

Appendix 10

Implementation Framework

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Key Terms Used in This Section

Adaptive Management - A type of natural resource management in which decisions are made as part of an on-going process. Adaptive management involves testing, monitoring, evaluation, and incorporating new knowledge into management approaches based on scientific findings and the needs of society. Results are used to modify management policy. *(Note: this definition differs from that sometimes used in scientific literature.)*

Regional Executives - A group representing the federal agency offices within the project area that provide guidance and direction to the Interior Columbia Basin Ecosystem Management Project (ICBEMP). They include: Bureau of Land Management (BLM) state directors, Forest Service regional foresters, Forest Service research station directors, regional director of the U.S. Fish and Wildlife Service, and regional administrators of the National Marine Fisheries Service and Environmental Protection Agency.

Monitoring - A process of collecting information to evaluate whether or not objectives of a project and its mitigation plan are being realized.

Evaluation - An essential companion activity to monitoring; the tool for translating data gathered by monitoring into useful information that could result in change or adaptive management.

Subbasin - Equivalent to a 4th-field Hydrologic Unit Code (HUC), a drainage area of approximately 800,000 to 1,000,000 acres.

Subwatershed - Equivalent to a 6th-field HUC, a drainage area of approximately 20,000 acres. Hierarchically, subwatersheds (6th-field HUC) are contained within a watershed (5th-field HUC), which in turn is contained within a subbasin (4th-field HUC). This concept is shown graphically in Figure 2-1 in Chapter 2.

Watershed - (1) The region draining into a river, river system, or body of water; (2) in this EIS, a watershed also refers to a drainage area of approximately 50,000 to 100,000 acres, which is equivalent to a 5th-field HUC.

Introduction

This appendix addresses implementation issues to be finalized by the Record of Decision (ROD). The implementation process must be adaptive because natural resource conditions change over time, particularly in the disturbance-driven ecosystems covered by the Interior Columbia Basin Ecosystem Management Project (ICBEMP). Knowledge evolves, as do public values, thus adding to the need for an adaptive management approach. Two vital elements of adaptive management are monitoring and evaluation. These aspects of adaptive management are discussed in more detail in this appendix.

This appendix is a framework to identify and guide the development work between the Supplemental Draft and Final EIS, and to add clarity to the implementation expectations. It is a start in the process, not a completed product. This framework is focused on the action alternatives (Alternatives S2 and S3). Implementation of Alternative S1 the No-Action alternative, would require continuation of existing processes. The intent is to identify the “new” processes associated with the action alternative. The implementation framework included in the Final EIS will focus on the selected alternative.

This appendix is composed of four main sections:

- ♦ The Nature of Decisions;
- ♦ Implementation Process;
- ♦ Monitoring, Evaluation, and Adaptive Management Framework; and
- ♦ Challenges to Implementation.

The Nature of Decisions

What the Decision Will Provide

As explained in Chapter 1 of the Supplemental Draft EIS, the ICBEMP Record of Decision (ROD) will provide the large-scale ecological context for Forest Service and Bureau of Land Management (BLM) land use plans. It also will help clarify the relationship of agency activities to ecosystem capabilities and will

help develop realistic expectations for the production of economic and social benefits. Most decisions in the ROD will focus on regional and subregional issues and establish desired landscape patterns, structure, and succession and disturbance regimes to address the issues. The ROD also will help establish general direction for management of habitat for species or groups of species that require integrated management across broad landscapes to assure viability. For the most part, fine-scale decisions will be deferred to individual administrative units after appropriately scaled NEPA analysis. Those decisions must be made within the context of the broad-scale direction in this EIS.

What the Decision Will Not Provide

Broad-scale decisions made through the ICBEMP Record of Decision will guide subsequent decisions made by local Forest Service and BLM managers. Many other decisions are not appropriately made at the scale, or within the scope, of this decision, and therefore will not be included in the ROD. Examples of these types of decisions include:

- ♦ *Statutory requirements.* The decision would not change the agencies' responsibility to comply with the Clean Air Act, Clean Water Act, Endangered Species Act, NEPA, or any other federal law.
- ♦ *National policy.* The decision would not change the agencies' obligation to conform with national policy. No change, for example, would be made in the requirement for all levels of planning activities to be conducted in close coordination with potentially affected American Indian tribes.
- ♦ *Specific allocations of resource products.* The allocation of allowable cut for timber or animal unit months (AUMs) of forage for livestock are made at the individual land use plan or activity plan level.
- ♦ *Activity plan level decisions.* The amount and restrictions for grazing in a specific allotment will continue to be determined locally in consultation with affected parties.
- ♦ *Funding levels and allocations.* The decision addresses broad scale management direction (management intent, objectives, standards, and guidelines) not funding levels. Funding levels and allocations are made through separate administrative processes that are influenced by this decision, but are not directed by it.

- ♦ *Project plan level decisions.* Examples include: the actual types, location, and timing of treatments to eradicate noxious weeds; the location and timing of prescribed fire activities; the location and timing of road and trail maintenance and rehabilitation activities.
- ♦ *Administrative actions for which a land use plan decision is not needed.* For example, a Memorandum of Understanding regarding collaboration among the five federal agencies represented on the ICBEMP Regional Executive Steering Committee has been agreed to. Also, the agencies have collaborated on and prototyped a basin-wide protocol for addressing waters listed under section 303(d) of the Clean Water Act.

Decision Elements

Specific decisions involved in the selection of an alternative include adoption of:

- ♦ Management goals;
- ♦ Management direction, including statements of *management intent*, *objectives* to be used in measuring progress toward attainment of the management goals, and *standards*, which are requirements to be used in designing and implementing future management actions;
- ♦ Geographic delineations, such as aquatic A1 and A2 subwatersheds and terrestrial T watersheds;
- ♦ A monitoring plan, mitigation measures, and other items documented in the ROD.

Guidelines, which are optional techniques that should prove useful in meeting the objectives, are also included in the decision. See Chapter 3 for more information on the alternatives and their components.

At this broad scale, the alternatives do not specify the types or level of management activities (for example, acres of rangeland improvement or prescribed burning) that would be needed to achieve the objectives in Chapter 3. Instead, they describe the emphasis, intent, and desired outcomes for the different conditions and areas delineated within the project area. In addition, story lines (see Appendix 14) were prepared to assist the Science Advisory Group in modeling the effects of the alternatives. The story lines depict a possible implementation scenario by indicating the probability and rate of occurrence for several activities at a given funding level.

Compliance with the National Environmental Policy Act and Other Laws

This EIS complies with the National Environmental Policy Act for the broad-scale decisions that will be made in the ROD. It does not replace the requirement to comply with NEPA, where necessary, for implementation actions. The agencies will continue to prepare environmental assessments (EAs) and environmental impact statements (EISs) as part of decision-making and planning processes. These subsequent EISs and EAs will tier to the ICBEMP EIS, when appropriate.

Vital to the successful implementation of the selected alternative will be compliance with other federal acts that affect management of national forests and BLM-administered public land. The intent of the ROD is to provide basin-wide direction designed to aid in compliance with the Endangered Species Act, Clean Water Act, Clean Air Act, and other laws (see Appendix 1). Specific on-the-ground actions to achieve compliance will be determined through the tiered process of analysis and decision making established by the ROD.

