAMP database to provide statewide consistency and availability of data, 6) evaluate monitoring tools in watersheds, 7) generate data to develop indices to evaluate ecological indicators, and 8) use a rotating watershed approach to collect data in each hydrologic unit at least once every five years.

Past watershed monitoring has included creeks in West Marin (Walker and Lagunitas) and waterbodies in the East Bay. Watersheds planned for monitoring in FY 2004-05 (beginning in April 2005) include South Coastal Marin and San Francisco creeks, including Pine Gulch, Morses Gulch, McKinnan Gulch, Audubon Canyon, Easkoot Creek, Webb, Redwood, Tennessee Valley and Rodeo Creeks and Bolinas and Rodeo Lagoons. Waterbodies to be monitored in San Francisco include Presidio watersheds, Islais/Glen Canyon creeks and Lake Merced. Since the Regional Board had no laboratory contract to conduct monitoring in 2003-04 all watersheds

planned to be monitored in 2003-04 will be monitored in 2004-05 starting in January 2005. These watersheds include urban waterbodies in Richmond, El Cerrito, Berkeley, and Oakland. Waterbodies include Baxter, Cerrito, Codornices, Strawberry, Temescal, Sausal, Glen Echo/Trestle Glen, Arroyo Viejo and Lion creeks and the rural Arroyo Mocho in the Alameda Creek drainage.

The technical approach for Regional Board activities under SWAMP includes: 1) monitoring fish for contaminant levels in reservoirs and coastal areas where people catch and consume fish and 2) watershed monitoring to assess water quality impacts and establish regional sites of reference (i.e., high quality or "clean") conditions. In previous years the Toxic Substances Monitoring Program funds have been used to measure contaminants in fish from reservoirs where people fish and consume the fish. Coastal Fish Contamination Program funds have been used to measure contaminants in fish that people consume in Tomales Bay and the ocean waters of the region. At this time the future and potential statewide objectives of these programs are undetermined. The Regional Board implements most of the watershed monitoring portion of SWAMP through a master contract with the CDFG for bioassessment. Regional Board staff conducts the research on watersheds, establishes partnerships within watersheds, conducts reconnaissance, develops the study design and establishes access. In addition, Regional Board staff conducts continuous monitoring, bacteriological monitoring and trash assessments.

A Tier 1 assessment is conducted at all stations in creeks. Tier 1 assessments include conducting rapid bioassessments with concurrent measurement of basic water quality parameters and visual physical habitat assessments. Rapid bioassessments occur in the spring. Continuous monitoring devices measuring temperature, pH, conductivity, and dissolved oxygen are deployed throughout the watersheds for one week intervals about four times per year. Tier 1 is designed to obtain spatial coverage in determining the basic water quality of the watershed, to identify reference sites and to complement the evaluation of tier 2 sites where potential impacts are being evaluated.

Tier 2 of the design was developed to answer basic questions concerning protection of beneficial uses and potential impacts of land use and water management. Tier 2 stations are a subset of the tier 1 stations. At tier 2 stations samples will be collected during three hydrologic cycles. The 3 hydrologic cycles are the wet season (January - March), decreasing hydrograph /spring (April - May) and the dry season (June - July). Additional samples and parameters to be evaluated in Tier 2 will depend on the beneficial uses or land uses at or above a site or on previous data indicating a potential impact. For example, Regional Water Board staff will collect samples for fecal coliforms and *E.coli* at stations where there is water contact recreation and/or there are potential sewage inputs.

On October 14, 2004 we issued the draft report *Chemical Concentrations in Fish Tissues from Selected Reservoirs and Coastal Areas: San Francisco Bay Region*. This report analyzed fish tissue data from 11 waterbodies in the Region including Tomales Bay, Bon Tempe, Nicasio and Soulejule Reservoirs in Marin County; San Pablo and Lafayette Reservoirs in Contra Costa County; Lake Chabot, Shadow Cliffs and Del Valle Reservoirs in Alameda County; and Stevens Creek and Anderson Reservoirs in Santa Clara County. We are also conducting studies to evaluate benthic macroinvertebrate data from reference sites in various ecoregions in the Region

for the development of an Index of Biological Integrity (IBI) and an eight-month temperature study to evaluate temporal variability within a selected watershed. For more information on the SWAMP program sampling workplan, studies, and available reports, please visit our website at www.waterboards.ca.gov/sanfranciscobay.

In addition to SWAMP, we participate in several focused monitoring efforts for San Francisco Bay. The primary ongoing monitoring effort within the San Francisco Bay Region is the San Francisco Estuary Regional Monitoring Program for Trace Substances (RMP). This $2.8 million effort is funded by over 70 of the major dischargers in the Region. The program provides scientifically rigorous chemical and physical data for water, sediment, and biota. The RMP's objectives include: describing patterns and trends in contaminant transport; describing pollutant general sources, pathways, and loadings; and measuring contaminant effects on the Bay's ecosystems. Information from the RMP is critical to the development of several TMDLs for San Francisco Bay.

Numerous other state and federal monitoring and research programs are currently taking place in the Bay. State programs include the Mussel Watch Program for bioaccumulation of contaminants by resident and deployed bivalves, the Toxic Substances Monitoring Program which measures the contaminant load in fish in freshwater systems, the Interagency Ecological Program which conducts ecological studies in the Bay/Delta, and CalFed, which conducts studies in the San Francisco Bay watershed down to San Pablo Bay to guide restoration of the Bay/Delta system.

Federal programs currently conducting research and monitoring in the Bay include the U.S. Geologic Survey, which conducts numerous ongoing research and monitoring programs. NOAA's Status and Trends Program conducted studies, mainly on sediment quality, from 2000-2002. There is also a limited amount of ongoing monitoring of urban creeks by various municipal storm water agencies and citizens' volunteer monitoring programs. Local universities also conduct some studies in the Bay.

Monitoring Coordination

Coordination and integration of the large number of monitoring efforts are critical to understanding what data are available and to identify data gaps. Of particular importance is the internal coordination of urban runoff monitoring, volunteer monitoring programs, and the San Francisco Estuary Regional Monitoring Program. SWAMP, TMDLs and the lead for Prop 13 and 50 grant projects reside in the Planning and TMDL Division at the Regional Board. Since Prop 13 and 50 grant projects that involve monitoring must be consistent with the SWAMP QAPP, we have monthly meetings to coordinate these activities.

SWAMP coordinates with NPS activities (see Section 2.4 below). SWAMP monitors contaminants and toxicity during wet weather runoff in urban areas to evaluate this potential impact. SWAMP also monitors fecal coliforms and *E. coli* downstream from dairies to evaluate this land use and determine if waivers are working. Information concerning hydromodification is discussed with the watershed managers to develop the study designs, and monitoring results are shared with appropriate staff.

SWAMP activities are also coordinated with the monitoring activities of other agencies and local watershed groups. The manager of SWAMP in this region serves on the TAC and many workgroups of the San Francisco Estuary Regional Monitoring Program (RMP) in order to coordinate RMP activities with SWAMP. The SWAMP manager also attends meetings of the BASMAA Monitoring Committee to coordinate SWAMP with the monitoring being conducted by stormwater agencies and to encourage consistency with SWAMP protocols and QA. We consider the RMP and the stormwater agencies partners in this program. Efforts are now underway to incorporate or link both RMP and stormwater data in to the study designs and to coordinate data collection and analysis.

2.4 NONPOINT SOURCE PROGRAM

Nonpoint Source (NPS) pollution is defined as discharges from diffuse sources not directly attributable to a piped discharge or specific site (known as a "point source"). Such NPS discharges can include urban runoff to storm drains, runoff from agricultural fields or grazing lands, pollutants from marina and boating activities, and sediment from streambanks. (Note that for legal reasons, urban storm water is considered a point source discharge and is regulated under the NPDES program.) This section describes our Region's NPS-related water quality problems, the strategy to address these problems, and specific tasks being implemented. It also discusses the statewide requirements for management of NPS pollution and several specific regulated categories of NPS pollution that overlap with point sources.

Although the NPS program focuses on specific implementation activities that are funded by U.S. EPA under Section 319(h) of the Clean Water Act, NPS activities in the San Francisco Bay Region go well beyond the activities that are funded by EPA. We use resources from other programs and activities such as non-Chapter 15 waste discharge requirements, enforcement penalties, and basin planning to fund efforts that have been identified as priorities through our Watershed Management Initiative. Most of the fines levied from administrative civil liabilities (ACLs) are directed towards "supplemental environmental projects" (SEPs) within the watersheds where the violation took place. Since 1991 over $4 million has gone toward numerous projects in three categories: 1) education and outreach, 2) pollution prevention, and 3) restoration. In addition, the Board works with dischargers who choose to support smaller SEPs as part of the State's new Mandatory Minimum Penalties (SB 2165) program. In 2003, for example, there were 33 enforcement actions in this region with total fines of $912,000. Of these, $620,000 was used for SEPs.

Management of Nonpoint Source Pollution

Nonpoint source pollution is the leading cause of water quality impairment in California. California's Nonpoint Source (NPS) Pollution Control Program has been in effect since 1988. In January 2000 the lead State agencies for the NPS program, the SWRCB and California Coastal Commission (CCC) in coordination with the RWQCBs, released the "Plan for California's Nonpoint Source Pollution Control Program" (NPS Program Plan). The NPS Program Plan enhances the State's efforts to protect water quality, and to conform to the Clean Water Act Section 319 (CWA 319) and Section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA). The State's long-term goal is to "improve water quality by implementing the management measures identified in the California Management Measures for Polluted Runoff Report (CAMMPR) by 2013."

Management of NPS pollution is based upon the requirements of the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). The Porter-Cologne Act, Division 7 of the California Water Code, establishes a comprehensive program for the protection of water quality and beneficial uses of the State's waters and makes explicitly clear the law applies to nonpoint as well as point source discharges. The Porter-Cologne Act also establishes the administrative permitting authority—in the form of Waste Discharge Requirements (WDRs), waivers of WDRs or basin plan prohibitions—to be used to control NPS discharges. Additional legislative

requirements state that all waivers must be conditional, they are to be re-evaluated and subsequently reissued every five years, and the RWQCBs must require compliance with waiver conditions.

California's Nonpoint Source (NPS) Pollution Control Program has been in effect since 1988 and was updated in January 2000. In August 2004 the Office of Administrative Law approved the Policy for the Implementation and Enforcement of the Nonpoint Source Pollution Control Program (NPS Policy), available at http://www.waterboards.ca.gov/nps/docs/oalfinalcopy052604.doc. The policy explains how the Porter-Cologne Act authorities will be used to implement and enforce the NPS Program Plan adopted by the SWRCB in 1999. The NPS Policy also provides a bridge between the Program Plan and the SWRCB Enforcement Policy. The policy makes clear that NPS discharges all must be under regulation – WDRs, waivers, or Basin Plan Prohibitions. The policy supersedes certain elements of the NPS Program Plan and formally eliminates the earlier "three-tiered approach" of voluntary compliance, regulatory-based encouragement (waivers), and regulation (permits and prohibitions).

NPS Policy Requirements

The NPS Policy provides for the development of and establishes the requirements for NPS control implementation programs. Implementation programs may be developed by individual dischargers, an RWQCB, the SWRCB or third party coalitions. Third-party-coalitions are defined as entities or organizations that are not under the permitting authority of the SWRCB or an RWQCB.

