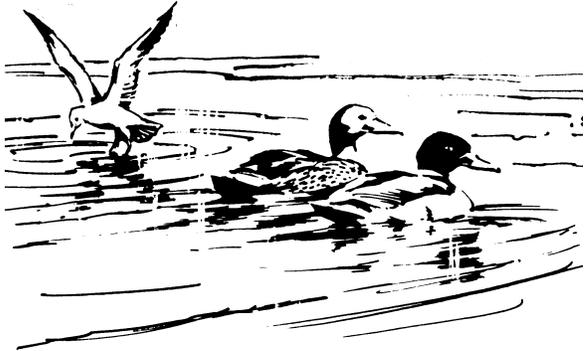


# Appendix A: Ecosystem Management



# A Appendix

## Ecosystem Management

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This appendix introduces and discusses the concept of ecosystem management as it relates to DOE stewardship of biological resources on lands that it administers. Section A.1 highlights federal policy development in regard to ecosystem management. Section A.2 describes in detail the background to and implementation of DOE-RL's approach to ecosystem management. The appendix concludes with brief overviews of a General Accounting Office review of federal ecosystem management efforts (Section A.3) and ecosystem/natural resource management planning at other DOE sites (Section A.4).

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## A.1 Policy Development in Regard to Ecosystem Management

On December 21, 1994, the Secretary of Energy (hereafter referred to as the Secretary) issued a departmental policy whose intent was to strengthen the stewardship of DOE lands.<sup>1</sup> The Land and Facility Use Policy states:

It is Department of Energy policy to manage all of its land and facilities as valuable national resources. Our stewardship will be based on the *principles of ecosystem management* (emphasis added) and sustainable development. We will integrate mission, economic, ecologic, social and cultural factors in a comprehensive plan for each site that will guide land and facility use decisions. Each comprehensive plan will consider the site's larger regional context and be developed with stakeholder participation. This policy will result in land and facility uses which support the Department's critical missions, stimulate the economy, and protect the environment.

Prior to the Secretary's policy statement, the Executive Office of the President had issued a report recognizing that federal land use planning should be organized around the concept of ecosystem management (NPR 1993). This report is the basis for the policy statement. The report also recommended that the president issue a directive that establishes a national policy to ensure sustainable ecosystems through ecosystem management (NPR 1993). These policy initiatives indicate the importance placed by the Executive Branch on having federal environmental policy reflect more of an ecological basis.

The DOE also has indicated their support for a more holistic approach to natural resource management by becoming a signatory to a Memorandum of Understanding (MOU), along with 13 other

federal agencies, that fosters an ecosystem approach. The policy portion of this MOU states:

The federal government should provide leadership in and cooperate with activities that foster the ecosystem approach to natural resource management, protection, and assistance. Federal agencies should ensure that they utilize their authorities in a way that facilitates, and does not pose barriers to, the ecosystem approach. Consistent with their assigned missions, federal agencies should administer their programs in a manner that is sensitive to the needs and rights of landowners, local communities, and the public, and should work with them to achieve common goals.<sup>2</sup>

In accordance with the MOU, each signatory agency was directed to examine the specific recommendations made in the report of the Interagency Ecosystem Management Task Force (IEMTF 1995) and identify those recommendations that may apply to its programs. Based on its review of these recommendations an agency could then undertake appropriate actions to implement the recommendations. The IEMTF made 31 specific recommendations grouped into the following areas of focus:

- improve federal agency coordination
- improve partnerships with non-federal stakeholders
- improve communication with the public
- improve resource allocation and management
- support the role of science
- improve information and data management
- increase flexibility for adaptive management.

Many of the IEMTF recommendations may be directly applicable to the implementation of the ecosystem (management) approach at Hanford.

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<sup>1</sup> Memorandum from H. R. O'Leary, Secretary of Energy, to Secretarial Officers and Operations Office Managers, dated December 21, 1994, Land and Facility Use Policy. See Attachment 1.

<sup>2</sup> Memorandum of Understanding to Foster the Ecosystem Approach between the Council of Environmental Quality, Department of Agriculture, Department of the Army, Department of Defense, Department of Energy, Department of Housing and Urban Development, Department of the Interior, Department of Justice, Department of Labor, Department of State, Department of Transportation, Environmental Protection Agency, and Office of Science and Technology Policy, dated December 15, 1995. See Attachment 2.

As a follow-on to the preceding policy initiatives, and in furtherance of its own stewardship responsibilities, DOE-RL has established its own biological resources protection policy that emphasizes an ecosystem management approach. The policy states:

It is the policy of the U.S. Department of Energy, Richland Operations Office to act as a responsible steward of the environment. This stewardship will be based on the principles of ecosystem management and sustainable development.<sup>3</sup>

## A.2 Department of Energy Approach to Ecosystem Management at Hanford

[Ecosystem management: a process that]

*...integrates scientific knowledge of ecological relationships within a complex sociopolitical and values framework toward the general goal of protecting native ecosystem integrity over the long term*

—Grumbine (1994).

The Executive Branch issued a report as part of a National Performance Review that stated: “It is self-evident that the federal government should do its utmost to ensure the sustainability of our human communities and the ecological systems upon which we depend.” (NPR 1993). Because too often, however, the federal government itself has contributed to the degradation of ecosystems, management approaches that can best integrate agency mission requirements with resource protection are vital. An evolving management strategy intended to accomplish the reconciliation of these often competing objectives is that of ecosystem management.

Although the concept of ecosystem management has yet to be uniformly defined or consistently applied by federal or state management agencies, consensus is developing (Grumbine 1994). Still, ecosystem management is not a panacea, and it has its detractors (for example, see Stanley 1995). Acceptance of ecosystem management will depend, in part, on the validity of its scientific underpinnings (ESA 1995).