Various federal laws and obligations—such as the Clean Water Act, Clean Air Act, Endangered Species Act, federal trust responsibilities, and the National Forest Management Act (NFMA)—as well as certain state laws have minimum requirements or conditions (such as meeting the viability requirement of the NFMA, water temperature standards of the Clean Water Act, or emission standards from the Clean Air Act) that must be attained prior to or while conducting management activities. While these define the lower limits of the decision space, the upper limit often is bounded by the biological potential, or maximum capabilities of the land and resources. This allows for a range of management options between the minimum legal requirements and the biological potential. Generally, after legal requirements are satisfied the range of options is narrow and precludes maximization of any specific value, except where risks are high or where rare and sensitive habitats exist.

Management Priorities

Management priorities are described in Chapter 1 of this EIS. They include: protecting ecosystems, restoring deteriorated ecosystems, and providing multiple benefits to people within the capabilities of ecosystems.

With the diversity of issues, resources, conditions, trends, and communities within the project area, there is no simple solution to ambiguities or conflicts that may arise through implementation at the field level. Management priorities and direction outlined in the ICBEMP EIS and ROD will provide the context, framework, or umbrella for local decision making. Local managers need the flexibility to work within this umbrella to adapt priorities and direction to local conditions such that outcomes can be most effective.

A process for using information from multiple scales to aid in decision making will be implemented as described in the Linking Broad-scale Decisions and Information to Finer Levels section of this appendix. This “step-down” process is designed to ensure that final commitments of actions to meet broad-scale goals and objectives are made only after considering local conditions and is specific to the action attending S2 and S3. In essence, the step-down process is a risk management approach to address risks at different scales. Step-down will enhance the understanding of risk and opportunities and will provide a hierarchically scaled context and information base of support for site-specific analysis and decisions. It will facilitate the analysis of cumulative effects when individual project decisions are made.

A feedback mechanism—called monitoring and evaluation—enables managers to compile information about implementation and aggregate it upward to determine if the cumulative results of implementation are as desired or expected. This monitoring and evaluation process will examine whether existing conditions match those projected, and whether progress is being made toward achieving the desired conditions. It will include a determination of whether the levels of activities that were projected are occurring, whether they are occurring in the expected locations, and how these findings relate to the projected effects of implementation. Monitoring and evaluation may occur in conjunction with analysis done at any scale in the step-down process. (See A Framework for Monitoring, Evaluation, and Adaptive Management, later in this appendix).

Concerns may arise about possible conflicts between resource needs and people’s needs. These are ultimately addressed at the local level, within the context of overall direction and priorities contained in the ROD. As a foundation, however, the Forest Service and BLM are obligated and committed to meeting the intent of existing laws, regulations, and policies. See previous section, Chapter 1, and Appendix 1 for further details.

Implementation Process

Implementation of decisions made through this process will occur in two phases. First, activity planning and project design will begin almost immediately to reflect the management direction as described in the ROD. Generally, any ongoing, short-term activity that has been through the NEPA process would not be changed as a result of new direction. Short-term activities where analysis has been completed and decisions are pending will be screened to ensure there are no major conflicts with the new direction. Decisions affecting longer term permitted activities, such as livestock grazing and special-use activities, would have a transition period to come into compliance with new direction. The actual time frame and process to bring existing activities into compliance will be included in the Record of Decision. New projects will be designed to achieve the broad-scale objectives.

The second phase of implementation will occur over the longer term, whereby plans for individual administrative units will be reviewed for barriers to achieving broad-scale objectives. This should occur through the monitoring and evaluation process, which may lead to additional changes in plans through a later amendment or revision process that considers information specific to each administrative unit.

Implementation will require a transition phase that links local resource programs and restoration priorities (such as those developed for the existing Biological Opinions) with the long-term program of work and restoration priorities of this project. The specifics of this transition will be explained in implementation guidance. Linkages have already been considered and are reflected in the design of these broad scale objectives and priorities.

Interagency and Intergovernmental Coordination, Collaboration, and Accountability

This EIS has been prepared with coordination and collaboration with other federal agencies; state, local, and tribal governments; Resource Advisory Councils (RACs); and Provincial Advisory Committees (PACs). Expectations are high for these decisions to resolve many broad-scale issues within the project area. In order to maximize the likelihood of fulfilling these expectations and to successfully restore the ecosystems of the project area, a collaborative approach toward implementing decisions made in the Record of Decision will be used. Currently there is no project-wide, systematic approach for interagency or intergovernmental coordination, collaboration, and accountability. Several areas have been identified where opportunities should be provided to meet this need. They include, but are not limited to:

- ♦ Consistent interpretation and application of decisions;
- ♦ Coordinating and conducting Subbasin Review;
- ♦ Prioritizing and conducting Ecosystem Analysis at the Watershed Scale;
- ♦ Assessing cumulative effects;
- ♦ Monitoring and adaptive management;
- ♦ Data management and inventory;
- ♦ Accountability and credibility;
- ♦ Coordination and collaboration with other federal agencies, state and local governments, and tribes.

After the Supplemental Draft EIS is published and before the ROD is released, representatives of the Forest Service, BLM, National Marine Fisheries Service, U. S. Fish and Wildlife Service, and U. S. Environmental Protection Agency will further develop and evaluate organizational options, process strategies, and training opportunities to address implementation of the ICBEMP direction. At this time, however, tentative decisions include a basin-wide coordination mechanism that consists of subregional, interagency, and intergovernmental coordination committees aligned along PAC/RAC boundaries.

Consultation with Tribal Governments

Indian tribes and federal agencies want the tribes to have more involvement in the decision-making process as sovereign governments. Since late 1993, numerous executive orders, laws, and statutes (see Appendix 1) have required or encouraged this interaction.

Consultation is an active, affirmative process which (a) identifies issues and seeks input from appropriate American Indian governments, community groups, and individuals; and (b) considers their interests as a necessary and integral part of the BLM's and Forest Service's decision-making process. It can build strong working relationships and encourage exchange of local site-specific information, resulting in better decisions.

Public Involvement and Collaboration

Federal agencies, social scientists, and others agree that ecosystem management requires increased participation by the public and other governmental agencies, including American Indian tribes, especially when those efforts foster mutual learning. Alternatives S2 and S3 reflect this, with objectives and standards designed to ensure that stakeholders play an increased role in public land planning, implementation, and monitoring.

An ongoing issue in public participation is how to involve not just the local and regional public, but also the national public. There appears to be consensus that it is most important to involve people who will be most directly affected by public land management. The economics chapter (Haynes and Horne 1997) of the *Assessment of Ecosystem Components* demonstrated the tremendous national values associated with project area resources; therefore, involving the national constituency should be part of the process, especially during processes such as regional priority setting.

It will be necessary to provide tribal, local, and state governments; other federal agencies; and the public with an opportunity to participate in technology

transfer (conveying project science information). This will provide them (and agency employees) with a better understanding of conditions, trends, issues, and interactions, which should enhance their increased role in planning, implementation, monitoring, evaluation, and adaptive management.

Collaborative approaches to implementation will be necessary to assure success. Close working relationships between management and regulatory agencies will need to be developed, maintained, and or improved. The BLM and Forest Service retain the responsibility and authority for land management decisions; however, these decisions will be more meaningful, effective, and long lasting if done in an open process through collaborative means. An important aspect of collaborative implementation will be forming subregional implementation teams for Resource Advisory Council (RAC) and Provincial Advisory Committee (PAC) areas, and using the knowledge and experience of the Councils and Committees.

