Options for Identifying and Protecting Strategic Fish and Wildlife Habitats and Recreation Sites

A General Handbook

Prepared for the
Alaska Region, U.S. Department of Agriculture, Forest Service
on behalf of
The *Exxon Valdez* Oil Spill Restoration Planning Work Group

Funded by
The U.S. Environmental Protection Agency

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The Nature Conservancy

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AND RECREATION SITES
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The Nature Conservancy
1815 North Lynn Street
Arlington, Virginia 22209
(703) 841-5300

The Nature Conservancy of Alaska
601 West 5th Avenue, Suite 550
Anchorage, Alaska 99501
(907) 276-3133

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NOTE:

This handbook provides general information about options that are potentially applicable to a wide range of situations and is not a complete presentation of all of the considerations or consequences involved in use of those options. Laws, regulations, or requirements other than those mentioned in this handbook may apply. Users should understand that nothing contained in this handbook (including the Appendices) is intended to represent the rendering of legal or tax advice or any other professional services, and this handbook may not be relied on for such purposes; accordingly, users who require such services or other expert assistance should consult competent professional advisors before using any of the options described herein.

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Executive Summary

Background

The United States and the State of Alaska are co-trustees with respect to restoration efforts associated with natural resource damages caused by the 1989 *Exxon Valdez* oil spill. On March 1, 1991, the U.S. Environmental Protection Agency (EPA), on behalf of the Federal Trustees, and the Alaska Department of Law, on behalf of the State Trustees, published a *Federal Register* notice which included a draft 1991 Restoration Work Plan for Prince William Sound, lower Cook Inlet, and the Gulf of Alaska. The draft plan described restoration planning and implementation activities that the Federal and State Trustees have been considering in order to foster the recovery of the sound and the other areas damaged by the oil spill.

The stated objective of Section III.B.4. of the notice is to "identify and protect strategic wildlife and fisheries habitats and recreation sites and to prevent further potential environmental damages to resources injured by the *Exxon Valdez* oil spill." This section calls for "the evaluation of cost-effective strategies to achieve restoration objectives for key upland habitats."

The Restoration Planning Work Group (RPWG), comprised of federal and state agency representatives, has been delegated certain responsibilities by the Federal and State Trustees. One of these responsibilities is to create a work plan to fulfill of the above objective. The RPWG has been actively engaged in gathering information about restoration of the oil spill area and in assessing planning requirements.

In connection with this process, the Alaska Region of the U.S. Department of Agriculture Forest Service, acting on the part of the RPWG, asked The Nature Conservancy to provide additional information to help the RPWG develop its long-range plan. On September 3, 1991, The Nature Conservancy entered into a challenge cost-share agreement with the Forest Service to prepare a report focusing on the ways the Conservancy and others identify and protect strategic fish and wildlife habitats and recreation sites within large, predominantly natural landscapes. Funding for the agreement was provided by the EPA.

In particular, the cost-share agreement requires that the Conservancy report contain:

- A description of several processes for identifying and ranking habitats and recreation sites;

- A menu of protection options available to protect habitats and recreation sites;
- A synopsis of institutional protection mechanisms for habitat areas and recreation sites afforded by existing laws and regulations, as implemented in Alaska; and
- Identification of the technical support capability required to implement the identification mechanisms, protection strategies, or protection tools identified in the report.

Purpose

The purpose of this handbook is to provide the RPWG with an overview of the variety of identification and ranking processes and protection tools, techniques, and strategies that the Conservancy and others use generally and that may be applicable to the RPWG's restoration planning efforts associated with private lands within the oil spill area. Some of the methods described in this handbook have been in use by private conservation organizations and government agencies for many years and have a proven history of success; other approaches are more innovative and, although they may have only a limited track record, offer promising possibilities.

Use

This handbook is intended to be used in two principal ways:

- As a source of ideas for the RPWG to develop specific strategies to deal effectively with restoration of the oil spill area, and
- As a practical reference for a variety of participants in conservation planning and implementation, including conservation biologists, protection planners, protection negotiators, attorneys, land managers, and others involved in the protection and restoration process.

This is a general handbook. Each situation presents unique challenges and opportunities, and the reader should note that in keeping within the purpose of the cost-share agreement, this handbook does not give any recommendations, legal advice, or guarantees about specific application of the options to the oil spill area or any particular sites within the spill area.

Organization

This handbook is divided into seven main parts:

(1) Overview of the Land Conservation Process

The first part provides the framework for the individual identification and protection methods described in the handbook. This part has been included because many of the key elements in this process may be applicable to the restoration process.

(2) Identification and Ranking Processes

The second part of the handbook describes various processes for identifying strategic fish and wildlife habitats and recreation sites and ways to set priorities among those sites. Identification processes for habitats and recreation sites involve fundamentally different considerations and approaches. Therefore, the discussion in the second part follows two main paths: One focuses on the processes applicable to fish and wildlife habitats, and the other focuses on recreation sites.

(3) Protection Tools, Techniques, and Strategies

Presented in Part 3 is a description of different protection tools and an array of techniques and strategies to optimize use of those tools. Virtually all of these tools, techniques, and strategies are, in principle, equally applicable to habitats and recreation sites.

(4) Innovative Conservation Initiatives

Part 4 gives a description of innovative conservation initiatives, which are intensive partnership efforts that use the individual protection tools, techniques, and strategies discussed in Parts 2 and 3 to achieve conservation objectives for large landscapes in generally new and creative ways. The initiatives all involve large-scale cooperation among a variety of institutions, and they all reflect a common theme: developing approaches that will both preserve nature in critical areas and allow people to sustain themselves economically.

(5) Case Studies

This part contains a number of examples of conservation transactions: It is limited to those in which the Conservancy has been involved because

these are examples with which we are intimately familiar. These case studies illustrate how the methods described in Parts 3 and 4 of the handbook have worked effectively in practice for the Conservancy and others throughout the United States and Latin America.

These case studies have also been included in the handbook to inspire ideas about creative strategies to address restoration of the oil spill area. While the situation described in an individual case study may not appear to be similar to the oil spill area, there may be a method used or concept reflected that could be useful to the RPWG. However, because every situation is different, the ways in which certain tools, techniques, strategies, or conservation initiatives are used in the case studies are not intended to be models to copy from, nor are they intended to suggest the only possible solution to similar situations.

(6) Glossary of Terms

Part 6 contains a glossary providing definitions for many of the technical and legal terms used in the document.

(7) Appendices

The Appendices consist of a number of supporting documents providing more detail on matters discussed in the text. Here, a synopsis of existing Alaska laws affording protection to habitats and recreation sites on private lands in the oil spill area is provided. Also found in this part is a variety of practical references and resources such as transaction and due diligence checklists, outlines of agreements, and annotated agreements which highlight some of the considerations involved in the actual implementation of protection tools, techniques, and strategies described in Part 3 of the handbook.

References and suggestions for further reading are found at the end of Parts 2, 3, 4, and 5.

1. Overview of the Land Conservation Process

Outline of Key Topics

1.1 Introduction

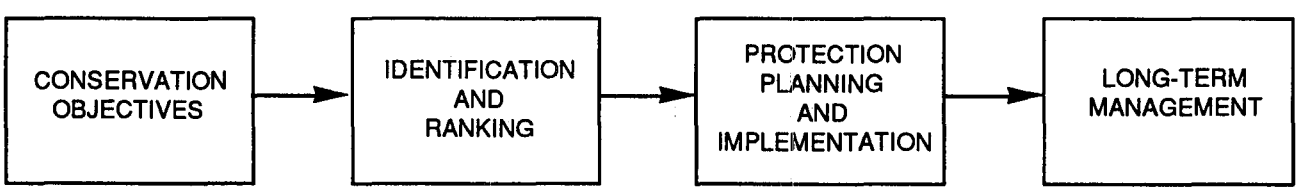
The purpose of land conservation is to insulate ecologically significant natural resources from urgent threats to their existence so that the resources have a reasonable chance of survival. The challenge for conservation planners is to preserve a region's natural heritage for future generations in ways that allow people to use and enjoy land and natural resources without degrading them.

Crucial to the objective of sustainable conservation are the three primary steps in the process of conserving land and habitats:

(1) Identify and rank the significant natural features in need of protection, using the best scientific methods available for the area;
(2) Achieve the most protection for the highest-priority elements for the least cost; and
(3) Manage and restore the land to ensure that the protected natural features are maintained for as long as they continue to exist on the land.

This process has worked in a wide range of geographic areas.

The following describes how these steps apply to the sustainable conservation of strategic fish and wildlife habitats and recreation sites. While these steps are described separately for the purpose of providing a clear and general guide, they are all part of a fluid process of thinking first about what the conservation entity is trying to protect and why, and then about how to go about achieving protection.



1.2 Key Steps in the Process of Sustainable Conservation

1.2.1 Identify and Rank Strategic Fish and Wildlife Habitats and Recreation Sites

The first step in the conservation process is to identify the biota (plants, animals, and natural systems) and recreation sites that exist in the area of concern, and to determine which need protection. This step must be based on a credible inventory of those natural features, where they are located, and what they consist of, together with sound scientific research on their management needs. Conservation planners can analyze this data to determine which species and natural systems, and which recreation sites, are most in need of protection and can be maintained in perpetuity. This analysis is part of the planners' task of designing the appropriate boundaries of the reserve area needed to sustain those natural features.

A. Create Inventory of Species and Natural Communities, and Recreation Sites, Using Effective Scientific Methodologies

Good scientific data forms the foundation of the protection process. A successful program should include the technical ability and expertise to inventory target species and natural communities on the one hand, and recreation sites on the other, using a credible, objective, and reliable scientific methodology. Even with the best of technologies, the information will be incomplete and will need to be continually revised and updated; nevertheless, the goal is to base decisions on the best information achievable under the circumstances.

B. Select Strategic Fish and Wildlife Habitats and Recreation Sites That Meet Predetermined Criteria

Using the information obtained from the inventory, the conservation planners can then select the best examples of the fish and wildlife habitats and recreation sites that have been found. They should, at the outset, strive to develop a neutral analytical framework that can rank the findings and identify sites which meet relevant criteria. Ranking considerations include, among other things, the uniqueness of the natural feature, the present condition of the feature, the severity of threats, the urgency to actively manage the habitat or site, and the proximity to other protected areas.

C. Analyze Ecosystem Processes and Recreational Use and Perform Initial Threat Analysis

After identifying the high-priority habitats and recreation sites, the planners should study the needs of target species and communities, or the recreation users, and gather data about and rank the threats to the continued viable

functioning of the habitat or site. With this information, planners can then select those for which protection activities are most suitable. In instances where a strategic recreation site overlaps with a critical habitat area, the protection-area design mechanism must be capable of resolving the conflict in a manner that safeguards the habitat.

D. Design Optimal Reserve Area

After performing the studies described above, the planners can design the optimum reserve area needed to maintain the priority habitats or recreation sites in perpetuity. At this early phase, the planners should focus on sound research without regard to legal land ownership patterns or political considerations. The planners should also consider compatible uses—such as controlled agriculture, mineral production, or timber harvesting—that may be consistent with the conservation goals.

In the design of the area, it is critical for the planners to ask themselves whether they are thinking big enough. They need to determine whether the protection area will be effective given its relationship to the entire ecosystem or system of interrelated ecosystems, in a way that will allow the natural resource to continue to exist in perpetuity with compatible uses, particularly in light of the current or possible future threats to the resource. These considerations are extremely complex. The larger the area needed for the protection area to work in the long run, the more complicated, exacting, and involved the analysis becomes and the more important are the expertise, experience, and good judgment of the planners.

1.2.2 Develop a Protection Plan

Once the planners have decided which threatened habitats and recreation sites are important to maintain and the appropriate reserve area needed to do so, the second main step is to formulate protection plans and strategies to achieve that goal. The planners first need to identify who the legal owners of the priority habitats and sites are and what their land uses are, consider possible partnerships, and assess funding alternatives. Based on the information gathered about the natural areas and the variety of people and entities whose interests are at stake, the planners can then develop protection plans and strategies and often can work with the partner organizations and owners, communities, and other interested parties to achieve the conservation objectives.

A. Determine Legal Ownership of Priority Sites

Before formulating protection plans and strategies, conservation planners should check available public sources to determine the identity of the legal owners of the priority sites. These sources include deeds recorded in the recorder's office, land status maps, tax assessors' maps, and probate records. Even after investigating these sources, planners may find that some of the information is incomplete or inaccurate. Other parties, such as tenants, may have interests in the land, but their interests may not be reflected in the public records. Changes in ownership may also have occurred as a result of death of an individual or because of a corporate merger or sale that the records may not show. Nevertheless, these records should give a generally accurate picture of land ownership.

B. Gather Public Information about the Landowners and Their Current Land Uses and Examine the Local Community

At this stage, planners should begin to obtain publicly available information about the landowners and their land uses—*always respecting each landowner's privacy.* This information includes answers to questions such as the following:

- How long have the owners held title?
- What have they traditionally used the land for?
- What are the land use, zoning, and other legal constraints that may affect the use and value of the property?
- What are the landowners' short-term and long-term plans for the land?

It is also important for conservation planners to be attuned to the local community and the people, groups, and institutions who may have an interest in the use of the land. Planners should also study ownership patterns carefully and research the current real estate market in the area to get a sense of values.

C. Assess Capacity, Look for Opportunities to Create Partnerships, and Assess Funding Opportunities

Fairly early in the protection process, it is critical for conservation planners to examine the capacity of the conservation entity to protect strategic re-

sources successfully. They should also look for opportunities to forge partnerships with other public or private organizations. Partnerships have many advantages. Different organizations bring different sources of expertise, skills, and constituencies that can help increase the likelihood of success for the design for the protected natural area. In addition, the pooling of resources and funds among various partner agencies and organizations can help achieve more conservation than any one institution could accomplish on its own.

At an early stage, planners also need to assess the range of available funding, including federal, state, and local public funds; private fund-raising; and volunteer programs. Funding should be identified for both the short term and long term to help ensure lasting conservation.

D. Develop Protection Plans and Strategies Based on a Thorough Threat Analysis; Seek Options for Mutual Gain

After identifying the legal owners and uses and possible partners and funding, the planners should make decisions about the priorities and appropriate levels of protection for each separately owned parcel of land—or portion of the parcel—and set realistic goals. They should then decide how to achieve those levels of protection based on a thorough assessment of the threats to the resource. The protection plan should include a number of possible options and strategies. At this stage, it is often useful for the planners to have a brainstorming session with protection-area designers, experienced negotiators, attorneys, and other experts to generate ideas about potential alternatives. The goal is to arrive at a solution that offers mutual gain for the landowners and the conservation entity (a win-win solution), but adheres firmly to the underlying conservation objectives for the natural resource.

E. Build a Working Relationship with the Landowners and Search for Their Underlying Interests

The land conservation process demands a sensitivity to the needs, desires, and concerns of the affected landowners and the local community because protection tools and strategies will succeed only if they can adequately address those interests. Planners or other trained representatives should meet face to face with the landowners—as well as members of the community and other interested groups—and build a constructive, amicable work-

ing relationship with them. All the background information gathered about the landowner and the community described above is crucial preparation for these meetings. Sometimes these meetings will be informal; other times they will entail negotiations. In either case, the representatives or negotiators should try to understand the landowners' thinking and their underlying interests by attempting to see the situation from their perspective.