In structuring effective NPS control implementation programs, five key elements have been identified as essential to a successful NPS control program, and all NPS control implementation programs must address these five elements. The elements reflect the information needed by the RWQCBs before they can determine there is a reasonable likelihood a particular implementation program will meet water quality objectives and protect the designated beneficial uses of the particular water body affected. The elements are:

Key Element 1: An NPS Implementation Program's ultimate purpose shall be explicitly stated and applicable to the problems causing water quality impairment and the water quality objectives and beneficial uses (including applicable anti-degradation requirements) the program is designed to protect.

Key Element 2: The program shall include a description of the Management Practices (MPs) and additional program elements expected to be implemented, the process used to select or develop the MPs, and the process to be used to ensure and verify proper implementation.

Key Element 3: Where an RWQCB determines it is necessary to allow time to achieve water quality requirements, a specific time schedule and corresponding quantifiable milestones designed to measure progress shall be established.

Key Element 4:The Implementation Program shall include sufficient feedback mechanisms so that a determination can be made by the RWQCB, the discharger or the public, that the program is achieving its stated purposes or that additional or different MPs or other actions are required.

Key Element 5: Each RWQCB shall make clear in advance the potential consequences for failure to achieve a programs stated purposes. By thinking through the potential need to eventually have to take an enforcement action to achieve the goals of a particular implementation program, a RWQCB is encouraged to more thoughtfully and effectively integrate use of the administrative tools with the structure of a particular implementation program in a manner designed to most likely achieve success.

"On-The Ground" NPS control implementation responsibility:
The policy very clearly states that under all circumstances, it is the individual discharger who is responsible for compliance with NPS pollution prevention and control measures, even when that discharger is a member of a third-party coalition. The policy also makes clear that any necessary enforcement action taken will be taken against non-compliant individual dischargers, not the third-party organization or representative.

Nonpoint Source Pollution Issues in Region 2

Many waterbodies within our Region are impaired or threatened due to pollution from nonpoint sources. Our Basin Plan includes a summary of adverse impacts from nonpoint source pollution on San Francisco Bay area water bodies and states our general approach to nonpoint source pollution management:

- "The total amount of pollutants entering aquatic systems from these diffuse, nonpoint sources is now generally considered to be greater than that from any other source. Protecting the region's aquatic systems from impacts associated with these diffuse sources is a long-term challenge and requires very different approaches than the control of pollutants from point sources." (Basin Plan, p.4-28)
- "(1) Changes in existing operating practices to minimize the potential for untreated wastes to reach aquatic systems; (2) collection and treatment of wastes; (3) prohibition of waste-generating practices…" (ibid.)

Projected land use changes in the San Francisco Bay Area have the potential to intensify nonpoint source inputs into already impaired waterbodies. The dominant land use changes in the region are conversion of woodlands and open space to residential and commercial development and viticulture and hydromodification of streams and wetlands for flood control and development. The geographic areas where new development has the greatest impacts are Alameda, Contra Costa, Napa, Santa Clara, Solano, and Sonoma Counties. Changes in land use from open space to viticulture are primarily in Napa and Sonoma County and, to a lesser extent Marin County. The adverse impacts to beneficial uses associated with urbanization and land use conversions are:

1) Elimination of natural channels, including loss of wetlands, wildlife, fisheries and riparian habitat;
2) Increased sedimentation due to construction activities and land clearing;
3) Unmitigated changes in hydrology that upset the geomorphic equilibrium of streams, causing destabilization and erosion of channels, and more frequent flooding;
4) Increased pollutant loads associated with urban activities;

5) Impairment of fish habitat from water diversions and fish passage barriers due to construction of in-channel reservoirs and diversion structures; and
6) Increased pollutant loads associated with agricultural activity.

We have three long-term goals and associated short-term objectives to meet these goals for nonpoint source management.

1) Encourage development and implementation of watershed management plans that address nonpoint source pollution by working within our office and with outside stakeholders throughout the San Francisco Bay Region.

2) Ensure effective implementation of high priority management measures for confined animal facilities, urban runoff, and hydromodification

3) Educate, inform, and provide technical assistance to the public, agencies, and private landowners and other interested parties about prevention and correction of nonpoint source pollution problems.

Specific Regional Activities

The primary causes of impairment or threat in the San Francisco Bay Region are from activities associated with agriculture, urbanization, and hydromodification. Accordingly, we have identified the following high priority Management Measures for our Region:

1. Wastewater and Runoff from Confined Animal Facilities
2. Management Measures for Urban Areas, and
3. Management Measures for Hydromodification

Our Nonpoint Source Program resources are distributed among our four geographic-based Watershed Management Division sections. In general, the same staff person(s) within a watershed management area is responsible for watershed management activities, outreach activities, specific nonpoint source issues (urban runoff, confined animal facilities, etc.), volunteer monitoring, and contract management.

We also coordinate our NPS activities with the CCC, the Bay Conservation and Development Commission (BCDC), and other agencies, including permit and wetland tracking, development of model language for Local Coastal Programs and permits, and development of educational material and trainings. We are also working with the BCDC and the CCC on issues related to San Francisco Bay marinas, including permitting conditions, marina monitoring proposals, and educational and outreach efforts. This includes managing a Proposition 13 grant for marina and boater outreach and education by the Northern California Waterkeepers.

Our efforts to target projects for financial assistance include 319(h) grants, State Revolving Fund projects, and Prop 13 Water Bond funding. Staff also continues to work with the Natural Resource Conservation Service (NRCS) and Resource Conservation Districts (RCDs) to establish priority projects for receipt of Federal Environmental Quality Incentives (EQIP) funding. In the Sonoma-Marin Area, projects receiving preferential consideration for EQIP

funding include reducing animal waste from entering waterways, reducing soil erosion and sedimentation of waterways, and working to improve riparian buffer zones.

Statewide Activities

We actively participate in statewide activities as part of the nonpoint source program. These include: the 401 Certification roundtable, the Urban Runoff Task Force, the GIS roundtable, the Monitoring Roundtable, and the Nonpoint Source Program roundtable. Staff attends the Interagency Coordinating Committee established under the California Nonpoint Source Plan and participates in the marina, urban, monitoring and tracking, and wetland subcommittees. We have taken a leadership role statewide in the development of policy and implementation actions on hydromodification and urban runoff, as well as in the development of compensatory wetland mitigation project assessments. We are also involved in the development of strategies in collaboration with the Department of Pesticide Regulation to prevent and correct water quality problems associated with urban uses of pesticides.

The NPS Program Plan includes requirements for Critical Coastal Area (CCA) designation. The intent of CCA designation is to direct needed attention to coastal areas of special biological, social, and environmental significance and to provide an impetus for these areas to receive special support and resources. These areas include Environmentally Sensitive Habitat Areas (ESHAs) currently designated in California's Coastal Zone Management (CZM) program, as well as areas adjacent to Areas of Special Biological Significance (ASBS), California's National Estuarine Research Reserves (NERRs), National Estuary Program (NEP), and National Marine Sanctuaries. In the San Francisco Bay Region, 21 areas have been identified as CCAs, both along the coastal areas and within San Francisco Bay. Of these, the CCA regional committee has initially ranked nine of these as high priority CCAs. Following a public review process, a number of these will be designated as the top candidates for pilot designation and potential project funding through grants or other sources.

Monitoring, Assessment, and Implementation Tracking

The goals of out monitoring and assessment efforts for nonpoint sources are to define issues, set priorities, and evaluate effectiveness of pollution prevention and control actions. We are fortunate to have the San Francisco Estuary Regional Monitoring Program (RMP) to regularly monitor and assess the San Francisco Bay segments. Our Regional Monitoring and Assessment Strategy (RMAS) focuses on surface water bodies other than the San Francisco Bay segments including the Surface Water Ambient Monitoring Program (SWAMP), which is described in detail in Section 2.3 ***Monitoring and Assessment***.

We are currently tracking implementation of specific management measures through several mechanisms. We track implementation of management measures for urban areas by requiring submittal of annual storm water program reports by municipalities. We directly track implementation of management measures at confined animal operations by inspecting dairies. We also have an active field presence to observe hydromodification management measures. We also indirectly track management measure implementation throughout the Region through regular communication with Resource Conservation Districts and through participation on watershed management forums.

2.5 WETLANDS AND STREAM PROTECTION

Wetlands and streams (which include rivers, creeks, sloughs, intermittent and ephemeral drainages; note in this section the terms “streams” and “creeks” may be used interchangeably) are closely linked both in topographic location and in ecological function. In turn, streams and wetlands are physically and biologically linked to the adjacent uplands. To effectively protect beneficial uses of waters of the state, we must better understand and manage the functions of, and links between, streams, wetlands, and uplands, and develop ways to use our regulatory and planning tools to protect their beneficial uses more effectively.

Regional Framework for Protecting Wetlands and Streams

Wetlands policy and program development are guided by the California Wetlands Conservation Policy (Executive Order W-59-93); the CWA §404(b)(1) guidelines (adopted into the Basin Plan in 1995); the Senate Concurrent Resolution No. 28, and the California Water Code Section 13142.5, which is incorporated by reference into our Basin Plan. An additional and important guidance document for wetlands is the Comprehensive Conservation and Management Plan (CCMP; Estuary Project 1994).

The Regional Board regulates activities affecting wetlands and streams under both Federal and State law. Federal law (CWA §404 and §401) requires most federally permitted activities to obtain Water Quality Certification (WQC) from the State signifying that the proposed activity complies with State water quality standards. State law allows the Regional Board to regulate any discharge that could adversely affect a water’s designated beneficial uses. Our primary mechanisms for doing this include taking enforcement actions for violation of water quality objectives or discharge prohibitions, and issuing Waste Discharge Requirements (WDRs). Staffing limitations restrict our ability to take significant and timely enforcement actions for illegal activities in wetlands and creeks, and often the ecological functions of the waterbody cannot be effectively restored.

Until recent years, WDRs were primarily used to regulate discharges of liquid waste to land (e.g., treated groundwater, septic effluent, etc.). We are increasing the use of WDRs to regulate discharges of waste (including fill material, sediment, and changes in flow) to waterways. Staff has developed draft general WDRs for channel maintenance. As we increase our understanding of the links between impacts to land and the functions of uplands, creeks, and wetlands, we will continue to seek better ways to use WDRs, including more general permits for specific classes of activities or activities within a specific watershed.

Although WQCs and WDRs are our fundamental regulatory tools, there are many other ways in which the Regional Board protects and helps improve management of wetlands and creeks. We participate in site cleanup and restoration efforts, generate monitoring data and standards, and provide public education. We also have developed programs to look at other priority issues related to wetlands and streams, such as mercury, watershed monitoring and assessment, urban runoff and new development, and erosion and sedimentation. Each division manages several programs with links to wetlands and/or stream protection, some of which are listed below. An important objective of the Wetlands and Stream Protection Program is to help define the links between these diverse programs and clarify the ways that each can contribute to improve protection of beneficial uses.

Wetlands and creeks are closely linked in the environment and through our regulatory programs, but our planning approaches in each of these areas have advanced differently. Wetlands received significant focus for a number of years in the 1990's because of several state and federal mandates and associated funding. As a result, our Wetlands Program developed rapidly during that period, guided by state and federal directives. In contrast, our efforts in creek protection and planning were driven by staff recognition of deficiencies in the existing programs for providing adequate protection of these important systems. The following sections describe our Wetlands and Stream Protection programs in more detail.

