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# The IUCN Sustainable Soil Project and Enforcement Failures

J. WILLIAM FUTRELL\*

## SYNOPSIS

The IUCN's project on a draft Protocol for the Conservation and Sustainable Use of Soil provides a template to assess existing national laws. Application of this template defining the characteristics of good soils legislation shows that the United States has a superb technical agency, excellent data and monitoring programs, and solid citizen participation and that the U.S. has made recent strides in preventing erosion by a system of expanded grants. The template, however, also identifies enforcement failures as a major problem in U.S. soil programs. Most valuably, it highlights the fragmented nature of U.S. protection efforts resulting from the failure to see soil as an ecological resource.

## I. INTRODUCTION

The International Union for the Conservation of Nature and Natural Resources ("IUCN") Environmental Law Program has identified an urgent need for international action to reverse the worldwide threat of soil degradation. To meet this need, the IUCN has published materials proposing a new international instrument (hereinafter "Draft Protocol") to promote sustainable use of soils.<sup>1</sup> Such an instrument would be a profoundly influential

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\* President, Sustainable Development Law Associates, 2003-present; President, Environmental Law Institute, 1980-2003; Sierra Club Board of Directors, 1970-1981, President, 1977-1978; Vice-Chair, IUCN Commission on Environmental Law, 1995-2005.

1. Int'l Union for the Conservation of Nature & Natural Res. [IUCN], Comm'n on Env'tl. Law, *Draft Protocol for the Conservation and Sustainable Use of Soil*, Oct. 10, 2005, available at <http://www.scape.org/IUCN%20Protocol.pdf> [hereinafter *Draft Protocol*]. This draft protocol is the product of the cooperative partnership between environmental lawyers and soil scientists through the IUCN Commission on Environmental Law Specialist Group for Sustainable Use of Soil and Desertification in order to generate discussion concerning the need for an international legal instrument to regulate soil usage. See *id.*; Soil Conservation and Protection for Europe, <http://www.scape.org/> (last visited Feb. 7, 2007). Interest in soils protection is especially keen in Europe. See *Commission Proposal for a Directive of the European Par-*

tool in educating legislatures and agencies on the criteria necessary to consider in order to effectively regulate soil use and would show these decision-makers that the laws currently governing soil are among the most primitive in natural resources law, predating the rise of ecological awareness in modern environmental law.<sup>2</sup>

Concerned with reports that soil degradation is accelerating despite state efforts to curb erosion, contamination, and compaction, the World Conservation Congress charged the IUCN Environmental Law Program with drafting a plan to address this challenge.<sup>3</sup> In response, the Commission on Environmental Law, in cooperation with the Environmental Law Centre in Bonn, produced two landmark reports establishing principles to govern protective soil law and criteria for measuring national practices.<sup>4</sup>

In these reports, the IUCN surveyed legislation and regulations currently implemented throughout the world and found a pattern of fragmented efforts and piecemeal approaches to soil problems and that many programs, still reflecting the attitudes of the 1930s, focused only on erosion to the exclusion of other soil problems.<sup>5</sup> The IUCN found that existing soil statutes were often merely another variety of land use legislation and that they did not embody the ecological conscience that serves as the basis of

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liament and of the Council Establishing a Framework for the Protection of Soil and Amending Directive 2004/35/EC, COM (2006) 232 final (Sept. 22, 2006), available at [http://ec.europa.eu/environment/soil/pdf/com\\_2006\\_0232\\_en.pdf](http://ec.europa.eu/environment/soil/pdf/com_2006_0232_en.pdf).

2. Scholars note that, even "[a] 'soft' norm can help to define the standards of good behavior corresponding to what is nowadays to be expected from a 'well-governed State' without having been necessarily consecrated as an in force customary norm." DAVID HUNTER, JAMES SALZMAN & DURWOOD ZAELEKE, INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 260 (1998).

3. Int'l Union for the Conservation of Nature & Natural Res. [IUCN], World Conservation Congress, Amman, 2000, *Resolution 2.59: Legal Aspects of the Sustainable Use of Soils*, available at [http://uicn.org/congress/general/pre\\_resolutions/programme.htm#259](http://uicn.org/congress/general/pre_resolutions/programme.htm#259). Resolution 2.59 requests that the investigation "pay particular attention to the ecological needs of soil and their ecological functions for the conservation of biodiversity and the maintenance of human life." *Id.*

4. Int'l Union for the Conservation of Nature & Natural Res., *Legal and Institutional Frameworks for Sustainable Soils: A Preliminary Report*, Environmental Policy and Law Paper No. 45 (2002) (prepared by Ian Hannam & Ben Boer) [hereinafter *Legal and Institutional Frameworks for Sustainable Soils*]; Int'l Union for the Conservation of Nature & Natural Res., *Drafting Legislation for Sustainable Soils: A Guide*, Environmental Law and Policy Paper No. 52 (2004) (prepared by Ian Hannam & Ben Boer) [hereinafter *Drafting Legislation for Sustainable Soils*]; see also Ben Boer & Ian Hannam, *Legal Aspects of Sustainable Soils: International and National*, 12 REV. OF EUR. COMMUNITY & INT'L ENVTL. L. 149, 160-63 (2003).

5. *Legal and Institutional Frameworks for Sustainable Soils*, *supra* note 4, at 27, 35-41.

laws such as the U.S. Clean Air Act and Clean Water Act.<sup>6</sup> It determined that these soil statutes did not view soil as a living resource, but as land—an inert piece of property.<sup>7</sup> Consequently, the IUCN reports recommended that states revise their soils laws to acknowledge soil's central role in ecology.<sup>8</sup>

To further that end, a protocol for sustainable soils adopted in either the Convention on Biological Diversity or the Convention to Combat Desertification could enlist states in a cooperative research and educational effort to strengthen national soil policies.<sup>9</sup> Sustainable soils are soils that are used “in a manner that preserves the balance between the processes of soil formation and soil degradation, while maintaining the ecological functions and needs of soil.”<sup>10</sup>

Healthy soils are essential to sustain plant and animal life and to enhance water and air quality and are the basis of productive crop lands, sustained yield forests, and working range lands.<sup>11</sup> While erosion is the leading cause of soil degradation worldwide, other threats loom large in industrialized countries where sprawl leads to the paving of agricultural lands and soil sealing.<sup>12</sup> Chemical contamination and salinization, for example, are concomitants of modern agriculture.<sup>13</sup>

In order to prevent these causes of soil degradation and promote sustainable soils, the protocol should contain a statement that lists necessary elements of effective soil legislation which states can use to devise their own legal frameworks.<sup>14</sup> Suggested examples of these basic components include:

1. A statement of policy acknowledging the ecological primacy of soil protection.<sup>15</sup>
2. An institutional framework designating a lead agency for administration.<sup>16</sup>

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6. *See id.* at xiv, 27, 41.

7. *See id.* at xiv, 11, 41.

8. *See id.* at xv, 40-41.

9. *See id.* at 62-64.

10. *Id.* at 22.

11. *See id.* at 9-11; *see also* NATURAL RES. CONSERVATION SERVICE, U.S. DEP'T OF AGRIC., PRODUCTIVE LANDS, HEALTHY ENVIRONMENT: NRCS STRATEGIC PLAN 2005-2010 23 (2005) [hereinafter NRCS STRATEGIC PLAN 2005-2010].

12. *See Legal and Institutional Frameworks for Sustainable Soils, supra* note 4, at 12-13.

13. *See id.* at 13.

14. *See, e.g., Drafting Legislation for Sustainable Soils, supra* note 4, at 37-80.

15. *See id.* at 37-39.

16. *See id.* at 39-45.

3. Financing mechanisms.<sup>17</sup>
4. Research and monitoring.<sup>18</sup>
5. Widespread public participation.<sup>19</sup>
6. Regulatory mechanisms to assure compliance with programs.<sup>20</sup>
7. Enforcement.<sup>21</sup>

An analysis of U.S. soil laws in light of these basic components demonstrates the usefulness of a sustainable soils protocol:

1. U.S. soil laws do not acknowledge the primacy of ecological concerns; indeed goals are blurred.
2. U.S. laws are fragmented by economic activity.
3. Soil programs are under-funded, although the situation has improved recently.
4. In soils research and monitoring, the U.S. is a world leader.
5. The U.S. is a world leader in citizen participation in soils programs and other environmental programs could learn from their experience.
6. Regulatory programs are complex, fragmented, and (on the whole) ineffective.
7. Enforcement failures dog the programs.

In order to highlight the need for a sustainable soils protocol addressing these issues, this paper discusses the continuing evolution of U.S. soil policy—beginning with the effective Soil Conservation Service education programs of the 1930s,<sup>22</sup> continuing with less successful state regulatory programs,<sup>23</sup> and ending with more recent and more successful federal subsidy programs.<sup>24</sup> This evolution has created a fragmented U.S. soils program formed by laws enacted in a piecemeal fashion without forethought as to how activities interacted. The legislators lacked an

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17. *See id.* at 65-66.

18. *See id.* at 63-64.

19. *See id.* at 65, 67.

20. *See id.* at 68-76, 79-80.

21. *See id.* at 77-79.

22. *See* R. NEIL SAMPSON, *FOR LOVE OF THE LAND: A HISTORY OF THE NATIONAL ASSOCIATION OF CONSERVATION DISTRICTS* 15 (1985).

23. *See id.* at 25, 29 (discussing the Standard State Districts Act); MODEL STATE ACT FOR SOIL EROSION AND SEDIMENT CONTROL (The Council of State Gov'ts 1973), reprinted in OFFICE OF WATER PLANNING AND STANDARDS, U.S. ENVT'L. PROT. AGENCY, REPORT ON STATE SEDIMENT CONTROL INSTITUTES PROGRAM (1975) [hereinafter MODEL STATE ACT]; Federal Water Pollution Control Act, 33 U.S.C. §§ 1251-1387 (2000).