Every landowner's mix of underlying interests is unique, and individual landowners tend to have much different interests than corporate landowners. On the one hand, individuals often have deeply held feelings about their land, especially if they are living on it. An individual's land may have been in the family for generations, and he or she may have very strong opinions about historic uses and family traditions, as well as concerns about what the land may be used for in the future. On the other hand, corporations have fiduciary obligations to their shareholders to maximize returns on their assets, including their land. Consequently, what they may do with their land may be more limited, especially in terms of their ability to surrender rights without a direct financial benefit.

In addition, there are sometimes groups of people who have strong cultural or traditional ties to the land, regardless of legal ownership patterns. It is vital for these groups to be intimately involved in the conservation process and for their needs, desires, and concerns to be addressed in any protection plan. A protection plan succeeds only if it is locally driven, with the local people assuming an active role in the protection, and particularly the stewardship process.

Learning about what interests and emotions motivate a landowner or a particular interested group can be very time-consuming and difficult. However, by doing so, the planners and negotiators can better develop options that satisfy the parties and have a better chance of achieving the conservation goals.

F. Use Cost-Effective Protection Tools Creatively and Flexibly in Working With Landowners

Each level of protection is achieved by implementing certain protection tools. There is a wide range of such tools, as well as techniques and strategies for optimizing their use. In general, the higher the level of protection, the higher the cost. Thus, it is extremely important to have a working team

of creative, knowledgeable, experienced, and committed professionals who can structure transactions that are attractive to landowners, but at the same time achieve the most protection for the least cost. This team of professionals should include experts in finance, real estate, law, and land use, among other areas. During negotiations with the landowners, the conservation negotiators should constantly refine and adapt the tools, techniques, and strategies—and even invent new ones—as more information about the landowners is obtained and circumstances change.

G. Perform Necessary Due Diligence before Acquiring Any Interest in Real Property

Most of the protection tools, techniques, and strategies involve legal transactions or have legal implications; and conservation planners and negotiators should work closely with experienced attorneys to make sure their objectives are not unexpectedly thwarted. The best plans will often fail if the facts about the land or the legal framework upon which they were based turn out to be inaccurate. Therefore, the conservation staff and attorneys must perform an adequate level of due diligence before a government agency or conservation organization acquires any interest in real property. In general, due diligence includes, at a minimum:

- A thorough review of an appraisal or other satisfactory evidence of value,
- A thorough review of a preliminary title report and underlying documents, and
- A thorough inspection of land and any buildings or other improvements for hazardous materials or other potential environmental problems.

Often, due diligence will entail many additional investigations, particularly in complicated transactions.

1.2.3 Manage the Land

Once the land has been placed in protected status, the last step is to maintain and/or restore it for the benefit of the protected fish and wildlife or the users of the recreation sites. This can be an expensive and resource-draining task. However, without a dedicated commitment to continued management, the time and effort invested and money spent to acquire an interest in the land, or otherwise protect the land, will have been wasted.

A. Develop a Management Plan as Part of the Protection Plan

A sound management plan based on thorough scientific research and expert advice is an intrinsic part of the protection plan. When thinking about protection options, conservation planners must consider whether there are adequate resources and personnel necessary to implement an appropriate management plan when the land-protection transaction is closed. Expert land managers should generally be involved early in the protection-area design and protection-planning stages and should be kept informed during any negotiations for protection transactions. This will help ensure that the terms of the transaction with the landowner are consistent with realistic long-term management of the land. Planners should look for opportunities for synergy—economies of scale with other protected areas and partner organizations in management. They should also look for, and work actively to create, opportunities to build a broad consensus for a management plan.

B. Dedicate Funds for Perpetual Management at the Time the Land Is Protected

Long-term management, like protection, can be very expensive, especially if it involves significant restoration of the land. Therefore, to ensure enduring protection of strategic habitats and recreation sites, it is essential to have a secure source of funds for management in place at the time the land protection transaction closes. (The Conservancy has established a policy that protection transactions must include the funding of a long-term stewardship endowment which is equal to approximately 25 percent of the fair market value of the interest acquired.)

C. Seek Partners in Stewardship

To help ensure success, long-term stewardship strategies for large-scale protected areas should take into account the goals and objectives of adjacent landowners and communities. The conservation entity should encourage these neighboring owners and communities to become partners in an effort that protects both the environmental and human values associated with the protected area. For example, by working with local universities, a conservation entity can help provide sound scientific research essential to an understanding of the environmental threats. Depending on the circumstances, the conservation entity could also help demonstrate to neighboring property-owners the value conservation easements may have for them,

develop local-hire opportunities for stewardship jobs, assist in the development of soil conservation programs, and heighten the environmental awareness of the local community and tourists.

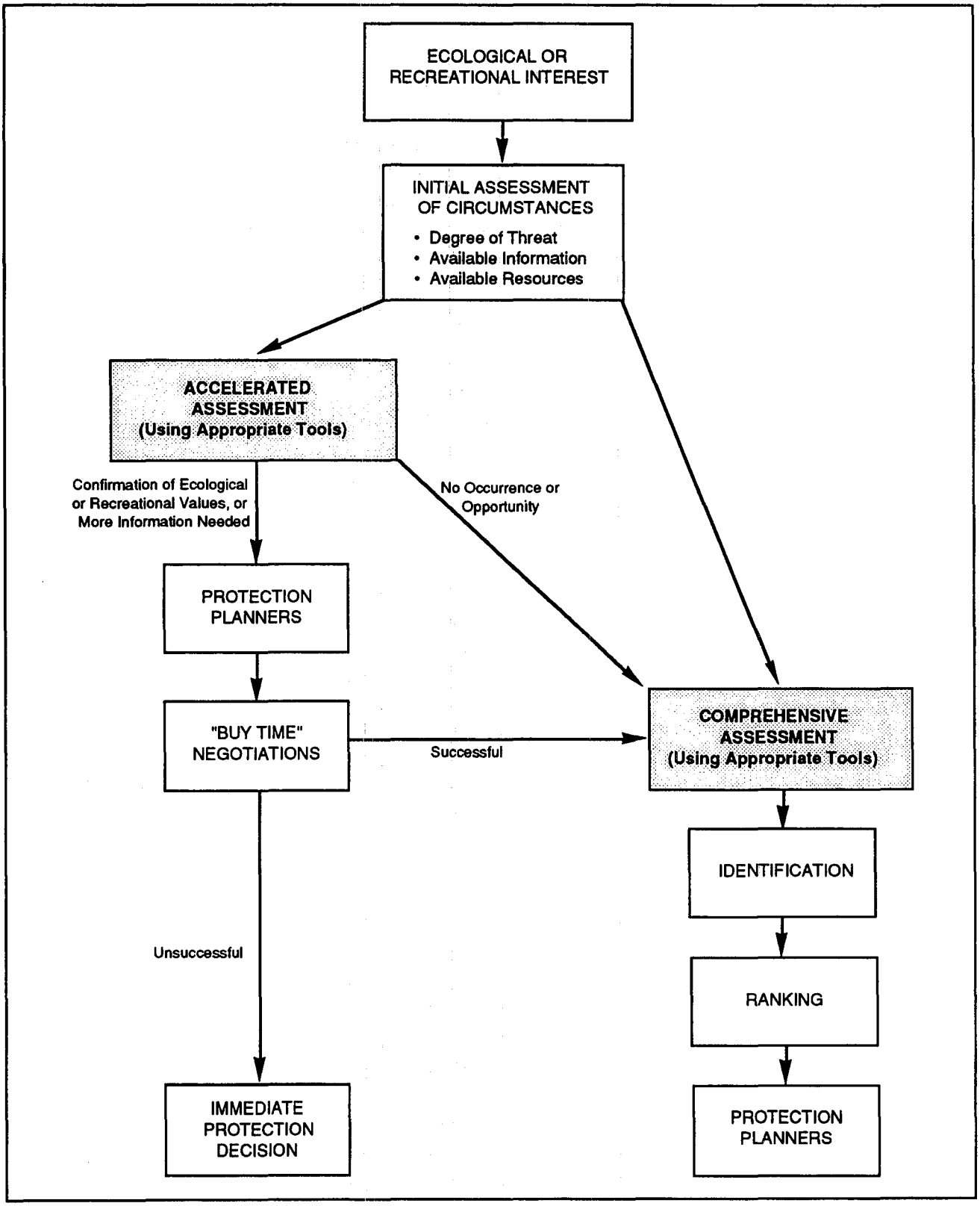
2. Identification and Ranking Processes

Outline of Key Topics

2.1 Introduction

This part of the handbook provides a discussion of the overall identification and ranking process for strategic habitats and recreation sites within large landscapes. Part 2.2 covers habitat identification and evaluation, while Part 2.3 provides techniques and strategies for identifying and ranking outdoor recreational opportunities. Figure 2-1 provides an overview of the identification and ranking process.

Figure 2-1
Landscape-Scale Identification and Ranking for Strategic Habitats and Recreation Sites



2.2 Habitat Identification and Evaluation

2.2.1 Introduction

Traditional habitat identification work grew out of the needs of wildlife biologists to (1) identify habitats critical to wildlife and (2) develop management strategies to ensure the protection and continued productivity of those habitats. Repeated observations of the ways in which animals used given areas resulted in the classification of habitats according to their utility: breeding, nesting, escape cover, wintering areas, and the like. Habitats were further described in terms of their structural similarities and the availability of key resources such as preferred food items. This information was traditionally displayed on maps.

Much attention was focused on so-called *critical habitats*—those which were deemed limiting to animal populations. Since much of this early work was financed primarily with funds from hunters and anglers, it focused on game animals and sport fishes. Even as the scope of these studies was expanded to include nongame animals, only a relatively few popular or high-profile species received the majority of the research and management efforts.

As the amount of information on animals and their ecological relationships increased, emerging computer technologies were employed to store and manipulate information. Modeling was used to explore habitat relationships and make predictions about the likely results of specific actions. A number of computerized information management efforts have been launched in the last 20 years. However, the new computer technologies were expensive compared to traditional manual information management; and few biologists were trained in either the technologies or the quantitative methods needed to use them. As a result, most of these early efforts were relatively narrow in scope and often concentrated on single species or narrow groups of species.

In conjunction with the growth of computerized data bases, comprehensive strategic planning became more focused. Using the information storage, sorting, and analytical abilities of the computer, agencies and institutions were able to more accurately identify constituencies, needs, and areas in which information was lacking. These analyses facilitated the setting of priorities and concentrating money and effort where they were most needed.

Enhanced strategic planning also permitted more objective analyses of the resources and needs which should be addressed. Instead of a "laundry list" of favorite projects, skewed toward those species or groups of species with

the largest constituencies, it became possible to clearly and objectively identify those species or groups of species with the greatest need for conservation and management. These next steps, beyond gathering and cataloguing information, are collectively termed *conservation planning*.

Table 2-1 provides a general summary of several types of conservation planning tools.

2.2.2 Identification Tools

Four key steps are involved in the selection of an appropriate identification process:

(1) Evaluating the apparent degree of threat to the area and its key resources;
(2) Assessing the availability, quality, and coverage of existing information sources;
(3) Estimating (using best professional judgement and readily available information) the likelihood of the occurrence of a species or community of concern; and
(4) Selecting one or more applicable tools which will achieve sound conservation-planning goals given the available time and money.

A wide array of techniques are available to assist in landscape classification, habitat identification, and conservation planning. These range from "top-down" methods which rely heavily on remote sensing data (primarily satellite imagery and aerial photography) in conjunction with Geographic Information Systems (GIS) technology, to comprehensive identification processes in which information is assembled and processed "from the ground up" in a systematic manner.

If a great deal of information exists and it is well-organized and readily available, reliable results can be produced in a relatively short time by using a planning system that incorporates a comprehensive data base, such as BCD, LAPS, or APS (described below). Indeed, if planning documents such as Forest Plans, State Comprehensive Strategic Outdoor Recreation Plans, Natural Diversity Scorecards, and Site Tracking Lists (or other strategic plans) have been completed, conservation planning is largely a matter of sorting through priorities which have already been established. However, it is more common to find that a number of sources of informa-

Table 2-1
Summary of Strengths and Limitations of Selected Habitat Identification Tools

TOOL	STRENGTHS	LIMITATIONS	KEY FEATURES
REMOTELY SENSED DATA TECHNIQUES (e.g., Rapid Ecological Assessment)	• Permits rapid evaluations in areas lacking field data • Uses readily available information • Provides a means of synthesizing variable amounts and kinds of data • Maximum flexibility to bring existing data and expertise to bear • Successive approximation efficiently focuses time and effort on most promising areas	• Cost of acquiring satellite imagery and aerial photography • Suitable imagery may not be available for all areas	• Telescoping process successively focuses more attention on sites deserving of protection
GAP ANALYSIS	• Large-scale landscape orientation • Attempts to relate vegetation/habitat and animal distributions • Provides a broad overview of ownership and protection • Incorporates many existing data sets into GIS layers	• Coverage limited at present • Time needed to digitize vegetation, range and ownership maps • Scale too broad for many applications • Equation of vertebrate diversity with biodiversity per se subject to debate • No provisions for updating at this time	• GIS-based, statewide coverage • Uses vegetation maps at cover-type level, vertebrate range maps and (often) heritage EO data
MODELLING Wildlife Habitat (e.g., HSI Models)	• Organized and standardized data • Quantitative analyses of habitat use • Quasi-predictive • Rapid data integration	• Simplistic; site and condition specific • Little or no verification • Potential misuse of unverified results	• Quantitatively based • Conceptually simple • Mathematically complex • Verification difficult
Bioenvironmental (e.g., Gradient Analysis)	• Large-scale landscape orientation • High predictive capabilities with respect to community stability • Measures the representativeness of given preserve designs • Objective analysis of size/cost trade-offs in preserve design	• Requires information on factors which influence vegetation • Deals only with communities • Results are predictive and must be confirmed via field surveys	• GIS-based, but can be done using manual methods • Assesses protection actions within regional context • Can be used to perform ecological benefit/cost analysis
INTEGRATED IDENTIFICATION Heritage Programs	• Standardized methods nationwide • Fully relational data bases, completely searchable • Outputs designed to facilitate conservation planning • Associated tract data bases to monitor ownership • Action tracking data bases to monitor conservation and stewardship actions • Continually updated	• Relies heavily on secondary sources and existing information • Time needed to populate data bases • Time needed for de novo field surveys	• Relational data bases: information on biodiversity, ownership, management and threats • Point location and boundary data • Life history, habitat and range information • Standardized methodology and international network • Computerized, manual and map files
Land Acquisition Priority Systems (LAPS/APS)	• Merges regional priorities into a national list • Evaluates acquisitions objectively based on one or more targets • Criteria are based on statutory authorities	• Designed for small acquisitions • Biased toward USFWS statutory authorities • Requires site by site evaluation • Designed to assess value of sites already targeted for acquisition	• Automates analyses of proposed acquisitions • Merges regional priorities into a single national list

tion exist, both in computerized and manual formats, and that none of these is comprehensive in either subject matter or geographic coverage. Still other areas have little information available, and planning must start from scratch.

