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**Chrome on the Range:  
Off-Road Vehicles on Public Lands**

by

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# Chrome on the Range: Off-Road Vehicles on Public Lands

Jeffrey L. Bleich\*

## INTRODUCTION

The rapid expansion of off-road vehicle (ORV) recreation in the United States poses difficult management challenges for the courts and for the public agencies responsible for protecting public lands.<sup>1</sup> ORV use on public lands increased tenfold between the early 1960's and 1980<sup>2</sup> and has become one of the fastest growing forms of recreation on America's parklands.<sup>3</sup> Nevertheless, public land managers have failed to establish any consistent program for accommodating or controlling ORV use on protected lands.<sup>4</sup> Consequently, land management disputes regarding ORV use are appearing in federal courts with increasing frequency.<sup>5</sup>

The management gridlock results in part from the lack of information about the consequences of ORV use. Many attempts to quantify the benefits derived from ORV use, the impact of ORV driving on aesthetic and environmental quality, and the disruptive effect of ORV's on traditional recreationists<sup>6</sup> have been discredited.<sup>7</sup> In the absence of adequate information, efforts by Congress and the Executive to create a uniform

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1. Warren, *Foreword* to D. SHERIDAN, *OFF-ROAD VEHICLES ON PUBLIC LANDS* at iii (1979).

2. D. SHERIDAN, *supra* note 1, at 2.

3. *Id.* at 3.

4. S. MCCOOL & J. ROGENBUCK, *OFF-ROAD VEHICLES AND PUBLIC LANDS: A PROBLEM ANALYSIS* (1974); *see also* D. SHERIDAN, *supra* note 1, at 3.

5. *See, e.g.*, *Sierra Club v. Clark*, 774 F.2d 1406 (9th Cir. 1985); *Sierra Club v. Clark*, 756 F.2d 686 (9th Cir. 1985); *Conservation Law Found. v. Clark*, 590 F. Supp. 1467 (D. Mass. 1984); *American Motorcyclist Ass'n v. Watt*, 543 F. Supp. 789 (C.D. Cal. 1982); *National Wildlife Fed'n v. Morton*, 393 F. Supp. 1286 (D.D.C. 1975).

6. For the purposes of this Comment, the term "traditional recreationists" is defined according to the National Park Service Act and the Cape Cod National Seashore Act. Traditional recreation includes "camping, swimming, boating, sailing, hunting, fishing, the appreciation of historic sites and structures and natural features . . . , and other activities of similar nature." 16 U.S.C. §§ 459b, 459b-6(b)(1) (1982); 50 C.F.R. § 26.32 (1987).

7. *See infra* notes 148-58 and accompanying text. *See generally* D. SHERIDAN, *supra* note 1, at 42 (noting H. Wilshire's review of 62 Forest Service Environmental Analysis Reports, which found all but two reports "virtually worthless when it comes to assessing the impact of ORV use on soil due to their lack of specific criteria and data").

ORV policy have resulted in a vague set of principles that cannot easily be applied to America's patchwork of public land regulation.<sup>8</sup> Furthermore, the often intense emotional nature of the controversy between traditional recreationists and ORV users has paralyzed land managers who have let the struggle between conflicting groups of public land users control their policy.<sup>9</sup>

This Comment examines the controversy surrounding ORV use on public lands and suggests a viable solution to the problem of formulating ORV management plans. Section I considers the various issues and sources of conflict in ORV management. Section II reviews present judicial and legislative efforts to resolve ORV disputes. Section III evaluates the ongoing ORV litigation concerning the Cape Cod National Seashore and demonstrates that the failure of both Congress and the public land agencies to establish management guidelines has frustrated effective management. Section IV argues that ORV use on public lands is a major federal action under the National Environmental Policy Act (NEPA) and that NEPA requires federal land management agencies to perform systematic cost-benefit analyses of ORV management decisions. Specifically, the Section recommends that if ORV use is allowed at all, public land agencies should adopt a NEPA-type approach for allocating land to ORV use. Section V applies cost-benefit analysis to the Cape Cod National Seashore to demonstrate its superiority to any analysis currently in use and suggests further adaptation and research.

This Comment focuses upon the ongoing ORV litigation between environmentalists and the National Park Service on the Cape Cod National Seashore<sup>10</sup> in order to provide a framework for its analysis and recommendations. The Cape Cod National Seashore was selected because of the unique ecological sensitivity of the region and the intensity of the ongoing litigation. The popularity of Cape Cod among both motorized and traditional recreationists brings into sharp relief the competing interests confronting public managers. Accordingly, Cape Cod has been the site of some of the most extensive and intensive research on ORV use in the country. Cost-benefit analysis offers a resolution to the Cape Cod litigation and provides a set of principles that can assist other agencies in resolving existing and future ORV disputes.

## I

### OFF-ROAD VEHICLE USE: MANAGEMENT ISSUES

Off-road vehicles are vehicles capable of cross-country travel over

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8. See *infra* notes 53-65 and accompanying text for a discussion of present management efforts.

9. Badaracco, *ORVs: Often Rough on Visitors*, PARKS & RECREATION, Sept. 1976, at 32, 73.

10. See *Conservation Law Found. v. Clark*, 590 F. Supp. 1467 (D. Mass. 1984).

natural terrain. These vehicles include motorbikes, four-wheel drive jeeps and pickups, campers, and dune buggies. ORV's allow people to drive through unpaved areas, including deserts, beaches, mountainous terrain, and dirt paths.

ORV's first gained popularity after they were introduced to the mass market in the early 1960's.<sup>11</sup> Annual ORV sales rapidly accelerated from 1.5 million in 1960 to over seven million in 1969, largely because ORV's greatly increased both the number and quality of recreational opportunities available to their users.<sup>12</sup> ORV use continued to increase rapidly throughout the 1970's, with sales topping ten million by 1979.<sup>13</sup> As ORV's appeared with increasing frequency on America's public lands, they demanded more space for parking, roadways, and maintenance facilities.<sup>14</sup> By 1979, ORV use had become the fastest growing form of recreation in national parks, deserts, forests, and seashores.<sup>15</sup>

### A. *The Benefits of ORV Use*

The primary benefit of ORV use is the increased amount and types of recreational opportunities it provides to ORV users.<sup>16</sup> ORV's allow individuals who cannot afford hotel rooms to vacation in otherwise overbooked or prohibitively expensive areas,<sup>17</sup> and may provide the only means of access to some portions of public land for people who are unable to walk great distances. In addition, by allowing sportsmen to carry large quantities of equipment and to track game quickly, ORV's arguably improve the quality and extent of many recreational activities, such as fishing or hunting.<sup>18</sup> Finally, ORV driving itself provides a certain

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11. D. SHERIDAN, *supra* note 1, at 1.

12. See AMERICAN MOTORCYCLIST ASS'N, PLANNING FOR TRAILBIKE RECREATION at iii (1978) [hereinafter AMA]; D. SHERIDAN, *supra* note 1, at 2-3 (combined figures).

13. Malone, *ORVs: Kicking Up Dust*, AM. FORESTS, Nov. 1981, at 43, 61-65; see D. SHERIDAN, *supra* note 1, at 2; see also U.S. Dep't of Interior, Cape Cod National Seashore Review of Off-Road Vehicle Use at table I (1981) (finding that ORV use doubled between 1975 and 1978). ORV use subsequently has tapered off in Cape Cod, partially in response to increased ORV management. 50 Fed. Reg. 31,177 (1985).

14. See D. SHERIDAN, *supra* note 1, at 37; Badaracco, *supra* note 9, at 74.

15. See D. SHERIDAN, *supra* note 1, at 3. Although no national data currently exists, one study of ORV sales in California found that the number of ORV's has doubled in the past decade. This may suggest that ORV use has continued to accelerate. San Bernardino Sun, Jan. 10, 1988, California Desert (special section) at 8, col. 3-4.

16. D. SHERIDAN, *supra* note 1, at 3.

17. R. BURY, R. WENDLING & S. MCCOOL, OFF-ROAD RECREATIONAL VEHICLES: A RESEARCH SUMMARY, 1969-75, at 26 (1976) [hereinafter R. BURY]. These benefits accrue primarily in oversubscribed areas such as the Cape Cod National Seashore, where alternatives such as camping on the beach are prohibited. See 36 C.F.R. § 7.67(a)(5)(v) (1987). In other areas, the total cost of purchasing, operating, and maintaining an ORV over the vehicle's lifetime may far exceed the cost of private lodgings or more traditional camping.

18. A. Nash, Nature Aesthetics, The Public Interest, and ORV Users' Perspectives 36 (Mar. 17, 1980) (monograph presented at School of Natural Resources, University of Michigan).

amount of recreational enjoyment to many ORV users.<sup>19</sup> Although no studies have measured either the value of these benefits or ORV users' willingness to pay for them,<sup>20</sup> over twelve million ORV's are presently in use in the United States, representing some substantial investment.<sup>21</sup>

ORV users also argue that the vehicles provide several distributional benefits.<sup>22</sup> ORV advocates claim that many ORV operators are either retired persons who are unable to walk long distances or large families that cannot afford motel accommodations.<sup>23</sup> Without ORV's, these individuals might not vacation at national parks and forests and, therefore, those potential visitors would be denied tens of thousands of vehicle-recreation-days per year.<sup>24</sup> Some ORV advocates contend that this loss of recreation would fall primarily upon lower income and elderly individuals.<sup>25</sup> However, no conclusive studies have examined either the demographics of ORV users or the willingness of ORV owners to substitute pedestrian recreation for off-road driving.<sup>26</sup>

### B. *The Costs of ORV Use*

ORV use has inspired widespread criticism by environmentalists and other users of public lands.<sup>27</sup> Principally, critics argue that ORV use significantly damages lands by causing erosion, destroying plantlife, inhibiting dune growth, disrupting wildlife nests, and emitting gas fumes.<sup>28</sup>

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19. See, e.g., D. SHERIDAN, *supra* note 1, at 4 (citing S. WIMER, *THE SNOWMOBILER'S COMPANION* at xi (1973)) ("It's maneuvering the snowmobile that makes you feel young, that gives you a new involvement outside yourself and your work.").

