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# A ROAD MAP TO A BETTER NEPA:

## WHY ENVIRONMENTAL RISK ASSESSMENTS SHOULD BE USED TO ANALYZE THE ENVIRONMENTAL CONSEQUENCES OF COMPLEX FEDERAL ACTIONS

by Sonja Klopff, Nada Wolff Culver, & Pete Morton\*

### INTRODUCTION

Over thirty-five years have passed since the enactment of the National Environmental Policy Act (“NEPA”), the “basic national charter for protection of the environment,” and one of the most important environmental laws passed by the U.S. Congress.<sup>1</sup> The provisions of NEPA were intended to help public officials make decisions with an “understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.”<sup>2</sup> NEPA also provides the basis for Environmental Impact Statements (“EISs”), the environmental review process that requires agencies to take a “hard look” at the potential environmental consequences of proposed federal actions.<sup>3</sup>

As early as the 1970s, however, NEPA began to weather considerable criticism from some in the scientific community. Instead of producing environmental analyses of high technical quality, scientists concluded that NEPA assessments contained “massive amounts of incomplete, descriptive, and often, uninterpreted data.”<sup>4</sup> The Council on Environmental Quality (“CEQ”) more recently found that even when there was more than enough data to make a responsible decision, the EIS lacked analysis.<sup>5</sup>

Our first thesis is that problems with inadequate data and science intensify when dealing with NEPA assessments of complex federal actions: large-scale programs, policies, or projects. We maintain that in the face of scientific uncertainty and data limitations, the risk of harm to ecological systems increases as the scale of proposed development increases. For example, during the Bush Administration, the speed and scale of oil and gas leasing and drilling on public lands throughout the West has increased dramatically.<sup>6</sup> Between 2001 and 2006, more than 17,000 gas and oil wells were drilled on public land in the Rockies. In contrast, fewer than 9,500 wells were drilled between 1995 and 2000 during the Clinton Administration.<sup>7</sup> A recent analysis conducted by The Wilderness Society found that the Bureau of Land Management (“BLM”) is in the process of approving more than 126,000 wells to be drilled in the Rocky

Mountain West over the next fifteen to twenty years, despite the more than 77,000 wells already producing on the public lands.<sup>8</sup>

Studying the effects of this trend, the Government Accountability Office (“GAO”) issued a report in June of 2005 entitled “Oil and Gas Development—Increased Drilling Permit Activity Has Lessened BLM’s Ability to Meet Its Environmental Protection Responsibilities.”<sup>9</sup> As the title indicates, the GAO found that the increased volume of permits to drill, and the mandates to focus on processing them, has resulted in more BLM staff resources devoted to issuing permits—with less attention being paid to monitoring and enforcing compliance with environmen-

tal standards that apply to the activities conducted under the permits.

In the Rocky Mountain West, the scale of oil and gas development is larger and the pace of decisions is faster than in the past, but there is less attention paid to considering or addressing the cumulative environmental risks. The Energy Policy Act of 2005 included five new categorical exclusions from NEPA analysis for oil and gas development activities, and both the BLM and the U.S. Forest

Service have implemented additional categorical exclusions in the past year.<sup>10</sup> A recent study concluded that the rapid pace and large scale of oil and gas drilling and leasing that has occurred greatly increases the risk to the environment as well as the uncertainty regarding the ultimate effects of this large-scale policy.<sup>11</sup>

Our second thesis is that the potential cumulative ecological impacts associated with federal efforts of large scale, such as the Bush Administration’s national energy policy, would be better analyzed through the use of Ecological Risk Assessments

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(“ERAs”), often within a Programmatic EIS. ERAs provide a conceptual and methodological framework to improve EISs, and they are designed to explicitly address uncertainty and risk when analyzing environmental impacts.<sup>12</sup> This scientific framework could rectify some of the continuing weaknesses of EISs, as well as better analyze the cumulative impacts and natural increases in risk and uncertainty stemming from these large, programmatic projects.

This Article will argue that, in order to adequately fulfill NEPA’s requirement of taking a hard look at potential environmental impacts of national policy initiatives and large-scale projects, ERAs should be an essential component of NEPA analysis. We begin by defining ERAs and providing background information on their use. The next section details the many common elements of ERAs and EISs, including the similar purposes and structures of the two processes, which make them so compatible. The Article will next discuss how ERAs can improve the NEPA process by improving analysis, assessing cumulative impacts, dealing more effectively with uncertainty, and separating assessment from management decisions. We end with discussion and recommendations, based on the information presented in the Article, that ERAs should be conducted for Programmatic or large-scale EISs—such as the Administration’s policy of increases in oil and gas drilling, or tar sands and oil shale development—in order to adequately fulfill NEPA’s requirements.