A. Remotely Sensed Data Techniques

Remotely sensed data include satellite imagery (such as LANDSAT/MSS, LANDSAT/TM, SPOT, AVHRR, SAR), as well as more conventional aerial photography, videography, and SLAR. These data and images have been extensively used in landscape classification, terrain analysis, and mapping, particularly for vegetation, soils, habitat, and geologic applications. Remotely sensed data can be processed and analyzed by either manual delineation and interpretation of the images (enhanced, if satellite images), or by computer-assisted methods employing the statistical analysis and classification of digital data. In all cases, the accuracy of any finished products (e.g., vegetation maps) must be evaluated in order to determine their value to any conservation planning applications or resource management decisions.

All of the remote sensing data listed above have been applied by various researchers and state and federal agencies to specific projects in Alaska. These projects include a large number of habitat and vegetation classifications and mapping products, done at various scales, using a variety of data, and with varying degrees of success. Many of them have been incorporated into a GIS and used in resource and conservation planning.

The Nature Conservancy's National Ecology Program has developed its own application, called Rapid Ecological Assessment (REA) (Muchoney et al., 1991), to integrate aerial and satellite imagery analysis with existing information and targeted field sampling to provide a reliable and efficient means of inventorying and monitoring areas in need of conservation action. The REA technique essentially involves the sequential use and evaluation of medium- and high-resolution satellite images, aerial photography, and videography. These images are analyzed to produce a first-order classification to delineate potential conservation sites. Often, initial biological interpretation of the landscape mosaic is done using aerial reconnaissance—including aerial photography and videography. Sites which appear to have a high potential for conservation action are field-checked, and high-quality sites are then ground-truthed and sampled to provide the detailed

information needed to fine-tune the classification and resolve boundary questions.

SEE CASE STUDY: 5.2.5A and 5.3.4D Virginia Coast Reserve

REA has been employed most extensively on The Nature Conservancy's Virginia Coast Reserve Project, a United Nations-designated biosphere reserve encompassing 70 miles of the lower Delmarva Peninsula and 18 associated barrier islands. In highly modified landscapes such as the Virginia Eastern Shore, the SPOT panchromatic data are useful for gathering large amounts of pre-classification vegetation data. For areas with less human impact, Landsat Thematic Mapper (TM) provides multispectral data which can be digitally classified. In the Virginia Coast Reserve Project, after human-impacted landscapes had been masked out using the SPOT data, Landsat TM data were used to stratify and classify the vegetative cover of the remaining areas. The initial classification was unsupervised; that is, classes were based on apparent differences in their spectral signatures.

The REA process is depicted in Figure 2-2 and described in further detail in Appendix B.1.

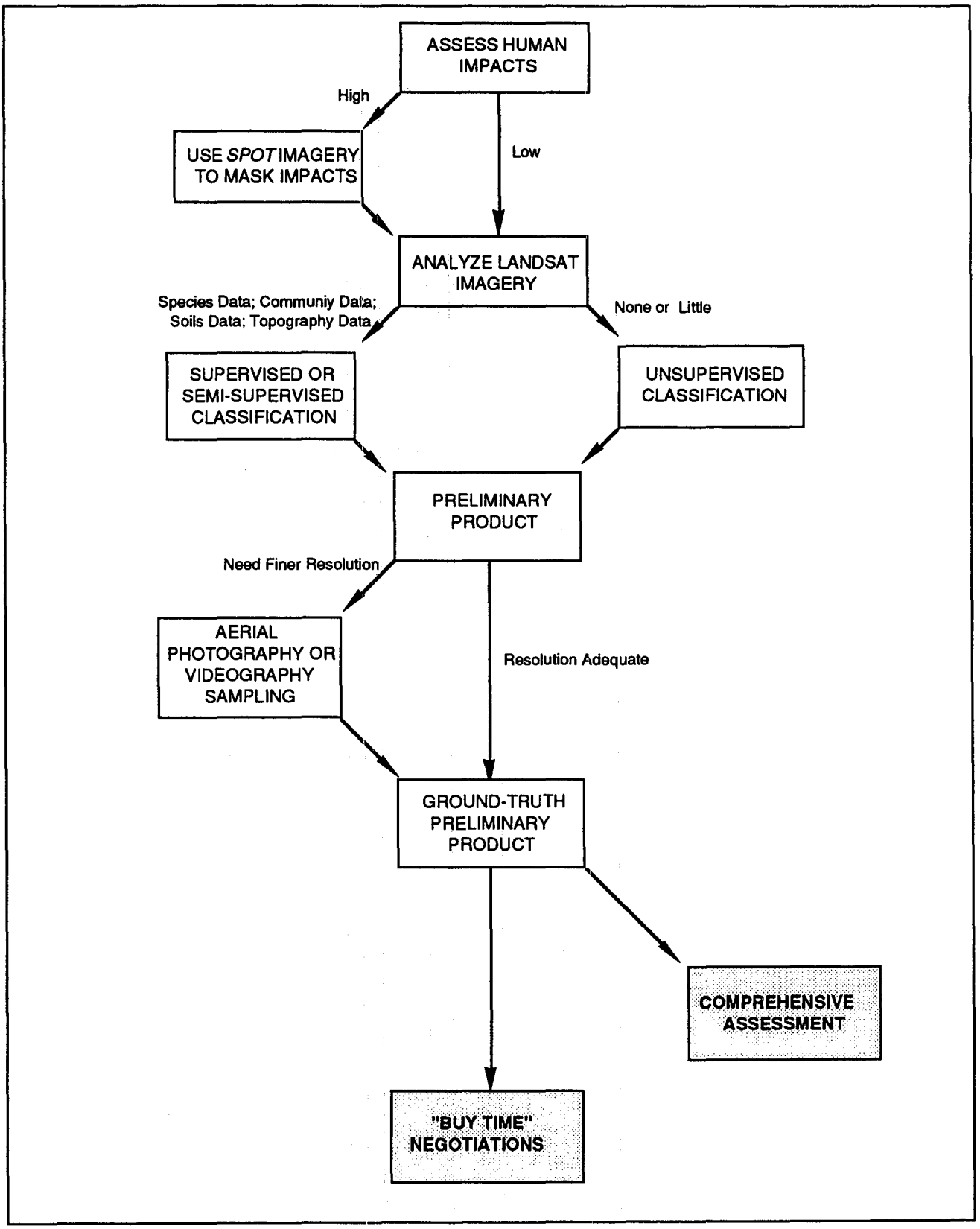
B. Gap Analysis

U.S. Fish and Wildlife Service researchers recently developed a method which they believe has great utility for helping to set a national agenda for biodiversity protection. *Gap analysis* is a term given to a GIS-based analysis of various layers of natural resources information which is used to identify significant omissions (gaps) in protected or conservation-managed lands (Scott et al., 1988). With the exception of Alaska, Gap Analysis Projects (GAP) are underway in several states, and more will be added, with the goal of completing every state in the United States by 2006.

GAP prepares a base map at a scale ranging from 1:100,000 to 1:500,000 and overlays this with a variety of GIS layers: vegetation, vertebrate species range maps, conservation ownership (federal, state, and private), the Conservancy's information for rare plants and animals, and in some cases, plant-species range maps. These layers are analyzed using the GIS technology to identify:

- Vegetation types which are under-represented or do not occur in protected ownership,

Figure 2-2
The Rapid Ecological Assessment Process



- "Hot spots" which seem to possess high species diversity as indicated by the extensive coincidence of species ranges, and
- Species or combinations of species which are under-represented or which do not occur in protected areas.

Gap analyses require accurate vegetation maps, accurate vertebrate range maps, accurate maps of land ownership (public versus private is sufficient), and accurate location information for species of special interest. All of these must be digitized (or scanned) and converted to the same scale. Gap analysis results must be verified on the ground before concrete protection actions are taken.

Gap analysis assumes vertebrate species diversity is an accurate indicator of biological diversity, which has not been clearly established. Other reviewers have questioned whether or not areas with the highest vertebrate species diversity are necessarily the best examples of habitat to protect to meet the needs of any one species. Some of these questions should be amenable to resolution soon. The first statewide gap analysis will be completed for Idaho by end of 1991, and Oregon is scheduled for completion in early 1992.

C. Modelling

Various modelling techniques have been developed and used as predictive tools for evaluating resources of large landscapes and information-poor areas. Wildlife habitat models have been reviewed extensively by Verner et al. (1984) and Cooperrider et al. (1986). Most of these can be grouped into one of three categories:

(1) Single-species models;
(2) Multiple-species models; and
(3) Habitat-analysis models.

Single species models include simple correlation, Habitat Suitability Index (HSI), Habitat Capability (HC), and Pattern Recognition (PATREC) models. Multiple-species or community models are represented by Bureau of Land Management's (BLM's) Integrated Habitat Inventory and Classification System (IHICS). Habitat-analysis models include the Wildlife and Fish Habitat Relationships (WFHR) program, the Habitat Evaluation Procedures (HEP), simulation models such as DYNAST, and optimization

models such as FORPLAN. These models provide an extensive set of analytical tools useful in organizing information and evaluating wildlife habitat requirements and, in some cases, predicting the effects of large-scale habitat modification programs.

Caution should be exercised in the use of these models since, despite their initial appeal and apparent ease of use, most have not been fully tested. Full verification of all results under conditions specific to the habitats being studied is needed to prevent inaccurate interpretations and development of inappropriate management strategies.

Vegetation and environmental information can be used to construct bioenvironmental models which can be manipulated not only to predict the occurrence of areas with high ecological diversity, but also to assess the representativeness of any given set of site boundaries. It is also possible to perform a gap analysis of sorts, identifying those elements of ecological diversity which may be omitted by a given set of site boundaries.

One such approach under investigation is called *gradient analysis* (Margules 1989). The technique involves arraying sample plots along *gradsects*: belt transects selected to represent the entire array of variation along the maximum perceived environmental gradients. In order to do this, it is necessary to identify environmental factors which seem to exercise the greatest influence on the distribution of vegetation communities.

Gradsects may be identified manually using topographic maps, climatic maps, soil and geological maps, and the like, but are most efficiently selected using a GIS and a variety of layers depicting the ways in which environmental factors vary. Likewise, sampling may be carried out entirely on the ground, but preliminary discriminations can also be made using satellite imagery or aerial photographs. DeVelice et al. (1988) prepared comprehensive gradient diagrams for an ecoregion of New Zealand and compared these with gradient diagrams showing existing protected areas. In this way, they were able to identify a major "gap" and recommend the addition of a unique forest remnant to a national park proposal for the study area (see Appendix B.2).

With another technique known as General Linear Modelling (GLIM), it is possible to predict the presence or absence of community types, the ranges and the presence or absence of individual species, and the representative-

ness of any given protected area—that is, the ecological variation representative of a larger area (such as an ecoregion) actually contained within the proposed boundaries of a protected area. For example, using this technique, Engelking and Bourgeron (1991) found that over half of the ecological diversity representative of the Apachean ecoregion was represented within the boundaries of The Nature Conservancy's 321,700-acre Gray Ranch Preserve located in New Mexico.

In order to apply gradient analysis and GLIM, it is necessary to develop a preliminary vegetation classification and working hypotheses concerning the primary environmental factors which influence the distribution of plant communities. It is also important to understand the patterns of variation in these factors over the area of interest.

D. Integrated Identification and Inventory Methods

From numerous data base and inventory efforts there has emerged a broad spectrum of information systems which include regional profiles, habitat management guides, geographic information systems, and multi-resource inventories. Most are independent systems for gathering and organizing information for scientific research and resource management and vary in application, degree of use, and depth of coverage. Some are written compilations while others are computerized (see Appendix B.3). The following are examples of integrated identification and inventory methodologies which identify species, communities, and/or habitats, and set priorities for conservation.

1. Natural Heritage Programs/Biological Conservation Data Bases

Natural Heritage Programs and their Biological Conservation Data Bases (BCD), originated by The Nature Conservancy, are designed to serve as central repositories of information about the location, status, and threats to key elements of biological diversity. The methodological focus is on species, populations, and communities that are rare and of critical ecological value. The information is used to guide maintenance of those resources which represent the biological and ecological diversity of a state or nation.

Heritage methods and technologies are standardized throughout an international network of programs. They use a systematic, computer-based methodology that relationally links information on biology, ecology, abundance,

distribution, taxonomy, and management descriptions with specific locations on a map.

A central concept in the design of heritage programs is the *coarse filter/fine filter* strategy. Most species on earth occur as members of one or more natural communities. When those communities are identified, inadvertent recognition is made of the many species which are integral members of those communities—even those species which have not yet been collected or described.

The identification of communities constitutes the coarse filter portion of the heritage program strategy. It is the responsibility of the community ecologist to: (1) create or adapt a community classification which represent the state, province, or nation, and (2) to find intact examples of these communities.

The program's botanists and zoologists create the fine filter by identifying the rare and ecologically significant plant and animal species. Of those species, some may have such narrow habitat requirements or are so adversely affected by human activities that they must be closely monitored. Some species may play a key structural or functional role in the ecosystem, while others grow on very specific substrates, yet occur on only one or two examples of that substrate.

Other key elements that are identified for the fine filter include rookeries for colonial nesting birds, haul-out areas for marine mammals, staging areas for migratory waterfowl and shorebirds, spawning beds for fish, and other sites that have a unique and important role in the life history of a species or a group of species. In combination with coarse-filter results, this information can then be applied to conservation efforts which capture this fullest array of biological diversity.

In order to set information gathering and inventory priorities, ranking occurs at three separate levels. First, all species, communities and habitats (*elements*) are ranked according to abundance, distribution, and threat criteria. A second ranking compares the locations of highly ranked elements by ascertaining their quality, condition, viability, defensibility, manageability, threats, and trends. Third, the ecological sites which encompass these element locations are ranked by biodiversity, management, protection, and other relevant values, such as recreation, aesthetic enjoyment, and educa-

tion values. These sites include the land areas required for adequate protective buffers and management operations, as well as defensible boundaries.

Summary information is assembled into *site-tracking records* for monitoring the relative value of sites (Figure 2-3) and *site scorecards* for showing biodiversity conservation priorities in roughly descending order of importance (Figure 2-4). This series of ranking procedures can then be systematically applied to setting public and private conservation priorities for protection planning.

Information contained within the BCD includes existing records from the literature and museum data bases, as well as the field inventories. Application of the data base to specific areas is dependent on the quality and extent of the existing information and the time and money available to inventory areas with identified data gaps.

Figure 2-5 illustrates the Natural Heritage Program's comprehensive ecological assessment process.