Wetlands Program Goals

The ultimate goals of our wetlands program are protection, enhancement and restoration (increase) of wetlands habitats within our region. Wetlands and related habitats comprise some of the San Francisco Bay Region's most valuable natural resources. They provide critical habitat for hundreds of species of fish, birds, and other wildlife; they also improve the overall water quality in the Region, help control flooding, provide open space, offer recreational opportunities, and provide filtration and purification of pollutants. The Baylands, that area bayward of the natural historic tideline, comprise a large percentage of the existing wetland resources, as well as most of the potentially restorable wetlands within our Region, and they are critical to the survival of several endangered fish and wildlife species. The largest remaining tidal wetland in California is the Suisun Marsh in Suisun Bay (over 72,000 acres). In the South Bay, the San Francisco Bay National Wildlife Refuge protects over 19,000 acres of wetlands.

Wetlands have also been under severe threat from development since the San Francisco Bay Area began its rapid population expansion in 1850's, and it has been estimated that over 80% of the estuary's wetlands have been filled since that time. In spite of significant new proposed wetland restoration projects, such as Hamilton Air Force Base in Marin County, and acquisition of existing wetlands such as Bair Island in the South Bay and the South Bay salt ponds, wetlands remain under threat from development and pollution and from a lack of successful regional planning efforts.

In the late 1990's USEPA led the effort to develop the *Baylands Ecosystem Habitat Goals* (1999). The Habitat Goals provide a picture of the types, amounts, and distribution of habitats needed within the Baylands to support healthy and diverse populations of fish and wildlife. The Habitat Goals also provide considerable additional information on the desired characteristics, design, and management of healthy wetlands habitats. In 2001 we completed the Baylands *Ecosystem Species and Community Profiles*, the technical compendium to the Habitat Goals Report. For the coming years, one of our primary objectives in wetlands planning and protection will be to facilitate implementation of the Habitat Goals.

In the past few years we have updated certification application package and guidelines. We have also provided guidance to applicants on mitigation requirements. These documents are available on our website at http://www.waterboards.ca.gov/sanfranciscobay/certs.htm. We also completed a final report in 2003 on 20 mitigation projects that have been completed in this Region. The report, *Wetland Ecological and Compliance Assessments in the San Francisco Bay Region*, is available on the web under Available Documents.

High-priority Wetlands Program objectives in next two years include the following:

- Upgrade existing 401 Certification Database: goal is to use database as a tool to evaluate criteria for project approval and mitigation success and to tie the database into statewide tracking and the San Francisco Estuary Institute (SFEI)'s San Francisco Bay Wetland Project Tracker, which is available at http://www.wrmp.org/projectsintro.html.
- Wetland Restoration Program Manager**:** assign wetland specialist to review and provide technical input on regional wetlands projects and permits.
- Regional General Permits: develop Regional General Permits (WDRs) for similar types of wetland fill/impacts with limited water quality threats to reduce staff time on individual permits.
- Mitigation and Monitoring Compliance: assign staff to review mitigation and monitoring proposals and provide staff training and mentorship; update and utilize mitigation and monitoring database that provides historical information on completed projects; and improve our follow up on mitigation projects by performing inspections and reviewing reports. We are continuing to use this database to randomly select projects for field assessment.
- Interagency Coordination and Planning: continue staff participation in multi-agency activities in the Wetland Recovery Program as part of our role in permitting project, as budget constraints allow. Work with San Francisco Estuary Institute, U.S. EPA
- Mitigation Guidance: provide clearer guidance to applicants on mitigation requirements (e.g., minimum mitigation ratios or mitigation narrative functional losses via direct and indirect impacts).
- Assessment Field Sheet: Develop wetland assessment field sheet and assess mitigation projects that have been completed in this region.
- Staff Training: Develop and provide training to familiarize staff with the Habitat Goals, monitoring protocols, and other wetlands issues, and to keep staff apprised of changing policy directions.

Stream Protection Program

Background

Streams and stream corridors in the Bay Area are under increasing attack from a variety of historic and current land use activities. Activities such as grazing, land use conversions, water diversions, removal of existing riparian corridors, and culverting and modifying drainages have all led to the degradation of the Bay Area's stream systems and watersheds. The effects of historical land use activities continue to have an impact on stream stability. Projects ranging from large-scale developments covering thousand of acres to large numbers of seemingly minor discharges and fills have been shown to have long term, unanticipated, direct and indirect impacts.

Because of the large number of projects, which have generally been reviewed on a case-by-case basis, Regional Board staff have been unable to provide needed technical guidance or to consistently review the cumulative impacts of many small projects on a stream system. We have found the traditional 401 water quality certification program limited in protecting small creeks and headwaters because the limits for notification to the Corps are determined by acres filled,

rather than linear feet. It is especially important to protect headwaters areas (known as first- and second-order streams), which comprise 60-70% in linear footage of Bay Area streams and are the primary pathways for moving water and sediment from upland areas to the lower stream reaches that provide habitat for fish and other aquatic and riparian species. The importance of these small streams in the overall ecosystem has typically been ignored, leading to extensive culverting, filling, and ditching of these important stream segments.

Mitigation for such projects has frequently resulted in small "patches" of riparian area, which function differently from the long riparian corridors that were removed. Often mitigation focuses only on replacing the riparian vegetation function of the stream with no mitigation for the loss of functions such as flood retention, water conveyance, or sediment transport. Municipalities, the regulated public, and other members of the community are often unaware of the linkages between all parts of a watershed's drainages, and the necessity of protecting all types of waterways, in order to protect functions up and downstream. Also, there is now considerable literature that shows that inadequate setbacks and faulty project designs result in direct and significant adverse impacts to water quality. Effective creek protection requires an understanding of the physical and regulatory links throughout Bay area creeks and their surrounding watersheds.

To that end, our staff has been working on developing a Stream Protection Policy (SPP). The goal of the SPP is to describe how protecting stream functions will protect beneficial uses. To protect the functions of different stream types we are focusing on five areas of emphasis for implementation activities: riparian corridors, floodplains, buffer zones, instream structures, and changes in the hydrograph.

Stream Protection Program Goals

The overall goal of the stream protection program is to have creeks and other waterways that function as well or better than they do at the present time. Ultimately, the long-term goals are to halt the loss and degradation of creeks (and other waterways), and to improve the condition of our remaining creeks and waterways in order to achieve a sustainable system that supports and meets the needs of the watershed users, including humans and wildlife. Several elements are necessary to achieve this goal:

- The Regional Board must continue to improve education for its staff and the public on how to manage streams for multiple objectives while seeking the highest environmental quality.
- Regulations and guidance must be developed that clearly outline the Board's objectives for achieving protection of beneficial uses for varied watershed activities.
- By better educating the regulated public on water quality objectives that must be considered in order to protect creeks, we will also continue to streamline the permit process.
- Broad participation by the Regional Board Planning and Watershed staff in the State Water Ambient Monitoring Program (SWAMP) that is seeking to evaluate water quality in all San Francisco Bay Creeks over the next several years.

Program Development and Priority Tasks

Further development of the SPP will continue to be a high priority in FY 2004/05. Staff plans to submit a Basin Plan amendment to the Board in 2005, including two new beneficial uses of

floodwater storage and water quality enhancement, a general policy on stream protection, and an implementation framework.

We have also identified two broad categories of research needs for better understanding stream dynamics and different scales in varied regional settings: 1) a refined stream classification system specific to Bay Area streams, and 2) research designed to resolve questions about how much and what types of information are required to predict watershed responses to specific alterations, which will lead to technically sound assessment protocols for use by individual applicants, municipalities, flood control agencies, and urban runoff programs. Another high priority is to develop new approaches to evaluate bank protection options, including evaluating the "no action" option and alternative, biotechnical methods. There is a need to develop analytical tools that use boundary sheer stress rather than velocity as a measure of the force driving bank erosion. We will continue to seek funding and expert assistance for these research efforts in the coming fiscal year and beyond.

Planning and Policy Division staff is responsible for creek basin planning issues and development of the SPP with assistance from the Watershed Division. Coordination on technical and policy development is communicated through trainings, staff participation in the statewide hydromodification workgroup, and short-term limited focus work teams. Staff involved in the non point source, urban runoff and field programs have primary responsibility for identifying appropriate local forums to assist in implementing creek protection measures. In 2001, we hired a stream specialist, who is providing regional and statewide staff training and technical support for restoration and stream alteration projects.

An ongoing priority is to coordinate with public works departments, flood management agencies, and agencies overseeing creek maintenance to develop mutually acceptable guidelines for best management practices. Regional and State Board staff have developed a set of agreed-upon activities with minimal impact and/or specific best management practices for maintenance activities involving bank stabilization, vegetation and/or sediment removal, and the repair of in-stream structures and have developed a draft permit for these maintenance activities. Staff also worked on a long-term flood control maintenance permit for Santa Clara Valley Water District that should become a model for all flood management agency programs.

2.6 CORE REGULATORY PROGRAMS

NPDES Wastewater, Municipal, Industrial, and Construction Storm Water, Non-Chapter 15 WDRs

Core Regulatory programs include NPDES wastewater permitting, municipal and industrial storm water permitting, and permitting of facilities under non-chapter 15 Waste Discharge Requirements. These activities are implemented at both the region-wide and watershed level. Region-wide activities include program management and coordination and activities that are more efficiently implemented at the region-wide level. Specific Core Regulatory activities implemented at the region-wide level are listed below.

Wastewater NPDES Permits

The goal of the wastewater NPDES program is to ensure protection of the beneficial uses of surface waters. To this end, it has been the most effective program established thus far. The Federal and State governments allocate resources for the program based on meeting program commitments (primarily permit issuances, inspections, enforcement). In most cases, work on these core regulatory program commitments helps ensure continued progress in improving water quality over the past 20 to 30 years. So maintaining the integrity of the program remains a high priority and will receive the bulk of staff resources. However, in some cases, meeting program commitments does not help to accomplish water quality goals effectively. Additionally, over the years, resources have decreased (e.g., 22% between fiscal year 02/03 and 04/05), but the universe of dischargers and the complexity of regulatory requirements have increased. Thus, to free up resources to tackle water quality issues that adherence to program commitments will not solve, we must look for opportunities to wring efficiencies out of core regulatory functions and defer lower priority tasks.

The primary way to get greater efficiency is through use of regional collaborative efforts on issues that involve a large group of dischargers. Additionally, we will continue to proactively outreach to key stakeholders to identify their concerns and consider those concerns in our work prioritization and development process. This will potentially avoid future challenges and litigation, which are resource drains.

The current regional efforts and high priority tasks for the wastewater NPDES program are outlined below and described in more detail in the sections that follow:

- Meet Important Program Commitments and Maintain high standards for permit requirements
    - Minimize Permit backlog
    - Implement New Regulations
    - Maintain whole effluent toxicity requirements
    - Compliance Evaluation and Enforcement
- Reduce Sanitary Sewer Overflows
- Improve Pollution Prevention Efforts
- Regional efforts
    - Zero chlorine residual

    - Watershed Permits
    - Resolve permit appeals
    - Electronic discharge reporting
- Other Priorities
    - Water Reuse
    - Desalination projects

The "other priorities" category identified above may require additional staff resources in the future. The exact level cannot be estimated at this time. These projects can benefit water resources and are thus high priority. As these projects come up, and as other policies and staff resources change, our goal is to re-adjust both what we do and how we do it, to ensure that limited staff resources are put towards issues that result in the most measurable water quality improvements.

