

PROCEDURAL GUIDANCE FOR EVALUATING WETLAND MITIGATION PROJECTS IN CALIFORNIA'S COASTAL ZONE

4. General Procedures for Evaluating the Performance of Wetland Mitigation Projects

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4.2.3.3. *The mitigation ratio*

The mitigation ratio sets the overall size of the mitigation project, and is defined as the ratio of values gained per unit area to values lost per unit area. Although the mitigation ratio is generally expressed in terms of area (e.g., a ratio of 5 to 1 equals five mitigation acres for each acre impacted through development), the ratio calculation should be based on other factors (e.g., appropriate functions and their associated values) in addition to area. Factoring in function and value information is generally a qualitative process that relies on information from the ecological assessment.

The process for determining a final mitigation ratio is influenced by a variety of factors; however, there is no objective process for quantifying many of these factors. The mitigation ratio is affected by the type of project (i.e., creation, restoration, or enhancement), particularly when partial credit is an issue. Project location must also be considered in determining the mitigation ratio. In the absence of a regional understanding of wetland resources, mitigation plans involving off-site mitigation may require higher mitigation ratios. Other factors affect the final mitigation ratio as well. For example, the ratio can also be adjusted to account for the uncertainty of success. Projects involving complex structures or a high degree of management may reduce the chances for complete success, and therefore require higher mitigation ratios to ensure full compensation. The expected length of interim losses of functional habitat (i.e., the losses occurring between the time of adverse impacts and the time of successful mitigation) is also important in determining the appropriate mitigation ratio. A higher mitigation ratio is warranted in cases where the compensatory mitigation occurs well after the wetland losses are sustained.

Currently, the CCC determines the applicable mitigation ratio on a case-by-case basis. In an attempt to account for concerns over project location, interim losses, and reduced chances of success, the CCC has required compensatory mitigation ratios greater than 1 to 1⁷.

⁷For specific examples of Commission required mitigation ratios see coastal development permit number 5-90-913, 5-92-408, 5-93-276, 6-86-2, 6-87-611, 6-87-667, 6-88-277, 6-88-388, 6-89-195, 6-90-219, 6-90-77.

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the Subdivision Map Act (commencing with Section 66410 of the Government Code), and any other division of land, including lot splits, except where the land division is brought about in connection with the purchase of such land by a public agency for public recreational use; change in the intensity of use of water, or of access thereto: construction, reconstruction, demolition, or alteration of the size of any structure, including any facility of any private, public, or municipal utility; and the removal or harvesting of major vegetation other than for agricultural purposes, kelp harvesting, and timber operations which are in accordance with a timber harvesting plan submitted pursuant to the provisions of the Z'berg-Nejedly Forest Practice Act of 1973 (commencing with Section 4511)."

²⁴Feasible is defined in Section 30108 of the Coastal Act to mean "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors".

²⁵Based on information contained in: CCC 1988. Draft Wetlands Task Force Report, Appendix C.

²⁶Percentages are calculated as the proportion of the total number of permits occurring in a specific category.

²⁷See the Statewide Interpretive Guidelines (CCC, 1981) For a complete list of these 19 wetlands.

²⁸Information relating to ports and port activities is taken from Section IV(E) of the Statewide Interpretive Guidelines (CCC, 1981).

²⁹The Coastal Act allows local governments, with CCC approval, to divide their coastal zone into geographic segments, and to prepare a separate LCP for each segment. For this reason, there are currently 126 LCP segments, instead of 73 (the actual number of coastal zone cities and counties). To date, 80 total LCP segments (64 percent) have been effectively certified and the relevant local governments are now issuing coastal development permits.

³⁰With regard to projects affecting wetlands, Coastal Act Section 30603(a)(2) limits the appeal of an action taken by a local government on a coastal development permit application to "developments... that are located within 100 feet of any wetland, estuary, or stream..."

³¹Management plans vary greatly in both format and content; however, a useful guide for the development of wetland management plans has been produced by the Lane Council of Governments (1992). *Hints on Preparing a Comprehensive Wetland Management Plan*. Pages 21-29 in The Association of State Wetland Managers. *Background Report Symposium Wetlands and Watershed (Water Resources) Management*. May 10-12, 1993. Sparks, Nevada.

It is clear that the management and protection of wetland resources involves numerous complex issues. Although we have come a long way in our knowledge and protection of California's coastal wetland resources, much work still remains.

Endnotes

¹⁶Normally, a particular vegetation type (e.g., hydrophytic vegetation) is considered to predominate when it makes up at least 50% of the vegetative cover on an areal basis.

¹⁷A common misconception is that the FWS definition requires only one of the three requisite attributes (i.e., proper hydrology, hydrophytic vegetation, or hydric soils) be present in order for any location to qualify as a wetland. This was never the Agency's intention. For a specific discussion of this topic, the reader is referred to Tiner, R.W. Jr. 1989. *A clarification of the U.S. Fish and Wildlife Service's wetland definition*. National Wetlands Newsletter. 11(3)6–8.

¹⁸This section is not a complete review of all laws and regulations pertaining to wetlands. For more information the reader is encouraged to review the following references: 1) Muir, T.A., C. Rhodes, and J.G. Gosselink. 1990. *Federal statutes and programs relating to cumulative impacts in wetlands*. Pages 223–236 in J.G. Gosselink, L.C. Lee, and T.A. Muir [Eds.]. *Ecological Processes and Cumulative Impacts: Illustrated by Bottomland Hardwood Wetland Ecosystems*. Lewis Publishers, Inc., Chelsea, MI.; and 2) Dennis, N.B. and M.L. Marcus. 1984. *Status and trends of California wetlands*. Final report prepared for the California Assembly, Resources Subcommittee.