In its simplest form, ecosystem management represents a proactive approach to federal environmental policy. Because of their vast land holdings and the nature of their activities that have the potential for significant impacts on the environment, federal agencies such as the Department of the Defense (DoD) and the DOE can make important contributions to sustaining healthy ecosystems by employing an ecosystem management approach (NPR 1993).

In 1994, the DoD issued a policy memorandum on the implementation of ecosystem management principles across the DoD complex.<sup>4</sup> Soon after, the Secretary followed with her policy statement on land and facility use that adopted ecosystem management as a governing principle. In an attempt to gain the benefits of a more holistic approach toward accomplishing its stewardship responsibilities for biological resources and in accordance with the Secretarial policy, DOE-RL will implement principles of ecosystem management. The purpose of this section is to define DOE-RL’s approach to ecosystem management at Hanford and to describe how this approach will be integrated into the different biological resource management activities covered under this plan.

Although there is, as yet, no overall consensus as to what ecosystem management is and what it should specifically accomplish, there is enough common ground to enable a description of the important elements that define it as a process. First, ecosystem management is a goal-driven approach to environmental management. Second, temporal and geographical scales and biological hierarchies of interest define the scope of management. Third, human values and their priorities help define what will be the desired social benefits of management actions. Fourth, partnerships among responsible government agencies and public interest groups are necessary for successful implementation.

With the above as a framework, it is possible to tailor the process of ecosystem management to fit site-specific needs and conditions. The approach to be taken for the application of ecosystem management at Hanford as it applies to biological

<sup>3</sup> See Attachment 3 for the complete text of the policy statement.

<sup>4</sup> Memorandum from S. W. Goodman, Deputy Under Secretary of Defense (Environmental Security) to Assistant Secretaries of the Army, Navy, and Air Force, dated August 8, 1994, Implementation of Ecosystem Management in the DoD.

resources will involve the following: (1) identification of the goal of ecosystem management, (2) identification of principles that will act as guidance for how the ecosystem management goal will be attained, and (3) identification of the management tools that will enable successful implementation of ecosystem management at Hanford.

### **A.2.1 Hanford's Ecosystem Management Goal**

The goal of ecosystem management at Hanford is to enable the accomplishment of DOE-RL's mission of: (1) cleaning up the Hanford Site, (2) providing scientific and technical excellence to meet global needs, and (3) partnering in the economic diversification of the region while at the same time preserving or enhancing over the long term the integrity of Hanford's ecosystem within its bioregional context. More specific biological resource management principles that taken together define what is meant by preserving or enhancing ecosystem integrity are identified in Section 2.2.2.

The three components of DOE-RL's mission could impact the integrity of the Hanford ecosystem in a number of ways. For example, remediation of past-practice waste sites could modify, both positively and, at least in the short-term, negatively, the environmental pathways through which a species's exposure to contaminants could occur. Moreover, the physical disturbance caused as a result of remediation could have significant impacts on plants, fish, and wildlife and their habitats. Additionally, site development that results from technology development and economic diversification also could have significant impacts on species and their habitat. These impacts are not only site-specific; cumulative impacts resulting from aggregated habitat loss and associated fragmentation of what remains could threaten ecosystem integrity. Thus, the preceding environmental stressors need to be addressed in any ecosystem management strategy whose intent is to preserve ecosystem integrity.

The basic assumption embodied in the above ecosystem management goal is that Hanford's missions and its associated activities are sustainable within an ecological context. Although sustainability is often used in the context of appropriately managing the exploitation of renewable resources to ensure

their availability for future generations, sustainability here means that DOE-RL will conduct its mission activities in such a manner that ecosystem integrity is not adversely impacted. The challenge of ecosystem management at Hanford is to provide the policies, principles, and resources necessary to achieve sustainability.

The other important elements of the goal statement relate to the temporal and spatial scales over which management is considered. Insofar as recognizing that choosing the appropriate scale is an important principle of ecosystem management, it will be mentioned here only briefly; the concept will be discussed more in depth in the following section. The salient points are that ecosystem management at Hanford must look beyond the Site's borders to understand the ecological context in which Hanford's biological resources exist, and it must consider ecosystem integrity over longer time scales than previously considered.

### **A.2.2 Principles of Ecosystem Management at Hanford**

Identified and described below are DOE-RL's ecosystem management principles. They form the basis for biological resource management at Hanford.

1. **Hierarchical Context**—All levels of the biodiversity hierarchy (i.e., genes, species, populations, ecosystems, and landscapes) and their connections are important. Populations and species requiring specific management needs, such as threatened and endangered species, will continue to be addressed. In addition, DOE-RL intends to focus increased attention on the overall integrity of the Hanford ecosystem and its connectivity to the surrounding landscape.
2. **Ecological Boundaries**—Under an ecosystem management approach, it is vital to set management goals and methods at scales, both spatially and temporally, that are compatible with natural processes, achieve management optima (Lackey 1996), and reflect local, regional, and national resource values. The correct scale to consider may differ with the particular management problem to be addressed. Importantly, the appropriate scale over which ecological information is needed and should be evaluated to make management decisions will more than likely not coincide with administrative and political boundaries.

3. Ecosystems are Limited in their Ability to Accommodate Stress—To continue to provide desired social benefits, an ecosystem and each of its integral parts must over the long term continue to function. There are, without question, limitations on how far an ecosystem, a species, or any level of the ecological hierarchy can be stressed before irreparable injury will be caused (Lackey 1996). Thus, ecosystem management assumes that not all activities are sustainable. Societal desire to continue certain actions must be balanced against the real threat to ecosystem integrity. If ecosystem integrity is an important social value, then management actions must be conservative: i.e., the benefit of the doubt is given to the resource rather than to development (Kaufmann et al. 1994).