2. USFWS Land Acquisition Priority System (LAPS)/ Alaska Acquisition Priority System (APS)

The U.S. Fish and Wildlife Service (USFWS) created the Land Acquisition Priority System (LAPS) as a means of automating the dynamic and complex land-acquisition priorities of the agency. It is used to transmit those priorities to Congress and other interested parties in a timely manner. Proposed acquisitions are first entered into regional-office LAPS files based on four target categories: (1) endangered species, (2) migratory birds, (3) nationally significant wetlands, and (4) biodiversity. The regions then submit their priority projects to the Washington office for a combined priority analysis. A national priority list is then produced using three criteria: (1) contribution to national service goals, (2) degree of threat, and (3) proximity to metropolitan statistical areas.

The initial priority list is reviewed by the Office of Migratory Birds, Endangered Species, Enhancement, Refuges, and others, and then submitted to the Director for approval. Once this internal review and approval process is complete, the national priority list is made available to Congress and the general public.

While seemingly effective in the contiguous 48 states, LAPS has proven to be generally unwieldy for Alaska. Approximately 23 million acres of land in the National Wildlife Refuge System in Alaska are selected or conveyed to Native corporations, allottees, the State of Alaska, and other individuals. In producing its Alaska Submerged Lands Act Report (1990), Region 7 of the USFWS rejected LAPS as inadequate to handle the scale of effort needed in Alaska (USFWS et al., 1990). Instead, Region 7 produced its own Acquisition Priority System (APS) using an ARC/INFO GIS and seven resource and three management criteria (Table 2-2).

Figure 2-6 shows the application of this technique in evaluating the priority of inholdings in the Becharof National Wildlife Refuge. This level of information is subsequently entered into the LAPS format for transmission to the Washington office and incorporation into the national priority list.

E. Professional Judgment

Sometimes decisions regarding protection of an area must be made quickly when the threat of degradation is imminent. A very tight time frame may preclude reliance on any of the methodologies discussed above. In such a situation the best approach may well be to rely on a formalized gathering of information from informed professional sources.

Scientists familiar with the area would be contacted and asked to provide names of others with expertise in the area. An effort would be made to contact individuals with a variety of resource backgrounds including botany, zoology, and community ecology. Next, a meeting of these experts would be convened and structured in such a way as to gather information in a format that can be easily mapped according to discipline.

The final product would thus be a series of overlaying maps arranged in a hierarchical fashion as follows:

(1) The bottom layers would include information on hydrology, topography, and soils;
(2) The second layer would include information on plant and animal communities;
(3) The third layer would include information on targeted plant and animal species;
(4) The fourth layer would include land status information; and
(5) The fifth would compile threat information.

Figure 2-3
Sample Site Tracking Report

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SITE TRACKING REPORT
Nation: US State: Montana

Site Name / Map / Type CS / IS / Tractname / Scientific Name / Common Name	Biodiversity Rating	EONum Ranks / Lastobs	Protection Urgency Rating / EO Rank Comments / Owner	Management Urgency Rating / EO Protection Comments / MA Name	Protection Comments/Conservation Intent / TRS / County
CONDON CREEK (600.00 acres)					
P	B1 - SITE CONTAINS 13 PONDS SUPPORTING HOWELLIA AQUATILIS (G2/S2), A MONOTYPIC GENUS; MANY OF THE POPULATIONS ARE LARGE AND VIABLE. AREA HAS BEEN IDENTIFIED AS PART OF A SIGNIFICANT TRAVEL CORRIDOR BETWEEN THE SWAN RANGE AND MISSION MOUNTAINS. HIGH SEASONAL USE BY GRIZZLY BEARS (G4T3/S3), BALD EAGLES (G3/S3), AND AN ARRAY OF RIPARIAN-ASSOCIATED WILDLIFE.			M2 - AN ASSESSMENT OF THE FOREST MANAGEMENT PLANS SHOULD BE MADE	
GRINDELIA HOWELLII HOWELL'S GUM-WEED (SMITH CREEK)		056 G3/S3 1987-07-15	D - SMALL POPULATION; IN A DISTURBED AREA. BURLINGTON NORTHERN	BURLINGTON NORTHERN LAND FLATHEAD NATIONAL FOREST, SWAN LAKE RANG	021N017W 13 Missoula
HOWELLIA AQUATILIS WATER HOWELLIA (CONDON CREEK)		006 G2/S2 1990-07-11	C - LARGE POPULATION- FLATHEAD NATIONAL FOREST	FLATHEAD NATIONAL FOREST, SWAN LAKE RANG	021N016W 18 Missoula
HOWELLIA AQUATILIS WATER HOWELLIA (CONDON CREEK)		020 G2/S2 1990-07-18	C - LARGE POPULATION,	FLATHEAD NATIONAL FOREST, SWAN LAKE RANG	021N016W 18 Missoula
HOWELLIA AQUATILIS WATER HOWELLIA (CONDON CREEK)		021 G2/S2 1987-07-02	C - SMALL POPULATION	FLATHEAD NATIONAL FOREST, SWAN LAKE RANG	021N016W 18 Missoula
HOWELLIA AQUATILIS WATER HOWELLIA (CONDON CREEK)		022 G2/S2 1990-07-12	C - MEDIUM-SIZED POPULATION FLATHEAD NATIONAL FOREST	FLATHEAD NATIONAL FOREST, SWAN LAKE RANG	021N016W 18 Missoula
HOWELLIA AQUATILIS WATER HOWELLIA (CONDON CREEK)		023 G2/S2 1990-07-10	C - MEDIUM-SIZED POPULATION FLATHEAD NATIONAL FOREST	FLATHEAD NATIONAL FOREST, SWAN LAKE RANG	021N016W 18 Missoula
HOWELLIA AQUATILIS WATER HOWELLIA (CONDON CREEK)		024 G2/S2 1987-07-02	C - SMALL POPULATION FLATHEAD NATIONAL FOREST	FLATHEAD NATIONAL FOREST, SWAN LAKE RANG	021N016W 18 Missoula
HOWELLIA AQUATILIS WATER HOWELLIA (CONDON CREEK)		025 G2/S2 1990-07-11	D - SMALL POPULATION FLATHEAD NATIONAL FOREST	FLATHEAD NATIONAL FOREST, SWAN LAKE RANG	021N016W 18 Missoula
HOWELLIA AQUATILIS WATER HOWELLIA (CONDON CREEK)		026 G2/S2 1990-07-12	C - MEDIUM-SIZED POPULATION FLATHEAD NATIONAL FOREST	FLATHEAD NATIONAL FOREST, SWAN LAKE RANG	021N016W 18 Missoula
HOWELLIA AQUATILIS		027 G2/S2	D - MEDIUM-SIZED POPULATION; POND MARGIN		021N016W 18

Figure 2-3
Sample Site Tracking Report (Cont'd)

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SITE TRACKING REPORT
Nation: US State: Montana

Site Name / Map / Type CS / IS / Tractname / Scientific Name / Common Name	EONum	Ranks / Lastobs	EO Rank Comments / Owner	EO Protection Comments / MA Name	TRS / County
WATER HOWELLIA (CONDON CREEK)		1990-07-17	FLATHEAD NATIONAL FOREST	FLATHEAD NATIONAL FOREST, SWAN LAKE RANG	Missoula
HOWELLIA AQUATILIS WATER HOWELLIA (CONDON CREEK)	028	G2/S2 1987-07-02	C - MEDIUM-SIZED POPULATION; ADJACENT BURLINGTON NORTHERN, INC.	BURLINGTON NORTHERN LAND	021N017W 13 Missoula
HOWELLIA AQUATILIS WATER HOWELLIA (CONDON CREEK)	029	G2/S2 1990-07-10	D - MEDIUM-SIZED POPULATION; POND BURLINGTON NORTHERN, INC.	BURLINGTON NORTHERN LAND	021N016W 19 Missoula
HOWELLIA AQUATILIS WATER HOWELLIA (CONDON CREEK)	030	G2/S2 1990-07-12	D - LARGE POPULATION; POND MARGINS BURLINGTON NORTHERN, INC.	BURLINGTON NORTHERN LAND	021N016W 19 Missoula
HOWELLIA AQUATILIS WATER HOWELLIA (CONDON CREEK)	031	G2/S2 1987-07-15	D - MEDIUM-SIZED POPULATION; AREA BURLINGTON NORTHERN, INC.	BURLINGTON NORTHERN LAND	021N017W 13 Missoula
DANCING PRAIRIE (2560.00 acres) Y 81 -		P2 - Potential for subdivision and existing grazing damage.	M2 - Phillips Creek needs protection from livestock and possibly riparian restoration.	/It would be ideal to acquire all lands within the primary and secondary boundaries and manage the site as a preserve.	
TYMPANUCHUS PHASIANELLUS COLUMBIANUS COLUMBIAN SHARP-TAILED GROUSE (DANCING PRAIRIE)	001	G4TU/S1 1988-05-20	A - BEST AND ONLY KNOWN ACTIVELY USED LEK CATE AND O'MEA CORP.	PRIVATELY OWNED LAND (INDIVIDUAL OR CORP	037N027W 26 Lincoln
TYMPANUCHUS PHASIANELLUS COLUMBIANUS COLUMBIAN SHARP-TAILED GROUSE (EUREKA)	002	G4TU/S1 1988-05-20	B - MAY NO LONGER EXIST - SEE COMMENTS BELOW. AL LUCIANO, EUREKA, MT	PRIVATELY OWNED LAND (INDIVIDUAL OR CORP	037N027W 23 Lincoln
TYMPANUCHUS PHASIANELLUS COLUMBIANUS COLUMBIAN SHARP-TAILED GROUSE (PHILLIPS CREEK)	003	G4TU/S1	D - INACTIVE LEK	PRIVATELY OWNED LAND (INDIVIDUAL OR CORP	037N027W 11 Lincoln
FESTUCA SCABRELLA MID STEPPE SERIES ROUGH FESCUE MID STEPPE SERIES (DANCING PRAIRIE)	005	Z/Z 1987-05-27	B - CATE & O'MEY CORP.	PRIVATELY OWNED LAND (INDIVIDUAL OR CORP	037N027W 26 Lincoln
STIPA COMATA MID STEPPE SERIES NEEDLE-AND-THREAD MID STEPPE SERIES (DANCING PRAIRIE)	002	Z/Z 1987-05-27	B - CATE & O'MEY CORP.	PRIVATELY OWNED LAND (INDIVIDUAL OR CORP	037N027W 26 Lincoln
SILENE SPALDINGII SPALDING CAMPION (DANCING PRAIRIE-TOBACCO PLAINS SOUTH)	001	G2/S1 1988-07-18	A -	PRIVATELY OWNED LAND (INDIVIDUAL OR CORP	037N027W 26 Lincoln

Figure 2-4
Sample Natural Diversity Scorecard

NATURAL DIVERSITY SCORECARD

Nation: US State: Alaska

Elmt Code / EOCode	Rank	Element Name / Sitename/Survey/Eotype	Common Name / Last Obs	Ranking / Protection / Comments
Element Class: Vascular plants				
PPASP0U020		POLYSTICHUM ALEUTICUM	ALEUTIAN SHIELD FERN	G1//S1
001	O	(ATKA)	1932-07-05	
002	A	(MT. REED I)	1989-08	Navy is aware of EO and supportive of protection.
003	A	(MT. REED II)	1989-08	Navy is aware of EO and are supportive of protection.
004		(MT. REED-ORIGINAL SMITH SITE)	1975-07	
PDPLM0D1L2		PHLOX SIBIRICA SPP RICHARDSONII	RICHARDSON'S PHLOX	G4T2T3Q//S1S2
001		(WHITE MOUNTAINS LIMESTONE RIDGE)	1959	
002		(DONELLY DOME)		
PDCAR0X0Z1		STELLARIA RUSCIFOLIA SPP ALEUTICA	CIRCUMPOLAR STARWORT	G4T2T3//S2S3
001		(HIDDEN GLACIER)		
PDGEN07051		GENTIANELLA PROPINQUA	ALEUTIAN FOUR-PARTED GENTIAN	G5T2T4//S2S4
001		(MT. ROBERTS)	1950-08-13	
002		(OLGA BAY)	1938-08	
PMPOA4Z0E0		POA BRACHYANTHERA	SHORT-ANTHER BLUEGRASS	G3Q?//S3?
001		(MILES GLACIER)		