Minimize Permit Backlog

We met U.S. EPA's permit backlog goal for major permits starting in 2003, but due to reduction in staff resources and loss of experienced staff, we have not been able to meet the same goal for minor permits. Permit backlogs for both major and minor permits is likely to become worse starting in 2006 when the major permits issued in 2001 will expire. These permits were issued during a focused effort to eliminate the backlog. Staff resources have shrunk since then by 5.4 Personnel Years (PY). Also, those permits have potential to be highly contentious again as some compliance schedules end with the permits' expiration in 2006. Many of the issues hopefully will be resolved before that time, with completion of TMDLs for mercury and PCBs, and Site Specific Objectives for copper, nickel, and cyanide. However, other issues remain that require regional solutions, such as selenium, chlorinated pesticides, and dioxins/furans. We will keep these issues high on the priority list for future regional efforts.

To tackle the current backlog of minor permits and major permits that expire, we will continue to look for ways to reduce duplication of effort as we use U.S. EPA's contractor for more and more of our core regulatory functions (compliance inspections, pretreatment inspections, draft permit preparation). We have identified a list of about six less complicated permits for the contractor to take independent lead. This should minimize the level of our initial involvement and subsequent back and forth that is necessary to complete the reissuance. If this process is successful, we will use it more frequently in the future. For some minor permits, we will also assess whether these discharges are best discharged to the sanitary sewer, in light of the new more stringent water quality-based requirements. As appropriate, we will use our permitting discretion to steer those dischargers away from an NPDES discharge.

Additionally, the State Board has initiated a Permit Standardization effort. One of the goals of standardizing permits is to reduce the time it takes to reissue a permit. We have and will continue to fully participate in this high priority effort.

Implement New Regulations

The development of new and updated NPDES regulations is an ongoing process. Within the constraints of federal regulation, we will implement new regulation in as efficient a manner as possible. High priorities for implementation for FY 2005/06 include:

- 316 (a) & (b) regulations for power plants
- New Bacteria standards for Marine waters
- State Implementation Policy Revisions (pending)
- New State standards for chlorine (pending, see separate section below)

Maintain Whole Effluent Toxicity Requirements

Whole effluent toxicity limits and requirements have been in the Region's NPDES Permits since the 1980's. First were fish acute toxicity limits, which grew and evolved in the 1990's to include chronic toxicity requirements using other organisms. In summary, the current policy is for all permits to require compliance with fish acute toxicity limits without dilution credits. Implementation of the chronic toxicity objective allows for consideration of dilution credits, and the reasonable potential of that discharge to cause toxicity in the receiving water. In general, all major industrial dischargers have some potential for causing chronic toxicity for reasons that qualified them to be in the major category. For municipal dischargers, in general, there is greater reasonable potential for those that are required to have a pretreatment program, or that are classified as major and discharge to a shallow water environment.

Because of this broad base of coverage, permits in this region are very protective and thereby necessitate more Water Board staff time to oversee. When dischargers violate or threaten to violate whole effluent toxicity requirements, they must first determine the cause, and then the sources of the cause, before developing measures to reduce the toxicity. This process is much more involved than resolving pollutant specific problems. Despite this, whole effluent toxicity requirements will continue to be implemented in permits as described, because it is a cost effective way to assess any adverse effects from pollutants that are not currently measured, and/or any increase in toxicity resulting from the combination of pollutants in a discharge.

In the future, whole effluent toxicity requirements will continue to mature, as protocols are updated and new protocols developed for indigenous species. The goal is to implement these changes as soon as practical, unless the new protocols create a compliance problem not related to actual effects in the receiving water.

Compliance Evaluation and Enforcement

As important as maintaining up to date permit requirements is the need to ensure compliance with those requirements. This is primarily accomplished through report review, site inspections, and prompt follow up for identified problems. The highest priority in the report review category is review of discharge monitoring reports to ensure compliance with effluent limitations. Other reports that should be prioritized are those that involve a change in facility operation to correct a problem or to avert a potential problem (e.g. reports required as part of a compliance schedule). Because of resource cutbacks, contractors will perform site inspections, including pretreatment inspections and audits.

Appropriate enforcement action for deficiencies and violations discovered by report review and inspections are high priority. Assessment of Mandatory Minimum Penalties (MMP) as required by legislation for limit violations will be accomplished in as efficient a manner as possible. These efficiencies are accomplished using standardized complaint language, and appropriate timing of the MMP actions. For other violations, we will continue to increase use of informal

enforcement and/or enforcement letters to keep minor problems from becoming major problems. Most dischargers tend to be more diligent with compliance if they perceive that the regulator may be watching closely.

Sanitary Sewer Overflows Reduction Program

The discharge of untreated sewage can, in many cases, threaten public health and significantly impact aquatic life and public use of water resources. Water Board Resolution No. R2-2003-0095 established a collaborative effort with the Bay Area Clean Water Agencies (BACWA) to initiate a regional program to reduce untreated sewage spills. Staff resources from other functions increased the commitment for this program from about 0.1 PY to 0.8 PY since October 2003. The collaborative program consists of improving spill reporting through developing a web-based electronic reporting system for sewage spills, and standard reporting requirements. Additionally, the program will involve guidance and requirements for sewage system management programs (SSMPs), and outreach to about 120 sewage collection system agencies on the new requirements.

Thus far this effort has been well received and is progressing smoothly. Six workshops in October 2004 initiated the outreach effort, and the first two tasks to improve reporting were implemented in December 2004. Guidance on SSMPs is scheduled for completion first half of 2005. This program will continue to evolve over the next several years as we merge our program with the statewide effort recently initiated by the State Board.

Regionally consistent and complete spill reporting will allow the Water Board to more fairly and effectively use its resources through proactive enforcement actions. We supported recently adopted legislation that would give higher priority for State funding to those agencies under an enforcement order. So we will strategically target enforcement against those collection agencies that are operating and maintaining their systems poorly, both as a means to help them receive funding, and to require them to do better. We will audit agencies to find and vigorously enforce against those that under report spills. Also, we will continue to enforce against large spills that were avoidable and potentially affected beneficial uses. By about 2007, we hope to be able to show whether these activities have achieved the goal of the program, which is reducing the number and volume of untreated sewage spills.

Pollution Prevention

Pursuant to the State Implementation Policy and Water Code Section 13263.3, there has been more and different emphasis on pollution prevention programs than in the years preceding 2000. As such, additional staff resources are now dedicated to stepping up pollution prevention efforts, currently 0.8 PY. Board Resolution No. R2-2003-0096 established a collaborative approach with the BACWA to develop pollution prevention menus. The intent is for individual dischargers to use these menus to develop, or augment existing pollution prevention programs. Water Board staff will work with BACWA through its subcommittee the Bay Area Pollution Prevention Group (BAPPG) to develop these menus. We also hope to use this forum to develop ways to measure and document the effectiveness of pollution prevention efforts, and to further regional pollution prevention efforts.

Pollution prevention menu development is an ongoing effort. Annually, pollutants of concern are prioritized based in part on regional needs stemming from issues related to permit compliance and TMDL implementation. In 2004, menus were developed for copper, mercury, pesticides, and "FOG" (fats, oil, and grease).

Measuring effectiveness of pollution prevention will be challenging, but is essential in helping managers allocate limited resources to the most effective measures as those resources shrink and/or face competing demands. Thus, developing a strategy to do this will be a focus for Water Board staff in 2005/6.

Also, regional pollution prevention efforts can help stretch limited resources. Thus, Water Board staff will continue to coordinate with the BAPPG on the following: regional pollution prevention projects, research and publication on topics related to pollution prevention, and regionally consistent education messages and programs.

Zero Chlorine Residual Limits

The Basin Plan establishes a very stringent standard of 0.0 mg/l total chlorine residual for all discharges. In the 1980's staff developed a compliance threshold for when enforcement action would be warranted. In 2000, State legislation (SB 709) removed much of this enforcement discretion because the legislation established a significantly lower threshold for mandatory enforcement action. Staff resources have thus been directed towards enforcement actions to comply with the legislation without regard to the environmental significance of the violations. Some dischargers have also steered away from voluntary continuous chlorine monitoring to avoid enforcement penalties. Because Water Board staff believes continuous chlorine monitoring allows for better process control than standard grab samples, we developed a strategy in 2002, with the silent consent of the State Board, which allows dischargers to stay with continuous monitoring without being penalized with higher numbers of penalties as compared to those collecting standard grab samples. This strategy is a stopgap measure until the State Board sets a statewide water quality based objective for chlorine (possibly in 2005/2006). At that time, we will develop an appropriate implementation policy for the new objective that considers the technical limitations of continuous chlorine monitoring devices.

Watershed Permitting

One of the tools available to implementing Total Maximum Daily Loads (TMDLs) is through watershed permits. As allowed by U.S. EPA, watershed permits may be issued to all dischargers, or certain categories of dischargers (e.g., municipal treatment plants) within a watershed. Watershed permits allow for the dischargers to collectively work together to achieve TMDL waste load allocations in a practical and cost effective way.

We will look for opportunities where watershed permits are desirable over conventional individual permits as a way to improve water quality with less overall cost to society. Such opportunities may include watershed permits to municipal sewage and municipal/industrial storm water agencies.

Resolve Permit Petitions and Litigation

Since 2000, 17 municipal sewage treatment plant permits and at least 3 industrial permits have been petitioned to the State Board for review. The State Board acted on four of these appeals (two municipal and two industrial). All were elevated by the petitioners to the trial court, and in two cases elevated further to the appeals court (Tesoro, Napa Sanitary District).

We have settlement agreements on two of the municipal permits with the dischargers (East Bay Municipal Utility District, Napa SD). BACWA has indicated their desire to work towards resolving issues related to the other 15 permit appeals. This is a positive step towards putting past disagreements behind us. BACWA has offered, so we will leverage as much of their resources as possible to accomplish resolution.

Electronic Data Reporting

Electronic data reporting has been a top priority in this Region to facilitate trend and status monitoring on a regional basis and ensure accurate and timely detection of violations. Early detection of violations has increased our effectiveness and efficiency in taking enforcement actions including issuing Administrative Civil Liabilities (ACLs) and Mandatory Minimum Penalties (MMPs). We continue to expend over 1 PY since 1999 towards development and support of this effort. The system we've developed has also been very valuable in providing data for permit reissuance, Basin Planning and TMDL development.

In the coming years, until about 2007, the focus will be to continue to provide support to the functions mentioned above, and to merge the system with the State Board's California Integrated Water Quality System (CIWQS). As the two systems are based on different formats, the greatest challenge is to ensure that all the past years of data are migrated over to the new system, and to assist the discharger community with using the new system. Also, since CIWQS is new, we expect that there will be some staff resource drain over the next several years (2005-2007) to first learn, and then debug the system. Despite this, it is hoped that in the long-term there will be overall resource savings because more discharge data will be available electronically, and input of violations into the system will be done automatically.

Other High Priorities

Water Reuse Program:

The Water Reuse Program in the Bay Area is not only a major program in the preservation of the region's water resources by supplementing existing surface and underground water supplies but is also an important and effective mechanism for the reduction of pollutant loads to the Bay. In response to staff resource cutbacks and for efficient and consistent program implementation, oversight for the wastewater reclamation program WDRs was entirely shifted over in 2004 to the Watershed Division and is currently overseen by the Region's Water Reuse Program Manager.