4. Role of Human Values and Priorities and their Dynamic Nature—Within the framework of an ecosystem management approach, human values will determine the overall ecosystem management goal and the specific biological resource management goals that are its derivatives. Ecosystem management, for better or worse, is still based on an anthropocentric viewpoint (Stanley 1995). The missions of DOE-RL will reflect those missions that society deems to be of the greatest social benefit. These missions are not necessarily static. As society changes the priority it places on the benefits it wants from Hanford, the state necessary for the Hanford ecosystem to provide these benefits may change as well. For ecosystem integrity to take precedence over all other missions, humans have to make that choice.

5. Partnerships—Because ecosystem management is based on ecological boundaries, and not administrative or political boundaries, and because ecosystem management must account for a myriad, and often conflicting number, of human values and desired social benefits, it will be best accomplished at Hanford by DOE-RL forming collaborative partnerships with other federal agencies, state, Tribal, and local governments, non-government entities, private landowners, and the general public. Together these entities can decide what they desire to be the future state of the Hanford ecosystem, what social benefits they want it to provide, and how much importance they want to place on its long-term integrity. Additionally, an informed and involved public can provide valuable input to the ecosystem management process.

6. Scientific Information—Ecosystem management at Hanford will be based on the best science available. To the extent that the focus of management efforts will change, new (and perhaps more) information and new ways of looking at this information will have to be used. A new approach also could involve a change in the types of scientific data collected and in the kinds of research conducted. Research topics such as the effects of fragmentation, habitat classification schemes, and the dynamics of disturbance regimes at different scales may take on increased importance. Data sharing among agencies will have to be increased. Management of existing and new data also may need to be improved. Most importantly, the tendency to assume that science and technology can provide all the answers, and by so doing provide the illusion that ecosystem integrity can be maintained in the face of any environmental stressor, must be avoided. Science and technology have their limitations, and it follows that an important principle of ecosystem management is to acknowledge uncertainty and apply caution to management decisions.

7. Adaptive Management—Ecosystems and the expectations humans place on their services are dynamic. As such, management must be adaptive. Adaptive management focuses on management as a learning process and recognizes the provisional nature of scientific knowledge (Grumbine 1994). Management must remain flexible to: (1) incorporate new information and the lessons learned from previous management actions, (2) account for the complexity of ecosystem structure and function, and (3) allow for uncertainty (Grumbine 1994). Management actions should be reviewed on a regular basis and adjustments made as necessary.

8. Organizational Change—Effective implementation of ecosystem management may require changes in organizational structure and relationships as well as changes in the manner in which organizations operate.

9. Humans as a Part of the Ecosystem—People are a part of the ecosystem they inhabit (Grumbine 1994). By their activities, humans can have enormous impacts on ecosystem components, their function, and their interrelationships. Importantly, however, humans are in turn affected by their environment. What sort of environment (quality of life) humans want is, in part, dictated by how humans treat their environment.

10. Integration—Ecosystem management can be effectively implemented only if it is incorporated site- and program-wide as the way of doing business. The goals and objectives of ecosystem management (here as they relate principally to biological resources) need to be an integral part of Hanford’s strategic planning, project planning, and budget decisions if any measure of success is expected to be achieved. Adoption of ecosystem management across the board can prevent duplication of effort, minimize inconsistencies, and create efficiencies for programs that will impact ecosystems.

### A.2.3 Tools of Ecosystem Management at Hanford

The preceding discussion of principles helps to define and bound the process of ecosystem management. The principles also provide operational meaning. From these principles, the tools of ecosystem management can be derived and so provide substance (i.e., tangible outcomes) as well as process. The tools described below will be integrated, as applicable, into the management strategy for each biological resource management component.

1. Data Collection and Management—Data collection will need to focus on those areas that are necessary to support the biological resource management goals (those goals that when met combine to achieve the preservation or enhancement of ecosystem integrity) identified in Section 2.2.2. This includes continuing the process of inventorying Hanford’s biological resources. Inventory of biological resources is covered in Chapter 6.0 of BRMaP. Data collection may result in the collection of different types of data from that previously collected. Thus, data management will have to accommodate these new types of data, as well as the new ways in which existing data may be used and retrieved. Data management is described in Chapter 9.0.

2. Impact Assessment—The assessment of the potential and realized impacts of Hanford activities on biological resources will continue to be under ecosystem management an important component of overall biological resources management. Impact assessment is necessary both to ensure regulatory compliance and to maintain stakeholder and public confidence in DOE-RL’s stewardship of public resources. Impact assessment is covered in Chapter 5.0.

3. Monitoring—An effective monitoring program will be a key component to the successful implementation of ecosystem management at Hanford. Monitoring creates a feedback loop that enables the results of management actions to be evaluated and, when necessary, corrected. Adaptive management is not possible without monitoring. An effective monitoring program monitors those resources whose status provides an indication of not only their individual viability but also the overall integrity of the Hanford ecosystem. To be effective, monitoring must be a long-term enterprise. It complements impact assessment and also replaces it when it is necessary to determine what the actual impacts from a project are after its completion and during its operational life. Moreover, monitoring enables an evaluation of the effects of cumulative impacts on biological resources. Long-term monitoring also is important for determining the success of mitigation actions. Monitoring is covered in Chapter 6.0.

4. Timely Use of Biological Resource Data—Consideration of biological resource values will need to be made an integral part of the decision process that determines the location, timing, and extent of Hanford Site remediation and development actions. In many cases, biological resources values may not take precedence. To avoid or minimize not only resource impacts, but also cost and schedule impacts, it is imperative in all cases, including when resources values are not the prime consideration, to at least bring resource information to bear early in the planning phases of a project.

Integration of the biological resource information and management framework provided within BRMaP with the *Final Hanford Comprehensive Land-Use Plan Environmental Impact Statement (HCP EIS)* (DOE 1999) and the project site selection process will facilitate this timely use of biological resource data (see Section 1.2). Chapter 4.0 identifies Hanford’s biological resources of concern and a framework for their management. Chapter 5.0 describes the procedures by which biological resource impacts will be avoided or minimized during remedial and developmental activities at Hanford.

