CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

RESOLUTION NO. 94-102

POLICY ON THE USE OF CONSTRUCTED WETLANDS
FOR URBAN RUNOFF POLLUTION CONTROL

I. WHEREAS, urban runoff contributes a significant amount of pollutants to the San Francisco Bay and its tributaries; and

II. WHEREAS, the San Francisco Bay Regional Water Quality Control Board regulates urban runoff through NPDES permits and urban runoff management programs under the 1987 Clean Water Act and the Porter-Cologne Water Quality Control Act; and

III. WHEREAS, the 1990 Coastal Zone Act Reauthorization Amendments require states to implement nonpoint source management measures to protect and restore wetlands, and promote the use of vegetated treatment systems such as constructed wetlands; and

IV. WHEREAS, the state-wide nonpoint source management plan is currently under revision and this revision, in part, is intended to address measures required by the 1990 Coastal Zone Act Reauthorization Amendments; and

V. WHEREAS, proposals have been made, and demonstration projects established, to develop constructed wetland systems in order to store and treat urban runoff in the San Francisco Bay Area; and

VI. WHEREAS, the Regional Board prepared an initial study and environmental checklist evaluating significant environmental impacts in compliance with Division 13 of the Public Resource Code - California Environmental Quality Act (CEQA) - and found that no significant adverse environmental impacts would result from implementation of the policy, and subsequently prepared a negative declaration; and

VII. WHEREAS, the Regional Board concludes that this policy involves "no potential for adverse effect, either individually or cumulatively on wildlife", and is therefore exempt from Department of Fish and Game CEQA filing fees; and

VIII. WHEREAS, on August 17, 1994 this Board held a public hearing and heard and considered all comments pertaining to this matter; and

IX. WHEREAS, upon consideration of the initial study, environmental checklist and comments received, the Regional Board finds that there is no substantial evidence that the project will have a significant effect on the environment.

X. THEREFORE, BE IT RESOLVED that:

1. This Regional Board approves the CEQA negative declaration.

2. This Regional Board adopts the policy set forth in the attached document entitled "Policy on the Use of Constructed Wetlands for Urban Runoff Pollution Control."

XI. BE IT FURTHER RESOLVED that the Regional Board directs the Executive Officer to continue to work with the appropriate federal and state agencies regarding the use and maintenance of constructed wetland systems for urban runoff pollution control.

XII. BE IT EVEN FURTHER RESOLVED that:

1. The State Water Resources Control Board (State Board) is requested to approve the policy in accordance with Section 13245.5 of the California Water Code.

2. Upon approval, the State Board is requested to transmit the policy to the Office of Administrative Law for approval.

3. The Regional Board directs the Executive Officer to sign and file a Certificate of Fee Exemption with the Department of Fish and Game for this policy.

I, Steven R. Ritchie, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on August 17, 1994.

Steven R. Ritchie
Executive Officer

POLICY ON THE USE OF CONSTRUCTED WETLANDS FOR URBAN RUNOFF POLLUTION CONTROL

Background

Urban runoff consists of storm water and other discharges from urban sources, and is a significant contributor of pollutants to the San Francisco Bay and its tributaries. The 1987 amendments to the Clean Water Act created a regulatory framework for storm water discharges in Section 402(p) under the National Pollutant Discharge Elimination System (NPDES). NPDES permits are required for storm water discharges from municipalities with populations over 100,000, designated industrial activities, construction activities that disturb greater than five acres of land, and storm water discharges that contribute to a violation of water quality standards or are significant contributors of pollutants to receiving waters.

State urban runoff pollution control measures include NPDES permits for storm water discharges from municipalities and storm water discharges associated with industrial or construction activities. The urban runoff pollution control strategy of the Regional Water Quality Control Board is contained in the Urban Runoff Management section of the Water Quality Control Plan for the San Francisco Bay Basin (September, 1992), hereafter called the Basin Plan. This strategy addresses control of pollution in urban runoff from municipalities, highways, industrial operations, and construction activities through issuance of NPDES permits, surveillance, and oversight of local agency urban runoff pollution control programs.