The Wastewater NPDES division staff will continue to be the lead for projects that require an NPDES permit. We will continue to create regulatory incentives to maximize wastewater reclamation. Currently thirteen (13) Public Wastewater Districts have been approved (or will be approved by February 2005) for implementation of a full Water Reuse Program under the Water Board's General Water Reuse Permit. Water Reuse Program priorities for 2005/06 are:

- Valero refinery's project to reuse City of Benicia's treatment plant effluent.
- Development and implementation of water reuse programs under the General Water Reuse Permit for the following wastewater districts: City of American Canyon, City of Pacifica/North Coast Water District, City of Petaluma, Sonoma Valley Co. Water District, City and County of San Francisco, and possibly City of San Bruno.
- Review the Annual Reports submitted by Permitees under the General Reuse Permit and work with permittees in updating their reuse programs (including the uniform reporting summaries of types of water reuse being undertaken).
- Staff review and (on-site) oversight of approved water reuse programs.
- Monitor the SWRCB/DHS development and implementation of new Groundwater Recharge Regulations (these will be incorporated into the proposed revised Livermore Tri-Valley Water Reuse Master Permit below).
- Continue to work with the Dublin San Ramon Services District Clean Water, City of Livermore and Zone 7 on the up dating of the Livermore Tri-Valley Water Reuse Master Permit for groundwater recharge of highly treated wastewater.
- Continue working with other potential Wastewater Management Districts to bring them under general permit
- Where appropriate, encourage and assist private entities in obtaining Water Reuse Permits using State-of-the-Art-Technology under Title 22
- Continue working with the Water Reuse Association on water reuse issues and activities

Desalination Projects:
Desalination projects to provide potable water are gaining in popularity, because bay and ocean water is a reliable source that is not affected by droughts. We have been getting more requests for permit assistance from companies and agencies that are exploring the feasibility of desalination in their area. Desalination projects to provide water that substitutes for natural fresh surface water sources could be beneficial in that they preserve the natural freshwater resource for other uses such as wildlife and aquatic resources. Thus, we will allocate a higher priority for assistance to these projects over projects whose goals are to accommodate growth.

While there are potential freshwater resource benefits, there are also potential detrimental effects to the marine environment from the intake of large volumes of bay or ocean water and the subsequent discharge of the highly salty brine. The Water Board's goal is to ensure that the design and location of such projects protect the marine resources.

NPDES Permits for Treated Groundwater Discharges

We have two general permits for discharges of treated groundwater, one for sites with volatile organic compounds and one for fuel leak sites. We dedicate one PY for oversight of these permits and related activities. Copies of these permits can be found on our website at http://www.waterboards.ca.gov/sanfranciscobay/npdes_gen__permit.htm.

Storm Water NPDES Permits

Municipal Permits

We currently have four large counties (Alameda, Contra Costa, San Mateo, and Santa Clara) and the Cities of Benicia and Fairfield-Suisun permitted under Phase I Municipal Stormwater permits. The Counties of Marin, Napa, Solano, and Sonoma are in the process of being permitted under the Phase II storm water program. San Francisco County has a combined storm water system and does not fall under the storm water permits, although the Port of San Francisco will be covered under a Phase II storm water management plan. Urban runoff and new development are the highest priority issue areas under the municipal permits. We have established an Urban Runoff Workgroup to address issues associated with compliance with Municipal Storm Water NPDES and development of Phase II storm water permits. The Workgroup has been established to improve communication internally and externally, establish regionwide performance standards, and develop standard program review and annual report audit procedures.

Regional Board staff are in the process of developing a Region-wide Phase I Municipal Stormwater NPDES permit in order to provide consistent requirements for all 74 Phase I Municipal Permittees, who are organized in the four large county-wide Municipal Stormwater permits, and three smaller city based permits as noted above. The emphasis in this Region-wide permit reissuance is specificity of actions to be accomplished, level of implementation, and specificity of reporting to make the task of reviewing permit compliance more straightforward. This is particularly necessary with the added task of incorporating TMDL and Waste Load Allocation related requirements into these stormwater permits.

Priorities for the municipal storm water program include:

- **Implementation of Existing Program Components:** In the past two years, we have brought information items to the Board describing the compliance status of each municipal stormwater program. This reflects an overall increase in the depth and breadth of scrutiny of Co-permittees' actions and compliance status, by both staff and the Board, as a consequence of the fact that conventional point source discharges are relatively well controlled, and urban runoff and other non-point sources of pollutants are now the largest, and least managed source of impairment of beneficial uses.

- **Focus on TMDLs and 303(d)-Listed Pollutants:** Both focused monitoring efforts and enhanced control strategies aimed at the pollutants for which receiving waters are currently listed as impaired should continue to be a significant priority of all Programs. A particular example among these is pesticide use and disposal, which is a quintessential stormwater challenge – one where progress will only occur through widespread outreach and resultant change in use and management patterns, vigorously promoted by the local agencies.

- **New Development:** The adoption of the enhanced performance standard provision as an amendment to the Santa Clara Program's permit led to a major focus for the on 1) adding new development permit amendments for the counties of Alameda, Contra Costa, and San Mateo and cities of Fairfield-Suisun and Vallejo and 2) monitoring Santa Clara's and the other programs' compliance. All of the Programs will be encouraged to work together to address: (a) a waiver provision, with compensation, (b) a hydrograph change management

plan (HMP), and (c) an alternate definition of the smaller (5000 square foot) applicable project category.

- **Monitoring and Assessment:** Our collective knowledge of the Bay proper is improving through the auspices of the San Francisco Estuary RMP. However, our knowledge in detail of the status of the important tributary waters that feed the Bay is lacking. Prioritized watershed assessment must move beyond the pilot stage, and we must implement plans to assess these waters. We will work with the municipal storm water programs, using volunteer talent and community based resources, to develop effective local monitoring programs.

- **Caltrans**: We will continue working with the local Caltrans district on coordination and compliance with their statewide permit as they move forward with construction of the new Bay Bridge.

- **Increased Outreach** – We will increase our outreach and education to local government decision makers in cooperation and with the assistance of the municipal permit agencies.

Other regionwide activities in addition to program management and coordination include participation on committees and workgroups including the Urban Runoff Task Force, the Bay Area Stormwater Management Agencies Association (BASMAA), the Bay Area Clean Water Agencies (BACWA), the Clean Estuary Partnership (an association of BASMAA, BACWA and the Water Board), and the California Stormwater Quality Task Force.

Industrial Permits

The statewide Industrial Storm Water General Permit Order 97-03-DWQ (General Industrial Permit) is an NPDES permit that regulates discharges associated with 10 broad categories of industrial activities. The General Industrial Permit requires the implementation of management measures that will achieve the performance standard of best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT). The General Industrial Permit also requires the development of a Storm Water Pollution Prevention Plan (SWPPP) and a monitoring plan. As of February 2005, the State Board is in processing of reissuing the General Permit, and a draft is out for public review.

Administration and compliance tracking of the Industrial Storm Water NPDES Permit program are implemented at the Regional Board level for efficiency and consistency. Activities include maintaining a discharger database, response to inquiries, review of annual reports, and review and processing of other submittals (Notices of Termination, No-Exposure Certifications, Sampling and Analysis Reduction Certifications, etc.). The Industrial Storm Water NPDES Permit program is coordinated with the Municipal Storm Water NPDES Permit program. Our staff works with the permitted cities and counties to assure both the quality and quantity of inspections of industrial facilities and other follow up activities conducted by municipalities. Our efforts focus on ensuring that the local permitted agencies have sufficient personnel and training, and are placing proper priority on this inspection activity. We currently have 1 PY of staff and 1.2 PY of student intern time dedicated to this program; however, we estimate that at least 3 PY are needed to run the program successfully.

Activities associated with facilities that are **Non-Filers** (subject to but not currently covered by the Industrial Storm Water General Permit) are also a high priority, although we do not have enough staff to dedicate full time to these activities, which include identification of non-filers, inspections and other follow-up activities, and enforcement actions.

Construction Permits

Dischargers whose projects disturb one or more acres of soil (or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres) are required to obtain coverage under the statewide General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 99-08-DWQ). Construction activity subject to this permit includes clearing, grading and disturbances to the ground such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

Regional Board staff work closely with local municipal staff on inspections and enforcement at construction sites covered by the Construction General Permit. In partnership with the San Francisco Estuary Project, we also hold a highly successful series of Construction Site Planning Workshops each summer and fall for contractors and municipal employees around the Region. Along with the workshops, we have prepared the *Erosion and Sediment Control Field Manual,* the *Guidelines for Construction Projects*, two videos: "Hold on to Your Dirt" and "Keep it Clean" in both English and Spanish, a CD of "Keep it Clean" and a CD training kit for construction planning. These are available through the Association for Bay Area Governments (ABAG) at http://store.abag.ca.gov/construction.asp.

Non-Chapter 15 WDR Program

The Non-Chapter 15 WDR program regulates point source discharges and dredge and fill activities, which are not otherwise regulated by the NPDES Program and the Chapter 15 (landfill) program, so that beneficial uses of the State's waters are protected and enhanced. The discharges regulated by this program are typically discharges to land, while the NPDES program typically regulates discharges to surface water. In addition to the normal baseline activities, Non-Chapter 15 WDR resources are also used for:

- Regulating wetland fill activities to allow conditioning of permits for protection of beneficial uses and to help better track tasks including mitigation projects;
- Adopting and enrolling discharges under general WDRs including those for typical point source discharges and those for wetland fill activities; and
- On-site system work such as updating Minimum Guidelines for Septic Systems in order to include non-standard systems, reviewing county codes, ordinances, files, and practices, updating county waiver resolutions based on results of reviews of existing waivers, and reviewing non-conforming septic systems.

The Coastal Counties Section of the Watershed Management Division has developed a strategy using a team approach to address water quality threats from the discharge of 12 small wastewater treatment plants in Marin County, determining which facilities should be considered for inspection priority based upon the following criteria:

- Potentially Extensive Significant Impacts to surface water, groundwater, or human health
- Potentially Localized Significant Impacts to surface water, groundwater, or human health
- Localized Insignificant Impacts to surface water, groundwater, or human health
- Unknown Impacts
- Receipt of Report of Waste Discharge requiring New or Re-Issued Permit

The next step will be to do site inspections and update the permits for those facilities that are not in compliance.

2.7 GROUNDWATER RESOURCE MANAGEMENT

This section of the WMI describes the activities, strategies and goals for addressing threats to and impairments of groundwater resources in the San Francisco Bay Region. A discussion of existing ambient groundwater monitoring activities and priority unfounded projects is also included.

The overall goal of the Regional Board groundwater program is to protect and improve water quality for beneficial use. Our key stakeholders are:

- **The public** that depends on a present and future safe source of groundwater for drinking water. They require confidence that the Regional Board is managing groundwater contamination issues in the public trust for human health and the environment.
- **Water supply agencies**, which need protection of supply wells, recharge areas, and future groundwater development areas.
- **Owners of sites with contaminated groundwater**, which need fair and timely response to contamination studies submitted to the Board and remediation requirements that are proportional to the risks.
- **Property owners and developers**, which need accurate and complete information on groundwater contamination for real estate transactions.

Groundwater programs are a major focus of the Regional Board's activities. Overall, the Regional Board's groundwater program is driven by the need to protect groundwater quality for existing municipal drinking water supply. Contamination sites in these basins receive the highest level of regulatory attention. Military base closures, property redevelopment issues, impacts to ecological receptors, and programmatic requirements (e.g., RCRA Subtitle C and D) also require significant staff focus. Other significant groundwater basins, used for domestic, irrigation or industrial supply, are an important, but secondary concern (due to limited resources).

Groundwater Resources in the San Francisco Bay Region

There are 33 groundwater basins in the San Francisco Bay Region (Figure 2-1). The basins range in size from the 240 mi^2 Santa Clara Valley to the 2 mi^2 Pescadero Valley. A summary of the groundwater basins is shown in Table 2-4.

