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Oversimplification: Value and Function: Wetland Mitigation Banking

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COMMENT

Oversimplification: Value and Function: Wetland Mitigation Banking

S. Scott Burkhalter

I. INTRODUCTION

> One morning . . . I rose early to see the sun come up. I was rewarded by moonflowers heavy with dew. They are white and as large as morning-glories. They close by day and open by night. I walked to the shore line to see what had been abroad. There were raccoon tracks on the beach. Not far offshore a small spit of sand showed. A mangrove had taken root there, sending down long tentacles from its branches that formed roots and gave the appearance of a tree on stilts. These roots were beginning to catch the debris of Florida Bay. Eventually that debris would accumulate, additional sand and marl would deposit, and in time a new key would be formed . . . Man tampered dangerously with this delicate balance . . . Settlers moved in and towns grew . . . [D]rainage canals to the oceans were dug; and farmers started tilling the rich peat land that had lain for centuries under the fresh waters . . . Endless acres of saw grass became dry. The great flights of birds went south, looking for water holes, and found only brackish water. The rich peat land shrunk and oxidized under the intense sun . . . The Everglades were dying.[1]

Historically, the destruction of wetlands in the United States has steadily increased from one generation to the next. The Environmental Protection Agency (EPA) has estimated that more than one million acres of U.S. wetlands were destroyed between 1985 and 1995.[2]

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1 WILLIAM O. DOUGLAS, MY WILDERNESS: EAST TO KATAHDIN 127-28, 135 (1961).

2 *See* John H. Cushman, Jr., *Nation's Wetlands Continue to Vanish; 1 Million Acres Disappeared From 1985 to 1995, U.S. Reports,* BALTIMORE SUN, Mar. 8, 1998, at B15. *But*

In an effort to prevent further destruction of these valuable resources, the federal government and the states have implemented legislation to protect wetlands or to at least minimize the adverse effects that people have on them.[3] One such mechanism to preserve wetlands is mitigation banking.

Mitigation banking is "a system in which the restoration, creation, enhancement, or preservation of wetlands is recognized by a regulatory agency as generating credits that may be used to compensate for multiple wetland impacts occurring generally within the same watershed as the banked wetlands."[4] Mitigation banking is a useful tool to preserve vast acres of wetlands and their inherent values.[5] However, mitigation banking may also be a simple device used by developers to offset development costs and circumvent accountability to the environment.[6]

Various techniques are used in the mitigation banking context to assess wetland characteristics, ranging from simple, limited indices to broad, ecologically comprehensive assessments.[7] A serious question exists concerning the consequences of using one technique as opposed to another. Specifically, current data suggests that the majority of mitigation banks use simple indices, the result of which is the potential loss of valuable ecosystems with their attendant contribution to the overall integrity of the natural environment.[8]

This comment questions the techniques used to value mitigation banking credits in mitigating unavoidable wetland loss and concludes that successful mitigation banking requires the use of broad, ecologically comprehensive methods for valuing mitigation credits to assure adequate compensation for destroyed or impacted wetlands in development projects.

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see VIRGINIA S. ALBRECHT & BERNARD N. GOODE, P.E., WETLAND REGULATION IN THE REAL WORLD ix, Appendix A (1994) (the actual loss of wetlands is often overstated).

3 *See* 33 U.S.C.A. § 1344 (West 1986 & Supp. 1998) (Section 404 Dredged and Fill Material Discharge Permit Program). *See infra* Section III.

4 ENVIRONMENTAL LAW INSTITUTE, NATIONAL WETLAND MITIGATION BANKING STUDY, WETLAND MITIGATION BANKING v (Institute for Water Resources (IWR) Report 94-WMB-6 Feb. 1994) [hereinafter ELI, MITIGATION BANKING STUDY]. The Institute for Water Resources has, and continues to conduct, a series of studies on wetland mitigation banking. The objectives of the studies are to evaluate the feasibility and appropriateness of wetland mitigation banks. *See id.* at 2.

5 *See id.* at 127; for example, Minnesota Wetland Habitat Mitigation Bank (1750 acres), South Carolina Department of Transportation (Bank) (1000 acres), Louisiana Department of Transportation and Development (Bank) (2944 acres), Fina LaTerre (7014 acres). *See id.* at 142-44.

6 Telephone Interview with Elizabeth White, EPA Region Nine, Water Resources, Coordinator on Mitigation Banking, U.S. Environmental Protection Agency (Apr. 7, 1998) [hereinafter White, Interview].

7 Generally, simple indices, narrowly tailored, and broadly tailored. *See* ELI, MITIGATION BANKING STUDY, *supra* note 4, at 63-64. *See infra* notes 270-345 and accompanying text.

8 *See infra* notes 281-97 and accompanying text.

Following this introduction, Section II recognizes that the destruction of wetlands continues at an alarming rate, and examines California's response to that destruction. Section III presents the federal government's response to the destruction of wetlands under the section 404 permit process. Section IV discusses the component of the section 404 permit process that requires permit applicants to compensate for unavoidable adverse impacts to wetlands occurring in the applicants' development projects. Section V discusses the concept of wetland mitigation banking and highlights the techniques used to value mitigation credits in compensating for unavoidable wetland loss. Section VI questions the various techniques used in valuing mitigation credits and suggests that an ecologically comprehensive method is needed to prevent further loss. Section VII compares the ethical considerations of using simple indices versus using ecologically comprehensive methods for assessing wetland values and functions. Section VIII suggests some solutions to valuing wetland function and values. Finally, Section IX concludes that wetland mitigation banking is a useful form of mitigating adverse impacts on wetland loss as a result of development, but that the success of mitigation banking depends upon using ecologically comprehensive methods of valuing mitigation credits.

II. THE DECLINING WETLANDS

The EPA estimates that more than one million acres of wetlands were destroyed between 1985 and 1995 and that 70,000 to 90,000 acres of wetlands on nonfederal, rural lands are lost each year in the United States.[9] As of 1993, only 10% of the total wetlands located in California prior to European settlement remained.[10]

Wetlands serve important public interests, including: 1) natural biological functions;[11] 2) wildlife sanctuaries; 3) drainage; 4)

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9 *See* Environmental Protection Agency, *U.S. Map: Wetland Loss Index-1780s-1990s* (last revised Oct. 27, 1998) <http://www.epa.gov/surf2/iwi/1998oct/ii7_usmap.html#why> [hereinafter EPA, *Wetland Loss*]. *See also* Cushman, *supra* note 2.

10 *See* CALIFORNIA STATE COASTAL CONSERVANCY, OPTIONS FOR WETLAND CONSERVATION: A GUIDE FOR CALIFORNIA LANDOWNERS 7 (1994) [hereinafter GUIDE] ("The Central Valley once had . . . over some 4 million acres; these have diminished to a mere 300,000 acres."); California Resources Agency, *Major Gains Achieved in State Wetlands Management; 78,000 acres of Additional High-Quality Wetlands; Unique Internet Site Unveiled, Added to "CERES"* (Jan. 24, 1996) <http://www.ceres.ca.gov/CRA/PressReleases/wetlands-site_012496.html> (in 1996 "a total of over 529,000 acres of high-quality permanent wetlands" existed in California). The California Resources Agency tracks existing wetlands from various federal and state agencies. The data (consisting of 273 projects) shows a significant increase in wetland acreage as a result of acquisition, restoration, enhancement, or creation. The largest increase was a result of wetland enhancement and the smallest increase derived from wetland creation. *See also* California Resources Agency, *Statewide Wetland Tracking* (modified Aug. 26, 1997) <http://ceres.ca.gov/wetlands/tracking.html>.

11 For example, food chain production, animal habitat, and spawning ground.

flood control; 5) erosion and storm damage barriers; 6) groundwater maintenance; 7) filtering systems;[12] and 8) aesthetic and recreational value.[13] According to the EPA and the United States Fish & Wildlife Service (USFWS), wetlands provide critical habitat for over one-third of all federally listed threatened or endangered species.[14] Similarly, "[b]etween 60 and 90% of all fish caught commercially . . . use wetlands as a spawning ground and nursery."[15]

As these factors suggest, the loss of our nation's wetlands has had a very negative impact on the environment. In response to this problem, the federal government and the states have developed strategies to encourage landowners to protect these valuable resources. Additionally, federal and state laws are becoming increasingly stringent, requiring permits prior to interfering with wetland values and functions in order to compel landowners to take a prospective approach to preserving wetlands.

In California, for example, the California Resources Agency has identified several strategies for the effective protection of wetlands, including: 1) conservation easements; 2) remainder interests; 3) management agreements; 4) limited development strategies; 5) leases; 6) transfer of full title; and 7) the voluntary landowner incentive program.[16]

A conservation easement is established when landowners transfer their rights to use property containing wetlands to a nonprofit conservation organization or government agency.[17] The nonprofit organization or government agency then ensures that the property is maintained in a manner such that its natural, agricultural, scenic or historic value is protected.[18] In return, the landowner may be compensated for the easement, receive a tax deduction, or simply enjoy the personal satisfaction gained from contributing to the preservation of a natural resource.[19]

A remainder interest in property is created when landowners transfer full or partial title to a nonprofit organization or government entity upon their death.[20] Similar to the conservation easement, the effect is the protection of the valuable resource conveyed

12 For example, water purification, and water quality.

13 *See* EPA, *Wetland Loss*, *supra* note 9. *See also* GUIDE, *supra* note 10, at 6; 33 C.F.R. § 320.4(b) (1998) (general policies for evaluating permit applications).

14 The Wildlife Society, *Wetlands, Mitigation and Mitigation Banking* (visited Feb. 18, 1998) <http://www.wildlife.org/wet.html>. *See also* EPA, *Wetland Loss*, *supra* note 9.

15 *Id. See, e.g.*, Steve LaRue, *Wetlands Vital to Fishing Industry, Report Claims*, SAN DIEGO UNION & TRIB., Oct. 1, 1993, at B3.

16 *See generally* GUIDE, *supra* note 10.

17 *See id.* at 9.

18 *See id.*

19 *See id.* at 9-10.

20 *See id.* at 10.

to the government entity or nonprofit organization.[21] In return for the dedication of a remainder interest, the landowner is entitled to a tax deduction in "proportion to the anticipated length of time [before the nonprofit organization or government entity] takes over the interest."[22]

A management agreement is an agreement between a nonprofit organization or government agency and the landowner.[23] Typically, such an agreement provides that the landowner will preserve or restore the natural integrity of the property in exchange for financial compensation and technical expertise.[24]

For landowners who wish to derive income from the use of their property, a limited development strategy may be available.[25] This strategy provides for partial development on the property, while protecting its more environmentally significant and sensitive areas.[26] In effect, the strategy places the land in trust, and simplifies and expedites the necessary development approvals.[27]

Leases to a nonprofit organization or government agency provide the landowner with a steady source of income while protecting the valuable resource.[28] Generally, leases last for 15 to 25 years and are negotiated between the landowner and the respective entity.[29]

The transfer of full title ensures the permanent protection of the natural resource.[30] The landowner transfers ownership by either sale or donation,[31] and is relieved of all tax and other liabilities for the property.[32]

Voluntary landowner incentive programs are designed to encourage the landowner to enter into a management agreement with a nonprofit organization or government agency for a financial or personal return on the "use value" of the property.[33] Such pro-

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21 *See id.*

22 *Id.*

23 *See id.* at 10-11.

24 *See id.*

25 *See id.* at 11. Two groups with experience with this technique are The Trust for Public Land and The State Coastal Conservancy. *See id.* at 12.

26 *See id.* at 11.

27 *See id.*

28 *See id.* at 12.

29 *See id.*

30 *See id.*

31 Donation entitles the landowner to a larger tax deduction than donation of a conservation easement. *See id.*

32 *See id.*

33 *See id.* at 15-27. Examples are: Agricultural Conservation Program, Water Bank Program, Wetland Reserve Program, Partners for Wildlife, California Waterfowl Habitat Program, Permanent Wetland Easement Program, Inland Wetland Conservation Program, Forest Stewardship Program/Stewardship Incentive Program, California Forest Improvement Program, and State Coastal Conservancy Resource Enhancement and Agricultural Programs.

grams are also structured to provide for long-term or permanent protection of the property.[34]

III. FEDERAL REGULATION OF WETLANDS: SECTION 404 PERMIT

If the landowner's property contains wetlands, and the owner seeks to develop the property, then the owner must apply for a permit under the Clean Water Act (CWA).[35] Congress enacted the CWA in 1972 pursuant to the Commerce Clause.[36] The Act's objective is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[37]

Under section 301(a) of the CWA, it is illegal for any person to discharge any pollutant into waters of the United States unless the discharge is made in compliance with applicable CWA provi-

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34 *See id* at 27-42. Examples are: Conservation Reserve Program, Wetland Reserve Program, Acquisition Program of the U.S. Fish and Wildlife Service, Wildlife Conservation Board Program, Inland Wetland Conservation Program, Permanent Wetland Easement Program, Debt Restructuring Program, Williamson Act (Land Conservation Act of 1965), State Coastal Conservancy Resource Enhancement and Agricultural Programs, Tahoe Conservancy Programs, Santa Monica Mountains Conservancy Programs, San Joaquin River Conservancy Programs, Coachella Valley Mountains Conservancy Programs, Land Trusts, and Open Space Districts.

35 *See* 33 U.S.C. § 1344(a) (1994) (permit required for discharge of dredged or fill material); 33 U.S.C.A. § 1344 (West 1986 & Supp. 1998). For a discussion on advising clients of potential changes in CWA jurisprudence see Daniel K. Slone & F. Paul Calamita, *Wetlands Reform: Is the Tide Turning?*, 10 PROB. & PROP. 7 (1996). *See generally* LYNN M. GALLAGHER & LEONARD A. MILLER, CLEAN WATER HANDBOOK 151-90 (2d ed. 1996); WILLIAM L. WANT, LAW OF WETLANDS REGULATION (1998). *See also* Virginia C. Veltman, Comment, *Banking on the Future of Wetlands Using Federal Law*, 89 NW. U. L. REV. 654 (1995) (with appropriate federal regulation, mitigation banking can be "an important tool in wetlands resource management." *Id.* at 688. In general, federal regulatory authority over the states and private property is derived from the Commerce Clause of the United States Constitution. U.S. CONST. art I, § 8, cl. 3 (Congress has the power "to regulate Commerce . . . among the several states. . . ."). Thus, like other federal environmental legislation, the provisions of the CWA stem from this authority. 33 U.S.C.A. §§ 1251-1387 (West 1986 & Supp. 1998). Historically, the Court held that the regulation of "navigable waters" is within the commerce power. Gibbons v. Ogden, 9 Wheat. 1 (1824). Today, the regulation of navigable waters is limited to the Court's interpretation of the commerce power. Elaine Bueschen, Comment, *Do Isolated Wetlands Substantially Affect Interstate Commerce?*, 46 AM. U. L. REV. 931 (1997) (with the use of scientific data, courts could determine that isolated wetlands substantially affect interstate commerce). *Id.* at 935. The current interpretation of the commerce power is reflected in *United States v. Lopez*, 514 U.S. 549, 559 (1995), where the Court held that a regulated activity must have a substantial effect on interstate commerce to be upheld. For additional discussion on the power to regulate wetlands pursuant to the commerce power see Lori J. Warner, *The Potential Impact of* United States v. Lopez *on Environmental Regulation*, 7 DUKE ENVTL. L. & POL'Y F. 321 (1997) (endangered species and wetland regulation will survive *Lopez* analysis); J. Blanding Holman IV, Note, *After* United States v. Lopez*: Can the Clean Water Act and the Endangered Species Act Survive Commerce Clause Attack?*, 15 VA. ENVTL. L.J. 139 (1995) (habitat modification and isolated wetland provisions of Endangered Species Act are susceptible to more stringent review under *Lopez*); Jonathan G. Hieneman, *The Shrinking Reach of the Commerce Power: Is Wetland Jurisdiction in Danger?*, 10 J. NAT. RESOURCES & ENVTL. L. 341 (1995) (debate between wetland jurisdiction and commerce power).