¹⁹For a more detailed discussion of the elevation process see Davis, M.L. and R.C. Gardner. 1993. *Recognizing the Corps' commitment*. National Wetlands Newsletter. 15(2)9–10.

²⁰Information in this section is from the Statewide Interpretive Guidelines (CCC, 1981).

²¹The consistency certification process must still be completed, even if the ACOE undertakes the work (e.g., maintenance dredging, or channel modification) .

²²Section 30107.5 of the Coastal Act defines an environmentally sensitive area as "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem, and which could be easily disturbed or degraded by human activities and developments".

²³According to Section 30106 of the Coastal Act " 'Development' means, on land, in or under water, the placement or erection of any solid material or structure; discharge or disposal of any dredged material or of any gaseous, liquid, solid, or thermal waste; grading, removing, dredging, mining, or extraction of any materials; change in the density or intensity of use of land, including, but not limited to, subdivision pursuant to

identifying this habitat as a type of wetland. Additionally, it was not uncommon for the LCP's to identify specific areas (mainly river and stream corridors) as riparian areas.

Of the 80 LCP's effectively certified Statewide, only 13 (16%) have no policies explicitly limiting development in wetlands. In all cases, this is because wetlands were known not to occur, or have not been identified within the jurisdictional boundaries. Of these 13 LCP's, two occur in the north coast region, one occurs in the central coast region, two occur in the south central coast region, seven occur in the south coast region, and one occurs in the San Diego coast region (Figure 6).

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V. Summary:

The regulations, policies, and processes guiding the management and protection of California's coastal wetlands are numerous, and complex. Although specific regulations controlling development in wetlands exist at all levels of government, there is evidence to suggest the goal of no-net-loss of wetlands has not been achieved. The ability to protect existing wetlands is also hampered by inconsistencies among regulatory agencies and gaps in existing regulations. The lack of a single, clear, and broadly instituted definition for a wetland is a major inconsistency among regulatory agencies, which can act to compound regulatory problems. Meanwhile, certain types of wetlands, such as riparian areas and seasonal wetlands, do not receive equal protection at all levels of government because of differences in adopted definitions, agency imposed limitations of adopted definitions, and jurisdictional limitations. Additionally, several activities resulting in the loss of wetlands such as draining, vegetation removal, and agriculture are not regulated to the same degree as dredging, filling, and diking.

Of the wetland development projects that are permitted, many involve some form of mitigation. Although mitigation can be a viable alternative, establishment of the specific requirements is generally on a case-by-case basis and often involves a complex and time intensive process. This approach is incompatible with attempts by regulatory agencies to implement consistent mitigation policies and requirements.

In many cases the level of protection a wetland receives is a function of both ownership and land use. Although much of California is held in public (i.e., federal, State, or local government) ownership, many wetlands of significant size are under private ownership. The level of wetland protection can be lower on private lands, although public ownership does not necessarily guarantee appropriate protection. Meanwhile, land use patterns can have direct and indirect affects on wetlands: urban and agricultural development in a wetland are obvious direct affects, while development outside the wetland but within the same watershed can indirectly affect wetlands through alteration of physical and chemical processes. On a larger scale, regional, Statewide, and (in the case of Canada) international land use patterns can affect coastal wetlands through, for example, changes in air quality, hydrology, and the abundance of birds and fish.

To achieve maximum responsiveness to local conditions, accountability, and public accessibility, it is necessary to rely heavily on local government and local land use planning procedures and enforcement.

To meet the objectives of Section 30004(a), the Coastal Act directs each of the 73 cities and counties lying wholly or partly within the coastal zone to prepare a Local Coastal Plan (LCP) for CCC review and certification²⁹. With a certified LCP, each local government assumes authority for permitting certain types of development in specified areas of the coastal zone. It is important to note, however, that even after LCP certification, the CCC continues to have a major role in regulating wetland development. Specifically, Coastal Act Section 30519(b) states in part:

Subdivision (a) [that is, delegation of development review authority to a local government] shall not apply to any development proposed or undertaken on any tidelands, submerged lands, or on public trust lands, whether filled or unfilled, lying within the coastal zone,...

Thus, the CCC retains regulatory authority over virtually all of the wetlands in the coastal zone either through its original jurisdiction, or through the appeal process³⁰.

LCP's provide for the regulation of wetland development in one of two principal ways: 1) through the adoption of Coastal Act Section 30233 (with or without some modification); or 2) by identifying wetlands as environmentally sensitive areas and then adopting Coastal Act Section 30240 (with or without some modification). Of the 67 LCP's with policies regulating development in wetlands, 37 (55 percent) use Section 30233 and 27 (40 percent) use Section 30240. The remaining three LCP's (5 percent) regulate wetland development through the creation of new policies.

The way in which LCP's regulate wetland development is somewhat influenced by the distribution of wetlands throughout the California coastal zone. Wetlands are relatively more numerous and diverse in the northern half of the State (North Coast and Central Coast regions, Figure 6); thus, the overall approach to wetland regulation is somewhat more dependent on development activity. LCP's from these regions contain policies that generally regulate development in wetlands and are applied as wetland development projects occur. In contrast, wetlands are relatively scarce in the southern half of the State (South Central Coast, South Coast, and San Diego Coast, Figure 6), and so each one is considered vitally important. Thus, many of the LCP's specifically identify the wetlands within the respective jurisdiction and contain specific regulations for development.

FIGURE 6. Local Coastal Program LCP Certification Status.

Some general trends in the type of wetlands regulated also exist among the LCP's. All of the LCP's contain some discussion of wetlands ranging from a single statement that wetlands do not occur within the jurisdiction, to an elaborate discussion of the types and characteristics of the wetlands found within the jurisdiction. Overall, riparian areas were most often included as a specific type of wetland, with 41 (61%) of the 67 LCP's

a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat recreation areas.