Figure 2-5
Natural Heritage Program Comprehensive Ecological Assessment Process

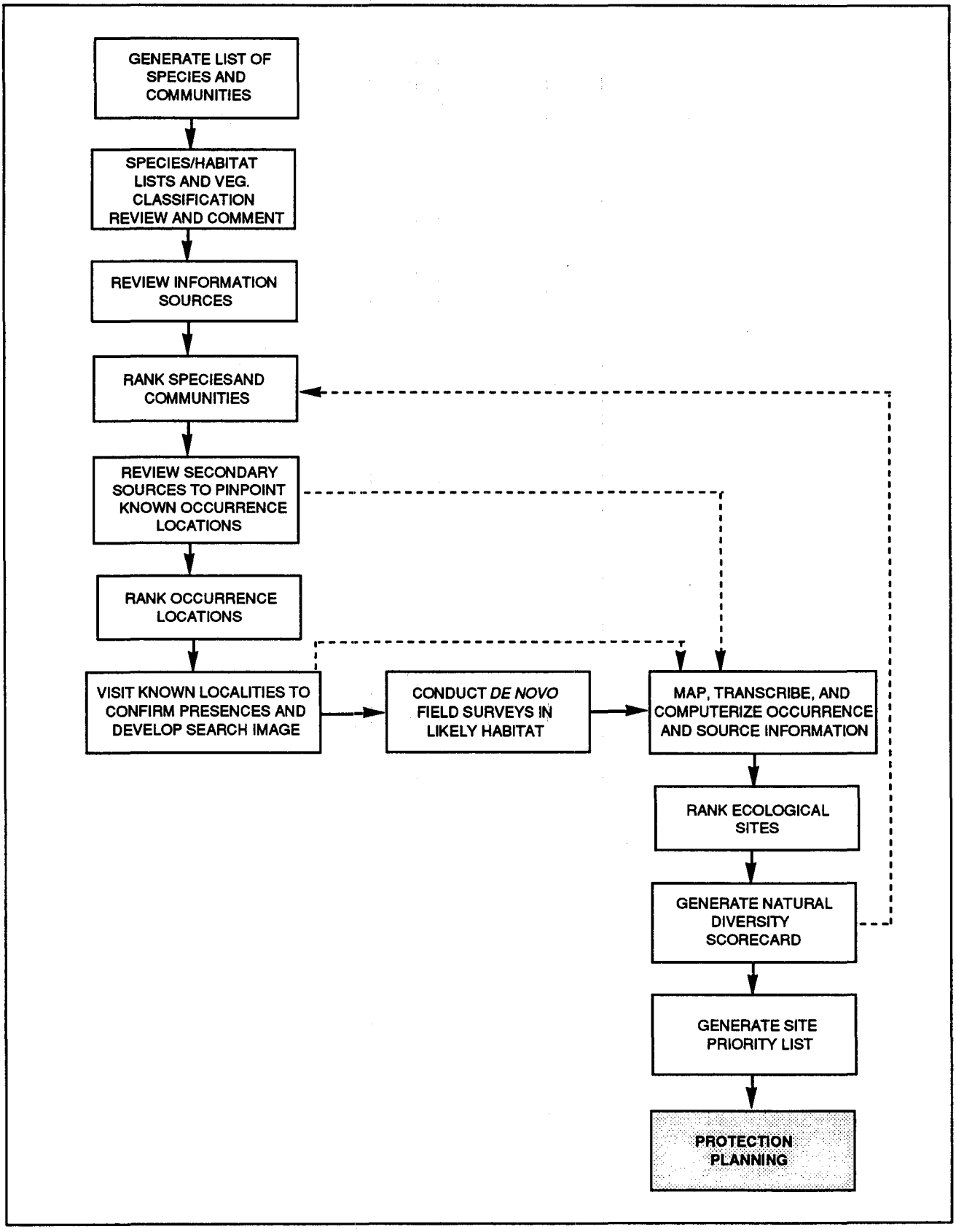
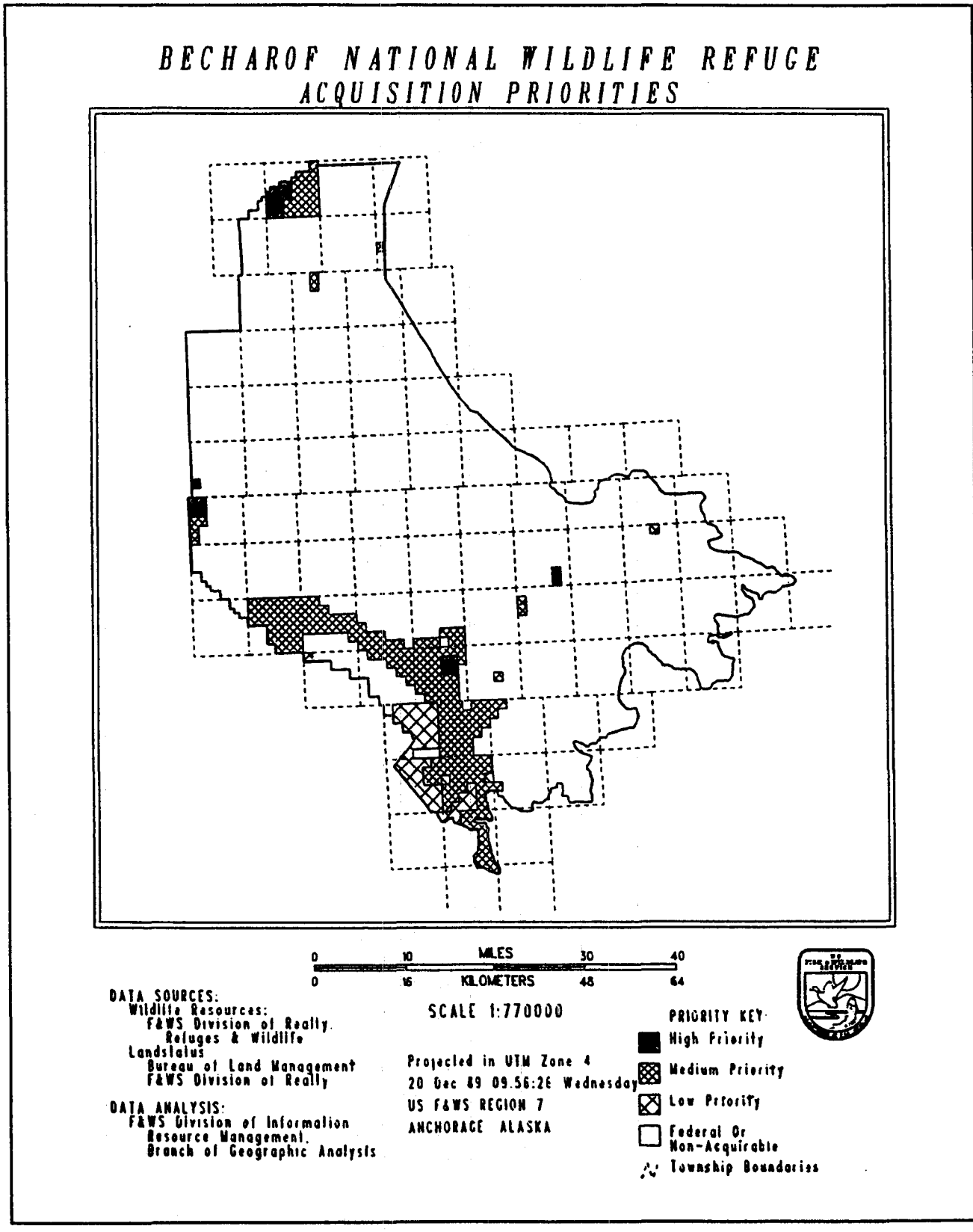


Table 2-2
Acquisition Priority Criteria
for Alaska Acquisition Priority System (APS)

CRITERIA
RESOURCE CRITERIA
Species Criteria
1. Endangered Species
2. Migratory Birds
3. Marine Mammals
4. Resident, Refuge Purpose Species
5. Fisheries
Diversity Criteria
6. Diversity of Wetlands
7. Diversity of Uplands
MANAGEMENT CRITERIA
8. Public Use
9. Refuge Management
10. Ability of Acquisition to Reduce Threats

Figure 2-6
Becharof National Wildlife Refuge Acquisition Priorities
(USFWS et al. 1990)



The composite of these maps would then be used by the conservation entity to guide what is essentially a political decision-making process with the best available scientific information.

F. Summary Discussion

In the past two and one-half decades, sophisticated computer technology and increasing concerns about environmental management and quality have stimulated the production of a diverse array of data sets dealing with biological diversity in the United States. Virtually every federal and state agency with responsibilities in land management, natural resources management, or environmental quality has created one or more such data sets.

For the most part, data acquisition has been prompted by narrow objectives defined within the contexts of the operational responsibilities of the various agencies and institutions acquiring and storing the data. Potential users of the data sets are not routinely provided information about their existence. As a result, it is difficult, if not impossible, to develop a comprehensive habitat assessment of a given area using the current array of data bases.

The methods surveyed in this section, no matter how sophisticated and comprehensive, are information-limited. Where information is lacking or incomplete, there are ways to hasten the process of gathering, processing, and interpreting it. However, there is no substitute for good, objective data. Where such data do not exist, the first priority should be to try to obtain them.

In proceeding with conservation planning for large landscape areas, the first step must be a threat assessment to identify those areas faced with immediate alteration. Areas facing imminent threat must be rapidly evaluated using one of the most appropriate technique based on availability and quality of existing information, applicability of the technique to the specific area, and resources (time and money) available for the assessment (see Figure 2-1 and Table 2-1). Where threats are less imminent, a more thorough ecological assessment needs to be initiated. Ideally, such an assessment should be ongoing, with provisions for continually updating information and developing new information through the process of successive approximation.

2.2.3 Federal and State Data Bases

A. Federal Agency Data Bases

In 1986, the Office of Technology Assessment produced a background paper for use by Congressional staffs to identify sources of biological-diversity information within federal agencies (OTA, 1986). The report identified three key objectives for which existing biological data could be used:

- Determining status and trends,
- Planning and managing in a diversity of forms, and
- Monitoring management strategies which have been implemented.

A follow-up report explored available and emerging technologies, as well as ways to improve the use of existing data for the purpose of maintaining biological diversity. Much of the information on federal agency data sets is taken from these assessments.

Most of the data bases listed in the Office of Technology Assessment's 1986 report were created after 1980, and many of those which existed prior to 1980 were poorly populated and maintained. New federal agency data bases continue to be proposed. One problem with biological data bases, however, is that new efforts are generally narrow in focus and are usually incompatible with previous and existing efforts.

The best nationwide data bases tend to be regional in nature. Those with "national" coverage are often superficial or incomplete. However, national data bases tend to be specific to one or a very narrow range of biological resources (such as the U.S. Fish and Wildlife Service's National Wetlands Inventory); or else they provide only cursory information on a broad range of resources (such as the Soil Conservation Service's Natural Resources Inventory). At this time, no true national inventory of biological resources exists, although the Natural Heritage Program/Conservation Data Center network coordinated by The Nature Conservancy is an approach to this goal. This data base standardizes data format and methodologies.

Another problem is that national or regional data bases generally fail to cover all land areas of the United States. For instance, the Forest Inventory of the USDA Forest Service is national in scope, but does not cover all land areas within the United States. Similarly, the National Park Service's Endangered Species Data Base is national in coverage, but in actuality is re-

stricted to lands owned and managed by Park Service. Regional data bases generally provide greater detail than national data bases, but still tend to be narrowly focused and fail to provide coverage across all categories of land ownership or biological categories. A short discussion of the most significant existing data bases and their management systems is found in the Appendix B.3. These data bases are biased toward either national or regional coverage.

Uses of national data sets in Alaska are variable in nature. Some data bases have been adopted for use by the lead agencies, while others have no or only partial implementation in the state.

B. Alaska Statewide Data Bases

A variety of Alaska data bases have been constructed with statewide coverage. These resource data bases vary with regard to purpose, focus, specificity, and application. Data-base scale ranges from regional to site specific, and the amount and detail of ground truthing incorporated into these data bases are also highly variable. All of these factors must be considered prior to future application and analysis of these data. It is also important to recognize the large data gaps that still remain across the state.

2.3 Identifying and Ranking Outdoor Recreational Opportunities

2.3.1 Introduction

Pursuit of outdoor recreation has always been a popular American pastime, and the pressure on existing resources and demand for additional opportunities continues to grow. Many federal, state, and local agencies are involved in providing recreational opportunities and managing recreational resources. A growing number of private organizations are also meeting recreation demands by offering facilities and services for recreation or allowing use of private lands for a fee. The reasons for providing recreational opportunities vary widely, depending on the responsibilities or objectives of the groups involved. Many public agencies are mandated by law to provide such opportunities; recreation may be offered as a specific, single-purpose use or as a component of multiple-use management. Private organizations may provide opportunities as part of a profit-oriented operation, as a nonprofit enterprise, or as a public service associated with other activities.

Managing recreation resources and activities can be approached on a variety of levels, ranging from large land areas to regional jurisdictions to specific local sites. In addition, the tools and strategies that may apply to pre-protection identification and ranking of recreational opportunities may not be the same used for site management or development after protection (e.g., campsite location or facility design).

Different public and private groups employ a variety of planning and management techniques to address recreation opportunities. No particular method is recognized as superior; methods must be used that are best suited to the task. Some techniques constitute a comprehensive planning effort and may require a significant amount of time and effort. They are used primarily by public land managers for specific purposes, and are often applied to similar management units throughout the country (e.g., the USDA Forest Service). Other techniques are more generic or informal, such as key-attribute identification or professional judgment, and can vary in the amount of time and effort involved, depending on need and available resources. Generic techniques may be utilized individually or in combination, depending on planning and management objectives.

Table 2-3 provides a general summary of tools used to identify and rank recreation sites and opportunities.

Table 2-3
Summary of Strengths and Limitations of Identification Tools for Outdoor Recreational Opportunities

METHODOLOGIES	STRENGTHS	LIMITATIONS	REQUIREMENTS
IDENTIFICATION Literature Review	• Universal starting point • Some form of data usually available • Flexible regarding depth of investigation	• Requires time • Sources may be limited	• Requirements vary based on information available; may require computer data bases or GIS • Library skills helpful • May require publications budget • In-depth searches labor-intensive • Access to agency documents, research reports, newspapers, guide brochures, activity magazines
Key Attribute	• Useful for large remote areas with little data • Can be used with key informant and focus group data	• Requires some form of mapped or photo data	• Data base (maps, aerial photos, GIS) • Knowledge of area and user groups • Library skills helpful • Map interpretation skills • Agency resource documents
GIS	• Can manipulate large amounts of data • Can create selected overlays • Well-suited for key attribute analysis	• Requires existing data base or entering data through digitizing • Can be expensive with regard to staff and computer needs	• Suitable computer and software, trained staff, and adequate data base • Computer skills for entering data and creating map overlays • Technical expertise in assessing appropriate mapped information to portray
Key Informant	• Useful where data is limited • Can meet public involvement and political concerns	• Requires cooperation from individuals contacted • Requires extensive field research and perhaps travel • Data may be difficult to analyze and summarize	• Familiarity with interview techniques, statistics • May require data analysis computer software • May require travel to contact informants • May require extensive telephone interviews • Analysis of interview data labor-intensive
Focus Group	• Useful where data is limited • Can meet public involvement and political concerns • Good for mapping information	• Requires cooperation from groups • Does not provide statistical reliability • Labor-intensive	• Familiarity with interview techniques, statistics • May require computer statistical analysis program • May require a series of meetings in various locations • Notices, mailings, or advertising needed to reach target group • Meeting organization skills • Meetings require location central to group being interviewed
Field Observation	• Useful where data is limited • Can be use to target data gaps • Incorporates knowledge from field personnel	• Requires time (field season of observations) • Requires staff for large areas • Interviews/surveys require statistical validity	• Requires field staff time, statistical knowledge • May require logistical support • Training and management for field observers • Travel may be extensive and complex; accommodations and meals may be needed for field researchers • Observation program may be tied to other field tasks

Table 2-3 (Cont'd)
Summary of Strengths and Limitations of Identification Tools for Outdoor Recreational Opportunities

METHODOLOGIES	STRENGTHS	LIMITATIONS	TECHNICAL SUPPORT REQUIREMENTS
IDENTIFICATION (Cont'd) Surveys	• Builds comprehensive data base • Can be focused on specific user groups	• Time consuming to design, administer survey, and analyze results • Can be expensive with regards to staff and computer needs	• Survey design and statistical knowledge • May require field or phone interview • May require computer analysis • Written summary of results
SYSTEMATIC METHODOLOGIES ROS	• Designed to provide information on a regional scale • Identifies specific recreation opportunity factors	• Complex, requires experts • Requires time • Requires significant data base • Needs more specific categories of use classes	• Typically needs team of experts • Requires aerial photos, maps, field observations • GIS or similar mapping system helpful • Multiple overlay maps to convey information
Landscape Management (VMS)	• Develops landscape classes, sensitivity levels, and management recommendations	• Oriented to visual impact, landscape management • Emphasis towards management, rather than identification and protection • Complex, requires experts • Requires time	• Typically needs expert staff to complete classification • Aerial photos, oblique photos, maps and field observation • Computer mapping capability • Multiple overlay maps to convey information
PRIORITIZATION Factor/Attribute-Based Ranking	• Allows choosing between sites to maximize recreational opportunity • Flexible in selecting factors and attributes, and use of weighting factors	Not standardized, subject to staff preference and political pressure • Requires detailed knowledge of recreation activities, and factors contributing to enjoyment of an activity	• Professional staff resources • Combination of data from several sources • Defined goals and objectives for recreational use • Understanding of current and desired levels of activity
Political Choice/ Professional Management	• Flexible, makes use of staff resources • Accounts for political acceptance factors	• Not standardized, subject to staff preference and political pressure	• Knowledgeable staff • Political sensitivity • Instinctive knowledge of needs of recreation groups • Knowledge of area
Economic Factor Ranking	• Accounts for economic return or economic feasibility • Well-suited for loaning public funds or public sector development	• Requires market analysis data • Requires understanding of expenditures and revenues • May take time to complete	• Staff expertise in cost/benefit, feasibility analysis or econometric modeling • Adequate market, expenditure, revenue data • May require computer assistance • Understanding of recreational activities • May require extensive survey research effort

2.3.2 Limitations

The purpose of this analysis is to provide an overview of the process of identifying and ranking outdoor recreational opportunities in large remote areas. The discussion of process is followed by a description of representative methodologies.