5. Mitigation Hierarchy—Mitigation is a series of prioritized actions that, when accomplished in full, ensures that a project will not have a net adverse effect on a particular biological resource. The key to minimizing the cost of mitigation and the uncertainty associated with the success of complex mitigation actions is to follow the hierarchy. Avoid is

always preferred over minimize, minimize is preferred over rectification, and so on. Mitigation is covered in Chapter 5.0.

6. Focus on the Appropriate Level of the Biodiversity Hierarchy—All levels of the biodiversity hierarchy have value. Still, management resources will always be limited. An ecosystem management approach, though still cognizant that some individual species require specific management attention, shifts the focus to higher levels of the hierarchy when it is efficient to do so. Ultimately, the particular management problem will dictate the level at which attention is placed. Management strategies that address habitat and other landscape-level concerns are covered in Chapter 7.0. Species management is covered in Chapter 8.0.

7. Performance Standards—As described in Section 2.2.2, each biological resource management goal should include as part of its implementation strategy specific objectives. Each objective should be referable to measurable biological benchmarks against which the success of management actions can be compared. The effectiveness of an adaptive management strategy relies on clearly defining the desired outcomes of management actions, tailoring a monitoring strategy that measures performance against these outcomes, and providing flexibility when outcomes dictate a change in management direction.

8. Organizational Changes—As an aid to the implementation of ecosystem management at Hanford, DOE-RL recently created an organizational structure that focuses the responsibility for site- and program-wide natural resource (biological, cultural, groundwater) management policy development within a Analytical Services and Natural Resources Team. This team is located organizationally within the Office of Site Services. Chapter 3.0 provides an overview of the organizational relationships that are germane to the administration of BRMaP. To further aid implementation, DOE-RL established an internal (DOE-RL and contractor) advisory board that is charged with the responsibility to help the Natural Resources Team ensure consistent and effective implementation of DOE-RL's biological resource management policies and direction and to assist team staff in addressing unforeseen management problems.

Interaction between DOE-RL programs and their contractor support with the Natural Resources Team and the advisory board will be encouraged to address issues of concern to the programs and

to facilitate implementation. Other changes in organizational structure, relationships, or manner of operation that may facilitate ecosystem management at Hanford are possible and may need to be considered as an outcome of the implementation of BRMaP. For example, encouraging the participation of federal and state resource agencies on an external advisory board also is a possibility.

### **A.3 General Accounting Office Review of Federal Ecosystem Management Efforts**

In response to a Congressional request, the U.S. General Accounting Office (GAO) initiated a review of ecosystem management efforts at the federal level (GAO 1994). The GAO focused its study on (1) the status of federal initiatives to implement ecosystem management, (2) additional actions necessary to implement the approach, and (3) barriers to its implementation government-wide. As a result of its study, the GAO found that the primary federal land management agencies (Bureau of Land Management, Fish and Wildlife Service, Forest Service, National Park Service) are beginning to implement an ecosystem approach to resource management; however, the GAO also found that, in spite of these efforts, additional actions must be taken and barriers must be overcome to realize government-wide implementation of ecosystem management.

In order for an agency to implement ecosystem management at the field level, the agency must clarify its policy goals and take practical steps at applying the principles of ecosystem management (GAO 1994). These practical steps include:

- delineating geographic areas to be managed as ecosystems
- understanding the ecology of the ecosystems
- making resource management choices
- using adaptive management principles (GAO 1994).

Even when taking these necessary steps, federal agencies are expected to face additional barriers in implementing ecosystem management. These barriers are mostly expressed as difficulties in coordination among varying levels of agencies (local, state, federal) with different incentives, authorities, and missions (GAO 1994).

Although not considered in the GAO report to be a primary federal land management agency, DOE has announced a policy of land stewardship based on the principles of ecosystem management (see Section A.1). Indeed, DOE has taken both the policy action identified by the GAO and the practical steps. The four practical steps outlined above are often best realized through the creation of field-level management plans. Across the DOE complex, such plans have been and are currently being written.

## **A.4 Natural Resource Management Planning at Other DOE Sites**

The DOE has embraced the concept of ecosystem management as a means of managing its lands and resources, and though as a “non-resource management agency,” it is proceeding cautiously with implementation, it is moving ahead with creating the building blocks necessary to implement the concept.<sup>5</sup> Individual DOE sites have achieved quite different levels of implementation in regard to ecosystem management let alone traditional natural resource management. A few case studies, and DOE’s system of National Environmental Research Parks (NERP) are described below.

### **A.4.1 National Environmental Research Parks**

The siting of many of the DOE facilities has resulted in a selection process that could have been used to select a network of ecological experimental research sites. Many of the sites contain lands that have been relatively undisturbed since they were set aside as security buffer zones and environmental monitoring areas at the beginning of the Manhattan Project. These sites serve as 50-year-old ecosystem baseline sites against which changes in environmental quality can be compared.<sup>5</sup>

The NERP Program was established by DOE in the 1970s to set aside land for ecosystem preservation and study and for environmental education (DOE 1994). Eventually a system of seven ecosystem sanctuaries was established; some of these land holdings represent the last remaining large remnants

of the original surrounding ecosystem (DOE 1994). The seven NERPs are:

- Fermilab NERP
- Hanford NERP
- Idaho NERP
- Los Alamos NERP
- Nevada NERP
- Oak Ridge NERP
- Savannah River NERP.

One of DOE’s broad mission goals is to provide the technical information and the scientific and educational foundation necessary to achieve improved environmental quality (DOE 1994). Environmental and ecological research at the seven NERP sites supports this mission goal as well as indirectly supporting other mission goals. Although execution of program missions of DOE sites must be ensured, ongoing environmental research projects and protected natural areas must be given careful consideration in any site-use decisions within a NERP (DOE 1994, Appendix: Charter for the National Environmental Research Parks).