Ports and port-related develop also have the potential of affecting coastal wetlands²⁸. Development within those portions of Ports Hueneme, Long Beach, Los Angeles, and San Diego Unified Port District lying within the coastal zone is generally governed by the provisions contained in Chapter 8 of the Coastal Act. However, wetlands and estuaries that have been identified on the CCC's Port Jurisdiction Maps (adopted by the Commission on April 6, 1977 pursuant to Section 30710) are not governed by the provisions of Chapter 8, but instead are subject to Chapter 3 policies of the Coastal Act (Coastal Act Section 30700).

Chapter 8 provisions apply to all "water areas" (a termed used only in this chapter) regardless of whether such area is considered wetland, estuary, or open coastal water. The diking, filling, or dredging of any water area within the defined areas of these ports is limited by Section 30705, 30706, and 30708 of the Coastal Act. The diking, filling or dredging of any wetland or estuary occurring in any port, harbor district or authority not named in Chapter 8 (e.g., Humbolt Bay Harbor, Recreation and Conservation Districts, or Moss Landing Harbor District) is subject to Chapter 3 provisions of the Coastal Act.

Section 30236 of the Coastal Act regulates development in aquatic regions such as rivers and streams. These sections address specific types of development such as channel alteration, dams, and flood control projects, which could impact riparian areas or tidal marshlands.

Finally, the CCC has adopted the *Statewide Interpretive Guidelines for Wetlands and Other Wet Environmentally Sensitive Habitat Areas* (CCC, 1981; [Appendix A](#)). These guidelines were developed to assist the CCC, local government, and the public in the application of the Coastal Act and certification of local coastal plans. These guidelines contain technical definitions for wetlands and riparian areas, discuss conditions for permitting development in these areas, and provide information pertaining to the maintenance and restoration of wetlands.

D. Local Government Regulatory Programs and Agencies:

The California Coastal Act is designed to delegate local governments with much of the CCC's authority over control of coastal development. Section 30004(a) of the Coastal Act states:

(2) Number and location of dikes and other artificial impediments to tidal action and freshwater flow and the ease of removing them to allow tidal action to resume.

(3) Degree of topographic alterations to the wetland and associated areas.

(4) Water quality.

(5) Substrate quality.

(6) Degree of encroachment from adjacent urban land uses.

(7) Comparison of historical environmental conditions with current conditions, including changes in both the physical and biological environment.

(8) Consideration of current altered wetland conditions and their current contribution to coastal wetland wildlife resources with relation to potential restoration measures.

(9) Chemical cycling capabilities of the wetland including water quality enhancement, nutrient accumulation, nutrient recycling, etc.

As part of this identification process, the extent of any wetland on the site must be identified with precision (CCC, 1981).

Section 30233(c) of the Coastal Act further limits development and alteration of wetlands throughout the coastal zone, stating:

In addition to the other provisions of this Section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary. Any alteration of coastal wetlands identified by the Department of Fish and Game, including, but not limited to, the 19²⁷ coastal wetlands identified in its report entitled, "Acquisition Priorities for the Coastal wetlands of California", shall be limited to very minor incidental public facilities, restorative measures, nature study, commercial fishing facilities in Bodega Bay, and development in already developed parts of south San Diego Bay, if otherwise in accordance with this division.

For the purposes of this section, "commercial fishing facilities in Bodega Bay" means that not less than 80 percent of all boating facilities proposed to be developed or improved, where such improvement would create additional berths in Bodega Bay, shall be designed and used for commercial fishing activities.

Numerous coastal wetlands (e.g., riparian areas) are considered environmentally sensitive habitat areas because they provide critical habitat to threatened or endangered species, or because of their uniqueness relative to the surrounding landscape. Thus, Section 30240 provides additional regulatory oversight of wetlands in certain situations. Section 30240 states:

Where any dike and fill development is permitted in wetlands in conformity with Section 30233 or other applicable policies set forth in this division, mitigation measures shall include, at a minimum, either acquisition of equivalent areas of equal or greater biological productivity or opening up equivalent areas to tidal action; provided, however, that if no appropriate restoration site is available, an in-lieu fee sufficient to provide an area of equivalent productive value or surface areas shall be dedicated to an appropriate public agency or the replacement site shall be purchased before the dike or fill development may proceed...

One interpretation suggests Section 30607.1 sanctions acquisition of an existing wetland as acceptable mitigation for an allowable wetland development project. However, such an approach would lead to a net loss of wetland area. In practice, the CCC has interpreted the phrase "at a minimum" to require inclusion of a restoration component in any acquisition plan in order to avoid the net loss of wetland area.

The CCC works with the applicant to develop specific mitigation requirements with the help of DFG, Coastal Conservancy, FWS, EPA, NMFS, and ACOE staff. Determining the amount and type of mitigation required is a contentious and complex matter often confounded by both a lack of applicable technical information and the regulatory process. Although numerous mitigation projects have been approved by the CCC, there is little information describing the success of these projects. This is a serious and chronic problem attributable to a lack of specific performance standards necessary to gauge the success of mitigation projects, and a lack of technical information and/or resources needed to evaluate these projects.

Probably one of the more contentious issues under Section 30233 is the stringent review of projects proposed in "degraded wetlands" (Section 30233(a.3)). With respect to historic wetland losses along the southern California coast, one intent of the Coastal Act is to halt the loss of wetlands and, where feasible, restore the resource (Dennis and Marcus, 1984). The main points of contention usually focus on the wetland delineation and the determination of what constitutes "degraded condition".

