

CAN INCORPORATING BIODIVERSITY INTO
ENVIRONMENTAL IMPACT STATEMENTS
ENHANCE COMPLIANCE WITH THE
NATIONAL ENVIRONMENTAL
POLICY ACT OF 1969

BY

KIMBERLY A. HOBIN

Bachelor of Arts

Clark University

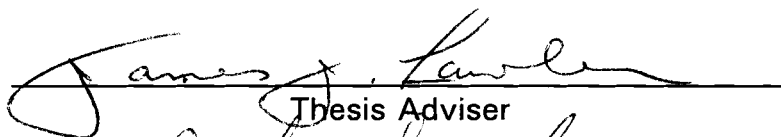
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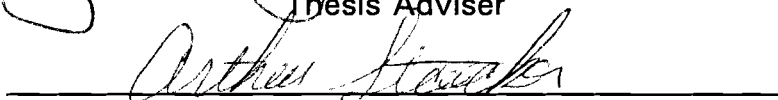
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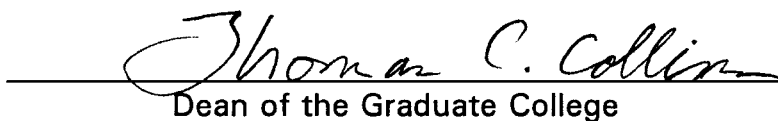
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Thesis Approved:


Thesis Adviser






Dean of the Graduate College

PREFACE

The purpose of this thesis is to explore the possibility that Environmental Quality can be enhanced through incorporating biodiversity into the National Environmental Policy Act (NEPA) process. The NEPA process does not currently consider biodiversity when evaluating overall ecological condition. My argument is that biodiversity is an important endpoint indicator of a system's ecological health, and should be required to be adequately considered in order to satisfy compliance with NEPA.

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Introduction:

The National Environmental Protection Act of 1969 (NEPA) was passed on January 1, 1970 to assist Federal Agencies in protecting the environment from future actions that the agencies might undertake. NEPA requires the federal agencies to think about the possible environmental effects of a proposed action, and inform the public of those effects. NEPA is very broad in that it requires all environmental consideration to be made. In reality, some effects are routinely investigated, such as noise pollution and the impacts on endangered species, while other effects such as those ecological and biological factors that influence biodiversity are not adequately considered (CEQ, 1993).

In the past several years, biodiversity has become an issue in the study of ecological health. Biodiversity is considered to be a good indicator of overall ecological health and well being, an endpoint indicator of a system as a whole, whose individual pieces and interactions are difficult to measure and predict. NEPA should be a tool to assess the effects of a proposed government action on the whole ecological system. Presently this is not the case. Just bits and pieces of the environment are being evaluated, while the whole picture is being ignored.

This thesis presents the argument that the inclusion of biodiversity into NEPA analysis would help achieve the basic goals of NEPA. I present the view that the Council on Environmental Quality should require that biodiversity be considered in NEPA evaluation, as well as adopt a method of enforcing this requirement. The thesis focuses largely on the context of the Environmental

Impact Statement as the main means by which to include biodiversity into NEPA. The current inadequacies of EISs in the role of fulfilling the requirements of NEPA compliance are discussed. These inadequacies undermine the intention of NEPA, and suggestions on how to rectify them are briefly presented.

The thesis includes a brief overview of the different definitions of biodiversity, as well as actions that impact on biodiversity. Also overviewed are some of the methods currently available to measure biodiversity. The inability to quantify biodiversity has been the main reason that it has not been previously included in impact analyses. I present the view that since technology has progressed to the point where there are several methods available to measure biodiversity, the inclusion of this parameter should be required by CEQ to be incorporated into all NEPA analyses.

Biodiversity:

The term biodiversity encompasses many different aspects of biology and ecology. When speaking of biodiversity it is necessary to state the criteria of which you are speaking. The diversity of biological organism can be measured in several ways, from the molecular to the trophic level. The actual definition of biodiversity can be different depending on who is defining it. Examples of some of the definitions that are used include:

"The variety among living organisms and the ecological communities they inhabit (Blum, 1993)".

"The array of populations and species of other organisms with which Homosapiens share Earth, and the communities, ecosystems, and landscapes of which they are a component part (Ehrlich, 1993)".

"The world's organisms, including their genetic diversity and the assemblages they form. It is the blanket term for natural biological wealth that undergirds human life and well-being. The breath of the concept reflects the interrelatedness of genes, species, and ecosystems. Because genes are the component of species, and species are the components of ecosystems, altering the make-up of any level of this hierarchy can change the others...(Nelson and Serafin, 1992)".

The most common definition used when describing biodiversity is the one by the Office of Technology Assessment(1987) that states- "Biological Diversity refers to the variety and variability among living organisms and the ecological complexes in which they occur (Probst, 1991)".

Other definitions include abundance and distribution of populations, numbers of endangered species, centers of species-richness with high endemism, taxic diversity, the degree of genetic variability, and successional stages within their definitions (McKendry, 1993).

The criteria in which biodiversity is defined are measured by several different scales. They include:

1. *Genetic Diversity*- the diversity of genetic material within a species (Henderson, 1992). Within any species there may be races or strains with similarities within each group, but which differ from other groups of the same species (Rose, 1992).

2. *Species Diversity*- diversity of species within a defined area, the extendant number and variety (Henderson, 1992). For example, within any one forest ecosystem, there may be a dozen tree species and many species of other plants, as well as thousands of animal and insect species (Rose, 1992).

3. *Ecosystem Diversity*- the diversity of interacting plant and animal species in natural communities and their relationship with the physical environment (Henderson, 1992). For example, a river valley may contain several forests, grassland, shoreland, and river environments, each of which may be regarded as a separate system, but which interrelate in the ecosystem (Rose, 1992).

4. *Functional Diversity*- Functional diversity refers to how the organisms function and the variety of responses to environmental change, especially the diverse space and time scales to which organisms react to each other and the environment, is a property of the ecosystem (Hammer et al, 1993).

Why it is Important to be Concerned About Biodiversity

The concern over biodiversity stems from the fear that as the earth loses biological organisms, ecological functions will also be lost. Reasons for the conservation of biodiversity include the fact that biological organisms are an integral part of the overall biosphere. Their presence influences other organisms and the physical environment. The presence of rich biota allows for one species to occupy the niche of another should any ecological shocks occur. Biodiversity provides ecological functions that are necessary for ecological sustainability, that in turn is necessary for long-term human survivability. Some of the reasons for the need to protect biodiversity include:

Human Utility-

Direct Benefits -People derive direct benefits of a multitude of species for use and consumption as food, fiber and medicine. People also derive direct benefits from the utilization of species for the purpose of pleasure and recreation such as hunting, fishing, camping, and bird-watching (Aylwars, 1992).

Gene Reservoirs- The saving of species diversity translates into the saving of the genetic resources associated with those species. These genetic resources have in the past, and will again in the future be used to enhance production of agricultural products through selective breeding (Myers, 1983).

Ecological Functions-

Decomposition- Decomposition involves the nutrient cycling necessary for soil maintenance and fertility. The decomposition is achieved by many different types of microorganisms working simultaneously (Aylward, 1992).

Herbivory- The eating habits of large herbivores are useful in the dispersal of seeds and pollen over wider areas. For some species herbivory is not only beneficial, but necessary (Shaw, 1985).

Carnivory- Carnivores play an important role in keeping population of prey in check, decreasing the ecological impacts associated with overpopulation. Carnivores also can perform the function of pest control for humans, taking care of rodents and insects for example (Shaw, 1985).

Physical Changes- The generation, maintenance and irrigation of soils, beavers build dams, and other types of physical structures are influenced by the presence of the local species. Local species perform functions that increase and maintain overall ecological health (Aylward, 1992).

Ecological Resiliency-

Biodiversity provides for many organisms of different genetic makeup to occupy a given area at the same time. In a relatively static environment, the ratio of these organisms are held relatively constant. In the event of a catastrophic environmental impact, or environmental disturbances that are less

than catastrophic but sufficient enough to eliminate critical species, the presence of a genetically diverse population is desirable. The higher the biodiversity of the area, the more likely there will be organisms available that are both able to tolerate the disturbance and provide the ecological functions that are necessary to stabilize the area (Hammer, 1993).

Waste Assimilation-

A biodiverse and healthy ecological community is better able to provide waste assimilation benefits that involve decomposition and detoxification of by-products of human economic activity. This ability to assimilate waste makes the environment less hazardous for more sensitive species and humans (Alyward, 1992).

Moral Obligations-

Since humans are the dominant species, the responsibility to act as good stewards and protect the earth as much as possible depends on us. There is a certain obligation to the future generations of humans to not destroy their resource base, so that human survival can continue (Myers, 1993).

Aesthetic Values-

People experience utility from a healthy, diverse environment. People enjoy knowing that there are such creatures as polar bears, bobcats, and wolves. Eventhough most people will never see these animals in the wild (nor would they necessarily want to), the fact that they exist and can be enjoyed on

television or in photographs is sufficient to add to the viewer's utility of the animals (Probst, 1991).

Precautionary Principle-

"If we live as if it matters and it doesn't matter, it doesn't matter. If we live as if it doesn't matter, and it matters, then it matters (Myers, 1993).

Actions that Decrease Biodiversity

Physical alteration-

Destruction- The destruction of biodiversity in its most direct form involves the complete removal of all biota from an area in order to build structures and lay down concrete. This can be devastating to local populations, since the effects of habitat loss are rarely linear, instead populations often decrease quickly once a threshold is reached. Eliminating a few high quality breeding habitats can cause the population to change significantly (Probst, 1991).

Simplification- The simplification of biodiversity involves the removal of most of the native biota in order to replace the ecological system with something exotic such as agricultural products or grass for golf courses. The resulting habitat is much less diverse (Shaw, 1985).

Fragmentation- Fragmentation is the cutting-up and segmentation of large tracts of land into smaller habitats surrounded by altered or disturbed areas (Probst, 1991). Examples include prairie fragments surrounded by agricultural lands, small patches of forests surrounded by clear-cut areas or a large tract of land that has been developed into neighborhood areas that form impermeable boundaries. The resulting populations in these areas are isolated from each other so the chances of local extinctions are greater since there is little chance for the migration and genetic mixing of the populations (Probst, 1991).

Pollution-

Pollution resulting from development can have a negative impact on biodiversity. Some species can be sensitive to particular toxic compounds. The consumption of non-toxic pollution can interfere with individual's ability to survive.

Overharvesting-

Overharvesting can be a problem for species directly, especially if they are the ones being overharvested. This has been a problem for many species that are hunted for sport or trophies, or collected for the pet trade. Some South American parrots are experiencing a decline in diversity due to the export of the animals for the pet trade (Bessinger, 1992).

Species diversity also suffers when components of habitat are overharvested. The spotted owl is one notorious species that relies on dense stands of old growth forest. The overharvesting of the trees that comprise the owl's habitat would be detrimental to the species.

Introduction of Exotic Species-

Predation- Predation of native species by an exotic species can lead to the rapid decline in the prey species. Predators and prey that have evolved together have reached an equilibrium. This is not the case when an exotic predator is introduced into the picture. The prey will not be equipped to evade the predator, and can be an easy target for the predator (Shaw, 1985).

Resource Competition- Exotic species can sometimes outcompete native species for resources. An example of this is the introduction of exotic grasses to prairie lands (Shaw, 1985).

Genetic Modification- Genetic modification is the result of the interbreeding of two species so that the resulting offspring is not genetically similar to either parent. This can happen when the subspecies have been separated geographically to evolve into separate genetic populations, and then are reunited. They will still breed with each other, which can be a beneficial thing if the population is in need of genetic diversity, but the uniqueness of the individual species will be lost (Shaw, 1985).

Disease Transmission- The introduction of exotic species often translates into the introduction of exotic diseases. Native species are not able to adapt rapidly enough to new disease, and whole populations can swiftly and effectively be wiped out (Shaw, 1985).

Disruption of Natural Processes

Fire suppression- The presence of development and the management strategies for some Federal lands call for the suppression of wild fires. Wild fires serve ecological functions. The fires regenerate soils, reduce groundcover, and assist in the lifecycles of some plant species. The suppression of fire for long periods of time decrease biodiversity (Shaw, 1985).

Modifying Flow Regimes- A flow regime involves the natural transfer of an ecological component from one place to another. Interrupting this flow of material is likely to be detrimental on the species that rely on the influx of such resources. Dams alter aquatic life downstream, and the drainage of wetlands interferes with primary production of estuaries (CEQ, 1993).

Altering Predator/Prey Populations- Selectively killing large predators can lead to ecological instability and the loss of some species due to overpopulation. The intentional killing of wolves for the benefit of ranching has led to the endangerment of the wolf population. Some species, such as deer, can become overpopulated which in turn causes environmental degradation, which results in a less hospitable environment for other species (Shaw, 1985).

The National Environmental Policy Act of 1969 (NEPA)

The National Environmental Policy Act was passed on January 1, 1970. The Act's main goals are to protect the physical and cultural environment from thoughtless and careless actions of the Federal Government. The Act requires Federal Agencies to consider the consequences of their actions as it relates to the human environment.

NEPA (P.L. 91-190) states that

" The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality."

The Environmental Impact Statement (EIS) is the main tool by which the goals of NEPA are attained. The EIS is a document used to inform the general public, as well as other Federal Agencies of the specific environmental consequences of a major proposed federal action. NEPA regulations largely evolve around EIS requirements. The Council on Environmental Quality's regulations state that "NEPA's purpose is not to generate paperwork-even excellent paperwork-but to foster excellent action. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment (40CFR 1500.1).

Figure 1.

OVERVIEW OF NEPA PROCESS

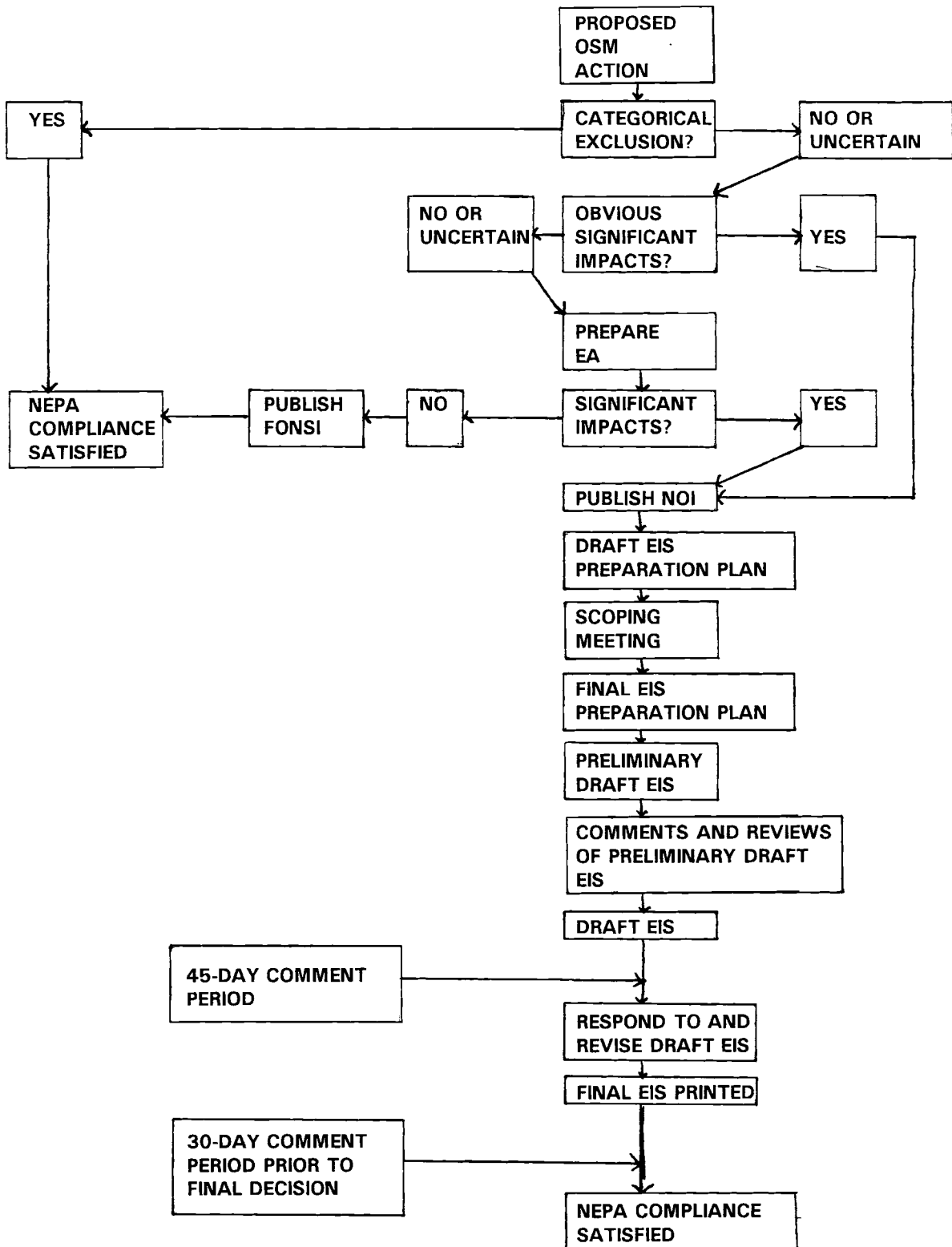


Figure 1 outlines the NEPA Process. The process begins with a proposed Federal action. The categorical exclusions are Agency specific and list the types of routine actions that typically do not require an EA or EIS. The EA is the Environmental Assessment, which involves a preliminary investigation into the effects of the proposed actions on the environment. Biodiversity could be considered in the EA at this point. If no significant effects are identified, a FONSI, Finding of No Significant Impact is drafted. If significant impacts are expected, a NOI, Notice of Intent, is prepared and published in the Federal Register. The NOI notifies the public that a project capable of producing adverse environmental effects has been proposed, and an EIS, Environmental Impact Statement will be drafted (DOI, 1981).

After the draft EIS has been distributed to CEQ and other interested parties, anyone wishing to comment on the context of the EIS has 60 days to do so. The Agency in charge of the EIS then must respond to the concerns of the public in writing, and edit the EIS if it chooses. The final EIS is printed. Another 30 day period for public comments allow for further concerns to be aired. Once an Agency has gone through all the steps describes in the outline, it has complied with NEPA.

Although it is a NEPA requirement that a Federal Agency respond to the concerns of interested parties, it is not a requirement that the Agency mitigate any conflicts. The purpose of the comment period is to allow the public to inform the Agency of any adverse effects it may have overlooked or inadequately evaluated. NEPA's main purpose, as described in several court findings, is to function as a tool for helping the Federal Government make

informed decisions regarding proposed actions. It is not the purpose to satisfy the concerns of ordinary citizens. The requirement that the Agency respond to the public's concerns in writing is to insure that the agency does not outright ignore the comments. The Agency can however, simply disagree with the comments, and still have complied with NEPA.