Unique difficulties are encountered in identifying and ranking in remote areas. Frequently, road access to recreational opportunities is not available, making it difficult to quantify use levels or to determine what recreational users are doing and where they are doing it. In many parts of the country, the application of identification and ranking methodologies depends on easy access and known activity levels, and hence may not be appropriate for large remote areas. As a result, this analysis is not meant to summarize all methodologies used by public and private entities in the United States. If additional information is required, more specific descriptions can be obtained by reviewing the references listed in Part 2.4.

2.3.3 The Identification and Ranking Process

Regardless of the methodologies used, identifying and ranking outdoor recreational opportunities in large remote areas tend to follow common paths.

A. Definition of the Project

The initial task is defining the recreation opportunities project to be undertaken, including geographic area, study purpose, participants, and any special considerations that apply.

1. Defining the Study Area

One of the first steps is definition of the study-area boundaries, which will depend on the objectives of the identification effort. However, that definition must include the existing physical and management attributes of the area. Physical characteristics such as mountains or long stretches of open, unprotected waters may help define practical boundaries. In some areas, the type of land management will provide narrow bounds on the recreational opportunity provided. For example, if the study area is in a management unit with a Congressionally designated wilderness classification, the recreational uses promoted will be limited to activities allowed by the 1964 Wilderness Act. Reviewing the physical and management characteristics of the study area also provides a starting place for identifying recreational uses.

2. Stating the Purpose and Scope of the Study

The purpose and objectives, as well as scope, of a recreational-opportunities study should be clearly stated. Study purpose and objectives come from a variety of sources. They may be mandated by federal or state legislation. Objectives may also result from a formal assessment of recreation needs that are to be met through a planning effort.

With regard to study scope, there are two main components of recreational opportunities: *uses* and *use sites*. *Recreational uses* are defined by the spectrum of recreational activities that occur within the study area. *Recreational use sites* are the areas in which recreational visitors pursue their chosen activities. *User groups* are categories of people who pursue recreation activities at specific use sites, and include anglers and hunters, kayakers, pleasure boaters, and hikers. Knowledge of the range and identity of user groups is essential to identification methodologies.

The number and types of recreation user groups in an affected area must also be considered. Certain recreation activities may be compatible, while others may not. Access and facility requirements will differ among activities. The requirements of different user groups affect the tools and strategies used.

Remote recreational areas in different parts of the country offer unique difficulties in identifying these variables. Much of the recreational activity takes place where it cannot be easily observed. Access is frequently limited to air and boat, or foot travel, making it difficult or expensive for researchers to travel through the area to observe popular use sites. Methods to deal with these challenges are discussed below and can be as creative and comprehensive as the enthusiasm and financial resources of the research team allow. In most instances, a data base must be developed or refined as an initial part of the study.

3. Defining the Participants

A number of groups with management authority may be participating in the selection of identification, ranking, and protection tools and strategies. These groups could include federal, state, or local agencies with responsibilities related to recreation resources and activities, either through land ownership or statutory requirements. Recreational user groups and private landowners may also be involved. As a result, it may be necessary to factor

into the study a variety of management objectives, methodologies, and tools, as well as varying staffing and technical capabilities. Different participants may also have different approaches or be working under related statutory requirements for private lands within management unit boundaries. Differences in agency management objectives may hinder or help in developing tools and strategies for large areas, or potential conflicts may have to be resolved.

4. Screening for Inappropriate Sites

Participants may wish to identify areas or resources that should be excluded from the identification process. Information on private lands within a given study area can be combined into an overlay map for further analysis of their recreational potential. At some point, it is appropriate to screen for critical habitat areas, archeological sites, or other locations that should not be considered for enhanced recreation.

5. Management and Use Variables

Finally, the management and use of the lands being considered for identification, ranking, and protection is an important factor. Variables include the management objectives of the landowner, potential competing uses and economic opportunities for the land, and any special considerations created by federal and state laws as a result of its transfer to private ownership.

B. Threat Analysis

The urgency of the need to evaluate recreational opportunities on lands may be immediately defined by a threat or perceived threat to the use of the land. A *threat analysis* is a means of determining whether an accelerated identification, ranking, and protection process is necessary due to immediate threats to recreation resources, activities, or opportunities. Where a short-term threat exists, use of a rapid, or abbreviated assessment will enable decision makers to decide on appropriate actions to buy time or immediately protect significant existing or potential resources. If time can be bought, a comprehensive assessment can proceed. Similarly, in the absence of any short-term threat, a comprehensive assessment would be initiated.

A *rapid assessment* is actually an abbreviated process of identifying and ranking outdoor recreational opportunities. It can use any of the methodologies discussed in this report; the primary limits are the time and re-

sources available to conduct the assessment before action is needed. Important considerations in conducting a rapid assessment include:

- The overall objectives of planning effort;
- Easily obtainable information on recreation resources, activities, and opportunities;
- Identification of specific threats to, or pressures on, recreation resources and opportunities; and
- Technical and staff resources available to the study effort.

C. Comprehensive Assessment

A *comprehensive assessment* is a systematic means of identifying and ranking outdoor recreational opportunities. If time, staff, and financial resources are available, a systematic approach is essential. As indicated in the following sections of this handbook, a comprehensive assessment can utilize a wide variety of specific or generic methodologies. Figure 2-7 summarizes the comprehensive assessment process.

D. Protection Strategies

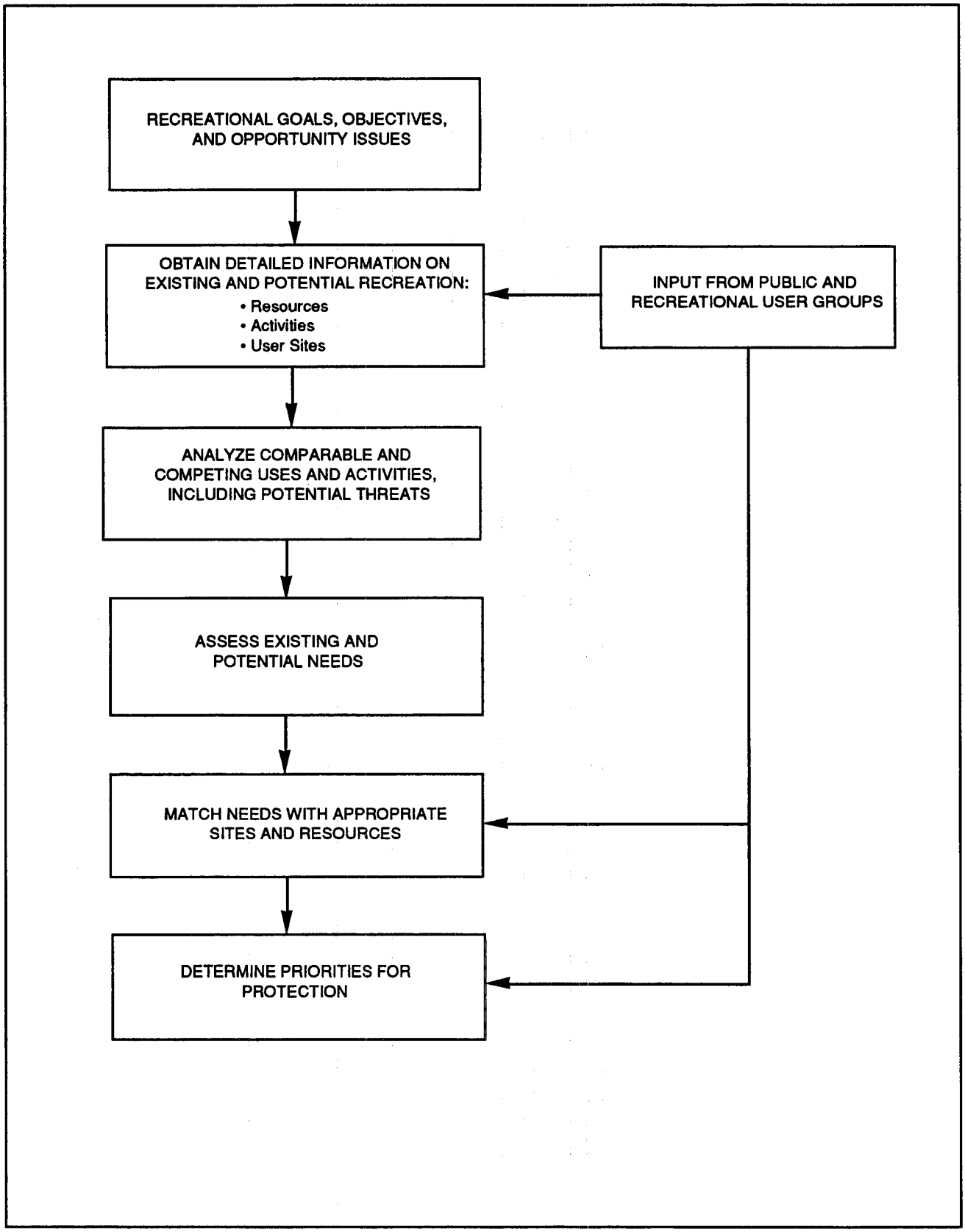
After identification and ranking, the next step is to develop protection strategies for recreation opportunities. Part 3 of this handbook discusses protection tools, techniques, and strategies.

2.3.4 Identification Tools

If the study area happens to be a little-visited remote area, very little may be known about it, let alone its recreational uses and potential. Even in this extreme case, a number of information sources can be used to begin the process of identifying existing and potential recreation activities and use sites. In more developed areas, sources of information are likely to be more abundant.

There is no one method or tool for assessing an area; numerous formal and informal tools can be used. The time available to study the area and the funds available for the task are two critical factors in selecting the methods. This section summarizes some of the available methodologies that can be employed, either on their own or in combination.

Figure 2-7
Comprehensive Assessment Process for Recreational Opportunities



A. Generic Assessment Methods

1. Literature Review

No matter where an area is located, there will be a body of literature available for the researcher to begin identification of recreational activities and use sites. A literature review is very flexible with respect to depth of investigation and does not require extensive resources—just time to investigate.

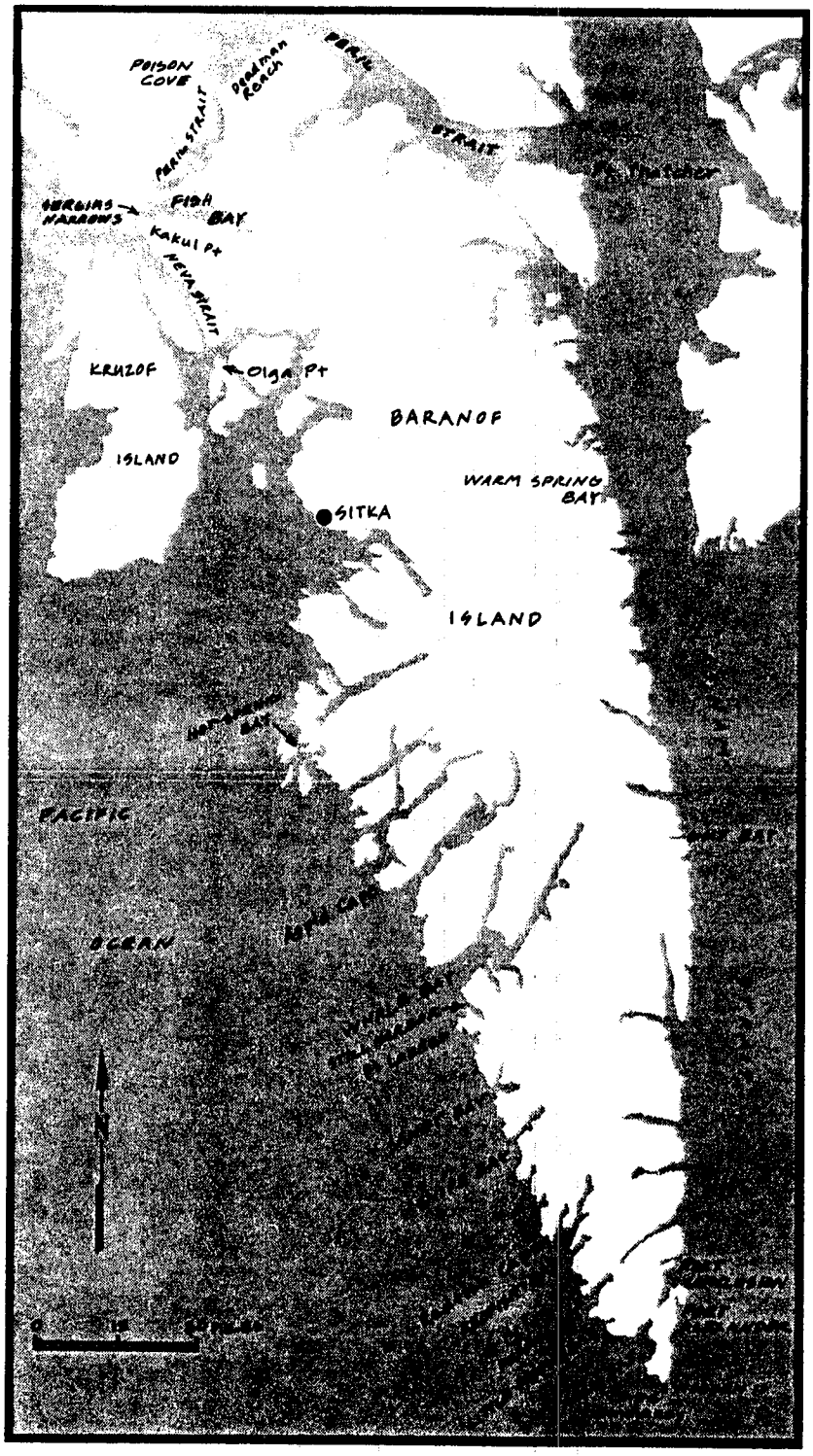
Literature may include agency management plans, activity guide books for the area, maps, use logs, file reports, adventure travel brochures, and other materials. Surveys or studies conducted for purposes other than recreation management may contain data useful to the identification of recreation sites, user groups, and their attitudes. Before using any of the other identification methodologies listed below, researchers can conduct a literature review to compile an inventory of known recreation activities and use sites within the study area. Other methodologies can then be chosen to fill data gaps.

As an example of information that can be obtained, the map shown in Figure 2-8 identifies navigation points and interest sites from an article on a sea-kayaking trip to circumnavigate Baranof Island *(Sea Kayaker,* Spring 1990). Information provided by such maps includes potential camp sites, distances between camps, identification of interesting features, and a mileage chart.