Section 30411 establishes the DFG as the lead agency charged with the study and identification of degraded wetlands, and provides general guidelines for classifying a wetland as degraded. However, the ecological complexity of wetlands and the lack of a single definition limits the degree of certainty with which these determinations can be made. The DFG has described its process for determining if a wetland is in fact degraded (for example see, DFG, 1981). In essence, the DFG makes this determination through an examination of the subject area to determine if the system has been adversely impacted by previous alterations, resulting in a degraded condition when compared to remaining unaltered areas or historic information. In addition, Coastal Act Section 30411(b) states that any such study of a wetland shall include consideration of all of the following:

(1) Amount and elevation of filled areas.

	<i>Permits</i>	<i>Permits for Dredging</i>	<i>Permits for Diking</i>	<i>Permits for Fill</i>	<i>Permits Approved</i>	<i>Permits Denied</i>	<i>Development or Maint. Proj.</i>	<i>Restoration Projects</i>	<i>Mitigation</i>
1973	2	0	0	2 (100%)	1 (50%) ²⁶	1 (50%)	2 (100%)	0	0
1974	3	2 (66%)	0	1 (33%)	3 (100%)	0	3 (100%)	0	0
1975	2	0	0	2 (100%)	2 (100%)	0	2 (100%)	0	1 (50%)
1976	4	3 (75%)	1 (25%)	1 (25%)	3 (75%)	1 (25%)	4 (100%)	0	0
1977	5	2 (40%)	0	5 (100%)	5 (100%)	0	4 (80%)	1 (20%)	1 (20%)
1978	7	1 (14%)	0	6 (86%)	5 (71%)	2 (29%)	7 (100%)	0	5 (71%)
1979	8	6 (75%)	0	5 (63%)	8 (100%)	0	6 (75%)	3 (38%)	1 (13%)
1980	10	5 (50%)	0	7 (70%)	10 (100%)	0	8 (80%)	4 (40%)	8 (80%)
1981	7	6 (86%)	0	2 (29%)	6 (86%)	1 (14%)	4 (57%)	3 (29%)	1 (14%)
1982	18	7 (39%)	1 (6%)	12 (67%)	17 (94%)	1 (6%)	15 (83%)	3 (17%)	10 (56%)
1983	18	12 (67%)	2 (11%)	14 (78%)	16 (89%)	2 (11%)	12 (67%)	6 (33%)	6 (33%)
1984	11	8 (73%)	1 (9%)	7 (64%)	11 (100%)	0	8 (73%)	3 (27%)	7 (64%)
1985	5	2 (40%)	0	3 (60%)	5 (100%)	0	3 (60%)	2 (40%)	3 (60%)
1986	6	4 (66%)	0	4 (66%)	6 (100%)	0	5 (83%)	1 (17%)	6 (100%)
1973 - 1986	106	58 (55%)	5 (5%)	71 (67%)	98 (92%)	8 (8%)	83 (78%)	26 (25%)	49 (46%)

Mitigating for wetland losses is frequently required in conjunction with coastal development permits granted under Section 30233. Most commonly, these projects involve compensatory mitigation. Both in-kind mitigation and out-of-kind mitigation are used. Coastal Act Section 30607.1 contains some of the most explicit language regarding mitigation for wetland development projects, and states in part:

The California State Coastal Conservancy (SCC) is another State agency actively involved in the protection and enhancement of coastal wetlands, although the agency has no regulatory function. The SCC was created by the legislature in 1976 to protect, restore, and enhance California's coastal resources. A primary purpose of the SCC is to resolve coastal land use conflicts not amenable to regulatory solutions, in order to protect coastal resources and expedite environmentally sound development. The SCC functions to address these conflicts with solutions unavailable to other State agencies because of their regulatory responsibilities, or because of limitations in funding, jurisdiction, or function.

The SCC accomplishes its purpose through various programs, including:

- Provision of technical assistance and guidance to nonprofit organizations
- Purchase and restoration of wetlands, sand dunes, and other important natural lands
- Revitalization of the State's urban waterfronts
- Preservation of prime agricultural lands
- Funding construction of beach access ways and trails, and retiring antiquated subdivisions within the coastal zone and San Francisco Bay

During the last 16 years, the SCC has given over \$40 million to 77 nonprofit organizations to acquire and restore key wetland, open space and agricultural lands along the coast. In addition, about one-third of all SCC funds (\$60 million) have gone to fund resource enhancement projects. With these funds, the SCC, in partnership with local governments and nonprofit organizations, has completed 91 resource enhancement plans, 60 wetland enhancement projects (at least one in every coastal county), and protected 24,000 acres of wildlife habitat, most of which are wetlands.

The California Coastal Commission is charged with the regulation of development in California's coastal zone as stipulated in the California Coastal Act. Sections 30230, 30231, 30233, 30236, and 30240 of the Coastal Act are directly applicable to the preservation and protection of wetlands and other environmentally sensitive areas²².

Development²³ or alteration of California's coastal wetlands is primarily regulated by Section 30233(a) of the Coastal Act, which states:

The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible²⁴ less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.

development activities affecting the water quality of navigable water and wetlands. Under Section 401(a)(1) of the Clean Water Act:

Any applicant for a Federal license or permit to conduct any activity...which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State...that any such discharge will comply with the applicable provisions of Sections 301, 302, 303, 306, and 307 of this Act.

In turn, California Code of Regulations Section 3831(k) defines the State certification required under Section 401 as:

'Water Quality Certification' means a certification that there is a reasonable assurance that an activity which may result in a discharge to navigable waters of the United States will not violate water quality standards, where the activity requires a federal license or permit.

Water quality standards are specified in federal regulation (40 CFR 131.6 et seq.) to include: 1) a State's numeric and narrative water quality criteria (objectives); 2) designated beneficial uses; and 3) anti-degradation policy. The anti-degradation policy requires, in part, the maintenance and protection of existing instream water uses including the level of water quality necessary to protect the existing uses. Through the Clean Water Act Section 404(b)(1) guidelines, the United States EPA interprets the anti-degradation policy to be satisfied with regards to fills in wetlands if the discharge did not result in "significant degradation" to the aquatic ecosystems.