Linking Broad-scale Decisions and Information to Finer Levels

In the action alternatives (Alternatives S2 and S3), certain requirements provide a hierarchy of analysis to support land management decisions. The following section outlines the types and levels of analysis that will “step-down” broad-scale information and decisions to site-specific actions. This step-down process is designed to ensure broad-scale decisions are viewed within the context of local conditions, and that local decisions are made within the context of broad-scale goals and objectives.

While the EIS contains direction and context for addressing broad-scale issues and resource conditions, most management actions will require further analysis and additional decisions prior to being implemented. The primary value of the additional analysis is to provide the type and level of information needed to amend and revise land use plans, and to schedule and design site-specific management activities appropriately and effectively.

Specifically, this additional analysis is necessary to:

- ♦ Validate, refine, or add to information concerning current and historical resource conditions, processes, and interactions;
- ♦ Address issues not appropriately addressed at the broad scale;
- ♦ Prioritize restoration efforts to maximize the likelihood of meeting management goals and objectives, and to minimize negative impacts;
- ♦ Provide subregional and local input.

Analysis of ecosystems is a systematic way of gathering, organizing, and understanding ecosystem information. It is not, in itself, a decision-making process. Rather, it provides information necessary to make well-informed decisions as required by the National Environmental Policy Act (NEPA). With this information, managers can better understand and disclose the effects of their decisions, and identify monitoring and research needs. Ecosystem analysis also helps guide the type, location, and sequence of appropriate management activities within a watershed.

Hierarchy of Analysis

The levels of analysis or review that are “below” (smaller-scale than) the project area-wide analysis conducted for this EIS are intended to provide the context necessary to appropriately implement these broad-level decisions on individual national forests and BLM resource areas or districts. In this project, these analysis levels are commonly referred to as “step down.” The step-down processes (Subbasin Review and Ecosystem Analysis at the Watershed Scale [EAWS]), as well as the differences between alternatives regarding the step-down process and results, are described in Chapter 3 of the EIS. This hierarchy of analysis or review is intended to meet the objectives mentioned above; however, additional scales may be more appropriate for certain subregional issues. Generally, watershed scale analyses will be aggregated to address issues that cross the boundaries of individual 5th- and 6th-field HUCs.

Ecosystem Review at the Subbasin Scale (Subbasin Review)

The first step toward understanding how the *Scientific Assessment* relates to more localized conditions is Ecosystem Review at the Subbasin Scale (800,000- to 1,000,000-acre drainage area) (referred to in this EIS as Subbasin Review). This process is based on existing information. Subbasin Review will generally occur on each 4th-field HUC across the project area. Exceptions include those subbasins where Forest Service- and BLM-administered lands make up only a small fraction of the total land area, or where grouping subbasins is logical. Subbasin Review will be conducted by an interagency, interdisciplinary team. As stated in Chapter 3 of the Supplemental Draft EIS, the objectives of Subbasin Review are to:

- ♦ Assess resource status and condition, as well as risks and opportunities to reduce potential unwanted effects from management actions and land uses (for example, road-related adverse effects) and to better balance short- and long-term, and mid- and fine-scale risks;
- ♦ Provide an understanding of how the review area fits into the broad-scale ecosystem, gain an understanding of the ecosystem that is apparent only at the mid scale, and provide context and priority for finer scale analysis;
- ♦ Provide support for other analyses and initiatives such as EAWS, roads analysis, water quality restoration plans, the Healthy Rangelands Initiative, and further mid-scale assessment needs;
- ♦ Identify risks and opportunities to meet broad-scale and mid-scale objectives through subsequent site-specific management actions;
- ♦ Identify opportunities for pooling interagency (federal agencies) and intergovernmental (tribes, states, counties, cities) resources;
- ♦ Provide information and recommendations to support land use planning, consultation, and legal requirements, such as those found in the Federal Land Policy and Management Act, NFMA, treaty and trust responsibilities, Endangered Species Act, and Clean Water Act;
- ♦ Verify or provide mid-scale data where projected or unavailable from ICBEMP, and identify data gaps at the mid-scale; and
- ♦ Prioritize opportunities for: ecosystem restoration, filling social and economic needs, further analysis, monitoring and data collection, and other subsequent site-specific management actions.

Subbasin Review will provide an opportunity for interagency and intergovernmental involvement. The process for subbasin review is provided in the *Ecosystem Review at the Subbasin Scale (Subbasin Review): A Guide for Midscale Ecosystem Inquiry* (draft). While refinements of this draft guide are expected after the Supplemental Draft EIS is released and before the Final EIS is released, the guide describes a process that has been tested and will meet the purpose of the Subbasin Review as described above.

Ecosystem Analysis at the Watershed Scale

The next analysis scale, below Subbasin Review, is watershed-scale analysis (5th- or 6th-field HUC; 10,000- to 100,000-acre drainage area) (referred to in this EIS as Ecosystem Analysis at the Watershed Scale [EAWS]). This analysis will normally use watershed and subwatershed boundaries; however, using other boundaries that are meaningful and efficient is appropriate as long as the logic and processes for EAWS are followed and the product provides context and information for decisions.

This scale of analysis is intended to:

- ♦ Establish a consistent watershed-wide context for water quality conditions and protection of beneficial uses;
- ♦ Provide the hydrologic characterization and identification of pollutant sources;
- ♦ Understand actual conditions at a resolution necessary to make judgement about watershed-scale effects of actions on resources;
- ♦ Evaluate potential actions in the context of an overall understanding of the capabilities, limitations, and risks of a specific watershed;
- ♦ Identify watershed level issues and concerns;
- ♦ Identify synergisms that can be gained through sequencing activities;
- ♦ Refine management standards to fit local conditions and values at risk;
- ♦ Identify monitoring needs for watershed-wide effects.

Ecosystem Analysis at the Watershed Scale will also provide an opportunity for interagency and intergovernmental involvement. It is an incremental process, whereby information from inventories, monitoring reports, or additional analyses can be added at any time. The EAWS process will follow the *Federal*

Guide for Watershed Analysis, Version 2.2, or subsequent replacements, using the six-step process outlined in the *Federal Guide*.

Information derived through Subbasin Review and Ecosystem Analysis at the Watershed Scale would be aggregated up to assist in making programmatic decisions, such as land use plan amendments and revisions, and would be incorporated into site-specific decisions at lower levels.

Site-specific Analysis

The next scale of analysis, below EAWS, is the site-specific, or activity-level analysis. This level of analysis will typically result in a NEPA process, including public scoping, and a site-specific decision document. While it may be feasible to analyze the effects of groups of activities at the watershed scale, most of the activities proposed will be analyzed at the site-specific scale. Under the hierarchy of analysis outlined above, this scale of analysis acts as a safety net for those issues overlooked or appropriately excluded at larger scales, and it provides site-specific information for determining effects.

Site-specific analysis has been used extensively since the inception of NEPA in 1969, and in accordance with Forest Service NEPA Handbook 1909.15 and BLM NEPA Handbook H-1790-1. It has been proven successful at identifying and addressing local issues and concerns; however, as a stand-alone assessment process, it has often been ineffective at addressing cumulative effects and larger scale issues. The site-specific analysis process will be significantly enhanced, predominantly by the context provided by higher scales of analysis when assessing cumulative effects. To the extent possible, projects will be “batched” for Endangered Species Act and tribal consultation at the watershed scale. The context provided by higher scales of analysis will also facilitate this endeavor, although it is not required. This process should further identify the monitoring necessary to meet those needs identified during Ecosystem Analysis at the Watershed Scale.