24. *See, e.g.*, Food Security Act of 1985, 16 U.S.C. § 3831 (2000) (first of several "farm bills" establishing subsidies for conservation efforts).

ecological conscience. Today, the U.S. federal government regulates major activities affecting soils through Department of Agriculture subsidy programs which focus on soil erosion and through the Environmental Protection Agency ("EPA") which focuses on soil contamination, while the states pursue separate avenues of soil regulation to deal with problems created by agriculture, forestry, mining, chemical contamination, and construction activity.<sup>25</sup> In order to understand the legal and institutional arrangements governing soil protection efforts, however, we have to go back to the late 1930s.

## II. EDUCATION

### A. Congressional Policy: The Dust Bowl and Response to Crisis

The first national laws governing soil protection in the U.S. were created in a time of great national crisis—the early 1930s—as the economic devastation of the Great Depression combined with the natural destruction of eroded soils of the dust bowl to set the stage for President Franklin Delano Roosevelt's New Deal.<sup>26</sup> Programs to put people back to work were at the heart of the New Deal.<sup>27</sup> Congress moved to aid farmers by authorizing a series of agricultural support programs including price supports and production quotas administered by the U.S. Department of Agriculture.<sup>28</sup> The Soil Conservation Act of 1935 announced a national policy "to provide permanently for the control and prevention of soil erosion"<sup>29</sup> and created the Soil Conservation Service ("SCS").<sup>30</sup> Within a year, the new SCS was operating twenty-three experiment stations, working with 454 Civilian Conservation Corps camps, and conducting 147 demonstration projects using Works Progress Administration relief workers.<sup>31</sup> The SCS's

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25. The U.S. is not alone in its piecemeal approach to soil protection. For surveys of different national practices, see *Legal and Institutional Frameworks for Sustainable Soils*, *supra* note 4, at 25-54 and *Drafting Legislation for Sustainable Soils*, *supra* note 4, at 29-35.

26. See SAMPSON, *supra* note 22, at 1, 5-13.

27. See, e.g., *id.* at 6, 8.

28. See, e.g., *id.* at 14-15; see also David Hosansky, *Farm Subsidies: Do They Favor Large Farming Operations?*, 12 CONG. Q. RESEARCHER 433, 444 (2002).

29. Soil Conservation Act of 1935, Pub. L. No. 74-46, 49 Stat. 163 (codified as amended at 16 U.S.C. §§ 590a-590q-3 (2000)); see also SAMPSON, *supra* note 22 at 11-12.

30. See SAMPSON, *supra* note 22, at 11.

31. See *id.* at 8, 12.

main efforts involved technical assistance to farmers who voluntarily sought to protect their land.<sup>32</sup> SCS employees urged farmers to adopt standard practices such as planting rows of trees for windbreaks, using contour plowing, rotating crops, and developing new management practices for land stewardship.<sup>33</sup> Over the next seventy years, the SCS became an established and respected force for land stewardship in rural America.<sup>34</sup> Widespread public education is the first and most important step in protecting soils.<sup>35</sup> The SCS and the National Resource Conservation Service ("NRCS") understand this and have made the dissemination of knowledge and the mobilization of public support for soil quality a core agency mission.<sup>36</sup>

### III. STATE REGULATORY PROGRAMS

#### A. Federalism and the Standard State Districts Act

Although the creation of the SCS marked a move towards an effective U.S. sustainable soils program, U.S. soil problems were not solved by this move alone. Recalcitrant or negligent landowners could still choose to not participate in the SCS conservation programs.<sup>37</sup> A mandatory regulatory program was not considered to solve this and other national environmental problems because New Deal leaders concluded that such a solution would not be politically palatable nor would it stand up to attack in the Courts.<sup>38</sup> Indeed, the U.S. Supreme Court voided significant portions of the New Deal legislation, finding some acts promoting agricultural planning to be unconstitutional.<sup>39</sup>

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32. See *id.* at 12-13, 15-17.

33. See *e.g., id.* at 15.

34. See generally SAMPSON, *supra* note 22; see also United States Department of Agriculture Natural Resource Conservation Service, Who We Are, <http://www.nrcs.usda.gov/about/agency.html> (last visited Feb. 7, 2007). The Soil Conservation Service was renamed the Natural Resources Conservation Service ("NRCS") in 1994. See NRCS STRATEGIC PLAN 2005-2010, *supra* note 11, at 3.

35. See *Drafting Legislation for Sustainable Soils*, *supra* note 4, at 25, 61-63.

36. See SAMPSON, *supra* note 22, at 15; NRCS STRATEGIC PLAN 2005-2010, *supra* note 11, at 25.

37. See SAMPSON, *supra* note 22, at 15-17.

38. The tortured genesis of soil governance is described in SAMPSON, *supra* note 22, at 13-21.

39. See generally ARTHUR M. SCHLESINGER, JR., *THE POLITICS OF UPHEAVAL*, 447-96 (1960) [hereinafter SCHLESINGER, JR., *UPHEAVAL*] (describing the clash between President Roosevelt and the Supreme Court on agricultural and regulatory policy); see also *United States v. Butler*, 297 U.S. 1 (1937) (declaring that the Agricultural Adjustment Act of 1933 was unconstitutional).

President Franklin Delano Roosevelt was a committed conservationist who worked to protect agricultural lands from soil erosion and to increase the quality of forestry in the United States.<sup>40</sup> However, the hallmark of his administration was a set of economic reform regulations aimed at curbing economic abuses in industry.<sup>41</sup> Much of this legislation was based on the Commerce Clause, which states, "The Congress shall have the power . . . To regulate Commerce with foreign Nations, and among the States, and with the Indian tribes."<sup>42</sup> Many of these laws were struck down by the U.S. Supreme Court, though, which said there was no constitutional basis for them.<sup>43</sup> This was the major battle of Roosevelt's political life, and it only ended because of a personnel change on the Supreme Court and the Court's subsequent recognition that the twentieth century needs of a continental modern economy called for national legislation.<sup>44</sup> Today almost, if not all, social and economic national laws are based on the Commerce Clause.<sup>45</sup> Federal soil laws and regulations, however, were enacted before this judicial revolution and look back to an earlier judicial era.

The balance of power between the national government and the states, as determined by the U.S. Supreme Court, has shifted several times in U.S. history.<sup>46</sup> Today, the Court is vigilant to protect states rights against the federal government in many areas, especially in land use decisions.<sup>47</sup>

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40. See generally EDGAR B. NIXON, *FRANKLIN D. ROOSEVELT AND CONSERVATION 1911-1945* (1957); see also ARTHUR M. SCHLESINGER, JR., *THE COMING OF THE NEW DEAL* 343 (1959) [hereinafter SCHLESINGER, JR., *THE COMING*].

41. For a detailed account of the regulatory initiatives enacted during President Roosevelt's first term see SCHLESINGER, JR., *THE COMING* *supra* note 40 at 343.

42. U.S. CONST. art. I, § 8, cl. 3; see also *Butler*, 297 U.S. at 63-64.

43. See SCHLESINGER, JR., *UPHEAVAL*, *supra* note 39, at 447-96.

44. See generally ROBERT H. JACKSON, *THE STRUGGLE FOR JUDICIAL SUPREMACY: A STUDY OF A CRISIS IN AMERICAN POWER POLITICS* (1941) (gives a detailed account of the controversy by one of the leading participants).

45. ERICA L. DOLGIN & THOMAS G.P. GUILBERT, *FEDERAL ENVIRONMENTAL LAW* 21-27 (1974); *SUSTAINABLE ENVIRONMENTAL LAW* 127 (Celia Campbell-Mohn ed., 1993).

46. The swing of the pendulum occurs not only in the judiciary's cycles of favoring central power over decentralized decision-making but also in other fields such as foreign policy (interventionism vs. isolationism) and economic policy (conservatism vs. liberalism). See generally ARTHUR M. SCHLESINGER, *THE CYCLES OF AMERICAN HISTORY* (1986). The Schlesinger thesis is applied to the environmental field in *SUSTAINABLE ENVIRONMENTAL LAW*, *supra* note 45, at 3-60.

47. Jay Austin & Scott Schang, *Fundamentalist Federalism*, ENVTL. FORUM 21, Sept.-Oct. 2004, at 28, 28 ("In the Supreme Court, parties and justices alike are couching in 'federalism' terms issues that until recently were treated as mere questions of statutory interpretation. The circuit courts likewise continue to entertain a



After its initial rejection by New Deal leaders, the bias against national environmental regulation continued for years. As recently as 1960, President Dwight Eisenhower vetoed a federal clean water study bill with the message that water pollution was a distinctly local problem and not an issue for the federal government.<sup>48</sup> The civil rights and environmental movements, however, ushered in an age of reform.<sup>49</sup> In the 1970s, Congress passed a series of bills that transformed environmental management in the United States.<sup>50</sup> The Clean Water Act, the Clean Air Act, and hazardous waste laws all promulgated national standards and set up a framework for state administration of these laws overseen by the EPA.<sup>51</sup> No such arrangement exists to protect soil quality. The federal programs most closely associated with protecting soils today are lodged in the U.S. Department of Agriculture and center around economic incentives that avoid dependence on the Commerce Clause and rely, instead, on the Spending Power Clause.<sup>52</sup> State and federal programs, thus, predate the Earth Day renaissance and look back to the Dust Bowl years of the 1930s and to a restrictive view of Congressional power.

In February 1937, instead of establishing a federal soils program, President Roosevelt sent a letter to all state governors promoting the Standard State Districts Act and recommending that each state pass a soil conservation statute and establish local districts to carry out soil protection efforts.<sup>53</sup> A form of the Standard

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range of federalism and constitutional theories that strike at the heart of environmental law. Seeing a return to a pre-New Deal theory of government, these 'fundamentalist federalists' have gained some beachheads, but are being turned back – for now.") See generally REDEFINING FEDERALISM (Douglas T. Kendall ed., 2004).