The Council on Environmental Quality

The Council on Environmental Quality is the regulatory body that is responsible for the implementation of NEPA. The responsibilities of CEQ according to 40CFR 1500.2 is making sure that:

"Federal agencies shall to the fullest extent possible:

- (a) Interpret and administer the policies, regulations, and public laws of the United States in accordance with the policies set forth in the Act and in these regulations.
- (b) Implement procedures to make the NEPA process more useful to decision makers and the public; to reduce paperwork and the accumulation of extraneous background data; and to emphasize real environmental issues and alternatives. Environmental impact statements shall be concise, clear, and to the point, and shall be supported by evidence that agencies have made the necessary environmental analyses.
- (c) Integrate the requirements of NEPA with other planning and environmental review procedures required by law or by agency practice so that all such procedures run concurrently rather than consecutively.
- (d) Encourage and facilitate public involvement in decisions which affect the quality of the human environment.
- (e) Use the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment.
- (f) Use all practicable means, consistent with the requirements of the Act and other essential considerations of national policy, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the human environment."

The CEQ has the authority to comment on Environmental Impact Statements, but typically does not. NEPA gave CEQ review, research, and reporting responsibilities, as well as the ability to review and evaluate federal

actions for compliance with NEPA (Mandelker, 1993).

The future of the Council on Environmental Quality is uncertain. President Clinton had created a White House Office of Environmental Quality and is planning to abolish the CEQ. The abolition of the CEQ would require the legislative transfer of the authority to administer NEPA to another agency (Mandelker, 1993).

The Office of Environmental Quality

The Office of Environmental Quality provides the professional and administrative staff for CEQ. The Chairman of the Council on Environmental Quality is the Director of this office.

Title 42 Ch. 56 Sec. 4372(d) describes the duties and functions of the Director as follows:

"In carrying out his functions the Director shall assist and advise the President on policies and programs of the Federal Government affecting environmental quality by (1) providing the professional and administrative support for the Council on Environmental Quality established by Public Law 91-190. (2) assisting the Federal agencies and departments in appraising the effectiveness of existing and proposed facilities, programs, policies, and activities of the Federal Government, and those specific major projects designated by the President which do not require individual project authorization by Congress, which affect environmental quality; (3) reviewing the adequacy of existing systems for monitoring and predicting environmental changes in order to achieve effective coverage and efficient use of research facilities and other resources; (4) promoting the advancement of scientific knowledge of the effects of actions and technology on the environment and encourage the development of the means to prevent or reduce adverse effects that endanger the health and well-being of man; (5) assisting in coordinating among the Federal departments and agencies those programs and activities which affect, protect, and improve environmental quality; (6) assisting the Federal departments and agencies in the development and interrelationship of environmental quality criteria and standards established through the Federal Government; (7) collecting, collating, analyzing, and interpreting data and information on environmental quality, ecological research, and evaluation".

Environmental Impact Statements

The main means by which NEPA accomplishes its goal of requiring Federal agencies to think about the environmental effects of their actions, is the requirement that an Environmental Impact Statement be drafted. NEPA requires that the general public have environmental information available to them and the ability to comment on and influence the Federal actions before they are taken. The law states that "...the information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA. Most important, NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail (40CFR Sec 1500.1(b))." The NEPA process is designed to help decision makers base their decisions in part on the environmental consequences and take proper actions to protect, restore and enhance the environment.

Section 102(2)(C) of NEPA provides:

All agencies of the Federal government shall...include in every recommendation or report on proposals for legislation and other major Federal action significantly affecting the quality of the human environment, a detailed statement by the responsible official on :

- (i) the environmental impact of the proposed action,
- (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
- (iii) alternatives to the proposed action,
- (iv) the relationship between local and short-term uses of the environment and the maintenance and enhancement of long-term productivity, and
- (v) any irreversible and irretrievable commitments of resources which

would be involved in the proposed action should it be implemented (Mandelker, 1993).

The Environmental Impact Statement is essentially a document that outlines the action that will be taken, and the environmental effects of that action. The document also outlines alternative actions and their environmental impacts, as well as actions that can be imposed to mitigate negative effects. The main strength of the document is that it must be made available for review to all public agencies that have an interest in the environmental impacts, such as the Environmental Protection Agency, the State regulatory agencies, and the local boards of health. Private individuals also have the right to review and comment on the proposed action. All this input is designed to further help the Agency responsible for the action make knowledgeable and reasonable decisions.

In order for an agency to be in compliance with NEPA, the EIS must be of substantial quality, and should be thorough in its consideration of all environmental impacts. Furthermore, the environmental impacts must be considered when making the final decision on what types of actions the agency will take to achieve its program goal, as well as mitigation of those impacts. The specific requirements for compliance with NEPA are found in the Code of Federal Regulation 40 CFR parts 1500-1508 (Appendix 2).

The question of whether or not NEPA is effective in achieving its goal of protecting the environment from federal actions through wise decision

analysis is debatable. For the most part, NEPA is not meeting it's objectives for two reasons

1. In many cases, the decision as to which actions should be taken have already been decided before an EIS is even drafted, and
2. The EISs are incomplete in that they do not consider the effect of the actions on biodiversity, a very important ecological consideration.

When to Prepare an EIS

NEPA requires that Federal agencies include an EIS "In every recommendation or report on proposals for legislation and other major federal action significantly affecting the quality of the human environment (42 USC ss 4332(2)(C))". A big problem in the implementation of NEPA is deciding when a proposal is a proposal, and when a proposal becomes a plan of action. In order for NEPA to be affective, it must be implemented prior to the stage where the proposal has advanced to the point where the decision on what types of actions will be taken have already been made, and resources have been committed to carry out these actions.

In the past, the objectives of NEPA have been undermined by the unwillingness of the justice system to enforce the requirement of NEPA that the EIS be drafted before the beginning of the decision process. In the 1976 case of *Kleppe v. Sierra Club*, the United States Supreme Court held that a proposal must exist before the Courts can enforce NEPA and compel a federal agency to prepare an EIS. In this ruling, "proposal" was interpreted to be a formal, written proposal for major federal action. This interpretation conflicts with the specific requirements of NEPA that a Final EIS be completed before the formal proposal is made. The ruling was not unanimous. Justice Marshall, joined by Justice Brennan dissented in part from the majority holding stating that "there comes a time when an agency that fails to begin preparation of a statement on a contemplated project is violating the law..the basic function of an EIS is *to serve as a forward-looking instrument*" (Chang, 1993).

Blue Ocean Preservation v. Watkins was a 1978 case which was filed against a Hawaiian geothermal project that was within Wao A Puna rainforest. The project was a joint effort by the State of Hawaii and the Department of Energy. Biologists opposed the construction project because the forest was very unique, sensitive and vulnerable to disturbances. The habitat was home to several threatened and indigenous species, as well as being critical for an extraordinarily diverse populations of species (Chang, 1993).

An EIS had not been prepared previous to the actual starting of the project because the project was segmented into stages. By the time of litigation, no EIS had been drafted, the project had advanced through phase I and II which involved research into transmitting electricity underwater through cable, and the drilling of one well and the building of a small demonstration plant. Congress had already appropriated 5 million dollars to the next phase, which included the actual drilling of 25 wells. The defendants pleaded that since there was no formal proposal yet for Phases III and IV, they were not in noncompliance with NEPA. The court of appeals ruled that since all four parts of the project were connected, the EIS should have been done for the whole project, before anything was done. The Supreme Court ruled on the issue of the *Kleppe* rule in this case by determining that eventhough there has not been any formal proposal made as to the III and IV phases of the project, the fact that appropriations were made for these actions meant that some sort of plan was in place. It further stressed that the language of NEPA is clear in that an EIS should have already been prepared previous to the request for Federal funds, and that the EIS must accompany the request for appropriations when

submitted to Congress, so that it may be considered (Chang, 1993).

Are the EISs Adequate

A major problem with NEPA is that it relies almost exclusively on the EIS as the tool for implementing the Act. The problem lies in the fact that these EISs are often inadequate, and most do not include biodiversity as a consideration. In addition, extraneous information can be included in the report that simply is not important. The NEPA regulations (Appendix 2), specifically state that the agencies are to "...reduce paperwork and the accumulation of extraneous background data; and to emphasize real environmental issues and alternatives. Environmental Impact Statements shall be concise, clear, and to the point, and shall be supported by evidence that agencies have made the necessary environmental analyses (40CFR 1500.2(b))".

A Federal Agency will draft an Environmental Impact Statement to serve one of four purposes:

1. to use the information collected from the EIS to make rational decisions,
2. to justify decisions already made,
3. to gain support or consensus for projects,
4. or to simply fulfill a legal mandate, with the EIS having no substantive impact on decisions (Ginger, 1993).

While it is the purpose of an EIS to help in the decision process, in reality the EIS has little influence over the decisions made in some projects.

It is up to the agencies to determine which environmental criteria it is going to consider in the evaluation. If the lead agency does not think that

biodiversity or other ecological surveys are necessary, they can issue a "Finding of no significant impact (FONSI)." Unless someone can convince the lead agency during the comment period that such surveys are necessary, the project can go on without these very important environmental issues ever having been looked at.

It is common practice for some EIS authors to repeat predictions of environmental effects found in existing documents when the activities and environmental conditions for a proposed projects are judged to be similar (Bernard, 1993). This cut and paste type of analysis is particularly inappropriate when considering ecological functions, such as biodiversity. Each site is likely to be unique, and needs to be investigated. Composing an EIS in this fashion is worse than not doing one at all.

Determining the Significance of Environmental Impacts

The rules for determining whether an effect is significant is left up to the individual agencies. The actual determination of whether a specific environmental effect is considered "Significant" or not is left up to the authors of the EIS. The rules for determining whether an effect is significant is left up to the individual agencies. In the evaluation of ecological disturbances, the investigators are left with the task of determining not only how much of a disturbance there will be, but whether the effects are acceptable or of "no significant impact". The evaluation of significance, in the absence of qualitative data, can be arbitrary, biased, and a reflection of the investigator's personal values.

The U.S. Dept of Interior, Office of Surface Mining Reclamation and Enforcement, suggests in it's "Handbook on Procedures For Implementing The National Environmental Policy Act", the following guidelines:

1. All members of the interdisciplinary team should address the issue of significance for all environmental impacts. This will help eliminate the likelihood of a serious effect being overlooked as insignificant.

2. Irreversible and irretrievable commitments of resources are especially important in determining significance. If the damage from a proposed action cannot be mitigated or reversed, it is considered more significant than similar damage that is temporary or even long-term.

3. Indirect impacts should be considered in significance. These are not always obvious, and can include social and cultural changes.

4. Considerations based upon best professional judgement and experience of the staff.

5. Guidelines which have been established and are generally accepted by experts in a given discipline (DOI, 1981).

The guidelines outlined above leaves much room for interpretation and ambiguity. An agency or an individual can easily justify submitting a FONSI for an environmental effect that it chooses to deem insignificant. When an effect is erroneously labeled insignificant, it is then the responsibility of other Federal Agencies and the general public to prove that the impacts would be significant in order to force a more detained EIS.

In the case *Robertson v. Methow Valley Citizens Council*, The Supreme Court ruled that NEPA does not impose a substantive duty on agencies to mitigate adverse environmental effects or to include in each EIS a fully developed mitigation plan. NEPA also does not impose a duty on an agency to make a "worst case analysis" in its EIS if it cannot make a reasoned assessment of a proposed project's environmental impact. Under conditions of uncertainty, the "reasonably foreseeable significant adverse impacts" are the only effects required to be reported in the EIS (Bartlit, 1991). The finding of the Supreme Court undermines the intention of NEPA in that it makes it that much easier for the authors of the EIS to disregard mentioning at all environmental effects that have a low probability of ever happening, but which could have devastating effects, such as the Exxon-Valdez and Three Mile Island accidents. Since the EIS is the main means by which to inform the general public as to the potential detrimental effects of a proposed action, the ability to leave out

important information deemed "improbable" by the EIS authors is clearly not the intention of NEPA.

The Finding of No Significant Impact

The types of problems that can occur when an agency does a poor job at incorporating biodiversity consideration into the EIS can be exemplified by the EIS drafted for the Pohakuloa Training area (PTA) in Hawaii. The PTA is owned by the US Army and was designed as a weaponry test and training site. The US Fish and Wildlife Service conducted an initial botanical survey for 5 sites and found 16 species that were endemic, and nine that were indigenous to the islands, as well as 26 exotic species. The EA stated that "although the entire project site was not surveyed, the survey findings are considered accurate indicators of the natural and cultural resources that are present within the boundaries" (Shaw, 1993). A second botanical study was conducted by a private consultant. Bad weather did not permit a thorough investigation, and the consultant stated that more time was needed to survey the project area; but no additional time was spent (Shaw, 1993).

The US Army issued a Finding Of No Significant Impact (FONSI) on the human environment. They stated that "there will be short term environmental impacts during construction..However, these impacts will not be significant..Long-term effects from the operation of the range will be insignificant and further minimized by protective and mitigation measures" (Shaw, 1993). There was little public response to the FONSI, and construction of the facility and roads began.

A motion for a restraining order to halt construction at the site until an adequate EIS could be completed was filed by a private citizen. The plaintiff

contended that the filing of FONSI was unreasonable and therefore a violation of NEPA. The plaintiff believed that extremely rare plant communities that were of significant scientific and biological value would be adversely affected. The court denied the plaintiff's request, and the plaintiff lost the case. An appeal was filed. The case was settled out of court in the hopes that the project would be able to proceed more rapidly. The settlement was that the plaintiff would drop the case and let the construction continue and the US Army would prepare an EIS to address the impacts of operating the facility (Shaw, 1993).

As a result of the additional botanical surveys, twelve rare species have been identified in the area. One species is listed as endangered, and three were previously undescribed. With the occurrence of these species, it is unlikely that the military facility will be used as it was intended. The problem is that 24 million dollars had already been invested in the construction of the PTA (Shaw, 1993).

It is unfortunate that the unique biota of the area was not discovered before the initiation of the construction of the facility. If an adequate biodiversity survey had been done, and an adequate EIS had been drafted from the very beginning, both the tax payers and the habitat would be better off today. The striking observation in this case is that it was possible for the Army to simply say that there was not going to be any adverse effects to the human environment, and that was adequate. If the Army had not settled out of court, it is quite likely that the Court of Appeals would have found in the Army's favor since the comment period on the FONSI had long since past, and the issue of the inadequate EIS should have been made then.

Biological surveys that are done for NEPA compliance commonly consist of rapid screening of the proposed site. Usually only the most accessible areas are visited. Most surveys are done only once, regardless of the growing season, and species are not required to be verified (Shaw, 1993). The lack of adequate surveys of the biodiversity in the preparation of EISs is leaving a huge gap in the evaluation of environmental effects. This gap undermines the whole purpose of NEPA, and therefore the inadequate EISs should translate into noncompliance with NEPA.

Compliance with NEPA

One of the major problems that encourages poor EISs to be accepted is the almost nonexistent use of enforcement of compliance. There are few penalties for inaccuracies in the EIS, and even fewer rewards for accuracy and thoroughness (Bernard, 1993). Sloppy or misleading EISs that intentionally underestimate or completely leave out impacts can slip through the NEPA process. It becomes the responsibility of an outside person or agency to investigate the true impacts of the proposed project (costs money), and to press the issue legally if the Agency in charge of the EIS decides that it is unwilling to conduct a thorough investigation (costs more money). A thorough analysis that includes all the impacts that are reasonably foreseeable is more likely to cause the Agency responsible for the project a lot of grief in terms of political pressure.

How to Incorporate Biodiversity into EISs

Biodiversity has been difficult to evaluate in the past, which is partly the reason that it has largely been ignored in Impact assessment. New techniques have been developed that can make the evaluation of biodiversity easier and more accurate. It would be beneficial if the Council on Environmental Quality set down guidelines for the analyses. This would be helpful to the people preparing EISs, since their options would be limited to effective methods, and it would be useful for NEPA compliance, since an approved methodology would help to assure a more consistent and thorough analyses.

Utilize a Multidisciplined Team

NEPA mandates the use of multidisciplinary teams to fulfill the requirements of NEPA. Section 102, Part A states that all agencies of the Federal Government shall "utilize a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment (Canter, 1991)." In the case of incorporating biodiversity into NEPA, an ecologist or environmental biologist should be a member of the team. EIS are typically supervised by environmental engineers. While engineers may be perfectly appropriate for incorporating the physical and chemical environmental impacts into the decision analysis, they are largely inept at fully understanding the biological interrelationships amongst species and their

habitats. This is simply due to the way in which engineers and biologists approach a problem. Engineers are typically more structured, and look for direct relationships that can be measured quantitatively. Biologists approach a problem from the point of observation. They will accept that something is because they have seen it, yet accept that they do not fully understand how it works, or how it can be measured quantitatively. They feel more comfortable with qualitative descriptions that engineers are.

The strength of a multidisciplinary team is that the more diverse the team, the more issues that are likely to be incorporated into the decision process. Furthermore, the diversity of talent and knowledge will increase the likelihood that the environmental impacts will be more thoroughly and competently assessed. In the case of biodiversity, only someone who is competent and experienced in the evaluation of biodiversity should be permitted to gather and evaluate data pertinent to estimates of the impacts of the proposed action on biodiversity.

Begin the Biological Surveys Early

The Biological Surveys need to be done early in the decision process. NEPA stipulates that an EIS be done prior to the presentation of the final plan of action for the specific reason that the results of such surveys be incorporated into the decision process. In the case of biological assessments, it is particularly critical to get the survey data before beginning any planning processes, because natural environments can be patchy and heterogenous, it is possible to mitigate

some of the loss of biodiversity simply by knowing where your more sensitive and unique areas are, and avoiding or protecting them from the beginning.

Include Cumulative Impacts

When attempting to focus on a biological or ecological endpoint, such as biodiversity, simple linear cause and effect relationships are not adequate. Dynamic processes will change over time and space, and should be included as much as possible in the assessment of anthropogenic affects. The Council on Environmental Quality says that a cumulative impact assessment should qualitatively or quantitatively assess "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 (Hunsaker, 1993)".

A more complete picture of the biological effects of the construction of a large facility on biodiversity can be enhanced by incorporating cumulative effects. The loss of localized vegetation and loss of habitat would be looked at. Also the continued operation of the facility with traffic, noise, pollution, etc. would be normally looked at in a good analysis. A cumulative impact assessment would try to estimate if the facility's presence and operation could cause damage to biodiversity by interrupting foraging requirements of some species; causing isolation of some species; altering population numbers to a level below their ability to sustain a viable population over time; and the effects of encroachment of invasive exotic species; predator-prey relationships; the long-term use of pesticides or rodenticides; and also how this particular project

fits in with all of the other development in the area. The issue of whether the project is likely to spurn a bunch of smaller private projects in the same area might also be considered.

Measuring Biodiversity

One of the most important aspects of evaluating biodiversity is determining how to measure it. Since decisions often consist of tradeoffs, the quantity and quality of the items being negotiated need to be established so that the most beneficial decision may be made. The lack of ability in measuring biodiversity in the past has been a large factor on its being ignored in routine environmental assessments. Some of the methods for evaluating biodiversity will be briefly discussed as an example of the types of the methods that can be included in the EIS, and therefor enhance NEPA compliance.