### BACKGROUND ON ECOLOGICAL RISK ASSESSMENTS

Risk can be simply defined as circumstances that pose danger to people or what they value.<sup>13</sup> Risk is more formally expressed as the relationship between the magnitude of an undesired effect and the probability of the undesired effect occurring.<sup>14</sup> Risk results from the existence of a hazard and uncertainty about its expression.<sup>15</sup> Ecological risk assessments attempt to transform scientific data into meaningful information about the undesired effects of human activities on the environment and combine it with an evaluation of the consequences.<sup>16</sup> Risk assessment identifies hazards such as the release of drilling fluids into surface waters that support fisheries and communities, and it uses measurement, testing, and statistical methods to quantify the relationship between initiating events and the effects.<sup>17</sup>

### DEVELOPMENT OF ECOLOGICAL RISK ASSESSMENTS

ERAs have been performed for more than twenty years and have a long history that began with pollution investigation.<sup>18</sup> The EPA published its *Framework for Ecological Risk Assessment* in 1992, therein establishing the basic process that is widely used today. It then added further detail in the 1998 *Guidelines for Ecological Risk Assessment*. In addition, the EPA continues to develop a “bookshelf” of documents for guidance on conducting

ERAs on more specific topics.<sup>19</sup> Public lands agencies, such as the U.S. Forest Service, have begun to develop new models for ERAs for use in making land management decisions.<sup>20</sup>

### EPA GUIDELINES FOR ECOLOGICAL RISK ASSESSMENTS

According to the EPA, ERA is “a process that evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors.”<sup>21</sup> ERAs “systematically evaluate and organize data, information, assumptions, and uncertainties in order to help understand and predict the relationships . . . in a way that is useful for environmental decision making.”<sup>22</sup> Put more simply, ERAs try to answer three basic questions: “What can go wrong? How likely is it to happen? And, so what if it does?”<sup>23</sup>

The EPA 1998 Guidelines provide a clear framework that includes three distinct steps for conducting ERAs. The first step is the problem formulation phase where the scope and scale of the ERA is decided upon and a full analysis plan is developed. The second phase is the actual analysis where exposure to stressors and the relationship between stressor levels and ecological effects is determined. For instance, if the risk assessor were

trying to determine the effect of road building on a watershed, one stressor could be the increased sediment in the stream caused by the road construction, while the corresponding ecological effect could be reduced salmon spawning numbers in the river. The analysis would include a determination of how much sediment increases and what effect that increase would have on the numbers of spawning salmon. The third and final

part of the process is where assessors estimate and describe the risk and prepare a report, which includes their overall degree of confidence in their conclusions.<sup>24</sup>

### COMMON ELEMENTS OF ERAs AND EISs

There are many common elements of ERAs and EISs, including similar purposes and structures, which make ERAs a useful tool for informing the NEPA process. The basic goal of both ERAs and EISs is to provide a structure for collecting and analyzing information without requiring a specific result, based on the premise that better information leads to less uncertainty in decision making. Through the NEPA process, an agency must prepare a “coherent and comprehensive up-front environmental analysis to ensure informed decision making to the end that ‘the agency will not act on incomplete information, only to regret its decision after it is too late to correct.’”<sup>25</sup> A NEPA document is legally sufficient only if its “form, content and preparation . . . foster both informed decision-making and informed public participation.”<sup>26</sup>

### COMMON PURPOSES OF ERAs AND EISs

One of the most important common elements of EISs and

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*NEPA specifically encourages adapting and changing methods of analysis as science and knowledge about ecosystems improve.*

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ERAs are their purpose. The purpose of NEPA, according to the Council for Environmental Quality's NEPA regulations, is to "facilitate the evaluation of management decisions and the environmental effects of proposed federal agency actions." ERAs have a similar purpose: "[e]cological risk assessments are designed and conducted to provide information to risk managers about the potential adverse effects of different management decisions."<sup>27</sup> These two processes not only have the same goals, but also complement each other. ERAs provide information to risk managers about different management decisions and EIS's evaluate the environmental effects of different management decisions.

#### COMMON STRUCTURES OF ERAS AND EISS

These similarities continue with the general structures of the EIS and ERA. The NEPA process begins with the scoping phase where the agency formally announces its intention to prepare an EIS. The agency requests comments from interested parties and the public in order to help focus its environmental review on potentially significant environmental issues. Likewise, the first step in conducting an ERA is problem formulation, when risk assessors, risk managers, and any other interested parties help focus the assessment and identify the important issues. At this time, risk assessors should also evaluate goals, select assessment endpoints, prepare a conceptual model, and develop an analysis plan. Although the initial phases of the ERA and EIS have different labels—and ERAs require more specific planning—both processes include the input of interested parties in order to determine the scope of the analysis. In this context, the scope of the environmental analysis to be performed under NEPA must be commensurate with the scope of the proposed action and its potential impacts.<sup>28</sup> Similarly, in order to determine the scope of an ERA,

[r]isk managers and risk assessors consider the nature of the decision (e.g., national policy, local impact), available resources, opportunities for increasing the resource base (e.g., partnering, new data collection, alternative analytical tools), potential characteristics of the risk assessment team, and the output that will provide the best information for the required decisions.<sup>29</sup>