36 U.S. CONST. art I, § 8, cl. 3.

37 33 U.S.C.A. § 1251(a) (West 1986 & Supp. 1998).

sions.[38] One such provision is 33 U.S.C. § 1344, commonly referred to as the section 404 Dredged and Fill Material Discharge Permit Program. The U.S. Army Corps of Engineers (Corps) has the primary authority to determine whether a particular activity requires a permit.[39] Consequently, the federal wetlands permit program is run primarily by the Corps.[40] Under section 404,[41] however, the EPA retains ultimate authority to regulate the discharge of pollutants,[42] including the power to veto permits.[43] The EPA may veto section 404 permits for disposal at specific sites if there would be an unacceptably adverse effect on environmental resources.[44] However, this power has been used sparingly by the EPA.[45] In 1989, the EPA and the Corps entered into a Memorandum of Agreement (MOA) which limited the EPA's authority.[46] In essence, the EPA makes only jurisdictional determinations when a permit involves important policy or technical issues; the Corps retains all other jurisdictional authority.[47]

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38 *See* 33 U.S.C. § 1311(a) (1994) (compliance with CWA provisions includes §§ 1312, 1316, 1317, 1328, 1342, 1344).

39 33 U.S.C. § 1344(a) (1994).

40 The Corps' role in issuing § 404 permits is not exclusive. Other federal agencies play a role in the federal regulation of wetlands; *e.g.*, United States Fish & Wildlife Service (USFWS) (comments on § 404 permits), National Marine Fisheries Service (MFS) (comments on § 404 permits), Natural Resources Conservation Service (NRCS) (Swampbuster program). *See* Mark A. Chertok, *Federal Regulation of Wetlands*, SB91 ALI-ABA 859, 866-67 (1997); Margaret N. Strand, *Wetlands: Avoiding the Swamp Monster*, *in* ENVIRONMENTAL ASPECTS OF REAL ESTATE TRANSACTIONS 603, 604-05 (James B. Witkin ed., 1995). Enforcement authority is vested in both the EPA and the Corps, 33 U.S.C.A. §§ 1319, 1344(s) (West 1986 & Supp. 1998).

41 33 U.S.C.A. § 1344 (West 1986 & Supp. 1998) (dredged and fill permit program). *See also* Lawrence R. Liebesman, *The Section 404 Dredged and Fill Material Discharge Permit Program*, *in* THE CLEAN WATER ACT HANDBOOK 136-82 (Parthenia B. Evans ed., 1994).

42 *See* 33 U.S.C.A. § 1342(a) (West 1986 & Supp. 1998).

43 *See* 33 U.S.C. § 1344(c) (1994).

44 *See id.*; Bersani v. EPA, 850 F.2d 36 (2d Cir. 1988), *cert. denied sub nom.* Robichaud v. EPA, 489 U.S. 1089 (1989) (upholding EPA's veto of § 404 permit issued by Corps for construction of a shopping mall). *See also* Chertok, *supra* note 40, at 865 (authority has been used sparingly); 33 U.S.C. § 1344(g) (1994) (EPA may approve delegation of § 404 permitting to states).

45 *See* Chertok, *supra* note 40, at 865. The author also argues that in recent years the EPA veto power has become controversial. *See id.* at 897. The appropriate standard of review under this veto power is "arbitrary and capricious." *See* James City County v. EPA, 12 F.3d 1330, 1338 n.4, 1339 (4th Cir. 1993) (EPA action under statute governing permits for dredged or fill material . . . is reviewable under "arbitrary and capricious" standard). By 1992, the EPA had exercised its veto authority 11 times. *See* Liebesman, *supra* note 41, at 153-56.

46 *See* Memorandum of Agreement Between the Department of the Army and the Environmental Protection Agency Concerning the Determination of the Geographic Jurisdiction of the Section 404 Program and the Application of the Exemptions Under Section 404(f) of the Clean Water Act, 58 Fed. Reg. 4995 (1993).

47 *See* Chertok, *supra* note 40, at 871.

A. Defining Wetlands

Under the federal wetlands program, a section 404 permit must be issued for the discharge of dredged or fill material into the navigable waters at specified disposal sites.[48] Jurisdiction under the section 404 program extends to all navigable waters of the United States.[49] "Navigable waters" are defined as "the waters of the United States, including the territorial seas."[50] The Corps and the EPA have broadly defined navigable waters to include wetlands adjacent to the waters of the United States,[51] artificially created wetlands,[52] and wetlands physically separated from other waters or isolated wetlands.[53] The regulations thus provide that the CWA applies to 1) all traditional navigable waters;[54] 2) all interstate waters, including interstate wetlands; 3) wetlands adjacent to other waters; and 4) all waters, including

48 *See* 33 U.S.C. § 1344(a) (1994); "Discharge of a pollutant" means, "any addition of any pollutant to navigable waters from a point source. . . ." 33 U.S.C. § 1362(12) (1994). Dredged or fill material "means material that is excavated or dredged from the waters of the United States." 33 C.F.R. § 323.2(c) (1998). The regulations broadly define fill material as "any material used for the primary purpose of replacing an aquatic area with dry land or of changing the bottom elevation of any waterbody." 33 C.F.R. § 323.2(e) (1998). Furthermore, Section 401(a) of the CWA requires that any applicant for a federal permit, who conducts "any activity . . . which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the state in which the discharge originates or will originate . . ." and no "permit shall be granted until the certification . . . has been obtained or has been waived . . ." 33 U.S.C. § 1341(a)(1) (1994). An example of discharging fill material occurred in United States v. Banks, 115 F.3d 916 (11th Cir. 1997). A landowner who bulldozed his property for farming was considered to be discharging fill material into a wetland. In contrast, the "placement of pilings in waters of the United States for piers, wharves, and an individual house on stilts generally does not have the effect of a discharge of fill material." 58 Fed. Reg. 45,008, 45,038 (1993) (to be codified at 33 C.F.R. pt 232.2). *But see* Fox Bay Partners v. United States Corps of Eng'rs, 831 F. Supp. 605 (D. Ill. 1993) (Corps denied application for permit for construction of marina on river because the project would contribute to the significant degradation of the aquatic system of the United States).

49 *See* Liebesman, *supra* note 41, at 136-37.

50 33 U.S.C. § 1362(7) (1994). *See* NRDC v. Callaway, 392 F. Supp. 685, 686 (D.D.C. 1975) ("Congress [intended] 'the waters of the United States, including the territorial seas' [to provide federal jurisdiction] to the maximum extent permissible under the Commerce Clause of the Constitution."); United States v. Phelps Dodge Corp., 391 F. Supp. 1181, 1187 (D. Ariz. 1975) ("[T]he scope of [CWA] control must extend to all pollutants which are discharged into any waterway [which] could reasonably end up in any body or water . . . in which there is some public interest.").

51 *See* 33 C.F.R § 328.3(a) (1998), 40 C.F.R. § 230.3(s) (1998). *See also* 33 C.F.R. § 328.2(c) (1998) (adjacent wetlands are defined by three parameters: soils, hydrology, vegetation); United States v. Riverside Bayview Homes, Inc., 474 U.S. 121 (1985) (adjacent wetlands play an important role in protecting and enhancing water quality). The EPA possesses the ultimate authority to define the existence and extent of wetlands. *See* Chertok, *supra* note 40, at 866.

52 *See, e.g.*, Leslie Salt Co. v. United States, 55 F.3d 1388 (9th Cir.), *cert. denied sub nom.* Cargill, Inc. v. United States, 516 U.S. 955 (1995) (artificially created pond); Chertok, *supra* note 40, at 874 ("All waters" may include artificial ponds, lakes or reservoirs.). *Id.*

53 *See* United States v. Riverside Bayview Homes, Inc., 474 U.S. 121 (1985).

54 This definition includes oceans, bays, and rivers.

wetlands, the use, degradation, or destruction of which could affect interstate commerce.[55]

B. Wetland Delineation

Generally, the Corps and the EPA define wetlands as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support . . . a prevalence of vegetation typically adapted for life in saturated soil conditions."[56] Although they use the same definition, "the Corps and EPA often do not agree upon whether a given area is a wetland."[57] In addition, a multidisciplinary approach has developed for assessing whether an area is a wetland; the various agencies have developed different methodologies for making the determination.[58] As a practical matter, the approach used by federal agencies and most states is set forth in the 1987 delineation manual developed by the Corps.[59]

In 1989, the Corps, EPA, USFWS and the Soil Conservation Service (SCS) adopted a "joint federal manual" to identify and delineate wetlands.[60] However, the 1989 manual is considered to constitute a supplement to the 1987 Corps Manual because the 1989 version did not undergo the requirements of Administrative Procedure Act (APA) rulemaking.[61]

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55 *See* Strand, *supra* note 40, at 606; 33 C.F.R. § 328.3 (1998). "All waters" would include isolated wetlands. However, the federal government's authority to regulate isolated wetlands is still unsettled. *See* United States v. Wilson, 133 F.3d 251 (4th Cir. 1997) (regulation's definition of wetland that could affect interstate commerce held invalid); Hoffman Homes, Inc. v. EPA, 999 F.2d 256 (7th Cir. 1993) (isolated wetland having no source of moisture other than rainfall outside jurisdiction of EPA under CWA). *Compare* Leslie Salt Co. v. United States, 55 F.3d 1388 (9th Cir.), *cert. denied sub nom.* Cargill, Inc. v. United States, 516 U.S. 955 (1995) (isolated wetlands used by migratory birds were within scope of CWA). *See also* Edward Alburo Morrissey, *The Jurisdiction of the Clean Water Act Over Isolated Wetlands: The Migratory Bird Rule*, 22 J. LEGIS. 137 (1996) (Congress should codify migratory bird rule); Michael Bablo, Note, Leslie Salt Co. v. United States: *Does the Recent Supreme Court Decision in* United States v. Lopez *Dictate the Abrogation of the "Migratory Bird Rule"?*, 14 TEMP. ENVTL. L. & TECH. J. 277 (1995) ("tenuous tie between migratory birds and interstate commerce does not satisfy the tests of Commerce Clause enunciated in *Lopez*"). *Id.* at 278. *See also* James H. Levine, Note, Leslie Salt Co. v. United States: *The Ninth Circuit Revisits Federal Jurisdiction Over Isolated Wetlands*, 9 TUL. ENVTL. L.J. 167 (1995) (Corps must find substantial evidence that migratory birds use isolated wetlands before asserting jurisdiction); John A. Leman, Comment, *The Birds: Regulation of Isolated Wetlands and the Limits of the Commerce Clause*, 28 U.C. DAVIS L. REV. 1237 (1995) (Congress cannot regulate isolated wetlands based on potential use by migratory birds). *Compare* Marni A. Gelb, Note, Leslie Salt Co. v. United States: *Have Migratory Birds Carried the Commerce Clause Across the Borders of Reason?*, 8 VILL. ENVTL. L.J. 291 (migratory bird rule was a reasonable interpretation of the CWA).

56 33 C.F.R. § 328.3(b) (1998); 40 C.F.R. § 230.3(t) (1998).

57 Liebesman, *supra* note 41, at 138.

58 *See id.* The agencies include the EPA, Corps, USFWS, and Soil Conservation Service (SCS).

59 *See id.*

60 *See id.*

61 *See id.* at 139. For a comparison between the 1987 and 1989 manual see *id.* at 140.

Wetlands are delineated according to the landowner's individual parcels or property.[62] Historically, federal agencies have used three factors to delineate wetlands: hydrology, hydrophytic vegetation, and hydric soils.[63] The 1989 manual requires that all three technical criteria be satisfied for a particular site to warrant the "wetland" label, "but describes methods for determining wetlands where one or more of the criteria are missing, especially for disturbed or difficult areas."[64] In reality, these factors or characteristics may be difficult to assess.[65] A trained professional may have to determine where these wetland characteristics begin and cease.[66] Often, the trained professional is hired by the developing landowner,[67] because the Corps and the EPA are not required to provide a wetland delineation to a property owner on demand.[68] This private consulting performed at the bequest of the landowner is encouraged by the Corps to save time,[69] to designate "safe" areas for immediate construction,[70] and to inform the landowner whether he or she qualifies for an exemption or general permit.[71] The professional's determination is, however, subject to Corps' approval.[72]

Generally, "sufficient hydrology exists when there is inundation of the subject area, either by surface flow or groundwater, for a specified percentage of the growing season."[73] This test may be

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62 *See* Strand, *supra* note 40, at 609.

63 *See* Liebesman, *supra* note 41, at 138. Factors are based on the 1989 Delineation Manual. *See id. See also* United States v. Riverside Bayview Homes, Inc., 474 U.S. 121 (1985).

64 Liebesman, *supra* note 41, at 139. An example of a disturbed area is prior converted cropland. "Prior converted cropland is not considered wetlands because the water regime has been substantially altered." *Id.*

65 *See id.* at 138.

66 *See* Strand, *supra* note 40, at 609.