Significant Groundwater Resources

Of the 33 groundwater basins in our region, only four are utilized for municipal drinking water supply. These four basins supply groundwater to approximately 3 million people. The basins that are utilized for supply are the Santa Clara Valley, Niles Cone, Livermore Valley and Westside Basins. In addition, the East Bay Plain Groundwater Basin is being investigated by East Bay Municipal Utility District for conjunctive use.

Beneficial Uses of Groundwater

Three basins (Santa Clara, Livermore, and Niles Cone) have been used to store imported surface water from the State and Federal Water Projects since the 1960's. Imported water is recharged

into these basins along with a smaller amount of local runoff and natural groundwater recharge. Additional water supply basins include: the West Side Basin for municipal use; and Half Moon Bay, Sonoma, Petaluma, Napa, and the East Bay Plain basins for domestic and agricultural supply, the Downtown (San Francisco) Basin is used for industrial and landscape irrigation supply. A list of the beneficial uses for each groundwater basin is shown in Table 2-5.

Further, groundwater development of portions of the West Side Basin by the San Francisco Public Utilities Commission and the East Bay Plain by the East Bay Municipal Utility District are under investigation.

Groundwater and Surface Water Interactions

Groundwater and surface water interactions are a significant issue at many groundwater pollution sites that are adjacent to San Francisco Bay. Remediation at the San Francisco International Airport has set the precedent for the Board's approach at similar sites. Other sites where groundwater remediation has addressed migration to surface water include: Port of Oakland, Pacific Bell Park, and about 20 landfills and 6 closing military bases.

Sole Source Aquifers

There are no sole source aquifers as defined by USEPA in the San Francisco Bay Region.
Groundwater Pollution Sources.

The groundwater staff at the Regional Board is responsible for managing an enormous number of groundwater contamination sites. As of December 1999, these include:

LUSTIS Cases Regional Board Lead (Open):	534
LUSTIS Cases Local Cases (Open):	3189
Active SLIC Cases	408
USEPA State Lead Sites	21
DoD Sites	32
DoE Sites	4
Above Ground Tank Facilities	375
Landfills (Active)	12
Landfills (Inactive)	45
Industrial Sites (Refineries, Chemical Mfg. Plants)	34
Total Regulated Groundwater Sites =	*4654*

In addition to the above totals, the Regional Board maintains information on 1027 closed LUSTIS Cases that are Regional Board lead and 4092 closed LUSTIS Cases overseen by Local Programs. A subset of these case are likely to be reopened in the future. Sites that will be reopened will be those that stored fuel with MTBE but were closed without monitoring for it
.

Leaking Underground Fuel Tank (LUFT) Sites

About 6% of the sites have active groundwater cleanup in progress, about 70% of the over 8,800 fuel UST (underground storage tank) sites have completed source control, less than 1% have

other engineering controls including capping and containment barriers. Together with local agencies we are steadily closing cases; over half are now closed.

The State Water Resources Control Board (SWRCB) has issued draft guidelines that are intended for use by Regional Water Quality Control Boards and local agencies to assist in the investigation and cleanup of MTBE impacted sites. The guidelines provide for establishing a priority ranking of MTBE sites in vulnerable groundwater areas, a general scope of work and strategy for MTBE sites, a timeframe for completing site management milestones, a decision-making framework for validating the site conceptual model, and an overview of technical considerations for MTBE cases.

Region 2 recognizes that there are significant groundwater resources in its jurisdiction that are available for municipal and other purposes. While several municipal drinking water wells in the region have been impacted by MTBE, there has not yet been a major impact to these groundwater resources from MTBE. However, the closure of these three municipal water supply wells in Region 2 is an indicator of a larger problem, as all were contaminated by MTBE from leaking underground storage tanks. To meet this challenge Region 2 is formulating a comprehensive strategy regarding the MTBE threat to ensure that there are no more impacts to community drinking water wells and to minimize the threat to Region 2's groundwater resources.

Non Fuel Program

Sites within the Non Fuel Program are typically SLIC (Spills, Leaks, Investigations and Cleanup) contaminated with chlorinated volatile organic compounds. Sites with significant threats to human health and the environment are issued Site Cleanup Requirements. As of 1999, the Regional Board has issued nearly 200 Site Cleanup Requirements for investigation and remediation of VOC plumes. Site Cleanup Requirements utilize the authority in the Water Code under Cleanup and Abatement Orders. The goal is for dischargers to reimburse staff oversight costs. Over the past five years we have had a steady increase in the sites where staff time at non-fuel sites is reimbursed by the discharger. Currently, 74% of active cases are on cost recovery.

Saltwater Intrusion

Historically, over pumping of several groundwater basins has resulted in saltwater intrusion. Basins that have been effected by saltwater intrusion include Santa Clara Valley, Niles Cone, Petaluma, Pittsburg Plain, and East Bay Plain. In general, saltwater intrusion has been halted in most basins due to reduction in pumping rates and the implementation of artificial recharge. The historical effects are still present in all of the above basins. The only potential current problem may be in the Westside Basin where limited data in the Daly City area shows gradual increases in chloride concentrations. Board staff have urged implementation of measures to prevent saltwater intrusion in this area in comments on the AB3030 groundwater management plan to the City of Daly City. Daly City received a grant from the Department of Water Resources in 2001 to install new saltwater intrusion monitoring wells. The result from the sampling of these wells should be available in FY2002/2003.

Other Pollutants

Metals in groundwater are an issue at a small sub set of sites and are regulated under the SLIC program. Pesticides and herbicides have not been a significant issue in our Region. Nitrates from confined animal facilities are an issue locally in the Santa Clara Valley.

Activities for Preserving and Restoring Groundwater

A total of 46 Regional Board staff (currently consisting of one Assistant Executive Officer, two Division Chiefs, five Section Leaders, and 38 line staff) are assigned to groundwater cleanup projects. While all surface water staff are organized on a watershed basis, most groundwater staff are not. The groundwater staff are divided within two separate groundwater divisions (the Groundwater Protection and Waste Containment Division and the Toxics Cleanup Division). A one half-time Planning and Policy Division staff person is responsible for groundwater basin planning issues with assistance from the two groundwater divisions. Each Division manages several groundwater related programs as follows:

Groundwater Protection and Waste Containment Division

- Chapter 15 (waste management units)
- Department of Defense (DOD) and Department of Energy (DOE) facilities
- Resource, Conservation, and Recovery Act (RCRA)
- Toxic Pits Cleanup Act (TPCA)
- Solid Waste Assessment Tests (SWAT)
- Above Ground Tank Program (AGT)

Toxics Cleanup Division

- Spills, Leaks, Investigations, and Cleanups (SLIC)
- Superfund (state lead)
- Underground Storage Tanks (UST)
- NPDES for groundwater extraction discharges
- USEPA Brownfields Programs

Planning and Policy Division

- Groundwater Basin Planning
- Groundwater Technical Support
- AB3030 Groundwater Management Plans
- Interstate Technology and Regulatory Cooperative
- Drinking Water Source Assessment and Protection (DWSAP) Program

Application of Risk-Based Screening Levels and Decision Making to Sites With Impacted Soil and Groundwater (Interim Final - August 2000)

Staff of the San Francisco Bay Area, Regional Water Quality Control Board (RWQCB) has prepared a technical document entitled *Application of Risk-Based Screening Levels and Decision Making to Sites With Impacted Soil and Groundwater* (Interim Final - August 2000). Volume 1 of the document presents lookup tables of conservative, Risk-Based Screening Levels (RBSLs) for over 100 chemicals commonly found in impacted soil and groundwater at sites where

releases of hazardous substances have occurred. Volume 2 describes how the RBSLs were developed and provides detailed tables and appendices in support of the summary lookup tables. The document is intended to help expedite the preparation of environmental risk assessments at sites where impacted soil and groundwater has been identified. As an alternative to preparing a formal risk assessment, soil and groundwater data collected at a site can be directly compared to the RBSLs and the need for additional work evaluated. It is anticipated that this document will be especially beneficial for use at small- to medium-size sites, where the preparation of a more formal risk assessment may not be warranted or feasible due to time and cost constraints.

Groundwater Committee

The Committee recommends policy on groundwater issues, conveys and shares new information and events related to groundwater pollution cleanup, and fosters internal consistency on groundwater policy implementation. The Committee normally consists of Regional Board line staff, supervisors, and managers from all five staff divisions.

The Committee's first major project was the groundwater Basin Plan Amendment adopted by the Board in 1992. The State and other regional boards in their Basin Plan updates have used significant portions of this amendment. It highlights the Board's experience with groundwater cleanup since the early 1980's and includes a recommendation to evaluate the Board's existing approach to managing site cleanups. This includes a review of the beneficial use designations for each of the Region's groundwater basins. More recently the Committee has focused on groundwater beneficial use evaluations. In 1996, the Committee produced the San Francisco and Northern San Mateo County Pilot Beneficial Use Designation Project. In 1999, the Committee produced the East Bay Plain Beneficial Use Designation Project.

Numerous local, state, and federal programs address groundwater protection. Perhaps nowhere in the San Francisco Bay area are these programs as important as in the South Bay, where 351 public water supply wells serve a population of 1.75 million people and provide up to half of the drinking water supply. In May 2003 Board staff completed "*A Comprehensive Groundwater Protection Evaluation for South San Francisco Bay Basins*", which is available on the Regional Board website. The South Bay project area covers three groundwater basins (Niles Cone, Santa Clara Valley, and San Mateo Plain) and includes large portions of three counties and 27 cities. The purposes of the project were to describe and review the effectiveness of groundwater protection programs and recommend areas for improvement, identify issues of concern that have not been adequately addressed, and describe ongoing protection efforts and offer recommendations to address issues of concern. The project was conducted in coordination with the Alameda County Water District, Santa Clara Valley Water District, and San Mateo County Environmental Health Services Division.

Innovation

The Regional Board encourages the use of innovative technologies as solutions to groundwater contamination issues, e.g., funnel and gate, enhanced bioremediation, groundwater reinjection, natural attenuation, etc. The Board also promotes the use of innovative regulatory solutions to groundwater contamination issues: containment zones, operable units, secondary liability findings, Brownfield initiatives, mediation, and risk based decision-making.

Board staff actively participate in nationwide and statewide groundwater contamination studies including the National Research Council, Lawrence Livermore National Laboratory LUFT Study, MTBE Study, and VOC Historical Case Analysis.

Other strategies include encouraging groundwater recharge with reclaimed water and the prevention of adverse ecological impacts from the discharge of contaminated groundwater to surface water.

FY 2004/05 Goals

MTBE: The goals of the MTBE program are to prevent impacts to municipal water wells, protect groundwater with drinking water beneficial uses from MTBE pollution, and support, complement, and supplement the goals mandated in the Governor's Executive Order D-5-99.

One of the MTBE goals for FY 2004/2005 is the monitoring of active service stations to determine whether undetected MTBE releases from operating and upgraded LUST facilities have occurred.

Support the Department of Water Resources Update on Groundwater Basins of California. DWR is updating its report titled "California's Ground Water - Bulletin 118," first published in 1975. This is a three-year effort, with a draft report to be released in early 2002 and a final report to be published in late 2002. The update will consist of a summary of regional and statewide data available on groundwater basins, as well as detailed information on individual groundwater basins.

Geographic Information System: Continue to use GIS as a useful analytical tool for the study and monitoring of groundwater quality, work with State Board on GeoTracker to implement a pilot project for electronic reporting of plume solvent plume contours, update Regional and Basin Plan maps, increase staff access to GIS software, increase staff training aids, and increase public access to GIS data layers.