2. Identification of Key Attributes

For most recreational activities, analysis of the key attributes of the study area can yield information on likely use areas. This method is particularly useful for large, remote areas where there is little data on use areas and use levels. Key attributes might include factors such as access, protected anchorage, availability of potable water, attractions such as salmon streams, and unusual scenery. Knowledge of user groups can be combined with key attributes of the study area to anticipate existing or potential areas of high recreation use. For example, anglers particularly are attracted to areas with ready access to an abundance of fish. Hunters look for concentrations of their target species, again in combination with access. Boaters are drawn to areas with protected anchorages, particularly where the immediate area provides a range of site destinations or activities.

Figure 2-8
Sample Map Showing Navigation Points and Interest Sites: Baranof Island



Map by Joan Velikanje; published in *Sea Kayaker* magazine, Spring 1990 (Used by permission)

The important key attributes may be different for each of the activities pursued in the study area and therefore may indicate groupings by activity type. For example, cruise ship patrons are most interested in scenery such as icebergs, glaciers, bird rookeries, marine mammal haul-outs, and the like. Cruise ship passengers may interact very little with the area and pass through without ever setting foot on land. Thus, the very nature of some activities defines the most important locations. Ocean kayakers, for example, need sites with water and level camping areas within a day's travel of each other.

Aerial photographs, topographic maps, and computerized map bases (see following discussion of GIS) can be used to identify key attributes. Other identification methodologies, particularly key informant interviews, can also be used. (Refer to the False Pass case study in Part 2.3.6 for examples of the use of area maps to identify features that may be destination sites or contribute to recreational activities.)

3. Geographic Information Systems (GIS)

Computerized Geographic Information Systems (GIS) data bases can be used as data sources and for manipulating categories of data into overlays. Geographic/mapped information is digitized or otherwise entered into a computer system, where it can be analyzed, manipulated, printed out, and updated. Many state and federal agencies operate or have access to GISs, which are replacing standard cartographic and engineering drafting functions. The GIS can be used as a source of mapped information, and can also be directed to overlay and print out selected key-attribute information.

GISs can be used to portray a variety of information, including:

- Land ownership, leases, and uses;
- Resource values such as fish and wildlife populations and habitat, oil and gas, timber, and minerals;
- Physical environmental characteristics such as soils, water quality, and oceanography;
- Transportation and utility systems;
- Subdivisions, zoning, and tax information; and
- Special applications such as oil spill mapping and response.

Several characteristics of GIS computer systems and their use affect the

ability to access or exchange information. Each system uses a combination of hardware and software. Major hardware categories include mainframe computers, minicomputers, and desktop systems, which may be either PC- or Macintosh-based. The type of software used and compatibility with other software are more critical to information sharing than the type of hardware; major software packages include ARC INFO, Intergraph, MOSS, and AutoCad. (ARC INFO appears to be the most commonly used system on the West Coast, including Alaska.) It is easier to access or extract and reprocess information from a GIS that uses compatible software. Some translation systems are available but are cumbersome. The form and options for system output also affect the ability to transfer information (e.g., tapes, floppy disks, downloading from a modem).

The characteristics of a GIS include the purposes it is being used for, the type or form of data (including scale and source), and the way it is set up to enter, store, analyze, and output the data. This information must be known in order to understand the feasibility of using GIS information from another system. The nature, source, scale, and format of data entered into a GIS system are critical in determining its usefulness to multiple users. Historically, most GISs have been set up for specific data management or analysis tasks, and do not necessarily make information dissemination or coordination with other systems a priority. This is changing as systems aimed at multiple users are set up, and increased data-sharing occurs among systems.

4. Key Informant

The *key informant* method is important because it is the principal method researchers and agencies use for understanding recreational uses in areas where little work has been completed. It can take any number of forms, but the main function is to seek out people with information about recreational uses and use sites in the study area. Examples of potential key informants include lodge owners, air charter services, state and federal field biologists, park rangers, captains, local residents, guides, and leaders of activity groups. The choice of key informants depends on the types of use and use-site information to be collected, and whether particular user groups are targeted.

Interviews with key informants are similar to survey methodology in that a set of standardized questions (called a *protocol*) is compiled for each key-

informant group. The interviews can be conducted in person, by phone, or by mail, but questions should be easily understood and should request specific data. Questions involving mapping recreation resources and activities can also be used as part of a key-informant interview. Typically, searches begin with known contacts for a particular target group, and grow as each contact provides additional sources. An example of a key-informant protocol is provided in Part 2.3.6 (Figure 2-12).

Where large key-informant groups and statistical analysis of responses are desired, experience with survey design and analysis is necessary, including use of computers and software such as SPSS+ (which is a data entry and analysis package for social science researchers).

5. Focus Group Meetings

Conducting *focus group meetings* is one way of obtaining information from key informants in a group session. Such meetings are particularly useful if the researcher wants to have an interactive session with individuals in a community or a group of recreational enthusiasts (for example, sea kayakers). Focus groups consist of individuals with experience and interest in a particular recreational activity or a particular area. Political or regulatory concerns can be addressed by involving groups who have a say in developing ranking and protection strategies. Focus groups can also help meet requirements for public involvement.

Again, questions and meeting agendas should be designed to be easily understood and should request specific data, particularly if replication and comparison among focus groups is required. Focus groups may be especially suited to efforts involving mapping identification, where the collective knowledge of a group can be exploited. It may also be advisable to schedule follow-up focus group meetings to review results or to discuss future management or development alternatives.

6. Field Observations

Obtaining field observations is a standard method for building a data base where limited information exists. The forms of field observations need only be limited by imagination and budgetary considerations. For example, in trying to obtain information on destination sites for recreational users in an area, the researcher could elect to interview individuals at selected departure sites. Observations should be formalized, with a clear understanding

of what is being observed and how observations will be quantified or reported. This approach can require a great deal of staff time for large areas, and care must be taken to ensure that observations are valid if they are to be used as a basis for ranking and protection.

Other related methods would involve observing and interviewing recreational users at their destination sites, or overflying the area at regular intervals and mapping the sites and activities. A limited survey could be developed and implemented at carefully selected locations (for example, at developed boat-launch sites). Question design and statistical validity are concerns for field interviews.

7. Surveys

Formal *surveys* are typically not the most appropriate tool for identifying recreational activities and use sites, particularly using random sampling. Statistical problems occur with random sampling in a large population for the purposed of seeking information on the recreational use attributes of a small component of that population. Unless the survey sample is unusually large, the relatively small number of participants in recreational activities in a particular location may be missed entirely. The solution is to focus the survey on the appropriate group; but when this is done, a random survey is transformed into a focus group, and the statistical extrapolation potential in the survey tool is lost. However, surveys can be positive tools in instances where the researcher can easily screen for users of an area (for example, at restricted-access sites) and needs information on recreational uses and use sites within an area.

The first step in a survey is the design of the survey instrument questionnaire. Secondly, it is necessary to decide how the survey is to be administered—in person, by mail, or by telephone. Once a draft survey has been prepared, it is useful to pretest the survey by administering it to a small test group. This tells the researchers if the respondents are able to understand the questions and if they interpret the questions as intended. After any corrections, the survey can be given to the sample selected, at random, or by other methods. Once completed surveys are in hand, the data analysis method depends on the sophistication and resources of the survey research group.

An example of a survey directed to recreational users of a river system can be found in Part 2.3.6 (Figure 2-13). In their description of the survey, the

National Park Service authors stress the importance of pretesting. The questions are designed in a manner that will allow simple coding and summarizing of responses.

B. Systematic Methods of Assessing Recreational Activities and Opportunities

The generic methods described above can be applied in varying combinations and degrees of depth to profile information on recreational opportunities and uses in the study. The two methods described below require a more long-term, systematic approach to developing a data base on the study area.

1. Recreational Opportunity Spectrum (ROS)

The Recreational Opportunity Spectrum (ROS) framework was developed to provide information to management agencies on the range and mix of recreational opportunities that should be provided on public lands. It is described as providing "a framework for stratifying and defining classes of outdoor recreation environments, activities, and experience opportunities. The settings, activities, and opportunities for obtaining experiences have been arranged along a continuum or spectrum divided into six classes: primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, rural, and urban" (USDA Forest Service, 1986).

In an earlier research paper, the ROS framework was compared with other types of land-management planning procedures, commonly used. Other examples of the spectrum concept included (quoted from USDA Forest Service, 1979):

- *"The Wild and Scenic Rivers Act:* Recognizes three classes of rivers varying in level of modification, development and permitted activities.

- *The National Trails Act:* Recognizes three classes of trails varying in purpose, permitted uses, and adjacent development.

- *National Forest Management Act:* Calls for providing a broad spectrum of dispersed and developed recreational opportunities.

- *USDA Forest Service:* Recognizes five recreation experience levels, ranging from those offering challenge, solitude, and demanding high skills to those involving extensive facilities and few skills.

- *Heritage Conservation and Recreation Services:* Recognized six types of outdoor recreation settings ranging from Class I (high density recreation areas) to Class VI (historic and cultural sites).

- *River Running:* International scale of river difficulty recognizes six classes of conditions, ranging from Class I (moving water with a few riffles and small waves, and no obstructions) to Class VI (nearly impossible, very dangerous).

- *Mountain Climbing:* International decimal system describes climbing skills ranging form Class 1.0 (hiking) to Class 5.0 to 5.11 (increasingly difficult piton-protected climbing)."

The ROS framework was designed to provide information on a regional scale. It requires an understanding of the physical characteristics of lands and existing use levels, level of transportation infrastructure, and other development. ROS evaluates lands according to six opportunity factors: access, other non-recreational resource users, on-site management, social interaction, acceptability of visitor impacts, and acceptable level of regimentation (USDA Forest Service, 1979).

The ROS system was utilized by the USDA Forest Service in the Land and Resource Management Plan for the Chugach National Forest. A copy of one of the maps delineating lands under the ROS scale is shown in Part 2.3.6 (Figure 2-15). A detailed example of delineation of lands utilizing the ROS system can be found in 1986 ROS Book (USDA Forest Service, 1986, IV-1 to IV-126). Data to apply the ROS system can come from a variety of sources including area maps, air photos, field observations, site visits, etc.

There are numerous drawbacks to application of the ROS system, which is a complex method requiring experts to make the classification. It requires a long-term commitment of staff to completing the analysis; and aerial photographs, oblique photographs, and field observation data are needed for

the area being studied. It is likely that most recreation in remote areas will fall on the non-developed end of the ROS scale; however, most of the six categories do not apply to define these activities. The ROS system would be easier to use in these areas if more specific categories of use classes were created. Further information on ROS is readily available from a guide published by the USDA Forest Service (1986) and numerous articles and publications.

2. Landscape Management (Visual Management System)

The Visual Management System (VMS) is another regional recreational lands identification system used by the USDA Forest Service and others to identify the visual characteristics of landscapes. The system provides information on the potential impacts of resource management decisions on visual landscape values. The process uses a combination of aerial photographs, oblique-angle aerial photographs, and field observations to provide the necessary data. The long-range goal of National Forest Landscape Management in applying this system is to inventory and interpret the visual resources on most lands of the national forests at a detailed, intensive level (USDA Forest Service, 1974).

The first step involves classifying the landscape according to *variety classes* to determine the relative importance with respect to scenic quality. Scenic diversity is divided into three variety classes: Class A (distinctive), Class B (common) and Class C (minimal). The Forest Service has established a process to judge the categorization of lands in these classes (USDA Forest Service, Agricultural Handbooks #434 and #462). The scenic diversity classes are applied to the types of basic geography: landform, rockform, vegetation, waterforms (lakes), and waterforms (streams).

The method next turns to *sensitivity levels*, which provide a measure of people's concern for the scenic quality of the landscape being addressed. There are three sensitivity levels: Level 1 (highest), Level 2 (average), and Level 3 (lowest). The sensitivity levels are mapped, including an identification of distance levels for the areas being mapped.

By this point in the process, all lands will have been categorized according to natural diversity (variety classes) and sensitivity levels. Visual quality objectives are measurable standards that are keyed to the values set forth in the variety classes and sensitivity levels. The final products of the sys-

tem are *visual resources* classified as: preservation, retention, partial retention, modification, or maximum modification. A sample map can be found in Figure 2-14 in Part 2.3.6. Other examples of classifications can be found in the two USDA handbooks referenced above and in *Visual Character Types*, a USDA publication focused on establishing a basis of visual characteristics for Alaska (USDA Forest Service, 1979).

2.3.5 Ranking of Recreational Use Sites

The major focus of the ranking phase of the assessment is to identify methods for choosing between sites to maximize recreational opportunity. The task is how to determine which of the available sites will be of most use for recreationists. No standard approach exists to complete this analysis, but various researchers have developed successful methods.

At this point, it is likely that a knowledge of recreational activities and use sites has been obtained, as well as some understanding of the need for additional recreational opportunity. This second factor can come from a formal needs assessment completed as part of a comprehensive planning process, from needs assessment documents such as State Comprehensive Outdoor Recreation Plans (SCORP), from some of the identification mechanisms discussed above (e.g., key informant, focus groups, and surveys), or from political processes. Whether the need for additional recreational opportunity is tied to management objectives or to political decisions, the same question is posed: Which sites are best to meet the planning objectives?

A. Ranking Based on Factors or Attributes

Take, for example, an area that is known to resource managers as popular for ocean kayaking. If one looks at ocean kayaking as a specific recreational activity for improvement in the area, one first must understand what is important to those participating. What factors or variables make a trip enjoyable? Some factors would include:

- Encounter variables: how many other kayakers or other types of boaters can they encounter each day before their enjoyment of the activity is lessened? Does the number of encounters vary between motorized and non-motorized uses?
- Availability of beach areas for camping and recreation.
- Development factors: what level of development in the area is

acceptable, before the nature of the experience is altered?
- What scenery attributes do ocean kayakers desire most? (The Visual Management System may assist with this evaluation.)
- What other types of activities can be combined with the ocean kayaking experience (e.g., hiking, fishing, etc.)?

These and other factors would make up a relatively small list of attributes that define the recreational experience for ocean kayakers. Similar lists can be developed for other recreational activities in the area.

The next step would be to look at how the area is being managed for recreational opportunity. Are the needs of ocean kayakers being met? If not, how can the aspects of recreational opportunity (social, development, management, and physical) be altered to better meet their needs or to enhance recreational opportunity? In the case of ocean kayakers, potential enhancement tools might include construction of use cabins and tent platforms, development of kayak-route hiking trails and access easements, etc. Management measures, such as area restrictions or permit systems, could also be considered to reduce conflicts between competing user groups (for example, cross-country skiers and snow machiners).

An appropriate methodology for ranking recreational enhancement within or adjacent to the study area is analysis of the indicator variables to determine if that change would be a benefit or a detriment to users. Following are three examples illustrating ranking methodology:

- A research report of a study of desired attributes in selection of a campsite choice;
- A study to rank the recreational potential of Alaskan rivers according to different use criteria; and
- A study of fishing streams ranked according to criteria developed in area management plans.

1. Campsite Attributes in Recreation Settings

A 1989 study proposed a model of campsite attributes preferred by campers' ratings of important campsite characteristics in a river canyon setting (Brunson and Shelby, 1990). The study area for the project was a 100-mile stretch of the Dechutes River in central Oregon—a river popular with anglers and whitewater boaters.