One potential alternative for the management of urban runoff is the constructed wetland treatment system. Wetlands generally occupy low-lying areas and, due to geographic location, receive surface runoff from adjacent lands. Studies have shown that wetlands have water quality treatment properties including pollutant removal through purification and filtering. Constructed wetland treatment systems may be feasible to control urban runoff pollution in cases of new construction and development, and retrofits of old structural controls. Constructed wetland treatment systems may also be added to existing flood control systems for purposes of water quality benefits as well as flood control enhancement.

The 1990 Coastal Zone Act Reauthorization Amendments (CZARA) require implementation of management measures to protect coastal zones from nonpoint source pollution from various sources, including urban runoff. These management measures apply to urban runoff discharges not regulated by NPDES permits, and require states to protect or restore wetlands and to promote the use of vegetated treatment systems. Vegetated treatment systems include vegetated filter strips and constructed wetlands.

Under section 6217(g) of CZARA, states are required to develop programs that ensure implementation of the management measures. Current revision of the state-wide nonpoint source management plan is intended to address CZARA requirements. This Resolution, in part, is intended to foster the use of constructed wetland systems as vegetated treatment

systems in the San Francisco Bay Area for the control of urban runoff discharges covered under CZARA.

Existing wetlands which are waters of the United States, as defined in 40 CFR Part 122.2, or waters of the state, as defined in the Water Code Section 13050 (e), are not covered under this policy. Existing wetlands of the San Francisco Bay are valuable resources that have been seriously depleted in the past. Although existing wetlands receive and likely treat urban runoff, intentional routing of untreated runoff to these wetlands may have negative impacts on wetland habitat value and water quality, and is not legally permissible unless all applicable water quality objectives for such wetlands are met. Damage to existing wetlands would constitute a net loss to the Bay system and a violation of the Clean Water Act and the Porter-Cologne Water Quality Control Act. For these reasons only the use of constructed wetlands, rather than existing or natural wetlands, will be considered under this policy for the treatment of urban runoff.

The Regional Board recognizes that in some cases it may be appropriate to route untreated urban runoff to natural or existing wetlands provided that applicable water quality objectives are met. Existing wetlands, however, are typically waters of the United States, and as such do not fall under the terms of this policy. Future regional wetlands planning efforts may establish policy or procedures regarding urban runoff and existing wetlands. For the interim, projects initiated outside the realm of this Regional Board policy will be considered on a case-by-case basis.

Preamble

The provisions which follow are intended to provide Regional Board policy on the establishment of constructed wetlands to control urban runoff pollution. Inherent in this policy is the recognition that the majority of research to date concerning wetland treatment systems pertains to treatment of wastewater. There is limited evidence on the effects, both short-term and long-term, of using wetlands for urban runoff pollution control. For this reason, a conservative approach regarding these treatment systems is warranted. Under no circumstances should wetlands constructed for purposes of urban runoff treatment preclude upstream pollution prevention measures. In the future, this policy may be modified to be consistent with ongoing regional wetlands planning efforts or revised to incorporate new evidence on the effects of using constructed wetlands for urban runoff pollution control.

For the purposes of this policy, urban runoff treatment is defined as:

> control of urban runoff pollution through the physical, chemical, or biological removal of pollutants in order to meet the requirements of the Clean Water Act imposed by NPDES permits, urban runoff management programs, or other regional or local jurisdictions.

Wetlands are defined in 40 CFR Part 122.2 as:

> *those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.* Wetlands include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and riparian areas.

Constructed wetlands are defined according to CZARA guidelines as:

> *engineered systems designed to simulate natural wetlands to exploit the water purification functional value for human use and benefits. Constructed wetlands consist of former upland environments that have been modified to create poorly drained soils and wetlands flora and fauna for the primary purpose of contaminant or pollutant removal from wastewaters or runoff. Constructed wetlands are essentially wastewater treatment systems and are designed and operated as such though many systems do support other functional values.*[1]

POLICY

The following provisions will be followed by the Regional Board in determining whether or not to approve projects involving the use of constructed wetlands to treat urban runoff. Pursuant to 40 CFR Part 122.2, wetlands constructed and operated under this policy are waste treatment systems and, as such, are not waters of the United States.