48. Edwin L. Dale, Jr., *President Vetoes Pollution Funds*, N.Y. TIMES, Feb. 24, 1960, at 1.

49. As stated in RICHARD J. LAZARUS, *THE MAKING OF ENVIRONMENTAL LAW* 92 (2004), "[m]any environmental activists had also been active in the civil rights movement. Justly or not, these environmentalists still viewed many states as obstacles to social change rather than potential allies." This was a period of "creedal passion" when Americans protested things as they were in contrast to things as they ought to be. See SAMUEL P. HUNTINGTON, *AMERICAN POLITICS: THE PROMISE OF DISHARMONY* 167-220 (1981).

50. See LAZARUS, *supra* note 49, at 67-97.

51. See 33 U.S.C. §§ 1251-1387 (2000); Clean Air Act, 42 U.S.C. §§ 7401-7671q (2000); Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901-6991 (2000); Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601-9675 (2000).

52. See *infra* text accompanying notes 114-141.

53. SAMPSON, *supra* note 22, at 25.

State Districts Act has been enacted in all fifty states.<sup>54</sup> However, some states have amended it to establish extensive regulatory authority<sup>55</sup> while others have kept the bare bones of the original statute.<sup>56</sup> The Virginia statute is typical in that its main thrust focuses on the mechanics of establishing local soil conservation districts.<sup>57</sup> The Virginia statute establishes a state Soil and Water Conservation Board with the power to approve petitions for local conservation districts.<sup>58</sup> The original Standard State Districts Act recommended that the local district boundaries be tied to watersheds and that the local Conservation District have land use enforcement powers.<sup>59</sup> These recommendations were often not followed, though, and several state legislatures created conservation districts along county lines while vesting general government county officials with land use enforcement powers.<sup>60</sup>

The Districts are special-purpose agencies of state government and are administered by more than 15,000 board members—an extraordinary mobilization of citizens to participate in the work of soil protection.<sup>61</sup> Local districts implement farm conservation practices, work with developers to prevent soil damage at construction sites, protect groundwater, plant trees, and conserve and restore wetlands.<sup>62</sup>

## **B. State Enforcement Problems: Act I**

With the rising concern over environmental quality in the 1970s, people began to realize that soil erosion and sedimentation remained a major problem. Consequently, in 1973 the Council of State Governments published a Model State Act to prevent soil

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54. For survey of state statutes, see HUONG N. TRAN, LIU-HSIUNG CHUANG, & CAROLYNE L. GUSS, U.S. DEP'T OF AGRIC. NATURAL RES. CONSERVATION SERV., NATURAL RESOURCES CONSERVATION LAWS: A REPORT ON 17 STATES AND THEIR SELECTED COUNTIES AND TOWNSHIPS 7-27 (1999). Most states use the term "soil and water conservation districts"; others vary, calling the units "resource conservation districts" or "natural resource district." See *id.* at 15.

55. See, e.g., 70 ILL. COMP. STAT. 405/1-42 (2006).

56. See TRAN, *supra* note 54, at 7-9; see also SAMPSON, *supra* note 22, at 29.

57. See VA. CODE ANN. §§ 10.1-500-559 (2006).

58. *Id.* §§ 10.1-500, 502, 505, 506.

59. See SAMPSON, *supra* note 22, at 29-32; TRAN, *supra* note 54, at 19.

60. See SAMPSON, *supra* note 22, at 29-32; TRAN, *supra* note 54, at 19. The NRCS, in keeping with the recommendations of the original State Standard Districts Act, operates on the premise that a watershed-based approach is key to the conservation of natural resources. See NRCS STRATEGIC PLAN 2005-2010, *supra* note 11, at 8-12.

61. National Association of Conservation Districts, About Conservation Districts, <http://www.nacdnet.org/about/aboutcds.htm> (last visited Feb. 7, 2007).

62. *Id.*

erosion.<sup>63</sup> The Council recommended that the proposed erosion and sediment control legislation should take the form of an amendment to the existing conservation districts' enabling laws.<sup>64</sup> The Model State Act calls for the state soil and water conservation commission to adopt a statewide plan to guide the local conservation districts in a regulatory system to control prohibited land-disturbing activities.<sup>65</sup> To assist the conservation districts, the state commission is charged with developing guidelines that "contain conservation standards for various types of soils and land uses, which standards shall include criteria, techniques, and methods for the control of erosion and sediment resulting from land-disturbing activities."<sup>66</sup> The local conservation district in turn is charged with assessing soils in the district and promulgating standards for the district's soils and land uses, consistent with the state guidelines.<sup>67</sup> The heart of the Model State Act is Section 5 which prohibits land-disturbing activities unless the person seeking to undertake such a project does so pursuant to a plan for erosion and sediment control which has been approved by the district.<sup>68</sup>

Illinois is an example of a major farm state that follows the recommended pattern. The erosion and sediment control provisions embedded in the state's Soil and Water Conservation Districts Act<sup>69</sup> require adherence to land-use regulations that become valid when approved by three-fourths of voters in the district.<sup>70</sup> The statute is supplemented by regulations of the Illinois Department of Agriculture, which uses as the yardstick for regulation "T values," which are defined as "the average annual tons per acre soil loss a given soil may experience and still maintain its productivity over an extended period of time. Both physical and economical factors are considered."<sup>71</sup> The regulations set standards for soil loss on agricultural lands, stream banks, non-agricultural lands and construction sites.<sup>72</sup> The standard for agricultural lands is that, "[a]ll conservation systems and practices applied to

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63. MODEL STATE ACT, *supra* note 23; see also SAMPSON, *supra* note 22, at 200-04, 209-10.

64. MODEL STATE ACT, *supra* note 23, at *Explanatory Statement*.

65. See *id.* §§ 2-3, 5.

66. *Id.* § 3(b)(3).

67. *Id.* § 4.

68. *Id.* § 5(a).

69. 70 ILL. COMP. STAT. 405/23-25 (2006).

70. *Id.* § 405/23.

71. ILL. ADMIN. CODE tit. 8, § 650.20 (2006).

72. *Id.* §§ 650.30-.50.

agricultural land in the state of Illinois shall seek to reduce soil loss to levels at or below "T" values."<sup>73</sup> This requirement meets the definition of sustainable soil found in the IUCN draft protocol.<sup>74</sup> The regulation then continues with a timetable to bring all agricultural land in Illinois in compliance.<sup>75</sup> If the owner of eroding farmland ignores the conservation district, the statute authorizes the district to step in and perform needed conservation measures itself and be reimbursed for its expenses.<sup>76</sup> This is a legal framework pointed toward achieving sustainable soils. The law has clearly designed standards in the regulations, and a statutory framework to compel compliance.<sup>77</sup> However, officials in Illinois and other states following the 1973 Model State Act report that they know of no instance in which these enforcement provisions have been used.<sup>78</sup>

In a number of other states, legislatures have resorted to passage of a "bad actor" statute, a law that authorizes agencies to step in and order remedial or preventive action for pollution causing events.<sup>79</sup> One authority writes,

[o]nly a few states have nonpoint source bad actor statutes. These bad actor statutes represent a different approach to nonpoint source pollution than the more regulatory-oriented approaches to forestry described in the preceding sections. Under the bad actor laws, the operator has no prior obligation (other than not to pollute), and the enforcement response tools are more limited than under comprehensive forest practices laws. Nonetheless, bad actor provisions provide a clear enforcement response which may, in many cases, be easier to use than the general discharge prohibitions . . . .<sup>80</sup>

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73. *Id.* § 650.30.

74. *See Draft Protocol, supra* note 1, at 8.

75. ILL. ADMIN. CODE tit. 8, § 650.30.

76. 70 ILL. COMP. STAT. 405/25 (2007).

77. ILL. ADMIN. CODE tit. 8, §§ 650.310-.390 (2007).

78. This is consistent with enforcement practice in other nations. *See* E-mail from Ian Hannam, Sustainable Soils Specialist Group, IUCN Commission on Environmental Law, to author (June 18, 2006) (on file with author). The IUCN research has shown that although national soil law (including that enacted in both western and developing nations) has made provision for regulation and enforcement for a long time, there is a history of failing to invoke enforcement procedures. *Id.*; *see also Legal and Institutional Frameworks for Sustainable Soils, supra* note 4, at xiv, 36-37.

79. ENVTL. LAW INST., ENFORCEABLE STATE MECHANISMS FOR CONTROL OF NONPOINT SOURCE WATER POLLUTION iii-iv, 35-36, 38-39 (1997) [hereinafter ENFORCEABLE STATE MECHANISMS].

80. *Id.* at 35.

During the last decade, a number of states have revisited the problem of land abuse in the agricultural sector with similar “bad actor” laws.<sup>81</sup> A typical example of these, Virginia’s Agricultural Stewardship Act of 1997, gives the Virginia Department of Agriculture enforcement authority to step in to curb polluting landowners’ actions.<sup>82</sup> This new authority gives states leverage to persuade landowners to do the right thing. Many agricultural lawyers believe that even with this added leverage, however, state regulation has been ineffective.<sup>83</sup>

Because the law governing U.S. soils is fragmented, a different law governs each activity. Few states have as comprehensive a forest practices statute as that adopted in California, which establishes a strong regulatory body and requires adherence to plans that effectively curb erosion and sedimentation.<sup>84</sup> However, even California—which has perhaps the most ecologically oriented forestry law—still relies on water quality standards as the means to curb soil degradation.<sup>85</sup> In fact, in *Pacific Lumber Co. v. State Water Resources Board*, the Supreme Court of California upheld the primacy of state clean water standards over timber operations approved by the state forestry board which would have caused erosion.<sup>86</sup>

The tools are available for state and local officials to curb erosion, but current soil and erosion statutes have not been helpful. Instead, both citizens and environmental officials must turn to state water pollution statutes to curb soil erosion. This is the case for officials in Vermont, for example, a state with a good record of nonpoint pollution enforcement.<sup>87</sup> Unfortunately, this approach underlines the fact that states see water, not soil, as the crucial resource.