### **A.4.2 Fernald Environmental Management Project**

The Fernald Environmental Management Corporation is preparing a natural resource management plan for the Fernald Environmental Management Project (FEMP) site that was still in draft as of November 1994. In addition to supporting the FEMP site’s environmental protection and resource management missions, the natural resource management plan also is intended to be a support document for future CERCLA, NEPA, and natural resource trusteeship activities.

The natural resource management plan is part of an overall resource management strategy for the FEMP site. The strategy includes: (1) establishing and maintaining natural resource characterization data, (2) developing and implementing the plan, (3) recommending avoidance/mitigation measures, (4) monitoring resource conditions, and (5) ensuring actions are taken to protect or enhance natural resources. The natural resource management plan

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<sup>5</sup> W. S. Osburn, Jr., U.S. DOE, Office of Energy Research, personal communication, 1996.

itself includes one section for each of the major categories of natural resources to be managed at the FEMP site. Each of these sections includes (1) a discussion of the regulatory drivers applicable to the management of the resource, (2) a detailed description of the natural resource, (3) overall management objectives applicable to each natural resource, and (4) the specific management plan to be implemented to meet the management objectives.

### A.4.3 Nevada Test Site

The Nevada Test Site (NTS) is in the early stages of preparing a resource management plan in response to the Secretary's policy statement. The resource management plan is the first step toward improving land-use and resource management planning on the NTS. The primary goal of the resource management plan is to develop a land-use planning process for the NTS that will ensure long-term diversity and productivity of ecosystems and sustainable use of NTS land and facilities. This goal will be pursued through applying the principles of ecosystem management.

As part of developing and implementing the resource management plan, DOE's Nevada Operations Office is considering the following eight steps:

1. Review existing information and identify resources.
2. Develop management goals for resources. This step includes identifying management issues and constraints associated with each resource.
3. Identify management actions that will be undertaken during land-use planning and resource management to meet the goals established in step two.
4. Collect, analyze, and summarize data needed to implement the management actions identified in step three.
5. Focus on developing land-use planning tools for spatial analysis of resource data. These tools will include GIS models, other mapping tools, and land-use classification systems.
6. Use the resource management plan in the selection and design of new projects to evaluate the impacts of those activities on the ecosystems and resources of the NTS. This step will involve consideration of mitigation measures and alternatives to proposed actions.

7. Focus on resource monitoring and adaptive management.
8. Update the resource management plan every several years.

### A.4.4 Oak Ridge Reservation

The DOE's Oak Ridge Reservation (ORR) has developed a resource management plan to assist planners in the resource management decision-making process (ORNL 1984–1992). Resources under the plan are viewed broadly and, thus, are not limited to natural resources. The resource management plan evolved as the mechanism for reviewing proposed activities within a framework that balances the preservation, conservation, consumption, and enhancement of the Reservation's resources.

The planning framework underlying the resource management plan is intended to: (1) develop and maintain a resource information data base, (2) establish and use a problem-solving system to handle conflicts between resources and their uses while maintaining multiple-use criteria for resources, and (3) develop a means for assessing planned actions with the aim of ensuring protection of vulnerable or irreplaceable resources.

The resource management plan was organized by identifying individual resource categories. A resource plan was prepared for each category. In general, each individual resource plan includes (1) an inventory and characterization of the resource, (2) specific management plans for the resource, and (3) an identification and description of any interrelationships with other resources. It is intended that each of the resource plans would be reviewed and updated annually and the overall reviewed and revised every 5 years.

Through its 28 volumes, the ORR resource management plan contains information on all ORR resources, as well as recommendations for their continued management. The plan also describes the establishment of a permanent resource management structure that can respond quickly to administrative needs and coordinate and integrate the functions of individual resource management groups.

#### A.4.5 Savannah River Site

The Savannah River Site (SRS) natural resources management program began as a massive reforestation effort in the early 1950s that ultimately converted 80,000 acres of abandoned fields and fallow farmlands into pine forests. Over the years, management attention expanded to include such activities as wildlife management, fire suppression, boundary maintenance, soil stabilization, timber management, and cultural and ecological research. A Natural Resources Coordinating Committee, composed of federal and state agencies, contractors, and other entities, provide information and management recommendations to DOE Savannah River Operations Office (DOE-SR). Some of the organizations that sit on the committee share some of the operational responsibility for various aspects of natural resource management at SRS.<sup>6</sup>

In 1991 DOE prepared and implemented a natural resource management plan for the SRS to foster environmental protection and responsible stewardship of the SRS's resources (DOE 1991). The natural resource management plan provides the strategy and policy framework for natural resource management activities on the SRS. As such, it is an umbrella document under which other management and research program plans are prepared. The natural resource management plan is the strategic guidance that ensures compliance with (then) DOE Orders 4300.1C, "Real Property and Site Development Planning" and 5400.1, "General Environmental Protection" (DOE-SR 1993).

Within the natural resource management plan is a description of the individual resource management programs in place on the SRS. Following the policy theme of the management plan as a whole, the sections describing the individual resource programs provide the objectives, strategies, and policies pertaining to each resource. Under this policy direction, management plans are prepared for each resource (e.g., a fish and wildlife management operations plan). The SRS natural resource management plan integrates soils, water, plant conservation, fish, wildlife, threatened and endangered species, and forest management and reforestation needs in the development and uses of the SRS (DOE-SR 1993).