67 *See id.*

68 *See id.*

69 Corps offices may be too understaffed to perform delineation upon demand. *See id.*

70 *See id.* The landowner should exercise caution in developing sites without Corps approval. The Corps retains the ultimate authority to determine whether the developed property requires a permit. *See generally id.*

71 *See id. See* MARK S. DENNISON, WETLAND MITIGATION: MITIGATION BANKING AND OTHER STRATEGIES FOR DEVELOPMENT AND COMPLIANCE 107-08 (1997) ("[A]pplicants for Section 404 permits are encouraged to arrange preapplication meetings with the Army Corps, other federal agencies, and state and local governmental authorities. Such meetings are crucial to applicants because they provide a background in specific application procedures which may vary from site to site, and often indicate to the applicant what specific mitigation procedures, monitoring requirements, etc. may be considered acceptable."). *Id.* at 107; Telephone Interview with Dr. Robert W. Brumbaugh, Policy Analyst, Institute for Water Resources, U.S. Army Corps of Engineers (Feb. 2, 1998) (beneficial for the applicant to consult early with the Corps) [hereinafter Brumbaugh, Interview].

72 *See* Strand, *supra* note 40, at 609. In some instances the Corps will accept a privately consulted delineation without a site review (office review). *See id.*

73 Chertok, *supra* note 40, at 868.

demonstrated by the presence of hydrophytic vegetation.[74] Likewise, hydric soils can be determined using a field comparison of soil color at certain depths matched with soil color reference charts.[75] The soil charts "reflect the anaerobic conditions typical of water-saturated soils."[76]

C. Wetland Exemptions

If the property in question meets the delineation criteria, it is considered a wetland.[77] Unless the wetland is statutorily exempt from the CWA, the landowner must apply for a permit to discharge dredged or fill material.[78]

The exemptions under the CWA are enumerated in 33 U.S.C. § 1344(f).[79] Some examples of exemptions under the CWA are: normal farming, silviculture, ranching, emergencies, maintenance, and temporary sediment basins.[80] The courts have tended to construe the exemptions narrowly;[81] therefore, a permit will typically be required. Two types of permits are available to the landowner: a general, nationwide permit (NWP) or an individual permit.[82]

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74 An area has hydrophytic vegetation when, "under normal circumstances, more than 50 percent of the dominant species are either obligate wetland plants, facultative wetland plants, or facultative plants." Chertok, *supra* note 40, at 869. *See* Liebesman, *supra* note 41, at 139.

75 *See* Liebesman, *supra* note 41, at 139.

76 Chertok, *supra* note 40, at 869.

77 *See supra* notes 56-76 and accompanying text.

78 *See* Strand, *supra* note 40, at 613.

79 33 U.S.C. § 1344(f) (1994).

80 *See id.*

81 *See* Strand, *supra* note 40, at 612. *See, e.g.*, United States v. Akers, 785 F.2d 814, 819 (9th Cir. 1986), *cert. denied*, 479 U.S. 828 (1986); United States v. Huebner, 752 F.2d 1235, 1240-41 (7th Cir.), *cert. denied*, 474 U.S. 817 (1985); Avoyelles Sportsmen's League, Inc. v. Marsh, 715 F.2d 897, 925 n.44 (5th Cir. 1983).

82 "[T]he Secretary may, after notice and opportunity for public hearing, issue general permits on a State, regional, or nationwide basis for any category of activities involving discharges of dredged or fill material if the Secretary determines that the activities in such category are similar in nature, will cause only minimal adverse environmental effects when performed separately, and will have only minimal cumulative adverse effects on the environment." 33 U.S.C. § 1344(e). "The term 'individual permit' means a Department of the Army authorization that is issued following a case-by-case evaluation of a specific project involving the proposed discharge(s) in accordance with the procedures of this part and 33 CFR Part 325 and a determination that the proposed discharge is in the public interest pursuant to 33 CFR Part 320." 33 C.F.R. § 323.2(g) (1998). "The term 'general permit' means a Department of the Army authorization that is issued on a nationwide or regional basis for a category or categories of activities when: (1) Those activities are substantially similar in nature and cause only minimal individual and cumulative environmental impacts; or (2) The general permit would result in avoiding unnecessary duplication of regulatory control exercised by another Federal, state, or local agency provided it has been determined that the environmental consequences of the action are individually and cumulatively minimal." 33 C.F.R. § 323.2(h) (1998).

D. Nationwide Permits

The Corps will issue an NWP for development projects that will have only minimal adverse effects on the impacted wetland.[83] This process saves the Corps considerable time in evaluating mitigation projects compared to issuing thousands of individual permits to developer applicants.[84]

Currently, there are 39 NWPs available with one reserved.[85] NWPs are prior-issued by rule;[86] after a project meets the requisite conditions of an NWP, the permit is considered to have already been issued.[87] NWPs are commonly used in California.[88] However, landowners who believe they meet the criteria of an NWP must carefully review the conditions.[89] Regulations authorize the Corps to modify, suspend, or revoke NWPs for specific activities, and a district (regional authority) may impose its own additional conditions.[90] In addition, "certain NWPs require predischarge notification (PDN) to the Corps of information regarding delineation of wetlands and compliance with other conditions."[91] If, after reviewing the PDN, the district engineer determines the impacts are more than minimal, the Corps may require mitigation to allow the project to continue.[92] Finally, an activity will not be eligible to operate under an NWP if the activity affects: 1) navigation, erosion, siltation, or aquatic life more than minimally; 2) species listed as endangered or designated critical habitat; 3) properties eligible for listing on or listed on the National Register of Historic Places; 4) tribal properties; or 5) designated wild and scenic rivers.[93] In these instances, an individual permit will be required.

E. Individual Permits

If a landowner's property does not meet a statutory exemption or an NWP, then an application must be filed for an individual

83 *See* William T. Gorton, *Replacing Nationwide Permit 26: The Next Battle Over Wetlands Development*, 18 CONSTRUCTION LAW. 43, 44 (1998).

84 *See id.*

85 *See* 33 C.F.R. § 330.4 (1998). It should also be noted that NWP 26—Headwaters and Isolated Waters Discharges—is the most controversial (allows unregulated development to small parcels of property); Strand, *supra* note 40, at 613-14. NWP 26 is the most commonly used NWP in California. *See* PAUL D. CYLINDER ET AL., WETLANDS REGULATION: A COMPLETE GUIDE TO FEDERAL AND CALIFORNIA PROGRAMS 71 (1995).

86 *See* CYLINDER, *supra* note 85, at 66.

87 *See id.*

88 *See id.* at 67.

89 *See id.*; Strand, *supra* note 40, at 613.

90 *See* 33 C.F.R. § 330.1(d) (1998).

91 CYLINDER, *supra* note 85, at 67.

92 *See* Liebesman, *supra* note 41, at 159.

93 *See* CYLINDER, *supra* note 85, at 69.

permit.[94] The permit process may be expensive and time-consuming.[95] For example, the process involves public notice, mitigation, and potential multi-agency involvement.[96]

1. Public Interest Review Process

The section 404 individual permit process "consists of steps of determinations and considerations."[97] The first step in the Corps' determination of whether or not to issue a permit is the Corps' public interest review process,[98] which requires public notice and comment.[99] The process subjects the Corps' decision to scrutiny; thus, the process is a delicate one.[100] The factors the Corps considers include: 1) the probable impacts, including cumulative impacts on the public interest and its intended use;[101] 2) the relative extent of public and private need for the proposed project; 3) the reasonable alternative locations and methods to accomplish the proposed project (mitigation); 4) a weighing of the detrimental and beneficial effects of the project; 5) the overall effect on the wetland; 6) the views of the USFWS and the National Marine and Fisheries Service (NMFS) concerning fish and wildlife impacts; 6) consideration of property ownership;[102] and 8) other federal, state, or local requirements.[103] No single factor controls the outcome of the public interest review process.[104]

2. EPA Guidelines

The second step in the permit process involves application of the EPA's section 404(b)(1) Guidelines.[105] Under the Guidelines,[106] the Corps must first determine if there is a practicable alternative to the discharge of dredged or fill material having an adverse impact on the environment.[107] The Corps considers the costs (economics), technology, and the project's logistics in making its

94 "The term 'individual permit' means a Department of the Army authorization that is issued following a case-by-case evaluation of a specific project involving the proposed discharge(s) in accordance with the procedures of this part and 33 CFR Part 325 and a determination that the proposed discharge is in the public interest pursuant to 33 CFR Part 320." 33 C.F.R. § 323.2(g) (1998); *see supra* note 82 and accompanying text.

95 *See* Strand, *supra* note 40, at 614.

96 *See id.*

97 Liebesman, *supra* note 41, at 146.

98 *See id.*

99 *See* 33 C.F.R. § 325.3 (1998).

100 *See* Liebesman, *supra* note 41, at 147.

101 *See id.* at 146. Other factors include economics, aesthetics, general environmental concerns, historic properties, and water supply. *See id.*

102 For example, the right to reasonable private use, property protection, access, and the right to exclude others.

103 *See* 33 C.F.R. § 320.4(j) (1998).

104 *See* Liebesman, *supra* note 41, at 146.

105 *See* 40 C.F.R §§ 230-230.80 (1998).

106 *See id.*

107 *See* 40 C.F.R. § 231.1(c) (1998). *See* Chertok, *supra* note 40, at 890-91.

determination.[108] The burden is on the applicant to demonstrate that an alternative is "not practicable."[109] Even if the applicant meets the burden of clearly demonstrating that no practicable alternative exists,[110] the application still may be denied if discharging of the dredged or fill material violates other federal or state laws or contributes "to the significant degradation of the waters of the United States."[111] "Significant degradation" includes significant adverse effects on human health or welfare, ecosystems, biodiversity, recreation, aesthetics, and economic values.[112] The Corps' findings of significant degradation are based on appropriate factual determinations, evaluations, and tests.[113] The Corps further requires that "no discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem."[114]

3. Sequencing

In 1990, an MOA between the Corps and EPA standardized section 404(b)(1) into a three-step sequencing process for evaluating permit applications.[115] The stated purpose of the MOA was to "improve consistency in the implementation of the Guidelines and to eliminate misunderstanding and confusion on the part of agency personnel."[116] The process consists of: 1) avoidance, 2) minimization, and 3) compensation.[117] The first step, avoidance, requires that the applicant demonstrate that there are no practicable alternatives to the project and that the impacts cannot be avoided.[118] The second, minimization, requires that appropriate project modifications and permit conditions be met to minimize the adverse impacts.[119] The third, compensation, requires appro-

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108 *See* 40 C.F.R. § 230 (1998).

109 *See* 40 C.F.R. § 230.10(a)(3) (1998) ("[P]racticable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise.").

110 *See id.*

111 40 C.F.R. § 230.10(b)-(c) (1998). *See* Chertok, *supra* note 40, at 894.

112 *See* Chertok, supra note 40, at 894.

113 *See id.*

114 40 C.F.R. § 230.10(d) (1998).

115 *See* Memorandum of Agreement Between the Department of the Army and the Environmental Protection Agency Concerning the Clean Water Act Section 404(b)(1) Guidelines, 55 Fed. Reg. 9210 (1990) [hereinafter MOA].

116 *Id.* at 9210.

117 *See id.* at 9211.

118 *See id.* at 9212. In National Wildlife Federation v. Whistler, 27 F.3d 1341, 1342-43 (8th Cir. 1994), the Eighth Circuit upheld a section 404(b) permit for a planned housing development's boat access to a nearby river. In granting the permit, the Corps reasoned that no practicable alternative existed in the project's proposal and that the boat access could not be located elsewhere.

119 *See* Fund for Animals, Inc. v. Rice, 85 F.3d 535, 544, 548 (11th Cir. 1996), where the Eleventh Circuit granted a county's motion for summary judgment on a challenge to the

priate and practicable compensatory mitigation for unavoidable adverse impacts which remain after all minimization measures have been exercised.[120] Compensation may take the form of on-site mitigation, off-site mitigation, or mitigation banking.[121] Compensatory mitigation is discussed in Section IV.

4. Choosing Appropriate Mitigation

In practice, the choice of mitigating adverse impacts to wetlands requires an evaluation of individual wetland functions and values.[122] Some of the goals of mitigation include: enhancing, creating, or restoring wildlife and fisheries habitat; protecting water quality;[123] providing flood protection; stabilizing shorelines; facilitating groundwater recharge; and protecting socioeconomic values, such as recreation and aesthetics.[124]

In determining which goals are appropriate for a given project, all pertinent functions and values should be considered.[125] In addition, multiple objectives are often desired to afford the greatest protection to the affected wetland.[126] The objectives may not always be reconcilable with each other, such as habitat conservation versus aesthetic value.[127] In such a case, clearly identifying the objectives in a proposed mitigation plan is necessary to yield optimal results.[128]

"Successful mitigation" is determined by the ability of the mitigated wetland to provide the biological, hydrological, and biogeochemical functions of the original wetland or emulated wetland.[129] These functions can be evaluated based on observable characteristics within the compensated wetland. The characteristics of a successful mitigation project include: 1) basic structural

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proposed construction of a municipal landfill. In reaching its conclusion, the circuit court recognized that the county minimized the proposed landfill's adverse impact on an isolated wetland by scaling down its original design from 120 acres to 74 acres.

120 *See* MOA, *supra* note 115, at 9212. In Friends of the Earth v. Hintz, 800 F.2d 822, 837-39 (9th Cir. 1986), the Ninth Circuit upheld the Corps' decision to issue a section 404 permit authorizing a logging company to discharge fill material into a wetlands area. In granting the permit, the Corps secured a mitigation agreement whereby the developer would compensate for the unavoidable loss of wetlands in dispute by restoring other property owned by the developer back to wetlands.

121 *See* MOA, *supra* note 115, at 9212.

122 *See* CYLINDER, *supra* note 85, at 110.

123 For example, sediment trapping, chemical detoxification, nutrient removal, and nutrient cycling. *See id.*

124 *See id.*

125 *See id.*

126 *See id.*

127 *See id.*

128 *See id.*

129 *See* Watersheds, *Successful Mitigation*, (visited Feb. 18, 1998) <http://h2osparc.wq.ncsu.edu/info/wetlands/mitsucc.html> [hereinafter Watersheds]. *See also* Michael G. Le Desma, Note, *A Sound of Thunder: Problems and Prospects in Wetland Mitigation Banking*, 19 COLUM. J. ENVTL. L. 497, 513-14 (1994); 28 C.F.R. § 63.6 (1998).

considerations, such as landscape and contour design; 2) a self-perpetuating hydroperiod similar to that of the emulated wetland; 3) successful colonization of wetland vegetation; 4) chemical and physical soil properties similar to the emulated wetland; and 5) diversity, density, and biomass of animal species similar to the emulated wetland.[130] Successful mitigation thus requires that the wetland's ecological characteristics be as good as that which was impacted or as good as a model wetland possessing high values and functions. Furthermore, these characteristics or criteria are interdependent; a failure in one can lead to a failure in others over time.[131]

F. Impact of Other Federal Legislation on the Section 404 Permit Process

Other federal legislation works in connection with, or is mandated in the section 404 permit process. For example, under the National Environmental Policy Act (NEPA),[132] the Corps is required to prepare an Environmental Assessment (EA) to determine if the proposed project will have a significant effect on the quality of the human environment.[133] If such an effect is found, then an Environmental Impact Statement (EIS) is required.[134] If there will not be a significant effect, then the Corps prepares a Finding of No Significant Impact (FONSI).[135]

The Coastal Zone Management Act (CZMA) requires that each applicant receive approval from the appropriate coastal zone agency if the proposed discharge is within a coastal zone as defined under the Act.[136] The Act requires that each applicant demonstrate that the proposed discharge is consistent with the state's Coastal Management Program.[137]

Under section 7 of the Endangered Species Act (ESA), the Corps is required to ensure that the permitted activity "is not likely to jeopardize . . . any endangered or threatened species."[138]

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130 *See* Watersheds, *supra* note 129; DAVID SALVESEN, WETLANDS MITIGATING AND REGULATING DEVELOPMENT IMPACTS 136-37 (2d. ed. 1994) (process of successful mitigation requires consultation with the Corps, the use of experienced crews, and a detailed mitigation plan).