The NEPA process continues with the development and writing of the EIS, where the agency staff conducts an objective analysis of the environmental impacts that could occur as a result of the proposed action, whether it is a policy, program, or project. The EIS also includes analysis of possible alternatives to the proposed project and recommendations on how to lessen or avoid environmental consequences. The second step of the ERA process is risk characterization, when assessors estimate the risk through integration of exposure and stressor-response profiles.<sup>30</sup> At the end of this phase there should be summary profiles that describe the exposure and the stressor-response relationships.<sup>31</sup> According to the EPA, these results should be written "clearly, articulate major assumptions and uncertainties, identify reasonable alternative interpretations, and separate scientific conclusions from policy judgments."<sup>32</sup> The risk manager can then use the risk assessment results, along with other factors such as pub-

lic opinion, economic, or legal concerns in making management decisions.<sup>33</sup>

#### COMMON REQUIREMENTS FOR PUBLIC DISCLOSURE

Both processes make the information contained in the EIS or ERA public. The EIS is published and mailed to federal, state, and local government agencies and elected officials, as well as environmental and public interest groups, other interested parties, affected landowners, Native American tribes, newspapers, and local libraries. The purpose is to inform the public of the proposed actions, show how decisions were made, make the decision-making process clear and open to further scrutiny, and keep the agency accountable for its actions and decisions.

The EPA recommends a number of additional public disclosures, including explicitly defined endpoints, being open about the strengths and limitations of the conceptual model, identifying and describing the rationale for key assumptions, and describing data limitations. The purpose of disclosing these details is to keep the ERA process clear and open to further scrutiny and peer review. Instead of relying on conclusory statements, these required details allow those who were not involved in the process to independently evaluate the validity of the assessment.

Similarly, NEPA's hard look at environmental consequences must be based on "accurate scientific information" of "high quality."<sup>34</sup> Essentially, NEPA "ensures that the agency, in reaching its decision, will have available and will carefully consider detailed information concerning significant environmental impacts."<sup>35</sup> The Data Quality Act and BLM's interpreting guidance expand on this obligation, requiring that influential scientific information use the "best available science and supporting studies conducted in accordance with sound and objective scientific practices."<sup>36</sup> NEPA also requires agencies to disclose where information is incomplete or unavailable.<sup>37</sup>

Once again the purposes of EISs and ERAs mirror each other. However, because ERAs generally require disclosure of specific information regarding the analysis, uncertainty, and data limitations, the ERA reporting process can make the EIS more informative and useful to a broader number of people.

#### HOW ERAS WILL IMPROVE THE NEPA PROCESS

Although ERAs cannot fulfill all NEPA requirements by themselves, they can help agencies effectively analyze the potential environmental impacts resulting from proposed federal actions and their possible alternatives.<sup>38</sup> Because the ERA process has a more defined scientific framework than the EIS and has historically incorporated more scientific data, merging the two processes actually facilitates better analyses when an ERA is used as part of an EIS. ERAs can also help focus taxpayer resources, both on what data needs to be collected and on where, when, and to what extent federal projects should occur.

#### FULFILLING NEPA REQUIREMENTS AND IMPROVING ANALYSIS

As discussed above, there have been continuing problems with inadequate NEPA documents including incomplete, descriptive and uninterpreted data, and a lack of clear analysis. In 1997, the CEQ conducted a study of the effectiveness

of NEPA twenty-five years after its implementation. Among a number of conclusions, the CEQ found that “NEPA practitioners need to analyze existing information more effectively. . . ” and “[w]hat is often lacking in EISs is. . . a comparison of the potential impacts of choosing particular alternatives at particular locations expressed in clear, concise language. . . .”<sup>39</sup>

The purpose of an EIS is to take a hard look at environmental effects, analyzing a number of different options in order to better protect the environment. NEPA specifically encourages adapting and changing methods of analysis as science and knowledge about ecosystems improve. NEPA states that, “. . . it is the continuing policy of the Federal Government. . . to use *all practicable means and measures*. . . to create and maintain conditions under which man and nature can exist in productive harmony.”<sup>40</sup> ERAs provide available means and measures to incorporate an accepted, consistent, science-based framework that public land agencies already frequently use to focus and improve their decisions. Completing ERAs as part of an EIS and following the EPA’s Guidelines will address long-term weaknesses and enable federal agencies to fulfill more completely the purposes of NEPA.