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**The Secretary of Energy**  
Washington, DC 20585

December 21, 1994

MEMORANDUM FOR SECRETARIAL OFFICERS  
AND OPERATIONS OFFICE MANAGERS

FROM: HAZEL R. O'LEARY *Hazel R. O'Leary*

SUBJECT: Land and Facility Use Policy

Today, I issued an innovative Departmental policy that strengthens the stewardship of our vast lands and facilities and encourages the return of some of these national resources to their rightful owners -- the American public. The policy will stimulate local economies, cut costs and redtape, and ensure public participation in our planning processes. The new policy states:

It is Department of Energy policy to manage all of its land and facilities as valuable national resources. Our stewardship will be based on the principles of ecosystem management and sustainable development. We will integrate mission, economic, ecologic, social and cultural factors in a comprehensive plan for each site that will guide land and facility use decisions. Each comprehensive plan will consider the site's larger regional context and be developed with stakeholder participation. This policy will result in land and facility uses which support the Department's critical missions, stimulate the economy, and protect the environment.

The new policy is highlighted in the attached book, *DEPARTMENT OF ENERGY - STEWARDS OF A NATIONAL RESOURCE*. The book describes how we are changing the way we manage our lands and facilities. It also describes some of our recent successes in finding new uses for our surplus land and facilities. These successes range from new leases at the former Mound facility and the use of an idle reactor for brain cancer treatment at the Idaho National Engineering Laboratory to the creation of an urban park adjacent to our headquarters and the development of the National Wind Technology Center at the Rocky Flats plant. The book provides information about our major sites and contact numbers for each public affairs office. It encourages businesspeople, public officials, citizen organizations, and our site neighbors to provide their ideas for new site and facility uses.

This new policy has already undergone the initial directives review process and will be incorporated in the Department's broader Corporate Facilities Management Directive initiative that I have commissioned to respond to the National Performance Review.

I know you share my excitement about the opportunities we have in finding new uses for our lands and facilities. I look forward to working with you to fulfill the responsibility entrusted to us by the citizens of the United States for managing these valuable national resources.

## Attachment 2

### MEMORANDUM OF UNDERSTANDING TO FOSTER THE ECOSYSTEM APPROACH

between the

COUNCIL ON ENVIRONMENTAL QUALITY  
DEPARTMENT OF AGRICULTURE  
DEPARTMENT OF THE ARMY  
DEPARTMENT OF COMMERCE  
DEPARTMENT OF DEFENSE  
DEPARTMENT OF ENERGY  
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT  
DEPARTMENT OF THE INTERIOR  
DEPARTMENT OF JUSTICE  
DEPARTMENT OF LABOR  
DEPARTMENT OF STATE  
DEPARTMENT OF TRANSPORTATION  
ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF SCIENCE AND TECHNOLOGY POLICY

#### I. DEFINITIONS

An *ecosystem* is an interconnected community of living things, including humans, and the physical environment within which they interact.

*The ecosystem approach* is a method for sustaining or restoring ecological systems and their functions and values. It is goal driven, and it is based on a collaboratively developed vision of desired future conditions that integrates ecological, economic, and social factors. It is applied within a geographic framework defined primarily by ecological boundaries.

*The goal of the ecosystem approach* is to restore and sustain the health, productivity, and biological diversity of ecosystems and the overall quality of life through a natural resource management approach that is fully integrated with social and economic goals.

#### II. POLICY

The federal government should provide leadership in and cooperate with activities that foster the ecosystem approach to natural resource management, protection, and assistance. Federal agencies should ensure that they utilize their authorities in a way that facilitates, and does not pose barriers to, the ecosystem approach. Consistent with their assigned missions, federal agencies should administer their programs in a manner that is sensitive to the needs and rights of landowners, local communities, and the public, and should work with them to achieve common goals.

### III. BACKGROUND

In its June 1995, report entitled, *The Ecosystem Approach: Healthy Ecosystems and Sustainable Economies*, the Interagency Ecosystem Management Task Force set forth specific recommendations with respect to how federal agencies could better implement the ecosystem approach. The Task Force recommended that member agency representatives sign a memorandum of understanding affirming their intent to implement the recommendations.

### IV. THE ECOSYSTEM APPROACH

Healthy and well functioning ecosystems are vital to the protection of our nation's biodiversity, to the achievement of quality of life objectives, and to the support of economies and communities. The ecosystem approach recognizes the interrelationship between healthy ecosystems and sustainable economies. It is a common sense way for federal agencies to carry out their mandates with greater efficiency and effectiveness. The approach emphasizes:

- Striving to consider all relevant and identifiable ecological and economic consequences (long term as well as short term).
- Improving coordination among federal agencies.
- Forming partnerships between federal, state, and local governments, Indian tribes, landowners, foreign governments, international organizations, and other stakeholders.
- Improving communication with the general public.
- Carrying out federal responsibilities more efficiently and cost-effectively.
- Basing decisions on the best science.
- Improving information and data management.
- Adjusting management direction as new information becomes available.

### V. THE COOPERATORS AGREE TO THE FOLLOWING:

- A. Each federal agency that is a party to this Memorandum of Understanding shall designate an individual who will be responsible for coordinating the agency's internal and interagency activities in support of this Memorandum of Understanding to implement the recommendations of the Task Force report as appropriate. Such designation shall be reported to the Interagency Ecosystem Management Task Force within 30 days of signature. The collective agency designees will serve as an Implementation Committee. The Committee will

## Attachment 2

meet regularly to share information on progress in implementing this Memorandum of Understanding, problems encountered, and solutions proposed in resolving them. The Committee shall provide reports at meetings of the Interagency Ecosystem Management Task Force. Such reports should include any unresolved issues that may require the attention of the Task Force.