131 *See* Watersheds, *supra* note 129.

132 42 U.S.C.A. §§ 4321-4370d (West 1994 & Supp. 1998).

133 *See* 33 C.F.R. § 230 (1998) (procedures for implementing NEPA); 40 C.F.R. § 1508.9 (1998).

134 *See* 40 C.F.R. § 1508.11 (1998).

135 *See* 40 C.F.R. § 1503.13 (1998); 42 U.S.C.A. §§ 4321-4370d (West 1994 & Supp. 1998) (NEPA requirements).

136 *See* 16 U.S.C.A. §§ 1451-1464 (West 1985 & Supp. 1998).

137 *See* 33 C.F.R. § 325.2(b)(2) (1997).

138 16 U.S.C. § 1536 (1994 & Supp. III 1997).

Thus, an applicant's permit must be denied if "it is determined that such [a result is] likely."[139]

The National Historic Preservation Act (NHPA) requires the Corps to consult with the Advisory Counsel on Historic Preservation (Council) if the proposed project may affect properties listed on the National Register of Historic Places.[140] The Council may request the Secretary "to provide a report to the Council detailing the significance of the property, describing the effects of the undertaking on the property, and recommending measures to avoid, minimize, or mitigate adverse effects."[141]

The Fish and Wildlife Coordination Act (FWCA) requires the Corps to consult with the USFWS, the NMFS, and state wildlife agencies on the proposed effect of the project on wildlife and their habitat.[142] However, the Corps is not required to comply with the Agencies' recommendations.[143]

G. Enforcement

Once the Corps considers all the relevant factors discussed above, a final permit is issued, subject to the EPA's veto authority.[144] However, the Corps, the EPA, and private citizens still have the opportunity to ensure that the applicant is complying with the permit's requirements through various enforcement mechanisms.[145] Such mechanisms are also available in instances where the landowner has failed to properly acquire a section 404 permit and has improperly filled a wetland.[146]

There are four types of enforcement mechanisms available under the CWA: administrative, civil, criminal, and citizen suits.[147] They are designed to penalize landowners for the illegal filling of wetlands or improper compliance with section 404 permits.[148]

Section 309 of the CWA empowers the EPA to issue compliance orders for the illegal discharge of fill material into wetlands.[149] A compliance order may require the violator to stop the illegal filling of wetlands and order corrective action such as resto-

139 Liebesman, *supra* note 41, at 152. *See* Tennessee Valley Auth. v. Hill, 437 U.S. 153 (1978) (environmental groups brought action to prevent completion of Tellico Dam because the project had an adverse impact on the habitat of the endangered snail darter).

140 *See* 36 C.F.R. § 800.10 (1998).

141 36 C.F.R. § 800.10(b) (1998).

142 *See* 16 U.S.C.A. § 662 (West 1985 & Supp. 1998).

143 *See* 16 U.S.C. § 662 (1994).

144 *See* 33 U.S.C. § 1344(j) (1994).

145 *See* 33 U.S.C.A. §§ 1319, 1344, 1365 (West 1986 & Supp. 1998). *See also infra* notes 147-61 and accompanying text.

146 *See* 33 U.S.C. § 1362(5) (1994). *See also infra* notes 147-61 and accompanying text.

147 *See* 33 U.S.C.A. §§ 1319, 1344, 1365 (West 1986 & Supp. 1998).

148 *See* 33 U.S.C.A. § 1365 (West 1986 & Supp. 1998).

149 *See* 33 U.S.C.A. § 1344(s) (West 1986 & Supp. 1998); 33 U.S.C. § 1319(a) (1994).

ration or mitigation.[150] The CWA also authorizes the Corps and the EPA to assess administrative penalties for violations under state issued permits and permits authorized under the CWA.[151]

Similar to administrative penalties, the CWA authorizes civil penalties under section 309(c) for failing to comply with a section 404 permit.[152] Civil penalties can be severe and are designed to deter the violator from further illegal action.[153]

Criminal enforcement is allowed under the CWA for negligent and knowing violations.[154] A negligent violation carries a minimum $2500 fine and maximum $25,000 penalty per day for each violation.[155] The violator may also be imprisoned for up to one year.[156] A knowing violation carries a minimum fine of $5000 and maximum fine of $50,000 per day or for each violation.[157] Additionally, the violator may be imprisoned for not more than three years.[158] If the landowner knowingly commits a second violation, the maximum fine is $100,000 per day for each violation, or the violator may be imprisoned for not more than six years.[159]

Section 505 of the CWA authorizes citizen suits against "any person" for violating any provision of the CWA, including the illegal discharge of fill material.[160] The provision also authorizes a suit against the Administrator of the EPA for failure to perform any act or duty under the CWA which is not discretionary.[161]

H. Remedies

If the Corps denies a permit application, the applicant can 1) challenge the permit denial in a federal district court, or 2) prove that the denial of the permit constituted a "taking" under the Fifth Amendment to the United States Constitution.[162]

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150 *See id. See also* Liebesman, *supra* note 41, at 162.

151 *See* 33 U.S.C.A. § 1319(g) (West 1986 & Supp. 1998).

152 *See* 33 U.S.C. § 1319(b) (1994).

153 *See* 33 U.S.C.A. § 1319(d) (West 1986 & Supp. 1998) (penalties can be assessed at $25,000 per day for each violation).

154 *See* 33 U.S.C.A. § 1319(c) (West 1986 & Supp. 1998).

155 *See* 33 U.S.C.A. § 1319(c)(1)(B) (West 1986 & Supp. 1998).

156 *See id.*

157 *See* 33 U.S.C.A. § 1319(c)(2)(B) (West 1986 & Supp. 1998).

158 *See id.*

159 *See id.*

160 *See* 33 U.S.C. § 1365 (1994 & Supp. III 1997).

161 *See* 33 U.S.C. § 1365(a)(2) (1994 & Supp. III 1997).

162 For a thorough discussion on "takings" jurisprudence and the effect upon wetlands see Charles H. Ratner, Comment, *Should Preservation Be Used as Mitigation in Wetland Mitigation Banking Programs?: A Florida Perspective*, 48 U. MIAMI L. REV. 1133, 1165-73 (1994); Dawn S. Spratley, Note, *Constitutional Law—Regulatory Takings—The Meaning of a Taking Under the Fifth Amendment and the Definition of Just Compensation Entitle Property Owners Regulated by the Wetlands Protection Act to Judicially Defined Compensation for Both Temporary and Permanent Takings.* K & K Constr., Inc., et al. v. Dep't of Natural Resources, *551 N.W.2d 413 (Mich. Ct. App. 1996)* 75 U. DET. MERCY L. REV. 467 (1998); Peter L. Henderer, *The Impact of* Lucas v. South Carolina Coastal Council *and the*

To establish a Fifth Amendment violation,[163] the applicant must prove that his or her property was "taken for public use, without just compensation."[164] The first factor to be considered is whether the challenged regulation substantially advances a legitimate state interest.[165] If the regulation does advance a legitimate state interest, then it must be determined whether the regulation deprives the landowner of all economically viable use of his or her property.[166] In *Lucas v. South Carolina Coastal Council*,[167] the Supreme Court held that, where a landowner is denied all economically viable use of his or her property, the landowner has suffered a per se taking.[168] If some economically viable use of the property remains, the court still may determine that there is a taking.[169] The court's determination is based on an ad hoc factual inquiry (i.e., balancing test) for determining whether or not a taking has occurred.[170] Essentially, the government's interest in the regulation is balanced against the economic harm the regulation will have on the landowner.[171] Alternatively, if the granting of the permit is conditioned upon the landowner's dedication or granting of some property interest to the government (i.e., an exaction), the condition or granting of the property interest must have an essential nexus between the permit condition exacted and the legitimate agency interest being pursued.[172] Furthermore, the condition exacted must be roughly proportional to the harm caused by the landowner's use of his or her property.[173] Lastly, the landowner must meet the procedural requirement of ripeness by showing that he or she has obtained a final decision from the regulatory agency, including the agency's decision to grant permits and variances.[174]

Logically Antecedent Question: A Practitioner's Guide to the Fifth Amendment Takings of Wetlands, 3 ENVTL. LAW. 407 (1997); Royal C. Gardner, *Banking on Entrepreneurs: Wetlands, Mitigation Banking, and Takings*, 81 IOWA L. REV. 527 (1996).

163 U.S. CONST. amend. V.

164 *Id.*

165 *See* Nollan v. California Coastal Comm'n, 483 U.S. 825 (1987).

166 *See* Lucas v. South Carolina Coastal Council, 505 U.S. 1003 (1992).

167 *Id.*

168 *See id.* at 1019. *Cf.* United States v. Riverside Bayview Homes, Inc., 474 U.S. 121, 126 (1985) (holding "that the mere assertion of regulatory jurisdiction by a governmental body does not constitute a regulatory taking").

169 *See Lucas*, 505 U.S. at 1015-16 & nn.6-7.

170 *See* Penn Central Transp. Co. v. City of New York, 438 U.S. 104 (1978). *See also Lucas*, 505 U.S. at 1015-16 & nn.6-7.

171 *See* Ehrlich v. City of Culver City, 911 P.2d 429 (Cal. 1996).

172 *See* Nollan v. California Coastal Comm'n, 483 U.S. 825 (1987).

173 *See* Dolan v. City of Tigard, 515 U.S. 374 (1994).

174 *See* Williamson Co. Reg'l Planning Comm'n v. Hamilton Bank, 473 U.S. 172 (1985); *See also* First English Evangelical Lutheran Church of Glendale v. County of Los Angeles, 482 U.S. 304 (1987).

IV. COMPENSATORY MITIGATION

The goal of compensatory mitigation is to prevent any net loss of acreage, functions, or values.[175] As part of his political campaign in 1988, then-Vice President George Bush "pledged no-net-loss of wetlands as a national goal."[176] President Bill Clinton and the EPA continue to support the no-net-loss policy of preserving wetlands.[177] California also endorses this policy to "[e]nsure no overall net loss and achieve a long-term net gain in the quantity, quality, and permanence of wetland acreage and values in California in a manner that fosters creativity, stewardship and respect for private property."[178] Generally, four methods of compensatory wetland mitigation are recognized: preservation, enhancement, restoration, and creation.[179]

A. Preservation

Wetland "[p]reservation refers to the protection of ecologically important wetlands or other aquatic resources in perpetuity through the implementation of appropriate legal and physical mechanisms."[180] In theory, wetland preservation is the preferred method of compensatory mitigation because it is performed on-site.[181] However, in the context of mitigation banking, wetland preservation is generally discouraged because the typical result is a "net loss" of wetlands.[182] This result is likely to occur because awarding credits for preservation does not replace lost wetland values and functions.[183] Regardless of the policy considerations, preserving wetlands on-site may be an attractive form of compensatory mitigation for developers,[184] because it saves them considerable time, costs, and aggravation by building around wetlands rather than in them.[185] In addition, preserving wetlands may increase property values by keeping property in its unadulterated state.[186]

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175 *See* Alyson C. Flournoy, *Preserving Dynamic Systems: Wetlands, Ecology and Law*, 7 DUKE ENVTL. L. & POLY. F. 105, 126 (1996).

176 Liebesman, *supra* note 41, at 170.

177 *See* Cushman, *supra* note 2.

178 Governor Pete Wilson, *California Wetlands Conservation Policy* (Aug. 23, 1993) <http://ceres.ca.gov/wetlands/policies/governor.html> [hereinafter Gov. Wilson, *Conservation Policy*].

179 *See id. See also* DENNISON, *supra* note 71, at 118-20.

180 DENNISON, *supra* note 71, at 118.

181 *See* MOA, *supra* note 115, at 9212.

182 *See* DENNISON, *supra* note 71, at 118-19.

183 *See id.* at 119. *See also* MOA, *supra* note 115, at 9212 (preservation of existing wetland resources accepted as compensatory mitigation only in exceptional circumstances).

184 *See* SALVESEN, *supra* note 130, at 91.

185 *See id.*

186 *See id.* Preserving wetlands may increase property values simply as a result of aesthetic beauty. For case studies and examples supporting wetland preservation see *id.* at 91-99 ("cluster concept," educational value, aesthetic beauty). The Elliott Ranch project is

B. Enhancement

Wetland enhancement is achieved by increasing desirable attributes of an existing wetland at a mitigation site.[187] However, enhancing only the desired attributes logically results in a negative trade-off between aquatic resource structure, functions, and values of other, undesirable characteristics of the enhanced wetland;[188] that is, a positive result in one function or value may result in a negative effect to another.[189] The enhancement approach has been criticized because the net result may not be beneficial to the overall ecological value of the altered wetland.[190] Thus, developers should consult ecologists and others with expertise in the field to maintain the ecological integrity of the impacted wetland.[191]

C. Restoration

Wetland restoration involves "re-establishing wetlands where they once existed but were lost due to disturbance of one or more of the site's physical or biological components."[192] Wetland restoration is the preferred method of compensatory mitigation of all federal and most state mitigation policies.[193] This preference may be attributed to the fact that wetland restoration results in a "net gain" of wetlands,[194] and involves less risk than creating new wetlands.[195] Critics of this approach argue that the restoration of degraded wetlands as a compensation for filling perfectly good ones actually leads to a "net loss" of wetland acreage and values.[196] However, a "net loss" would not result if the restored wetland "is created out of upland, assuming that the created wetland exhibits

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an example of preserving a wetland to offset the adverse impacts of development. At Elliott Ranch, 67 acres of vernal pool and seasonal marsh wetlands were preserved to mitigate the placement of fill into 66.2 acres of wetlands in a mixed-use planned community development project. California Resources Agency, *Elliot Ranch* (last modified May 13, 1996) <http://ceres.ca.gov/wetlands/projects/elliot_ranch.html>.