Field Surveys

Field surveys of biodiversity can be directly measures by two criteria: 1) species distribution and 2) intraspecies genetic variance (Solow, 1993). Good field surveys are labor intensive, which may make them prohibitive for NEPA consideration.

Species Distribution: Species distribution measures the number and types of species in a given area.

Direct Sampling: This method can be employed to estimate the types and quantities of vegetation, soil microbes, small bugs, molluscs, worms, etc., This method involves removing a known quantity of soil, vegetation, and air as a

sample. The data collection involves sorting, counting, identification, and recording of all species found in the samples.

Mark and Recapture: The mark and recapture technique can be used to estimate the population concentration of small animals. The animals are captured in live traps, tagged and released. After a short period of time (30 days), the same number of animals are again captured. Population size can be estimated for a given species using the ratio of marked to unmarked members of the species (Shaw, 1985).

Transect Survey: This sampling method can be used to estimate types and quantities of large mammals and migratory birds. Survey routes are randomly placed throughout the proposed area. A light aircraft is flown along each transect route and the type and quantity of animals are recorded (Shaw, 1985).

Intraspecies Genetic Variance: Intraspecies genetic variation measures the diversity within a population. This is important to biodiversity because it is a measure of the fitness of a species. Species that are victim of a loss of diversity are composed of individuals who share a large degree of the same genes. This is due to inbreeding that results when members die off, or are separated from others in the breeding pool by geographic boundaries. The individuals that are used for the study will be collected randomly from sample collected from the proposed site. Good species to choose are ones that are not mobile over large

areas, such as vegetation or bugs, snails, reptiles, or rodents.

The heterozygosity of a species can be measured easily with current laboratory techniques. Heterozygosity is a measurement of the degree of difference between the genes of individuals that code for the same protein. The higher the heterozygosity of the population, the more genetically diverse the population is. Gell electrophoresis is a simple and rapid method for detecting the heterozygosity of a gene (Ayala, 1982).

Indicator Species: The use of indicator species can be helpful in simplifying the field surveys. An indicator can help assess the health of a population or ecosystem. The choice of the proper indicator can be the most critical step in the analysis. Indicators should be selected by biologists familiar with the regional ecology. Several different indicators should be selected to maximize the accuracy of the data. The indicators chosen should have the following characteristics:

1. be sensitive to disturbances to provide early warning of change,
2. be distributed broadly over the entire geographic area in question,
3. be capable of providing continuous assessment over a wide range of stress,
4. be relatively independent of sample size,
5. be easy to measure, collect, assay, and/or calculate (in the case of an index),
6. be able to differentiate between natural cycles or trends and those induced by adverse environmental stress,

7. be relevant to ecologically significant phenomena. Determine whether the ecological effects most likely to occur from the proposed action impact on this particular species (Henderson, 1992).

With the right choice of indicators, predictions can be made about how the proposed action may affect the indicators, and thus biodiversity. The best use of indicators is to be able to monitor the effect of an action after the action has been implemented, so that unrecognized effects can be discovered and mitigated (Henderson, 1992). Even though monitoring requirements are beyond the scope of NEPA, it would be a good management practice to include the monitoring of indicator species into the remediation plans of large Federal actions (Henderson, 1992).

Geographical Information Systems (GIS):

Geographical information systems have been designed to model variations in the spacial distribution of species richness and have been used to predict areas of high biodiversity. With GIS, distribution of individual vertebrate wildlife species can be predicted from maps of vegetative cover types combined with biological knowledge of the wildlife's habitat preferences. The GIS models assume that the environmental elements that define habitat such as cover can be measured properly, and that these areas will indeed be occupied by the vertebrates predicted. The desired outcome of the GIS mapping is the number of vertebrate species, species richness, in a designated area (Stoms, 1992).

Remote Sensing:

Remote sensing has traditionally been used to produce land cover and vegetative maps. Remote sensing can be used to enhance GIS analysis. Coupling GIS technology and remote sensing capabilities can allow digital versions of range maps and the calculation of species richness (Stroms, 1993). David Stroms has found that it is possible to extrapolate from remote sensing data other criteria that impact on biodiversity such as habitat quantity and quality as well as dynamic processes such as species interactions and extinction rates.

Resource quality looks at the vegetation as a function of habitat diversity and structural complexity. Topographic variability is strongly related to species richness. The degree of edging, and canopy layering also increase species richness. A landscape with many habitats will be richer than a less heterogenous one. However, if habitat patches become too fragmented and disjunct, as typically results from anthropogenic land use, richness declines.

Resource quantity is a measurement of the amount of photosynthetic vegetation. When resources are abundant and reliable, species can become more specialized, allowing more species per unit area. Total primary productivity (TPP) is a function of temperature, precipitation, solar insolation, actual and potential evapotranspiration, biomass, leaf area, and percentage of canopy cover. It is possible to map vegetation with remote sensing and then estimate TPP using field data. A less labor intense method involves the

use of Advanced Very High Resolution Radiometer (AVHRR), that uses red and infrared channels to measure the level of chlorophyll absorption and mesophyll leaf structure of the canopy to estimate TPP (Stroms, 1993).

Dynamic influences can be monitored through the use of multi-date satellite imagery. Disturbances caused by fires, floods, landslides, and pest epidemics can be observed. Frequent, intense disturbances will decrease overall diversity, while intermediate levels of disturbances increase diversity. The theories of island biogeography can be integrated into overall biodiversity surveys to help predict dynamics of the populations in an area. Small areas supporting small populations have a higher extinction rates. Immigration rates decrease as distance increases from the nearest breeding population (Stoms, 1993). If a population is stuck in a little habitat, far away from other populations that it can breed with, the genetic diversity of that population will soon decrease, and the entire species can become eradicated, decreasing biodiversity in that area.

Pattern Diversity

Pattern diversity is a method developed by Samuel Scheiner that attempts to mathematically evaluate biomes to rank their degree of difference from the mean biodiversity in the area. The method measures landscape complexity and the variation in commonness and rarity among species. A simple landscape is dominated by a few species, and a complex landscape is one with no one dominant species and has many niche opportunities. Statistical analysis from many points in an area, in relation to

species present, is used to find an affinity value (A) for each point. The affinity value is the degree of uniqueness of a point to all other points in the area. It measures how far away the point is from the average. Points that are very close to the average have $A = 0.5$. Points that have a value greater than 0.5 contain more unique species, while a value less than 0.5 means that the point does not contain species other than the most common ones, and is therefore not very unique (Samuel, 1992).

Mean similarity is calculated in the same fashion using the property of similarity of species amongst the points. A similarity value of greater than 0.5 means that the point contains a great deal of the species present in the other points. A point that contains less than the average number of common species would get a value less than 0.5. Figure #2 represents the analysis of a set of data.

The mean affinities of the points are plotted against the mean similarities. The points that are greater than +1 standard deviation from the average affinity value are significantly greater in biodiversity than the other points in the area. This is because those points contain many of the common species present in the area, plus a high number of species unique to itself. Points that are greater than -1 standard deviation from the mean affinity on the graph are significantly less biodiverse since they do not contain many of the more common species, nor do they contain unique species (Scheiner, 1992). Pattern diversity analysis is more labor intensive than GIS analysis, but more inclusive and accurate.

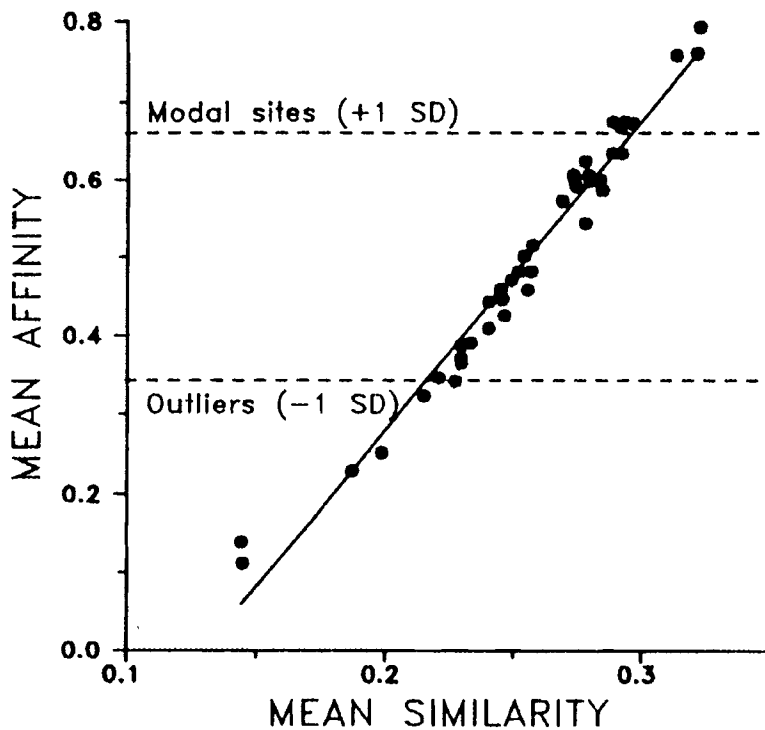


Figure 2: Affinity analysis graph for measuring pattern diversity (Solow, 1993)

Gap analysis:

Gap analysis takes the concept of biodiversity analysis one step further by adding management and ownership status into biodiversity evaluation. Biodiversity maps are generated by GIS techniques so that vegetation, vertebrate distribution, and endangered species, for example, are mapped. These maps are overlaid with additional maps of the same areas that include socioeconomic criteria. These criteria can include ownership, zoning, land use, potential use, land values, and agricultural, industrial, and social processes that may influence the areas (McKendry, 1993). Human

actions that may influence the proposed area in the NEPA study can be predicted. Cumulative effects on biodiversity can be better estimated.

The ability to get a more over-all view of the influences over the biodiversity allows the investigator to have a better grasp as to how alternative management strategies will impact on biodiversity. This could be a valuable tool for land-use policy creators. Different scenarios can be played out under the theoretic influences of different management strategies to predict the impact on biodiversity.

Mitigation Efforts

NEPA requires that an EIS include mitigation efforts in the analysis of environmental damage. The EIS not only covers what the environmental effects may be, but how they can be managed to alleviate the effects. A good and adequate EIS should include all possible methods of mitigation, as well as outline the methods that are planned to be actually utilized.

Minimize Fragmentation: Natural corridors and migration routes could be preserves or constructed to alleviate genetic isolation of populations. Artificial barriers should be avoided, like very tall fences that encircle a project site, or hinder access to water supplies. The project should be constructed in such a way as to allow for natural flows of organisms, energy, water, and nutrients (CEQ, 1993).

Promote Native Species: The protection of native species is important to biodiversity, because native species have evolved with and are an integral part of the landscape. By leaving native landscapes intact, and avoiding the purposeful introduction of exotic species or pesticides that indiscriminately kill off "weedy species", biodiversity will be conserved (CEQ, 1993).

Protect Rare and Ecologically Important Species: Avoiding the disturbance of rare and ecologically rare species will benefit biodiversity (CEQ, 1993). Very rare species that are listed as endangered are threatened under the

Endangered Species Act (ESA) are already protected by law from disturbance. NEPA can play a role in the protection of other rare species that are not listed under ESA but are still considered rare in their own right. If elimination of them from a particular site will be a great loss to the population and push them closer to extinction, it is considered an adverse environmental effect, and definitely a negative impact on the local biodiversity. Not having these rare species listed as endangered or threatened will permit the project proponents to be able to utilize more creative methods for managing these populations (Salk, 1991).

Ecologically important species that provide food, habitat, pest control, or other ecological functions should be protected. Their presence is important to maintaining a balanced ecosystem that in turn promotes biodiversity (CEQ, 1993).

Protect Unique or Sensitive Environments:

Mitigation for the protection of unique or sensitive environments is important in the protection of biodiversity. It is in these types of unusual places that rare or unusual species may find their niche, and these areas may function as adequate habitats in the case of an environmental disturbance. Both functions are important to biodiversity and ecological health. Unique areas are substantially different from their surrounding areas in terms of vegetation, terrain, soils, or water availability. Sensitive areas such as

stream banks, wetlands, and deserts areas should not be disturbed (CEQ, 1993).

Maintain or Mimic Natural Ecosystem Processes:

Natural ecosystem processes are ones that determine the characteristics of the environment. Anthropogenic effects can involve the elimination of these effects. Fire succession and vegetative succession are examples of processes that are frequently disturbed by the presence of people. Provisions should be made that will allow these processes to occur either naturally or artificially (CEQ, 1993).

Monitor for Biodiversity Impacts:

Monitoring for biological impacts is important in achieving the overall goal of NEPA which is to ultimately protect the environment from deleterious effects due to Federal actions. Mitigation proposals are based on predicted environmental impacts. It can often be the case that predictions are inaccurate, and therefore the mitigation plans may be inappropriate. Some of these problems stem from the difficulty in forecasting situations involving many variables within the natural environment, and uncertain social and economic changes resulting from a project's development that may lead to second and third-order effects that with greater consequences than the primary effects (Hunsaker, 1992).

Biodiversity monitoring can serve to test the predicted, to identify unintended or unpredicted consequences of an action, and to help in the adaptation of more appropriate mitigation procedures. Monitoring should include both project effects and mitigation effectiveness (CEQ, 1993).

Enforce NEPA Regulations

The Council on Environmental Quality should independently evaluate EISs to assure that they are accurate and complete. It would be beneficial if CEQ had the authority to administer fines for noncompliance with NEPA regulations. If congress would give CEQ that authority, CEQ could enforce the regulations more efficiently since they would not have to rely on the courts for enforcement. A program could be constructed that would require random auditing that would result in fines for those EISs that are blatantly misleading. The program could be modeled after the auditing program of the Internal Revenue Service. The fear of an audit and fines are the main reason that people comply with the requirement to pay their taxes. They do this even though it would be more advantageous for them to leave out some information concerning earnings than to be thorough and honest. The principle of having to be thorough and honest even if it hurts, because the alternative of getting caught would be even worse, would enhance compliance with NEPA.

Post project monitoring for compliance should also be done to assure that the environmental safeguards and mitigation measures adopted in the

Finding of No Significant Impacts or Records of Decision will actually be carried out satisfactorily. As is stands now, it is an act of faith that environmental mitigation will take place, and the agencies responsible for the mitigation will be conscientious about their obligations (Hunsaker, 1992). Since the EIS bases its environmental impacts on assumption that a program mitigation will be carried out, the failure to assure that the mitigation will occur undermines the finding of the EIS, and the whole NEPA process.

Conclusion

Incorporating biodiversity considerations into Environmental Impact Analysis would enhance compliance with NEPA. While most Federal Agencies appear to be in compliance with NEPA, due to the fact that they have gone through the NEPA process, the fact remains that unless all of the important environmental issues are adequately addressed, NEPA requirements have not been fulfilled. Biodiversity is one environmental issue that has been routinely ignored in the analysis of environmental impacts. Partly this is due to the fact that this ecological parameter has been hard to measure, partly it is due to the fact that CEQ has not encouraged or required the inclusion of biodiversity in the EIS.

One of NEPA's strengths is that it incorporates a holistic approach to environmental assessment. If the basic goals of NEPA are to be accomplished, which include in part "...preserving..an environment which supports diversity..", biodiversity should be a component of the EIS. It is now possible to rapidly assess biodiversity through the use of geographical information systems. What is needed to make biodiversity an integral part of the NEPA process is for CEQ to require that biodiversity assessments be included in the EIS.

REFERENCES

- Abramovitz, Janet. (1991). Biodiversity: Inheritance from the past, investment in the future. Environment, Science, and Technology. 25 (11), 1817-1819.
- Alcorn, Janis. (1991). Ethics, Economics, and Conservation: in Biodiversity: Culture, Conservation, and Ecodevelopment. ed. Oldfield, Margery and Alcorn, Janis. Westview Press, Boulder, Co.
- Ayala, Francisco. (1982). Population and Evolutionary Genetics. Benjamin/Cummings Publishing Co., Menlo Park, CA.
- Bartlit, Jennifer. (1991). An adequate EIS under NEPA. Natural Resources Journal, 36, 653-672.
- Bernard, D.P.; Hunsaker, D.B., and Marmouk, D.R. (1993). Tools for Improving Predictive Capabilities of Environmental Impact Assessments: Structured Hypothesis, Audits, and Monitoring. in Environmental Analysis: The NEPA Experience. ed. Hidebrand, Stephen G. and Cannon, Johnnie B., Lewis Publishers, Boca Raton, Fla., 547-564.
- Bessinger, Steve and Bucher, Enrique. (1992). Can Parrots be Conserved through Sustainable Harvesting. BioScience, 42 (3), 164-173.
- Bishop, Richard. (1993). Economic efficiency, sustainability and biodiversity. Ambio, 22 (2-3), 69-73.
- Blum, Elissa. (1993). Making Biodiversity Profitable. Environment, 35 (4), 16-45.
- Browder, John. (1992). The Limits of Extracativism. BioScience, 42 (3), 174-182.
- Bruns, D.A., Staley, C.S., Rope, R.C. and Moor K.S. (1993). An Approach to Ecological Ecosystem. Characterization in the NEPA Process. in Environmental Analysis: The NEPA Experience. ed. Hidebrand, Stephen G. and Cannon, Johnnie B., Lewis Publishers, Boca Raton, Fla., 103-124.

- Caldwell, L.K. (1993). Achieving NEPA Intent: New Directions in Politics, Science and Law. in Environmental Analysis: The NEPA Experience. ed. Hidebrand, Stephen G. and Cannon, Johnnie B., Lewis Publishers, Boca Raton, Fla., 12-21.
- Cantor, L.W. (1991). Interdisciplinary Teams in Environmental Impact Assessment. Environmental Impact Assessment Review, 11, 375-387.
- Chang, Valarie. (1993). Finding a Proposal for Major Federal Action Consistent with the Purposes of NEPA: Does *Blue Ocean Preservation Society v. Watkins* Breathe New Life into the Law? Natural Resource Journal, 33, 201-216.
- Contant, Cheryl K. and Wiggins, Lyna L. (1991). Defining and analyzing cumulative environmental impacts. Environmental Impact Assessment Review, 11, 297-309.
- Council on Environmental Quality. (1993). Incorporating Biodiversity Considerations Into Environmental Impact Analysis Under the National Environmental Policy Act. Washington, D.C.
- Cross, Nicholas. Verbal Discussions on Electrophoresis. Oklahoma State University, Dept. of Physiological Sciences, Stillwater, OK. April-June 1993.
- Dixon, John and Sherman, Paul. (1990). Economics of Protected Areas. Island Press, Washington, D.C.
- Ehrlich, P.R., and Wilson, E.O. (1991). Biodiversity Studies: Science and Policy. Science, 253, 758-761.
- Ehrlich, P.R., and Ehrlich, A.H. (1992). The Value of Biodiversity. Ambio, 21, 219-226.
- Ehrlich, Paul R. (1993). Population Extinction and Saving Biodiversity. Ambio, 22 (2-3), 64-68.
- Estep, Kenneth, Shys, Ronald and Synertsen, Erike. (1993). "Linnaeus" and beyond: workshop report in multimedia tools for the identification and database storage of biodiversity. Hydrobiologia, 269-270, 519-525.
- Folke, C., Maler, K., and Perrings, C. (1992). Biodiversity Loss: An Introduction. Ambio, 3, 200.
- Gadgil, M. (1992). Conserving Biodiversity as if People Matter: A Case Study from India. Ambio, 3, 266-270.