In practice, the regional boards have applied their authority over water quality standards to all waters of the State, including wetlands. Discharge to wetlands and riparian wetlands may violate water quality objectives (e.g., turbidity, temperature, or salinity); impair beneficial uses (e.g., groundwater recharge, recreation, wildlife habitat, fish migration, and shellfish harvesting); and conflict with the anti-degradation policy.

The California Department of Fish and Game has Statewide resource responsibilities and authority that directly and indirectly influence projects and activities in coastal zone wetlands. In addition to being responsible for the maintenance and protection of California's fish and wildlife, the DFG has authorities under California's Public Resources Code, and the federal Fish and Wildlife Coordination Act to regulate or comment on activities in wetland and riparian areas. The DFG also assumes primary responsibility for implementation of the California State Endangered Species Act, and the Streambed Alteration Agreement (Fish and Game Code Sections 1601–1603). This agreement is one of the State's few direct legal instruments for the protection of streams, rivers, and lakes. Additionally, as mentioned previously, the DFG is a primary consultant to the CCC regarding the affects of coastal development on wetlands and other natural resources. The DFG also comments directly to the ACOE concerning fish and wildlife aspects of Section 10 and Section 404 permits. DFG's official position regarding the protection of wetlands is that development projects should not result in a net loss of either wetland acreage or wetland habitat value (DFG, 1987).

C. State Regulatory Programs and Agencies:

Numerous State agencies regulate, manage, or otherwise control natural resources within California through a wide variety of general and specific laws and directives, which are carried out by resource departments, commissions, and boards (Dennis and Marcus, 1984). Analyses completed in the early 1980's reviewed the effectiveness of 59 California State statutes in protecting wetlands and other water related lands, and concluded the State has limited direct authority over wetlands except in three geographic areas: the coastal zone, San Francisco Bay, and Suisun Marsh (Jones, 1981; Shute and Mihaly, 1982). Thus, although the coast is relatively well protected, inland California is not.

The California Environmental Quality Act (CEQA) sets the State's basic charter for environmental protection. Among other policies, CEQA aims to minimize or eliminate the environmental impacts from development projects. Specific wetland areas are listed as having regional or statewide significance (e.g., Suisun Marsh, Sacramento–San Joaquin Delta, and wild and scenic rivers), and the resource in general (wetlands and riparian lands) is defined as significant habitat.

The Keene–Nejedly California Wetlands Preservation Act (1976) is the only State legislation besides the Coastal Act to define wetlands (Dennis and Marcus, 1984). The act states there "is a need for an affirmative and sustained public policy and program directed at their [wetlands] preservation, restoration, and enhancement, in order that such wetlands shall continue in perpetuity". The act provided for acquisition of ten important wetlands, using funds from several sources, and was intended to support preparation of a statewide wetlands plan. However, acquisition funds were not allocated in 1976 (Dennis and Marcus, 1984).

The California Wild and Scenic rivers Act (1972) provides for the preservation of certain rivers, which possess extraordinary scenic, recreational, fishery, or wildlife values. Designated rivers are preserved in their free-flowing state, together with their immediate environments. All of the rivers currently included under this act occur in the northern half of California. Preservation under this act provides additional protection to the riparian areas adjacent to the rivers.

The Resources Agency functions as an umbrella agency for the State's resource departments, conservation boards, and commissions. The agency sets major resource policy for the State and oversees programs of member departments such as the DFG. With respect to wetlands, the Resources Agency is just beginning to implement Governor Wilson's Statewide wetlands policy. This policy defines the State's goals and objectives with regard to the preservation of remaining wetlands and set priorities and guidelines for restoration.

The State Regional Water Quality Control Boards are a regulatory body within the newly formed California Environmental Protection Agency. The regional boards' primary role is to enforce the federal Clean Water Act, and in doing so, assert regulatory authority over

deposition of fill material in a wide variety of riparian habitats and small ((1 acre) wetlands. This is particularly troublesome in California, where the seasonally dry nature of many streams and ponds precludes ACOE jurisdiction of many riparian corridors and small freshwater wetlands.

Although the River and Harbors Act and the Clean Water Act empower the ACOE with primary responsibility for the federal regulation of development and alterations in wetlands, other federal agencies are also involved. The EPA, FWS, Soil Conservation Service, and the National Marine Fisheries Service (NMFS) can review applications for ACOE Section 404 permits and provide comments and recommendations to the ACOE. In fact, under the Fish and Wildlife Coordination Act, the ACOE is required to consult with the FWS and the NMFS and give full consideration to their recommendations in evaluating permit decisions. Additionally, under certain circumstances the EPA, FWS, and NMFS can elevate an ACOE district engineer's permit decision to the Assistant Secretary for review and reconsideration¹⁹. However, only the EPA has the authority (albeit, rarely used) to veto an ACOE permit decision.

Notable exceptions to this division of agency responsibility occur when threatened or endangered species are present, or when an activity is subject to the requirements of the National Environmental Policy Act. In these situations a multitude of agencies with direct regulatory authority may become involved. The lead and participating agencies will vary depending on the specific circumstances.

B. Federal–State Interaction²⁰:

Pursuant to regulations adopted by the Office of Ocean and Coastal Resource Management (OCRM) under the Federal Coastal Zone Management Act (CZMA), applicants for ACOE Section 404 and Section 10 permits must include in their application a certification of consistency with the California Coastal Management Program²¹. This certification, and accompanying data and analysis, must also be submitted to the California Coastal Commission (CCC) for review and concurrence. The ACOE may not issue their permit until the CCC reviews and concurs with the applicant's consistency certification. This requirement is in addition to any other requirements the CCC has for coastal development permit applications.