20. R. BURY, *supra* note 17, at 29.

21. Telephone interview with Howard Wilshire, U.S. Geological Survey (Mar. 30, 1988); see D. SHERIDAN, *supra* note 1, at 7 (reporting that some ORV users spend as much as 10% of their income on ORV's). This figure, however, also might suggest that ORV users generally have sufficient disposable income to pay for alternative accommodations on public lands. See *id.* at 6 (citing R. MAUGHAN & D. DUNCAN, *MOTORIZED VS. NON-MOTORIZED FORMS OF OUTDOOR RECREATION: SOCIOECONOMIC CORRELATES* 13 (1976)).

22. "Distributional benefits" refer to how ORV benefits are allocated among users of federal public lands. An evaluation of these benefits considers whether disadvantaged individuals or individuals with limited alternatives to public lands recreation are particularly benefited by ORV use.

23. *But see* D. SHERIDAN, *supra* note 1, at 6 (citing R. MAUGHAN & D. DUNCAN, *supra* note 21, at 13) (finding these claims to be "political rhetoric").

24. R. BURY, *supra* note 17, at 13-15; Briggs, *Dirtbikes as a Form of Recreation*, in AMA, *supra* note 12, at 32, 34.

25. See, e.g., 50 Fed. Reg. 31,178 (1985) (in opposing ORV restrictions on the Cape Cod National Seashore, "commenters [claimed] that [ORV restrictions] would adversely impact handicapped and aged individuals who would no longer have access to the [Cape Cod National Seashore] in vehicles"). *But see* R. BURY, *supra* note 17, at 28-29 (reporting that a majority of ORV users are males under 30 years old with two years of college education).

26. See R. BURY, *supra* note 17, at 28-29; cf. J. ALBRECHT & T. KNAPP, *OFF ROAD VEHICLES—ENVIRONMENTAL IMPACT—MANAGEMENT RESPONSE: A BIBLIOGRAPHY* (1985).

27. This controversy has resulted in much litigation. See *supra* note 5.

28. D. SHERIDAN, *supra* note 1, at 58. See also American Ass'n for the Advancement of

Environmentalists claim that these effects will deprive future generations of the opportunity to enjoy these public lands.<sup>29</sup> Critics also complain that the injection of noise, fumes, ruts, and reminders of urban life into wilderness areas impairs the enjoyment of public lands by traditional recreationists.<sup>30</sup> One Forest Service survey found that some forest visitors are fearful of injury in areas where ORV's are in use.<sup>31</sup> Another study concluded that ORV's not only inhibit recreation, but actually cause pedestrian recreationists to avoid certain areas of public lands altogether.<sup>32</sup>

Unfortunately, studies of ORV effects found that public land managers have mistaken the displacement of traditional recreationists by ORV users as a reflection of decreased demand for traditional recreation.<sup>33</sup> Land managers who observe a site with ORV's and no pedestrians plan *additional* sites for ORV's.<sup>34</sup> Thus, managers continue to allocate more recreational land and facilities to a group that has suppressed or displaced traditional recreationists. These studies conclude that, in effect, ORV's may be *shrinking* the amount of land (and opportunities) available for non-ORV recreation and thus reducing recreation overall.<sup>35</sup> One survey found that, as a result of growing user conflicts, ORV management was one of the most important issues among federal forest managers.<sup>36</sup> Consequently, land managers are forced to balance the need to provide public lands for recreation—especially for those individuals who otherwise might not use these public lands—against the possibility that increased ORV usage will impair the land, disrupt other recreational experiences, and ultimately reduce both the amount and quality of public land use.

## II

### REGULATION: THE FEDERAL RESPONSE

Public land planners have had difficulty fashioning broad rules for ORV management because America's public lands were established to serve many different purposes and are managed by many different agencies. The two predominant landholding agencies in the federal government are located in different cabinet departments. The Bureau of Land

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Science, Comm. on Arid Lands, *Off-Road Vehicle Use*, 184 SCIENCE 500-01 (1974); Badaracco, *supra* note 9, at 34.

29. See, e.g., Complaint of Conservation Law Found. at 12-15, Conservation Law Found. v. Clark, 590 F. Supp. 1467 (D. Mass. 1984) (No. 81-1004-N).

30. D. SHERIDAN, *supra* note 1, at 30.

31. R. BURY, *supra* note 17, at 17.

32. See Badaracco, *supra* note 9, at 71-73.

33. *Id.* at 73.

34. *Id.*

35. *Id.*

36. R. BURY, *supra* note 17, at 15.

Management (BLM) is part of the Department of the Interior whereas the United States Forest Service is part of the Department of Agriculture.

Coordination or creation of ORV management policies is limited to the extent that public lands are managed for different purposes. The public land management statutes require agencies to provide varying levels of protection for the public lands.<sup>37</sup> Parks are accorded greater protection than forest lands managed under the multiple-use concept but are given less protection than national wilderness lands.<sup>38</sup> For example, BLM manages 474 million acres, composed primarily of desert lands, grazing lands, lands leased for mineral exploration, and some timberlands, for "multiple use, sustained yield."<sup>39</sup> By statute, BLM may permit outdoor recreation only "in a manner that will protect the quality of . . . ecological [and] environmental . . . values."<sup>40</sup> Forest Service lands, on the other hand, although also managed under the principles of multiple use and sustained yield,<sup>41</sup> must be managed consistently with a more stringent "natural resource conservation posture."<sup>42</sup>

The management situation is complicated further by requirements that lands within the jurisdiction of a single agency be managed for greatly varying purposes. For example, although the National Park Service—part of the Department of the Interior—is required to provide recreation on its 75.8 million acres of parklands,<sup>43</sup> within these lands it also manages conservation areas where recreation is limited to "appropriate incidental or secondary use[s]."<sup>44</sup> The diverse and occasionally conflicting land management objectives of the major federal landholding agencies prevent them from forging a single policy governing the appropriate forms of recreation on public lands.

### A. Coordinated Efforts

The different functions of the respective public land management agencies, combined with their independent bureaucratic identities, have

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37. Conservation Law Found. v. Clark, 590 F. Supp. 1467, 1479 n.7 (D. Mass. 1984).

38. *Id.* The Wilderness Act specifically prohibits the use of motor vehicles on wilderness lands. 16 U.S.C. § 1133(c) (1982).

39. 43 U.S.C. § 1732(a) (1982). The statute defines "multiple use" as using various park resources "in the combination that will best meet the . . . needs of the American people [taking] into account the long-term needs of future generations for renewable and nonrenewable resources, including . . . recreation, range, timber [and] minerals." *Id.* § 1702(c).

40. *Id.* § 1701(a)(8).

41. *See* 16 U.S.C. §§ 528-531 (1982).

42. *Id.* § 1600(6).

43. *Id.* § 1.

44. *Id.* § 460(k). These activities are described as including, inter alia, sightseeing, photography, and nature observation. 50 C.F.R. § 26.32 (1987).

discouraged active cooperation<sup>45</sup> even on issues of common importance.<sup>45</sup> Nevertheless, the federal government has made some efforts to establish uniform management guidelines in response to the similar land use problems confronting all agencies.<sup>46</sup>

The executive branch has attempted to foster coordination in ORV management by issuing executive orders that relate to all land management agencies. In 1972, President Nixon issued Executive Order No. 11,644,<sup>47</sup> later amended by Executive Order No. 11,989 of 1977,<sup>48</sup> directing agency heads "to develop and issue regulations [governing the] designation of the specific areas and trails on public lands on which the use of off-road vehicles may be permitted"<sup>49</sup> and to locate ORV areas where there will be minimal damage to the land, disruption of wildlife habitat, and impairment of existing recreational uses.<sup>50</sup> The order also prohibited ORV use in designated wilderness or primitive areas and allowed use on remaining lands only if the agency determines that off-road vehicle use in such locations "will not adversely affect their natural, aesthetic, or scenic values."<sup>51</sup> Finally, the President required agencies to monitor the effects of ORV use on public lands and to adapt their ORV route designations accordingly.<sup>52</sup>

Despite the mandate of the executive orders, only one of the four major public land agencies, BLM, actually has drafted regulations designating appropriate ORV use.<sup>53</sup> The National Park Service and the Fish and Wildlife Service have failed to draft general regulations and instead continue to rely upon ad hoc determinations to manage ORV

45. See COUNCIL ON ENVTL. QUALITY, THIRTEENTH ANNUAL REPORT 143-63 (1982); PUBLIC LAND LAW REVIEW COMM'N, ONE-THIRD OF THE NATION'S LAND 60-61 (1970).

46. In 1970, the Public Land Law Commission recommended that over 3,000 existing public land laws be consolidated into a single act setting out a statement of purposes, goals, and authority relating to the use of the public lands. F. GRAD, ENVIRONMENTAL LAW 1212 (3d ed. 1985). This ultimately was codified as the Federal Land Policy and Management Act of 1976 (FLPMA), Pub. L. No. 94-579, 90 Stat. 2743 (codified as amended at 43 U.S.C. §§ 1701-1782 (1982)). Although FLPMA constituted a major effort to consolidate land management and to establish a common public land policy, several commentators have concluded that, in practice, the vastly different mandates of the various agencies have been irreconcilable and, thus, FLPMA has had little impact with respect to altering their organizational or substantive mandates. See F. GRAD, *supra*, at 1219; Clawson, *The Federal Land Policy Management Act of 1976 in a Broad Historical Perspective*, 21 ARIZ. L. REV. 585, 596 (1980); see also *Sierra Club v. Hickel*, 433 F.2d 24 (9th Cir. 1970), *aff'd sub nom. Sierra Club v. Morton*, 405 U.S. 727 (1972).

47. 3 C.F.R. 666 (1971-1975), reprinted in 42 U.S.C. § 4321 note (1982).

48. 3 C.F.R. 120 (1978), reprinted in 42 U.S.C. § 4321 note (1982).