187 CYLINDER, *supra* note 85, at 106.

188 DENNISON, *supra* note 71, at 119.

189 *See id.*

190 *See id.* at 119-20. In response to such criticism, proponents argue that "human interventions into nature can be creative and indeed can improve on nature, provided that they are based on ecological understanding of natural systems and of their potentialities for evolution as they are transformed into humanized landscapes." SALVESEN, *supra* note 130, at 114 (quoting René Dubos).

191 *See generally*, DENNISON, *supra* note 71, at 119-20.

192 CYLINDER, *supra* note 85, at 106. *See generally* Robert E. Beck, *The Movement in the United States to Restoration and Creation of Wetlands*, 34 NAT. RESOURCES J. 781 (1994).

193 *See* DENNISON, *supra* note 71, at 120; *See also* Gov. Wilson, *Conservation Policy*, *supra* note 178 (encouraging landowners to conserve and restore wetlands).

194 Compare with wetland preservation, which results in a "net loss" of wetlands. *See* DENNISON, *supra* note 71, at 119.

195 *See* SALVESEN, *supra* note 130, at 100.

196 *See id.*

the same values and functions as the one filled."[197] Regardless of which view is followed, restoration may be the better alternative in mitigating adverse impacts because of the existing wetland's ecological value.[198]

D. Creation

Wetland creation is "the development of new wetlands where they have not historically occurred."[199] This form of mitigation involves creating wetlands from scratch, such as by turning dry woods into swamps, or sandy shores into salt marshes.[200] The creation of wetlands is "strongly supported by the Corps, by developers, and especially by a cadre of environmental consultants who travel around the country creating wetlands where none existed."[201] However, creating wetlands is a complex process, requires technical expertise, and may be costly.[202] Variations among regions and wetland type cause the complexity.[203] Wetlands typically occur as a result of their natural setting: "the topography, soil conditions, hydrology, and climate" are crucial to their formation.[204] Wetland creation has been met with varying degrees of success.[205] Regardless, it continues to be a favored activity of the Corps because the creation of wetlands is a viable solution to the burgeoning of development in environmentally sensitive areas.[206] Developers cannot practically restore and enhance enough existing wetlands to achieve "no net loss" while at the same time realizing a high level of development.

V. Mitigation Banking

Under traditional methods of regulating wetlands, developers and governmental agencies with regular construction needs[207]

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197 *Id.*

198 *See* Cylinder, *supra* note 85, at 112.

199 *Id.* at 106. *See generally* Beck, *supra* note 192.

200 *See* Salvesen, *supra* note 130, at 120.

201 *Id.*

202 *See id.* at 120-31.

203 *See* Jon A. Kusler & Mary E. Kentula, *Executive Summary, in* Wetland Creation and Restoration (Jon A. Kusler & Mary E. Kentula eds., 1990).

204 Salvesen, *supra* note 130, at 121.

205 *See id.* at 120; Wetland Creation and Restoration (Jon A. Kusler & Mary E. Kentula eds., 1990) (series of articles and case studies of wetland creation and restoration successes and failures).

206 *See* Brumbaugh, Interview, *supra* note 71. However, Elizabeth White, EPA Region Nine, Water Resources, Coordinator on Mitigation Banking, disagrees. She states that it may be preferable to mitigate on-site because of the existing ecological value of the wetland marked for destruction. She attributes the Corps' position to pressure from developers to expedite the section 404 permit process. White, Interview, *supra* note 6; *See also* Shirley Jeanne Whitsitt, *Wetlands Mitigation Banking*, 3 Envtl. Law. 441, 459-62 (1997) (advantages of mitigation banking over on-site mitigation).

207 For example, the California Department of Transportation (Caltrans).

faced recurring and unpredictable time delays and costs in obtaining approval for projects which impact wetlands.[208] As a result, the need for means of advanced planning arose that would make the permitting process more reliable and less costly.[209] Responding to this need, the concept of mitigation banking emerged.[210]

A. Policy Development

Consistent with the policy goal of "no-net-loss" endorsed by the federal government and the states, wetland mitigation banks are considered a useful tool.[211] However, a brief discussion of wetland mitigation policy leading up to mitigation banking must first be considered.

1. Federal

On May 24, 1977, President Jimmy Carter issued Executive Order No. 11,990 for the protection of wetlands.[212] President Carter announced that "each agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance natural and beneficial values of wetlands in carrying out the agencies' responsibilities."[213] Regarding the beneficial values of wetlands, the Executive Order specified factors such as 1) the public health, safety, and welfare;[214] 2) maintenance of natural systems and ecological value;[215] and 3) other uses such as public interest, which includes aesthetics and recreation.[216]

Consistent with those policy objectives and the "no-net-loss" policy announced by President Bush, in 1993 the Clinton administration endorsed the use of mitigation banks for mitigating unavoidable wetland loss in the section 404 permit process.[217] The Corps, USFWS, EPA, and other federal agencies responded by announcing a memorandum for federal guidance for the establish-

208 *See* Robert D. Sokolove & P. Robert Thompson, *The Future of Wetland Regulation Is Here*, 23 REAL EST. L.J. 78, 85 (1994).

209 *See id.*

210 *See id.*

211 *See* Michael Lenetsky, Comment, *President Clinton and Wetlands Regulation: Boon or Bane to the Environment?*, 13 TEMP. ENVTL. L. & TECH. J. 81, 95 n.146 (1994).

212 Executive Order No. 11,990, 42 Fed. Reg. 26,961 (1977), *reprinted in* 42 U.S.C. § 4321 (1994 & Supp. III 1997).

213 *Id.*

214 These factors include water supply, quality, pollution, and flood control. *See id.* at 26,963.

215 These factors include conservation and long-term productivity, habitat protection, and biodiversity. *See id.*

216 *See id.*

217 *See* Joyce Price, *Criticism Greets Environmental Plan*, WASH. TIMES, Aug. 25, 1993, at A3.

ment, use, and operation of mitigation banks in 1995.[218] The document provides guidance for the successful creation, management, and implementation of mitigation banks as a means of compensating for wetland loss.[219] The enumerated policy considerations are: key planning considerations, goal-setting, site selection, technical feasibility, and the role of preservation.[220] Underlying these considerations is attention to preserving wetland values, effectiveness, efficiency, cost, and the integrity of the ecosystem.[221] Thus, the memorandum attempts to balance the overall effectiveness of using mitigation banking between low development costs and prospective planning with the ecological value the banks represent.

2. The California Approach

In 1993, Governor Pete Wilson announced California's Wetlands Conservation Policy.[222] The stated goals of the policy are to:

- Ensure no overall net loss and achieve a long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California in a manner that fosters creativity, stewardship and respect for private property;
- Reduce procedural complexity in the administration of state and federal wetlands conservation programs; and

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218 *See* 60 Fed. Reg. 58,605 (1995).

219 *See id.*

220 *See id.*

221 *See id.*

222 *See* Gov. Wilson, *Conservation Policy, supra* note 178. Like a wetland mitigation bank, "[c]onservation banking enables developers and others to compensate for environmental impacts by purchasing credits that can be consolidated, thus making it possible to acquire ecologically important areas of greater value than otherwise might be obtainable." Douglas P. Wheeler, Letter to the Editor, *Conservation Banking Gains a Foothold in San Diego County,* SAN DIEGO UNION & TRIB., Dec. 27, 1995, at B9. There are 39 conservation banks in California which currently are in operation or in the process of being created. The majority of the banks are located in San Diego County, with 20, followed by Sacramento County, with five. California Resources Agency, *Restoration and Mitigation Projects* (last modified Jan. 21, 1998) <http://ceres.ca.gov/topic/banking/shasta.html> [hereinafter *Catalog*]; The Santa Ynez River Conservation Bank in Lompoc, California is being developed by McCollum Associates. The Bank is designed to preserve willow-riparian habitat and may be used as flood control for adjacent farmland. Ideally, the end result will be a "large wildlife corridor along the Santa Ynez River" in Santa Barbara County. Credits produced from the bank may be sold to other individuals, firms, or agencies that are required under law to compensate for the adverse environmental impacts of a development project. McCollum Associates developed the first conservation bank in April 1995. The bank, Carlsbad Highlands Conservation Bank, located in San Diego, is a 180-acre bank consisting of coastal sage scrub habitat. "Multispecies credits are sold to mitigate for most upland impacts throughout . . . San Diego County, including coastal areas." Other wetland mitigation banks developed by McCollum Associates are: Medford Island Conservation Bank (seasonal and riparian wetland habitat), Barry Jones Wetland Mitigation Bank (e.g., fairy shrimp), and Wilmont Ranch (ocean, riparian). McCollum Associates, *Conservation Banks* (visited Apr. 15, 1998) <http://www.mccollum.com/Mitbanks.htm>.

- Encourage partnerships to make landowner incentive programs and cooperative planning efforts the primary focus of wetlands conservation and restoration.[223]

To achieve these goals, the policy calls for 1) statewide policy initiatives;[224] 2) "geographically based regional strategies in which wetlands programs can be implemented, refined, and combined in unique ways;"[225] and 3) the "[c]reation of an interagency wetlands task force on wetlands to direct and coordinate administration and implementation of the policy."[226] The policy states that California must "develop and adopt guidelines for wetland mitigation banks which recognize [ ] regional concerns, contain flexible mitigation ratios, are consistent with Federal agency guidelines, and encourage decisions to locate banks in the context of local or regional plans."[227] For example, the California Coastal Commission has established procedural guidance for the establishment of wetland mitigation projects in California's coastal zone.[228] Generally, the procedures are: 1) making an ecological assessment;[229] 2) defining the project's goals, objectives and performance standards; 3) identifying the type of mitigation used; 4) selecting the location; 5) monitoring; and 6) evaluating wetland performance.[230] The document attempts to define the proper methods and procedures for the successful implementation of a mitigation plan that will achieve the best results in protecting the ecological integrity of the impacted wetland.

B. History and Concept

Mitigation banking is a relatively new concept, which has had limited success to date.[231] Generally, mitigation banking is defined as "off-site wetland restoration, creation, enhancement, and in exceptional circumstances, preservation undertaken expressly

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223 *See id. See generally* GUIDE, *supra* note 10 (wetland conservation options).

224 A statewide wetlands inventory, support for wetland planning, improved administration of existing regulatory programs, strengthened landowner incentives to protect wetlands, support for mitigation banking, development and expansion of other wetland programs, integration of wetlands policy and planning with other environmental and land use processes. *See* Gov. Wilson, *Conservation Policy, supra* note 178, at 2-7.

225 The Central Valley, San Francisco Bay Area, and Southern California. *See id.* at 1-2.

226 *Id.* at 2. Participating entities include the California Resources Agency, Cal/EPA, the State Water Resources Control Board and other agencies. *See id.* at 10.

227 *Id.* at 5.

228 *See* California Resources Agency, *Procedural Guidance for the Establishment of Wetland Mitigation Projects in California's Coastal Zone* (visited Feb. 21, 1998) <http://ceres.ca.gov/coastalcomm/weteval/wetc.html>.

229 For example, assessing wetland habitat, functions, and ecological contribution to the landscape. *See id.*

230 *See id.*

231 *See* Dr. Robert W. Brumbaugh, *Wetland Mitigation Banking: Entering a New Era?*, (visited Mar. 11, 1999) <http://www.wes.army.mil/EL/wrtc/bulletins/v5n3/brum.html> [hereinafter Brumbaugh, *New Era*].

for the purpose of mitigating unavoidable adverse wetland losses in advance of development actions."[232] The central goal of mitigation banking is to "provide for the replacement of the chemical, physical, and biological functions of wetlands and other aquatic resources which are lost as a result of authorized impacts."[233] Mitigation banking is different from the normal permitting process in two key aspects: 1) it attempts to construct mitigation areas in advance of anticipated projects that will have an adverse impact on existing wetlands;[234] and 2) banks are typically sufficiently large in area to allow multiple users use of the bank to offset the impacts of the wetland(s) affected by their specific projects.[235] Mitigation banking is premised on the theory that "in some circumstances there may be ecologically better ways of providing compensatory mitigation for wetland conversions than onsite replacement."[236]

The mitigation banking concept was first developed by the USFWS in the early 1980s "in an attempt to increase the effectiveness of wetlands mitigation while reducing the costs to the regulated community."[237] As of 1994, there were 46 existing wetland mitigation banks, with 64 proposals for creating new ones.[238] The majority of mitigation banks were located in California, with 11, followed by Florida, with 8.[239]

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232 DENNISON, *supra* note 71, at 129-30.

233 *Id.* at 130.

234 *See id.* (effectively this consolidates the compensation requirements of the § 404 permit). *See id.*

235 *See id.*

236 ELI, MITIGATION BANKING STUDY, *supra* note 4, at 127.

237 DENNISON, *supra* note 71, at 130.

238 *See* ELI, MITIGATION BANKING STUDY, *supra* note 4, at 131-34. *See also* William W. Sapp, *The Supply-Side and Demand-Side of Wetland Mitigation Banking*, 74 OR. L. REV. 951 (1995). A 1994 report by the Corps found that 8 out of 21 operational banks were of questionable success. Yancey Roy, *State Ponders Construction of Alternative Wetlands*, TIMES UNION, Oct. 20, 1995, at B1.

239 *See* ELI, MITIGATION BANKING STUDY, *supra* note 4, at 131-32. In 1997, there were approximately 100 banks; *See* E-mail from Dr. Robert Brumbaugh, Policy Analyst, Institute for Water Resources, U.S. Army Corps of Engineers (Apr. 20, 1998) (on file with *Chapman Law Review*) (report in E-mail to be called ENVIRONMENTAL LAW INSTITUTE, NATIONAL WETLAND MITIGATION BANKING STUDY, OPERATING WETLAND MITIGATION BANKS (not verified) (Institute for Water Resources (IWR), Feb. 1997)) [hereinafter ELI, OPERATING BANKS]. California had approximately 17 banks and more are expected as a result of the state's policy in protecting and preserving wetlands. *See id.*; John Grove, Vice President of American Wetlands and Natural Resource Exchange Corp., estimates that there are between 100 and 200 wetland mitigation banks in the country. Linda McCrerey, *Wetland Banks Preserve Land*, COLO. BUS., Nov. 1, 1997, at 18.