- Gadgil, M. (1993). Biodiversity and India's Degraded Lands. Ambio, 22, 167-172.
- Gerrard, M.B. (1993). Judicial Review of Scientific Evidence in Environmental Impact Statements. in Environmental Analysis: The NEPA Experience. ed. Hidebrand, Stephen G. and Cannon, Johnnie B., Lewis Publishers, Boca Raton, Fla., 30-41.
- Ginger, Clare and Mohai, Paul. (1993). The Role of Data in the EIS Process: Evidence from the BLM Wilderness Review. Environmental Impact Assessment Review, 13, 109-139.
- Githinji, M.W., and Perrings, C. (1993). Social and Ecological Sustainability in the Use of Biotic Resources in Sub-Saharan Africa. Ambio, 22 (2-3), 110-116.
- Hammer, Monica, Junssen, AnnMari, and Janssen, Bengt-Owe. (1993). Diversity Change and Sustainability: Implications for Fisheries. Ambio, 22 (2-3), 97-105.
- Henderson, S.J., Noss, R.F., and Ross, P. (1993). Can NEPA Protect Biodiversity? in Environmental Analysis: The NEPA Experience ed. Hidebrand, Stephen G. and Cannon, Johnnie B., Lewis Publishers, Boca Raton, Fla., 463-472.
- Hlohowskyj, I., Krummel J.R., Irving, J.S., and Vinikour, W.S. (1993). Ecological Assessments at DOE Hazardous Waste Sites: Current Procedures and Problems. in Environmental Analysis: The NEPA Experience. ed. Hidebrand, Stephen G. and Cannon, Johnnie B. Lewis Publishers, Boca Raton, Fla., 125-139.
- Hunsaker, C.T. (1993). Ecosystem Assessment Methods for Cumulative Effects at the Regional Scale. in Environmental Analysis: The NEPA Experience. ed. Hidebrand, Stephen G. and Cannon, Johnnie B., Lewis Publishers, Boca Raton, Fla., 480-493.
- Hunsaker D.B. (1992). NEPA follow-up studies: Introduction and Summary. Oak Ridge National Laboratory, Oak Ridge, Tennessee.
- Kangas, J., and Kuusipalo, J. (1993). Integrating Biodiversity into Forest Management Planning and Decision-Making. Forest Ecology and Management, 61, 1-15.
- Laurenci, David. (1993). Quantitative versus Qualitative Evaluation. A False Dichotomy. Environmental Impact Assessment Review. 13, 3-11.

- Leon, B.F. (1993). Survey of Analyses in Environmental Impact Statements. in Environmental Analysis: The NEPA Experience. ed. Hidebrand, Stephen G. and Cannon, Johnnie B., Lewis Publishers, Boca Raton, Fla., 653-659.
- Maki, Alan W. (1992). Of Measured Risks: The Environmental Impacts of the Prudhoe Bay, Alaska, Oil Field. Environmental Toxicology and Chemistry, 11, 1691-1707.
- McKendry, D.E., and Machlis, G.E. (1991). The Role of Geography in Extending Biodiversity Gap Analysis. Applied Geography, 11, 135-152.
- McNeely, J.E. (1993). Economic Incentives for Conserving Biodiversity: Lessons for Africa. Ambio, 22, 144-150.
- Munasinghe, M. (1992). Biodiversity Protection Policy: Environmental Valuation and Distribution Issues. Ambio, 21, 227-236.
- Myers, Norman. (1993). Biodiversity and the Precautionary Principle. Ambio, 22 (1-3), 74-79.
- Myers, Norman. (1983). A Wealth of Wild Species, Westbrook Press, Boulder, Co.
- Myslicki, A. (1993). Use of Programmatic EISs in Support of Cumulative Impact Assessment. in Environmental Analysis: The NEPA Experience. ed. Hidebrand, Stephen G. and Cannon, Johnnie B., Lewis Publishers, Boca Raton, Fla., 373-390.
- Nelson, J. Gordon and Serafin, Rafal. (1992). Assessing Biodiversity: A Human Ecological Approach. Ambio, 22 (3), 212-218.
- Norton, Bryan G. and Vlanowicz, Robert E. (1992). Scale and Biodiversity Policy: A Hierarchical Approach. Ambio, 21 (3), 244-249.
- Oliver, Ian, and Beattie, Andrew. (1993). A possible Method for the Rapid Assessment of Biodiversity. Conservation Biology, 7(3), 562-568.
- Pearce, David and Turner, R. Kerry. (1990). Economics of Natural Resources and the Environment. Johns Hopkins Univ. Press, Baltimore.
- Perrings, C., Folke, C., and Maler, K. (1992). The Ecology and Economics of Biodiversity Loss: The Research Agenda. Ambio, 21, 201-211.
- Probst, John R and Crow, Thomas R. (1991). Integrating Biological Diversity and Resource Management. Journal of Forestry, February, pp 12-17.

- Raven, P.H., and Wilson, E.O. (1992). A Fifty-Year Plan for Biodiversity Surveys. Science, 258, 1099-1100.
- Ready, Richard and Bishop, Richard. (1991). Endangered Species and the Safe Minimum Standard. American Agricultural Economics Association, May, 309-312.
- Rese, Roger. (1992). Economic aspects of conserving biological diversity. Agriculture and Resources Quarterly, 4 (3), 378-388.
- Riede, Klaus. (1993). Monitoring Biodiversity: Analysis of Amazon Rain Forest Sounds. Ambio, 22, 546-548.
- Roesch, Francis A. Jr. (1993). Adaptive Cluster Sampling for Forest Inventories. Forest Science, 39 (4), 655-669.
- Ryan, John. (1992). Conserving Biological Diversity. in State of the World. ed. World Watch Institute, W.W. Norton and Co., N.Y., N.Y. , 9-26.
- Salk, Martha. (1991). NEPA and the Endangered Species Act: Complementary Approaches or Regulatory Excess? Oak Ridge National Laboratories, Oak Ridge, TN.
- Scheiner, S.E. (1992). Measuring Pattern Diversity. Ecology, 73(3), 1860-1867.
- Shaw, Robert B. and Laven, Richard D. (1993). Environmental Auditing: Environmental Regulatory Compliance on Army Lands: A Case Study. Environmental Management, 17 (3), 387-393.
- Shaw, James H.(1985). Introduction to Wildlife Management. McGraw-Hill Publishing, N.Y., N.Y.
- Siegel M.S. and Mreno, D.D. (1993). Geographic Information Systems: Effective Tools for Siting and Environmental Impact Assessment. in Environmental Analysis: The NEPA Experience ed. Hidebrand, Stephen G. and Cannon, Johnnie B., Lewis Publishers, Boca Raton, Fla., 78-186.
- Solow, Andrew, R. (1993). Measuring Biological Diversity. Environment, Science, and Technology, 27 (1).
- Southgate, D. and Clark, H.L. (1993). Can Conservation Projects Save Biodiversity in South America. Ambio, 22, 163-166.
- Stoms, D.M. (1992). Effects of Habitat Map Generalization in Biodiversity Assessment. Photogrammetric Engineering and Remote Sensing. 58(11), 1587-1591.

- Stoms, D.M. and Estes, J.E. (1993). A Remote Sensing Research Agenda for Mapping and Monitoring Biodiversity. International Journal of Remote Sensing, 14(10), 1839-1860.
- Swanson, Sherman. (1994). Viewpoint: Integrating CRM (Coordinated Resource Management) and NEPA (National Environmental Policy Act) processes. Journal of Range Management, 47 (2), 100-106.
- Tarlock, A.D. (1993). Local Government Protection of Biodiversity: What is Its Niche? The University of Chicago Law Review, 60, 555-613.
- Tietenberg, Tom. (1992). Environmental and Natural Resource Economics. Harper Collins Publishers, N.Y., N.Y.
- U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement. (1991). Handbook on Procedures for Implementing the National Environmental Policy Act. Washington, D.C.
- United States Department of Agriculture, Forestry Service. (1990). Draft Biological Diversity Assessment: Rocky Mountain Region. Washington, D.C.
- Vane-Wright, R.I., Humphries, C.J., and Williams, P.H. (1991). What to Protect? Systematics and the Agony of Choice. Biological Conservation, 55, 235-254.
- Wayne, P.M. and Bazzaz F.A. (1991). Assessing Diversity in Plant Communities: The Importance of Within-Species Variation. TREE, 6 (12), 400-404.
- Wells, M.P. (1992). Biodiversity Conservation, Affluence and Poverty: Mismatched Costs and Benefits and Efforts to Remedy Them. Ambio, 21, 237-243.
- Wells, M.P. and Brandon, K.E. (1993). The Principles and Practice of Buffer Zones and Local Participation in Biodiversity Conservation. Ambio, 22, 157-162.
- Wood, Christopher and Bailey, John. (1994). Predominance and Independence in Environmental Impact Assessment: The Western Australia Model. Environmental Impact Assessment Review, 14, 37-59.

Appendix 1

National Environmental Policy Act of 1969

(42 USC 4321 et seq.: amended by PL 94-52, July 3, 1975; PL94-83, August 9, 1975)

Purpose

Sec 2. The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.

TITLE 1

DECLARATION OF NATIONAL ENVIRONMENTAL POLICY

Sec. 101. (a) The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

(b) In order to carry out the policy set forth in this Act, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may-

(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(2) assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;

(3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

(4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which

supports diversity and variety of individual choice;

(5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(c) The Congress recognizes that each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

Sec. 102. The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall -

(A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment;

(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by title II of this Act, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations;

(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on -

(i) the environmental impact of the proposed act,

(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,

(iii) alternatives to the proposed action,

(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statements and the comments and views of the appropriate Federal, State and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of title 5, United States Code, and shall accompany the proposal through the existing agency review processes;

(D) study, develop, and describe appropriate alternatives to

recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(E) recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(F) make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(G) initiate and utilize ecological information in the planning and development of resource-oriented projects; and

(H) assist the Council on Environmental Quality established by title II of this Act.

Sec. 103. All agencies of the Federal Government shall review their present statutory authority, administrative regulations, and current policies and procedures for the purpose of determining whether there are any deficiencies or inconsistencies therein which prohibit full compliance with the purposes and provisions of this Act and shall propose to the President not later than July 1, 1971, such measures as may be necessary to bring their authority and policies into conformity with the intent, purposes, and procedures set forth in this Act.

Sec. 104. Nothing in Section 102 or 103 shall in any way affect the specific statutory obligations of any Federal agency (1) to comply with criteria or standards of environmental quality, (2) to coordinate or consult with any other Federal or State agency, or (3) to act, or refrain from acting contingent upon the recommendations or certification of any other Federal or State agency.

Sec. 105. The policies and goals set forth in this Act are supplementary to those set forth in existing authorizations of Federal agencies.

TITLE II

COUNCIL ON ENVIRONMENTAL QUALITY

Sec. 201. The President shall transmit to the Congress annually beginning July 1, 1970, an Environmental Quality Report (herein-after referred to as the "report") which shall set forth (1) the status and condition of the major natural, manmade, or altered environmental classes of the Nation, including, but not limited to, the air, the aquatic, including marine, estuarine, and fresh water, and the terrestrial environment, including, but not limited to, the forest, dryland, wetland, range, urban, suburban, and rural environment; (2) current and foreseeable trends in the quality, management and utilization of such environments and the effects of those trends on the social, economic, and other requirements of the Nation; (3) the adequacy of available natural resources for fulfilling human and economic requirements of the Nation in the light of expected population pressures; ;(4) a review of the programs and activities (including regulatory activities) of the Federal Government, the State and local governments, and nongovernmental entities or individuals,

with particular reference to their effect on the environment and on the conservation, development and utilization of natural resources; and (5) a program for remedying the deficiencies of existing programs and activities, together with recommendations for legislation.

Sec. 202. There is created in the Executive Office of the President a Council on Environmental Quality (hereinafter referred to as the "Council"). the Council shall be composed of three members who shall be appointed by the President to serve at his pleasure, by and with the advice and consent of the Senate. The President shall designate one of the members of the Council to serve as Chairman. Each member shall be a person who, as a result of his training, experience, and attainments, is exceptionally well qualified to analyze and interpret environmental trends and information of all kinds; to appraise programs and activities of the Federal Government in the light of the policy set forth in title I of this Act; to be conscious of and responsive to the scientific, economic, social, esthetic, and cultural needs and interests of the Nation; and to formulate and recommend national policies to promote the improvement of the quality of the environment.

Sec. 203. The Council may employ such officers and employees as may be necessary to carry out its functions under this Act. In addition, the Council may employ and fix the compensation of such experts and consultants as may be necessary for the carrying out of its functions under this Act, in accordance with section 3109 of title 5, United States Code (but without regard to the last sentence thereof).

Sec. 204. It shall be the duty and function of the Council-

(1) to assist and advise the President in the preparation of the Environmental Quality Report required by section 201;

(2) to gather timely and authoritative information concerning the conditions and trends in the quality of the environment both current and prospective, to analyze and interpret such information for the purpose of determining whether such conditions and trends are interfering, or are likely to interfere, with the achievement of the policy set forth in title I of this Act, and to compile and submit to the President studies relating to such conditions and trends;

(3) to review and appraise the various programs and activities of the Federal Government in the light of the policy set forth in title I of this Act for the purpose of determining the extent to which such programs and activities are contributing to the achievement of such policy, and to make recommendations to the President with respect, thereto;

(4) to develop and recommend to the President national policies to foster and promote the improvement of environmental quality to meet the conservation, social, economic, health, and other requirements and goals of the Nation;

(5) to conduct investigations, studies, surveys, research, and analysis relating to ecological systems and environmental quality;

(6) to document and define changes in the natural environment, including the plant and animal systems, and to accumulate necessary data and other information for a continuing analysis of these changes or

trends and an interpretation of their underlying causes;

(7) to report at least once each year to the President on the state and condition of the environment; and

(8) to make and furnish such studies, reports thereon, and recommendations with respect to matters of policy and legislation as the President may request.

Sec. 205. In exercising its powers, functions, and duties under this Act, the Council shall-

(1) consult with the Citizen's Advisory Committee on Environmental Quality established by Executive Order numbered 11472, dated May 29, 1969, and with such representatives of science, industry, agriculture, labor, conservation organizations. State and local governments and other groups, as it deems advisable; and

(2) utilize, to the fullest extent possible, the services, facilities, and information (including statistical information) of public and private agencies and organizations, and individuals, in order that duplication of effort and expense may be avoided, thus assuring that the Council's activities will not unnecessarily overlap or conflict with similar activities authorized by law and performed by established agencies.

Sec. 206. Members of the Council shall serve full time and the Chairman of the Council shall be compensated at the rate provided for Level II of the Executive Schedule Pay Rates (5 U.S.C. 5313). The other members of the Council shall be compensated at the rate provided for Level IV or the Executive Schedule Pay Rates (5 U.S.C. 5315).

Sec. 207. There are authorized to be appropriated to carry out the provisions of this Act not to exceed \$300,000 for fiscal year 1970, \$700,000 for fiscal year 1971, and \$1,000,000 for each fiscal year thereafter.

Approved January 1, 1970.

Council on Environmental Quality Regulations

Pt. 1500

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**PART 1500—PURPOSE, POLICY,
AND MANDATE**

Sec.

- 1500.1 Purpose.
- 1500.2 Policy.
- 1500.3 Mandate.
- 1500.4 Reducing paperwork.
- 1500.5 Reducing delay.
- 1500.6 Agency authority.

AUTHORITY: NEPA, the Environmental Quality Improvement Act of 1970, as amended (42 U.S.C. 4371 *et seq.*), sec. 309 of the Clean Air Act, as amended (42 U.S.C. 7609) and E.O. 11514, Mar. 5, 1970, as amended by E.O. 11991, May 24, 1977).

SOURCE: 43 FR 55990, Nov. 28, 1978, unless otherwise noted.

§ 1500.1 Purpose.

(a) The National Environmental Policy Act (NEPA) is our basic national charter for protection of the environment. It establishes policy, sets goals (section 101), and provides means (section 102) for carrying out the policy. Section 102(2) contains "action-forcing" provisions to make sure that federal agencies act according to the letter and spirit of the Act. The regulations that follow implement section 102(2). Their purpose is to tell federal agencies what they must do to comply with the procedures and achieve the goals of the Act. The President, the federal agencies, and the courts share responsibility for enforcing the Act so as to achieve the substantive requirements of section 101.

(b) NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA. Most important, NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail.

(c) Ultimately, of course, it is not better documents but better decisions that count. NEPA's purpose is not to generate paperwork—even excellent paperwork—but to foster excellent action. The NEPA process is intended to help public officials make decisions that are based on understanding of en-

vironmental consequences, and take actions that protect, restore, and enhance the environment. These regulations provide the direction to achieve this purpose.

§ 1500.2 Policy.

Federal agencies shall to the fullest extent possible:

(a) Interpret and administer the policies, regulations, and public laws of the United States in accordance with the policies set forth in the Act and in these regulations.

(b) Implement procedures to make the NEPA process more useful to decisionmakers and the public; to reduce paperwork and the accumulation of extraneous background data; and to emphasize real environmental issues and alternatives. Environmental impact statements shall be concise, clear, and to the point, and shall be supported by evidence that agencies have made the necessary environmental analyses.

(c) Integrate the requirements of NEPA with other planning and environmental review procedures required by law or by agency practice so that all such procedures run concurrently rather than consecutively.

(d) Encourage and facilitate public involvement in decisions which affect the quality of the human environment.

(e) Use the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment.

(f) Use all practicable means, consistent with the requirements of the Act and other essential considerations of national policy, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the human environment.

§ 1500.3 Mandate.

Parts 1500 through 1508 of this title provide regulations applicable to and binding on all Federal agencies for implementing the procedural provisions of the National Environmental Policy Act of 1969, as amended (Pub. L. 91-190, 42 U.S.C. 4321 *et seq.*) (NEPA or the Act) except where compliance would be

inconsistent with other statutory requirements. These regulations are issued pursuant to NEPA, the Environmental Quality Improvement Act of 1970, as amended (42 U.S.C. 4371 et seq.) section 309 of the Clean Air Act, as amended (42 U.S.C. 7609) and Executive Order 11514, Protection and Enhancement of Environmental Quality (March 5, 1970, as amended by Executive Order 11991, May 24, 1977). These regulations, unlike the predecessor guidelines, are not confined to sec. 102(2)(C) (environmental impact statements). The regulations apply to the whole of section 102(2). The provisions of the Act and of these regulations must be read together as a whole in order to comply with the spirit and letter of the law. It is the Council's intention that judicial review of agency compliance with these regulations not occur before an agency has filed the final environmental impact statement, or has made a final finding of no significant impact (when such a finding will result in action affecting the environment), or takes action that will result in irreparable injury. Furthermore, it is the Council's intention that any trivial violation of these regulations not give rise to any independent cause of action.