Data Management and Technology Transfer

A key element for ecosystem management is the need for consistent, current, and accurate information

concerning the ecological and biophysical environments across the landscape. The collection and management of data and information among tribal, federal, state, and local agencies need to be effectively coordinated and shared in order to implement ecosystem management and to successfully link broad-scale decisions and information to finer levels. Currently, data are collected in many formats among and within agencies. Developing a minimum data standard for vegetation, aquatic, fisheries, and terrestrial components of the landscape should be explored.

To facilitate implementation of the decisions for this EIS and the associated findings, technical support will continue after the Record of Decision is signed. This support could consist of:

- ♦ *Workshops*—Several types of workshops have been considered that could be useful in dissemination of the information gained during development of the ICBEMP. Technology transfer teams are crucial for providing user support and training to the field offices over the next several years.
- ♦ *A science advisory group* —Science advisory groups could interpret, consult, and provide advice on ICBEMP products, data, databases, and models.
- ♦ *A spatial analysis team* —A spatial analysis team could coordinate and maintain the Geographic Information System (GIS) database, and provide data layer maintenance for key layers.
- ♦ *Release, maintenance, and upkeep of the GIS database* —The GIS data (170 themes) and associated databases (approximately 20) collected and created for use in the *Scientific Assessment* needs to be managed, maintained, and shared.
- ♦ *Maintenance and updates of the various databases and models that were developed for the ICBEMP* —A central information clearinghouse could be established to support the update and implementation of national forest and BLM district land use plans. A few of the existing models have been fully documented and have user guides (Information Systems chapter [Gravenmier et al. 1997] of the *Assessment of Ecosystem Components*).
- ♦ *Technical assistance to support plan amendments* (Information Systems chapter [Gravenmier et al. 1997] of the *Assessment of Ecosystem Components*).

A Framework for Monitoring, Evaluation, and Adaptive Management

Introduction

This section of Appendix 10 provides a framework for developing a specific monitoring and evaluation plan to measure the conditions and trends in the ICBEMP project area. Information developed through the monitoring process can be used to assess management strategies, alter decisions, change implementation, or maintain current management direction. This section builds on *A Framework for Ecosystem Management in the Interior Columbia Basin* (Haynes et al. 1996) and the Supplemental Draft EIS.

Monitoring is the process of collecting information to determine if ecosystem management strategies are being implemented as planned, if management goals and objectives are being met, and if there are any unanticipated results from implementing planned management strategies. Based on an evaluation of the monitoring information, current management can be maintained or adjusted to meet ecosystem management goals.

Monitoring and evaluation play pivotal roles in the adaptive management process, primarily to detect undesirable changes early enough that management activities can be modified to work toward achieving the desired goals and objectives. Adaptive management strategies must include all four parts of the process: planning, implementation, monitoring, and evaluation. Resources must be allocated and priorities established so that all parts of adaptive management are completed over an appropriate time frame and no part is emphasized at the expense of another. To be effective, monitoring and evaluation must be treated as an integral component of land management, be well conceived, and be adequately funded. Also, monitoring will necessitate a major cooperative effort involving interested and affected parties, including federal, state, and local governments; tribes; Resource Advisory Councils and Provincial Advisory Committees; local communities; private landowners; and special interest groups. These parties share a

common interest in attempting to achieve the objectives that emerged from the ICBEMP.

Ecosystems operate within a hierarchy, where each level of an ecosystem has discrete ecological functions but at the same time is part of the larger, integrated whole. Monitoring and evaluation also need to follow a hierarchical pattern—answering questions and measuring trends at the various levels within the project area. Certain issues and activities within the project area can have effects at the broadest level, such as activities that affect air quality, noxious weeds, or wide-ranging species. Other issues or conditions—such as forest health, juniper encroachment, and species endemism—operate within smaller geographic areas. Others are mostly of local concern, such as access management and municipal watersheds that may affect local communities. Monitoring strategies need to recognize such a hierarchy and provide for data collection and evaluation at the appropriate levels.

In summary, a coordinated, interagency, interdisciplinary monitoring system is needed to determine the health and integrity of the project area ecosystems, determine condition and trends, and provide the basis for needed changes in management. It is difficult and sometimes impossible to judge the health and integrity of the ecosystem at the regional level because of the wide variety of federal and non-federal monitoring activities currently existing in the project area, the dispersed nature of data, and inconsistency in the kinds of data collected. Data should be collected for the different ownerships within ecosystems so that it can be aggregated to answer broad-scale questions. Once regional data elements are identified for monitoring, appropriate monitoring systems can be designed to allow for analyses at various scales.

Conceptual Framework of Monitoring

The conceptual framework contains four elements: goals, scope, general approach, and relationship of monitoring to other activities.

Goals of Monitoring

Information provided through monitoring can be used to measure success in meeting plan goals. Specifically, monitoring efforts provide information to:

1. Determine if planned activities have been implemented and standards and guidelines are being followed;

2. Detect magnitude and duration of change in conditions and detect trends;
3. Formulate and test hypotheses as to the cause of the changes; and
4. Help managers better understand the causes of change and predict impacts.

Under this approach, departures from expected conditions or other quantities are treated not as failures but rather as new information to improve the quality of land management. Actions taken could be mitigation, change of actions in the future, and revised goals, or some mix of these. This iterative approach is referred to as adaptive management, described further in the Relationship of Monitoring to Other Activities section.

Scope of Monitoring

The ICBEMP monitoring and evaluation strategy focuses on Forest Service- and BLM-administered lands in the project area (see Map 1-1 in Chapter 1 of this EIS). However, monitoring could cross administrative boundaries to measure other federal lands in the ecosystem. Monitoring needs to be a multi-agency effort characterized by sharing of information, adoption of data standards, and training among federal agencies and other interested parties is vital for success. Monitoring must be focused on decisions and directing contained in the Final EIS and ROD with the objectives of testing results and identifying necessary adjustment in order to achieve desired results.

The design of a monitoring program needs to accommodate a variety of geographic levels (for example, basin, subbasin, watershed), allowing information gathered locally to be compiled and interpreted or analyzed to answer broad regional questions. In addition, the program needs flexibility to allow for monitoring and evaluation at the regional level to better address broad-scale questions.

Because ecosystems are complexes of biotic, abiotic, and human elements interacting over time and space, the biological, physical, social, and economic aspects will need to be monitored to determine if ecosystem goals are being met. A complex array of landscapes, resources, management prescriptions, species requiring attention, and geographic areas must be addressed.

General Approach of Monitoring Strategy

The following criteria will be considered when designing the monitoring strategy.

- ♦ Integrate the monitoring process into existing organizational structures as much as possible, rather than creating a separate organization to achieve monitoring needs.
- ♦ Be cost effective so that meaningful monitoring can be done within agency budgets;
- ♦ Support management objectives and address the identified issues and problems;
- ♦ Be sensitive to significant changes in ecological and social systems;
- ♦ Address the hierarchy of geographic scales (basin, subbasin, watershed);
- ♦ Provide early warning so appropriate actions can be taken in a timely manner;
- ♦ Provide a basis for natural resource policy decisions through analysis at various levels;
- ♦ Provide for integration of information among resource functions to support efficiency and ecologically based decision making;
- ♦ Integrate monitoring at the landscape level with monitoring at the subregional and regional levels;
- ♦ Emphasize sound experimental design and standardized data collection which will support statistical analysis where necessary;
- ♦ Integrate inventories into the monitoring system;
- ♦ Provide for corporate storage and systematic compilation, interpretation, and analysis of data;
- ♦ Be accessible across organizational levels and administrative boundaries;
- ♦ Be implementable within the existing agency structure;
- ♦ Ensure data are promptly analyzed and applied in adaptive management;
- ♦ Provide for distribution of results in a timely and effective manner.