#### ASSESSING CUMULATIVE IMPACTS

ERAs can help to address the difficulties in adequately assessing cumulative impacts that can plague EIS’s. NEPA requires that agencies assess the “direct, indirect, or cumulative” environmental impacts of a proposed action.<sup>41</sup> Cumulative impacts are defined as:

the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.<sup>42</sup>

As the scale and pace of these large-scale developments increases, the need to examine the potential cumulative impacts increases as well. Agencies are required by NEPA and the courts to provide “some quantified or detailed information; . . . [g]eneral statements about possible effects and some risk do not constitute a hard look. . . absent a justification regarding why more definitive information could not be provided.”<sup>43</sup> Agencies can fail to properly analyze these cumulative impacts, especially when dealing with large-scale projects; the Ninth Circuit complained in *Ocean Advocates v. U.S. Army Corps of Engineers* that the agency’s “findings about cumulative impacts were perfunctory and conclusory and d[id] not provide a helpful analysis of past, present, and future projects.”<sup>44</sup> Similar concerns have motivated courts to require programmatic EISs to ensure that the likely environmental consequences of policy initiatives are adequately assessed.<sup>45</sup>

The conceptual and methodological framework for ERAs outlined by the EPA allows for a consistent and comprehensive approach for land managers to follow when making decisions. Each ERA should include—as well as document for the

public—the stages of problem formulation, exposure analysis, effects assessment, and risk characterization.<sup>46</sup> Requiring each of these components should, in turn, improve methods of sampling and analysis, interpretations of data, and quality assurances.<sup>47</sup> In this way, cumulative impacts can be dealt with consistently and comprehensively, avoiding the lack of analysis and conclusory findings that often occur in EIS.<sup>48</sup>

#### DEALING EFFECTIVELY WITH UNCERTAINTY

Uncertainty is a constant when dealing with the effect of land management actions upon the environment, but using ERAs can help to consistently recognize where uncertainty lies, how uncertainty can be reduced, and where more data may be needed to make an effective evaluation. Unfortunately, in the history of EIS, uncertainty has been largely “ignored, omitted, described in qualitative terms, or merely [made] implicit in the assessment.”<sup>49</sup>

Where there is incomplete or unavailable scientific information concerning significant adverse environmental impacts, NEPA requires the disclosure and analysis of the costs of uncertainty and the costs of proceeding without more and better information.<sup>50</sup> However, agencies may not address, explain, or satisfactorily reduce uncertainty in their decisionmaking process, even when it is brought to their attention. For example, the Ninth Circuit found an EIS inadequate because it “did not address in any meaningful way the various uncertainties surrounding the scientific evidence.”<sup>51</sup> Courts have also concluded that agencies “need not undertake further scientific study, [to reduce uncertainty. . . but the agency] must explain in the EIS why such an undertaking is not necessary or feasible.”<sup>52</sup>

The ERA process helps to address this problem by calling for an explicit determination of the impacts of uncertainty on the overall quality and utility of the ERA. First, the EPA Guidelines prescribe better planning to eliminate as many sources of uncertainty as possible. When uncertainty is thus reduced, the EPA recommends that the ERA openly and explicitly describe the strengths and limitations of the model as well as identify and describe rationales for any assumptions made. Finally, risk assessors should describe data limitations. In this way, if there is missing data or uncertain results, these problems are not simply ignored or swept aside, but they become an intricate part of the analysis.

#### SEPARATING ASSESSMENT AND MANAGEMENT

Agencies and land managers are subject to substantial pressure from various interested parties and groups when it comes to making land management decisions. There is pressure to develop, pressure to keep pristine, and pressures for all different kinds of access. In addition, there are economic and legal implications that must be taken into account. There is no question that these pressures, as well as personal biases, can and do have an impact on land management decisions.<sup>53</sup> However, these reasons and pressures are often not clearly separated from the scientific analysis in NEPA documents, making it unclear where the science ends and where the policy-based planning begins.

The EPA framework clearly defines these different roles

and encourages their separation in order to prevent personal or institutional bias that typically “color” the scientific evaluation. Therefore, ERAs begin with the risk assessment, a scientific process, which involves the evaluation of the likelihood of adverse effects. When this process is finished, the risk characterization process involves the selection of a course of action based on other factors including social, legal, political, economic, as well as the risk assessment results.<sup>54</sup> Following this framework should help to separate the scientific conclusions from policy decisions, leading to more clearly defined discussions with the public about the effects of different courses of action as well as better management decisions.

## DISCUSSION AND RECOMMENDATIONS

NEPA requires federal agencies to consider the direct, indirect, and cumulative impacts of “major federal actions significantly affecting the quality of the human environment.”<sup>55</sup> Major federal actions include: “new and continuing activities, including projects and programs entirely or partly financed, assisted, conducted, regulated, or approved by federal agencies; new or revised agency rules, regulations, plans, policies, or procedures; and legislative proposals.”<sup>56</sup> In addition to oil and gas drilling, we have identified a number of major federal actions related to energy of sufficient scale, scope, and uncertainty to merit the use of ERAs.

The BLM assessed the development of wind energy on Western public lands managed by the agency, utilizing a programmatic EIS in order to evaluate the cumulative impacts of this program.<sup>57</sup> The final programmatic EIS identifies places that wind energy development would be appropriate on public lands, establishes policies and best management practices concerning right-of-way authorizations, and amends fifty-two separate BLM land use plans.<sup>58</sup>

The BLM is currently conducting programmatic NEPA analysis of the effects of oil shale and tar sands development on public lands in Colorado, Utah, and Wyoming.<sup>59</sup> The uncertainty of this project is significant because the scale of development is very large (and encompasses three states) and both oil shale and tar sands energy development involve new, commercially unproven processes with unknown risks to the environment.<sup>60</sup>

The BLM and the U.S. Forest Service are preparing a joint programmatic EIS to analyze and expedite the leasing of lands with high potential for renewable geothermal resources in eleven Western states and Alaska.<sup>61</sup> Neither agency has a robust geothermal leasing program, as a result there is a substantial amount of uncertainty about the effects on public lands, while at the same time there is a desire to begin leasing at a greater speed and scope.