49. Exec. Order No. 11,644, *supra* note 47.

50. *Id.*

51. *Id.*

52. *Id.*

53. 43 C.F.R. §§ 8340-8344 (1987).

use.<sup>54</sup> Although the Forest Service has issued ORV plans for 154 national forests, these plans are unresponsive to the demand of the executive orders for broad regulation. Instead, they largely codify preexisting ORV management practices.<sup>55</sup> The Forest Service has closed to ORV use only those areas already excluded by law—wilderness and primitive areas.<sup>56</sup> In fact, Forest Service instructions concerning ORV planning inform regional foresters that “restrictions and closures are to be used only as a last resort.”<sup>57</sup> Although the Forest Service has issued environmental assessment reports addressing the impact of ORV’s on forests, a study reviewing these reports found that sixty out of sixty-two reports were wholly inadequate.<sup>58</sup> As a result, several of the Forest Service’s ORV plans have been challenged by environmentalists because the plans “failed to follow any of the scientifically-recognized procedures” necessary for “an adequate assessment of the impact of ORV activity as required by the Multiple Use Act and [NEPA].”<sup>59</sup>

Although BLM has promulgated ORV regulations, it has restricted those regulations to only one portion of its more than 474 million acres of land.<sup>60</sup> The Federal Land Policy and Management Act of 1976 (FLPMA),<sup>61</sup> passed four years after Executive Order No. 11,644, specifically addresses the issue of ORV management but only in the context of the California Desert Conservation Areas. The Act provides no specific guidelines for resolving ORV disputes, requiring only that BLM “provide . . . outdoor recreation uses, including the use, where appropriate, of off-road recreational vehicles.”<sup>62</sup>

In response to the failure of agency regulations to control environmental damage,<sup>63</sup> President Carter issued Executive Order No. 11,989 requiring federal land management agencies to ban ORV’s immediately

54. D. SHERIDAN, *supra* note 1, at 43 (finding that most agencies declare all land open to ORV’s unless specifically designated closed).

55. In the case of the Forest Service, this means leaving forest lands open to ORV recreation unless designated as closed. *Id.* at 40-43.

56. *Id.* at 43.

57. *Id.* at 41 (quoting Memorandum from Zane Smith, Jr., Recreation Mgmt. Director, U.S. Forest Service (Mar. 12, 1976)).

58. *See supra* note 7.

59. D. SHERIDAN, *supra* note 1, at 41 (citing Memorandum of L. Silver, Sierra Club Legal Defense Fund to the Regional Forester, Region 5, in Support of Appeal, Sequoia National Forest ORV Plan 36 (Mar. 21, 1977)). The Sierra Club ultimately challenged the ORV plans for five national forests in California, the Rogue River National Forest in Oregon, the Santa Fe National Forest in New Mexico (ORV Plan recalled), and four national forests in North Carolina. *Id.*

60. *See* 43 U.S.C. § 1781 (1982) (regulating management of the California Desert Conservation Area); 43 C.F.R. §§ 8340-8344 (1987).

61. Pub. L. No. 94-579, 90 Stat. 2743 (codified as amended at 43 U.S.C. §§ 1701-1782 (1982)).

62. 43 U.S.C. § 1781(a)(4) (1982).

63. President’s Message to Congress on the Environment, 1977 PUB. PAPERS 967, 979 (May 23, 1977).

from areas where the respective agency determines that ORV use "will cause or is causing considerable adverse effects."<sup>64</sup> In the ten years since that executive order was issued, however, neither the Forest Service, BLM, nor the other land management agencies has issued a revised ORV plan. Moreover, in reviewing the BLM's plan for the California Desert Conservation Area, the Ninth Circuit Court of Appeals held that the executive orders did not place any significant additional restraints on BLM's discretion.<sup>65</sup> Thus, despite the issuance of Executive Order No. 11,989, the agencies are unlikely to have any incentive to create revised ORV plans.

### B. BLM Regulations and the Courts

BLM's regulations on ORV use in the California Desert Conservation Area, as the only formally promulgated federal ORV regulations to date, illustrate how little guidance land managers have in confronting ORV conflicts. The regulations state that the broad objectives of BLM's ORV rules are to "protect the resources of the public lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands."<sup>66</sup> To achieve these ends, the Bureau required that ORV areas and trails be located where they minimize conflicts with other recreational uses of the region;<sup>67</sup> adverse affects to soil, watershed, vegetation, air, and other resources;<sup>68</sup> harassment of wildlife; and significant disruption of wildlife habitat.<sup>69</sup> The rules further caution that managers may authorize ORV areas and trails only in regions where ORV use "will not adversely affect . . . natural, esthetic, scenic or other values for which such areas were established."<sup>70</sup>

The effectiveness of BLM's regulations has been hampered by enforcement problems. In implementing its regulations, BLM has issued only one plan designating which lands are suitable for ORV use. The California Desert ORV Plan, as amended in 1983, designates four percent of the National Resource Lands as "closed" to ORV's, four percent as "open," and the remainder as "restricted" (meaning that ORV drivers are required to stay on existing roads and trails).<sup>71</sup> BLM, however, has

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64. Exec. Order No. 11,989, *supra* note 48.

65. Congress, the court stated, has "left determination of appropriateness largely up to the Secretary in an area of sharp conflicts. If there is to be a change, it must come by way of Congressional reconsideration." *Sierra Club v. Clark*, 756 F.2d 686, 691 (9th Cir. 1985); *see infra* notes 76-92 and accompanying text.

66. 43 C.F.R. § 8340.0-2 (1987).

67. *Id.* § 8342.1(c).

68. *Id.* § 8342.1(a).

69. *Id.* § 8342.1(b).

70. *Id.* § 8342.1(d).

71. One study found that the Desert Conservation Area has 15,000 miles of paved and maintained roads, 21,000 miles of unmaintained roads, and 7,000 miles of vehicle-accessible washes. Bureau of Land Management, Plan Amendments to the California Desert Plan 87

only forty-two rangers to ensure compliance on the twelve million acres of "restricted" land.<sup>72</sup> According to one estimate, there are up to 1.8 million acres of de facto unrestricted desert land<sup>73</sup> beyond the 740,000 acres of recognized unrestricted desert land<sup>74</sup> exposed to ORV traffic. BLM staff concludes that ORV drivers are able to travel cross-country with impunity on these "restricted" and "closed" lands.<sup>75</sup>

Enforcement of these regulations first was challenged in *Sierra Club v. Clark*,<sup>76</sup> after BLM authorized unrestricted ORV access to most of Dove Springs Canyon in the California Desert Conservation Area.<sup>77</sup> The Ninth Circuit acknowledged in its ruling that extensive ORV usage had caused "severe environmental damage in the form of major surface erosion, soil compaction, and heavy loss of vegetation."<sup>78</sup> The court noted that the character and visual aesthetics of the Canyon had been altered so severely by ORV use that the Canyon had come to be used almost exclusively for ORV activities.<sup>79</sup> Nevertheless, the court refused to reverse or remand the Secretary of the Interior's decision to allow ORV use, holding instead that determination of what constituted "considerable adverse effects" under the executive orders was left to the discretion of the Secretary.<sup>80</sup>

The court held that it must give broad deference to the Secretary's interpretation of what constitutes a "considerable adverse effect" in the context of the Desert Area as a whole.<sup>81</sup> The court concluded that such a broad interpretation was necessary and consistent with BLM statutes and regulations<sup>82</sup> that expressed a congressional judgment that BLM should permit ORV use "where appropriate."<sup>83</sup> In establishing this deferential standard of review, the *Sierra Club* court explicitly held that

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(1983). Senator Alan Cranston has introduced a bill to improve enforcement of all recreational management in the California Desert Conservation Area. S. 7, 100th Cong., 1st Sess. (1987). The Senate Energy and Natural Resources Committee held hearings on the resolution in July 1987 and is expected to issue its report this year.

72. Telephone interview with Candy Johnson, Bureau of Land Management, Riverside, Cal. (Mar. 30, 1988).

73. D. SHERIDAN, *supra* note 1, at 40 (citing Memorandum from Resource and Planning Staff Professionals, Riverside District, Desert Plan Program, California State Office to California State Director, Bureau of Land Management 9 (Sept. 20, 1976)) (estimating that 15% of restricted lands are not patrolled).

74. Figure provided by Senator Cranston's office.

75. D. SHERIDAN, *supra* note 1, at 40.

76. 756 F.2d 686 (9th Cir. 1985).

77. *Id.* at 688.

78. *Id.*

79. *Id.*

80. *Id.* at 691 (emphasis added).

81. *Id.* at 690-91.

82. 43 U.S.C. § 1781(a)(4) (1982); 43 C.F.R. § 8341.2(a) (1987).

83. *Sierra Club*, 756 F.2d at 691. The court reasoned that a contrary interpretation would require "the total prohibition of ORV use because it is doubtful that any discrete area could withstand unrestricted ORV use without considerable adverse effects." *Id.*

courts may reverse ORV route designations only when those designations arbitrarily and capriciously exceed the Secretary's broad discretionary powers.<sup>84</sup>

The *Sierra Club* court found little guidance in the BLM regulations because of their seeming inconsistencies with other BLM mandates.<sup>85</sup> The Federal Land Policy and Management Act requires multiple use "without permanent impairment of . . . the environment."<sup>86</sup> The Act also specifically requires, however, that BLM lands be managed "to provide . . . outdoor recreational uses, including the use, where appropriate, of off-road recreational vehicles."<sup>87</sup> In an attempt to harmonize these mandates, the court concluded that congressional approval of "appropriate ORV use" implied that BLM has authority to allow ORV use even when it conflicts with the other goals of the Act.<sup>88</sup> The court reached this conclusion despite its findings that the level of ORV use damaged the environment, disrupted wilderness experiences, and disturbed traditional recreationists.<sup>89</sup> Accordingly, the court held that the decision by Congress to allow "appropriate ORV use" gives BLM broad discretion in allocating lands for off-road vehicles regardless of FLPMA's other mandates.<sup>90</sup> In effect, *Sierra Club* places no limits upon ORV management decisions by agencies.<sup>91</sup>

*Sierra Club* illustrates and exacerbates the problem of forging an effective land management policy for ORV's. Lacking any coherent guidelines and faced with difficult choices, many public land managers have refused to take any action on ORV use.<sup>92</sup> Others, including park

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84. *Id.*

85. *Id.*

86. 43 U.S.C. § 1702(c) (1982).