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81. *See id.* at 38-39.

82. *See id.* at 38; VA. CODE ANN. §§ 10.1-559.1-11 (2006).

83. *See e.g.*, John H. Davidson, *Conservation Plans in Agriculture*, 31 ENVTL. L. REP. (Envtl. Law Inst.) 10,501, 10,505 (2001) (describing the Kentucky bad actor statute as, “an almost laughable ‘soft touch’ on agricultural operators who generate water pollution . . .”).

84. *See* CAL. PUB. RES. CODE §§ 4511-4628 (2006).

85. *See id.* §§ 4551.5, 4562.7; *Pac. Lumber Co. v. State Water Res. Control Bd.*, 126 P.3d 1040 (Cal. 2006).

86. *Pac. Lumber Co.*, 126 P.3d at 1042.

87. E-mail from Mark Sciarrato, Assistant Attorney General, Vermont Attorney General’s Office (on file with the author).

### C. State Enforcement Problems: Act II: The Clean Water Act

The Clean Water Act of 1972,<sup>88</sup> ("CWA" or "the Act"), created a potentially powerful new force to control agricultural runoff and thus curb soil erosion. The purpose of the Act is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."<sup>89</sup> Everyone recognizes that sedimentation is a major source of water pollution,<sup>90</sup> but for years the Act has been an unused tool in curbing erosion.

The CWA divides water pollution into two major classes: point sources (such as a factory pipe dumping directly into the waters of the United States) and nonpoint sources (such as farms).<sup>91</sup> Congress and the EPA have established an effective permitting system for point source dischargers, which requires industry to use best available technology.<sup>92</sup> Efforts to regulate nonpoint source pollution, however, have languished.<sup>93</sup> In its early years, the EPA waged major political and judicial struggles to bring industrial and municipal pollution under control but made a policy decision to exempt agricultural pollution from many of its major regulatory programs.<sup>94</sup>

88. 33 U.S.C. §§ 1251-1387 (2000).

89. *Id.* § 1251(a).

90. See e.g., COMM. ON LONG-RANGE SOIL AND WATER CONSERVATION, NAT'L RESEARCH COUNCIL, SOIL AND WATER QUALITY: AN AGENDA FOR AGRICULTURE 337-38 (1993) [hereinafter NAT'L RESEARCH COUNCIL].

91. See 33 U.S.C. §§ 1251(a)(7), 1362(14).

92. See *id.* §§ 1311(a)-(b), 1342, 1344, 1362(12). Agricultural operations resulting in point sources such as concentrated animal feeding operations ("CAFOs") are regulated by the Act. See *id.* § 1362(14); NPDES Permit Regulation and Effluent Limitation Guidelines and Standards for CAFOs, 68 Fed. Reg. 7,176 (Feb. 12, 2003).

93. See Drew Caputo, *A Job Half Finished: The Clean Water Act after 25 Years*, 27 ENVTL. L. REP. (Envtl. Law Inst.) 10,574, 10,581-85 (1997).

94. See J.B. Ruhl, *The Environmental Law of Farms: 30 Years of Making a Mole Hill Out of a Mountain*, 31 ENVTL. L. REP. (Envtl. Law Inst.) 10,203, 10,203 (2001) ("farms are virtually unregulated by the expansive body of environmental law that has developed in the United States in the past 30 years"); J.B. Ruhl, *Farms, Their Environmental Harms, and Environmental Law*, 27 ECOLOGY L. Q. 263, 293-316 (2000) [hereinafter Ruhl, *Farms, Their Environmental Harms*] (identifying the safe harbors that the EPA and Congress have invented for the agricultural sector). Despite lawsuits from environmentalists and the court decision in *Nat'l Res. Def. Council v. Costle*, 568 F.2d 1369 (D.C. Cir. 1977), which held that the EPA Administrator does not have the authority to exclude any class of point sources from the permit requirements of the CWA, Congress has largely acted to shield farmers from the reach of federal pollution control law.

G. Tracy Mehan, III, former Assistant Administrator for Water at the EPA, offers insight into the administrative realities of constructing the water quality program:

It is hard to appreciate how all-consuming was the effort to develop technology-based effluent guidelines. For decades this was the focal point of so much of EPA's activities requiring enormous amounts of resources, personnel, and budget. The courts basically dictated the workload pursuant to successful lawsuits filed by environmentalists. And industry, in turn, filed numerous lawsuits of their own challenging the guidelines promulgated by EPA. For instance, by 1976, there were already 250 lawsuits on file challenging specific guidelines. Only recently has EPA's Office of Water come out of a kind of court receivership in this area of effluent guidelines.<sup>95</sup>

Today, nonpoint sources, such as urban storm water discharges and agricultural runoff, are the major sources of water pollution.<sup>96</sup> Section 303(a) of the Clean Water Act requires each state, with EPA oversight, to set water quality standards; section 303(d) then requires each state to identify waters that do not meet these standards and set total maximum daily loads ("TMDLs") for them.<sup>97</sup> Following this, an implementation plan to reduce nonpoint sources and point sources should be adopted to reduce the load of pollutants.<sup>98</sup> The obligation to set water standards and monitor streams is on the states.<sup>99</sup> The EPA is required to approve or disapprove state TMDL plans.<sup>100</sup> If the states do not act, the EPA has the duty to step in.<sup>101</sup> None of this happened, though. Instead, the states and the EPA ignored §303(d) for more than twenty years.<sup>102</sup>

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95. G. Tracy Mehan, III, Speech at the 2006 Missouri Environmental Conference at the Lake: The Next Era of the Clean Water Act, (July 27, 2006) (copy of transcript on file with the author).

96. James M. McElfish, Jr. et al., *Inventing Nonpoint Controls: Methods, Metrics and Results*, 17 VILL. ENVTL. L.J. 87, 87 (2006).

97. 33 U.S.C. § 1313(a), (d).

98. See *id.* § 1313(d), (e); see also James R. May, *The Rise and Repose of Assimilation-Based Water Quality, Part I: TMDL Litigation*, 34 ENVTL. L. REP. (Envtl. Law Inst.) 10,247, 10,247, 10,249-50 (2004) (stating that the TMDL is apportioned among both point and nonpoint sources).

99. See 33 U.S.C. § 1313(a)(3), (d).

100. *Id.* § 1313(d)(2).

101. See *id.* § 1313(b)(1), (d).

102. See May, *supra* note 98, at 10,247 (bemoaning the glacial pace of compliance).

The states and the EPA's failure to address nonpoint source pollution was challenged by a series of environmental lawsuits brought by citizens in the late 1990s who were seeking to speed the process of setting TMDLs for states' waterways.<sup>103</sup> Since then, more than forty lawsuits have resulted in all fifty states creating a TDML program—even if in name only.<sup>104</sup> Based on 1998 estimates, the EPA reported that the states and territories had identified the need for 36,000 TMDLs on 20,000 impaired water bodies.<sup>105</sup> Currently, agricultural interests, environmental organizations, states, and the EPA are litigating every phase of the TDML program in courts across the United States.<sup>106</sup> As TMDL litigation continues into the foreseeable future, states are struggling with ways to curb nonpoint source pollution today.<sup>107</sup>

California has an advanced and sophisticated program that already has moved to setting a budget for agricultural and municipal area runoff controls.<sup>108</sup> Other states are struggling to find solutions to runoff from cities and farms. They do this through a mixture of various programs with heavy emphasis on education, technical assistance, financial assistance, and cost sharing; few state programs resort to regulation.<sup>109</sup> The EPA and states' effort to curb nonpoint source pollution is still in its infancy. Its major challenges consist of finding ways to deal with deposition of airborne pollutants in waterways, with the leaching of agricultural chemicals, and with the classic problems of wind and water erosion and sedimentation. As programs mature, though, they can

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103. *Id.*; see also OLIVER A. HOUCK, ENVTL. LAW INST., *THE CLEAN WATER ACT TMDL PROGRAM: LAW, POLICY, AND IMPLEMENTATION* (2d ed. 2002) (analyzing the history of the lawsuits and the regulations).

104. May, *supra* note 98, at 10,247.

105. Fact Sheet on "The National Costs of the Total Maximum Daily Load Program (Draft Report)," <http://www.epa.gov/owow/tmdl/coststudy/costfact.html> (last visited Apr. 11, 2007); see also Michael Ferullo, *Agency Seeks Public Comment on Costs of Implementing Rule on Impaired Waters*, 33 ENV'T REP. (BNA) 1588 (Aug. 10, 2001).

106. See HOUCK, *supra* note 103, at 190-93; see generally May, *supra* note 103.

107. See McElfish, Jr. et al., *supra* note 96. This article by McElfish is the most recent of an ongoing series of assessments of state actions to control nonpoint source water pollution that is the most useful source of information on this contentious field. See also ENFORCEABLE STATE MECHANISMS, *supra* note 79; ENVTL. LAW INST., *PUTTING THE PIECES TOGETHER: STATE NONPOINT SOURCE ENFORCEABLE MECHANISMS IN CONTEXT* (2000) [hereinafter *PUTTING THE PIECES TOGETHER*]; ENVTL. LAW INST., *ALMANAC OF ENFORCEABLE STATE LAWS TO CONTROL NONPOINT SOURCE WATER POLLUTION* (1998) [hereinafter *ALMANAC*].