The general approach is to measure variables that index whole ecosystems. Significant change in these variables indicates a need for further study. Initially,

this approach does not expect to directly identify cause-and-effect relationships; although they are needed, cause-and-effect relationships are left for follow-up investigations. Instead, the approach focuses on measuring change in the system which would indicate whether further study and evaluation are warranted.

An initial step in developing the monitoring strategy is to define the questions that need to be answered at the regional level to evaluate attainment of ecosystem management goals and objectives in the project area. These questions can be used to focus the monitoring strategy on appropriate issues and avoid gathering information which has limited value in answering pertinent regional level questions. The questions will also be used to help design a system that can be implemented within agency budgets.

Technical and scientific staffs, in consultation with field managers, need to play a key role in designing a monitoring strategy—to help select key monitoring elements and indicators that can be statistically sampled and can provide desired data at a reasonable cost, and to help develop and shape the monitoring questions.

The “reductionist” approach (that is, measuring all the insects, mammals, soil properties, water, etc.) should not be used. Given limitations on funding, the approach is not affordable, and the complexity could never be understood. Equally important, measurements of each of these ecological elements may not be necessary to address key, identified questions. However, individual species or other taxonomic groups (such as genera and families) or physical elements will be used if they are good indicators. Research will evaluate the effectiveness of alternative measures to improve future monitoring efforts.

A standard core set of data elements will be collected. Core data are the minimum set of variables to be collected at all scales. In all cases, standardized measurement and reporting protocols will be determined because of the need for consistency. Where possible, monitoring protocols will be designed to integrate existing monitoring efforts, and/or address multiple questions. Also, the design will allow flexibility for local administrative units to add data elements needed to answer subregional and landscape level questions.

The variables to be monitored will be indicators or surrogates representing other physical, biological, socio-economic, cultural, and/or ecological processes. They must describe conditions and trends for functional, healthy ecosystems and be quantifiable and measurable in a repeatable way. A range of values for

the variables may often be measured to account for the spatial and temporal variability found in a particular geographic area.

Relationship of Monitoring to Other Activities

Relationship of Monitoring to Adaptive Management Process

Some science publications indicate adaptive management involves large scale manipulative experiments designed specifically for learning. Learning better ways of doing things is an important purpose of this effort. However, this effort is much more than experimentation and learning, there are other needs and sideboards. For example, adopting this approach would require managers to accept more risk in application of some activities than is likely permitted by existing law, regulation, policy and procedure, or what collaboration with all involved parties would tolerate.

Therefore, in this context, adaptive management is defined as a continuing process of planning, implementation, monitoring, and evaluation to adjust management strategies to meet goals and objectives of ecosystem management. Monitoring has a vital role to play in adaptive management: to detect changes so that management activities can be modified to achieve management objectives.

Adaptive management emphasizes results, such as the achievement of desired functions, processes, and interrelationships of ecosystem components. Since knowledge often is incomplete when decisions are made, adjustments are made through time. A continual feedback loop based on new information allows for mid-course corrections to standards, guidelines, and underlying assumptions (at time intervals appropriate to the systems, processes, and functions analyzed), in order to meet the planned goals and objectives. It also provides a model for adjusting goals and objectives as new information develops through monitoring or other means and as public desires change.

Relationship of Monitoring to Research

Research participation in the development of monitoring protocols is essential to the success of the adaptive management process described above. Data obtained through monitoring activities in a systematic and statistically valid manner can be used by scientists to develop research hypotheses related to priority issues. Conversely, the results obtained

through research can be used to further refine the protocols and strategies used to monitor and evaluate the effectiveness of activities occurring in the implementation of ecosystem management.

The step down process is a process to characterize human and ecological features, conditions, processes, and interactions within a geographic area. The activities are intended to help estimate direct, indirect, and cumulative effects of management activities and guide the general type, location and sequence of appropriate management activities within a geographic area. This tiered process is an important part of adaptive management that will “localize” monitoring efforts.

Reliance on achieving desired outcomes through application of the step down process requires the assurance of an adequate monitoring, evaluation, and accountability system. A monitoring strategy will focus on the key issues and objectives at hand, link monitoring responsibilities at different organizational levels, and focus on the achievement of objectives and time frames outlined in the alternatives. Through this process, local BLM and Forest Service managers will be held accountable to ensure that on-the-ground decisions and activities maintain overall integrity of ecosystems at the landscape level and are linked to broader-level desired outcomes.

Generally, Subbasin Review and EAWS are based on existing data; however, it should also incorporate monitoring and evaluation information. Ecosystem analysis information should additionally be considered in developing future monitoring plans. Information derived from ecosystem analysis is used to: guide management prescriptions, including the setting and refining of boundaries in riparian areas; set restoration strategies and priorities; and reveal the useful indicators for monitoring environmental change.

Relationship of Monitoring to Inventories and Surveys

Inventories and surveys are parts of the adaptive management framework and need to be closely linked with monitoring. Information gathered in the inventory and survey process form a baseline from which trends in ecosystem conditions can be measured. Virtually all the concerns identified in this framework must be considered in the design of a sound inventory system.

Relationship of Monitoring to Evaluation

Evaluation is a process in which the plan and monitoring data are reviewed to see if the management goals and objectives are being met and if management

direction is sound. This portion of the adaptive approach examines the monitoring data gathered over time and uses it to draw conclusions on whether management actions are meeting stated objectives and, if not, why. The conclusions are used to make recommendations on whether to continue current management or what changes need to be made in management practices to meet objectives. The results could be changes in mitigating measures, future actions, monitoring elements, objectives, standards, guidelines, or some mixture of these.

Monitoring Components

This framework provides a starting point for building a monitoring program based on identifying the fundamental kinds of information that must be gathered to evaluate the success of ecosystem management. The next section of this document focuses on the types of monitoring and on the development of interagency and intergovernmental monitoring. A five-step process for establishing a monitoring network is discussed.

Types of Monitoring

Four types of monitoring (implementation, effectiveness, validation, and baseline) will be applied to meet management objectives and to evaluate management practices used in implementing local plans. These four types of monitoring encompass the broad spectrum of monitoring, and all of them need to occur to achieve the goals of the adaptive management process. Some agencies may use different terms for the same types of monitoring.

Implementation Monitoring

Implementation monitoring is the most basic type of monitoring and simply determines whether planned activities have been implemented and whether the standards and objectives were followed. Some agencies call this *compliance monitoring*.

Effectiveness Monitoring

Effectiveness monitoring is aimed at determining if the implementation of activities has achieved the desired goals and objectives, and whether the standards and objectives have attained the goals and objectives of ecosystem management. Success may be measured against the benchmark of desired future condition.

Cause-and-effect relationships will ultimately need to be understood to ensure that management actions result in desired conditions.

Validation Monitoring

Validation monitoring is intended to ascertain whether a cause-and-effect relationship exists among management activities or resources being managed. It confirms whether the predicted results occurred and if assumptions and models used in developing the plan are correct. While recognized for being demanding and expensive, validation monitoring is equally as important as implementation, effectiveness, and baseline monitoring.

Baseline Monitoring

Baseline monitoring is used to establish reference conditions by monitoring elements or processes that may be affected by management activities. Generally, the reference conditions are natural or relatively unaffected by human activities.