The oil and gas energy policy established by the Bush Administration is also a major federal action significantly affecting the quality of the human environment. This policy has

required federal agencies to prioritize and accelerate approval of energy development projects while reducing the amount of environmental analysis that will be conducted.<sup>62</sup> Unlike wind and geothermal energy development, where a programmatic EIS is involved, no NEPA analysis of the Bush Administration oil and gas energy policy has been conducted despite requests to do so.<sup>63</sup> The direct, indirect, and cumulative effects of the energy policy must be considered through a comprehensive, programmatic EIS, much as the agencies have proceeded with other large-scale energy development initiatives.<sup>64</sup> By completing a programmatic EIS of the Bush Administration’s energy policy, the BLM would be able to examine “an entire policy initiative rather than performing a piecemeal analysis.”<sup>65</sup> Because the Bush Administration has made unmistakable and public efforts to increase oil and gas development throughout the West, the cumulative impacts of this regional increase are more than reasonably foreseeable and must be taken into account in a thorough NEPA analyses.

The effects of broad program or policy initiatives include large-scale habitat fragmentation, cumulative air quality, water quantity and quality, human health impacts, wildlife, loss of recreation opportunities, and damage to the habitat of sensitive, threatened and endangered species. In order to effectively consider such impacts, the structured and scientific approach of

ERAs will be invaluable. The environmental consequences of these truly major federal actions need to be analyzed at an equally broad scale through a programmatic EIS that includes an ERA. For the Bush Administration’s energy policy, which has not yet been subjected to a programmatic NEPA analysis, a

programmatic EIS and ERA should be prepared immediately.

## CONCLUSION

Both EISs and ERAs are premised on the principle that thorough consideration of accurate, relevant data will yield the most responsible decisions. Both EISs and ERAs set out processes that are intended to ensure that decisions are made based on the most complete and accurate information available and take uncertainty into account. Both EISs and ERAs are tools that are being used by federal agencies, but they can be used more effectively and consistently, especially if they are used in concert.

ERAs have already been used in public land management decisions that range from estimating risks from wildfire and other natural disasters, to implementation of vegetation projects. The use of ERAs should be expanded, however, to broad land management decisions where the large scale and scope of the analyses to be completed in an EIS makes a complete analysis more difficult. The EPA framework for ERAs outlines a consistent, science-based framework to improve the analysis of cumulative impacts and deal with uncertainty. ERAs can be an essential element of large, programmatic EISs and should be used in order to more effectively fulfill NEPA’s purpose and requirements.

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*The purpose of an EIS is to take a hard look at environmental effects.*

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Federal agencies have recognized the importance of conducting NEPA analysis on a programmatic scale when the scope of a federal action is a policy or program that can have wide-ranging impacts on resources and values. Programmatic EISs have been or are in the process of being used to assess the development of wind energy, geothermal energy, tar sands, and oil shale resources on public lands. NEPA's mandate to analyze direct, indirect, and cumulative environmental consequences,

consider measures to avoid or mitigate those impacts, and evaluate management alternatives at this scale can be effectively fulfilled via ERAs, which provide a rigorous scientific framework. Moreover, ERAs will ensure that the analysis of risks is completed separate from and prior to the ultimate management decisions, which often involve different, non-scientific considerations, facilitating informed and science-based decision-making—which we believe to be better decision-making.



## Endnotes: A Road Map to a Better NEPA

<sup>1</sup> 40 C.F.R. § 1500.1(a) (2007).

<sup>2</sup> 40 C.F.R. § 1500.1(c).

<sup>3</sup> 42 U.S.C. § 4321, *et seq.* (2007); *see* Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 333 (1989); Ecology Ctr., Inc. v. Austin, 430 F.3d 1057, 1065 (9th Cir. 2005); Seattle Audubon Soc'y v. Espy, 998 F.2d 699, 704 (9th Cir. 1993) (“The EIS did not address in any meaningful way the various uncertainties surrounding the scientific evidence. . . . Even if the Forest Service concludes that it need not undertake further scientific study regarding owl viability and the impact of further habitat loss, the Service must explain in the EIS why such an undertaking is not necessary or feasible”). For a discussion of a “hard look” at “risks,” *see also* San Luis Obispo Mothers for Peace v. Nuclear Regulatory Comm'n, 449 F.3d 1016, 1032 (9th Cir. 2006) (“If the risk. . . is not insignificant, then NEPA obligates the NRC to take a ‘hard look’ at the environmental consequences of that risk.”)