§ 1500.4 Reducing paperwork.

Agencies shall reduce excessive paperwork by:

- (a) Reducing the length of environmental impact statements (§ 1502.2(c)), by means such as setting appropriate page limits (§§ 1501.7(b)(1) and 1502.7).
- (b) Preparing analytic rather than encyclopedic environmental impact statements (§ 1502.2(a)).
- (c) Discussing only briefly issues other than significant ones (§ 1502.2(b)).
- (d) Writing environmental impact statements in plain language (§ 1502.8).
- (e) Following a clear format for environmental impact statements (§ 1502.10).
- (f) Emphasizing the portions of the environmental impact statement that are useful to decisionmakers and the public (§§ 1502.14 and 1502.15) and reducing emphasis on background material (§ 1502.16).
- (g) Using the scoping process, not only to identify significant environ-

mental issues deserving of study, but also to deemphasize insignificant issues, narrowing the scope of the environmental impact statement process accordingly (§ 1501.7).

(h) Summarizing the environmental impact statement (§ 1502.12) and circulating the summary instead of the entire environmental impact statement if the latter is unusually long (§ 1502.19).

(i) Using program, policy, or plan environmental impact statements and tiering from statements of broad scope to those of narrower scope, to eliminate repetitive discussions of the same issues (§§ 1502.4 and 1502.20).

(j) Incorporating by reference (§ 1502.21).

(k) Integrating NEPA requirements with other environmental review and consultation requirements (§ 1502.25).

(l) Requiring comments to be as specific as possible (§ 1503.3).

(m) Attaching and circulating only changes to the draft environmental impact statement, rather than rewriting and circulating the entire statement when changes are minor (§ 1503.4(c)).

(n) Eliminating duplication with State and local procedures, by providing for joint preparation (§ 1506.2), and with other Federal procedures, by providing that an agency may adopt appropriate environmental documents prepared by another agency (§ 1506.3).

(o) Combining environmental documents with other documents (§ 1506.4).

(p) Using categorical exclusions to define categories of actions which do not individually or cumulatively have a significant effect on the human environment and which are therefore exempt from requirements to prepare an environmental impact statement (§ 1506.4).

(q) Using a finding of no significant impact when an action not otherwise excluded will not have a significant effect on the human environment and is therefore exempt from requirements to prepare an environmental impact statement (§ 1506.13).

[43 FR 55890, Nov. 29, 1978; 44 FR 873, Jan. 3, 1979]

§ 1500.5 Reducing delay.

Agencies shall reduce delay by:

§ 1500.6

(a) Integrating the NEPA process into early planning (§1501.2).

(b) Emphasizing interagency cooperation before the environmental impact statement is prepared, rather than submission of adversary comments on a completed document (§1501.6).

(c) Insuring the swift and fair resolution of lead agency disputes (§1501.5).

(d) Using the scoping process for an early identification of what are and what are not the real issues (§1501.7).

(e) Establishing appropriate time limits for the environmental impact statement process (§§1501.7(b)(2) and 1501.8).

(f) Preparing environmental impact statements early in the process (§1502.5).

(g) Integrating NEPA requirements with other environmental review and consultation requirements (§1502.25).

(h) Eliminating duplication with State and local procedures by providing for joint preparation (§1506.2) and with other Federal procedures by providing that an agency may adopt appropriate environmental documents prepared by another agency (§1506.3).

(i) Combining environmental documents with other documents (§1506.4).

(j) Using accelerated procedures for proposals for legislation (§1506.8).

(k) Using categorical exclusions to define categories of actions which do not individually or cumulatively have a significant effect on the human environment (§1506.4) and which are therefore exempt from requirements to prepare an environmental impact statement.

(l) Using a finding of no significant impact when an action not otherwise excluded will not have a significant effect on the human environment (§1506.13) and is therefore exempt from requirements to prepare an environmental impact statement.

§ 1500.6 Agency authority.

Each agency shall interpret the provisions of the Act as a supplement to its existing authority and as a mandate to view traditional policies and missions in the light of the Act's national environmental objectives. Agencies shall review their policies, procedures, and regulations accordingly and revise them as necessary to insure full com-

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pliance with the purposes and provisions of the Act. The phrase "to the fullest extent possible" in section 102 means that each agency of the Federal Government shall comply with that section unless existing law applicable to the agency's operations expressly prohibits or makes compliance impossible.

PART 1501—NEPA AND AGENCY PLANNING

Sec.

1501.1 Purpose.

1501.2 Apply NEPA early in the process.

1501.3 When to prepare an environmental assessment.

1501.4 Whether to prepare an environmental impact statement.

1501.5 Lead agencies.

1501.6 Cooperating agencies.

1501.7 Scoping.

1501.8 Time limits.

AUTHORITY: NEPA, the Environmental Quality Improvement Act of 1970, as amended (42 U.S.C. 4371 *et seq.*), sec. 306 of the Clean Air Act, as amended (42 U.S.C. 7606, and E.O. 11514 (Mar. 5, 1970, as amended by E.O. 11901, May 24, 1977).

SOURCE: 43 FR 55992, Nov. 29, 1978, unless otherwise noted.

§ 1501.1 Purpose.

The purposes of this part include:

(a) Integrating the NEPA process into early planning to insure appropriate consideration of NEPA's policies and to eliminate delay.

(b) Emphasizing cooperative consultation among agencies before the environmental impact statement is prepared rather than submission of adversary comments on a completed document.

(c) Providing for the swift and fair resolution of lead agency disputes.

(d) Identifying at an early stage the significant environmental issues deserving of study and deemphasizing insignificant issues, narrowing the scope of the environmental impact statement accordingly.

(e) Providing a mechanism for putting appropriate time limits on the environmental impact statement process.

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§ 1501.4

§ 1501.2 Apply NEPA early in the process.

Agencies shall integrate the NEPA process with other planning at the earliest possible time to insure that planning and decisions reflect environmental values, to avoid delays later in the process, and to head off potential conflicts. Each agency shall:

(a) Comply with the mandate of section 102(2)(A) to "utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment," as specified by §1507.2.

(b) Identify environmental effects and values in adequate detail so they can be compared to economic and technical analyses. Environmental documents and appropriate analyses shall be circulated and reviewed at the same time as other planning documents.

(c) Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources as provided by section 102(2)(E) of the Act.

(d) Provide for cases where actions are planned by private applicants or other non-Federal entities before Federal involvement so that:

(1) Policies or designated staff are available to advise potential applicants of studies or other information foreseeably required for later Federal action.

(2) The Federal agency consults early with appropriate State and local agencies and Indian tribes and with interested private persons and organizations when its own involvement is reasonably foreseeable.

(3) The Federal agency commences its NEPA process at the earliest possible time.

§ 1501.3 When to prepare an environmental assessment.

(a) Agencies shall prepare an environmental assessment (§1506.9) when necessary under the procedures adopted by individual agencies to supplement these regulations as described in §1507.3. An assessment is not necessary

if the agency has decided to prepare an environmental impact statement.

(b) Agencies may prepare an environmental assessment on any action at any time in order to assist agency planning and decisionmaking.

§ 1501.4 Whether to prepare an environmental impact statement.

In determining whether to prepare an environmental impact statement the Federal agency shall:

(a) Determine under its procedures supplementing these regulations (described in §1507.3) whether the proposal is one which:

(1) Normally requires an environmental impact statement, or

(2) Normally does not require either an environmental impact statement or an environmental assessment (categorical exclusion).

(b) If the proposed action is not covered by paragraph (a) of this section, prepare an environmental assessment (§1506.9). The agency shall involve environmental agencies, applicants, and the public, to the extent practicable, in preparing assessments required by §1506.9(a)(1).

(c) Based on the environmental assessment make its determination whether to prepare an environmental impact statement.

(d) Commence the scoping process (§1501.7), if the agency will prepare an environmental impact statement.

(e) Prepare a finding of no significant impact (§1506.13), if the agency determines on the basis of the environmental assessment not to prepare a statement.

(1) The agency shall make the finding of no significant impact available to the affected public as specified in §1506.6.

(2) In certain limited circumstances, which the agency may cover in its procedures under §1507.3, the agency shall make the finding of no significant impact available for public review (including State and area-wide clearinghouses) for 30 days before the agency makes its final determination whether to prepare an environmental impact statement and before the action may begin. The circumstances are:

(i) The proposed action is, or is closely similar to, one which normally re-

§ 1501.5

quires the preparation of an environmental impact statement under the procedures adopted by the agency pursuant to §1507.3, or

(1) The nature of the proposed action is one without precedent.

§ 1501.5 Lead agencies.

(a) A lead agency shall supervise the preparation of an environmental impact statement if more than one Federal agency either:

(1) Proposes or is involved in the same action; or

(2) Is involved in a group of actions directly related to each other because of their functional interdependence or geographical proximity.

(b) Federal, State, or local agencies, including at least one Federal agency, may act as joint lead agencies to prepare an environmental impact statement (§1506.2).

(c) If an action falls within the provisions of paragraph (a) of this section the potential lead agencies shall determine by letter or memorandum which agency shall be the lead agency and which shall be cooperating agencies. The agencies shall resolve the lead agency question so as not to cause delay. If there is disagreement among the agencies, the following factors (which are listed in order of descending importance) shall determine lead agency designation:

(1) Magnitude of agency's involvement.

(2) Project approval/disapproval authority.

(3) Expertise concerning the action's environmental effects.

(4) Duration of agency's involvement.

(5) Sequence of agency's involvement.

(d) Any Federal agency, or any State or local agency or private person substantially affected by the absence of lead agency designation, may make a written request to the potential lead agencies that a lead agency be designated.

(e) If Federal agencies are unable to agree on which agency will be the lead agency or if the procedure described in paragraph (c) of this section has not resulted within 45 days in a lead agency designation, any of the agencies or persons concerned may file a request with

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the Council asking it to determine which Federal agency shall be the lead agency.

A copy of the request shall be transmitted to each potential lead agency. The request shall consist of:

(1) A precise description of the nature and extent of the proposed action.

(2) A detailed statement of why each potential lead agency should or should not be the lead agency under the criteria specified in paragraph (c) of this section.

(f) A response may be filed by any potential lead agency concerned within 20 days after a request is filed with the Council. The Council shall determine as soon as possible but not later than 20 days after receiving the request and all responses to it which Federal agency shall be the lead agency and which other Federal agencies shall be cooperating agencies.

[43 FR 55992, Nov. 29, 1978; 44 FR 873, Jan. 3, 1979]

§ 1501.6 Cooperating agencies.

The purpose of this section is to emphasize agency cooperation early in the NEPA process. Upon request of the lead agency, any other Federal agency which has jurisdiction by law shall be a cooperating agency. In addition any other Federal agency which has special expertise with respect to any environmental issue, which should be addressed in the statement may be a cooperating agency upon request of the lead agency. An agency may request the lead agency to designate it a cooperating agency.

(a) The lead agency shall:

(1) Request the participation of each cooperating agency in the NEPA process at the earliest possible time.

(2) Use the environmental analysis and proposals of cooperating agencies with jurisdiction by law or special expertise, to the maximum extent possible consistent with its responsibility as lead agency.

(3) Meet with a cooperating agency at the latter's request.

(b) Each cooperating agency shall:

(1) Participate in the NEPA process at the earliest possible time.

(2) Participate in the scoping process (described below in §1501.7).

(3) Assume on request of the lead agency responsibility for developing information and preparing environmental analyses including portions of the environmental impact statement concerning which the cooperating agency has special expertise.

(4) Make available staff support at the lead agency's request to enhance the latter's interdisciplinary capability.

(5) Normally use its own funds. The lead agency shall, to the extent available funds permit, fund those major activities or analyses it requests from cooperating agencies. Potential lead agencies shall include such funding requirements in their budget requests.

(c) A cooperating agency may in response to a lead agency's request for assistance in preparing the environmental impact statement (described in paragraph (b)(3), (4), or (5) of this section) reply that other program commitments preclude any involvement or the degree of involvement requested in the action that is the subject of the environmental impact statement. A copy of this reply shall be submitted to the Council.

§ 1501.7 Scoping.

There shall be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. This process shall be termed scoping. As soon as practicable after its decision to prepare an environmental impact statement and before the scoping process the lead agency shall publish a notice of intent (§1508.22) in the FEDERAL REGISTER except as provided in §1507.3(e).

(a) As part of the scoping process the lead agency shall:

(1) Invite the participation of affected Federal, State, and local agencies, any affected Indian tribe, the proponent of the action, and other interested persons (including those who might not be in accord with the action on environmental grounds), unless there is a limited exception under §1507.3(c). An agency may give notice in accordance with §1506.6.

(2) Determine the scope (§1506.25) and the significant issues to be analyzed in

depth in the environmental impact statement.

(3) Identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (§1506.3), narrowing the discussion of these issues in the statement to a brief presentation of why they will not have a significant effect on the human environment or providing a reference to their coverage elsewhere.

(4) Allocate assignments for preparation of the environmental impact statement among the lead and cooperating agencies, with the lead agency retaining responsibility for the statement.

(5) Indicate any public environmental assessments and other environmental impact statements which are being or will be prepared that are related to but are not part of the scope of the impact statement under consideration.

(6) Identify other environmental review and consultation requirements so the lead and cooperating agencies may prepare other required analyses and studies concurrently with, and integrated with, the environmental impact statement as provided in §1502.25.

(7) Indicate the relationship between the timing of the preparation of environmental analyses and the agency's tentative planning and decisionmaking schedule.

(b) As part of the scoping process the lead agency may:

(1) Set page limits on environmental documents (§1502.7).

(2) Set time limits (§1501.8).

(3) Adopt procedures under §1507.3 to combine its environmental assessment process with its scoping process.

(4) Hold an early scoping meeting or meetings which may be integrated with any other early planning meeting the agency has. Such a scoping meeting will often be appropriate when the impacts of a particular action are confined to specific sites.

(c) An agency shall revise the determinations made under paragraphs (a) and (b) of this section if substantial changes are made later in the proposed action, or if significant new circumstances or information arise which bear on the proposal or its impacts.

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§ 1501.8 Time limits.

Although the Council has decided that prescribed universal time limits for the entire NEPA process are too inflexible, Federal agencies are encouraged to set time limits appropriate to individual actions (consistent with the time intervals required by §1506.10). When multiple agencies are involved the reference to agency below means lead agency.

(a) The agency shall set time limits if an applicant for the proposed action requests them: *Provided*, That the limits are consistent with the purposes of NEPA and other essential considerations of national policy.

(b) The agency may:

(1) Consider the following factors in determining time limits:

- (i) Potential for environmental harm.
- (ii) Size of the proposed action.
- (iii) State of the art of analytic techniques.
- (iv) Degree of public need for the proposed action, including the consequences of delay.

(v) Number of persons and agencies affected.

(vi) Degree to which relevant information is known and if not known the time required for obtaining it.

(vii) Degree to which the action is controversial.

(viii) Other time limits imposed on the agency by law, regulations, or executive order.

(2) Set overall time limits or limits for each constituent part of the NEPA process, which may include:

(i) Decision on whether to prepare an environmental impact statement (if not already decided).

(ii) Determination of the scope of the environmental impact statement.

(iii) Preparation of the draft environmental impact statement.

(iv) Review of any comments on the draft environmental impact statement from the public and agencies.

(v) Preparation of the final environmental impact statement.

(vi) Review of any comments on the final environmental impact statement.

(vii) Decision on the action based in part on the environmental impact statement.

(3) Designate a person (such as the project manager or a person in the

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agency's office with NEPA responsibilities) to expedite the NEPA process.

(c) State or local agencies or members of the public may request a Federal Agency to set time limits.

PART 1502—ENVIRONMENTAL IMPACT STATEMENT

Sec.

- 1502.1 Purpose.
- 1502.2 Implementation.
- 1502.3 Statutory requirements for statements.
- 1502.4 Major Federal actions requiring the preparation of environmental impact statements.
- 1502.5 Timing.
- 1502.6 Interdisciplinary preparation.
- 1502.7 Page limits.
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- 1502.9 Draft, final, and supplemental statements.
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- 1502.11 Cover sheet.
- 1502.12 Summary.
- 1502.13 Purpose and need.
- 1502.14 Alternatives including the proposed action.
- 1502.15 Affected environment.
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- 1502.18 Appendix.
- 1502.19 Circulation of the environmental impact statement.
- 1502.20 Tiering.
- 1502.21 Incorporation by reference.
- 1502.22 Incomplete or unavailable information.
- 1502.23 Cost-benefit analysis.
- 1502.24 Methodology and scientific accuracy.
- 1502.25 Environmental review and consultation requirements.

AUTHORITY: NEPA, the Environmental Quality Improvement Act of 1970, as amended (42 U.S.C. 4371 *et seq.*), sec. 309 of the Clean Air Act, as amended (42 U.S.C. 7609), and E.O. 11514 (Mar. 5, 1970, as amended by E.O. 11991, May 24, 1977).

SOURCE: 43 FR 55994, Nov. 29, 1978, unless otherwise noted.

§ 1502.1 Purpose.

The primary purpose of an environmental impact statement is to serve as an action-forcing device to insure that the policies and goals defined in the Act are infused into the ongoing programs and actions of the Federal Government. It shall provide full and fair discussion of significant environmental impacts and shall inform

decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment. Agencies shall focus on significant environmental issues and alternatives and shall reduce paperwork and the accumulation of extraneous background data. Statements shall be concise, clear, and to the point, and shall be supported by evidence that the agency has made the necessary environmental analyses. An environmental impact statement is more than a disclosure document. It shall be used by Federal officials in conjunction with other relevant material to plan actions and make decisions.

§ 1502.2 Implementation.

To achieve the purposes set forth in § 1502.1 agencies shall prepare environmental impact statements in the following manner:

(a) Environmental impact statements shall be analytic rather than encyclopedic.

(b) Impacts shall be discussed in proportion to their significance. There shall be only brief discussion of other than significant issues. As in a finding of no significant impact, there should be only enough discussion to show why more study is not warranted.

(c) Environmental impact statements shall be kept concise and shall be no longer than absolutely necessary to comply with NEPA and with these regulations. Length should vary first with potential environmental problems and then with project size.

(d) Environmental impact statements shall state how alternatives considered in it and decisions based on it will or will not achieve the requirements of sections 101 and 102(1) of the Act and other environmental laws and policies.

(e) The range of alternatives discussed in environmental impact statements shall encompass those to be considered by the ultimate agency decisionmaker.

(f) Agencies shall not commit resources prejudicing selection of alternatives before making a final decision (§ 1506.1).