Developing Interagency and Intergovernmental Monitoring

Development and implementation of monitoring to collect, report, and evaluate data in a manner that is both scientifically credible and economically feasible requires careful design and coordination. As previous sections have discussed, foremost needs are:

- ◆ To develop and implement a common design framework and common indicators or environmental measurements, tiered to the final EIS and ROD;
- ◆ To identify specific indicators within each monitoring component or activity, along with protocols and methods for their measurement and quality assurance; and
- ◆ To establish a required level of detection ability, data quality objectives, and precision.

The monitoring framework that is established should: (1) be cost effective; (2) permit data to be integrated through statistical or modeling approaches to provide quantitative inputs to the adaptive management process; and (3) accommodate multiple geographical scales and provide a consistent process for establishing monitoring sites, frequency of sampling, level of

sampling, and specific techniques for analysis, synthesis, and reporting. This approach is critical to ensuring consistent collection, integration, and evaluation of monitoring over long time periods among projects, watersheds, regions, and agencies.

Following is a five-step process for establishing a monitoring network:

- Step 1. Establish linkages between and among agencies, tribes, advisory groups, and others.
- Step 2. Identify information needs.
- Step 3. Survey and evaluate ongoing monitoring efforts.
- Step 4. Establish technical details.
- Step 5. Establish a repository system for collected data, storage, and analysis.

Step 1. Establish Linkages Between and Among Agencies and Tribes

In order to accomplish necessary linkages among agencies, tribes, and research, an interagency monitoring team needs to be formed under direction of the Regional Executives, with the goal of integrating a project monitoring process into the existing agency organization. This team would be responsible for assuring key decisions and directions in the Final EIS and ROD are sufficiently monitored to assure consistency of implementation and identify if any modifications in implementation are needed to achieve desired outcomes. They would also be responsible for assuring that data storage and data management are occurring so the information upon which the ICBEMP is based is maintained and changed to reflect new information and changing conditions. Leadership and structure of the team is yet to be determined, but to assure adequate representation, all agencies, research and tribes must be vested within the group, and funding and priority given the membership to allow them to be active participants.

In addition, private citizens and groups will be encouraged to participate in monitoring. This participation will be coordinated by individual agencies, as determined by the monitoring items, type and scale of monitoring, and agency responsibility. At the subregional or regional scales, Resource Advisory Councils (RACs), Provincial Advisory Committees (PACs), coalitions of counties, or other bodies may also participate in monitoring through methods developed by the committee.

Step 2. Identify Information Needs

A monitoring strategy will concurrently be developed with the Final EIS and Record of Decision, to give focus to the monitoring task and to assure a direct link to the decisions. For example, there is a strong likelihood that terrestrial species habitats and populations will be an element of the decision. A strategy will be developed to monitor specific questions associated with this element, such as how source habitat, snags, roads, population outcomes, terrestrial species viability and long-term recovery and delisting of wide-ranging threatened or endangered species are affected over time with implementation of ICBEMP direction.

Step 3. Survey the Ongoing Monitoring Efforts

Step 3 consists of conducting an initial survey of the monitoring activities currently used by other agencies or groups within the project area, to evaluate similar monitoring objectives and identify information gaps and barriers. Monitoring activities identified through this process will be potential candidates for incorporation into the interagency monitoring framework.

Information requests can be designed and distributed to all the potential agency staff and other parties who collect relevant environmental data. The most efficient approach would be to have an initial survey to identify the relevant activities, followed by collection of in-depth information on the appropriate ones. These surveys should include the individual monitoring program, objectives, questions, ecological resources, indicators and associated protocols, design, quality assurance information, costs, and historical data.

After collecting information about existing monitoring activities, a detailed review and comparison of information needs and existing monitoring should be conducted. Results can be summarized in a report containing the following general categories:

- ◆ Program scope, objectives, and temporal and spatial resolution;
- ◆ Program methods and design;
- ◆ Program documentation and reporting;
- ◆ Program organization and coordination;
- ◆ Program barriers, effectiveness, and weaknesses.

Step 4. Establish Technical Details

Step 4 in the monitoring design process involves several elements: information or data quality objectives, indicators, statistical design, measurement and sampling protocols, and a quality assurance program.

Indicators and protocols that currently exist (as identified in Step 3) need to be evaluated to determine their adequacy in meeting the objectives. Where possible, this evaluation should be based on whether or not the data is relevant to specific direction and decision for the Final EIS and ROD. The intent is to deliberately maintain the link of post ROD activities to the direction and decisions contained therein to assure an efficient adaptive management process.

Although the general concepts of monitoring are broadly understood, application of the natural resource monitoring protocols necessary to carry out the ICBEMP monitoring recommendations is complicated. For example, there are many legal mandates for monitoring individual species across biologically complex areas. These mandates—coupled with considerations for management of habitats, plant communities, and ecosystems over a variety of spatial and temporal scales—require monitoring systems and approaches that may test and exceed the existing theory and technology for monitoring.

Adequate indicators and protocols need to be developed in those cases where they do not exist. Development of appropriate protocols will require coordination with the research components within the overall effort. If research results indicate that specific methods are successful, a pilot study should then be planned to field-test the methods and evaluate the results. After evaluation of the pilot study, any necessary changes can be made in the protocols. If the protocol is determined to be suitable, then the type and level of training necessary for field staff to implement the methods should be determined.

As technical monitoring groups provide strategies to address evaluation questions, gaps and barriers may be found in existing research and monitoring technology. Research priorities must be to fill in these gaps.

Some of the issues related to sufficiency of monitoring technology that may be considered in developing a comprehensive monitoring strategy are:

- ♦ Efficiency;
- ♦ Simplicity;
- ♦ Sensitivity of monitoring measures relative to natural ranges of variation;
- ♦ Indicator development and testing;
- ♦ Development of new technology and adaptation of existing technology;
- ♦ Changes needed to current laws and regulations to enable more effective monitoring operations, data collection and analysis;
- ♦ Development and effective transfer of sampling approaches, monitoring protocols and ideas on application where these elements do not exist;
- ♦ Adequate monetary support;
- ♦ Linkage to existing organizational structures.

Step 5. Repository for Data and Analysis

The ICBEMP has created a large database that is expected to be used as baseline information in the evaluation process. That data could be stored at the Oregon/Washington BLM State Office and Forest Service Pacific Northwest Regional Office, both located in Portland, Oregon. The data could be made available via an Internet site. Each agency's information resource management staff, in coordination with monitoring coordinators, could be responsible for the administration of their agency's portion of the data.

Management of data and analysis must consider the need to collect and store new regional level monitoring data. The comparability of data collected by all agencies is a crucial issue to be resolved by the committee. The protocol must be clear about how each agency's data contribute to the whole data set needed for evaluation of ecosystems at the regional level. Each agency would collect and maintain monitoring data according to the protocol developed by the team overseeing this effort and make it available upon request to other agencies for use in evaluation of ecosystem management. The monitoring coordinators and information resource management group would collect appropriate data from agency records, construct databases, and manage the information for analysis or formal evaluation.

Evaluation Component

Evaluation is the next key component of the adaptive management process. It is the process by which a comprehensive, holistic review of the plan and monitoring data is developed. If the planning is completed, the plan is implemented, and monitoring data are gathered without the follow-up to judge the success of the plan, a high likelihood exists that problems will not be detected until a crisis develops. This portion of the adaptive management approach focuses evaluation on actions and outcomes, where departures from expected conditions or results are treated not as failures but rather as new information to improve the quality of management. The results could be changes in mitigating measures, future actions, objectives, standards, guidelines, or some mixture of these.