108. See *ALMANAC*, *supra* note 107, at 21-30.

109. See McElfish, Jr. et al., *supra* note 96; ENFORCEABLE STATE MECHANISMS, *supra* note 79; *PUTTING THE PIECES TOGETHER*, *supra* note 107; *ALMANAC*, *supra* note 107.



make an important contribution to soil protection by giving regulators leverage to persuade landowners to enter into conservation plans.

#### D. A Growing Role for EPA

The EPA has had to step into a regulatory void on soil protection before. Congress gave the EPA tools to promote soil quality with passage of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA" or "Superfund") in 1980, which set up a program of emergency response for spills and a remedial action program to restore contaminated soils.<sup>110</sup> Much maligned during its first decades, CERCLA is now recognized as one of the most successful Congressional efforts in environmental improvement, and the EPA is credited with having emerged after a twenty-five year struggle as an effective force for dealing with contaminated soil.<sup>111</sup> As a leading authority on Superfund has written:

Although the Superfund program has generated extraordinary levels of controversy and criticism, it can now be recognized as an arena in which EPA has achieved a high level of success. After starting out with little or no practical knowledge of the problems to be addressed, the Agency has, over time, developed institutional capability and expertise, solved problems, improved relationships, and ultimately established a program that operates effectively and performs a critical function in society. Tens of thousands of contaminated sites have been evaluated, short-term removal actions have been taken at several thousand of those sites, and longer term remedial actions are slowly being completed at the most severely contaminated sites. A topic of intense public concern—once dominated by controversy and emotion—has been brought under control, buttressed by sound technical understanding and a general public recognition that actions that should be taken are being taken.<sup>112</sup>

The saga of Superfund's trials and triumphs cannot be detailed here, but the EPA experience in dealing with contaminated soils on mining and industrial sites suggests an expanded role for it in future soils policy. An Executive Order created the EPA,

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110. 42 U.S.C. §§ 9601-9675 (2000).

111. See John Quarles & Michael W. Steinberg, *The Superfund Program at Its 25th Anniversary*, 36 ENVTL. L. REP. (Envtl. Law Inst.) 10,364 (2006).

112. *Id.* at 10,365-66.

transferring agencies from other government departments: water from the Department of the Interior, pesticides from the Department of Agriculture, air from the Department of Health and Human Services.<sup>113</sup> The future may bring some future combination or fusing of the capabilities of NRCS and the EPA.

#### IV. FEDERAL SUBSIDY PROGRAMS

##### A. The Federal Response to a Growing Crisis

By the early 1980s, the U.S. soil situation had reached a state of quiet crisis, and Congress began to consider ways to strengthen the federal presence in soil protection efforts. Congress was still unwilling to use the stick of regulation to protect soil quality, however, so it turned to the carrot of economic incentives by channeling some of the funds previously used for agricultural price supports to conservation purposes. Previously, in the 1930s, Congress and the U.S. Department of Agriculture ("USDA") created a massive system of price supports and commodity quotas in a centrally directed agriculture sector aimed at protecting farmers' incomes.<sup>114</sup> In the 1980s—in a move to deregulate more of the economy—Congress transformed the agricultural support system, moving from a system of annually authorizing agricultural programs to passage of a multi-year umbrella bill, known as the "farm bill," that provided a road map for the next five or six years.<sup>115</sup>

The 1985 farm bill was landmark legislation,<sup>116</sup> which set the pattern for succeeding farm bills in 1990,<sup>117</sup> 1996,<sup>118</sup> and 2002.<sup>119</sup> The next farm bill is slated for consideration in 2007. Title I of the most recent farm bill, passed in 2002, covers payments to commodity growers of crops (such as cotton, wheat, soybeans, and corn) and is intended to make these crops competitive in world markets.<sup>120</sup> It allocated \$89.7 billion dollars for these subsidies

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113. See United States Environmental Protection Agency, History, The Birth of EPA, <http://www.epa.gov/history/topics/epa/15c.htm> (last visited Feb. 7, 2007).

114. See Hosansky, *supra* note 28, at 444.

115. See generally *id.* at 444-52.

116. Food Security Act of 1985, Pub. L. No. 99-198, 99 Stat. 1354.

117. Food, Agriculture, Conservation and Trade Act of 1990, Pub. L. No. 101-624, 104 Stat. 3359.

118. Federal Agricultural Improvement and Reform Act of 1996, Pub. L. No. 104-127, 110 Stat. 888.

119. Farm Security and Rural Investment Act of 2002, Pub. L. No. 107-171, 116 Stat. 134.

120. See *id.* §§ 1001-1108.

over the life of the farm bill.<sup>121</sup> Title II committed \$20.8 billion dollars to cover conservation payments to farmers who cooperate with the NRCS programs.<sup>122</sup> Title IV committed \$137.2 billion dollars, approximately half of the farm bill commitment, to food stamps and nutrition.<sup>123</sup> The annual appropriation for each of the programs is made pursuant to the budget process of that year.

Since 1985, Congress has shifted some of the price and loan support funding for commodities to conservation payments. In the succeeding farm bills passed in 1990, 1995, and 2002, it has continued to increase conservation funds.<sup>124</sup> The next farm bill slated for consideration in 2007 will undoubtedly continue this trend.

Part of the landmark farm bill passed in 1985, the Food Security Act of 1985 created the Conservation Reserve Program ("CRP"), which authorized USDA to enter into long-term rental contracts with farmers on highly erodible land.<sup>125</sup> By the terms of these contracts, farmers are required to plant acreage enrolled in the CRP with resource-conserving vegetation.<sup>126</sup> Farmers participating in the program must also develop approved conservation systems in order to remain eligible for benefits.<sup>127</sup> These systems should be economically viable for the farmer and should result in substantial soil erosion reductions.<sup>128</sup> Some commonly used conservation systems include crop rotation, conservation tillage, terracing, and grassed waterways.<sup>129</sup>

Congress placed the administration of conservation programs with the Farm Service Agency ("FSA") and the Commodity Credit Corporation.<sup>130</sup> These agencies, however, are more focused on disbursing funds from the plethora of diverse subsidies administered

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121. See Hosansky, *supra* note 28, at 448.

122. See Pub. L. No. 107-171, §§ 2001-2702; Hosansky, *supra* note 28, at 448.

123. See Pub. L. No. 107-171, §§ 4001-4405; Hosansky, *supra* note 28, at 448. These payments that go to poorer citizens are very popular with urban representatives and help ensure that each farm bill commands broad national support.

124. See e.g., NATURAL RES. CONSERVATION SERVICE, U.S. DEP'T OF AGRIC., NRCS STRATEGIC PLAN: 2003 UPDATE 34 (2003) [hereinafter STRATEGIC PLAN 2003 UPDATE].

125. Food Security Act of 1985, Pub. L. No. 99-198, § 1231, 99 Stat. 1354, 1509 (codified as amended at 16 U.S.C. § 3831 (2000)).

126. *Id.*; see also Roger L. Pederson, *Farms and Wetlands Benefit from Farm Bill Conservation Measures*, NAT'L WETLANDS NEWSL., Sept.-Oct. 2001, at 9, 11-12.

127. See Food Security Act of 1985, Pub. L. No. 99-198, §§ 1201, 1211-12, 99 Stat. 1354, 1504-07 (codified as amended at 16 U.S.C. §§ 3801, 3811-12, 3812a (2000)).

128. See *id.*

129. See *id.*

130. See *id.* § 1241, 99 Stat. at 1514-15 (codified at 16 U.S.C. § 3841).

by the Department of Agriculture than managing the CRP.<sup>131</sup> Further, as originally administered by the FSA, grants were not targeted to priority lands.<sup>132</sup> With each successive farm bill, however, Congress became more focused on requiring strategic application of funds, creating new conservation programs, and escalating funding levels.<sup>133</sup> Examples of such targeted efforts include the Wildlife Habitat Incentives Program, which pays farmers to plant erodible land with vegetation to create high quality wildlife habitats,<sup>134</sup> and the Conservation Security Program, which pays landowners to plant in order to ensure watershed protection.<sup>135</sup> Significantly, these programs are administered by the NRCS, the agency charged with the mission of soil protection.<sup>136</sup> Each of these programs has varied goals, methods, and requirements that are established by USDA regulations.<sup>137</sup> Together, they have great potential for a coordinated ecological program for the agricultural sector.<sup>138</sup> In fact, it seems that Congress is already fashioning the beginnings of an effective program for sustainable soils, albeit through the budget process rather than through substantive revision of soils law.

In addition to budgetary efforts by Congress, American farmers have also made great progress in the last twenty years in curbing soil erosion.<sup>139</sup> Through a combination of these efforts, the

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131. See U.S. GEN. ACCOUNTING OFFICE, *AGRICULTURAL CONSERVATION: STATE ADVISORY COMMITTEES' VIEWS ON HOW USDA PROGRAMS COULD BETTER ADDRESS ENVIRONMENTAL CONCERNS* 6, 9 (2002).

132. See *id.*

133. See *id.* For the various programs, see *Erodible Land and Wetland Conservation and Reserve Program*, 16 U.S.C. §§ 3801 to 3839bb-3 (2000).

134. 16 U.S.C. § 3839bb-1.

135. *Id.* § 3838a-c.

136. See United States Department of Agriculture Natural Resource Conservation Service, NRCS Conservation Programs, <http://www.nrcs.usda.gov/programs/> (last visited Feb. 7, 2007); United States Department of Agriculture Natural Resource Conservation Service, *Who We Are*, <http://www.nrcs.usda.gov/about/agency.html> (last visited Feb. 7, 2007).

137. See United States Department of Agriculture National Resource Conservation Service, NRCS Conservation Programs, <http://www.nrcs.usda.gov/programs/> (last visited Feb. 7, 2007).