Pursuant to the Fish and Wildlife Coordination Act, the ACOE must also give full consideration to comments submitted by the DFG. As the principal State resources trust agency, the DFG is obligated to comment on ACOE permit decisions in order to ensure protection of the State's natural resources. In this capacity, the DFG has drawn on the policy direction of the California Coastal Act, the California Endangered Species Act, the California Environmental Quality Act, and other relevant State laws. The DFG also consistently relies on the policy direction of California's Wetlands Conservation Policy (1993), which calls for no net loss of wetlands and a long-term net gain in the quantity, quality, and permanence of wetland acreage and values.

and protection of wetlands, the sheer number and complexity of these regulations often have the opposite result. In this section some of the more important laws and regulations affecting the development and alteration of coastal wetlands are described.¹⁸

A. Federal Regulatory Programs and Agencies:

Two statutes at the federal level provide the primary regulatory authority over wetlands in the United States: 1) The Clean Water Act (Section 404 (b)) regulates disposal of dredge and fill materials in waters of the United States, including all streams to their headwaters, lakes over 10 acres, and contiguous wetlands, including those above the ordinary high water mark in non-tidal waters and mean high tide in tidal waters; and 2) the River and Harbors Act of 1899 (Section 10) regulates the diking, filling, and placement of structures in navigable waterways. The ACOE is responsible for the enforcement of rules and regulations pertaining to both of these sections.

The original intent of the River and Harbors Act was protection of waterway navigability. In 1968, however, the ACOE established a more expansive review process, "public interest review", which included assessment of local and regional interests such as land use, economics, flood control, fish and wildlife, ecology, pollution, as well as traditional navigability (Dennis and Marcus, 1984). The availability of alternatives, permanence of impacts, and cumulative effects were adopted as additional review criteria in 1974 (Dennis and Marcus, 1984). Thus, the ACOE Section 10 review process incorporates numerous criteria applicable to the regulation of wetlands occurring in navigable waterways.

Under Section 404(b) regulations, all saline, brackish, and freshwater wetlands adjacent to (and in some circumstances, isolated from) navigable waters are subject to ACOE jurisdiction. The Section 404 regulatory program has a complex judicial and administrative history, in which wetlands have become the regulatory focus of "waters of the United States". Additionally, as part of the Section 404 permit program, the EPA and the ACOE have developed guidelines (specifically 404(b)(1) guidelines) that specify disposal sites for dredged or fill material. The purpose of these guidelines is to control discharges of dredged or fill material into U.S. waters in order to restore and maintain the chemical, physical, and biological integrity of the waters. These guidelines set the criteria against which permit applications are measured.

Unfortunately, the intent and administration of the Section 404 program is interpreted in fundamentally different ways by various federal agencies. For example, the ACOE views its primary regulatory function as protecting water quality, whereas the FWS, who comments on many Section 404 permit actions, regards protecting the integrity of wetlands and their habitats as the primary function of Section 404 (Dennis and Marcus, 1984).

It is important to note that not all activities in wetlands are regulated under Section 404. For example, excavation, clearing, leveling, draining, and vegetation removal are all unregulated activities. Additionally, the ACOE's general permit system exempts the

one important difference in the DFG delineation process compared to the FWS process, is that the DFG only requires the presence of **one** attribute (e.g., hydrology, hydric soils, or hydrophytic vegetation) for an area to qualify as a wetland (Environmental Services Division, 1987).

In contrast to the detailed definition and classification system adopted by the DFG, Section 30121 of the California Coastal Act (1976), the statute governing the CCC, has an exceptionally broad definition for a wetland:

Wetland means lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, or fens.

However, the CCC Administrative Regulations (Section 13577 (b)) provides a more explicit definition:

Wetlands are lands where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent or drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salt or other substance in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deepwater habitats.

As discussed in chapter one, the CCC with assistance from the DFG, is responsible for determining the presence and size of a wetland subject to regulation under the Coastal Act. Although the exact procedure has varied somewhat in the past, the DFG wetland definition and classification system is the delineation methodology generally followed by the CCC.

This discussion demonstrates that defining, delineating, and classifying wetlands are not simple matters, requiring an understanding of both wetland science and current regulatory definitions. Recently, wetland policy statements were released by both the Clinton administration and the Wilson administration, which may offer some help in this regard. Both statements identify the development of a single wetland definition as a high priority. Such a definition would need to encompass all types of wetlands and meet the needs of all relevant agencies. However, a single, clear definition for a wetland could aid in the sound management and protection of this resource, since many decisions regarding this resource are based on the definition used.

III. Agencies and Regulations Relating to Wetlands:

Numerous federal, State, and local agencies administer and enforce a myriad of federal, State, and local regulations that pertain to the development and alteration of wetlands in the California coastal zone. Although intended to provide clear and complete oversight

The Soil Conservation Service currently assists farmers in making wetland determinations on agricultural lands. Under the "Swampbuster Provisions" of the Food Security Act (as amended in 1990), the presence of wetlands can affect the amount of federal benefits farmers receive through the federal farm benefits program. The Swampbuster Provisions allow for farm benefits to be withheld from any person who: 1) plants an agricultural commodity on a converted wetland that was converted by drainage, dredging, leveling, or any other means after December 23, 1985; or 2) converts a wetland for the purpose of or to make agricultural commodity production possible after November 28, 1990.

A recently released wetlands policy statement from the Clinton Administration charges the Soil Conservation Service with the responsibility of serving as lead agency for identifying wetlands on agricultural lands under both the Clean Water Act and the Food Security Act (Office on Environmental Policy, 1993).