87. *Id.* § 1781(a)(4).

88. *Sierra Club*, 756 F.2d at 691.

89. *Id.* at 688.

90. [I]t is doubtful that any discrete area could withstand unrestricted ORV use without considerable adverse effects. However appealing might be [a total prohibition of ORV use,] Congress has found that ORV use, damaging as it may be, is to be provided 'where appropriate.' It left determination of appropriateness largely up to the Secretary in an area of sharp conflict. If there is to be a change it must come by way of Congressional reconsideration. The Secretary's interpretation that this legislative determination calls for accommodation of ORV usage in the administrative plan, we must conclude, is not unreasonable and we are constrained to let it stand.

*Id.*

91. In response to this decision, Senator Cranston has introduced a bill that would tighten enforcement and reduce ORV use in the California Desert Conservation Area by designating an additional 4.5 million acres as wilderness. See *supra* note 71.

The *Sierra Club* court refused to follow commentators who have argued that courts should take a more assertive and intrusive role in preventing impairment of the public trust. See, e.g., J. SAX, DEFENDING THE ENVIRONMENT: A STRATEGY FOR CITIZEN ACTION 193-230 (1970) (arguing that courts should be required to set aside judgments that seriously harm or threaten the public trust); Sive, *Some Thoughts of an Environmental Lawyer in a Wilderness of Administrative Law*, 70 COLUM. L. REV. 612 (1980).

92. Interview with Herbert Olsen, Superintendent of Cape Cod National Seashore, in

superintendents, have grasped unsuccessfully at ad hoc solutions.<sup>93</sup> Unfortunately, none of these efforts has produced satisfying results. As a consequence, ORV litigation<sup>94</sup> and reform bills<sup>95</sup> have confronted public land managers from California to Massachusetts.

### III

#### ORV MANAGEMENT IN ACTION: THE CAPE COD NATIONAL SEASHORE

##### *A. Background*

The National Park Service, which manages the Cape Cod National Seashore, has provided even less guidance than BLM in governing the use or appropriateness of ORV's. The Park Service has not drafted criteria for determining appropriate ORV uses pursuant to the executive orders, nor has it formulated a specific policy regarding the appropriateness of *any* ORV use on national park lands. At present, Park Service managers simply operate under the Park Service's broad statutory instructions to preserve national parklands and to provide opportunities for recreation that foster an appreciation of nature and nature experiences.<sup>96</sup>

Like many of America's parks, the Cape Cod National Seashore was established before ORV's gained general popularity. ORV traffic on the beach escalated from 400 vehicles per year in 1961, when the Seashore was created, to almost 5,000 vehicles per year in 1979.<sup>97</sup> Between 1961 and 1980, the Park Service promulgated no specific regulations governing ORV use on the Seashore. The vehicle operators, although comprising less than three percent of the Seashore's average annual visitors,<sup>98</sup> had unlimited access to the entire twenty-six-mile shoreline and commanded two 0.2 mile areas for vehicle camping.

Seashore visitors raise the traditional arguments both for maintaining the existing ORV opportunities and for reducing ORV use. ORV operators at the Seashore contend that ORV use is not inconsistent with

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Truro, Mass. (June 20, 1985); see also D. SHERIDAN, *supra* note 1, at 3 (public land managers have been ill-prepared to deal with ORV's from the start).

93. Researchers at the University of California found that there is no consistent pattern of ORV management on Park Service lands and that Park Service officials were independently pursuing over 400 different, uncoordinated research questions in order to help formulate a concrete policy. S. MCCOOL & J. ROGGENBUCK, *supra* note 4.

94. See *supra* note 5.

95. See S. 2061, 99th Cong., 2d Sess., 132 CONG. REC. 1162-69 (1986).

96. 16 U.S.C. § 1 (1982).

97. National Park Service, Cape Cod National Seashore Annual Report (1981); see also *Conservation Law Found. v. Clark*, 590 F. Supp. 1467, 1471 (D. Mass. 1984). Recent figures suggest, however, that ORV use has declined significantly to under 3,000 vehicles per year since the first ORV management plan took effect. 50 Fed. Reg. 31,177 (1985).

98. 50 Fed. Reg. 31,178 (1985). ORV camping areas are located approximately three miles north of the beach entrance at Head of the Meadow and 0.3 miles north of the beach entrance at High Head. Both sites are approximately 0.2 miles long.

underlying Park Service principles.<sup>99</sup> ORV users point out that the diversity of topography, vegetation, and wildlife on the Seashore makes it particularly attractive for ORV recreation.<sup>100</sup> Furthermore, they contend, ORV use allows individuals to experience "nature" in areas they could not otherwise reach by foot.<sup>101</sup> On the other hand, traditional recreationists<sup>102</sup> at the Seashore cite national park use guidelines and argue that ORV use is not a legitimate recreational activity, that it undermines appropriate park uses, and that it severely harms the ecological and aesthetic qualities of the park.<sup>103</sup>

Complaints by Cape Cod Seashore visitors and growing concern by park managers that ORV use was damaging the Seashore's fragile dune ecology prompted the Park Service in 1975 to commission a long-range study of the impact of ORV's on the Cape Cod National Seashore (the UMass Study).<sup>104</sup> Released in 1979, the UMass Study concluded that virtually any level of ORV activity through vegetated areas produced "maximum damage" to both the plant life and the stability of the dune.<sup>105</sup> Researchers found that ORV tires churned up the roots of developing beach grass, thereby severing the connections and destroying the underground network that anchors dune growth.<sup>106</sup> The study recommended that ORV traffic be prohibited in vegetated areas and refused to recommend ORV use elsewhere along the beach because "relatively low levels of impact . . . create maximum damage to the plants. [Dune v]egetation does not have a 'carrying capacity' for vehicles."<sup>107</sup>

In response to the conclusions of the UMass Study and the heightened public criticism that it occasioned, managers of the Cape Cod National Seashore promulgated the Seashore's first ORV Management Plan in 1980 (the Plan).<sup>108</sup> The Plan retained ORV use along the entire twenty-six mile shoreline, but limited traffic to an "ORV corridor" along the outer beach and proposed that wooden stakes ("delineator post-marks") be driven into the perimeter of the corridor to deter ORV's from straying into the dunes or vegetation.<sup>109</sup>

99. See, e.g., Defendant's Memorandum in Support of Motion to Dismiss at 17, Conservation Law Found. v. Clark, 590 F. Supp. 1467 (D. Mass. 1984) (No. 81-1004-N).

100. *Id.* at 18-20.

101. See *supra* note 25 and accompanying text.

102. See *supra* note 6 for discussion of traditional recreational activities.

103. See Complaint of Conservation Law Found. at 6-10, Conservation Law Found. v. Clark, 590 F. Supp. 1467 (D. Mass. 1984) (No. 81-1004-N).

104. S. LEATHERMAN & P. GODFREY, THE IMPACT OF OFF-ROAD VEHICLES ON COASTAL ECOSYSTEMS IN CAPE COD NATIONAL SEASHORE: AN OVERVIEW (1979) [hereinafter UMass Study].

105. *Id.* at 13.

106. *Id.* at 4.

107. *Id.* at 7.

108. See 50 Fed. Reg. 31,177-81 (codified in 36 C.F.R. § 7.67 (1987)).

109. *Id.*

### B. Litigation

The ORV Management Plan was roundly criticized by local groups for underestimating the potential ecological threats and for failing to consider aesthetic damage.<sup>110</sup> The groups worried that the Plan would not prevent ORV's from straying into ecologically unstable areas and that ORV's would continue to cause ecological and aesthetic damage by destroying plant life, scarring the beach, and creating noise and fumes.<sup>111</sup> Moreover, the groups asserted that ORV use impaired traditional recreational experiences and, in fact, deterred traditional recreationists from using the Seashore or at least using areas where ORV's were prevalent.<sup>112</sup>

After exhausting the administrative hearing process, a coalition of regional and national environmental groups led by the Conservation Law Foundation of New England (CLF) challenged the Plan in federal district court in 1981.<sup>113</sup> CLF claimed that the ORV Management Plan violated the Cape Cod National Seashore's enabling legislation.<sup>114</sup> The Cape Cod National Seashore Act<sup>115</sup> required that the Seashore be "preserved" in its present condition for future generations<sup>116</sup> and be managed for the enjoyment of traditional beach users including hikers, campers, and swimmers.<sup>117</sup> CLF claimed that ORV use violated these mandates by causing "severe" damage to vegetation and dune stability<sup>118</sup> and by disturbing traditional beach users as well.<sup>119</sup> Thus, CLF contended that the Plan violated the Cape Cod National Seashore Act, the National Park Service Act, and two executive orders.<sup>120</sup>

The district court's 1984 opinion followed the traditional lines of administrative review,<sup>121</sup> which also were adopted in *Sierra Club*.<sup>122</sup> The court recognized the broad discretion of the Park Service to promulgate ORV regulations that are not arbitrary and capricious in light of the evidentiary record before the agency.<sup>123</sup> The court also held that the Secre-

110. See, e.g., Conservation Law Found., Comments of the Conservation Law Foundation of New England on the Proposed Plan of the National Park Service for Off-Road Vehicle Use on the Cape Cod National Seashore (1980) (unpublished) [hereinafter CLF Comments].

111. *Id.* at 11-20.

112. Complaint of Conservation Law Found. at 9, Conservation Law Found. v. Clark, 590 F. Supp. 1467 (D. Mass. 1984) (No. 81-1004-N).

113. *Conservation Law Found.*, 590 F. Supp. at 1471.

114. *Id.*

115. 16 U.S.C. §§ 459b-459b-8 (1982).

116. *Id.* § 459b-5.

117. *Id.*

118. CLF Comments, *supra* note 110, at 12.

119. *Conservation Law Found.*, 590 F. Supp. at 1472.