C. Types

There are three types of wetland mitigation banks: 1) single client, private and public; 2) publicly sponsored, commercial; and 3) privately sponsored, commercial.[240]

1. Single Client, Private and Public

Single client banks are typically developed by a landowner or local government.[241] The former may be called a single client-private bank and the latter a single client-public bank. Using a single client bank expedites the permit review process for a developer who may foresee a series of development activities involving compensatory mitigation.[242] A developer thus uses the bank to fulfill its own mitigation needs.[243] For example, several single client-public banks were used to mitigate impacts of highway construction projects.[244]

Funding for a single client bank may present some obstacles for the developer.[245] In the case of single client-public banks, the government entity[246] may "front" the money and recoup its costs from the development agencies as the project proceeds.[247] With a single client-private bank, the private developer is typically a "major player" who can afford to finance the bank and recoup the costs from the subsequent profits of the compensated project.[248]

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240 *See* Whitsitt, *supra* note 206, at 454. *See* ELI, MITIGATION BANKING STUDY, *supra* note 4, at 98-100. In 1994, the United States had 40 single client banks, 2 publicly sponsored banks, and 4 privately sponsored banks. *See id.* at 131-32, 141-47. At that same time, there were 34 proposed single client banks, 15 proposed publicly sponsored banks, and 16 privately sponsored banks. *See id.* at 132-34 (2 banks are public/private banks).

241 *See* DENNISON, *supra* note 71, at 134-35. As of 1994, in the United States there were 6 single client-private and 33 single client-public banks representing 87% of the existing wetland mitigation banks in the country. *See* ELI, MITIGATION BANKING STUDY, *supra* note 4, at 131-32, 141-47 (one additional bank was a hybrid public/private bank). The same year there were 29 proposed single client-public and 5 single client-private banks representing 53% of the total proposed wetland mitigation banks. *See id.* at 132-34. *Compare* with 1997. There were 43 single client-public and 14 single client-private banks. *See* ELI, OPERATING BANKS, *supra* note 239.

242 *See* Whitsitt, *supra* note 206, at 454.

243 *See* ELI, MITAGATION BANKING STUDY, *supra* note 4 at 134.

244 Huntington Beach Wetlands Restoration Project, Georgia Department of Transportation, Acequia, Louisiana Department of Transportation and Development, Minnesota Wetland Habitat Mitigation Bank, Dahorney National Wildlife Refuge, Malmaison Wildlife Management Area, State Line Bog & Dead Dog Bog, Interagency Wetland Mitigation Bank, Company Swamp, Pridgen Flats Mitigation Site, North Dakota State Highway Department Bank, Highway Mitigation Bank, South Carolina, Wetlands Accounting System, West Tennessee Wetland Mitigation Bank, Goose Creek/Bowers Hill Tidal Mitigation Bank, Cabin Creek, Fort Lee Wetland Mitigation Bank, Otterdam Swamp, Patrick Lake Wetland Mitigation Bank. *See* ELI, MITIGATION BANKING STUDY, *supra* note 4, at 135-45.

245 *See* Whitsitt, *supra* note 206, at 454.

246 For example, the Highway Department. *See id.*

247 *See* ELI, MITIGATION BANKING STUDY, *supra* note 4, at 100. Additional methods include issuing bonds, permitting fees, federal and state grants, and general revenue (taxes). *See id.*

248 *See* Whitsitt, *supra* note 206, at 454.

2. Publicly Sponsored, Commercial

Publicly sponsored commercial banks are "developed with public funds which the government seeks to recoup by selling mitigation credits to permit applicants."[249] A publicly sponsored bank may be advantageous because the government entity is "motivated . . . by a desire to protect and enhance wetland values, rather than out of a desire for profit" or to compensate for destruction of wetlands elsewhere.[250]

3. Privately Sponsored, Commercial

Like publicly sponsored banks, privately sponsored or entrepreneurial banks are developed by private entities to generate credits for subsequent sale to permit applicants.[251] A distinguishing characteristic of privately sponsored banks is that the bank, rather than the permittee, bears the legal and financial responsibility for mitigation failure.[252]

The Fina LaTerre Bank, located in Terrebonne Parish, Louisiana is perhaps the best known privately sponsored wetland mitigation bank in the country.[253] The bank is also one of the largest, comprised of 7,014 acres.[254] Fina LaTerre was established in 1984 by the Tenneco Company.[255] As part of an MOA between the Tenneco Company and various state and federal agencies,[256] the Tenneco Company "is required to spend $3 million per year over a 25-

249 DENNISON, *supra* note 71, at 135; *See also* APOGEE RESEARCH INC., ALTERNATIVE MECHANISMS FOR COMPENSATORY MITIGATION: CASE STUDIES AND LESSONS ABOUT FEE-BASED COMPENSATORY WETLANDS MITIGATION (Institute for Water Resources (IWR) Working Paper, Mar. 1993). "Mitigation Credits" are discussed in the next section.

250 Jonathan Silverstein, Comment, *Taking Wetlands to the Bank: The Role of Wetland Mitigation Banking in a Comprehensive Approach to Wetlands Protection*, 22 B.C. ENVTL. AFF. L. REV. 129, 144 (1993-94). As of 1994, there were only two publicly sponsored wetland mitigation banks in the United States, representing 4% of the total existing banks. *See* ELI, MITIGATION BANKING STUDY, *supra* note 4 at 131-32 (Washoe Lake Mitigation Bank, Astoria Airport). However, 14 publicly sponsored banks were proposed, representing 22% of the total proposed banks; *See id.* at 132-34. Compare with 1997. There were 14 publicly sponsored banks. *See* ELI, OPERATING BANKS, *supra* note 239.

251 *See* DENNISON, *supra* note 71, at 134; PAUL SCODARI & ROBERT BRUMBAUGH, NATIONAL WETLAND MITIGATION BANKING STUDY, COMMERCIAL WETLAND MITIGATION CREDIT VENTURES: 1995 NATIONAL SURVEY (Institute for Water Resources (IWR) Report 96-WMB-9, Aug. 1996) (case studies of commercial ventures).

252 *See* Whitsitt, *supra* note 206, at 456. As of 1994, there were only four privately sponsored wetland mitigation banks in the United States, representing 6.5% of the total existing banks. *See* ELI, MITIGATION BANKING STUDY, *supra* note 4, at 131-32, 141-47. (Bracut Wetland Mitigation Marsh, Mission Viejo/ACWHEP, Morse Reservoir, Fina LaTerre). However, 15 privately sponsored banks were proposed, representing 23% of the total proposed banks; *See id.* at 132-34. Compare with 1997. There were 32 privately sponsored banks. *See* ELI, OPERATING BANKS, *supra* note 239.

253 *See* DENNISON, *supra* note 71, at 138.

254 *See* ELI, MITIGATION BANKING STUDY, *supra* note 4, at 143.

255 *See* DENNISON, *supra* note 71, at 138.

256 USFWS, SCS, NMFS, LA Department of Natural Resources, and LA Department of Wildlife & Fisheries. *See id.*

year period" to enhance fish and wildlife habitats within the Fina LaTerre Bank.[257] In return, the Tenneco Company generated mitigation credits to offset the company's own mitigation requirements in future development projects or for sale to other developers for profit.[258]

D. Mitigation Credits

Mitigation banking "involves the sale of mitigation credits to permit applicants who are seeking off-site mitigation" to compensate for an adverse impact to an on-site wetland involved in the development project.[259] Mitigation credits represent an increase in the function or value of the wetland bank derived from restored, created, enhanced or preserved wetlands at the mitigation bank.[260] Debits represent the unavoidable wetland loss of on-site development.[261] Credits and debits are the "currency" of the mitigation bank.[262] However, a mitigation bank does not function like a checking account; instead, "[c]redits placed in deposit by a sponsor can only be spent by a user (developer) if the regulator approves the action."[263]

Typically, a single credit represents a unit of acreage or habitat.[264] For example, mitigation banks typically assign a single credit to one acre of wetland value or function. Generally, the number of credits available at a mitigation bank will be based on "standards tailored to the specific restoration, creation, or enhancement activity at the bank site or through the use of an appropriate functional assessment methodology."[265]

E. Credit Valuation: Functional Value Assessment

The value of the credits is determined by various valuation techniques[266] that may be divided into three categories "which roughly correspond to greater scopes of ecological comprehensiveness."[267] These are: 1) simple indices; 2) narrowly tailored assessment methods; and 3) broadly tailored assessment methods.[268]

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257 DENNISON, *supra* note 71, at 138.

258 *See id.* at 139.

259 *Id.* at 131.

260 *See id;* Brumbaugh, *New Era*, *supra* note 231.

261 *See* Brumbaugh, *New Era*, *supra* note 231; DENNISON, *supra* note 71, at 131.

262 *See* DENNISON, *supra* note 71, at 131. The sale of credits is represented in dollars. *See id. See also* Charles P. Edmonds et al., *Wetland Mitigation*, 65 APPRAISAL J. 72 (1997); David M. Keating et al., *A Conceptual Framework for Appraising Wetland Mitigation Banks*, 65 APPRAISAL J. 165 (1997).

263 Brumbaugh, *New Era*, *supra* note 231.

264 *See* DENNISON, *supra* note 71, at 131.

265 *Id.* at 132.

266 *See id.*

267 ELI, MITIGATION BANKING STUDY, *supra* note 4, at 63.

268 *See id.* at 63-64.

Many banks use a combination of these various techniques in assessing wetland values and functions.[269]

1. Simple Indices

Simple indices "are derived from quickly and easily observed characteristics of a wetland" such as its size and the number of species.[270] The technique is preferred by developers and regulatory agencies because valuation can often be completed quickly, and the information gained can be readily understood.[271] With simple indices, the developer has the advantage of "being able to avoid the complexity of developing project-specific mitigation plans," and thus saves valuable time, cost, and resources.[272] The regulatory agency benefits because the technique is "not resource-intensive to apply," saving the agency time, effort, and resources.[273]

The obvious disadvantage to using simple indices is their relatively limited scope. The simple index technique merely assesses wetland values based on quantitative, rather than qualitative data.[274] For example, "[t]he most common simple index used in mitigation banking is acreage."[275] Based on acreage, a developer may simply purchase "x" number of credits represented by "x" number of acres contained in the mitigation bank to compensate for the unavoidable wetland loss in his or her project.[276] Thus, the correlation between the affected wetland and the banking credits is, at best, a replacement for lost characteristics of the impacted wetland. In reality, the sole use of acreage for replacing wetlands "ignore[s] the complexities of wetland ecosystems."[277]

To correct this problem, other indices may be used, in lieu of or in addition to acreage, to offset the inadequacies of using acreage as the sole component.[278] For example, diversity of species present within a given area could be used to form an index for conversion into mitigation credits.[279] However, determining which species are present in a given area and their corresponding value may be time-consuming.[280] The end result of using other indices

269 *See id.* at 72.
270 *Id.* at 63-64.
271 *See id.* at 64.
272 *Id.*
273 *Id.*
274 *See id.*
275 *Id.*
276 *See id.*
277 *Id.*
278 *See id.* at 65.
279 *See id.*
280 *See id.* In some instances, using diversity of species may be advantageous to a specific development project because the core aim is the replacement of a particular species in mitigating the impacts of the project. For example, at Hawes Ranch Mitigation Bank in

for determining the value of mitigation credits may undermine the advantages of using a simple index method.

In 1994, almost half of the banks in the United States and a majority of banks in California used this method. More specifically, 22 wetland mitigation banks (48% of the total) used simple indices for valuing mitigation credits in the United States,[281] and in California, 6 of the total 11 mitigation banks (55%) used this method.[282] One example, the Naval Amphibious Base Eelgrass Mitigation Bank, is a 10-acre bank operated by the U.S. Navy and created to transplant aquatic beds of eelgrass to mitigate development impacts of the San Diego Naval Base.[283] The compensation ratios used to mitigate and compensate for project impacts is 1-to-1.[284] The 1-to-1 ratio means that for every one acre of destroyed or impacted wetland, one acre of compensated wetland in the bank must be used. Thus, the Naval Amphibious Base Eelgrass Mitigation Bank represents a mere quantitative method for replacing a single wetland characteristic[285] and does not consider the complexities of the entire wetland ecology.

The use of a simple index for compensating unavoidable wetland loss may be inconsistent with the goals of the section 404 permit process and public policy. For example, under the Code of Federal Regulations, the decision whether or not to issue a section 404 permit "will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest."[286] Wetlands serve important public interest functions, including natural biological functions, wildlife habitat, flood control, groundwater maintenance, aesthetic value, and recreation.[287] Thus, there are several factors to be considered when evaluating the values that wetlands serve to the public interest, contrary to merely evaluating a single wetland characteristic like the Naval Amphibious Base Eelgrass Mitigation Bank in San Diego does.

In addition, the regulations indicate that "the specific weight of each factor is determined by its importance and relevance to the particular proposal."[288] The transplant of eelgrass at the San Di-

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California (also called Barry Jones Wetland Mitigation Bank, *see supra* note 222) the targeted species is vernal pool fairy shrimp, tadpole shrimp, and Orcutt's grass. California Resources Agency, *Hawes Ranch Mitigation Bank* (visited Mar. 11, 1999) <http://ceres.ca.gov/topic/banking/shasta.html>.

281 *See* ELI, MITIGATION BANKING STUDY, *supra* note 4, at 145-47.

282 *See id.*

283 *See id.* at 141, 145.

284 *See id.* at 145.

285 *See id.*

286 33 C.F.R. § 320.4(a)(1) (1998).

287 *See* EPA, *Wetland Loss, supra* note 9; 33 C.F.R. § 320.4(b) (1998) (general policies for evaluating permit applications).

288 33 C.F.R. § 320.4(a)(3) (1998).

ego bank may be the most important value of that particular wetland area. However, by simply requiring a 1-to-1 replacement ratio based solely on eelgrass vegetation, the mitigation bank, on its face, fails to consider all ecological impacts that the loss of that wetland will have upon the environment, and destroys the potential for future use.[289]

In addition to losing the ecological value of a wetland by using simple indices, mitigation credits are often undervalued.[290] For example, in 1996 the EPA rejected a MOA submitted through the Corps for the creation of a mitigation bank along the Santa Ana River in Riverside County, California.[291] The proposed bank[292] was to be located on a 174-acre site "to promote natural revegetation and restoration of native habitat for the endangered least Bell's vireo and other native riparian species through the removal of *Arundo donax, Ricinius communis and Tamarix spp.*"[293] In rejecting the proposal, the EPA listed its concerns: 1) the "long term viability of a native riparian ecosystem at the bank" was not considered;[294] 2) the bank actually would result in a "net loss" of wetlands because the proposal simply enhanced the value of the wetland in the bank and did not adequately mitigate the permanent loss of wetland acreage elsewhere;[295] 3) there was no acreage cap or maximum specified in the proposal, thus resulting in a gross undervaluation of the credits that would be used to mitigate other development projects;[296] and 4) the proposal did not consider other significant aspects of the bank, including biodiversity, hy-

289 *See supra* notes 283-85 and accompanying text.

290 *See* White, Interview, *supra* note 6.

291 *See* Letter from Daniel A. Meer, Chief, Clean Water Act Compliance Office, EPA, to Richard J. Schubel, Chief, Regulatory Branch, U.S. Army Corps of Engineers (Nov. 22, 1996) [hereinafter Letter from EPA] (on file with *Chapman Law Review*).