All of the federal definitions use some combination of three principal attributes (i.e., hydrology, hydric soils, and hydrophytic vegetation) to determine the presence and define the boundaries of a wetland. Although a discussion of why these attributes were chosen is beyond the scope of this document, it is clear that their nation-wide use offers several advantages: 1) Each attribute is clearly defined, and the definitions are very similar if not identical among agencies; 2) the presence of each attribute, with few exceptions, is readily determined with a high degree of precision; and 3) each attribute represents a key wetland characteristic.

While it has been known for some time that several (and somewhat conflicting) wetland definitions exist at the federal level, only recently have steps been taken to address this problem. In 1993, the Clinton Administration commissioned the National Academy of Science to lead the development of a single wetland definition that will be used by all relevant federal agencies to identify wetland areas. This work will be completed in September, 1994, and should result in a more cohesive approach to wetlands regulation at the federal level.

B. Definition and Classification by California State Agencies:

In addition to the definition and classification procedures developed by federal agencies, some California resource and regulatory agencies have developed their own wetland definition and classification procedures. Although these State agency procedures are generally based on the FWS definition and classification procedure described above, they do differ in specific details.

In the California coastal zone, the California Coastal Commission (CCC), with the assistance of the Department of Fish and Game (DFG) is responsible for determining the presence of wetlands subject to regulation under the California Coastal Act. As the primary wetland consultant to the CCC, the DFG essentially relies on the FWS wetland definition and classification system, with some minor changes in classification terminology, as the methodology for wetland determinations (Radovich, 1993). However,

FIGURE 4. Scope of Corps Regulatory Jurisdiction

Like the ACOE definition, the FWS definition (Cowardin, et al., 1979) of a wetland incorporates the three key parameters of hydrophytic vegetation, hydric soils, and hydrology:

Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly¹⁶ hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.

In addition to the above definition, the FWS has developed an elaborate classification system for wetlands and deepwater habits, which was primarily created to facilitate a national inventory of wetlands (Cowardin, et al., 1979). Cowardin and his associates (1979) acknowledged the difficulty, if not impossibility, of arriving at a "single, correct, indisputable, ecologically sound definition" because of the diversity of wetland types, and because "the demarcation between wetland and dry land lay along a continuum". The FWS classification system is hierarchical, progressing from broad system descriptors to very specific modifiers for water regime, water chemistry, and soils (Cowardin, et al., 1979). Wetlands within each system share similar physical, chemical, and biological characteristics. The systems consist of the coastal wetlands which include marine and estuarine wetlands, and the interior wetlands which include riverine, lacustrine, and palustrine wetlands (Figure 5 illustrates these systems diagrammatically).

FIGURE 5. Diagram Illustrating Major Wetland Systems

Although the FWS classification system is complex, it does provide an objective method for identifying virtually any wetland landscape. Relative to the ACOE definition, the FWS definition is generally regarded as being more inclusive in the classification and subsequent delineation of a wetland. This is because the FWS classification system defines a wetland by the presence of the proper hydrology **and either** the presence of hydric soils **or** hydrophytic vegetation, except in nonsoil areas, such as rocky intertidal areas, where only the presence of proper hydrology is required¹⁷.

Another federal wetland definition is found in the Food Security Act of 1985. This definition is important because it applies to agricultural lands:

The term "wetland", except when such term is part of the term "converted wetland", means land that has a predominance of hydric soils and that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions.

the Environmental Protection Agency (EPA), and the United States Fish and Wildlife Service (FWS) have developed the two definitions most commonly used by federal, State, and local agencies. The ACOE and EPA definition for a wetland (hereafter referred to as the ACOE definition) is probably used most often throughout the United States because of the ACOE's direct permit authority over development in wetlands and deepwater areas, and because the definition has been upheld in several courts of law.

The ACOE definition is often referred to as a "three parameter definition" because three key parameters: hydrology, soil, and vegetation must all occur and meet the defined characteristics in order for a location to be classified a wetland. The ACOE definition (Environmental Laboratory, 1987) reads as follows:

The following definition, diagnostic environmental characteristics, and technical approach comprise a guideline for the identification and delineation of wetlands.

a. Definition: The ACOE (Federal Register, Section 328.3(b), 1991) and the EPA (Federal Register, Section 230.4(t), 1991) jointly define wetlands as: Those areas that are inundated or saturated by surface or ground water 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 generally include swamps, marshes, bogs, and similar areas.

b. Diagnostic environmental characteristics: Wetlands have the following general diagnostic environmental characteristics:

- 1. Vegetation: The prevalent vegetation consists of macrophytes that are typically adapted to areas having hydrologic and soil conditions described in (a) above. Hydrophytic species, due to morphological, physiological, and/or reproductive adaptation(s), have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions.*
- 2. Soil: Soils are present and have been classified as hydric, or they possess characteristics that are associated with reducing soil conditions.*
- 3. Hydrology: The area is inundated either permanently, or periodically at mean water depths < 6.6 ft. (~ 2 m), or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation. The period of inundation or soil saturation varies according to the hydrologic/soil moisture regime and occurs in both tidal and non-tidal situations*

c. Technical approach for the identification and delineation of wetlands: Except in certain situations defined in this manual, evidence of a minimum of one positive wetland indicator from each parameter (hydrology, soil, and vegetation) must be found in order to make a positive wetland determination.

Figure 4 presents a cross-sectional diagram of the areas and habitats under ACOE jurisdiction, and under which this definition applies.

short, California is currently lacking a fully implemented comprehensive policy for the management and protection of its wetlands.

More recent activities, however, should improve the current situation. Specifically, the Wilson administration (State) and the Clinton administration (federal) released wetland policy statements in August 1993, which are designed to provide a consistent policy framework for the management and protection of wetlands. These policy statements detail a series of action items and initiatives designed to achieve three principal goals: 1) ensure no net loss of wetlands; 2) reduce procedural complexity; and 3) develop private and public partnerships to encourage wetland conservation and protection. Implementation of these policy statements is underway.