(g) Environmental impact statements shall serve as the means of assessing the environmental impact of proposed

agency actions, rather than justifying decisions already made.

§ 1502.3 Statutory requirements for statements.

As required by sec. 102(2)(C) of NEPA environmental impact statements (§ 1506.11) are to be included in every recommendation or report.

On proposals (§ 1506.23).

For legislation and (§ 1506.17).

Other major Federal actions (§ 1506.18).

Significantly (§ 1506.27).

Affecting (§§ 1506.3, 1506.8).

The quality of the human environment (§ 1506.14).

§ 1502.4 Major Federal actions requiring the preparation of environmental impact statements.

(a) Agencies shall make sure the proposal which is the subject of an environmental impact statement is properly defined. Agencies shall use the criteria for scope (§ 1506.25) to determine which proposal(s) shall be the subject of a particular statement. Proposals or parts of proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement.

(b) Environmental impact statements may be prepared, and are sometimes required, for broad Federal actions such as the adoption of new agency programs or regulations (§ 1506.18). Agencies shall prepare statements on broad actions so that they are relevant to policy and are timed to coincide with meaningful points in agency planning and decisionmaking.

(c) When preparing statements on broad actions (including proposals by more than one agency), agencies may find it useful to evaluate the proposal(s) in one of the following ways:

(1) Geographically, including actions occurring in the same general location, such as body of water, region, or metropolitan area.

(2) Generically, including actions which have relevant similarities, such as common timing, impacts, alternatives, methods of implementation, media, or subject matter.

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(3) By stage of technological development including federal or federally assisted research, development or demonstration programs for new technologies which, if applied, could significantly affect the quality of the human environment. Statements shall be prepared on such programs and shall be available before the program has reached a stage of investment or commitment to implementation likely to determine subsequent development or restrict later alternatives.

(d) Agencies shall as appropriate employ scoping (§1501.7), tiering (§1502.20), and other methods listed in §§1500.4 and 1500.5 to relate broad and narrow actions and to avoid duplication and delay.

§ 1502.5 Timing.

An agency shall commence preparation of an environmental impact statement as close as possible to the time the agency is developing or is presented with a proposal (§1508.23) so that preparation can be completed in time for the final statement to be included in any recommendation or report on the proposal. The statement shall be prepared early enough so that it can serve practically as an important contribution to the decisionmaking process and will not be used to rationalize or justify decisions already made (§§1500.2(c), 1501.2, and 1502.2). For instance:

(a) For projects directly undertaken by Federal agencies the environmental impact statement shall be prepared at the feasibility analysis (go-no go) stage and may be supplemented at a later stage if necessary.

(b) For applications to the agency appropriate environmental assessments or statements shall be commenced no later than immediately after the application is received. Federal agencies are encouraged to begin preparation of such assessments or statements earlier, preferably jointly with applicable State or local agencies.

(c) For adjudication, the final environmental impact statement shall normally precede the final staff recommendation and that portion of the public hearing related to the impact study. In appropriate circumstances the statement may follow preliminary

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hearings designed to gather information for use in the statements.

(d) For informal rulemaking the draft environmental impact statement shall normally accompany the proposed rule.

§ 1502.6 Interdisciplinary preparation.

Environmental impact statements shall be prepared using an interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts (section 102(2)(A) of the Act). The disciplines of the preparers shall be appropriate to the scope and issues identified in the scoping process (§1501.7).

§ 1502.7 Page limits.

The text of final environmental impact statements (e.g., paragraphs (d) through (g) of §1502.10) shall normally be less than 150 pages and for proposals of unusual scope or complexity shall normally be less than 300 pages.

§ 1502.8 Writing.

Environmental impact statements shall be written in plain language and may use appropriate graphics so that decisionmakers and the public can readily understand them. Agencies should employ writers of clear prose or editors to write, review, or edit statements, which will be based upon the analysis and supporting data from the natural and social sciences and the environmental design arts.

§ 1502.9 Draft, final, and supplemental statements.

Except for proposals for legislation as provided in §1506.8 environmental impact statements shall be prepared in two stages and may be supplemented.

(a) Draft environmental impact statements shall be prepared in accordance with the scope decided upon in the scoping process. The lead agency shall work with the cooperating agencies and shall obtain comments as required in part 1503 of this chapter. The draft statement must fulfill and satisfy to the fullest extent possible the requirements established for final statements in section 102(2)(C) of the Act. If a draft statement is so inadequate as to preclude meaningful analysis, the agency

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shall prepare and circulate a revised draft of the appropriate portion. The agency shall make every effort to disclose and discuss at appropriate points in the draft statement all major points of view on the environmental impacts of the alternatives including the proposed action.

(b) Final environmental impact statements shall respond to comments as required in part 1503 of this chapter. The agency shall discuss at appropriate points in the final statement any responsible opposing view which was not adequately discussed in the draft statement and shall indicate the agency's response to the issues raised.

(c) Agencies:

(1) Shall prepare supplements to either draft or final environmental impact statements if:

(i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or

(ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

(2) May also prepare supplements when the agency determines that the purposes of the Act will be furthered by doing so.

(3) Shall adopt procedures for introducing a supplement into its formal administrative record, if such a record exists.

(4) Shall prepare, circulate, and file a supplement to a statement in the same fashion (exclusive of scoping) as a draft and final statement unless alternative procedures are approved by the Council.

§ 1502.10 Recommended format.

Agencies shall use a format for environmental impact statements which will encourage good analysis and clear presentation of the alternatives including the proposed action. The following standard format for environmental impact statements should be followed unless the agency determines that there is a compelling reason to do otherwise:

(a) Cover sheet.

(b) Summary.

(c) Table of contents.

(d) Purpose of and need for action.

(e) Alternatives including proposed action (sections 102(2)(C)(iii) and 102(2)(E) of the Act).

(f) Affected environment.

(g) Environmental consequences (especially sections 102(2)(C)(i), (ii), (iv), and (v) of the Act).

(h) List of preparers.

(i) List of Agencies, Organizations, and persons to whom copies of the statement are sent.

(j) Index.

(k) Appendices (if any).

If a different format is used, it shall include paragraphs (a), (b), (c), (h), (i), and (j), of this section and shall include the substance of paragraphs (d), (e), (f), (g), and (k) of this section, as further described in §§ 1502.11 through 1502.18, in any appropriate format.

§ 1502.11 Cover sheet.

The cover sheet shall not exceed one page. It shall include:

(a) A list of the responsible agencies including the lead agency and any cooperating agencies.

(b) The title of the proposed action that is the subject of the statement (and if appropriate the titles of related cooperating agency actions), together with the State(s) and county(ies) (or other jurisdiction if applicable) where the action is located.

(c) The name, address, and telephone number of the person at the agency who can supply further information.

(d) A designation of the statement as a draft, final, or draft or final supplement.

(e) A one paragraph abstract of the statement.

(f) The date by which comments must be received (computed in cooperation with EPA under § 1506.10).

The information required by this section may be entered on Standard Form 424 (in items 4, 6, 7, 10, and 18).

§ 1502.12 Summary.

Each environmental impact statement shall contain a summary which adequately and accurately summarizes the statement. The summary shall stress the major conclusions, areas of controversy (including issues raised by agencies and the public), and the issues to be resolved (including the choice

among alternatives). The summary will normally not exceed 15 pages.

§ 1502.13 Purpose and need.

The statement shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action.

§ 1502.14 Alternatives including the proposed action.

This section is the heart of the environmental impact statement. Based on the information and analysis presented in the sections on the Affected Environment (§1502.15) and the Environmental Consequences (§1502.16), it should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public. In this section agencies shall:

(a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

(b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.

(c) Include reasonable alternatives not within the jurisdiction of the lead agency.

(d) Include the alternative of no action.

(e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.

(f) Include appropriate mitigation measures not already included in the proposed action or alternatives.

§ 1502.15 Affected environment.

The environmental impact statement shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration. The descriptions shall be no longer than is necessary to understand the effects of the alternatives. Data

and analyses in a statement shall be commensurate with the importance of the impact, with less important material summarized, consolidated, or simply referenced. Agencies shall avoid useless bulk in statements and shall concentrate effort and attention on important issues. Verbose descriptions of the affected environment are themselves no measure of the adequacy of an environmental impact statement.

§ 1502.16 Environmental consequences.

This section forms the scientific and analytic basis for the comparisons under §1502.14. It shall consolidate the discussions of those elements required by sections 102(2)(C)(i), (ii), (iv), and (v) of NEPA which are within the scope of the statement and as much of section 102(2)(C)(iii) as is necessary to support the comparisons. The discussion will include the environmental impacts of the alternatives including the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented. This section should not duplicate discussions in §1502.14. It shall include discussions of:

(a) Direct effects and their significance (§1508.8).

(b) Indirect effects and their significance (§1508.8).

(c) Possible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned. (See §1506.2(d).)

(d) The environmental effects of alternatives including the proposed action. The comparisons under §1502.14 will be based on this discussion.

(e) Energy requirements and conservation potential of various alternatives and mitigation measures.

(f) Natural or depletable resource requirements and conservation potential of various alternatives and mitigation measures.

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(g) Urban quality, historic and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures.

(h) Means to mitigate adverse environmental impacts (if not fully covered under § 1502.14(f)).

[43 FR 55994, Nov. 29, 1978; 44 FR 873, Jan. 3, 1979]

§ 1502.17 List of preparers.

The environmental impact statement shall list the names, together with their qualifications (expertise, experience, professional disciplines), of the persons who were primarily responsible for preparing the environmental impact statement or significant background papers, including basic components of the statement (§§ 1502.6 and 1502.8). Where possible the persons who are responsible for a particular analysis, including analyses in background papers, shall be identified. Normally the list will not exceed two pages.

§ 1502.18 Appendix.

If an agency prepares an appendix to an environmental impact statement the appendix shall:

(a) Consist of material prepared in connection with an environmental impact statement (as distinct from material which is not so prepared and which is incorporated by reference (§ 1502.21)).

(b) Normally consist of material which substantiates any analysis fundamental to the impact statement.

(c) Normally be analytic and relevant to the decision to be made.

(d) Be circulated with the environmental impact statement or be readily available on request.

§ 1502.19 Circulation of the environmental impact statement.

Agencies shall circulate the entire draft and final environmental impact statements except for certain appendices as provided in § 1502.18(d) and unchanged statements as provided in § 1503.4(c). However, if the statement is unusually long, the agency may circulate the summary instead, except that the entire statement shall be furnished to:

(a) Any Federal agency which has jurisdiction by law or special expertise

with respect to any environmental impact involved and any appropriate Federal, State or local agency authorized to develop and enforce environmental standards.

(b) The applicant, if any.

(c) Any person, organization, or agency requesting the entire environmental impact statement.

(d) In the case of a final environmental impact statement any person, organization, or agency which submitted substantive comments on the draft.

If the agency circulates the summary and thereafter receives a timely request for the entire statement and for additional time to comment, the time for that requestor only shall be extended by at least 15 days beyond the minimum period.

§ 1502.20 Tiering.

Agencies are encouraged to tier their environmental impact statements to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review (§ 1508.28). Whenever a broad environmental impact statement has been prepared (such as a program or policy statement) and a subsequent statement or environmental assessment is then prepared on an action included within the entire program or policy (such as a site specific action) the subsequent statement or environmental assessment need only summarize the issues discussed in the broader statement and incorporate discussions from the broader statement by reference and shall concentrate on the issues specific to the subsequent action. The subsequent document shall state where the earlier document is available. Tiering may also be appropriate for different stages of actions. (Section 1508.28).

§ 1502.21 Incorporation by reference.

Agencies shall incorporate material into an environmental impact statement by reference when the effect will be to cut down on bulk without impeding agency and public review of the action. The incorporated material shall be cited in the statement and its content briefly described. No material may be incorporated by reference unless it is reasonably available for in-

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spection by potentially interested persons within the time allowed for comment. Material based on proprietary data which is itself not available for review and comment shall not be incorporated by reference.

§ 1502.22 Incomplete or unavailable information.

When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking.

(a) If the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement.

(b) If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known, the agency shall include within the environmental impact statement:

(1) A statement that such information is incomplete or unavailable; (2) a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment; (3) a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment, and (4) the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. For the purposes of this section, "reasonably foreseeable" includes impacts which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.

(c) The amended regulation will be applicable to all environmental impact statements for which a Notice of Intent

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(40 CFR 1508.22) is published in the FEDERAL REGISTER on or after May 27, 1986. For environmental impact statements in progress, agencies may choose to comply with the requirements of either the original or amended regulation.

[51 FR 15625, Apr. 25, 1986]

§ 1502.23 Cost-benefit analysis.

If a cost-benefit analysis relevant to the choice among environmentally different alternatives is being considered for the proposed action, it shall be incorporated by reference or appended to the statement as an aid in evaluating the environmental consequences. To assess the adequacy of compliance with section 102(2)(B) of the Act the statement shall, when a cost-benefit analysis is prepared, discuss the relationship between that analysis and any analyses of unquantified environmental impacts, values, and amenities. For purposes of complying with the Act, the weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis and should not be when there are important qualitative considerations. In any event, an environmental impact statement should at least indicate those considerations, including factors not related to environmental quality, which are likely to be relevant and important to a decision.

§ 1502.24 Methodology and scientific accuracy.

Agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement. An agency may place discussion of methodology in an appendix.

§ 1502.25 Environmental review and consultation requirements.

(a) To the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with environmental impact analyses and related surveys and studies required by the Fish and Wildlife Coordination Act. (16

U.S.C. 661 *et seq.*), the National Historic Preservation Act of 1966 (16 U.S.C. 470 *et seq.*), the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*), and other environmental review laws and executive orders.

(b) The draft environmental impact statement shall list all Federal permits, licenses, and other entitlements which must be obtained in implementing the proposal. If it is uncertain whether a Federal permit, license, or other entitlement is necessary, the draft environmental impact statement shall so indicate.

PART 1503—COMMENTING

Sec.

- 1503.1 Inviting comments.
- 1503.2 Duty to comment.
- 1503.3 Specificity of comments.
- 1503.4 Response to comments.

AUTHORITY: NEPA, the Environmental Quality Improvement Act of 1970, as amended (42 U.S.C. 4371 *et seq.*), sec. 309 of the Clean Air Act, as amended (42 U.S.C. 7609), and E.O. 11514 (Mar. 5, 1970, as amended by E.O. 11991, May 24, 1977).

SOURCE: 43 FR 55997, Nov. 29, 1978, unless otherwise noted.

§ 1503.1 Inviting comments.

(a) After preparing a draft environmental impact statement and before preparing a final environmental impact statement the agency shall:

- (1) Obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved or which is authorized to develop and enforce environmental standards.
- (2) Request the comments of:
 - (i) Appropriate State and local agencies which are authorized to develop and enforce environmental standards;
 - (ii) Indian tribes, when the effects may be on a reservation; and
 - (iii) Any agency which has requested that it receive statements on actions of the kind proposed.

Office of Management and Budget Circular A-95 (Revised), through its system of clearinghouses, provides a means of securing the views of State and local environmental agencies. The clearinghouses may be used, by mutual agreement of the lead agency and the

clearinghouse, for securing State and local reviews of the draft environmental impact statements.

(3) Request comments from the applicant, if any.

(4) Request comments from the public, affirmatively soliciting comments from those persons or organizations who may be interested or affected.

(b) An agency may request comments on a final environmental impact statement before the decision is finally made. In any case other agencies or persons may make comments before the final decision unless a different time is provided under § 1506.10.

§ 1503.2 Duty to comment.

Federal agencies with jurisdiction by law or special expertise with respect to any environmental impact involved and agencies which are authorized to develop and enforce environmental standards shall comment on statements within their jurisdiction, expertise, or authority. Agencies shall comment within the time period specified for comment in § 1506.10. A Federal agency may reply that it has no comment. If a cooperating agency is satisfied that its views are adequately reflected in the environmental impact statement, it should reply that it has no comment.

§ 1503.3 Specificity of comments.

(a) Comments on an environmental impact statement or on a proposed action shall be as specific as possible and may address either the adequacy of the statement or the merits of the alternatives discussed or both.

(b) When a commenting agency criticizes a lead agency's predictive methodology, the commenting agency should describe the alternative methodology which it prefers and why.

(c) A cooperating agency shall specify in its comments whether it needs additional information to fulfill other applicable environmental reviews or consultation requirements and what information it needs. In particular, it shall specify any additional information it needs to comment adequately on the draft statement's analysis of significant site-specific effects associated with the granting or approving by that

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cooperating agency of necessary Federal permits, licenses, or entitlements.

(d) When a cooperating agency with jurisdiction by law objects to or expresses reservations about the proposal on grounds of environmental impacts, the agency expressing the objection or reservation shall specify the mitigation measures it considers necessary to allow the agency to grant or approve applicable permit, license, or related requirements or concurrences.

§ 1503.4 Response to comments.

(a) An agency preparing a final environmental impact statement shall assess and consider comments both individually and collectively, and shall respond by one or more of the means listed below, stating its response in the final statement. Possible responses are to:

- (1) Modify alternatives including the proposed action.
- (2) Develop and evaluate alternatives not previously given serious consideration by the agency.
- (3) Supplement, improve, or modify its analyses.
- (4) Make factual corrections.
- (5) Explain why the comments do not warrant further agency response, citing the sources, authorities, or reasons which support the agency's position and, if appropriate, indicate those circumstances which would trigger agency reappraisal or further response.

(b) All substantive comments received on the draft statement (or summaries thereof where the response has been exceptionally voluminous), should be attached to the final statement whether or not the comment is thought to merit individual discussion by the agency in the text of the statement.

(c) If changes in response to comments are minor and are confined to the responses described in paragraphs (a)(4) and (5) of this section, agencies may write them on errata sheets and attach them to the statement instead of rewriting the draft statement. In such cases only the comments, the responses, and the changes and not the final statement need be circulated (§1502.19). The entire document with a new cover sheet shall be filed as the final statement (§1506.9).

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PART 1504—PREDECISION REFERRALS TO THE COUNCIL OF PROPOSED FEDERAL ACTIONS DETERMINED TO BE ENVIRONMENTALLY UNSATISFACTORY

Sec.

1504.1 Purpose.

1504.2 Criteria for referral.

1504.3 Procedure for referrals and response.

AUTHORITY: NEPA, the Environmental Quality Improvement Act of 1970, as amended (42 U.S.C. 4371 *et seq.*), sec. 309 of the Clean Air Act, as amended (42 U.S.C. 7609), and E.O. 11514 (Mar. 5, 1970, as amended by E.O. 11991, May 24, 1977).

§ 1504.1 Purpose.

(a) This part establishes procedures for referring to the Council Federal interagency disagreements concerning proposed major Federal actions that might cause unsatisfactory environmental effects. It provides means for early resolution of such disagreements.

(b) Under section 309 of the Clean Air Act (42 U.S.C. 7609), the Administrator of the Environmental Protection Agency is directed to review and comment publicly on the environmental impacts of Federal activities, including actions for which environmental impact statements are prepared. If after this review the Administrator determines that the matter is "unsatisfactory from the standpoint of public health or welfare or environmental quality," section 309 directs that the matter be referred to the Council (hereafter "environmental referrals").