292 To be called the Santa Ana River Mitigation Bank. *See id.*

293 *Id. Arundo donax, Ricinius communis and Tamarix spp* is a giant cane-like weed. Erik Smith, *War Declared on Plant That Chokes Rivers: $6.4 Million Fight Readied Against the Baneful Weed*, THE PRESS-ENTER., Mar. 4, 1997, at B1. "It grows up to 10 inches a day, with 30-foot bamboo-like stalks so dense they squeeze out native plants and animals, not to mention people." *Id.* The plant (weed) has infested up to 5,000 acres and consumes "enough water each day to serve the city of Riverside, and Colton." *Id. See also*, Editorial, *Reclaiming the Santa Ana*, THE PRESS-ENTER., Mar. 5, 1997, at A10.

294 The proposed bank called for only a 20-year management period. The EPA considered this a significant problem because the bank would be part of the greater Santa Ana watershed which contains 5000 acres of *Arundo*. *See* Letter from EPA, *supra* note 291.

295 *See id.*

296 *See* Letter from Alexis Strauss, Acting Director, Water Division, EPA, to Lieutenant Colonel Robert L. Davis, District Engineer, U.S. Army Corps of Engineers (Feb. 24, 1997) (on file with *Chapman Law Review*). "The MOA allows the bank to be used as mitigation for impacts under the individual permit process. While the MOA states that it would only be used for minimal impacts, EPA is concerned that there is no acreage cap. Without a cap on the acreage, we believe that the bank could be used inappropriately as mitigation for the significant permanent loss of wetlands." *Id. See* Letter from EPA, *supra* note 291.

drology, and other wetland functions.[297] The EPA thus signified that it was primarily concerned with the long-term viability of the proposed bank and its value as an entire ecosystem with its attendant effects upon the environment.

2. Narrowly Tailored Assessment Methods[298]

In contrast to using simple indices, narrowly tailored systems attempt to directly measure and predict particular wetland functions.[299] For example, these methods assess the habitat of species, hydrology, or soil conditions.[300]

The most common narrowly tailored assessment method is the Habitat Evaluation Procedures (HEP) developed by the USFWS.[301] Under this technique, a standard computer model evaluates the "biological requirements and tolerances for certain indicator species to environmental variables as they occur on the subject property."[302]

Many mitigation banks have used the HEP assessment method in evaluating credits.[303] However, in most cases, the mitigation banks have altered the HEP methodology "to facilitate easier comparison of disparate wetlands."[304]

A method similar to the HEP is the Habitat Evaluation System (HES) developed by the Corps.[305] The HES method "examines an entire wetland for the structural indicators of habitat . . . rather than selecting species themselves as function indicators."[306] Thus, the HES method examines the dominant indicators of species habitat but fails, nonetheless, to assess the entire ecology of the property.[307]

Like simple indices, narrowly tailored assessment methods fail to evaluate *all* wetland functions.[308] However, from an ecologi-

297 *See* Letter from EPA, *supra* note 291.

298 There are various assessment methods developed by the states (e.g., SUPERBOG). *See* ELI, MITIGATION BANKING STUDY, *supra* note 4, at 67. Some are variations of the methods that are discussed here. Others are tailored to the specific projects involved. *See id.* at 67-68.

299 *See id.* at 63, 65.

300 *See id.* at 65-68.

301 *See* DENNISON, *supra* note 71, at 132.

302 *Id.* For example, water depth and quality, flooding periodicity, vegetation density and type, and soil type. *See id.*

303 *See* ELI, MITIGATION BANKING STUDY, *supra* note 4, at 67.

304 *Id.* The Astoria Airport Mitigation Bank in Clatsop County, Oregon has established the available credits to be the difference in totals of the species HUs before and after restoration. Thus, this variation considers the number of habitat units available after restoring the wetlands rather than the HEP's version of prior assessment. *See id.* at 143, 147.

305 *See id.* at 68.

306 *Id.*

307 *See id.*

308 *See id.* at 65 (emphasis added).

cal perspective, these approaches are superior to using simple indices because they require more information in assessing actual wetland functions, rather than a cursory evaluation of wetland characteristics.

As of 1994, 13 wetland mitigation banks (28% of the total) used narrowly tailored assessment methods for valuing mitigation credits in the United States.[309] In California, 4 of the total 11 mitigation banks (36%) used the same method.[310] One example is the San Joaquin Marsh in Orange County, California.[311] The bank, developed by the Irvine Company,[312] is 492 acres, the largest freshwater marsh in Southern California.[313] As part of the restoration, several species of plants were transplanted into the marsh and several non-native plants were removed.[314] These plants and other wetland functions and values were assessed using a Habitat Valuation Analysis (HVA), a narrowly tailored method similar to the HEP.[315]

3. Broadly Tailored Assessment Methods

In response to the disadvantages of simple indices and narrowly tailored assessment methods, "wetland scientists have developed assessment methods that attempt to evaluate a broader spectrum of wetland functions."[316] Ideally, these methods empirically measure each wetland function in the field and produce measurable, quantitative values.[317] However, the time and expense involved in using these methods may be impracticable for use in mitigation banking.[318]

The Wetland Evaluation Technique (WET) developed by the Corps and Federal Highway Association is an example of this technique.[319] WET has been used by many agencies and banks in

309 *See id.* at 145-47.

310 *See id.*

311 *See id.*

312 The Irvine Company is a privately held real estate investment firm based in Orange County, California. It owns roughly one-sixth of the land in Orange County, thereby controlling much of the development of the County. It has substantial holdings in the cities of Irvine, Newport Beach, and Tustin.

313 *See* California Resources Agency, *San Joaquin Marsh* (visited Mar. 30, 1998) <http://ceres.ca.gov/wetlands/geo_info/so_cal/san_joaquin.html>.

314 California bulrush or tules, Olney's bulrush, Alkali bulrush, Common rushes (transplanted), tamarisk, artichoke, black mustard (removed). *See* Tim Bradle & Marjorie Patrick, Department of Ecology & Evolutionary Biology, UC Irvine, *Restoration of a Marsh Pond in the San Joaquin Freshwater Marsh Reserve* (visited Apr. 20, 1998) <http://128.200.23.67/sjfmr/restore2.html>. *See also* Bill Bretz, Office of Natural Resources, U.C. Irvine, *San Joaquin Freshwater Marsh Reserve* (last modified Mar. 9, 1999) <http://nrs.ucop.edu/reserves/sjfm.html>.

315 *See* ELI, MITIGATION BANKING STUDY, *supra* note 4, at 145.

316 *Id.* at 68.

317 *See id.*

318 *See id.* at 68-69.

319 *See* DENNISON, *supra* note 71, at 132.

assessing wetland functions.[320] Under this technique, the analyst first gathers information from maps and other printed materials about "various wetland characteristics or 'indicators.'"[321] These indicators are then combined into "three ratings[322] for each of eleven wetland functions: groundwater recharge; groundwater discharge; flood-flow storage & desynchronization; shoreline anchoring & dissipation of erosive forces; sediment trapping; nutrient retention & removal; food chain support; fisheries habitat; wildlife habitat; active recreation, and passive recreation & heritage value."[323] The ratings represent, for each function, the wetland's projected "effectiveness,"[324] "opportunity,"[325] and "social significance."[326] The ratings are qualitative rather than quantitative.[327] Thus, the overall quality of the wetland is assessed to determine the probability that each of the indicators supply their corresponding wetland functions.[328]

Similar to WET, the Wetland Evaluation Methodology (WEM) values wetland functions by assessing wetland characteristics or indicators.[329] WEM, however, uses fewer indicators to value wetland functions.[330] The indicators are processed and the data is assessed into quantitative and numerical functional ratings.[331] These ratings are then converted to represent a quantitative value, and are assigned a rating based on their importance to wetland functions.[332]

The greatest disadvantage in using a broadly tailored assessment methodology is that the process is time-consuming, complex, and expensive.[333] The obvious advantage of using this method is that it provides a better representation of the entire ecological value of the mitigation bank or compensated wetland.[334]

As of 1994, only four mitigation banks (9%) used a broadly tailored method for assessing wetland functions and values.[335] Two of the four were supplemented by using the best professional

320 *See* ELI, MITIGATION BANKING STUDY, *supra* note 4, at 69.

321 *Id.* Including, gradient of the basin, soils, land cover, and habitat. *See id.*

322 Those ratings are low, moderate, and high. *Id.*

323 *Id.*

324 "[C]an the wetland perform the function?" *Id.*

325 "[D]oes the wetland have the opportunity to be effective?" *Id.*

326 *Id.* "[H]ow important is the function to society?" *Id.*

327 *See id.*

328 *See id.*

329 *See id.* at 70.

330 *See id.* (Flood-flow characteristics, water quality, wildlife, fish, shoreline anchoring, and visual values). *See id.*

331 *See id.*

332 *See id.*

333 *See id.* at 68.

334 *See id.*

335 *See id.* at 145-47.

judgment approach.[336] In California, no mitigation banks used this approach in assessing wetland values and functions.[337]

Wetland mitigation banks that use this method, such as the Hillsborough County Utilities Department in Florida,[338] assess wetland values based on several wetland indicators, such as groundwater recharge and discharge, flood control, sediment trapping, food chain support, and wildlife habitat.[339] Thus, rather than merely assessing a few of the dominant wetland characteristics like a narrowly tailored assessment method, the broadly tailored approach attempts to determine how several wetland functions contribute to the overall ecological value of the wetland bank being analyzed. Therefore, the broadly tailored approach provides a better representation of the overall value of the wetland and its attendant values and functions.

4. Best Professional Judgment

Although not listed within the three categories of valuation techniques, some banks use best professional judgment in assessing wetland values and functions.[340] Under this technique, individuals who are familiar with wetlands and their functions make the decisions regarding the best use of the wetland "based on their own knowledge."[341]

The advantage of this method is that it produces an educated and well-founded assessment of individual wetlands based on expertise and experience.[342] The disadvantage is that the individual making the assessment is granted limitless power and thus the "real issue then becomes holding the [assessor] to a standard of quality and loyalty to the ecological objectives of wetland mitigation."[343]

As of 1994, only three wetland mitigation banks (6%) used this method in the United States.[344] In California, one bank (9%) used best professional judgment for assessing wetland values and functions.[345] A summary of the number of banks using each technique both nationally and in California is listed in the following tables.

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336 Cheval Tournament Players Club, Hillsborough County Utilities Dep't Mitigation Bank. *See id.* at 141, 145; *See infra* notes 340-45 and accompanying text.

337 *See id.* at 145-47.

338 *See id.* at 141, 145.

339 *See id.* at 69.

340 *See id.* at 71-72.

341 *Id.* at 72.

342 *See id.*

343 *Id.*

344 *See id.* at 145-47.

345 *See id.* at 141, 145.

TABLE 1. WETLAND MITIGATION BANKS & CREDIT VALUATION METHODS—UNITED STATES (1994)[346]

Credit Valuation Method	Number of Banks Using Method	Percentage of Banks Using Method
Simple Indices	22	48%
Narrowly Tailored	13	28%
Broadly Tailored	4[347]	9%
Best Professional Judgment	3	6%
Other[348]	4	9%
Totals	46	100%

TABLE 2. WETLAND MITIGATION BANKS & CREDIT VALUATION METHODS—CALIFORNIA (1994)[349]

Credit Valuation Method	Number of Banks Using Method	Percentage of Banks Using Method
Simple Indices	6	55%
Narrowly Tailored	4	36%
Broadly Tailored	0	0
Best Professional Judgment	1	9%
Other	0	0
Totals	11	100%

Based on the 1994 data, the majority of wetland mitigation banks in the country use simple indices for determining wetland values and functions.[350] The second most common approach is a narrowly tailored method.[351] Thus, the data suggests that more mitigation banks are using a simpler, easier, less expensive approach to assessing wetland values and functions, rather than using more sophisticated, ecologically responsible approaches.

VI. CHALLENGE: CREDIT VALUATION

A continuing debate exists over whether or not wetland mitigation banking is a good mode of compensatory mitigation.[352] One author concludes that mitigation banking is a useful tool for protecting wetlands because mitigation banks can be more successful

346 *See id.* at 131-32, 145-47.

347 Two banks used a broadly tailored assessment method and best professional judgment. *See id.* at 145.

348 *See id.* at 145-47. (Other, not specified, case-by-case).

349 *See id.*

350 *See id.* at 145-47.

351 *See id.*

352 *See* Andrew Roe, *These Banks Are All Wet: Wetland Banks Are Growing as an Alternative to Fragmented Rebuilding of Damaged Sites, But Their Rules Are Changing*, ENG'G NEWS-RECORD, Feb. 16, 1998, at 32.

ecologically, as well as more convenient and less expensive to the applicant.[353] On the other hand, one opponent argues that mitigation banking decreases the national supply of wetlands because they often fail,[354] the sale of credits is not susceptible to public scrutiny through review and comment, and mitigation banking significantly alters the type and location of wetlands.[355] The opponent concludes: "[w]etlands mitigation may be a necessary evil, but mitigation banks may well be the devil incarnate."[356]

Generally, "as the understanding of wetland types and functions has increased, [mitigation banking] has been recognized as potentially detrimental within a watershed" because, by allowing "out-of-kind" mitigation such as restoration and creation, "regulatory agencies cause overall local gains of certain common, easily attained, earlier successional-stage [sic] wetland functions, while concurrent losses are of increasingly scarce, difficult to replace, more complex functions."[357] The detriment to the watershed and the supply of wetlands is caused primarily by "gaps in technical understanding of ecological functions [that] make it difficult for regulators to require applicants to quantify such functions in site assessments and mitigation designs."[358]

One way to correct this problem is to simply require on-site mitigation.[359] However, requiring on-site mitigation effectively dismantles the mitigation banking concept. To continue using mitigation banking as a form of compensatory mitigation, regulators must apply an ecologically comprehensive method of assessing wetland functions and values which are, in the mitigation banking framework, represented by credits.

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353 *See* William W. Sapp, *Mitigation Banking: Panacea or Poison For Wetland Protection*, 1 ENVTL. LAW. 99 (1994). Benefits include: an organization can remove the uncertainty of mitigation requirements by obtaining credits from a bank, thus expediting a project and more quickly realizing financial objectives; an organization will save time and money on site acquisition, environmental analysis, regulatory negotiations and the maintenance and monitoring of a wetlands mitigation site; a company can purchase mitigation credits for less than it would cost the company to perform its own mitigation or to contract out for the mitigation; and an organization will be freed of mitigation requirements and liability including long term monitoring. Michael G. Le Desma, Note, *A Sound of Thunder: Problems and Prospects in Wetland Mitigation Banking*, 19 COLUM. J. ENVTL. L. 497 (1994); *But see* White, Interview, *supra* note 6 (wetland mitigation banking may not be preferable to on-site mitigation because it is too "easy for a developer to simply cut a check" rather than take the ecological value of the impacted wetland into consideration).