138. Ian Hannam notes, "This approach by U.S. is one of few examples around the world of a legislative-based approach to integrated resource management on agricultural lands. In this regard, it introduces an ecological approach that we argue for in the IUCN publications No. 45 and 52 in Article 1 of the draft Soil Protocol." E-mail from Ian Hannam, Sustainable Soils Specialist Group, IUCN Commission on Environmental Law, to author (June 18, 2006) (on file with author).

139. See U.S. GEN. ACCOUNTING OFFICE, *AGRICULTURAL CONSERVATION: USDA NEEDS TO BETTER ENSURE PROTECTION OF HIGHLY ERODIBLE CROPLAND AND WETLANDS* 38-41 (2003) [hereinafter *USDA NEEDS TO BETTER ENSURE PROTECTION*]; see

NRCS National Resources Inventory on soil loss reported in 2001 that,

[t]he significant gains in erosion control that were made between 1982 and 1997 were sustained in the period between 1997 and 2001 . . . . Soil erosion on cropland declined from 3.1 billion tons per year in 1982 to 1.8 billion tons per year in 2001. Sheet and rill erosion dropped by almost 41 percent during this time period, while wind erosion dropped by 43 percent.<sup>140</sup>

Both government officials and private citizens attribute this progress to the economic incentives that provide ways for local conservation districts and the NRCS to work with farmers towards improving the land and protecting water quality.<sup>141</sup>

## **B. Institutional Arrangements for Soil Protection**

In 1994, the SCS was renamed the Natural Resources and Conservation Service ("NRCS") in recognition of the agency's concerns with wetlands and water in addition to soil quality.<sup>142</sup> Congress augmented the agency's statement of purpose in 1962:

It is hereby declared to be the policy of this [chapter] also to secure, and the purposes of this [chapter] shall also include, (1) preservation and improvement of soil fertility; (2) promotion of the economic use and conservation of land; (3) diminution of exploitation and wasteful and unscientific use of national soil resources; (4) the protection of rivers and harbors against the results of soil erosion in aid of maintaining the navigability of waters and water courses and in aid of flood control; (5) reestablishment, at as rapid a rate as the Secretary of Agriculture determines to be practicable and in the general public interest, of the ratio between the purchasing power of the net income per person on farms and that of the income per person not on farms that prevailed during the five-year period August 1909-July 1914, inclusive, as determined from statistics available in the United States Department of Agriculture, and the maintenance of such ratio; (6) prevention and abatement of agricultural-re-

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*generally* United States Department of Agriculture Natural Resources Conservation Service, National Resources Inventory 2001, <http://www.nrcs.usda.gov/Technical/land/nri01/nri01eros.html> (last visited Feb. 7, 2007).

140. United States Department of Agriculture Natural Resources Conservation Service, National Resources Inventory 2001, <http://www.nrcs.usda.gov/Technical/land/nri01/nri01eros.html> (last visited Feb. 7, 2007).

141. See USDA NEEDS TO BETTER ENSURE PROTECTION, *supra* note 139, at 38-39.

142. See NRCS STRATEGIC PLAN 2005-2010, *supra* note 11, at 3.

lated pollution, and (7) the promotion of energy and water conservation through dry land farming.<sup>143</sup>

This laundry list of diverse and sometimes competing goals reflects the tension between environmental protection and the USDA's primary focus on production. Note the reference to parity, the benchmark of the golden years of American agriculture between 1909 and 1914.

The NRCS is above all a professional agency.<sup>144</sup> The scientific and engineering expertise of the NRCS forms the background to leadership in protecting soil quality.<sup>145</sup> The Service's work in creating a universal soil loss equation to predict erosion from water and wind formed a solid foundation for establishing tolerance levels for different types of soils.<sup>146</sup> These levels then became the basis for later standard-setting in state laws and administrative regulations.<sup>147</sup> Through these efforts, the U.S. has made impressive progress in establishing sufficient research and monitoring capacity—one of the fundamental criteria the IUCN has identified as critical to implementing sound soils law.<sup>148</sup>

From the beginning, the SCS had sought on-the-ground engagement of local communities.<sup>149</sup> Expanded conservation funding by Congress allowed dramatic expansion of SCS and NRCS efforts, which, in turn, revitalized private sector soil protection efforts and pumped new life into conservation district activities.<sup>150</sup>

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143. See 16 U.S.C. § 590g(a).

144. See NRCS STRATEGIC PLAN 2005-2010, *supra* note 11, at 5.

145. See *id.* at 6-7.

146. See United States Department of Agriculture Natural Resources Conservation Service, National Resources Inventory 2001, <http://www.nrcs.usda.gov/Technical/land/nri01/nri01eros.html> (last visited Feb. 7, 2007).

147. See, e.g., ILL. ADMIN. CODE tit.8, § 650.30 (2007).

148. See *Draft Protocol*, *supra* note 1, at 13-14. The Service is not without its critics. Policy analysts at Resources for the Future have argued that the data reported by the NRCS is not supported by observation, but by over-reliance on models. See, e.g., Stanley W. Trimble & Pierre Crosson, *U.S. Soil Erosion Rates—Myth and Reality*, 289 *Sci.* 248 (2000).

149. See United States Department of Agriculture Natural Resource Conservation Service, *Who We Are*, <http://www.nrcs.usda.gov/about/agency.html> (last visited Feb. 7, 2007); see also United States Department of Agriculture Natural Resource Conservation Service, *A Story of Land and People*, <http://www.nrcs.usda.gov/about/history/story.html> (last visited Feb. 7, 2007).

150. The ramping up of funding is analyzed in JEFFREY A. ZINN, CONG. RESEARCH SERV., LIBRARY OF CONG., CRS REP. NO. RL31486, *RESOURCE CONSERVATION TITLE OF THE 2002 FARM BILL: A COMPARISON OF THE NEW LAW WITH BILLS PASSED BY THE HOUSE AND SENATE AND PRIOR LAW (2002)*. The trend continues in the proposed 2007 Farm Bill. See Amena H. Saiyid, *White House Seeks \$7.8 Billion Increase in Upcoming Farm Bill's Conservation Title*, 38 *ENV'T. REP. (BNA)* 260 (Feb. 2, 2007).

This interplay between officials at the county, state, and federal level demonstrates the strong ability of federalism to achieve national goals by mobilizing citizenry at the local level.<sup>151</sup> Today the NRCS's 12,000 employees work in nearly 2900 field offices in almost every county in the U.S.<sup>152</sup> An important task of these employees is updating the National Resource Inventory, a detailed county-by-county assessment of soil quality.<sup>153</sup> NRCS staff interacts with the 8700 employees of the state and conservation district offices.<sup>154</sup> Additionally, more than 15,000 volunteers serve in elected or appointed positions on conservation districts' governing boards.<sup>155</sup> They work directly with more than 2.3 million cooperating land managers nationwide, and their efforts touch more than 778 million acres of private land.<sup>156</sup>

Soil conservation institutional arrangements are not simple and vary from state to state. Within each state, there are two parallel hierarchies—one in state government and the other in federal agencies.<sup>157</sup> In Virginia, a state with a typical arrangement, for example, the state Director of the Department of Conservation and Recreation appoints a Director for the Division of Soil and Water, who oversees state employees assigned to coordinating the activities of the local conservation districts, which are staffed by district employees and governed by a county-elected board of members.<sup>158</sup> The budgets of the conservation districts come from a mix of county and state funds. On the federal side, within each state, a NRCS State Conservationist administers a staff that serves in the field in each county and conservation district. In most counties, this staff works in the same building as and closely with the staff of the local conservation district. Observers who are familiar with the often uneasy interactions of state and federal workers administering EPA programs are frequently struck by the closeness of cooperation between county, state, and federal offices involved in administering farm programs. In the state capi-

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151. See NRCS STRATEGIC PLAN 2005-2010, *supra* note 11, at 6.

152. *Id.* at 4.

153. See United States Department of Agriculture Natural Resources Conservation Service, National Resources Inventory 2001, <http://www.nrcs.usda.gov/technical/land/nri03/nri03eros-mrb.html> (last visited Feb. 7, 2007).

154. STRATEGIC PLAN 2003 UPDATE, *supra* note 124, at 6.

155. National Association of Conservation Districts, About Conservation Districts, <http://www.nacdnet.org/about/aboutcds.htm> (last visited Feb. 7, 2007).

156. *Id.*

157. See NRCS STRATEGIC PLAN 2005-2010, *supra* note 11, at 6.

158. See Virginia Association of Soil & Water Conservation Districts, About the Association, <http://www.vaswcd.org/aboutus.htm> (last visited Feb. 7, 2007).

tal, a program staff oversees the core programs that the NRCS has been conducting for years: soil surveys, demonstration projects, and cost share agreements.

Although federal NRCS staff and state officials have a long history of cooperating, some things have changed. Most significantly, the expanded funding that started in 1985 with the Conservation Reserve Program has grown as Congress adds new programs like the Environmental Quality Incentives Program, which allows the NRCS to contract with state and local agencies on priority projects.<sup>159</sup> At the heart of each of these contracts is an agreement that the private landowner will carry out conservation programs on his property.<sup>160</sup> Development of new programs such as these is causing a significant shift in the NRCS role from a purely technical advisory body to a more programmatic agency.

The EPA and environmental officials in some states have realized that conservation districts present an extraordinary resource that can be used to curb nonpoint source pollution.<sup>161</sup> Like a hand in a glove, seventy years of experience with conservation plans to curb soil erosion fits perfectly inside the country's renewed interest in protecting water quality by reducing agricultural runoff.<sup>162</sup> In Virginia, for example, the state's strategy to combat nonpoint source pollution rests on engaging its conservation districts.<sup>163</sup>

The complicated and locally-oriented soil conservation administrative process has its positive side. With interested volunteers manning conservation districts, the machinery to promote sustainable soils is already in place in almost every county in the

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159. Environmental Quality Incentives Program, 16 U.S.C. §§ 3839aa to 3839aa-9 (2000).