(c) Under section 102(2)(C) of the Act other Federal agencies may make similar reviews of environmental impact statements, including judgments on the acceptability of anticipated environmental impacts. These reviews must be made available to the President, the Council and the public.

[43 FR 55996, Nov. 29, 1978]

§ 1504.2 Criteria for referral.

Environmental referrals should be made to the Council only after concerted, timely (as early as possible in the process), but unsuccessful attempts to resolve differences with the lead agency. In determining what environmental objections to the matter are ap-

propriate to refer to the Council, an agency should weigh potential adverse environmental impacts, considering:

- (a) Possible violation of national environmental standards or policies.
- (b) Severity.
- (c) Geographical scope.
- (d) Duration.
- (e) Importance as precedents.
- (f) Availability of environmentally preferable alternatives.

[43 FR 55998, Nov. 29, 1978]

§ 1504.3 Procedure for referrals and response.

(a) A Federal agency making the referral to the Council shall:

(1) Advise the lead agency at the earliest possible time that it intends to refer a matter to the Council unless a satisfactory agreement is reached.

(2) Include such advice in the referring agency's comments on the draft environmental impact statement, except when the statement does not contain adequate information to permit an assessment of the matter's environmental acceptability.

(3) Identify any essential information that is lacking and request that it be made available at the earliest possible time.

(4) Send copies of such advice to the Council.

(b) The referring agency shall deliver its referral to the Council not later than twenty-five (25) days after the final environmental impact statement has been made available to the Environmental Protection Agency, commenting agencies, and the public. Except when an extension of this period has been granted by the lead agency, the Council will not accept a referral after that date.

(c) The referral shall consist of:

(1) A copy of the letter signed by the head of the referring agency and delivered to the lead agency informing the lead agency of the referral and the reasons for it, and requesting that no action be taken to implement the matter until the Council acts upon the referral. The letter shall include a copy of the statement referred to in (c)(2) of this section.

(2) A statement supported by factual evidence leading to the conclusion that the matter is unsatisfactory from the

standpoint of public health or welfare or environmental quality. The statement shall:

(i) Identify any material facts in controversy and incorporate (by reference if appropriate) agreed upon facts,

(ii) Identify any existing environmental requirements or policies which would be violated by the matter,

(iii) Present the reasons why the referring agency believes the matter is environmentally unsatisfactory,

(iv) Contain a finding by the agency whether the issue raised is of national importance because of the threat to national environmental resources or policies or for some other reason,

(v) Review the steps taken by the referring agency to bring its concerns to the attention of the lead agency at the earliest possible time, and

(vi) Give the referring agency's recommendations as to what mitigation alternative, further study, or other course of action (including abandonment of the matter) are necessary to remedy the situation.

(d) Not later than twenty-five (25) days after the referral to the Council the lead agency may deliver a response to the Council, and the referring agency. If the lead agency requests more time and gives assurance that the matter will not go forward in the interim, the Council may grant an extension. The response shall:

(1) Address fully the issues raised in the referral.

(2) Be supported by evidence.

(3) Give the lead agency's response to the referring agency's recommendations.

(e) Interested persons (including the applicant) may deliver their views in writing to the Council. Views in support of the referral should be delivered not later than the referral. Views in support of the response shall be delivered not later than the response.

(f) Not later than twenty-five (25) days after receipt of both the referral and any response or upon being informed that there will be no response (unless the lead agency agrees to a longer time), the Council may take one or more of the following actions:

(1) Conclude that the process of referral and response has successfully resolved the problem.

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(2) Initiate discussions with the agencies with the objective of mediation with referring and lead agencies.

(3) Hold public meetings or hearings to obtain additional views and information.

(4) Determine that the issue is not one of national importance and request the referring and lead agencies to pursue their decision process.

(5) Determine that the issue should be further negotiated by the referring and lead agencies and is not appropriate for Council consideration until one or more heads of agencies report to the Council that the agencies' disagreements are irreconcilable.

(6) Publish its findings and recommendations (including where appropriate a finding that the submitted evidence does not support the position of an agency).

(7) When appropriate, submit the referral and the response together with the Council's recommendation to the President for action.

(g) The Council shall take no longer than 60 days to complete the actions specified in paragraph (f)(2), (3), or (5) of this section.

(h) When the referral involves an action required by statute to be determined on the record after opportunity for agency hearing, the referral shall be conducted in a manner consistent with 5 U.S.C. 557(d) (Administrative Procedure Act).

[43 FR 55998, Nov. 29, 1978; 44 FR 873, Jan. 3, 1979]

PART 1505—NEPA AND AGENCY DECISIONMAKING

Sec.

1505.1 Agency decisionmaking procedures.

1505.2 Record of decision in cases requiring environmental impact statements.

1505.3 Implementing the decision.

AUTHORITY: NEPA, the Environmental Quality Improvement Act of 1970, as amended (42 U.S.C. 4371 *et seq.*), sec. 309 of the Clean Air Act, as amended (42 U.S.C. 7609), and E.O. 11514 (Mar. 5, 1970, as amended by E.O. 11991, May 24, 1977).

SOURCE: 43 FR 55999, Nov. 29, 1978, unless otherwise noted.

§ 1505.1 Agency decisionmaking procedures.

Agencies shall adopt procedures (§1507.3) to ensure that decisions are made in accordance with the policies and purposes of the Act. Such procedures shall include but not be limited to:

(a) Implementing procedures under section 102(2) to achieve the requirements of sections 101 and 102(1).

(b) Designating the major decision points for the agency's principal programs likely to have a significant effect on the human environment and assuring that the NEPA process corresponds with them.

(c) Requiring that relevant environmental documents, comments, and responses be part of the record in formal rulemaking or adjudicatory proceedings.

(d) Requiring that relevant environmental documents, comments, and responses accompany the proposal through existing agency review processes so that agency officials use the statement in making decisions.

(e) Requiring that the alternatives considered by the decisionmaker are encompassed by the range of alternatives discussed in the relevant environmental documents and that the decisionmaker consider the alternatives described in the environmental impact statement. If another decision document accompanies the relevant environmental documents to the decisionmaker, agencies are encouraged to make available to the public before the decision is made any part of that document that relates to the comparison of alternatives.

§ 1505.2 Record of decision in cases requiring environmental impact statements.

At the time of its decision (§1506.10) or, if appropriate, its recommendation to Congress, each agency shall prepare a concise public record of decision. The record, which may be integrated into any other record prepared by the agency, including that required by OMB Circular A-95 (Revised), part I, sections 6(c) and (d), and part II, section 5(b)(4), shall:

(a) State what the decision was.

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(b) Identify all alternatives considered by the agency in reaching its decision, specifying the alternative or alternatives which were considered to be environmentally preferable. An agency may discuss preferences among alternatives based on relevant factors including economic and technical considerations and agency statutory missions. An agency shall identify and discuss all such factors including any essential considerations of national policy which were balanced by the agency in making its decision and state how those considerations entered into its decision.

(c) State whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not. A monitoring and enforcement program shall be adopted and summarized where applicable for any mitigation.

§ 1505.3 Implementing the decision.

Agencies may provide for monitoring to assure that their decisions are carried out and should do so in important cases. Mitigation (§1505.2(c)) and other conditions established in the environmental impact statement or during its review and committed as part of the decision shall be implemented by the lead agency or other appropriate consenting agency. The lead agency shall:

(a) Include appropriate conditions in grants, permits or other approvals.

(b) Condition funding of actions on mitigation.

(c) Upon request, inform cooperating or commenting agencies on progress in carrying out mitigation measures which they have proposed and which were adopted by the agency making the decision.

(d) Upon request, make available to the public the results of relevant monitoring.

PART 1506—OTHER REQUIREMENTS OF NEPA

Sec.

1506.1 Limitations on actions during NEPA process.

1506.2 Elimination of duplication with State and local procedures.

1506.3 Adoption.

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1506.4 Combining documents.

1506.5 Agency responsibility.

1506.6 Public involvement.

1506.7 Further guidance.

1506.8 Proposals for legislation.

1506.9 Filing requirements.

1506.10 Timing of agency action.

1506.11 Emergencies.

1506.12 Effective date.

AUTHORITY: NEPA, the Environmental Quality Improvement Act of 1970, as amended (42 U.S.C. 4371 *et seq.*), sec. 309 of the Clean Air Act, as amended (42 U.S.C. 7609), and E.O. 11514 (Mar. 5, 1970, as amended by E.O. 11991, May 24, 1977).

SOURCE: 43 FR 56000, Nov. 29, 1978, unless otherwise noted.

§ 1506.1 Limitations on actions during NEPA process.

(a) Until an agency issues a record of decision as provided in §1505.2 (except as provided in paragraph (c) of this section), no action concerning the proposal shall be taken which would:

(1) Have an adverse environmental impact; or

(2) Limit the choice of reasonable alternatives.

(b) If any agency is considering an application from a non-Federal entity, and is aware that the applicant is about to take an action within the agency's jurisdiction that would meet either of the criteria in paragraph (a) of this section, then the agency shall promptly notify the applicant that the agency will take appropriate action to insure that the objectives and procedures of NEPA are achieved.

(c) While work on a required program environmental impact statement is in progress and the action is not covered by an existing program statement, agencies shall not undertake in the interim any major Federal action covered by the program which may significantly affect the quality of the human environment unless such action:

(1) Is justified independently of the program;

(2) Is itself accompanied by an adequate environmental impact statement; and

(3) Will not prejudice the ultimate decision on the program. Interim action prejudices the ultimate decision on the program when it tends to deter-

mine subsequent development or limit alternatives.

(d) This section does not preclude development by applicants of plans or designs or performance of other work necessary to support an application for Federal, State or local permits or assistance. Nothing in this section shall preclude Rural Electrification Administration approval of minimal expenditures not affecting the environment (e.g. long leadtime equipment and purchase options) made by non-governmental entities seeking loan guarantees from the Administration.

§ 1506.2 Elimination of duplication with State and local procedures.

(a) Agencies authorized by law to cooperate with State agencies of statewide jurisdiction pursuant to section 102(2)(D) of the Act may do so.

(b) Agencies shall cooperate with State and local agencies to the fullest extent possible to reduce duplication between NEPA and State and local requirements, unless the agencies are specifically barred from doing so by some other law. Except for cases covered by paragraph (a) of this section, such cooperation shall to the fullest extent possible include:

(1) Joint planning processes.

(2) Joint environmental research and studies.

(3) Joint public hearings (except where otherwise provided by statute).

(4) Joint environmental assessments.

(c) Agencies shall cooperate with State and local agencies to the fullest extent possible to reduce duplication between NEPA and comparable State and local requirements, unless the agencies are specifically barred from doing so by some other law. Except for cases covered by paragraph (a) of this section, such cooperation shall to the fullest extent possible include joint environmental impact statements. In such cases one or more Federal agencies and one or more State or local agencies shall be joint lead agencies. Where State laws or local ordinances have environmental impact statement requirements in addition to but not in conflict with those in NEPA, Federal agencies shall cooperate in fulfilling these requirements as well as those of

Federal laws so that one document will comply with all applicable laws.

(d) To better integrate environmental impact statements into State or local planning processes, statements shall discuss any inconsistency of a proposed action with any approved State or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law.

§ 1506.3 Adoption.

(a) An agency may adopt a Federal draft or final environmental impact statement or portion thereof provided that the statement or portion thereof meets the standards for an adequate statement under these regulations.

(b) If the actions covered by the original environmental impact statement and the proposed action are substantially the same, the agency adopting another agency's statement is not required to recirculate it except as a final statement. Otherwise the adopting agency shall treat the statement as a draft and recirculate it (except as provided in paragraph (c) of this section).

(c) A cooperating agency may adopt without recirculating the environmental impact statement of a lead agency when, after an independent review of the statement, the cooperating agency concludes that its comments and suggestions have been satisfied.

(d) When an agency adopts a statement which is not final within the agency that prepared it, or when the action it assesses is the subject of a referral under part 1504, or when the statement's adequacy is the subject of a judicial action which is not final, the agency shall so specify.

§ 1506.4 Combining documents.

Any environmental document in compliance with NEPA may be combined with any other agency document to reduce duplication and paperwork.

§ 1506.5 Agency responsibility.

(a) *Information.* If an agency requires an applicant to submit environmental information for possible use by the agency in preparing an environmental

impact statement, then the agency should assist the applicant by outlining the types of information required. The agency shall independently evaluate the information submitted and shall be responsible for its accuracy. If the agency chooses to use the information submitted by the applicant in the environmental impact statement, either directly or by reference, then the names of the persons responsible for the independent evaluation shall be included in the list of preparers (§1502.17). It is the intent of this paragraph that acceptable work not be redone, but that it be verified by the agency.

(b) *Environmental assessments.* If an agency permits an applicant to prepare an environmental assessment, the agency, besides fulfilling the requirements of paragraph (a) of this section, shall make its own evaluation of the environmental issues and take responsibility for the scope and content of the environmental assessment.

(c) *Environmental impact statements.* Except as provided in §§1506.2 and 1506.3 any environmental impact statement prepared pursuant to the requirements of NEPA shall be prepared directly by or by a contractor selected by the lead agency or where appropriate under §1501.6(b), a cooperating agency. It is the intent of these regulations that the contractor be chosen solely by the lead agency, or by the lead agency in cooperation with cooperating agencies, or where appropriate by a cooperating agency to avoid any conflict of interest. Contractors shall execute a disclosure statement prepared by the lead agency, or where appropriate the cooperating agency, specifying that they have no financial or other interest in the outcome of the project. If the document is prepared by contract, the responsible Federal official shall furnish guidance and participate in the preparation and shall independently evaluate the statement prior to its approval and take responsibility for its scope and contents. Nothing in this section is intended to prohibit any agency from requesting any person to submit information to it or to prohibit any person from submitting information to any agency.

§ 1506.6 Public involvement.

Agencies shall:

(a) Make diligent efforts to involve the public in preparing and implementing their NEPA procedures.

(b) Provide public notice of NEPA-related hearings, public meetings, and the availability of environmental documents so as to inform those persons and agencies who may be interested or affected.

(1) In all cases the agency shall mail notice to those who have requested it on an individual action.

(2) In the case of an action with effects of national concern notice shall include publication in the FEDERAL REGISTER and notice by mail to national organizations reasonably expected to be interested in the matter and may include listing in the *102 Monitor*. An agency engaged in rulemaking may provide notice by mail to national organizations who have requested that notice regularly be provided. Agencies shall maintain a list of such organizations.

(3) In the case of an action with effects primarily of local concern the notice may include:

(i) Notice to State and areawide clearinghouses pursuant to OMB Circular A-95 (Revised).

(ii) Notice to Indian tribes when effects may occur on reservations.

(iii) Following the affected State's public notice procedures for comparable actions.

(iv) Publication in local newspapers (in papers of general circulation rather than legal papers).

(v) Notice through other local media.

(vi) Notice to potentially interested community organizations including small business associations.

(vii) Publication in newsletters that may be expected to reach potentially interested persons.

(viii) Direct mailing to owners and occupants of nearby or affected property.

(ix) Posting of notice on and off site in the area where the action is to be located.

(c) Hold or sponsor public hearings or public meetings whenever appropriate or in accordance with statutory requirements applicable to the agency. Criteria shall include whether there is:

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(1) Substantial environmental controversy concerning the proposed action or substantial interest in holding the hearing.

(2) A request for a hearing by another agency with jurisdiction over the action supported by reasons why a hearing will be helpful. If a draft environmental impact statement is to be considered at a public hearing, the agency should make the statement available to the public at least 15 days in advance (unless the purpose of the hearing is to provide information for the draft environmental impact statement).

(d) Solicit appropriate information from the public.

(e) Explain in its procedures where interested persons can get information or status reports on environmental impact statements and other elements of the NEPA process.

(f) Make environmental impact statements, the comments received, and any underlying documents available to the public pursuant to the provisions of the Freedom of Information Act (5 U.S.C. 552), without regard to the exclusion for interagency memoranda where such memoranda transmit comments of Federal agencies on the environmental impact of the proposed action. Materials to be made available to the public shall be provided to the public without charge to the extent practicable, or at a fee which is not more than the actual costs of reproducing copies required to be sent to other Federal agencies, including the Council.

§ 1506.7 Further guidance.

The Council may provide further guidance concerning NEPA and its procedures including:

(a) A handbook which the Council may supplement from time to time, which shall in plain language provide guidance and instructions concerning the application of NEPA and these regulations.

(b) Publication of the Council's Memoranda to Heads of Agencies.

(c) In conjunction with the Environmental Protection Agency and the publication of the 102 Monitor, notice of:

- (1) Research activities;
- (2) Meetings and conferences related to NEPA; and

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(3) Successful and innovative procedures used by agencies to implement NEPA.

§ 1506.8 Proposals for legislation.

(a) The NEPA process for proposals for legislation (§1508.17) significantly affecting the quality of the human environment shall be integrated with the legislative process of the Congress. A legislative environmental impact statement is the detailed statement required by law to be included in a recommendation or report on a legislative proposal to Congress. A legislative environmental impact statement shall be considered part of the formal transmittal of a legislative proposal to Congress; however, it may be transmitted to Congress up to 30 days later in order to allow time for completion of an accurate statement which can serve as the basis for public and Congressional debate. The statement must be available in time for Congressional hearings and deliberations.

(b) Preparation of a legislative environmental impact statement shall conform to the requirements of these regulations except as follows:

(1) There need not be a scoping process.

(2) The legislative statement shall be prepared in the same manner as a draft statement, but shall be considered the "detailed statement" required by statute; *Provided*, That when any of the following conditions exist both the draft and final environmental impact statement on the legislative proposal shall be prepared and circulated as provided by §§ 1503.1 and 1506.10.

(i) A Congressional Committee with jurisdiction over the proposal has a rule requiring both draft and final environmental impact statements.

(ii) The proposal results from a study process required by statute (such as those required by the Wild and Scenic Rivers Act (16 U.S.C. 1271 *et seq.*) and the Wilderness Act (16 U.S.C. 1131 *et seq.*)).

(iii) Legislative approval is sought for Federal or federally assisted construction or other projects which the agency recommends be located at specific geographic locations. For proposals requiring an environmental impact statement for the acquisition of space

by the General Services Administration, a draft statement shall accompany the Prospectus or the 11(b) Report of Building Project Surveys to the Congress, and a final statement shall be completed before site acquisition.

(iv) The agency decides to prepare draft and final statements.

(c) Comments on the legislative statement shall be given to the lead agency which shall forward them along with its own responses to the Congressional committees with jurisdiction.

§ 1506.9 Filing requirements.

Environmental impact statements together with comments and responses shall be filed with the Environmental Protection Agency, attention Office of Federal Activities (A-104), 401 M Street SW., Washington, DC 20460. Statements shall be filed with EPA no earlier than they are also transmitted to commenting agencies and made available to the public. EPA shall deliver one copy of each statement to the Council, which shall satisfy the requirement of availability to the President. EPA may issue guidelines to agencies to implement its responsibilities under this section and § 1506.10.