354 *See* Arthur Feinstein, *Mitigation Banks Often Rob Us*, ENG'G NEWS-RECORD, Apr. 6, 1998, at 91 (citing recent Florida study showing that many mitigation projects subsequently failed).

355 *See id.* ("An entrepreneur will seek the cheapest land for a mitigation bank and it is cheaper to dig a shallow hole rather than design and create a complicated ecosystem.").

356 *Id.*

357 Watersheds, *supra* note 129.

358 *Id.*

359 *See* White, Interview, *supra* note 6.

VII. OVERSIMPLIFICATION: ECOLOGICAL ETHICS

The extensive use of simple indices for assessing wetland values and functions is problematic in essentially three ways: 1) it is ecologically irresponsible; 2) it is inconsistent with the goals and objectives of the section 404 permit process; and 3) it is contrary to public policy at both the federal and state level.

A. Ecologically Irresponsible

The primary argument against using simple indices for valuing wetland functions and values is based on ecological ethics.[360] Professor Joseph Sax has identified two conflicting views of property rights based on a private citizen's use of property versus the property's inherent worth.[361] The first view is referred to as land in a "transformative economy."[362] The second, ecological approach, is called the "economy of nature."[363]

In a transformative economy, which Professor Sax calls the "conventional perspective of private property," property is viewed "as a discrete entity that can be made one's own by working it and transforming it into a human artifact."[364] Land "is in a passive state, waiting to be put to use."[365] In the context of mitigation banking, the property is being put to use by a developer depositing dredged or fill material into a wetland for a particular development project for his or her own use. To compensate for the loss of that wetland, the developer uses mitigation credits to replace the functions and values of the destroyed wetlands.[366] It is irrelevant to the developer whether or not the credits used are of comparable value and function to the destroyed values and functions of the wetland, because the land is "subject [to the] owner's dominion" and control.[367] Therefore, this view supports the proposition that land has a single purpose—to be transformed into the desirable use of the property owner.

In contrast, the economy of nature "views land as consisting of systems defined by their function, not by man-made boundaries."[368] "Land is not a passive entity waiting to be transformed by its landowner. . . . Land is already at work, performing important

360 For another example of environmental ethics, see PAUL W. TAYLOR, RESPECT FOR NATURE: A THEORY OF ENVIRONMENTAL ETHICS (1986) (biocentric outlook on nature).

361 Joseph L. Sax, *Property Rights and the Economy of Nature: Understanding* Lucas v. South Carolina Coastal Council, 45 STAN. L. REV. 1433, 1442 (1993).

362 *Id.*

363 *Id.*

364 *Id.*

365 *Id. See also* Jonathan R, Macey, *Property Rights, Innovation, and Constitutional Structure, in* PROPERTY RIGHTS (Ellen Frankel Paul et al. eds., 1994).

366 *See* DENNISON, *supra* note 71, at 138.

367 Sax, *supra* note 361, at 1445.

368 *Id.* at 1442.

services in its unaltered state."[369] For example, wetlands are sanctuaries for wildlife, act as flood control, and are barriers to erosion and storm damage.[370] In the context of mitigation banking, the wetland being impacted by the developer is already at work performing valuable services to the ecological integrity of the natural environment. Thus, the mitigation credits used to compensate for a developer's adverse impact on that wetland should represent similar values and functions to maintain ecological equilibrium.

The issue becomes the interest of the developer in using the property "at will" versus an ecologically based ethic that land has inherent value. Viewing land as being under the dominion and control of the landowner suggests that any method of assessing wetland values and functions is proper in the mitigation banking context. Thus, whether or not the regulatory agency assesses wetland values and functions based on simple indices, narrowly tailored methods, or a broadly tailored approach is irrelevant. However, the use of simple indices is preferred by the landowner because this technique saves the developer considerable time and costs. This preference is criticized, because, as one environmental scientist has stated, "[w]hat you end up with is a lot of lousy mitigation sites because people do the minimum they can to get a permit."[371]

In contrast, viewing land as having inherent, ecological value, that is already providing valuable services to the natural environment, requires utilizing the best methods available for assessing wetland values and functions in determining the value of mitigation credits. The widespread use of valuing wetlands using simple indices is repugnant to maintaining the ecological balance of the natural environment because of their limited scope in actually considering all functions and values present in the wetland ecosystem. The "economy of nature" view requires a broadly tailored assessment method to ensure actual replacement of lost wetland values and functions because of the method's ecologically comprehensive approach.

In making a decision as to which view of private property rights is the correct one, morality and ethical considerations may differ from the law.[372] For example, some may view the filling of wetlands as morally irresponsible, although it may be legal via the section 404 permit process. Similarly, the use of simple indices in

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369 *Id.*

370 *See supra* notes 11-13 and accompanying text.

371 Patty Reinert, *Developers, Environmentalists Find Common Ground on Wetlands Bill*, DAILY RECORD, Mar. 29, 1993, at 5.

372 *See* TIMOTHY BEATLEY, ETHICAL LAND USE: PRINCIPLES OF POLICY AND PLANNING 16 (1994).

valuing wetland mitigation credits may not be the morally best method of assessing wetland values and functions. Thus, an examination of the goals and policy of the section 404 permitting scheme is required to determine which view of land is reflected—that land's single purpose is to be transformed into the desirable use by the landowner, or that land is already at work performing important services in its unaltered state—and which assessment method is consistent with that view.

B. Inconsistency with Goals and Objectives of Section 404 Permitting

Applying the EPA Guidelines,[373] the Corps is required to deny a section 404 permit if the discharge of dredged or fill material violates state or federal law or contributes to the significant degradation of waters of the United States.[374] In determining what constitutes "significant degradation," the Corps must consider the adverse effects on human health or welfare, ecosystems, biodiversity, and economic values.[375] Thus, a consideration of adverse impacts on ecosystems and biodiversity are components in the Corps' analysis of whether or not a permit should be granted.

By definition, the use of simple indices does not consider the overall ecological value of the wetland being assessed.[376] Instead, only a few characteristics of the wetland are identified, such as eelgrass in the Naval Amphibious Base Eelgrass Mitigation Bank in San Diego.[377] The result is therefore a one-for-one acreage replacement based on a few characteristics between the two wetlands in the form of a credit, rather than making a general assessment of the overall ecological value of the wetland in the mitigation bank and the compensated wetland.[378] One may conclude that by using simple indices the Corps fails to adequately identify the potential impact on the ecosystem and other factors, such as biodiversity, making it impossible to correctly determine if there is significant degradation to the waters of the United States.

Similarly, the 1990 MOA between the EPA and the Corps identifies the requirements necessary for compensating for wetland loss when there is an unavoidable adverse impact to a wetland in a proposed development project after all minimization measures have been exercised.[379] In that case, the applicant developer is required to compensate for the unavoidable loss by us-

373 *See* 40 C.F.R. §§ 230-230.80 (1998).
374 *See* 33 U.S.C.A. § 1344 (West 1986 & Supp. 1998).
375 *See* 40 C.F.R. §§ 230.10(b)-(c) (1998).
376 *See supra* notes 270-71 and accompanying text.
377 *See supra* notes 283-85 and accompanying text.
378 *See id.*
379 *See* MOA, *supra* note 115 at 9211-12.

ing on-site mitigation, off-site-mitigation, or mitigation banking.[380] The MOA expressly states that on-site mitigation is the best alternative.[381] This preference is attributed to the belief that on-site mitigation is a better representative of the overall ecological value of the impacted wetland.[382] In contrast, the use of mitigation banking as an alternative is least preferred because mitigation banks often fail to adequately represent the overall functions and values lost or destroyed in the wetland impacted by a development project.[383] The failure to replace lost values and functions of a wetland ecosystem may be attributed to the use of simple indices because only a select few of the wetland characteristics are identified and used in replacing lost values or functions.[384] In contrast, mitigation banks that use a broadly tailored assessment method should consider the overall ecological value of the wetland.[385] Banks using a broadly tailored assessment method are arguably similar to those using the preferred on-site mitigation because the actual lost values and functions are adequately replaced.

In conclusion, simple indices fail to adequately consider the overall ecological value of the wetland mitigation bank and compensated wetland. This failure is inconsistent with the goals and objectives of the section 404 permitting process, because the intent of the Corps and the EPA is to replace all functions and values of a destroyed or impacted wetland with similar values and functions represented in a mitigation bank. To accomplish this result, the use of broadly tailored assessment methods is necessary because these techniques do, in fact, assess wetlands based on multiple characteristics and values which are a better representation of the overall ecological value of the wetland being compensated with the ecological value in the mitigation bank.

C. The Better Approach: Comparable Ecological Value

Both federal and state policy considerations recognize that wetlands play a vital role in maintaining the ecological integrity of the nation's waters.[386] Thus, the federal government implemented the no-net-loss policy, which was endorsed by the states.[387] Arguably, the no-net-loss policy is a call for maintaining the existing number of wetlands in the United States. This interpretation merely requires that for each acre of wetland destroyed, one must be replaced. However, such an argument is contrary to broader

380 *See id.* at 9212.
381 *Id.*
382 *See* White, Interview, *supra* note 6.
383 *See id.*
384 *See supra* notes 270-71 and accompanying text.
385 *See supra* note 316 and accompanying text.
386 *See supra* notes 211-30 and accompanying text.
387 *See id.*

social goals and objectives involved in preserving wetlands because it fails to consider whether what is being replaced is ecologically comparable to what has been destroyed. Therefore, the correct interpretation of the no-net-loss policy is not simply a one-for-one replacement of wetlands restored, enhanced or created for ones destroyed, but a one-for-one replacement of wetlands of comparable ecological value to those destroyed. Since simple indices fail to assess the overall ecological values and functions present in a compensated wetland or mitigation bank, the results are uncertain about whether there is actually a net loss of wetland values and functions between the compensated wetland and mitigation bank.[388] To correct this uncertainty, a broadly tailored assessment method is necessary to determine if actual wetland functions and values are being compensated in the bank.

VIII. Remediating the Oversimplification Dilemma

The simplest means of correcting the problem of valuing wetland mitigation credits is to abandon mitigation banking altogether. This approach would require landowners and regulators to use traditional forms of compensatory mitigation, such as on-site preservation or off-site creation, restoration, or enhancement. Alternatively, the landowner could utilize one of many wetland protection strategies, such as a conservation easement, management agreement, limited development agreement, or voluntary landowner incentive program.[389] However, such a solution does not really correct the problem; it ignores it.

One way to correct the widespread use of simple indices in valuing mitigation credits would be to require landowners and regulators to use ecologically comprehensive methods of assessment, such as the Wetland Evaluation Technique or Wetland Evaluation Methodology. The use of these comprehensive or broadly tailored assessment methodologies results in a better representation of the entire ecological value of the compensated wetland versus the functions and values of the mitigation bank.[390] However, the use of broadly tailored assessment methods is time-consuming, complex, and expensive.[391] These characteristics are inconsistent with the mitigation banking concept because mitigation banking is designed to reduce costs to the regulated community and save time by creating banks in anticipation of development.

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388 *See supra* notes 270-77 and accompanying text.

389 *See supra* notes 16-34 and accompanying text.

390 *See supra* notes 316-17 and accompanying text.

391 *See supra* note 318 and accompanying text.

To remedy this inconsistency, the developer or regulatory agency can exercise various land-use planning techniques. For example, section 404(b)(1) of the CWA allows the Corps and the EPA to identify wetlands as suitable or unsuitable for disposal sites even before a permit application has been filed (Advanced Identification Program).[392] The developer-applicant can reasonably foresee whether or not his or her proposed project will require a section 404 permit. This prospective planning may save the developer-applicant considerable time in determining whether or not the property will have to be mitigated. A similar approach exists under applicable special area management plans and procedures, such as California's procedural guidance for the establishment of wetland mitigation projects in California's coastal zone.[393] These plans and procedures guide the developer in determining which mitigation measures are appropriate within a defined geographic region such as the coastal zone. Like the Advanced Identification Program,[394] the developer-applicant can reasonably determine what mitigation measures are appropriate for his or her project. Finally, state and local planning agencies may assist landowners in defining what mitigation will be appropriate for their potential projects under various planning techniques. For example, California's conservation policy and programs assist developer-applicants in determining suitable areas for mitigation, determining the actions required, and in creating incentives for the developer-applicant to comply with the program's requirements, such as tax deductions, technical advice, and limited liability.[395] Thus, the developer can save time and costs by consulting various planning techniques already instituted by various federal, state, and local authorities.

The disadvantages of using broadly tailored assessment methods, such as time, complexity and costs, can be offset by applying various federal, state, and local planning techniques. The end result would be a broader, more ecologically comprehensive approach to assessing wetland values and functions. The ecological integrity of the wetland would be preserved, the goals of the section 404 permit process met, and federal and state policy considerations satisfied.

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392 *See* 40 C.F.R. § 230.80 (1998).

393 *See* California Resources Agency, *Procedural Guidance for the Establishment of Wetland Mitigation Projects in California's Coastal Zone* (visited Feb. 21, 1998) <http://ceres.ca.gov/coastalcomm/weteval/wetc.html>. *See also* 60 Fed. Reg. 58,605-14 (1995).

394 *See* 40 C.F.R. § 230 (1998).

395 *See generally* Timothy Beatley, *Preserving Biodiversity Through the Use of Habitat Conservation Plans*, *in* COLLABORATIVE PLANNING FOR WETLANDS AND WILDLIFE: ISSUES AND EXAMPLES 35 (Douglas R. Porter & David A. Salvesen eds., 1995).

IX. CONCLUSION

The destruction of wetlands in the United States continues at an alarming rate.[396] To prevent further destruction of this natural resource, the states and the federal government have implemented legislation to protect wetlands or at least to minimize adverse effects upon them.[397] One such mechanism to prevent further destruction of wetlands is mitigation banking, a form of compensation in the section 404 permit process for unavoidable impacts on wetlands in development projects.[398] However, for mitigation banking to work successfully, ecologically comprehensive methods of valuing mitigation credits must be employed to assure that there are, at least, similar wetland values and functions in the mitigation bank to compensate for the destroyed or impacted wetland in the development project. The use of ecologically comprehensive methods is consistent with the goals and objectives of section 404 permitting, federal and state policy, and is simply a matter of ecological ethics: land is at work, performing valuable services to the ecological integrity of the natural environment.

396 *See supra* notes 1-2 and accompanying text.
397 *See supra* note 3 and accompanying text.
398 *See supra* notes 4-6 and accompanying text.