This chapter presents a review of the relevant agencies, processes, and policies affecting California's wetlands. Topics covered include: 1) definition and classification of wetlands; 2) agencies and regulations relating to wetlands; and 3) existing management practices. The focus is on wetlands occurring in the coastal zone. This chapter is not intended to present an exhaustive review, but rather to give the reader a basic level of understanding and a sense of the current regulatory procedures. The subjects covered here are complex. The reader is encouraged to consult the referenced literature for additional information.

II. Definition and classification of wetlands:

The lack of a single definition for a wetland is one of the more problematic issues affecting wise stewardship of this resource. The use of different definitions by regulatory and resource agencies has led to unequal protection of California's wetland resources and inconsistencies in evaluating the existence and management of wetlands. All of the regulatory processes related to wetland protection and development apply only after the existence of a wetland is established. Thus, the criteria and processes used to define a wetland are central to determining which regulations apply and to what extent they are applied.

The word wetland is a relatively new term used to describe a particular landscape known throughout the world by a variety of names (e.g., swamp, bog, fen, mud flat, mire, and marsh). In fact, many of the terms used to define a wetland were developed as a way to describe the more obvious characteristics that exist within this landscape. Fundamentally, a wetland is land that remains wet long enough to result in the alteration of key physical, chemical, and biological elements relative to the surrounding landscape. However, the complex nature of wetlands requires a more elaborate definition, one which accounts for their variable nature and their subtle, but important, features.

A. Definition and Classification by Federal Agencies:

Several definitions for a wetland are applied by numerous State and federal resource and regulatory agencies, and this combined with the complex nature of wetlands has resulted in public confusion and frustration. The United States Army Corps of Engineers (ACOE),

heterogeneous vegetation composition. Yet riparian areas do exhibit many of the functions and values found in other wetlands. In the past, CCC staff have recognized riparian areas as "environmentally sensitive areas" within the meaning of Coastal Act section 30107.5, and then regulated development through Section 30240. Additionally, Sections 30231 and 30236 provide for the protection of many riparian areas. The semi-arid climate of Southern California also presents problems for the identification and delineation of wetlands. Some wetlands in this part of California can remain dry for one or more seasons due to the Mediterranean climate. Many of the information sources listed above can assist CCC staff in identifying such seasonally wet wetlands. Additionally, Ferren and Fiedler (1993) have developed a technical description useful for identifying wetlands in Central and Southern California.

As evidenced by this brief discussion, accurate wetland identification and delineation can be challenging. CCC staff are encouraged to work with the DFG, the ACOE, local government and any other applicable agencies to minimize delays relating to wetland delineation. Early communication can go a long way to preventing problems later on.

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CHAPTER THREE

PROTECTION AND MANAGEMENT OF WETLANDS IN THE CALIFORNIA COASTAL ZONE: A REVIEW OF RELEVANT AGENCIES AND PROCESSES

I. Introduction:

Numerous processes, policies, and regulations issued from all levels of government have dramatically influenced the amount and quality of wetlands in California since the early 1800's. Early on, much of the interest in wetlands focused on their "reclamation" for agriculture. More recently, however, interest has focused on the preservation and restoration of wetlands in California, resulting in protection oriented policies and regulations. Currently, a complex network of government agencies is responsible for enforcing the many rules and regulations pertaining to wetland management and protection. Although a few statutes and directives are specific to wetlands, most of the regulatory influence over wetlands occurs indirectly through management or regulation of water quality and quantity, fish and wildlife, endangered species habitat, water navigation, floodplain control, public trust, coastal resources, and environmental land use regulations (Dennis and Marcus, 1984). However, even with the myriad of regulatory measures, wetland resources throughout the State do not receive equal protection. Moreover, implementation within and among government agencies is inconsistent. In

PROCEDURAL GUIDANCE FOR THE REVIEW OF WETLAND PROJECTS IN CALIFORNIA'S COASTAL ZONE

CHAPTER ONE

COASTAL DEVELOPMENT PERMIT REVIEW PROCESS

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IV. Wetland Identification and Delineation:

All coastal development permit applications proposing development in a wetland must include a map delineating the wetland area¹². A wetland delineation map identifies the wetland's location and pinpoints the boundary line between the wetland and adjacent upland area by determining the extent of one or more key wetland characteristics: hydrology, hydric soils, and hydrophytic vegetation. Other resources such as aerial photographs, national wetland inventory maps, and soil conservation maps may also prove useful in determining the location and size of a wetland. CCC staff must review the resulting delineation map and supporting information carefully, because the delineation results can vary depending on the wetland definition and delineation procedure used (see chapter three for more information).

In the coastal zone, the CCC, with assistance from the DFG, is responsible for determining the presence and size of wetlands subject to regulation under the Coastal Act. The local government also has a direct role in the identification and delineation process in areas with a certified local coastal program. Although the exact procedure has varied somewhat in the past, the DFG wetland definition and classification system (described in chapter three) is the delineation methodology generally followed by the CCC. For wetland development projects requiring Army Corps of Engineers (ACOE) review, the applicant may, in some cases, need to obtain two delineations, one for the coastal development permit, and another for the ACOE Section 404 permit.

A number of ecologically distinct wetland types occur in California, and these ecological differences can also affect the identification and delineation of wetlands. The subject of wetland ecology is discussed further in other parts (particularly chapter four) of this document, but some points relevant to this section are introduced here. In addition to the more traditional fresh- and salt-water marshes, the California coastal zone also contains a number of riparian areas, most often occurring as corridors along streams and rivers. Resource and regulatory agencies have found it hard to strictly define riparian areas as wetlands because of the often transient hydrology, the absence of hydric soils, and the