§ 1506.10 Timing of agency action.

(a) The Environmental Protection Agency shall publish a notice in the FEDERAL REGISTER each week of the environmental impact statements filed during the preceding week. The minimum time periods set forth in this section shall be calculated from the date of publication of this notice.

(b) No decision on the proposed action shall be made or recorded under § 1505.2 by a Federal agency until the later of the following dates:

(1) Ninety (90) days after publication of the notice described above in paragraph (a) of this section for a draft environmental impact statement.

(2) Thirty (30) days after publication of the notice described above in paragraph (a) of this section for a final environmental impact statement.

An exception to the rules on timing may be made in the case of an agency decision which is subject to a formal internal appeal. Some agencies have a formally established appeal process which allows other agencies or the pub-

lic to take appeals on a decision and make their views known, after publication of the final environmental impact statement. In such cases, where a real opportunity exists to alter the decision, the decision may be made and recorded at the same time the environmental impact statement is published. This means that the period for appeal of the decision and the 30-day period prescribed in paragraph (b)(2) of this section may run concurrently. In such cases the environmental impact statement shall explain the timing and the public's right of appeal. An agency engaged in rulemaking under the Administrative Procedure Act or other statute for the purpose of protecting the public health or safety, may waive the time period in paragraph (b)(2) of this section and publish a decision on the final rule simultaneously with publication of the notice of the availability of the final environmental impact statement as described in paragraph (a) of this section.

(c) If the final environmental impact statement is filed within ninety (90) days after a draft environmental impact statement is filed with the Environmental Protection Agency, the minimum thirty (30) day period and the minimum ninety (90) day period may run concurrently. However, subject to paragraph (d) of this section agencies shall allow not less than 45 days for comments on draft statements.

(d) The lead agency may extend prescribed periods. The Environmental Protection Agency may upon a showing by the lead agency of compelling reasons of national policy reduce the prescribed periods and may upon a showing by any other Federal agency of compelling reasons of national policy also extend prescribed periods, but only after consultation with the lead agency. (Also see § 1507.3(d).) Failure to file timely comments shall not be a sufficient reason for extending a period. If the lead agency does not concur with the extension of time, EPA may not extend it for more than 30 days. When the Environmental Protection Agency reduces or extends any period of time it shall notify the Council.

[43 FR 56000, Nov. 29, 1978; 44 FR 874, Jan. 3, 1979]

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§ 1506.11 Emergencies.

Where emergency circumstances make it necessary to take an action with significant environmental impact without observing the provisions of these regulations, the Federal agency taking the action should consult with the Council about alternative arrangements. Agencies and the Council will limit such arrangements to actions necessary to control the immediate impacts of the emergency. Other actions remain subject to NEPA review.

§ 1506.12 Effective date.

The effective date of these regulations is July 30, 1979, except that for agencies that administer programs that qualify under section 102(2)(D) of the Act or under section 104(h) of the Housing and Community Development Act of 1974 an additional four months shall be allowed for the State or local agencies to adopt their implementing procedures.

(a) These regulations shall apply to the fullest extent practicable to ongoing activities and environmental documents begun before the effective date. These regulations do not apply to an environmental impact statement or supplement if the draft statement was filed before the effective date of these regulations. No completed environmental documents need be redone by reasons of these regulations. Until these regulations are applicable, the Council's guidelines published in the FEDERAL REGISTER of August 1, 1973, shall continue to be applicable. In cases where these regulations are applicable the guidelines are superseded. However, nothing shall prevent an agency from proceeding under these regulations at an earlier time.

(b) NEPA shall continue to be applicable to actions begun before January 1, 1970, to the fullest extent possible.

PART 1507—AGENCY COMPLIANCE

Sec.

1507.1 Compliance.

1507.2 Agency capability to comply.

1507.3 Agency procedures.

AUTHORITY: NEPA, the Environmental Quality Improvement Act of 1970, as amended (42 U.S.C. 4371 *et seq.*), sec. 309 of the Clean

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Air Act, as amended (42 U.S.C. 7609), and E.O. 11514 (Mar. 5, 1970, as amended by E.O. 11991, May 24, 1977).

SOURCE: 43 FR 56002, Nov. 29, 1978, unless otherwise noted.

§ 1507.1 Compliance.

All agencies of the Federal Government shall comply with these regulations. It is the intent of these regulations to allow each agency flexibility in adapting its implementing procedures authorized by § 1507.3 to the requirements of other applicable laws.

§ 1507.2 Agency capability to comply.

Each agency shall be capable (in terms of personnel and other resources) of complying with the requirements enumerated below. Such compliance may include use of other's resources, but the using agency shall itself have sufficient capability to evaluate what others do for it. Agencies shall:

(a) Fulfill the requirements of section 102(2)(A) of the Act to utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on the human environment. Agencies shall designate a person to be responsible for overall review of agency NEPA compliance.

(b) Identify methods and procedures required by section 102(2)(B) to insure that presently unquantified environmental amenities and values may be given appropriate consideration.

(c) Prepare adequate environmental impact statements pursuant to section 102(2)(C) and comment on statements in the areas where the agency has jurisdiction by law or special expertise or is authorized to develop and enforce environmental standards.

(d) Study, develop, and describe alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources. This requirement of section 102(2)(E) extends to all such proposals, not just the more limited scope of section 102(2)(C)(iii) where the discussion of alternatives is confined to impact statements.

(e) Comply with the requirements of section 102(2)(H) that the agency initiate and utilize ecological information in the planning and development of resource-oriented projects.

(f) Fulfill the requirements of sections 102(2)(F), 102(2)(G), and 102(2)(I), of the Act and of Executive Order 11514, Protection and Enhancement of Environmental Quality, Sec. 2.

§ 1507.3 Agency procedures.

(a) Not later than eight months after publication of these regulations as finally adopted in the FEDERAL REGISTER, or five months after the establishment of an agency, whichever shall come later, each agency shall as necessary adopt procedures to supplement these regulations. When the agency is a department, major subunits are encouraged (with the consent of the department) to adopt their own procedures. Such procedures shall not paraphrase these regulations. They shall confine themselves to implementing procedures. Each agency shall consult with the Council while developing its procedures and before publishing them in the FEDERAL REGISTER for comment. Agencies with similar programs should consult with each other and the Council to coordinate their procedures, especially for programs requesting similar information from applicants. The procedures shall be adopted only after an opportunity for public review and after review by the Council for conformity with the Act and these regulations. The Council shall complete its review within 30 days. Once in effect they shall be filed with the Council and made readily available to the public. Agencies are encouraged to publish explanatory guidance for these regulations and their own procedures. Agencies shall continue to review their policies and procedures and in consultation with the Council to revise them as necessary to ensure full compliance with the purposes and provisions of the Act.

(b) Agency procedures shall comply with these regulations except where compliance would be inconsistent with statutory requirements and shall include:

(1) Those procedures required by §§ 1501.2(d), 1502.9(c)(3), 1505.1, 1506.6(e), and 1508.4.

(2) Specific criteria for and identification of those typical classes of action:

(i) Which normally do require environmental impact statements.

(ii) Which normally do not require either an environmental impact statement or an environmental assessment (categorical exclusions (§ 1508.4)).

(iii) Which normally require environmental assessments but not necessarily environmental impact statements.

(c) Agency procedures may include specific criteria for providing limited exceptions to the provisions of these regulations for classified proposals. They are proposed actions which are specifically authorized under criteria established by an Executive Order or statute to be kept secret in the interest of national defense or foreign policy and are in fact properly classified pursuant to such Executive Order or statute. Environmental assessments and environmental impact statements which address classified proposals may be safeguarded and restricted from public dissemination in accordance with agencies' own regulations applicable to classified information. These documents may be organized so that classified portions can be included as annexes, in order that the unclassified portions can be made available to the public.

(d) Agency procedures may provide for periods of time other than those presented in § 1506.10 when necessary to comply with other specific statutory requirements.

(e) Agency procedures may provide that where there is a lengthy period between the agency's decision to prepare an environmental impact statement and the time of actual preparation, the notice of intent required by § 1501.7 may be published at a reasonable time in advance of preparation of the draft statement.

PART 1508—TERMINOLOGY AND INDEX

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AUTHORITY: NEPA, the Environmental Quality Improvement Act of 1970, as amended (42 U.S.C. 4371 *et seq.*), sec. 309 of the Clean Air Act, as amended (42 U.S.C. 7609), and E.O. 11514 (Mar. 5, 1970, as amended by E.O. 11991, May 24, 1977).

SOURCE: 43 FR 56003, Nov. 29, 1978, unless otherwise noted.

§ 1508.1 Terminology.

The terminology of this part shall be uniform throughout the Federal Government.

§ 1508.2 Act.

Act means the National Environmental Policy Act, as amended (42 U.S.C. 4321, *et seq.*) which is also referred to as "NEPA."

§ 1508.3 Affecting.

Affecting means will or may have an effect on.

§ 1508.4 Categorical exclusion.

Categorical exclusion means a category of actions which do not individually or cumulatively have a significant effect on the human environment and which have been found to have no such effect in procedures adopted by a Federal agency in implementation of these regulations (§1507.3) and for which, therefore, neither an environmental assessment nor an environmental impact statement is required. An agency may decide in its procedures or otherwise, to prepare environmental assessments for the reasons stated in

§1508.9 even though it is not required to do so. Any procedures under this section shall provide for extraordinary circumstances in which a normally excluded action may have a significant environmental effect.

§ 1508.5 Cooperating agency.

Cooperating agency means any Federal agency other than a lead agency which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment. The selection and responsibilities of a cooperating agency are described in §1501.6. A State or local agency of similar qualifications or, when the effects are on a reservation, an Indian Tribe, may by agreement with the lead agency become a cooperating agency.

§ 1508.6 Council.

Council means the Council on Environmental Quality established by title II of the Act.

§ 1508.7 Cumulative impact.

Cumulative impact is 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.

§ 1508.8 Effects.

Effects include:

(a) Direct effects, which are caused by the action and occur at the same time and place.

(b) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

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Effects and impacts as used in these regulations are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.

§ 1508.9 Environmental assessment.

Environmental assessment:

(a) Means a concise public document for which a Federal agency is responsible that serves to:

(1) Briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact.

(2) Aid an agency's compliance with the Act when no environmental impact statement is necessary.

(3) Facilitate preparation of a statement when one is necessary.

(b) Shall include brief discussions of the need for the proposal, of alternatives as required by section 102(2)(E), of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted.

§ 1508.10 Environmental document.

Environmental document includes the documents specified in §1508.9 (environmental assessment), §1508.11 (environmental impact statement), §1508.13 (finding of no significant impact), and §1508.22 (notice of intent).

§ 1508.11 Environmental impact statement.

Environmental impact statement means a detailed written statement as required by section 102(2)(C) of the Act.

§ 1508.12 Federal agency.

Federal agency means all agencies of the Federal Government. It does not mean the Congress, the Judiciary, or the President, including the performance of staff functions for the President in his Executive Office. It also in-

cludes for purposes of these regulations States and units of general local government and Indian tribes assuming NEPA responsibilities under section 104(h) of the Housing and Community Development Act of 1974.

§ 1508.13 Finding of no significant impact.

Finding of no significant impact means a document by a Federal agency briefly presenting the reasons why an action, not otherwise excluded (§1508.4), will not have a significant effect on the human environment and for which an environmental impact statement therefore will not be prepared. It shall include the environmental assessment or a summary of it and shall note any other environmental documents related to it (§1501.7(a)(5)). If the assessment is included, the finding need not repeat any of the discussion in the assessment but may incorporate it by reference.

§ 1508.14 Human environment.

Human environment shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment. (See the definition of "effects" (§1508.8).) This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment.

§ 1508.15 Jurisdiction by law.

Jurisdiction by law means agency authority to approve, veto, or finance all or part of the proposal.

§ 1508.16 Lead agency.

Lead agency means the agency or agencies preparing or having taken primary responsibility for preparing the environmental impact statement.

§ 1508.17 Legislation.

Legislation includes a bill or legislative proposal to Congress developed by or with the significant cooperation and

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support of a Federal agency, but does not include requests for appropriations. The test for significant cooperation is whether the proposal is in fact predominantly that of the agency rather than another source. Drafting does not by itself constitute significant cooperation. Proposals for legislation include requests for ratification of treaties. Only the agency which has primary responsibility for the subject matter involved will prepare a legislative environmental impact statement.

§ 1508.18 Major Federal action.

Major Federal action includes actions with effects that may be major and which are potentially subject to Federal control and responsibility. Major reinforces but does not have a meaning independent of significantly (§1508.27). Actions include the circumstance where the responsible officials fail to act and that failure to act is reviewable by courts or administrative tribunals under the Administrative Procedure Act or other applicable law as agency action.

(a) 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 (§§1506.8, 1508.17). Actions do not include funding assistance solely in the form of general revenue sharing funds, distributed under the State and Local Fiscal Assistance Act of 1972, 31 U.S.C. 1221 *et seq.*, with no Federal agency control over the subsequent use of such funds. Actions do not include bringing judicial or administrative civil or criminal enforcement actions.

(b) Federal actions tend to fall within one of the following categories:

(1) Adoption of official policy, such as rules, regulations, and interpretations adopted pursuant to the Administrative Procedure Act, 5 U.S.C. 551 *et seq.*; treaties and international conventions or agreements; formal documents establishing an agency's policies which will result in or substantially alter agency programs.

(2) Adoption of formal plans, such as official documents prepared or approved by federal agencies which guide

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or prescribe alternative uses of Federal resources, upon which future agency actions will be based.

(3) Adoption of programs, such as a group of concerted actions to implement a specific policy or plan; systematic and connected agency decisions allocating agency resources to implement a specific statutory program or executive directive.

(4) Approval of specific projects, such as construction or management activities located in a defined geographic area. Projects include actions approved by permit or other regulatory decision as well as federal and federally assisted activities.

§ 1508.19 Matter.

Matter includes for purposes of part 1504:

(a) With respect to the Environmental Protection Agency, any proposed legislation, project, action or regulation as those terms are used in section 309(a) of the Clean Air Act (42 U.S.C. 7609).

(b) With respect to all other agencies, any proposed major federal action to which section 102(2)(C) of NEPA applies.

§ 1508.20 Mitigation.

Mitigation includes:

(a) Avoiding the impact altogether by not taking a certain action or parts of an action.

(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

(e) Compensating for the impact by replacing or providing substitute resources or environments.

§ 1508.21 NEPA process.

NEPA process means all measures necessary for compliance with the requirements of section 2 and title I of NEPA.

§ 1508.22 Notice of intent.

Notice of intent means a notice that an environmental impact statement will be prepared and considered. The notice shall briefly:

- (a) Describe the proposed action and possible alternatives.
- (b) Describe the agency's proposed scoping process including whether, when, and where any scoping meeting will be held.
- (c) State the name and address of a person within the agency who can answer questions about the proposed action and the environmental impact statement.

§ 1508.23 Proposal.

Proposal exists at that stage in the development of an action when an agency subject to the Act has a goal and is actively preparing to make a decision on one or more alternative means of accomplishing that goal and the effects can be meaningfully evaluated. Preparation of an environmental impact statement on a proposal should be timed (§1502.5) so that the final statement may be completed in time for the statement to be included in any recommendation or report on the proposal. A proposal may exist in fact as well as by agency declaration that one exists.

§ 1508.24 Referring agency.

Referring agency means the federal agency which has referred any matter to the Council after a determination that the matter is unsatisfactory from the standpoint of public health or welfare or environmental quality.

§ 1508.25 Scope.

Scope consists of the range of actions, alternatives, and impacts to be considered in an environmental impact statement. The scope of an individual statement may depend on its relationships to other statements (§§1502.20 and 1508.28). To determine the scope of environmental impact statements, agencies shall consider 3 types of actions, 3 types of alternatives, and 3 types of impacts. They include:

- (a) Actions (other than unconnected single actions) which may be:

(1) Connected actions, which means that they are closely related and therefore should be discussed in the same impact statement. Actions are connected if they:

- (i) Automatically trigger other actions which may require environmental impact statements.
- (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously.
- (iii) Are interdependent parts of a larger action and depend on the larger action for their justification.

(2) Cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement.

(3) Similar actions, which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography. An agency may wish to analyze these actions in the same impact statement. It should do so when the best way to assess adequately the combined impacts of similar actions or reasonable alternatives to such actions is to treat them in a single impact statement.

(b) Alternatives, which include: (1) No action alternative.

(2) Other reasonable courses of actions.

(3) Mitigation measures (not in the proposed action).

(c) Impacts, which may be: (1) Direct; (2) indirect; (3) cumulative.

§ 1508.26 Special expertise.

Special expertise means statutory responsibility, agency mission, or related program experience.

§ 1508.27 Significantly.

Significantly as used in NEPA requires considerations of both context and intensity:

(a) Context. This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific ac-

tion, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

(b) *Intensity*. This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:

(1) Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

(2) The degree to which the proposed action affects public health or safety.

(3) Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

(4) The degree to which the effects on the quality of the human environment are likely to be highly controversial.

(5) The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

(6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

(7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

(8) The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

(9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical

under the Endangered Species Act of 1973.

(10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

[43 FR 56003, Nov. 29, 1978; 44 FR 874, Jan. 3, 1979]

§ 1508.28 Tiering.

Tiering refers to the coverage of general matters in broader environmental impact statements (such as national program or policy statements) with subsequent narrower statements or environmental analyses (such as regional or basinwide program statements or ultimately site-specific statements) incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared. Tiering is appropriate when the sequence of statements or analyses is:

(a) From a program, plan, or policy environmental impact statement to a program, plan, or policy statement or analysis of lesser scope or to a site-specific statement or analysis.

(b) From an environmental impact statement on a specific action at an early stage (such as need and site selection) to a supplement (which is preferred) or a subsequent statement or analysis at a later stage (such as environmental mitigation). Tiering in such cases is appropriate when it helps the lead agency to focus on the issues which are ripe for decision and exclude from consideration issues already decided or not yet ripe.

VITAE

Kimberly Ann Hobin

Candidate for the Degree of

Master of Science

Thesis: CAN INCORPORATING BIODIVERSITY INTO ENVIRONMENTAL IMPACT STATEMENTS ENHANCE COMPLIANCE WITH THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

Major Field: Environmental Science

Biographical:

Personal Data: Born September 4, 1967 in Boston Massachusetts. Moved to Oklahoma in 1990. Married to Mitchell Spindel and has one child, Jacob, born March 29, 1995.

Education: Graduated from Clark University, Worcester, Massachusetts in 1989; received Bachelor of Arts in Environmental Technology and Biology. Completed the requirements for the Master of Science degree with a major in Environmental Science at Oklahoma State University in July 1995.

Experience: Research Technician in the Department of Physiological Sciences, College of Veterinary Medicine, Oklahoma State University, Stillwater, Oklahoma, 1992 to present. Conducted research in human fertility laboratory.