<sup>4</sup> D.W. Schindler, *The Impact Statement Boondoggle*, 192 SCIENCE 50 (1976); S.M. Bartell, *Ecology, Environmental Impact Statements, and Ecological Risk Assessment: A Brief Historical Perspective*, 4 HUMAN AND ECOLOGICAL RISK ASSESSMENT 843, 844 (1998).

<sup>5</sup> COUNCIL ON ENVIRONMENTAL QUALITY, THE NATIONAL ENVIRONMENTAL POLICY ACT, A STUDY OF ITS EFFECTIVENESS AFTER TWENTY-FIVE YEARS 28 (Jan. 1997), available at <http://ceq.eh.doe.gov/nepa/nepa25fn.pdf> (last visited Nov. 7, 2007).

<sup>6</sup> Craig Welch, *For Good or Ill, Bush Clears Path for Energy Development*, SEATTLE TIMES, Sept. 26, 2004 at A22 (claiming that Cheney's Energy Task Force made forty recommendations to speed production, including a call to reconsider public lands previously withdrawn from energy drilling).

<sup>7</sup> M. HAEFELE, P. MORTON & N. CULVER, THE WILDERNESS SOCIETY, NATURAL DIVIDENDS: WILDLAND PROTECTION AND THE CHANGING ECONOMY OF THE ROCKY MOUNTAIN WEST, available at <http://www.wilderness.org/Library/Documents/upload/Natural-Dividends-Wildland-Protection-and-the-Changing-Economy-of-the-Rocky-Mountain-West.pdf> (last visited Oct. 31, 2007).

<sup>8</sup> The Wilderness Society's BLM Action Center conducted a preliminary analysis of land use plans and large-scale projects approved, or in the process of approval, in the states of Colorado, Montana, New Mexico, Utah, and Wyoming in order to estimate the number of new oil and gas wells likely to be approved for drilling over the next fifteen to twenty years. Results were issued in October 2007. *See* THE WILDERNESS SOCIETY, PRELIMINARY ANALYSIS OF CURRENT FEDERAL ACTIONS AUTHORIZING DRILLING OF NEW WELLS (Aug. 2007), available at <http://www.wilderness.org/Library/Documents/upload/WellCount-Overview-Update2007.pdf> (last visited Nov. 7, 2007).

<sup>9</sup> U.S. GOVERNMENT ACCOUNTABILITY OFFICE, OIL AND GAS DEVELOPMENT: INCREASED PERMITTING ACTIVITY HAS LESSENED BLM'S ABILITY TO MEET ITS ENVIRONMENTAL PROTECTION RESPONSIBILITIES (June 2005), available at <http://www.gao.gov/new.items/d05418.pdf> (last visited Nov. 7, 2007).

<sup>10</sup> Pub. L. No. 109–58, § 390, 42 U.S.C. § 15942; 72 Fed. Reg. 45504–45542 (Aug. 14, 2007); 72 Fed. Reg. 7391–7402 (Feb. 15, 2007).

<sup>11</sup> P. Morton, C. Weller, J. Thomson, M. Haeefe, & N. Culver, THE WILDERNESS SOCIETY, DRILLING IN THE ROCKY MOUNTAINS: HOW MUCH AND AT WHAT COST? (Mar. 2004), available at [http://www.wilderness.org/Library/Documents/upload/Drilling\\_in\\_the\\_Rocky\\_Mountains\\_March\\_2007.pdf](http://www.wilderness.org/Library/Documents/upload/Drilling_in_the_Rocky_Mountains_March_2007.pdf) (last visited Nov. 7, 2007).

<sup>12</sup> Bartell, *supra* note 4, at 848.

<sup>13</sup> NATIONAL RESEARCH COUNCIL, BARRIERS TO SCIENCE: TECHNICAL MANAGEMENT OF THE DEPARTMENT OF ENERGY'S ENVIRONMENTAL REMEDIATION PROGRAM (National Academy Press 1996).

<sup>14</sup> GW SUTER II, ECOLOGICAL RISK ASSESSMENT (Lewis Publishers 1993).

<sup>15</sup> NATIONAL RESEARCH COUNCIL, *supra* note 13; Suter, *supra* note 14.

<sup>16</sup> Bartell, *supra* note 4.

<sup>17</sup> SUTER, *supra* note 14.

<sup>18</sup> *See, e.g.*, NATIONAL SCIENCE AND TECHNOLOGY COUNCIL, ECOLOGICAL RISK ASSESSMENT IN THE FEDERAL GOVERNMENT (May 1999), available at <http://yosemite.epa.gov/SAB/sabcvpess.nsf/e1853c0b6014d36585256dbf005c5b71/b882baf473df807185256de4006a39a5!OpenDocument> (last visited Nov. 7, 2007).

<sup>19</sup> Virginia Dale, Remarks on State of Science in Ecological Risk Assessment at the Advances in Threat Assessment and Their Application to Forest and Rangeland Management Conference (July 18–20, 2006).

<sup>20</sup> *See* ForestEncyclopedia.net, Advances in Threat Assessment and Their Application to Forest and Rangeland Management Conference, [www.threatsforencyclopedia.net](http://www.threatsforencyclopedia.net) (last visited Nov. 1, 2007).