160. See generally Erodible Land and Wetland Conservation and Reserve Program, 16 U.S.C. §§ 3801-3862 (2000).

161. See ENFORCEABLE STATE MECHANISMS, *supra* note 79; PUTTING THE PIECES TOGETHER, *supra* note 107, ALMANAC, *supra* note 107; McElfish, Jr. et al., *supra* note 96.

162. See VA. CODE ANN. §§ 10.1-559.1 to .11 (2006).

163. See *id.* § 10.1-559.3; ALMANAC, *supra* note 107. John H. Davidson comments:

In addition, the idea of a conservation plan enjoys a history of acceptance among farmers, and there is an institution—the SCS—in place. There is a tendency to overlook the remarkable presence of the USDA in farm country. Stationed in every county is a technical staff ready to develop conservation plans. This staff knows the ground, and has on file the complete cropping history for each farm. Annual aerial photography provides staff with a unique analytical and monitoring device. The importance of the local office's link to farm financial support programs is apparent.

Davidson, *supra* note 83, at 10,506.



U.S.<sup>164</sup> This is an extraordinary human resource, unparalleled by efforts to protect air and water through EPA programs.<sup>165</sup> Probably no other nation has such a high level of citizen involvement in its soil programs. This is an outstanding example of widespread public participation, a key component of the IUCN's draft protocol on sustainable soils.<sup>166</sup> These citizens have enormous potential to turn the soil crisis around if the U.S. could get the law and its implementation right.

### C. USDA Enforcement Problems

Federal incentives, rather than mandatory regulations, are relied on in order to fill the gap left by the failure of the states to enforce their erosion and sedimentation statutes. The effectiveness of this "carrot" system depends, however, on grantee farmers carrying out their end of the bargain and implementing the conservation practices required. All too many do not.<sup>167</sup>

The original 1985 farm bill contained a swampbuster provision that blocked funding for farmers who drained wetlands<sup>168</sup> and a sodbuster provision that did the same for farmers bringing highly erodible land into production.<sup>169</sup> Environmentalists noted that these provisions are particularly valuable in protecting small sensitive areas, such as wetlands, that are imbedded in larger tracts.<sup>170</sup> Large-scale commodity producers, however, often viewed isolated wetlands as a nuisance to their commodity operations and, as such, drained them.<sup>171</sup> In response, Congress increased sanctions in the 1990 farm bill and terminated all USDA benefits for the nonperforming farmer.<sup>172</sup> The law is clear: the government can bar the farmer from further payments and sue to

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164. See National Association of Conservation Districts, About Conservation Districts, <http://www.nacdnet.org/about/aboutcds.htm> (last visited Feb. 7, 2007).

165. The EPA interaction with state and local governments has been stormy in many parts of the country. See generally ENVTL. LAW INST., FEDERAL OVERSIGHT OF AUTHORIZED STATE PROGRAMS (1995); Margaret Kriz, *Feuding with the Feds*, 29 NAT'L J. 1598 (1997).

166. See *Draft Protocol*, *supra* note 1, at 11-12.

167. See generally USDA NEEDS TO BETTER ENSURE PROTECTION, *supra* note 139.

168. Food Security Act of 1985, Pub. L. No. 99-198, §§ 1221-24, 99 Stat. 1354, 1507-08 (codified as amended at 16 U.S.C. §§ 3821-3824 (2000)).

169. *Id.* §§ 1211-15, 99 Stat. at 1506-07 (codified as amended at 16 U.S.C. §§ 3811-3814).

170. See Pederson, *supra* note 126, at 10.

171. *Id.*

172. See Food, Agriculture, Conservation and Trade Act of 1990, Pub. L. No. 101-624, §§ 1411-12, 1421-24, 104 Stat. 3359, 3569-76 (codified as amended at 16 U.S.C. §§ 3811-14, 3821-24 (2000)).

recover past payments.<sup>173</sup> Appellate courts have repeatedly reaffirmed the government's right enforce erosion and sedimentation statutes by barring subsidies and reclaiming payments from non-compliant farmers. In *United States v. Dierckman*, for example, the court ordered a landowner to reimburse the government \$92,703 for payments made between 1991 and 1993 to a farm on which wetlands had been converted.<sup>174</sup>

The hostility to enforcement in the farm belt is intense. In 2005, *Horn Farms, Inc. v. Johanns*, which held that a farmer who converted wetlands to agricultural use was ineligible for federal agricultural subsidies under the swampbuster legislation,<sup>175</sup> drew law review criticism that the total forfeiture penalty was draconian and an abuse of the Congressional spending power clause.<sup>176</sup> In 2006's *Holly Hills Farm Corp. v. United States*, however, the Fourth Circuit held that protection of the public fisc requires those who seek public funds to act with scrupulous regard for the requirements of law, and it upheld an NRCS finding of a technical wetland conversion and the subsequent FSA decision to deny benefits.<sup>177</sup>

In addition to public hostility, enforcing compliance with conservation agreements has also been administratively problematic. The NRCS is responsible for compliance reviews to verify that a particular farmer is carrying out agreed upon management practices.<sup>178</sup> This finding of fact is transmitted to the FSA, which is responsible for withholding payments for noncompliance.<sup>179</sup> A survey by the General Accounting Office ("GAO"), an oversight agency of Congress, found that the FSA waived NRCS's noncompliance findings in 4,948 out of 8,118 appeals.<sup>180</sup> The FSA structure follows that of the NRCS, with an FSA office in almost every county in the United States disbursing government payments.<sup>181</sup>

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173. See 16 U.S.C. §§ 3811, 3814, 3821.

174. *United States v. Dierckman*, 201 F.3d 915, 917 (7th Cir. 2000).

175. *Horn Farms, Inc. v. Johanns*, 397 F.3d 472, 474-79 (7th Cir. 2005).

176. See e.g., Amy L. Ohnemus, *December 23, 1985: A Turning Point in the Granting of Farm Subsidies Under the Food Security Act of 1985*, 13 MO. ENVTL. L. & POL'Y REV. 171, 187-91 (2006).

177. *Holly Hill Farm Corp. v. United States*, 447 F.3d 258, 260, 264-65 (4th Cir. 2006).

178. USDA NEEDS TO BETTER ENSURE PROTECTION, *supra* note 139, at 2.

179. *Id.*

180. *Id.* at 6.

181. United States Department of Agriculture Farm Service Agency, About FSA, <http://www.fsa.usda.gov/FSA/webapp?area=about&subject=landing&topic=landing> (last visited Feb. 7, 2007).

The decision-making body is a county FSA committee, elected by the eligible farmers of the district, which decides whether the cited farmer can claim a good faith exemption for his land abuse.<sup>182</sup> The GAO concluded that these locally elected boards are reluctant to take funds away from their neighbors.<sup>183</sup>

The failure to enforce agreed upon soil protection projects is a major defect in the U.S. system to promote sustainable soils, but this failure is consistent both with the larger failure to see soil as an ecological resource and with the fragmented approach that treats soil protection efforts as an afterthought to development goals.

#### **D. Agricultural Subsidies and the World Trade Organization ("WTO")**

Congress will have an opportunity to address U.S. enforcement failures while debating the 2007 farm bill. Many observers believe conservation funds will be greatly expanded in the 2007 farm bill because of current disputes in the WTO, in which Brazil has attacked the practice of commodity payments, generally, and African countries have protested U.S. cotton subsidies, in particular.<sup>184</sup> Many think the growth of the global trading system depends on branding these subsidies as unfair trade practices.<sup>185</sup>

Admittedly, the heavy subsidies Congress pays to American farmers are skewed in favor of a few select crops for export. Title I, the heart of successive U.S. farm bills has provided subsidies for commodity producers of cotton, soybeans, rice, wheat, and corn that are intended to keep these crops competitive in world markets.<sup>186</sup> U.S. farm receipts total \$200 billion a year of which 25%—\$50 billion—is exported.<sup>187</sup> Many observers believe that these crops are the source of the worst environmental abuses in terms of erosion, nutrient loss, and damaging runoff to water-

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182. USDA NEEDS TO BETTER ENSURE PROTECTION, *supra* note 139, at 6.

183. *Id.* at 6.

184. See Vance E. Hendrix, *The Farm Bill of 2002, the WTO, and Poor African Farmers: Can They Co-exist?*, 12 *TULSA J. COMP. & INT'L L.* 227 (2004).

185. See *id.* at 262.

186. See Farm Security and Rural Investment Act of 2002, Pub. L. No. 107-171, §§ 1001-1618, 116 Stat. 134, 134-223.

187. United States Environmental Protection Agency, Ag 101, Revenues, <http://www.epa.gov/agriculture/ag101/econrevenues.html> (last visited Feb. 7, 2007). These exports are an important factor in the U.S. balance of payments in foreign trade. *Id.*

ways.<sup>188</sup> A potentially alarming recent scientific development, in terms of soil protection, is the conversion of commodity crops to biofuels like ethanol.<sup>189</sup> A push is currently underway for massive planting of corn as a means to foster energy independence.<sup>190</sup> This new emphasis on agriculture as a means to ease energy shortages poses a severe threat to a sustainable soils policy.