1. The Regional Board will consider the use of wetlands for urban runoff treatment in cases where the wetlands are constructed or "artificial" systems. The use or modification of existing wetlands for urban runoff pollution control is beyond the scope of this policy. Constructed wetland systems which subsequently are connected with - or discharge to - existing wetlands may be considered provided that 1) the discharge does not violate water quality objectives, and 2) the beneficial uses of the existing wetlands are maintained or enhanced.

   Rationale: Existing wetlands are waters of the United States and are afforded protection from degradation by nonpoint source pollutants under the Clean Water Act. Direct discharges of untreated urban runoff to existing wetlands may disrupt the habitat of valuable or rare or endangered species, or may adversely alter the distribution of vegetation. Damage to existing wetlands would constitute a net loss of

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[1]D.A. Hammer, Designing Constructed Wetlands Systems to Treat Agricultural Nonpoint Source Pollution, *Ecological Engineering*, 1(1992): 49-82.

wetlands in the Bay system and a violation of the Clean Water Act, the Porter-Cologne Water Quality Control Act, and the no net loss policy. As a result, use of existing wetlands for urban runoff pollution control is beyond the scope of this policy.

The Regional Board will consider the connection of constructed wetlands to existing wetlands so long as the constructed wetlands are maintained and operated to avoid discharges of pollutants to the existing wetlands that would otherwise negatively impact or degrade the existing wetlands. In these cases, the constructed wetlands may serve as buffers and/or water sources for the existing wetlands.

2. Wetlands constructed under this policy will function as urban runoff treatment systems in order to satisfy storm water and nonpoint source discharge requirements of the Clean Water Act and the Basin Plan. Wetland systems constructed to treat urban runoff are intended, in part, to meet the Clean Water Act requirement to reduce pollutants in urban runoff discharges to the maximum extent practicable. In addition, these treatment systems are intended, in part, to prevent or eliminate violations of applicable water quality objectives, or negative impacts to beneficial uses, of receiving waters.

Rationale: The primary goal of the construction of these wetland systems is urban runoff treatment. Any other functions and values created during construction or thereafter are ancillary to the constructed wetland's purpose. As treatment systems, constructed wetlands operated and maintained according to this policy will not be waters of the United States. Constructed wetlands that are not operated and maintained according to terms of this policy and the approved management plan (required by Provision 7) may forfeit the designation of "treatment system."

Urban runoff treatment systems are intended to remove pollutants and should not contribute to or intensify water quality problems in receiving waters, including groundwater. This would *contradict* the purpose of the constructed wetland treatment system. In such cases, the treatment wetland could be subject to clean-up or discharge requirements.

3. Wetlands constructed for urban runoff treatment under this policy shall be constructed separate from the receiving water. Instream systems are constructed within waters of the United States, subject to Clean Water Act Section 401 and 404 requirements, and do not fall under the terms of this policy. Any wetland system constructed instream will be a water of the United States and subject to all applicable Clean Water Act and Basin Plan regulatory and water quality requirements.

Rationale: Instream systems are constructed within existing waters of the United States (e.g., wetlands, streams and creeks). As a result, any wetland constructed in a water of the United States would be a water of the United States by default, regardless of treatment functions. Therefore, instream systems do not fall under the terms of this policy and will require satisfaction of all applicable regulatory requirements, including Clean Water Act Section 404 permits and Section 401 water quality certification.

4. The Regional Board will require the proponent to demonstrate (1) a commitment of an adequate amount of land to maintain urban runoff treatment functions in the constructed wetland; and (2) a commitment to manage the constructed wetland to maintain urban runoff treatment functions.

Rationale: The intent of this provision is to assure that adequate land and management resources are available for as long as the constructed wetland is intended for urban runoff treatment. The commitment to provide the land and management resources may come from a person or persons other than the proponent, such as local agencies. However, the commitment must be such that the land or management resources cannot be withdrawn without Regional Board notification. In addition, there must be sufficient advance notice to provide for acceptable alternative disposal or reclamation facilities for the runoff - or explanation of the reason the constructed wetland is no longer necessary.