The evaluation process is used to determine whether or not ecosystem management objectives and standards in the project area are being met and remain appropriate. The process gathers together all the data available from the monitoring process and uses the data to answer these questions:

- ♦ Were the standards followed?
- ♦ Were the goals and objectives met?
- ♦ Were the standards effective at meeting the goals and objectives?
- ♦ Were the underlying management assumptions correct?
- ♦ Have public expectations for ecosystem management changed?
- ♦ Are the decisions still appropriate?

The public has an important role in evaluation—to help ensure that the evaluation process addresses public concerns about agency ability to implement adaptive management.

The final stage of evaluation is to develop recommendations for changing current management, if needed, to meet ecosystem management goals. Adjustments should be related to implementation of management plans, management plan objectives, standards and guidelines, and monitoring data collection and integration. Recommendations should be used to modify land use plans, thus completing the adaptive management circle.

Since knowledge may be incomplete when decisions are made, adjustments need to be made through time; a continual feedback loop based on new information allows for mid-course corrections at time intervals appropriate to the systems, processes, and functions analyzed. An evaluation schedule needs to be set in advance to ensure that: (1) evaluations are conducted at intervals that allow for corrections in management direction before crises develop; (2) monitoring data are gathered in advance to be used in the evaluation process; and (3) the appropriate evaluation team is assembled to conduct the evaluation.

Regional-level changes in ecosystems occur slowly over time. Management evaluations made too frequently will not detect changes in the ecosystem because cost-effective monitoring systems cannot detect them. On the other hand, if ecosystem management evaluations are not conducted, or if they are delayed for too long, irreversible changes may take place without detection. To avoid this problem, two periodic management evaluations are proposed. The first is an implementation evaluation to be conducted every five years, beginning five years after completing the ICBEMP ROD, to see if the plans resulting from the project were implemented. The second is an effectiveness evaluation, to be conducted 10 years after completion of the ROD, to see if management practices are leading to achievement of ecosystem management goals and objectives.

The five-year implementation evaluation could be conducted by staff at national forests and BLM districts. Monitoring data would be evaluated and changes made to local actions where necessary to meet goals, objectives, and standards of ecosystem management plans. National forests and BLM districts within Resource Advisory Council or Provincial Advisory Committee boundaries should coordinate their evaluations and involve the Resource Advisory Council or Provincial Advisory Committee (or other public advisory groups) in the evaluation process. This coordination ensures that project area ecosystem management implementation issues are considered at the broader level while incorporating public participation. The general public and American Indian tribes also need to be involved in the evaluation.

A 10-year project area ecosystem management effectiveness evaluation could be conducted by an interagency evaluation team formed by the regional executives. The team would evaluate ecosystem management plans and monitoring information with involvement of the public. They would develop findings and recommendations to the participating agencies on: (1) whether or not the management was effective in meeting goals and objectives; (2) whether or not the assumptions and models used in developing

the plan were correct and are still valid or need to be changed; and (3) what changes are needed in mitigation measures, future actions, objectives, standards, and guidelines to meet ecosystem management goals.

Funding

Most of the funds and personnel necessary to conduct monitoring, data management, and evaluation activities for the implementation of ecosystem management in the project area are expected to come from the federal land management agencies. However, the expertise needed to develop and refine scientifically credible monitoring approaches is expected to reside with individuals who are often located elsewhere (such as Forest Service experiment stations, National Biological Survey, state agencies, university researchers, and tribes).

Traditionally, funds have been allocated for the planning and implementation phases of the adaptive management process, while monitoring and evaluation have been given minimal attention. There is a need to allocate resources and establish priorities so that all parts of adaptive management are completed over an appropriate time frame and so that no individual part receives emphasis at the expense of another.

Costs relative to monitoring are associated with the agency monitoring coordinators, the interagency monitoring committee, information gathering, and data management. The regional executives would set priorities; the committee would develop the protocols; and the agencies would implement them. Because funds for ecosystem management are limited, monitoring and evaluation activities have to be carefully planned so that only critical information needed for evaluation is gathered.

Challenges to Implementation

Because of the diversity of resources, conditions, communities, and concerns throughout the project area, challenges to successful implementation are expected to arise. This section summarizes some of these that have been compiled from an informal survey of BLM, Forest Service, and other agency employees; from challenges discussed in interdisciplinary and public meetings; from public and other

comments received during the course of the project; and from an ICBEMP science contract report concerning barriers to ecosystem management.

Funding

Funding to accomplish the Record of Decision will be a challenge and will require new approaches. Congressional allocation will largely dictate amounts and emphasis. This decision does not mandate specific levels or allocations of funds. However, it is envisioned that the ROD will have an effect on the distribution and emphasis of agency out-year program requests and agency funding allocations. With the boundary-less nature of the decisions, the involved agencies at the National Forest and BLM district level will need to jointly establish local priorities and funding strategies through the step-down-process. This contrasts with the traditional processes where, generally, each agency independently established their priorities to treat land within their responsibility. A similar philosophy must apply at the state and regional as well as basin level. The manner in which available funds are allocated across the project area and among possible treatments affects the degree to which the achieved outcomes reflect the outcomes projected in the SDEIS Chapter 4. Implementation of the preferred alternative presumes funds are expended to focus on the restoration work that has been identified as a priority, through management direction, such as directed through specific management objective, or designation (such as in an A2 subwatershed). In addition, the basin-wide prioritization of “high priority to restore” subbasins should be used to guide allocation of resources if the outcomes identified for the preferred alternative are to be achieved.

In summary, to implement the ROD, the executives and their staffs will collaboratively set priorities for funding requests and allocations at the regional and subregional scales using the guidance set by the ROD as a template to bring about a basin-wide strategy that addresses broad-scale issues. This contrasts with traditional approaches.

Funding reductions sometime result in organizational restructuring which can present additional challenges in retaining the appropriate staff for implementing an integrated program. In addition, many employees move frequently within their careers. On the one hand, this creates new ideas and innovation; on the other hand, local relationships are interrupted, and local knowledge of how ecosystems respond to treatments often is lost.

Monitoring

Monitoring has been a challenge in the past. Often there has been more emphasis and energy in putting forth new projects than in conducting monitoring and evaluation activities. The ICBEMP action alternatives have objectives and standards that address ways of approaching monitoring to meet this concern and tie monitoring to decisions made during implementation. This will require that agencies reexamine how projects are funded and the rate of implementation, as monitoring will become an essential part of implementation.

Concerns have arisen about the effectiveness of restoration activities, which address most of the components of ecosystems, including vegetation, disturbance, aquatic/riparian resources, and human needs associated with Forest Service and BLM management. With the tremendous variety and diversity of conditions within the project area, it is not realistic to think that activities appropriate in one area will necessarily work in others. This EIS outlines restoration expectations at the broad scale and recognizes that implementation will occur at the fine scale or local level. Since successful implementation of the selected alternative will depend on how effectively implementation activities are conducted, the BLM and Forest Service expect to review restoration actions and programs through the monitoring and evaluation process, and to work within existing authorities to apply appropriate adaptive management techniques to respond appropriately.

The agencies also recognize that the amount of time required to see effective results can vary. For example, replacing a culvert that impedes fish migration can show immediate results; determining trends on rangelands, or altering patterns and structure of forest landscapes, may take decades to evaluate the effectiveness of change. Both long-term and short-term monitoring strategies are necessary to meet this monitoring challenge. Collaborative approaches with tribes, other agencies, Resource Advisory Councils, Provincial Advisory Committees, the public, and other governments also will be necessary.