Title II conservation payments<sup>191</sup> are not considered trade distorting subsidies under the WTO but, instead, are labeled as "green box" measures by the Agreement on Agriculture.<sup>192</sup> Many European countries are bolstering their agricultural sectors in this way and are shifting their large agricultural subsidies to a system of grants, often awarded to the same farmers as before, for the implementation of conservation practices.<sup>193</sup>

The lines are being drawn for the debate on the 2007 farm bill. The Bush administration proposal would limit commodity subsidies sharply and make more money available for conservation funding.<sup>194</sup> Additionally, a coalition of environmental organizations is seeking public support for increasing Title II payments and strengthening the conservation programs.<sup>195</sup> In upcoming debates about the 2007 farm bill, Congress should address the problem of recalcitrant landowners who take money without performing bargained for conservation work and should

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188. See *Legal and Institutional Frameworks for Sustainable Soils*, *supra* note 4, at 13; see also NAT'L RESEARCH COUNCIL, *supra* note 90, at 29.

189. See generally Marcello E. Dias de Oliveira et al., *Ethanol as Fuel: Energy, Carbon Dioxide Balances, and Ecological Footprint*, 55 BIOSCIENCE 593 (2005).

190. John Cochran, *Fuel From the Farm*, CQ WEEKLY, Aug. 7, 2006, at 2166.

191. Farm Security and Rural Investment Act of 2002, Pub. L. No. 107-171, §§ 2001-2702, 116 Stat. 134, 223-80.

192. MELAKU GEBOYE DESTA, LEGAL ISSUES IN INTERNATIONAL AGRICULTURAL TRADE: THE EVOLUTION OF THE WTO AGREEMENT ON AGRICULTURE FROM ITS URUGUAY ROUND ORIGINS TO ITS POST-HONG KONG DIRECTIONS 19, 27 (2006). The WTO distinguishes between clear trade violations that are classified in the "amber box," an intermediary class in the "blue box," and trade neutral practices in the "green box." See *id.* at 22-29; Melaku Geboye Desta, *The Bumpy Ride Towards the Establishment of "A Fair and Market-Oriented Agricultural Trading System" at the WTO: Reflections Following the Cancun Setback*, 8 DRAKE J. AGRIC. L. 489, 521-32 (2003).

193. See DAN CHARLES, GOING GREEN IN AGRICULTURE: EU SHIFTS SUBSIDIES FROM CROPS TO LAND STEWARDSHIP (2005), available at <http://www.npr.org/templates/story/story.php?storyid=4748066>.

194. See Alexei Barrionueve, *Agriculture Dept. Urges Big Overhaul in Farm Policy*, N.Y. TIMES, Feb. 1, 2007, at 1.

195. See American Farmland Trust, *Diverse Voices Find Common Ground at Farm Policy Reform Leadership Summit*, <http://www.agobservatory.org/library.cfm?refID=37771> (last visited Feb. 7, 2007).

strengthen monitoring and enforcement of agricultural subsidy conservation agreements.

## V. THE ROAD AHEAD: POLITICS AND SUSTAINABLE SOILS

Despite great gains since 1985, the loss of soil and the pollution of waterways by agricultural effluents remain deeply disturbing problems. Soil scientists have as much reason to be as pessimistic as climate change prophets if current trends continue.<sup>196</sup> Indeed, the crisis in soils and the current climate crisis are linked. Healthy soils play a major role in carbon fixing, thus softening the climate change impacts of industrial development.<sup>197</sup> Soil degradation, on the other hand, leads to the transfer of massive amounts of carbon fixed in soil to the atmosphere and thereby contributes to greenhouse warming.<sup>198</sup> Good soil conservation programs that sequester carbon are powerful tools to reduce the effects of climate change.<sup>199</sup>

The 2000 NRCS Strategic Plan reported that 232 million acres of cropland, 280 million acres of rangeland, and 222 million acres of private forestland are in need of conservation treatment.<sup>200</sup> The current strategic plan reports that, in 2003, 60% of cropland was managed under systems that maintained or improved soil quality and increased soil carbon but notes that potential sediment delivery from agricultural operations was 970 million tons.<sup>201</sup> In 1999, 500 million acres of non-federal grazing land and non-industrial forest were considered to be in minimal or degrading vegetative condition.<sup>202</sup>

The NRCS strategic plan envisions a greatly accelerated pace of activity and increased funding for conservation. The NRCS, however, currently faces an enormous backlog in applications for assistance. Because farmers seeking to enroll in these programs

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196. See generally NAT'L RESEARCH COUNCIL, *supra* note 90; see also USDA NEEDS TO BETTER ENSURE PROTECTION, *supra* note 139, at 38-41; Ruhl, *Farms, Their Environmental Harms*, *supra* note 94, at 274-94.

197. See Food and Agriculture Organization of the United Nations, Land and Water Development Division, SOIL CARBON SEQUESTRATION, <http://www.fao.org/ag/agl/agll/carbonsequestration/background.stm> (last visited Feb. 7, 2007).

198. See *id.*

199. See *id.*

200. NATURAL RES. CONSERVATION SERVICE, U.S. DEP'T OF AGRIC, NRCS STRATEGIC PLAN 2000-2005 12, 17, 21 (2000).

201. NRCS STRATEGIC PLAN 2005-2010, *supra* note 11, at 23-29.

202. *Id.* at 37.

face a \$3 billion backlog, 80% of applications are annually rejected.<sup>203</sup> Further, even if funding were increased to a sum that would fund the conservation of hundreds of millions of acres in need—an unlikely event considering the unwillingness of Congress to pay for environmental services—the problem of the recalcitrant or negligent landowner remains. A leading commentator on agricultural law observes that “[t]he weak point in the erosion control effort has been its dependence on voluntary action. Thus, those who are conservation-minded from the outset tend to participate while those with erosion-prone land and a disinclination toward conservation remain untouched. The latter group has the clear majority.”<sup>204</sup>

The situation calls for Congressional attention to the enforcement failures not only of USDA aid programs but also of state soil laws. The growth of conservation funding through the farm bills demonstrates a national commitment to investing in sustainable soils. In time, Congress may demand that the states protect that investment with strengthened regulatory controls at the state and county level to curb soil degradation,<sup>205</sup> perhaps by barring distribution of conservation funding to farmers in states that do not adequately enforce their erosion and sedimentation laws. Congress could charge the USDA with a duty to consult with the EPA on funding conservation grants, much as it charges the Corps of Engineers with coordinating with the EPA on wetland permits.<sup>206</sup> Further, Congress could also amend the Soil Conservation Act to require states to establish substantive soil standards<sup>207</sup> and enforce their statutes. Sanctions are no stranger to successful fed-

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203. Environmental Defense, Help Farmers, <http://www.environmentaldefense.org/article.cfm?contentid=4159> (last visited Feb. 7, 2007).

204. John H. Davison, *Sustainable Development and Agriculture in the United States*, 32 ENVTL. L. REP. (Envtl. Law Inst.) 10,543, 10,556 (2002).

205. See Ruhl, *Farms, Their Environmental Harms*, *supra* note 94. J.B. Ruhl argues that the time has come to devise a new system of regulation fashioned for agro-industry, noting that in 1997 about 157,000 large farms (with annual agricultural sales averaging about \$900,000) accounted for 8% of all U.S. farms but 72% of all farm sales. See *id.* at 273, 333-48. Another legal framework would address smaller farms and rely on a mixture of incentives. *Id.* at 333-48.

206. See 33 U.S.C. § 1344(c) (2000) (giving the EPA the authority to veto a Corps of Engineers permit to fill a wetland); see also MARGARET N. STRAND, ENVTL. LAW INST., WETLANDS DESKBOOK 410 (2d ed. 1997).

207. Technically, the criteria to set national standards for soil quality have been in place for years. The SCS established the T factor for soils after extensive research in the 1930s. For instance, the T factor standard is the basis for the soil standards in the Illinois regulations discussed *supra* Section III.B. See ILL. ADMIN. CODE tit. 8, § 650.20-.30 (2006).

eral-state programs. The Clean Air Act sets national standards for criteria pollutants and delegates implementation to the states.<sup>208</sup> Section 176 of the Clean Air Act blocks payment of federal highway funds—or other aid—to any city or state that does not comply with its implementation plan.<sup>209</sup> Congress needs to give soil protection efforts this kind of serious support.

Congress has shied away in the last thirty years from anything that smacked of land use planning, but new times call for new solutions to an old and increasingly serious problem. The resistance will be fierce because such an effort runs against the enshrined view of soil as land, a thing, or a piece of property whose use by its owner should not be impeded by federal programs. The view of the IUCN soils project is that land is more—much more.<sup>210</sup> The beginning of an effective approach to land use law in the U.S. will be entwined with the recognition of soil as an ecological resource—no less vital and no less vulnerable than air and water.

U.S. enforcement failures in soil protection stem from the fact that soil is undervalued as a resource and soil quality is addressed only after a serious decline has occurred, much as the first generation of air and water pollution laws focused on end-of-pipe pollution alone. As the air and water programs matured, they became less reactive and more focused on pollution prevention. Today, soil programs in the U.S. address erosion and contamination, but they do not address nutrient loss and other fundamentals essential to sustainable soils. New laws, inspired by an awareness of the ecological dimensions of soil policy, must recognize the major role that healthy soils play in sustaining life.

Application of the IUCN sustainable soils project's template on good soils legislation shows that the U.S. has achieved much. The U.S. has a superb technical soil agency in the NRCS, an innovative EPA that has achieved considerable success in dealing with contaminated soils, excellent data and monitoring, an impressive record in conservation funding by the USDA, and unparalleled citizen outreach. However, application of the template also identifies enforcement problems in the USDA agricultural programs

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208. See 42 U.S.C. §§ 7401-7671q (2000).

209. *Id.* § 7506 ("No department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve, any activity which does not conform to an implementation plan after it has been approved and promulgated under §7410 of this title.").

210. *Legal and Institutional Frameworks for Sustainable Soils*, *supra* note 4, at 11-12, 41.

and significant failures by the EPA and the states in dealing with nonpoint source pollution. Most significantly, however, the IUCN project highlights the fragmented nature of U.S. protection efforts resulting from its failure to recognize soil as an ecological resource.