- B. Each signatory agency shall examine the specific recommendations made in the report of the Interagency Ecosystem Management Task Force in light of its authorities, policies and procedures, and identify recommendations that may apply to its programs. Based on this review, agencies shall determine what changes or interagency actions are necessary or desirable, undertake appropriate actions, monitor accomplishments, and report their findings and actions through the Implementation Committee to the Interagency Ecosystem Management Task Force, on a schedule to be determined by the Task Force.
- C. The Interagency Ecosystem Management Task Force shall encourage regional directors or comparable executives of the federal agencies in the various regions to have regular and systematic exchanges of information about plans, priorities, and problems. The purposes are to eliminate inefficiencies and duplication of effort, to keep executives informed about federal government activities outside of their agencies, to clarify the respective contributions to ecosystem activities of federal agencies with varying missions (such as land management, resource management, regulatory, research, infrastructure, technical assistance, and funding), and to strengthen executive-level support for the interagency ecosystem activities of field personnel.
- D. Each signatory agency shall participate, as appropriate to its mandates, in ecosystem management efforts initiated by other federal agencies, by state, local or tribal governments, or as a result of local grass-roots efforts. Members of the Implementation Committee shall identify their ongoing ecosystem efforts and other efforts that come to their attention, share information about those efforts, discuss appropriate agency actions with regard to participating in those efforts, and identify successful and unsuccessful components of those efforts. Signatory agencies shall also look for opportunities in new geographic areas for federal efforts in collaboration with stakeholders.
- E. The Interagency Ecosystem Management Task Force will propose, as appropriate, new regional ecosystem demonstration initiatives. These initiatives will build upon the knowledge gained from evaluating the seven ecosystems that were the subject of the Task Force reports.
- F. The Interagency Ecosystem Management Task Force will evaluate the potential for joint training programs for the ecosystem approach, in which all signatory

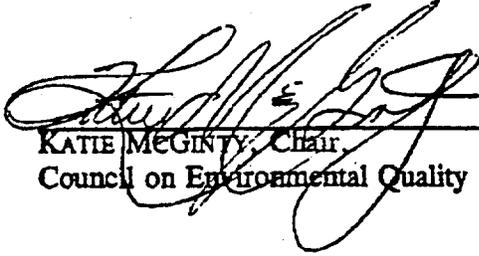
agencies could participate, and in which personnel from all signatory parties could receive training. The Implementation Committee members will share information on agency training programs related to the ecosystem approach, and signatory agencies are encouraged to accommodate trainees from other agencies in such courses as appropriate.

**VI. IT IS MUTUALLY AGREED AND UNDERSTOOD BY AND AMONG THE COOPERATORS THAT:**

- A. Specific work projects or activities that involve the transfer of funds, services, or property among the Cooperators will require the execution of separate interagency agreements, contingent upon the availability of funds as appropriated by Congress. Each subsequent agreement or arrangement involving the transfer of funds, services, or property among the Cooperators must comply with all applicable statutes and regulations, including those statutes and regulations applicable to procurement activities, and must be independently authorized by appropriate statutory authority.
- B. This Memorandum of Understanding in no way restricts the Cooperators from participating in similar activities or arrangements with other public or private agencies, organizations, or individuals.
- C. Nothing in this Memorandum of Understanding shall obligate the Cooperators to expend appropriations or enter into any contract or other obligations.
- D. This Memorandum of Understanding may be modified or amended upon written request of any party hereto and the subsequent written concurrence of all of the Cooperators. Cooperator participation in this Memorandum of Understanding may be terminated with the 60-day written notice of any party to the other Cooperators. Unless terminated under the terms of this paragraph, this Memorandum of Understanding will remain in full force and in effect until September 30, 1999.
- E. This Memorandum of Understanding is intended only to improve the internal management of the executive branch and is not intended to, nor does it create any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity by a party against the United States, its agencies, its officers, or any person.
- F. The terms of this Memorandum of Understanding are not intended to be enforceable by any party other than the signatories hereto.

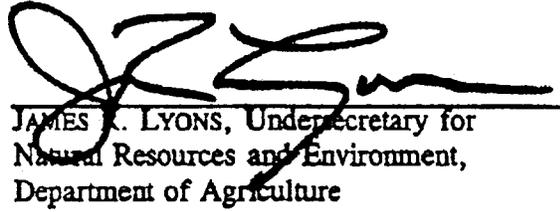
## Attachment 2

### VII. SIGNATURES



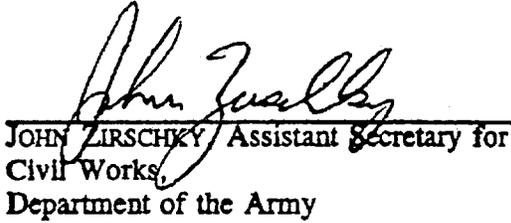
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KATIE MCGINTY, Chair  
Council on Environmental Quality



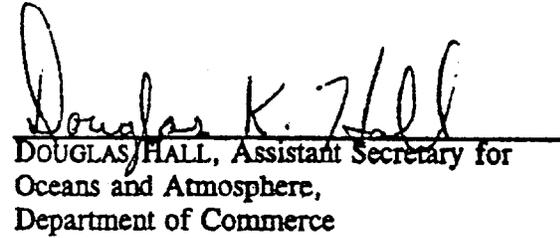
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JAMES K. LYONS, Undersecretary for  
Natural Resources and Environment,  
Department of Agriculture



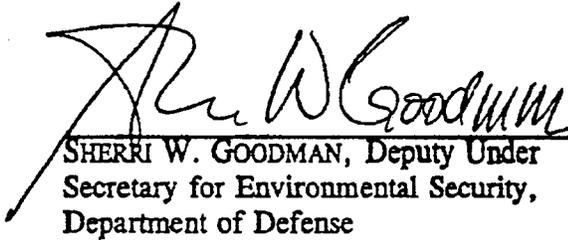
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JOHN ZIRSCHKY, Assistant Secretary for  
Civil Works,  
Department of the Army



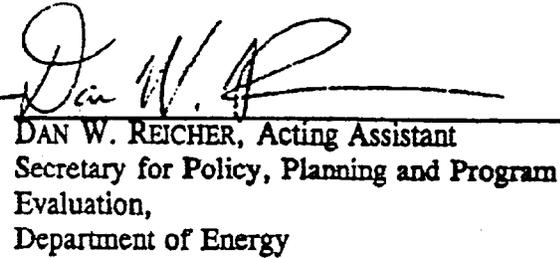
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DOUGLAS K. HALL, Assistant Secretary for  
Oceans and Atmosphere,  
Department of Commerce