120. *Id.* at 1471.

121. The *Conservation Law Foundation* court stated that it could not disturb an agency's decision unless it determined that "on the record as a whole the agency could [not] reasonably make the finding that it did." *Id.* at 1474.

122. *Sierra Club v. Clark*, 756 F.2d 686, 690 (9th Cir. 1985).

123. *Conservation Law Found.*, 590 F. Supp. at 1473-75.

tary was within his discretion in determining that the Plan would not pose any appreciable ecological harm to the Seashore.<sup>124</sup>

The court concluded, however, that because the Park Service had not considered the impact of unlimited ORV use on nonecological values, the Plan had to be reconsidered in light of these other Seashore objectives.<sup>125</sup> The court remanded the ORV Plan to the Park Service to evaluate the compatibility of ORV use with other uses of the Seashore.<sup>126</sup> The court further ordered the Park Service to prepare and submit a written evaluation of the issues of aesthetic damage and suppression of recreation.<sup>127</sup>

### C. Efforts After Remand

In April 1985, the Park Service released its report entitled "Visitor Experiences on the Cape Cod National Seashore."<sup>128</sup> The study, prepared by researchers at the City University of New York (CUNY), posed broad questions to over 1,000 beach users concerning the quality of their experience at the Seashore.<sup>129</sup> The study found that only thirteen percent of Cape Cod visitors felt that ORV's should be restricted further or eliminated entirely.<sup>130</sup> Based upon this evidence, the study concluded that ORV use does not have a significant impact upon visitor experiences.<sup>131</sup>

Relying upon the CUNY study—but possibly reacting to the threat of an appeal—the Park Service promulgated an Amended ORV Plan in August 1985.<sup>132</sup> The Amended Plan permanently closed 17.5 miles of beach to ORV's and banned ORV use on the remaining portions from November 15 to April 15 of each year.<sup>133</sup> Furthermore, the Plan narrowed the ORV corridor by ten feet to ensure a buffer zone between straying vehicles and ecologically sensitive areas.<sup>134</sup>

Regrettably, the Amended ORV Plan did not establish priorities

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124. *Id.* at 1476.

125. *Id.* at 1484.

126. *Id.* at 1489.

127. *Id.* While the Park Service prepared its report, CLF appealed the district court's ruling on the ecological damage issue. *Conservation Law Found. v. Clark*, No. 84-1738, slip op. (1st Cir. Jan. 28, 1985). After oral argument, the court of appeals expressed sympathy with CLF's views, stating that the Park Service findings were "inadequate to show ORV's inappropriateness," but ruling that the issue was not ripe because the Park Service had not yet completed its findings. *Id.*

128. W. Kornblum, *Survey of Cape Cod National Seashore Visitor Experiences and Perceptions of the ORV Issue* (Mar. 1, 1985) (unpublished) [hereinafter CUNY Study]. The methodology and conclusions of the CUNY Study have been severely criticized. See *infra* notes 148-54 and accompanying text.

129. CUNY Study, *supra* note 128, at 2.

130. *Id.* at 16.

131. *Id.* at 22.

132. See 50 Fed. Reg. 31,181 (1985) (codified at 36 C.F.R. § 7.67 (1987)).

133. 36 C.F.R. § 7.67(a)(1) (1987).

134. *Id.* § 7.67(a)(2).

among competing uses of public lands and, thus, it failed to address the conflicting contentions of Seashore recreationists. Environmentalists and traditional beach users contend that parklands per se are inappropriate sites for ORV use because the lands were set aside for the unimpaired enjoyment of traditional recreationists and future beach users.<sup>135</sup> These opponents of the Amended Plan note that despite the new restrictions on beach access, the Plan fails to reduce effectively either the user conflicts or the ecological damage caused by ORV's. In fact, the area alongside the retained ORV corridor is one of the most ecologically sensitive areas of the Seashore.<sup>136</sup> These opponents argue that the Park Service is *perpetuating* displacement by selecting this site for ORV use. In other words, the reason for low "traditional user" interest in the "ORV Zone" is that ORV's *already* have displaced such users in these areas.<sup>137</sup> Closing the rest of the beach will only aggravate these problems by forcing greater numbers of ORV's into this area.

Meanwhile, ORV enthusiasts condemn the Plan for eliminating ORV use on most of the Seashore and for prohibiting all winter ORV use.<sup>138</sup> The seaward edge of the closed beach areas is narrow and eroded and hence was not heavily traveled by ORV's. Furthermore, because pedestrian and ORV use of the Seashore in winter is rare, there appeared to be little justification for banning winter travel either on the grounds of reducing user conflicts or protecting dune growth.<sup>139</sup>

Finally, the Park Service itself provides no consistent justification for its Amended Plan. The Park Service claims that no appreciable user conflicts occur on the beach, but it has stated simultaneously that ORV route closures "will reduce user conflict."<sup>140</sup> The Park Service also contends that its primary concern in formulating the Plan was to protect the Seashore's ecology,<sup>141</sup> but the Plan permits use of ORV's adjacent to the most sensitive area of the beach and restricts their use where their impact is slight. Thus, the Plan itself bears little relation to any purported ORV management policies articulated by the Park Service.

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135. Brief for Appellant at 20-28, *Conservation Law Found. v. Clark*, 590 F. Supp. 1467 (D. Mass. 1984), *appeal docketed*, No. 84-1738 (dated Nov. 13, 1984).

136. Leatherman and Godfrey identified this region as the only remaining "accreting,"—or growing—area of the beach. The dunes in this area are growing out onto the beach and, thus, they are considerably more susceptible to vehicle damage (or inhibition) than the eroding beaches to the south. UMass STUDY, *supra* note 104, at xi, 1.

137. D. SHERIDAN, *supra* note 1, at 32-34; Badaracco, *supra* note 9, at 72-74.

138. 50 Fed. Reg. 31,178 (1985).

139. ORV lobbyists contend that winter ORV use does not risk dune impairment because dune development and extension occur only during the spring and summer.

140. 50 Fed. Reg. 31,178 (1985).

141. *Id.*

*D. Problems with Present Management Efforts: Research Flaws*

The Cape Cod National Seashore litigation illustrates the difficulty of controlling ORV use on public lands absent any clear guidelines. Rather than formulating a comprehensive strategy for analyzing ORV impacts based upon established guidelines and management goals, the Park Service commissioned a single study that addressed only one management issue (ecological damage) and completely neglected other Park Service objectives.<sup>142</sup> Lacking standards for judging the appropriateness of any ORV use on parklands or in specific portions of those lands, the Seashore managers were forced to rely largely upon incomplete, hastily prepared postlitigation analysis in drafting the Amended Plan. The Park Service's reliance upon this research ultimately produced a compromise plan that satisfied neither party.

The research produced over the course of the ORV litigation on the Cape Cod Seashore did not adequately supplement the Park Service's initial studies. Specifically, the Park Service never fully investigated the range of issues regarding ORV use. Rather, its studies focused almost exclusively upon "hard" ecological damage, ignoring the aesthetic, distributional, and recreational costs and benefits of ORV use. As a result, the final plan is driven primarily by ecological considerations. Moreover, the shortcomings of the few nonecological studies the Park Service possessed prompted it to ignore some potentially valuable information.<sup>143</sup>

The ecological damage study commissioned *prior* to the outset of the Cape Cod litigation provides the sole example of the type of careful analysis necessary to produce informed land management decisions.<sup>144</sup> In that study, researchers from the University of Massachusetts performed multiple experiments over five years to determine the impact of ORV use on coastal ecology.<sup>145</sup> The tests included driving vehicles through dune clumps, measuring vegetation densities in impacted and unaffected areas, and charting beach growth in special test areas.<sup>146</sup> The tests were performed in different seasons, using different vehicles, and with varying frequency.<sup>147</sup>

In contrast, the nonecological studies assembled by both sides *during* the course of litigation suffer from poor design and, as a consequence, yield little valuable information. Specifically, the survey of visitor atti-

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142. Specifically, the original plan did not consider potential aesthetic impacts or the protection of traditional user experiences.

143. For example, the Park Service's revised regulations failed to mention the research on aesthetic issues produced in the SUNY Study, *infra* note 155, and placed no emphasis upon the CUNY Study, *supra* note 128. See 50 Fed. Reg. 31,177 (1985); discussion *infra* text accompanying notes 148-54.

144. See *supra* note 104 and accompanying text.

145. UMASS STUDY, *supra* note 104, at 1.

146. *Id.* at 1, 11.

147. *Id.*

tudes conducted by a City University of New York professor asked a random sample of visitors on the Seashore whether they were "disturbed" by any Seashore activities.<sup>148</sup> Only sixty-four of the 1,282 individuals polled *directly* mentioned "the sight of ORV's," and the survey concluded that ORV conflict is not a significant problem on the Seashore.<sup>149</sup> The CUNY study has been criticized deservedly for its methodological flaws.<sup>150</sup> Most obviously, critics suggest that the question posed was too broad.<sup>151</sup> They note that the vast majority of those polled answered with responses such as "mosquitoes" and "traffic jams on the way," problems which are not "Seashore activities" under Park Service control.<sup>152</sup>

Perhaps most importantly, the CUNY study failed to address the possibility that some pedestrian recreationists had been displaced from the Seashore by the ORV's. The individual surveys were conducted primarily in areas near large groups of ORV's,<sup>153</sup> presumably to ensure that those polled were familiar with ORV's. This resulted, however, in sampling a disproportionate number of ORV users and individuals who appear to tolerate ORV use. The surveyors questioned only a few individuals in the less congested areas of the Seashore and completely neglected to interview people on nearby ORV-free beaches to determine whether their site selection had been influenced by the absence of ORV's.<sup>154</sup>

Similarly, the environmentalists' study of the magnitude of ORV visual impact has done little to advance the ORV debate. The study—commissioned by CLF—attempted to measure the impact of tire ruts and ORV's upon the visual experiences of visitors.<sup>155</sup> Two researchers from the State University of New York (SUNY) showed photographs of a variety of Cape Cod Seashore scenes to a group of landscape architects. The architects rated the visual impact of each photograph using a complicated analytical scheme.<sup>156</sup> The study found that a strong visual impact occurred whenever ORV's or their tracks were evident in the photographs and that severe visual impacts occurred when ORV's were displayed more prominently.<sup>157</sup> The opinions of landscape architects, however, are not necessarily representative of the majority of Seashore

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148. CUNY Study, *supra* note 128, at 10.