SWRCB's System for Water Information Management: Support the SWRCB's development and implementation of a statewide database, relating to inspection, monitoring, enforcement, and reporting.

Develop Regional Board policy for active landfills located in historic wetlands of the San Francisco Bay Estuary (Estuary Landfills). While over 30 Estuary Landfills have closed due to lack of capacity and the burdens of new landfill regulations, there remain 8 active landfills with considerable unlined capacity. At issue is whether the Regional Board should take formal position on Estuary Landfills as a group. Three of these landfills have expansion plans. Collectively, the Estuary Landfills have 34 million cubic yards of potential capacity and an additional future potential capacity of 19 million cubic yards. The primary issues are 1) ongoing disposal in unlined cells (where waste has subsided 5-25 feet below sea level into the underlying bay mud) and 2) expansion of these landfills vertically and into historic wetlands.

Ambient Groundwater Monitoring: Ambient groundwater monitoring is conducted in Santa Clara, Niles Cone, Livermore, and the East Bay Plain Groundwater Basins. In almost all cases,

monitoring does not include volatile organic compounds and the results are not published or made easily available to the general public.

The Regional Board has conducted limited ambient groundwater monitoring using funds from the laboratory services contact. In 1990, the Regional Board monitored pesticides in Napa Groundwater basin wells. In 1999, the Regional Board monitored organic compounds in the San Francisco Downtown Basin wells. In 2000 and 2001 we funded the San Mateo County Health Department (SMCHD to sample wells in the Westside and San Mateo Plain Basins.

The San Mateo County Health Department (SMCHD), Groundwater Protection Program is providing database consolidation activities of water quality and water depth data for an agreement based upon the AB3030 plan with the cities of Daly City, San Bruno, San Francisco, and California Water Company. SMCHD is compiling data from the AB3030 partners and measures water levels in existing agricultural, industrial and municipal wells in the San Mateo County portion of the basin.

SWRCB's Ambient Groundwater Monitoring and Assessment Program:
The SWRCB, in coordination with the Department of Health Services and the Department of Water Resources, is implementing the California Aquifer Susceptibility (CAS) assessment to determine the water quality and relative susceptibility of groundwater that serves as a source for public water supplies to potentially contaminating activities. CAS is part of the Ambient Groundwater Monitoring and Assessment Program and will employ groundwater age-dating techniques and low-level analyses for volatile organic compounds. Sampling began in June 2001 in the Santa Clara Valley, Niles Cone, Westside, and Livermore Basins. A total of 271 public water supply wells have been sampled and data will be available in early 2002. This new data will allow the Regional Board to better the access ongoing cleanup efforts, the vulnerability of existing aquifers and prioritize future cleanup efforts.

The S.F. Regional Board has designated a staff person in the Groundwater Protection Division to be the region's GAMA coordinator.

Unfunded Ambient Groundwater Monitoring Activities
In general, funding is needed for ambient groundwater monitoring of VOCs and oxygenates in Santa Clara, Niles Cone, Livermore, and the East Bay Plain Groundwater Basins. Funding is also needed to make existing data available to the public for these basins.

One specific priority unfunded proposal that the Regional Board has an interest in is as follows:

- **East Bay Groundwater Awareness and Information Network –** This is a proposed monitoring program developed as part of a USEPA grant application (City of Emeryville, 1998). The grant was not funded, but the cooperating agencies are interested in the network. The grant sought to create the "East Bay Groundwater Awareness and Information Network" (GAIN). The objective of GAIN are (1) to design a community based, time relevant groundwater monitoring program network, (2) cultivate public interest in obtaining and using information, (3) complete a time relevant groundwater monitoring network, and (4) manage, process, and deliver groundwater monitoring data to the public. GAIN is designed to provide

East Bay residents with the ability to gauge for themselves the overall "health" of their deep groundwater resources. GAIN also targets localized areas where groundwater is contaminated and residents have requested monitoring data to guide decisions affecting economic revitalization.

Future Goals

- Support expanding GeoTracker to include information on sites other than LUFTs. The addition of SLIC sites, Landfills, AGTs, and DoD sites to GeoTracker would greatly improve access to site data and allow for better site management and tracking.

- Support ongoing Regional Board efforts to analyze the historical plume information collected by responsible parties over the past 15 years, investigate trends in remediation approaches, and develop a prioritization list.

- Regional Groundwater Basin Assessment. Expand ambient water quality monitoring in municipal supply aquifers, compile existing data and support the establishment a broader network of deep monitoring wells. While over 10,000 wells are used to monitor the shallow aquifers in the Region, less than one-hundred wells monitor the deeper aquifers.

- Policy Development. Support the development of policy and guidelines for: the natural attenuation of volatile organic compounds; non point source pollution of groundwater; and groundwater cleanup at sites located over marginal groundwater resources.

- Source Water Protection. If funding is available, the Regional Board will assist water purveyors using groundwater, with obtaining information on the Board's permitting activities to compile their list of potential sources of contamination to those groundwater sources of drinking water.

Table 2-4. Groundwater Basins in the San Francisco Bay Region

GROUNDWATER BASIN	COUNTY	DWR Basin No.[6]	AREAL EXT (SQ. MI.)	BASIN DEPTH (ft)	STORAGE CAPACITY (ac ft)	PERENNIAL YIELD (ac-ft)_
EAST BAY GROUNDWATER BASINS						
Alameda Creek (Niles Cone)	Alameda	2 - 9.01	97	40 - >500[a]	1.3 mil[a]	32,600[a]
Castro Valley	Alameda	2 - 8	4	NA	NA	NA
East Bay Plain						
Richmond Sub-Area	Contra Costa	2 - 9.01		>600[u]	420[u]	
Berkeley Sub-Area	Alameda			300[u]	2.67 mil[w]	
Oakland Sub-Area	Alameda			700[u]		
San Leandro Sub-Area	Alameda			1100[u]		
San Lorenzo Sub-Area	Alameda			1100[u]		
Livermore Valley	Alameda	2 - 10	170	0 - 500[d]	540,000[d]	13,500[e]
Sunol Valley	Alameda	2 - 11	28	160 - 500[f]	>2800[g] ?	140[g] ?
Arroyo Del Hambre Valley	Contra Costa	2 - 31	2	NA	NA	NA
Clayton Valley	Contra Costa	2 - 5	30	50 - 300[h]	180,000[d] ?	NA
Pittsburg Plain	Contra Costa	2 - 4	30	50 - 160[h]	NA	NA
San Ramon Valley	Contra Costa	2 - 7	30	300 - 600[i]	NA	NA
Ygnacio Valley	Contra Costa	2 - 6	30	20 - 300[h]	50,000[h]	NA
NORTH BAY GROUNDWATER BASINS						
Novato Valley	Marin	2 - 30	17.5	55 - 90[j]	NA	NA
Sand Point Area	Marin	2 - 27	2	20 - 300[k]	NA	NA
San Rafael	Marin	2 - 29	NA	NA	NA	NA
Ross Valley	Marin	2 - 28	18	10 - 60[l]	1380[l]	350[l]
Suisun/Fairfield Valley	Solano	2 - 3	203	30 - 400[s,t]	40,000[t]	NA
Kenwood Valley	Sonoma	2 - 19	6	0 - 1000[d]	460,000[d]	NA
Petaluma Valley	Sonoma	2 - 1	41	0 - 900[d]	2.1 mil[d]	NA
Sebastopol-Merced Fm. Highlands	Sonoma	2 - 25	150	NA	NA	NA
Sonoma Valley	Sonoma	2 - 2.022	50	0 - 1000[d]	2.66 mil[d]	NA
Napa Valley	Napa	2.2 & 2 - 2.01	210	50 - 500[m]	240,000[n]	24,000[m]
SAN FRANCISCO PENINSULA AND COASTAL GROUNDWATER BASINS						
Islais Valley[3]	San Francisco & San Mateo	2 - 33	8.75			
Visitacion Valley	San Francisco	2 - 32	8	<200[v]	20,000[v]	
Downtown[1]	San Francisco	2 - 34	11.7	175	59,500	
Marina[1]	San Francisco	2 - 34	3.5	200[v]		
Lobos[1]	San Francisco & San Mateo	2 - 34	3.75	140[v]		
Westside[2]	San Francisco & San Mateo	2 - 34/2 - 35	38	3500[v]	500,000 - 1 mil[v]	
South[1]	San Francisco	2 - 34	3.25	200[v]	5,000[v]	NA
Treasure Island[4]	San Francisco	none	0.9	28[v]		
Half Moon Bay Terrace	San Mateo	2 - 22	25	20-15[o]	10,300[o]	2200[o]
Pescadero Valley	San Mateo	2 - 26	2	NA	NA	NA
San Gregorio Valley	San Mateo	2 - 24	2	NA	NA	NA
San Mateo Plain	San Mateo	2 - 9 (A)	32.5	100-500[q]	NA	NA

San Pedro Valley	San Mateo	2 - 36	2	NA	NA	NA
SOUTH BAY GROUNDWATER BASIN						
Santa Clara Valley (& Coyote)	Santa Clara	2 - 9 (B)	240	10-1010[d]	3.0 mil[r]	100,000[r]

Footnotes and references:

NA - Not Available.

1. Previously this basin was part of the “San Francisco Sands” Basin. This basin was designated as “existing” MUN beneficial uses in the 1995 Basin Plan.
2. Previously this basin was part of the “Merced Valley” Basin and the “San Francisco Sands” Basin.
3. Previously this basin was designated as part of the “Merced Valley” Basin.
4. This area was not designated as a groundwater basin in the 1995 Basin Plan.
5. Information compiled from DWR and local water management agencies. (References are listed below.)
6. DWR Bulletin 118-80 (1980).
7. Average depth to aquifers below land surface. These depths are provided for information only and cannot be used to characterize site-specific conditions.
8. Total available storage in acre-feet. (References are listed below.)
9. The average annual amount of groundwater that can be withdrawn without producing an undesired result. (References are listed below.)