<sup>21</sup> EPA, GUIDELINES FOR ECOLOGICAL RISK ASSESSMENT B-3 (May 14, 1998), available at <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=12460> (last visited Nov. 7 2007) [hereinafter GUIDELINES FOR ECOLOGICAL RISK ASSESSMENT].

<sup>22</sup> GUIDELINES FOR ECOLOGICAL RISK ASSESSMENT, *id.* at 1.

<sup>23</sup> Bartell, *supra* note 4, at 845.

<sup>24</sup> GUIDELINES FOR ECOLOGICAL RISK ASSESSMENT, *supra* note 21, at 8.

<sup>25</sup> Blue Mountains Biodiversity Project v. Blackwood, 161 F.3d 1208, 1216 (9th Cir. 1998); *see also* Marsh v. Oregon Natural Res. Council, 490 U.S. 360, 371 (1989).

<sup>26</sup> Colorado Env'tl. Coalition v. Dombeck, 185 F.3d 1162, 1172 (10th Cir. 1999); *see* Oregon Env'tl. Council v. Kunzman, 817 F.2d 484, 492 (9th Cir. 1987); *see also* Found. on Econ. Trends v. Heckler, 756 F.2d 143, 157 (D.C. Cir. 1985) (“The NEPA duty is more than a technicality; it is an extremely important statutory requirement to serve the public and the agency before major federal actions occur.”)

<sup>27</sup> GUIDELINES FOR ECOLOGICAL RISK ASSESSMENT, *supra* note 21, at 23.

<sup>28</sup> Kern v. U.S. Bureau of Land Mgmt., 284 F.3d 1062, 1072 (9th Cir. 2002) (stating agency must analyze environmental consequences of specific timber sales on spread of root fungus in broader area); 40 C.F.R. § 1508.25 (requiring a federal agency must consider the impacts of not only the proposed action, but connected, cumulative and similar actions).

<sup>29</sup> GUIDELINES FOR ECOLOGICAL RISK ASSESSMENT, *supra* note 21, at 19–20.

<sup>30</sup> GUIDELINES FOR ECOLOGICAL RISK ASSESSMENT, *supra* note 21, at 8. This phase of the process includes a number of specific objectives including: describing risk by discussing lines of evidence and determining ecological adversity; prepare a report; estimate ecological effects; indicate the overall degree of confidence in the risk estimates; cite evidence supporting the risk estimates; and, interpret the adversity of ecological effects.

<sup>31</sup> GUIDELINES FOR ECOLOGICAL RISK ASSESSMENT, *supra* note 21, at 8.

<sup>32</sup> GUIDELINES FOR ECOLOGICAL RISK ASSESSMENT, *supra* note 21, at 8.

<sup>33</sup> GUIDELINES FOR ECOLOGICAL RISK ASSESSMENT, *supra* note 21, at 8.

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## ENDNOTES: A ROAD MAP TO A BETTER NEPA *continued from page 43*

<sup>34</sup> 40 C.F.R. § 1500.1(b).

<sup>35</sup> *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989).

<sup>36</sup> Treasury and General Government Appropriations Act for Fiscal Year 2001, Pub.L.No. 106-554, § 515; *see also* BUREAU OF LAND MANAGEMENT, INFORMATION QUALITY GUIDELINES, *available at* [http://www.blm.gov/nhp/efoia/data\\_quality/guidelines.pdf](http://www.blm.gov/nhp/efoia/data_quality/guidelines.pdf) (last visited Nov. 3, 2007).

<sup>37</sup> 40 C.F.R. § 1502.22.

<sup>38</sup> The scope of an EIS is relatively wide and requires the agency to “discuss the purpose and need for the proposed action, environmental impacts resulting from the actions, unavoidable adverse environmental impacts, alternatives to the proposed action, the relationship between short-term uses and long-term productivity, and the amount of resources that must be devoted to the proposed action.” *Citizens’ Comm. to Save Our Canyons v. U.S. Forest Serv.*, 297 F.3d 1012, 1022 (10th Cir. 2002); 42 U.S.C. §4332(2)(C)(i)-(v); 40 C.F.R. § 1502.10.

<sup>39</sup> COUNCIL ON ENVIRONMENTAL QUALITY, *supra* note 5.

<sup>40</sup> National Environmental Policy Act, 42 U.S.C. § 4331(a) (2007).

<sup>41</sup> 40 C.F.R. § 1508.8.

<sup>42</sup> 40 C.F.R. § 1508.7.

<sup>43</sup> *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1379-80 (9th Cir. 1998).