5. Prior to authorizing the construction of a urban runoff treatment wetland, the Regional Board will require demonstration that the wetland will be managed so as not to create vector problems and nuisance, and so as to minimize the occurrence of avian botulism and other infectious diseases. The Regional Board will also require reasonable monitoring to demonstrate that, consistent with a treatment system, pollutants and other substances transferred to the constructed wetland do not harm wildlife due to direct toxicity or bioaccumulation in the food chain.

Rationale: Control of vectors and other nuisance factors is essential in all cases and critical near urban areas. Wetlands remove nutrients, toxics, and metals (e.g., mercury and selenium) which potentially accumulate and/or biomagnify in sediments and biotic tissues. Currently, there is a general lack of knowledge on how these substances and their accumulation affect wetlands and resident wildlife. In light of this information gap, a conservative approach should be used in evaluating the potential for adverse impacts to wildlife, particularly for substances that biomagnify. Monitoring and contingency plans will be necessary to avoid the creation of hazards. If it is determined that the runoff is

harmful to wildlife, measures must be developed to eliminate the hazard; or discourage wildlife use of the constructed wetland.

6. Constructed wetlands used for urban runoff treatment may not be used to satisfy mitigation requirements for wetlands loss pursuant to any program within the purview of the Regional Board including, but not limited to, Sections 401 and 404 of the Clean Water Act, or any other regional or local jurisdiction.

Rationale: Wetlands constructed to control urban runoff pollution have the primary purpose of water treatment and, as such, are not waters of the United States. Mitigatory wetlands, however, are created solely for purposes of preserving habitat and wildlife values and receive the same protection under the Clean Water Act as natural or restored wetlands. Under the Clean Water Act, discharges which would lead to the degradation of protected wetlands are prohibited. Therefore, there can be no substitution of wetlands constructed for water treatment for wetlands required as Section 404 mitigation.

In addition, there is limited evidence on the effects of using constructed wetlands for urban runoff pollution control and whether such wetlands provide suitable habitat value. In the future, significant new monitoring data may warrant reconsideration of mitigation restrictions.

7. Prior to approving a constructed wetland for urban runoff treatment, the Regional Board will require the proponent to provide a management plan acceptable to the Executive Officer which provides detailed information on how compliance with Provisions 1 through 6 is to be achieved, and which designates the party responsible for maintenance and operation of the wetland once construction has been completed. The management plan should contain at least the following information:

A. A project plan, including a description of: the site; the physical facilities to be provided in the constructed wetland area; the physical layout of the constructed wetland including all points of discharge to and from the wetland; adjacent waters; applicable pretreatment and source control measures; and how the land is to be committed to this use for the project lifetime. The project plan should also include an explanation of the project purpose and objectives, a description of pre-construction site selection and sampling, and a description of planning and design elements including wetland design criteria.

B. An operations and maintenance plan, including contingency plans and a vector control program.

C. As part of the operations and maintenance plan, a reasonable monitoring plan

including monitoring for vector control, water quality investigations, and any necessary habitat and wildlife evaluations.

D. A complete description of pilot work or other data on which the proposal is based. This description should include determinations of the optimum land area and management techniques needed. The description should also include the anticipated quality of the runoff discharged to the constructed wetland and the anticipated quality of the discharge from the constructed wetland, including its impact on receiving waters.

Rationale: A management plan, in addition to providing the necessary information to the Regional Board, should act as an operations manual for managing and monitoring the constructed wetland. Project goals specified in the management plan will later serve as indicators of the success of the project. This management plan may be part of an existing plan such as a Storm Water Pollution Prevention Plan.

Management plans should be prepared in consultation with the staff of the Regional Board, the State Department of Fish and Game, the State Department of Health, local vector control agencies, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the U.S. Soil Conservation Service, the U.S. Fish and Wildlife Service and local storm water management programs. Regional Board staff will provide the proponent with management plan recommendations.