149. *Id.* at 10, 22.

150. *See, e.g.,* Affidavit of A. Haluk Ozkaynak, Conservation Law Found. v. Clark (D. Mass.) (No. 81-1004-N) (sworn on Oct. 30, 1987) [hereinafter Ozkaynak Affidavit].

151. *See, e.g., id.* at 3.

152. *Id.* at 8.

153. CUNY Study, *supra* note 128, at 2.

154. *See* Ozkaynak Affidavit, *supra* note 150, at 10-13.

155. R. Palmer & P. Smardon, Visual Impact Assessment: Off Road Vehicles on Cape Cod National Seashore Beaches (1983) [hereinafter SUNY Study].

156. *Id.*

157. *Id.*

visitors. Even ORV opponents have criticized the study for considering only one small fragment of the aesthetics issue.<sup>158</sup> Flaws in both methodology and scope have virtually discredited this study.

Because the Cape Cod Seashore litigation has focused upon alleged Seashore Act violations by ORV's, there have been no investigations concerning the possible benefits of ORV use. No one has conducted a study that attempts to measure either the value of increased recreation due to ORV's or the willingness of ORV users to pay for those benefits. Likewise, no survey has evaluated the purported distributional benefits of ORV use.

The lack of concrete and comprehensive studies forced park managers and then the courts to balance the Seashore's (and park users') competing needs while equipped with only half of the equation. The absence of clear regulations, moreover, left the Park Service without guidance for systematically evaluating ORV issues. Subsequent attempts to fill these gaps during the course of litigation were almost uniformly unsuccessful<sup>159</sup> because of both the adversarial context in which they were composed and the necessary time constraints of litigation. Consequently, the ORV Plan offered by the Park Service fails to address the issues of user-conflicts and aesthetic damage posed by ORV use and jeopardizes several Park Service goals.

#### IV

#### IMPROVING ORV DECISIONS: COST-BENEFIT ANALYSIS

The decisions in *Sierra Club v. Clark*<sup>160</sup> and *Conservation Law Foundation v. Clark*<sup>161</sup> indicate that no standards presently exist to limit or regulate effectively the use of ORV's on public lands. The ORV management decisions on the Cape Cod National Seashore appear to be driven either by incomplete ad hoc considerations or by agency inaction. The National Park Service, the executive branch agency entrusted with managing the Seashore, has ignored Executive Order Nos. 11,644 and 11,989 for over a decade by failing to adopt specific ORV regulations. The few constraints that do exist have been largely undercut by the broad administrative discretion granted to land managers in *Sierra Club*.<sup>162</sup>

The failure of Congress and agencies to provide effective guidance is particularly mystifying in light of the fact that the executive orders actu-

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158. Interview with Emily Bateson, Programs Director, Conservation Law Found. of New England (June 15, 1985).

159. It would be unfair to characterize the studies as entirely unsuccessful because they do indicate, for example, the existence of opposition to ORV's among Seashore users. The studies fail, however, to quantify accurately the extent or sources of those sentiments.

160. 756 F.2d 686 (9th Cir. 1985).

161. 590 F. Supp. 1467 (D. Mass. 1984).

162. See *supra* notes 80-84 and accompanying text.

ally suggest an appropriate analytical framework for resolving ORV disputes. Executive Order No. 11,644 specifically provides that *in furtherance of* the National Environmental Policy Act of 1969 (NEPA),<sup>163</sup> land managers must promulgate regulations that "protect the resources" of federal lands and "minimize conflicts among the various uses of those lands."<sup>164</sup> This language implies that agencies should employ the type of analysis required by NEPA.

NEPA mandates a "systematic interdisciplinary approach" to analysis of all "major federal actions significantly affecting the quality of the human environment."<sup>165</sup> Historically, courts have interpreted "major federal actions" broadly to include any federal decisions that arguably may affect environmental quality.<sup>166</sup> ORV management decisions fall within these boundaries. Executive Order No. 11,644 authorizes agency heads to designate for ORV use trails and areas on public lands, making such designation a federal action.<sup>167</sup> ORV use also affects environmental quality by causing "severe environmental damage in the form of major surface erosion, soil compaction, and heavy loss of vegetation."<sup>168</sup> Therefore, federal agencies designating public lands for ORV use should be required to comply with the NEPA requirements.

NEPA requires land management agencies to produce an environmental impact statement (EIS) if it appears that a major federal action may affect the environment.<sup>169</sup> Designating ORV trails would appear to constitute such a major federal action.<sup>170</sup> NEPA describes the scope of an EIS and requires that it contain a detailed statement that considers the relation between short-term uses of the environment and the maintenance and enhancement of the environment's long-term productivity. An EIS also must consider irreversible impacts on resources.<sup>171</sup> The

163. Pub. L. No. 91-190, 83 Stat. 852 (1970) (codified as amended at 42 U.S.C. §§ 4321-4347 (1982)).

164. Exec. Order No. 11,644, *supra* note 47 (emphasis added).

165. 42 U.S.C. § 4332(a), (c) (1982).

166. *E.g.*, *Scientists Inst. for Pub. Information v. Atomic Energy Comm'n*, 481 F.2d 1079, 1088 (D.C. Cir. 1973) (federal action includes "an agency decision which permits action by other parties which will affect the quality of the environment"); *Hanley v. Kleindienst*, 471 F.2d 823, 837 (2d Cir. 1972) (Friendly, C.J., dissenting) ("[T]he scheme of the National Environmental Policy Act argues for giving 'significant' a reading which places it toward the lower end of the spectrum."); *Students Challenging Regulatory Agency Procedures v. United States*, 346 F. Supp. 189, 201 (D.D.C. 1972) ("[A] statement is required whenever the action *arguably* will have an adverse environmental impact."), *rev'd on other grounds*, 412 U.S. 669 (1973).

167. *See* Exec. Order No. 11,644, *supra* note 47.

168. *Sierra Club v. Clark*, 756 F.2d 686, 688 (9th Cir. 1985).

169. 42 U.S.C. § 4332(2)(c)(i) (1982).

170. *Cf.* *Steubing v. Brinegar*, 511 F.2d 489 (2d Cir. 1975) (requiring EIS for decision approving construction of a bridge); *Monroe County Conservation Council v. Volpe*, 472 F.2d 693 (2d Cir.) (requiring EIS for designating highway routes through a public park), *cert. denied*, 409 U.S. 1000 (1972).

171. 42 U.S.C. § 4332(2)(c)(iv), (v) (1982); *see* E. REHBINDER & R. STEWART, ENVIRONMENTAL PROTECTION POLICY 134-35 (1985).

statement must consider all feasible alternatives (including no action) and evaluate them on the basis of cost-benefit analysis.<sup>172</sup> Federal courts have interpreted these provisions as requiring agencies to develop a broad range of alternatives to the recommended course of action and then to justify their decision to pursue that course on the basis of all relevant factors.<sup>173</sup> Requiring an EIS for ORV management plans would force all agencies to demonstrate either that permitting or prohibiting ORV use in a given area will maximize the total benefit among conflicting land uses.<sup>174</sup>

A cost-benefit analysis would be relatively easy to implement. Federal land management agencies already employ cost-benefit techniques such as quantification<sup>175</sup> in evaluating land management questions.<sup>176</sup> In fact, many land policy decisions already fall within NEPA requirements.<sup>177</sup> Likewise, the principles of multiple use and sustained yield require both BLM and the Forest Service to justify their allocation of

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172. 40 C.F.R. § 1502.14 (1987); see *Calvert Cliffs' Coordinating Comm. v. Atomic Energy Comm'n*, 449 F.2d 1109, 1114 (D.C. Cir. 1971) ("This requirement . . . seeks to ensure that each agency decision maker has before him [all possible approaches that affect] the environmental impact and the cost-benefit balance."); see also *Monroe County*, 472 F.2d at 701 (ruling that an adequate EIS for plans to build a roadway through a park must "consider not only the economic effect of the location but also the social and environmental effects of such a plan"). But see *Sax, The (Unhappy) Truth About NEPA*, 26 OKLA. L. REV. 239 (1973) (condemning this type of analysis as a dilatory tactic by which federal agencies ultimately manipulate figures to satisfy their original objectives).

173. See, e.g., *Natural Resources Defense Council v. Morton*, 458 F.2d 827 (D.C. Cir. 1972). The requirements for discussion and analysis of alternatives are set forth in 40 C.F.R. § 1502.14, 1505.1 (1987). Generally, agencies are required to evaluate objectively all reasonable alternatives such that reviewers may independently evaluate the comparative values. *Id.*

174. See *Monroe County*, 472 F.2d 693; *Alabama ex rel. Baxley v. Army Corps of Engineers*, 411 F. Supp. 1261 (D. Ala. 1976); *Pennsylvania v. Morton*, 381 F. Supp. 293 (D.D.C. 1974). In *Monroe County*, the Second Circuit required the agency to produce an EIS prior to construction of a highway through a public park. The purpose of the EIS was to ensure that no alternative feasible routes were available that would cause less environmental harm or other unique problems. 472 F.2d at 700-01.

175. Because outdoor recreation is largely a nonmarket commodity, economists have developed a variety of methods for quantifying the value of recreational experiences. These methods include polling recreationists about their willingness to pay for certain activities, determining the costs incurred by recreationists in traveling to public lands, and comparing the cost of comparable, privately marketed recreation. See generally Knetsch & Davis, *Comparisons of Methods for Recreation Evaluation*, in A. KNEESE & S. SOUTH, *WATER RESEARCH* 450 (1966). For a discussion of quantifying the costs of damage to natural resources, see E. YANG, R. DOWER & M. MENEFFEE, *THE USE OF ECONOMIC ANALYSIS IN VALUING NATURAL RESOURCE DAMAGES* at i-ix, 1-68, 113-18 (1984).