<sup>44</sup> *See Ocean Advocates v. U.S. Army Corps of Eng’rs*, 361 F.3d 1108, 1129 (9th Cir. 2004); *Muckleshoot Indian Tribe v. U.S. Forest Serv.*, 177 F.3d 800, 811 (9th Cir. 1999) (holding that the cumulative impact statements that are provided in the EIS are far too general and one-sided to meet the NEPA requirements); *see also High Sierra Hikers Ass’n v. Blackwell*, 390 F.3d 630, 645-46

(9th Cir. 2004); *Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt.*, 387 F.3d 989, 991-92 (9th Cir. 2004) (asserting that the analyses performed by the BLM do not sufficiently consider the cumulative impacts posed by the timber sales); *Wyoming Outdoor Council Powder River Basin Res. Council v. United States*, 351 F. Supp. 2d 1232, 1238 (D. Wyo. 2005); *Defenders of Wildlife v. Ballard*, 73 F. Supp. 2d 1094, 1114 (D. Ariz. 1999).

<sup>45</sup> *See Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976); *Northcoast Env’tl. Ctr. v. Glickman*, 136 F.3d 660, 688 (9th Cir. 1998). (holding that the preparation of a programmatic EIS, will permit agency to assess the environmental consequences of “an entire policy initiative rather than performing a piecemeal analysis”).

<sup>46</sup> *Bartell, supra* note 4, at 848.

<sup>47</sup> *Bartell, supra* note 4, at 848.

<sup>48</sup> James L. Connaughton, *Modernizing the National Environmental Policy Act: Back to the Future*, 12 N.Y.U. ENVTL. L.J. 1, 9 (2003) (writing about the possibilities of using ERAs to improve the NEPA process, and saying, “[t]he question we must find an answer to now is how to pull environmental and risk assessments together in such a way to create a more programmatic view of planning and development”).

<sup>49</sup> *Bartell, supra* note 4, at 848.

<sup>50</sup> 40 C.F.R. § 1502.22.

<sup>51</sup> *Seattle Audubon Soc’y v. Espy*, 998 F.2d 699, 704 (9th Cir. 1993).

<sup>52</sup> *Seattle Audubon Soc’y, id.*; *see also Ecology Ctr., Inc. v. Austin*, 430 F.3d 1057, 1065 (9th Cir. 2005).

<sup>53</sup> *Montana Wilderness Ass'n v. Fry*, 408 F. Supp. 2d 1032 (D. Mont. 2006) (deciding to maintain jurisdiction until BLM submitted proof that it had completed an adequate NEPA analysis of oil and gas leases, a federal court in Montana cited the importance of ensuring that the NEPA process not be “reduced to a series of hurdles to be cleared en route to a predetermined result” and, in discussing the testimony from the BLM State Director, repeatedly emphasized its “concern over BLM’s ability to fulfill its procedural obligations without favoring a predetermined outcome”).

<sup>54</sup> GUIDELINES FOR ECOLOGICAL RISK ASSESSMENT, *supra* note 21, at 5.

<sup>55</sup> 42 U.S.C. § 4332(C).

<sup>56</sup> 40 C.F.R. § 1508.18(a).

<sup>57</sup> The eleven Western states are: California, Washington, Oregon, Idaho, Nevada, New Mexico, Utah, Colorado, Wyoming, Montana, and Arizona.

<sup>58</sup> BLM, WIND ENERGY DEVELOPMENT PROGRAMMATIC EIS INFORMATION CENTER, *available at* <http://windeis.anl.gov/> (last visited Nov. 1, 2007)

<sup>59</sup> BLM, OIL SHALE & TAR SANDS LEASING PROGRAMMATIC EIS, *available at* <http://ostseis.anl.gov/index.cfm> (last visited Nov. 3, 2007).

<sup>60</sup> OIL SHALE & TAR SANDS LEASING PROGRAMMATIC EIS, *id.*

<sup>61</sup> BLM, GEOTHERMAL RESOURCES LEASING PROGRAMMATIC EIS, *available at* [http://www.blm.gov/wo/st/en/prog/energy/geothermal/geothermal\\_nationwide.html](http://www.blm.gov/wo/st/en/prog/energy/geothermal/geothermal_nationwide.html) (last visited Nov. 1, 2007).

<sup>62</sup> The Cheney Energy Task Force released its recommendations for expediting oil and gas exploration and development while reassessing the use of protective lease stipulations or other measures. Executive Orders 13211 and 13212 were released at the same time directing federal agencies to follow these recommendations and to take actions to “accelerate the completion of energy-related projects.” In 2003, the BLM issued Instruction Memoranda Nos. 2003-233 and 2003-234, which formalized a requirement for the BLM to manage its lands to expedite review, accelerate completion and impose the “least restrictive constraints” on oil and gas development. In addition to the new categorical exclusions discussed above, the Energy Policy Act of 2005 also prescribed shortened review periods for approving applications for permits to drill, provided an exemption from the Clean Water Act for certain oil and gas development activities, and established five pilot project offices to focus on processing applications for permits to drill. Pub. L. No. 109–58, § 366, 365 (Aug. 8, 2005).

<sup>63</sup> Morton, Weller, Thomson, Haefele, & Culver, *supra* note 11.

<sup>64</sup> *See Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976).

<sup>65</sup> *Northcoast Env'tl. Ctr. v. Glickman*, 136 F.3d 660, 688 (9th Cir. 1998).