Existing Laws

The BLM and Forest Service are authorized and bound by many existing laws and treaties (see Appendix 1 in this EIS), many of which have been developed to respond to issues of the time. Sometimes these laws have competing requirements. Often agency staffs

spend considerable energy in assuring that the intent of existing laws, regulations, and policies are met. Many of these are simple and straightforward; others are more complex. For example, under existing mineral leasing laws, agencies retain ultimate discretion whether or not to lease or which stipulations to attach (such as no surface occupancy) for leasable mineral resources such as oil, gas, geothermal and coal. Agencies can decide whether or not to sell common mineral resources such as gravel. However, locatable minerals (such as gold and other metallic metals) are different because of the 1872 Mining Act, and agencies work with operators through notices and plans of operation to minimize adverse effects. Complying with both the Mining Act and the Endangered Species Act while also meeting the intent of aquatic conservation strategies is an example of the complexity of legal challenges to successful implementation.

Understanding Ecosystem Management

The challenge most frequently cited by respondents to the study prepared by Schlager and Friemund (1994) was the confusion surrounding the meaning of ecosystem management. Multiple definitions and interpretations have the potential to describe ecosystem management so broadly that the concept becomes meaningless to some. The ambiguity causes many members of the public to be suspicious, and it can create unclear expectations by both the public and agency employees. Ecosystem management needs to be well defined, with associated clear goals and expectations, to achieve successful implementation. The intent of this project and EIS is to explain the concepts of ecosystem management and how these concepts would apply to management activities and expected outcomes on lands administered by the BLM or Forest Service. By doing this and by refining this implementation plan, many of the ambiguities about the term ecosystem management can be better addressed.

A related challenge is a perception that ecosystem management is an internal agency policy shift that is not specifically based on new legislative direction, even though ecosystem management is being implemented by the Forest Service and BLM in response to existing laws, changing public values, and new information and understandings. This challenge can be addressed in part by public involvement and clear documentation of the numerous agency-level directives, interim management direction, laws related to land and resource management, and court orders that collectively provide legal and

regulatory authority for permanent, long-term, ecosystem-based management direction.

Agency Accountability and Credibility

Through the course of the ICBEMP, it has become clear that there is mistrust in the ability of the Forest Service and BLM to do what is specified in plans, policies, and programs. This mistrust results in frustrations on the part of some who rely on goods and services expected from these public lands. In addition, frustrations occur from those concerned about agency abilities to provide protection to such resources as threatened and endangered species or species of concern to tribes. Others are unclear about expectations and how programs will be implemented.

The challenge of addressing such concerns is two-fold: (1) some events or processes such as appropriations, or the results of litigation are outside the control or the authorities of the agencies; and (2) priorities may not be clearly communicated, accountability may not be clearly assessed, or organizational challenges may inhibit progress toward meeting goals. The latter are within the control of the agencies.

Through discussions with many of the people associated with the project both internally and externally, there is a clearly expressed need to assure agency priorities and direction are clear and staffs are accountable for meeting these needs. This may be further addressed by the desire of many to expand the role of tribes, the public, and other agencies and governments in participating in agency planning, implementation, and monitoring activities such that problems are identified early and adjustments are made as necessary.

Tribal Concerns

Federally recognized tribes have critical interests and/or rights associated with significant portions of land administered by the BLM or Forest Service. Some of these American Indian tribes retain rights which were reserved under treaties and other agreements negotiated with the U. S. government. Tribal rights and interests in the management of resources sometimes conflict with the interests of other groups and cultures.

Certain specific issues with respect to the ICBEMP project are of deep concern to American Indian tribes.

These concerns are described in more detail in Chapters 1 and 2 and Appendix 8 of this EIS. They include:

- ♦ Differing perceptions regarding the trust obligations of the federal government with regard to off-reservation settings;
- ♦ Tribal consultation requirements and opportunities to participate in the decision making;
- ♦ Tribal community health and well-being;
- ♦ Availability of culturally significant species and access to socially and/or traditionally important habitats;
- ♦ Adequate restoration of all damaged habitats and protection of high quality habitats for native species of interest to tribes;
- ♦ Protection of the integrity of cultural places such as landscapes, traditional use areas, burial sites, archeological sites, and other areas of tribal interest;
- ♦ Maintenance of harvestable populations of salmonids and other fish, wildlife, and plant species important to the tribes; and
- ♦ Active protection of cultural resources and cultural practices, including the rehabilitation of gathering sites, restoration of native plant communities, and restoration of watershed health and function.

In many areas, there is mistrust and misunderstanding between tribes and the agencies. In some units, there is a lack of understanding or awareness of tribal interests in federal land management as a result of treaties, executive orders, or other agency policies. Because the U.S. courts have not clearly defined the precise scope of the federal-Indian trust relationship, agencies often are unsure when a responsibility is met or redeemed. These misunderstandings can create adversarial relationships rather than partnerships.

Government-to-government consultation is an ongoing relationship between an agency (or agencies) and a tribe (or tribes). Consultation has been variably defined and implemented, and among tribes there are as many definitions for consultation and fulfillment of trust as there are Indian nations. For that reason, consultation is conducted with each tribe individually. Consultation and collaboration are necessary and must be substantive, and the involvement and participation by affected tribes take time, people, and money for both tribes and agencies.

Currently, agency-tribal relations infrequently incorporate a formal consultation strategy. Consequently, agency-tribal relations often are not addressed in a context that would enable adaptive responses to

agency operations and tribal rights and concerns. Collaborative processes to establish agreeable consultation procedures and concerted efforts to provide shared understanding of agency missions and tribal rights and concerns are needed to meet this challenge.

Perceived Threat to Private Interests

Ecosystem management conjures fears in some people of increased direct or indirect governmental regulation or control of private landowner management practices or rights. Many rural communities within the project area are undergoing challenges or changes to their local economies; many people in these communities are understandably anxious about the future. Although the Forest Service and BLM have no authority, intent, or desire to make decisions or implement programs outside agency boundaries, the challenge remains to address this continuing concern and to acknowledge that programs administered by the Forest Service and BLM can have effects on local communities, especially in more rural areas.

Ability to Implement Adaptive Management

Although there is widespread support for adaptive management as a principle and a process, sometimes agency operating regulations pose challenges. For instance, if through monitoring and evaluation a need is identified to alter a local land use plan standard or change a management allocation, a plan amendment often is needed. Depending on the significance of the amendment, the actual process may take substantial time and be subject to rigorous planning steps. Sometimes the process discourages agencies faced with declining budgets and staffs to accomplish the needed changes.

Collaboration and Associated Challenges

Collaboration to address complex land management issues at the levels directed by the ROD will be difficult. Issues will include differing definitions of collaborations. For example, some will state that they didn't get a chance to collaborate if their issue isn't dealt with totally the way they wanted. Others will refuse to come to the collaborative table, hoping that in

doing so they may be able to keep action they don't want from occurring. And, collaboration takes time and funding that may not be available.

The preferred alternative addresses the intent of collaboration, which is that collaboration must be demonstrated as a good faith element of implementation. However, it is recognized that action to implement the ROD must not be halted if the appropriate parties can't all coalesce in a unanimous group to agree upon a particular facet of implementation, or if some party chooses to not come to the table and become involved in the collaborative process.

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