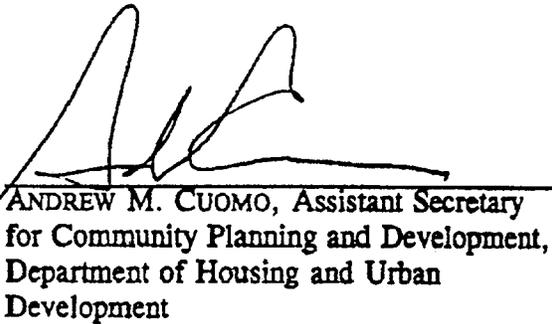
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SHERRI W. GOODMAN, Deputy Under  
Secretary for Environmental Security,  
Department of Defense



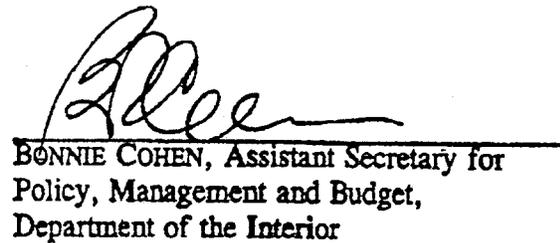
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DAN W. REICHER, Acting Assistant  
Secretary for Policy, Planning and Program  
Evaluation,  
Department of Energy



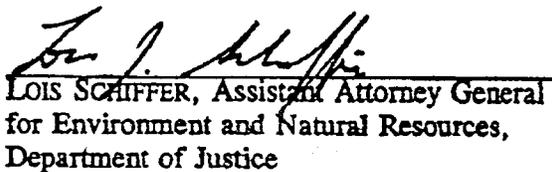
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ANDREW M. CUOMO, Assistant Secretary  
for Community Planning and Development,  
Department of Housing and Urban  
Development



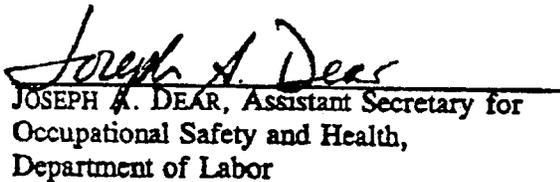
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BONNIE COHEN, Assistant Secretary for  
Policy, Management and Budget,  
Department of the Interior



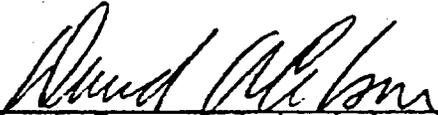
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LOIS SCHIFFER, Assistant Attorney General  
for Environment and Natural Resources,  
Department of Justice

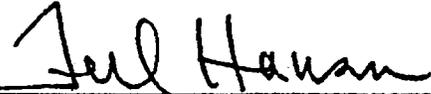


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JOSEPH A. DEAR, Assistant Secretary for  
Occupational Safety and Health,  
Department of Labor

  
\_\_\_\_\_  
DAVID A. COLSON, , Acting Assistant  
Secretary for Oceans and International  
Environmental and Scientific Affairs,  
Department of State

  
\_\_\_\_\_  
FRANK KRIVESI, Assistant Secretary for  
Transportation Policy,  
Department of Transportation

  
\_\_\_\_\_  
FRED HANSEN,  
Deputy Administrator  
Environmental Protection Agency

  
\_\_\_\_\_  
JACK GIBBONS, Director,  
Office of Science and Technology Policy

Dated: December 15, 1995

# Attachment 3



## ENVIRONMENTAL POLICY

It is the policy of the Department of Energy Richland Operations Office (RL) to act as a responsible steward of the environment. This stewardship will be based on the principles of ecosystem management and sustainable development. Protection of the environment and of the public health is the primary consideration in all RL activities. Environmental, mission, and financial stewardship are integrated into the planning and execution of work.

To foster the stewardship, RL will:

- Consider the impacts of all its activities on the environment;
- Work together with its contractors, regulators, stakeholders, and the Indian Tribes to carry out this policy;
- Adopt cost-effective practices that eliminate or minimize negative environmental impacts;
- Manage programs and projects in a way that prevents pollution and is protective of the environment and public health;
- Define, prioritize and mitigate existing environmental problems; and
- Anticipate and address potential future environmental problems before they pose a threat.

All Hanford employees will be responsible environmental stewards by:

- Ensuring that Hanford operations are carried out in an environmentally sound manner that limits risks to the environment and protects the public health;
- Integrating environmental considerations into their daily work and aggressively striving to comply with the applicable regulations that address the natural, archeological, cultural, historical, public health, and social environment;
- Carrying out the work that they are responsible for in a cost-effective manner consistent with this policy and in compliance with regulatory and permit requirements;
- Seeking out and integrating pollution prevention, resource conservation, waste minimization and environmental impact considerations into all planning, decision-making, and work conducted;
- Looking for opportunities to improve environmental management;
- Promptly reporting environmental incidents and deficiencies that they observe; and
- Utilizing alternative nontoxic materials and altering practices to minimize the use and release of hazardous materials to the environment.

  
John D. Wagoner, Manager  
Richland Operations Office  
John D. Wagoner, Manager  
Richland Operations Office

  
Paul W. Kruger, Director  
Office of Environment, Safety and Health  
Paul W. Kruger, Director  
Office of Environment, Safety and Health

  
James E. Rasmussen, Director  
Environmental Assurance, Permits and Policy Division  
James E. Rasmussen, Director  
Environmental Assurance, Permits and Policy Division

[Hanford Home Page](#)

For questions or comments, please send email to [RL-ESH@rl.gov](mailto:RL-ESH@rl.gov)  
URL: <http://www.hanford.gov/esh/policies/policy-env.htm>  
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