176. See, e.g., *Minnesota Pub. Interest Research Group v. Butz*, 498 F.2d 1314, 1323 (8th Cir. 1974) (Forest Service actions in granting timber sales constituted a major federal action within the meaning of NEPA); 43 U.S.C. § 1712(c) (1982) (requiring BLM to use interdisciplinary approaches in devising land use plans and to consider other potential uses of the land and alternatives for achieving land values).

177. See, e.g., *Butz*, 498 F.2d 1314; *Natural Resources Defense Council v. Morton*, 388 F. Supp. 829 (D.D.C. 1974) (requiring EIS for BLM grazing permits), *aff'd without opinion*, 527 F.2d 1386 (D.C. Cir.), *cert. denied*, 427 U.S. 913 (1976).

land uses in cost-benefit terms.<sup>178</sup> Thus, because ORV plans fall within the scope of NEPA and because review under NEPA appears consistent with land management practices in other contexts, the executive orders invite, if not require, the analysis of ORV use in accordance with cost-benefit considerations.<sup>179</sup>

Requiring agencies to promulgate regulations that instruct land managers to perform cost-benefit analysis on ORV use is not appropriate for all public lands. In certain instances, such as designated wilderness or primitive areas, legal mandates already deem ORV use inappropriate regardless of its purported benefits.<sup>180</sup> If policymakers begin their analysis by specifically setting forth the land values and uses to be protected from ORV damage, however, cost-benefit analysis may provide a means for balancing these uses where land use goals conflict. After proper weighting of factors, cost-benefit analysis might reveal that ORV recreation can continue on some public lands without jeopardizing important land values.

## V

### COST-BENEFIT ANALYSIS AND THE CAPE COD NATIONAL SEASHORE

This Section demonstrates the usefulness of cost-benefit analysis by applying it to the Cape Cod National Seashore controversy. The five major alternatives available to the Park Service at the outset of the litigation are examined and evaluated in terms of their respective costs and benefits. Given that the only conclusive measure of harm or benefit from ORV's was produced by the UMass Study, the analysis presented is driven by ecological considerations. Because a cost-benefit analysis cannot compensate for—and may indeed be distorted by—gaps in information, the optimal solution selected by this analysis will be subject to modification as more accurate information becomes available. Nevertheless, applying a cost-benefit framework to the information available about ORV use *does* result in a management scheme that unambiguously would reduce user and ecological conflicts while preserving most ORV benefits.

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178. See, e.g., Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), Pub. L. No. 94-588, 90 Stat. 2949 (codified as amended at 16 U.S.C. §§ 1600-1614 (1982)), incorporating the Multiple Use and Sustained Yield Act, 16 U.S.C. §§ 528-531, at 16 U.S.C. § 1600(3).

179. *But see* Conservation Law Found. v. Clark, 590 F. Supp. 1467, 1476 (D. Mass. 1984) (court held that no NEPA review was necessary because the Secretary followed minimum permissible procedures in determining that ORV use would not pose an appreciable harm to the Seashore); *cf.* American Motorcyclist Ass'n v. Watt, 543 F. Supp. 789 (C.D. Cal. 1982) (court held that desert conservation area plan improperly allowed BLM to designate off-road vehicle routes without minimizing adverse environmental impacts).

180. The Wilderness Act specifically prohibits the use of motor vehicles on wilderness lands. 16 U.S.C. § 1133(c) (1982).

Thus, even in the absence of complete information, cost-benefit analysis may be a useful ORV management tool.

### A. Alternatives

Managers of the Cape Cod Seashore considered several alternative means of handling the ORV problem. The five most practical options would be:

- (1) Allowing ORV travel to continue along the entire twenty-four-mile outer beach pending further information;
- (2) Allowing ORV travel only along the eight-mile section of outer beach that is most popular among ORV users;
- (3) Restricting the number of vehicles on the beach by issuing a fixed number of permits;
- (4) Banning ORV travel entirely; or,
- (5) Banning ORV's but providing a dune shuttle service for visitors.

The following subsections consider the costs and benefits of ORV use in general and attempt to determine the relative merits of the five alternatives in the context of the Cape Cod National Seashore controversy. Specifically, the subsections evaluate the impact of each alternative upon protecting the environment, preserving aesthetic values, and reducing conflicts among public land users.

### B. Analysis

Essentially, there are two values at stake in prescribing an ORV management plan on the Cape Cod National Seashore. The Park Service must balance the public's right to unspoiled national parkland—with the corresponding environmental amenities the parks provide—against the need to accommodate a variety of recreational activities that may provide some distributional benefits but that also may damage the parklands.

#### 1. Protecting Public Land

The Park Service's duty to preserve lands for the public's enjoyment necessarily supercedes its responsibility to provide and foster any individual type of recreation.<sup>181</sup> No matter how enjoyable a particular activity may be, the Park Service must preserve the park for a wide variety of public uses.<sup>182</sup> The UMass Study found that ORV's would cause the

181. The National Park Service Organic Act requires the National Park Service to administer parklands so as "to conserve the scenery and the natural and historic objects and the wild life therein, and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." 16 U.S.C. § 1 (1982).

182. "[S]tatutes allow for a balancing of preservation and development *only to the extent* that such development does not derogate from the overriding preservation mandate." *Conservation Law Found.*, 590 F. Supp. at 1479 (emphasis added).

least damage if restricted to the shoreline.<sup>183</sup> The authors cautioned, however, that "only a few passes . . . break up the deposit and kill all vegetation."<sup>184</sup>

With this information in mind, Seashore managers established an "ORV corridor" marked by wooden stakes intended to restrict ORV's to the "safe" region of the beach. A 1985 research study by the Woods Hole Oceanographic Institute concludes that the posts have been only marginally successful in reducing ORV damage along the upper beach.<sup>185</sup>

Under the original management plan, alternative 1, ORV traffic has continued through the dunes, thus preventing future dune growth and Seashore preservation.<sup>186</sup> Considering the Park Service mandate, the UMass and Woods Hole studies demonstrate the need for some change in this management plan. A superior management policy would permit continued ORV use but would better protect the Seashore from permanent ecological harm.

The Amended Plan, alternative 2, shortens the corridor to the eight-mile section of beach where ORV use is most popular and, therefore, might improve enforcement simply by reducing the size of the enforcement area.<sup>187</sup> However, Seashore managers admit that "short of cabling every inch of designated routes . . . there is no effective way" to prevent future violations.<sup>188</sup> More importantly, investigators note that the proposed ORV area borders on sensitive areas of accreting beach, making seashore expansion itself particularly susceptible to ORV damage.<sup>189</sup> Consequently, even a decreased total *number* of violations could increase aggregate ecological damage if concentrated in this particular area.

Alternative 3, issuing permits to reduce ORV traffic, provides little improvement over the present management policy. The necessity of obtaining a permit might discourage careless "dunebusters" from using the beach. Because of its limited number of rangers, however, the Park Service already is unable to enforce its existing unlimited permit program.<sup>190</sup>

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183. UMass STUDY, *supra* note 104, at 3.

184. *Id.* at 4.

185. The study, commissioned by the Conservation Law Foundation, is summarized in the Affidavit of John Teal, Conservation Law Found. v. Clark (D. Mass.) (No. 81-1004-N) (sworn on Apr. 8, 1986) [hereinafter Teal Affidavit]. In the 12-week study during the summer of 1985, photographers recorded 842 violations of the ORV corridor boundaries. *Id.* at 4.

186. See *supra* notes 108-12 and accompanying text.

187. 50 Fed. Reg. 31,177 (1985).

188. Memorandum from Herbert Olsen, Superintendent, Cape Cod National Seashore to Rick Gale 2 (Oct. 17, 1980).

189. See CLF Comments, *supra* note 110, at 13 (citing numerous reports of the National Park Service Cooperative Research Unit released during the five-year UMass Study).

190. See *supra* text accompanying note 188. The Cape Cod National Seashore presently issues permits to any properly equipped ORV after the vehicle's driver has paid a small fee and watched a videotape on safe beach driving.

Thus, without a costly increase in ranger presence, “dunebusters” would continue to have unlimited beach access. Moreover, ecological damage appears to vary less with the number of ORV drivers than with the number of drivers who stray from the designated ORV path. Given that a small number of straying vehicles will cause maximum damage, setting ORV quotas offers at best an unsubstantiated possibility of preventing further ecological harm.

Alternative 4, a total ban of ORV's, would eliminate ORV-induced degradation and could be enforced at a low monetary cost simply by barricading the automobile entrances to the beach. A ban, however, would eliminate the recreational enjoyment of thousands of individuals, the great majority of whom respect the trail boundaries.<sup>191</sup> Thus, banning ORV use entirely could have a large recreational cost compared to only speculative increases in traditional recreational use.

Providing a Park Service beach shuttle along the trail in lieu of allowing private ORV's—alternative 5—also would effectively prevent violations. Unlike alternative 4, however, this alternative would not sacrifice all ORV benefits. ORV users still would be able to bring large quantities of equipment and to visit otherwise inaccessible areas of the beach. The only detriment from the ORV users' perspective would be the loss of independence.

On the issue of ecological protection alone, then, the fifth alternative appears to provide the greatest reduction in damage at the lowest recreational cost. Only alternatives 4 and 5 could positively guarantee that ORV's would not cause any significant harm to the Cape Cod Seashore. Although alternative 4 sacrifices all benefits of ORV driving, alternative 5 sacrifices only the “thrill” of ORV driving.<sup>192</sup> This thrill, however, appears negligible because park officials—for health and safety reasons—already have restricted driving to below fifteen miles per hour along the flat outer beach.<sup>193</sup> Thus, the recreational loss from alternative 5 would be insignificant compared to the permanent protection of the Cape Cod Seashore.