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Table 2-5. Existing and Potential Beneficial Uses of Groundwater Identified Basins or Portions thereof (As adopted by the Regional Board in April 2000, but awaiting SWRCB approval)

GROUNDWATER BASIN	COUNTY	DWR Basin No.	MUN	PROC	IND	AGR
EAST BAY GROUNDWATER BASINS						
Alameda Creek (Niles Cone)	Alameda	2 - 9.01	E	E	E	E
Castro Valley	Alameda	2 - 8	P	P	P	P
East Bay Plain						
Richmond Sub-Area	Contra Costa	2 - 9.01	E[5]	E	E	E
Underlying Chevron Richmond Refinery[8]			–[6]	P	P	P
Berkeley Sub-Area	Alameda		E[5]	E	E	E
Oakland Sub-Area	Alameda		E[5]	E	E	E
Underlying Oakland shoreline/Alameda Point[7]			–[6]	P	P	P
San Leandro Sub-Area	Alameda		E	E	E	E
San Lorenzo Sub-Area	Alameda		E	E	E	E
Livermore Valley	Alameda	2 - 10	E	E	E	E
Sunol Valley	Alameda	2 - 11	E	E	E	E
Arroyo Del Hambre Valley	Contra Costa	2 - 31	P	P	P	P
Clayton Valley	Contra Costa	2 - 5	E	P	P	P
Pittsburg Plain	Contra Costa	2 - 4	P	P	P	P
San Ramon Valley	Contra Costa	2 - 7	E	P	P	E
Ygnacio Valley	Contra Costa	2 - 6	P	P	P	P
NORTH BAY GROUNDWATER BASINS						
Novato Valley	Marin	2 - 30	P	P	P	P
Sand Point Area	Marin	2 - 27	E	P	P	P
San Rafael	Marin	2 - 29	P	P	P	P
Ross Valley	Marin	2 - 28	E	P	P	E
Suisun/Fairfield Valley	Solano	2 - 3	E	E	E	E
Kenwood Valley	Sonoma	2 - 19	E	P	P	E
Petaluma Valley	Sonoma	2 - 1	E	P	P	E
Sebastopol-Merced Fm. Highlands	Sonoma	2 - 25	E	P	P	E
Sonoma Valley	Sonoma	2 - 2.022	E	P	P	E
Napa Valley	Napa	2.2 & 2 - 2.01	E	E	E	E
SAN FRANCISCO PENINSULA AND COASTAL GROUNDWATER BASINS						
Islais Valley[3]	San Francisco & San Mateo	2 - 33	P[5]	E	E	P
Visitacion Valley	San Francisco	2 - 32	P[5]	E	E	P
Downtown[1]	San Francisco	2 - 34	[6]	E	E	E
Marina[1]	San Francisco	2 - 34	P[5]	P	P	P
Lobos[1]	San Francisco & San Mateo	2 - 34	E	P	E	E
Westside[2]	San Francisco & San Mateo	2 - 34/2 - 35	E	P	E	E
South[1]	San Francisco	2 - 34	P[5]	P	P	P
Half Moon Bay Terrace	San Mateo	2 - 22	E	P	P	E

GROUNDWATER BASIN	COUNTY	DWR Basin No.	MUN	PROC	IND	AGR
Pescadero Valley	San Mateo	2 - 26	E	P	P	E
San Gregorio Valley	San Mateo	2 - 24	E	P	P	E
San Mateo Plain	San Mateo	2 - 9 (A)	E	E	E	P
San Pedro Valley	San Mateo	2 - 36	P	P	P	P
SOUTH BAY GROUNDWATER BASIN						
Santa Clara Valley (& Coyote)	Santa Clara	2 - 9 (B)	E	E	E	E

Notes:

Beneficial Uses:

MUN - Municipal and domestic water supply.

PROC - Industrial process water supply.

IND - Industrial service water supply.

AGR - Agricultural water supply.

[Note: FRESH - Freshwater replenishment to surface water designation will be determined at a later date; for the interim, a site-by-site determination will be made.]

E - Existing beneficial use.

P - Potential beneficial use.

[1] Previously this basin was part of the "San Francisco Sands" Basin.

[2] Previously this basin was part of the "Merced Valley" Basin and the "San Francisco Sands" Basin.

[3] Previously this basin was designated as part of the "Merced Valley" Basin.

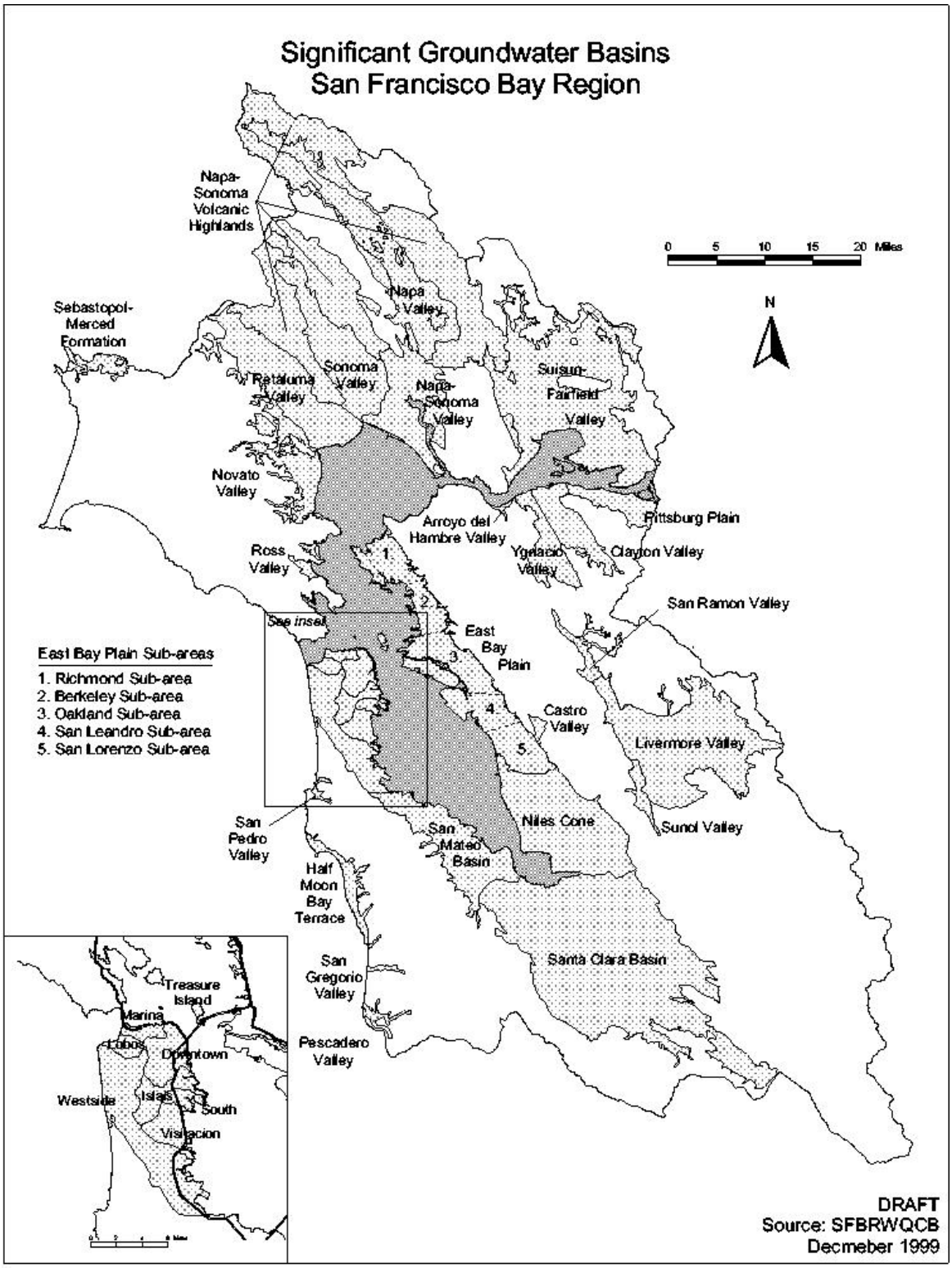
[4] This area was not designated as a groundwater basin in the 1995 Basin Plan.

[5] No known existing drinking water wells. However, there are numerous private backyard irrigation wells.

[6] Groundwater does not meet the state's Sources of Drinking Water Policy criteria (State Board Resolution 88-63).

[7] Dedesignation of the MUN beneficial use in these areas only applies to the shallow aquifers and not the deeper aquifers. The shallow aquifers are defined as those water-bearing zones above the Yerba Buena Mud (generally less than 100 feet below ground surface). Within these areas, there is no historical, existing or planned use of groundwater as a source of drinking water either in the shallow or deeper aquifers. However, deep aquifers in these areas will continue to be designated as MUN. Therefore pollution in the shallow zones will still be required to be remediated to levels to protect the deeper aquifers or other more stringent levels as required to protect remaining beneficial uses (i.e., aquatic receptors in the shoreline bands).

Figure 2-1. Significant Groundwater Basins



Significant Groundwater Basins in the San Francisco Bay Region

2.8 GEOGRAPHIC INFORMATION SYSTEM (GIS)

Current GIS Activities

Over the past several years, the Regional Board has initiated or participated in a number of projects that incorporated a significant application of GIS. Past projects include Board studies of the Napa River Watershed (1996), the San Francisco groundwater basins (1996), the East Bay Plain groundwater basin (1999) and the South Bay groundwater basins (2001); the development of the San Francisco Bay EcoAtlas (in conjunction with the San Francisco Estuary Institute); analysis for the Tomales Bay pathogens TMDL (2003); and the mapping of marinas in the San Francisco Bay region (2004).

The Regional Board continues to use GIS as a useful analytical tool for the study and monitoring of groundwater quality. The Regional Board provided significant input into the State Board's Geotracker (web-based GIS analytical tool for the display and analysis of LUFT and well data) and has developed a number of scripts and routines for the prioritization of its own MTBE and SLIC program groundwater cleanup cases. In 2001, the Regional Board implemented a pilot project for the electronic reporting of solvent plume contours by responsible parties; Regional Board staff is currently working with State Board staff to implement this functionality in Geotracker. GIS is also seeing increasing use among staff working on the remediation of former Department of Defense sites, as DoD contractors provide more analytical data in GIS format. Regional Board staff is also actively providing input in the State Board's forthcoming CIWQS surface water information system.

The Regional Board continues to work closely with other agencies and community groups to share information, improve data accuracy and facilitate data acquisition and analysis. Some of the projects Regional Board staff is currently involved with include:

- lending technical assistance to the Contra Costa Community Development Department in their work with local creek groups in mapping stream channels and features.
- working closely with Alameda County Water District, Santa Clara Valley Water District, and San Mateo County Environmental Health Services Division on the mapping and analysis of the groundwater basins in their jurisdiction, and
- developing permit forms with the U.S. Army Corps of Engineers, BCDC, U.S. EPA, and the San Francisco Estuary Institute that can be uploaded to GIS with exact project locations and permitting information.

The Regional Board is also increasing the use of GIS in its watershed and TMDL analysis. We are working closely with Stillwater Sciences in the development and use of analytical routines and LIDAR elevation data to determine sediment loading for the Napa River TMDL. GIS is also providing a component of the analysis for the TMDLs for Tomales Bay pathogens, Sonoma Creek nutrients and Napa River nutrients. The SWAMP program team is using GIS to plan and track sampling sites.

The Regional Board currently has 1 PY dedicated to GIS activities in addition to approximately eight staff members who apply GIS to varying degrees in their work.

Future Goals

Prior application of GIS analysis at the Regional Board has been determined in large part by project-specific goals. The following objectives have been established to assist in the broader application of GIS in the Board's activities:

1. Update Regional and Basin Plan maps. The 2004 Basin Plan Triennial Review, certified by the Regional Board in November 2004, placed the update of the watershed maps in Basin Plan as the highest priority item for revision in the Basin Plan. Drafts of the new maps will be included in a package of Basin Plan amendments scheduled for 2005.

Since the last revision of CalWater (the State Watershed dataset), a number of new, more accurate watershed delineations have become available (Oakland Museum Creek maps, Contra Costa Watershed Atlas). These delineations will be integrated into the Board's existing watershed boundary dataset and new regional maps will be produced.

2 Increase staff access to GIS software. The Board's GIS software licenses are still based upon a one-seat, one-license model. The development of license manager for ArcGIS software will enable the Board to move to a shared-license data model. This will be explored in the coming fiscal year.

3. Develop staff training aids. Improved access to GIS data and software will also increase the need for technical support and assistance in the usage of the GIS tools. A staff training covering basic GIS and data acquisition issues should be scheduled. Additional training documents (handouts, PowerPoint presentation slides, etc.) as well as information regarding classes and workshops on more advanced GIS topics could be made available via the Board Intranet web site.

4.Increase public access to Regional Board data layers. Many of the Regional Board's data layers could be made available for public download on either the Regional Board's website or from the state GIS portal (http://gis.ca.gov). Policies for data distribution should be formulated and FGDC or state-compliant metadata for all Regional Board coverages should be developed.