## 2. *Suppression of Recreation*

The potential impact of the five proposed management strategies on user conflicts is more ambiguous. For some individuals, existing ORV traffic clearly reduces the recreational value of a visit to the Cape Cod

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191. The Woods Hole Study, for example, found evidence of 842 incidents of trail boundary violations in the summer of 1985. Teal Affidavit, *supra* note 185, at 4. Even assuming that each violation was caused by a different driver, this number is small compared to the number of ORV permits that are issued each year. See U.S. Dep't of the Interior, Cape Cod National Seashore Review of Off Road Vehicle Use 3 (1981).

192. There may be some incidental costs to operating a shuttle, but it probably would cost less than the existing permit program and could be financed by charging fares to shuttle riders.

193. See 36 C.F.R. § 7.67(a)(2)(vi)(B) (1987).

Seashore.<sup>194</sup> ORV access, however, enhances the recreational experience of other individuals. The CUNY study is inconclusive on the relative extent of these effects.<sup>195</sup> Because of the lack of data, it seems inappropriate to consider "all or nothing" options (alternatives 1 and 4) to resolve the recreational conflict issue. Rather, the solution needs to focus upon ways to reduce antagonism of non-ORV users while preserving some ORV benefits.

Shortening the ORV route, alternative 2, would provide some reduction in conflict by offering pedestrians an ORV-free recreation zone. In addition, many ORV operators would not be affected by this limitation because, historically, most of them prefer this section of the beach. Given its sensitive and isolated nature, however, the area in question also is valued highly by those pedestrian recreationists who most object to ORV's,<sup>196</sup> particularly those individuals seeking quiet and isolation at the Seashore. Thus, by crowding ORV's into the last remaining isolated section of the Seashore, this solution actually might intensify the conflict between ORV's and traditional recreationists.

Setting permit quotas, alternative 3, is also unsatisfactory. Evidence suggests that user conflicts caused by ORV's are a function of the very presence of ORV's rather than the magnitude of that presence.<sup>197</sup> Indeed, those vacationers displaced by present levels of ORV traffic may not return as a result of incremental reductions in the number of ORV's allowed to roam the beaches.<sup>198</sup> Setting limits on ORV access, moreover, invites the possibility of the same long lines at beach entrances that currently plague Yellowstone and other national parks. Thus, even the hypothesized benefits of permit quotas do not justify the reduction in ORV benefits that flows from barring some drivers from the beach and condemning others to wait for long periods at beach access areas.

Establishing a bus route along the corridor, alternative 5, would not wholly eliminate disturbance caused by ORV's because the presence of even one vehicle may be too much for some people. This alternative, however, would reduce substantially the frequency of conflict because only one vehicle would pass at a time and would do so only occasionally. Alternative 5 also would preserve some of the primary benefits of ORV

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194. This diminution is unavoidable for traditional users who wish to observe the seashore in a state undisturbed by the sounds, smells, and physical intrusion of ORV's. For such users, ORV's necessarily "impair [their] enjoyment or understanding of the outdoors on public land." D. SHERIDAN, *supra* note 1, at 30, *quoted in* Conservation Law Found. v. Clark, 590 F. Supp. 1467, 1486 (D. Mass. 1984).

195. *See supra* notes 148-54 and accompanying text.

196. For a statement of ecological and "traditional" recreational reasons for banning ORV's in this area in particular, see CLF Comments, *supra* note 110, at 12-14.

197. Badaracco, *supra* note 9, at 34; *see supra* note 194.

198. *See, e.g.*, Badaracco, *supra* note 9, at 72-74 (impairment of recreational enjoyment may lead to displacement of that recreational activity).

use such as access to fishing, access for those unable to walk long distances, and the ability to transport equipment to remote areas of the beach. Moreover, it would not necessarily limit the opportunity to camp on the beach if the Seashore allowed individuals to camp in the existing ORV areas. Finally, although this alternative would eliminate the flexibility and independence that many ORV drivers prize, current management practices indicate that the Park Service places a low priority on driving for driving's sake.<sup>199</sup> Thus, although no alternative simultaneously fulfills all of the recreational objectives of ORV and non-ORV users, alternative 5 offers some reduction in ORV conflict while ostensibly preserving the most important primary benefits of ORV use.

### 3. *Aesthetics*

As yet, no adequate research has been conducted on the impact of noise and fumes from ORV's upon the aesthetic experiences of visitors to the Seashore. Only one study has measured the visual impact of tire ruts and ORV's upon visual experiences.<sup>200</sup> Yet despite failed efforts to *quantify* aesthetic damage, the CUNY and SUNY studies clearly show that ORV use produces *some* level of aesthetic damage.<sup>201</sup> Pedestrian visitors have voiced objections to the tire ruts, noise, and visual intrusions created by ORV's.<sup>202</sup> These visitors contend, furthermore, that aesthetic damages flow only one way and fall entirely upon those who pursue nonmotorized recreation.<sup>203</sup> Thus, in determining the solution to the Seashore user conflict, the optimal alternative must mitigate the aesthetic damage without sacrificing all the benefits of ORV use.

Limiting ORV access to the beach by either reducing the number of ORV's (alternative 3) or the length of the ORV corridor (alternative 2) may offer some reduction in aggregate noise, fumes, and visual impacts. These benefits may be slight, however, because ORV's tend to congregate. In fact, increasing the concentration of ORV's in a specific area might produce a greater level of aesthetic degradation in that area.<sup>204</sup> Thus, restricting access may provide insignificant relief in the most congested ORV sites despite the fact that total numbers are reduced. The

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199. See 36 C.F.R. § 7.67(a) (1987) (limiting driving to direct, designated routes, and low speeds). Nevertheless, the issue of quantifying the recreational enjoyment of ORV users remains a proper subject for further study.

200. See SUNY Study, *supra* note 155.

201. CUNY Study, *supra* note 128, at 20 (segment of visiting public that opposes ORV use does so more on aesthetic than environmental grounds); SUNY Study, *supra* note 155, at 3.

202. CUNY Study, *supra* note 128, at 19.

203. Badaracco, *supra* note 9, at 35; see D. SHERIDAN, *supra* note 1, at 30, quoted in *Conservation Law Found.*, 590 F.2d at 1486 ("Nonmotorized recreationists do not enjoy their encounters with motorcycles, dune buggies, and four-wheel drive vehicles. . . . The ORV operator, on the other hand, is quite tolerant, even oblivious of the person on foot or horseback.").

204. SUNY Study, *supra* note 155.

obvious solution to this—requiring ORV's to spread out along the beach—creates difficulties both in enforcement and exposure of ORV's to a larger percentage of traditional users.

On the other hand, although alternative 4 would ban ORV's completely from this eight-mile area, and therefore would produce the optimal aesthetic result, it also would capitulate entirely to the aesthetic demands of a small group of pedestrian users.<sup>205</sup> This outcome seems unnecessary when a less harsh alternative exists: many of the benefits of ORV use still could be achieved if the Park Service instituted a beach shuttle.

A shuttle bus, alternative 5, appears to be the most satisfactory option. Although a shuttle would not eliminate aesthetic damage completely, as would a total ban, it would reduce dramatically contact between pedestrians and individual or multiple vehicles. The shuttle also would eliminate most of the aesthetically offensive byproducts of ORV's because it would greatly reduce total fumes and noise and leave only one set of tire tracks instead of several. Thus, although no alternative will reduce aesthetic damages without eliminating some recreational benefits, the beach shuttle is the only option that reduces aesthetic damage without entirely precluding ORV benefits.

### C. Summary

There is a great need for more accurate information concerning the costs and benefits of ORV use. Specifically, studies are not available on the value of ORV recreation, its possible substitutes, or the demographic composition of ORV users at the Cape Cod Seashore. In addition, studies on all the possible costs of ORV use generally have suffered from a variety of methodological flaws.<sup>206</sup> The Park Service's studies provided virtually no insight into the aesthetic costs and recreational losses caused by ORV traffic other than to prove their existence. In fact, the only research that provided a conclusive measure of ORV harm was the UMass ecological damage study, which showed both the existence and extent of environmental harm.<sup>207</sup> As a result, the preceding analysis of various alternatives was based largely on ecological issues.

The most important finding of the UMass Study (and the subsequent Woods Hole Study) was that present ORV use poses a significant threat to beach protection and future recreation and therefore must be restricted.<sup>208</sup> The key question is the extent to which ORV use should be restricted. In order to perform a full cost-benefit analysis on this ques-

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205. Only 92 of the 1,643 individuals who commented on the Amended ORV Plan advocated a total ban on ORV use. See 50 Fed. Reg. 31,177, 31,178 (1985).

206. See *supra* notes 148-59 and accompanying text.

207. UMass Study, *supra* note 104.

208. *Id.* at xi-xiv; see also Teal Affidavit, *supra* note 185, at 40-41.

tion, more accurate quantitative estimates of the recreational benefits and aesthetic costs of ORV use are needed. Because such estimates are unavailable (and may not be available to park managers in other instances), the Park Service must assume that ORV's provide some recreational and distributional benefits that deserve protection *and* that ORV's cause some aesthetic damage and suppression of recreation that must be minimized. Based upon the foregoing analysis, the purposes of the Cape Cod National Seashore would be served best by alternative 5, the only option that unambiguously protects the environment, reduces damage, and preserves some of the benefits of ORV use.

#### CONCLUSION

Before any improvement in ORV management can occur, Congress must push public land management agencies to promulgate regulations to fulfill the requirements of Executive Order No. 11,644. These regulations would force agencies to adapt ORV use to the special needs and uses of different public lands, thereby allowing ORV use only where its impact is consistent with land preservation and the underlying purposes of public land law. Where ORV use may be feasible, agencies should be required to justify their decisions by cost-benefit analysis in order to maximize recreational benefits and minimize land use conflicts.

The option of a beach shuttle service is a solution peculiar to the Cape Cod National Seashore. Other public land managers confronting ORV use on their recreation areas will need to tailor their management strategies to the land in question, the dimensions of ORV conflict and damage, the calculable benefits of ORV use, the availability of enforcement resources, and the limits of available information. Based upon its application to the Seashore's ORV conflict, cost-benefit analysis appears to be a potentially useful method with which to frame and analyze the difficult tradeoffs of ORV management and thus to improve the management of ORV's on America's public lands.