The researchers mailed questionnaires to 13,000 persons selected randomly from the population of boat passes purchased. In the survey, respondents were asked to rate a series of campsite attributes using a four-point scale ranging from not very important to very important. For ranking campsites, there were eleven attributes grouped into four categories:

- Necessity attributes (flat ground, shade, good place to tie up boats);
- Experience attributes (good fishing nearby, screening from other sites, out of sight and sound of others);
- Amenity attributes (away from railroad tracks, free of cattle grazing, doesn't have much bare ground);
- Dual attributes (availability of toilets, absence of fire hazards).

Survey respondents were also asked to rate the importance of various reasons for visiting the Dechutes, with the choices including quality of steelhead fishing, riverside camping, getting together with friends, peace and solitude, getting away from other people, and viewing scenery and wildlife.

From the survey data, the researchers analyzed respondents' preferred campsite characteristics, and how these varied among different user groups (attributes versus reasons for visiting). Prior to analyzing the data, the researchers predicted three outcomes that were borne out by the results. First, they predicted that necessity attributes would be the most important campsite attributes, followed by experience attributes and amenity attributes. Ranking scores followed this predicted pattern. Second, they predicted that campers seeking a particular type of recreation experience would look for campsites that help them achieve that experience. The analysis showed a correlation between experience attributes of campsites, and preferred activity supported this hypothesis. The third prediction was for necessity attributes to be independent of any particular recreation motive. The analysis also supported this hypothesis.

Using the results of their analysis, the researchers develop a model to explain campsite choice on the basis of attributes. They suggest that the model can be helpful to managers of dispersed recreation settings in two ways:

- If the needs of a given user population are known, managers can steer campers to the settings that are best able to provide those needs; and

- By identifying users' experience goals, managers can help ensure that the campsites provided will enhance those goals rather then interfere with them.

2. A Method of Evaluating the Recreational Potential of Alaskan Rivers

This study was completed in 1987 by the Wildlife Federation of Alaska for the National Park Service, Alaska Regional Office (Rue et al., 1987). The study developed an evaluation methodology for determining the recreational potential of rivers on non-federal lands in Alaska. The research problem was typical of that posed by recreation in remote, lightly used areas: The area to be covered was vast and included thousands of rivers and streams. The researchers found very limited published literature describing the recreational uses of streams in the study area. The total area to be studied was divided into five basic regional sub-units based on watershed and ecosystem lines. The researchers compiled a list of rivers for each of the sub-units, using available data sources, including: federal wild and scenic river studies, river float guidebooks, state land-use plans, recreation studies, interviews with knowledgeable persons, and sport hunting and fishing guidebooks and data. Land ownership was researched for each river using the Alaska Department of Natural Resources' Generalized Land Status Maps. Following the land status investigation, rivers having less than one-third non-federal land were excluded from further analysis. Rivers less than 25 miles in length were also dropped from the analysis, unless outstanding features warranted their inclusion.

The lack of definitive data on the rivers required the researchers to develop an evaluation system that would accept both objective and subjective data. The system also needed to apply to a wide variety of river types and was designed to incorporate numerical ratings which could be translated into categories of high, moderate, and limited recreational potential.

Six criteria were identified to classify a river's recreational potential: fishing, hunting/trapping, boating/floating, scenic qualities, wildlife viewing and other resources, and the primitive/developed nature of the river. Within each criterion, several different indicators were established. The exception was the indicators of "uniqueness" and "geographical significance." For example, the indicators for sportfishing were: habitat productivity, species diversity, geographic significance, and uniqueness.

In classifying a river, the researchers applied a numerical scale to each of the indicators for each criterion. The resulting rankings were aggregated onto high, moderate, and limited point scales for each criterion. The study rated several rivers within the area using the methodology, presented the results, and provided a critique as a guide to further research.

3. A Method for Ranking Sportfishing Opportunities in Special Management Areas

In an ongoing program of management of angling opportunities for rainbow trout in special management areas, the Alaska Department of Fish and Game has developed a ranking method for streams (ADF&G, 1990). The methodology is part of an overall management planning effort that includes: identification of management policy, a public participation process, review of streams within the special management area for conformance to the management policy, and identification of appropriate management tools to initiate change where necessary.

In this application, streams were ranked according to ten criteria for management within the special area. The ranking factors are: stock status, history of special management, proximity to a local community, legal access, overlap with freshwater net fisheries, abundance and size of rainbow trout, water characteristics, clear geographic boundaries, relative importance of the rainbow trout fishery to the sportfishing industry, and geographical distribution. A simple numerical factor was given for presence or absence of the ranking factors for 57 streams or segments of streams in southwest Alaska. In many cases, streams were categorized in several segments because different segments of the rivers have very different physical and use characteristics. ADF&G is using the results of the ranking to guide management in the area.

B. Political Choice and Professional Judgment in Site Selection

One commonly used tool to guide public policy decisions to protect (or not protect) public lands comes as a result of political action. Some group decides that an area should be managed for a particular use or should be protected from certain consumptive uses and managed as wilderness. These ideas are proposed as public policy actions and go through modification or rejection in the process, with public policy for recreational uses on public lands being determined in the end. Because political factors affect support for, and ultimate approval of, protection strategies, they are a legitimate ranking tool.

The process of accommodating political factors in public lands indirectly affects recreational opportunity on adjacent or nearby private lands. The boundaries, recreational-use restrictions, and other land-use guidelines forged through political compromise may be far removed from what the professional managers would prefer to see, but have to be dealt with in many instances. Recreational opportunities on adjacent private lands will be directly or indirectly affected as a result of these political choices.

Another type of system for identification and enhancement of recreational opportunities on public lands could be referred to as *intuition*, or perhaps more kindly, *professional judgment*, on the part of the land management professional. The basis for this type of decision is usually personal, on-site field observation in the area. This experience, particularly over a number of years, creates a comprehensive understanding of recreational activities within an area. For example, a park ranger who has spent five years in the field would probably be able to suggest a number of potential good cabin sites to support specific recreational uses in an area. Similar decisions could be made with respect to any of the recreational uses in the area, and reasoned and practical suggestions would likely result. This methodology is not systematic and standardized, but is probably as widely used as any for identifying new use sites for recreation.

C. Economic Factor Ranking

Economic factors, which are also used to rank potential recreation sites or activities, include economic benefits provided by an activity or site development, and the economic feasibility of the plan. These factors are particularly appropriate if the objectives of an identification/ranking/protection project include a need for generating economic return or fostering sound private-sector recreational development.

Use of economic benefits as a ranking tool can assist with meeting recreation planning objectives of:

- Evaluating economic impact of the public recreation expenditures and
- Maximizing economic return to communities and private enterprise in the planning area.

The primary challenges are determining appropriate indicators of economic

benefits, finding applicable research to place a value on benefits, calculating the aggregate effects, and obtaining usage data to assign benefits to geographic areas.

Economic benefits can be measured by user expenditures associated with pursuit of recreation activities, including user fees and purchases of equipment, supplies, and services (e.g., charter boat fees). Representative expenditures can be compiled for specific user groups (e.g., anglers, kayakers) and then aggregated using the population size of the recreation user group. If data on the levels and geographic distribution of recreation activity exist, calculated economic benefit can also be geographically distributed.

Economic feasibility analysis is useful in determining whether an investment in a recreation-related improvement will provide an acceptable return. It is particularly appropriate for strategies where a private landowner or party is expected to meet a recreation demand, or if investment of public funds is supposed to maximize return. A typical feasibility analysis would include the following elements:

- Description of the proposed activity;
- Market analysis of the proposed activity (assessment of potential demand; other existing and potential alternatives to meet that demand, including competitive activities; and other factors important to the success of the activity);
- Description of the amount and timing of costs of the activity (construction, operation, equipment purchase, financing);
- Description of the amount and timing of revenue generated by the activity (fees, sales, grants); and
- Comparison of costs and revenues to determine if the activity will provide an acceptable return.

D. Research Methods for Improving Recreational Opportunities within Existing Use Areas

Researchers have developed methods to focus on recreational-use conflicts among existing user groups. The common theme in these methods is determining the factors which characterize or define a desired recreational experience for a particular user group, and analyzing how these factors can be changed to improve their recreational experience. These methods include

- *Limits of Acceptable Change* (LAC), which is applied mainly to wilderness-type areas;
- *Carrying Capacity*, which was developed for river and lake environments but has applications in other areas; and
- *Visitor Impact Management* (VIM), also used in wilderness management.

As mentioned, these methods are generally directed towards resolving conflicts among existing recreational-use opportunities, and are therefore not consistent with the major focus of this section.

As an example of these methods, a description of the LAC approach and an example of its use is included in Part 2.3.6 below. A source of information on carrying capacity and VIM is a recently published report reviewing research applications (Vaske et al., 1990). For those working with recreational opportunities adjacent to rivers, comprehensive planning assistance is available from the Rivers and Trails Conservation Program conducted by the National Park Service. This program provides technical assistance to states, local governments, and private interests to protect rivers and recreational uses on rivers. Assistance or information can be obtained from any National Park Service office.

2.3.6 Supplemental Information

A. Case Studies/Examples of Identification Strategies

1. Limits of Acceptable Change (LAC)

Summary. The Limits of Acceptable Change (LAC) system addresses human-induced changes to wilderness lands. In the application of the system, the amount of change is explicitly defined by quantitative standards, the appropriate management actions needed to prevent further change are identified, and procedures for monitoring and evaluating management performance are established (USDA Forest Service, 1985). An important criterion of the process is that it requires managers to define desired wilderness conditions and to undertake actions to maintain or achieve those conditions.

Implementing the LAC planning procedure involves nine interrelated steps leading to development of a set of measurable objectives that define desired wilderness conditions. The steps are:

(1) Identify areas issues and concerns,
(2) Define and describe opportunity classes,
(3) Select indicators and resource and social conditions,
(4) Inventory existing resource and social conditions,
(5) Specify standards for resource and social indicators for each opportunity class,
(6) Identify alternative opportunity class allocations reflecting area issues and concerns and existing resource and social conditions,
(7) Identify management actions for each alternative,
(8) Evaluate and select a preferred alternative, and
(9) Implement actions and monitor conditions.

Strengths and Limitations. The publication referenced above provides a hypothetical example of an application of the LAC process (USDA Forest Service, 1985). In summarizing the process, the authors emphasize: "The LAC process emphasizes explicit statements of objectives. This is both a strength and a weakness in the system. It is a strength in that the process provides focused and specific information on recommendations to protect wilderness designations while providing for recreational opportunities. It is a weakness to the extent that many lands are managed according to weak or nonexistent objectives with respect to defining recreational opportunities."

2. Bristol Bay Commercial Recreation Study: Literature Review and Key-Informant Interviews

Summary. This study was conducted for the Bristol Bay Coastal Resource Service Area as the initial part of a Nushagak-Mulchatna Recreation Rivers cooperative management plan with the Alaska Department of Natural Resources. The objective of the study was to obtain information on the characteristics of commercial recreational activities in the river drainage. Lodge operators, fishing guides, and air taxi operators were identified through a literature review of directories, brochures, and phone books. A detailed key-informant survey form was designed for each of the three operator categories, tested with a few interviews, and subsequently modified. Key-informant interviews were then conducted to develop a profile of commercial recreation-use activities and important use areas. A wide variety of recreation-activity and use-area information was obtained, including business profile (employees, rates charged, expenses, number and profile of clients, facilities, and equipment); types of recreational activities (spe-

cies hunted and fished, level of activity, ranking of activities); and mapping of important use areas.

Strengths and Limitations. Where little literature information on activities and use areas was available, the key-informant survey provided a broad range of information on commercial recreational-use activities, characteristics, and important use areas. Results were dependent on getting a good response from service providers, and staff was required for face-to-face interviews in several locations and for phone interviews. The extensive survey form turned out to be cumbersome from an analysis point of view, and made use of computer analysis through SPSS+ software mandatory.

Technical Support Requirements This study required the capability to design a valid survey form, staff to conduct in-person and telephone interviews, and computer capability and statistical analysis background to use the statistical computer software program SPSS+ for survey analysis.

3. False Pass Tourism Development Study: Key-Attribute Identification and Key-Informant Interview

Summary. This study was conducted for the False Pass Tribal Council to assess the potential for tourism development in False Pass, Alaska, on the Aleutian Chain. Using key-attribute identification, it inventoried and mapped the attractions, natural resources, and community services that could contribute to development of a tourism industry. Attributes included marine and terrestrial mammal distribution, sport fish, seabirds and waterfowl, and scenic values (natural features such as beaches, barrier island-lagoon systems, and kayak destinations). Key-informant interviews were conducted with False Pass residents to confirm key attributes and understand potential tourism services in False Pass. Potential tourism activities were then overlaid on the key attributes. The study looked at attributes in the immediate vicinity of False Pass and in a larger area linked to the regional transportation hub of Cold Bay. Transportation-system connections were analyzed with regard to tourism potential. Finally, using literature such as brochures and key-informant interviews, the researchers prepared tourist business profiles for certain types of activities. The report summarized tourism development alternatives and recommended that limited action be taken (Richardson and Isaacs, 1990).

Figures 2-9 , 2-10, and 2-11 illustrate the use of area maps to identify features that may be destination sites or contribute to recreational activities

(Richardson and Isaacs, 1990). Figure 2-9 shows the study area's main physical features including the nearby volcanic peaks (potentially of interest to hikers). Figure 2-10 presents an overlay of concentrations of terrestrial and marine mammals within the study area. Figure 2-11 depicts locations of fish concentrations (for identification of sportfishing opportunities), seabirds, and waterfowl abundance sites.

Strengths and Limitations The study provided an inexpensive inventory of potential tourism attributes and a first level of feasibility analysis for the Tribal Council. Limited statistical information was available to quantify tourism demand, and a detailed feasibility analysis was not provided.

Technical Support Requirements. This study was a low-tech, low-budget, small-staff effort. The primary requirement was current key-attribute information, which was provided by the area coastal management plan. Use of a computer graphics program such as Corel Draw was essential for the mapping. Telephone interviews were also a key part of the project.

4. Southcentral Alaska Sportfishing Economic Study: Economic Benefit Analysis

This study was prepared for the Alaska Department of Fish and Game to determine the economic values generated by sportfisheries in southcentral Alaska during 1986 (Jones & Stokes Inc. et al. 1987). Its three primary objectives were to estimate:

- Expenditures of anglers by water body fished and species sought,
- The economics of angler spending in the study area, and
- Non-market values of sportfishing by water body and species sought.

The study also examined factors that influence the decision to sport fish and determine the number of fishing trips and the role played by site attributes in selection of fishing sites. The first phase of the study involved design, testing, and implementation of an extensive survey of 7,500 households, fishing-related businesses, and fishing guides. Phase 2 consisted of survey and data analysis. The report prepared presented a profile of sportfishing activities for anglers, fishing-related businesses, and fishing guides; an analysis of angler expenditures and economic impacts; and descriptions of economic concepts and valuation, data collection methodology, data pro-

Figure 2-9
Study Area Map: False Pass Tourism Feasibility Study
(Richardson and Isaacs, 1990)

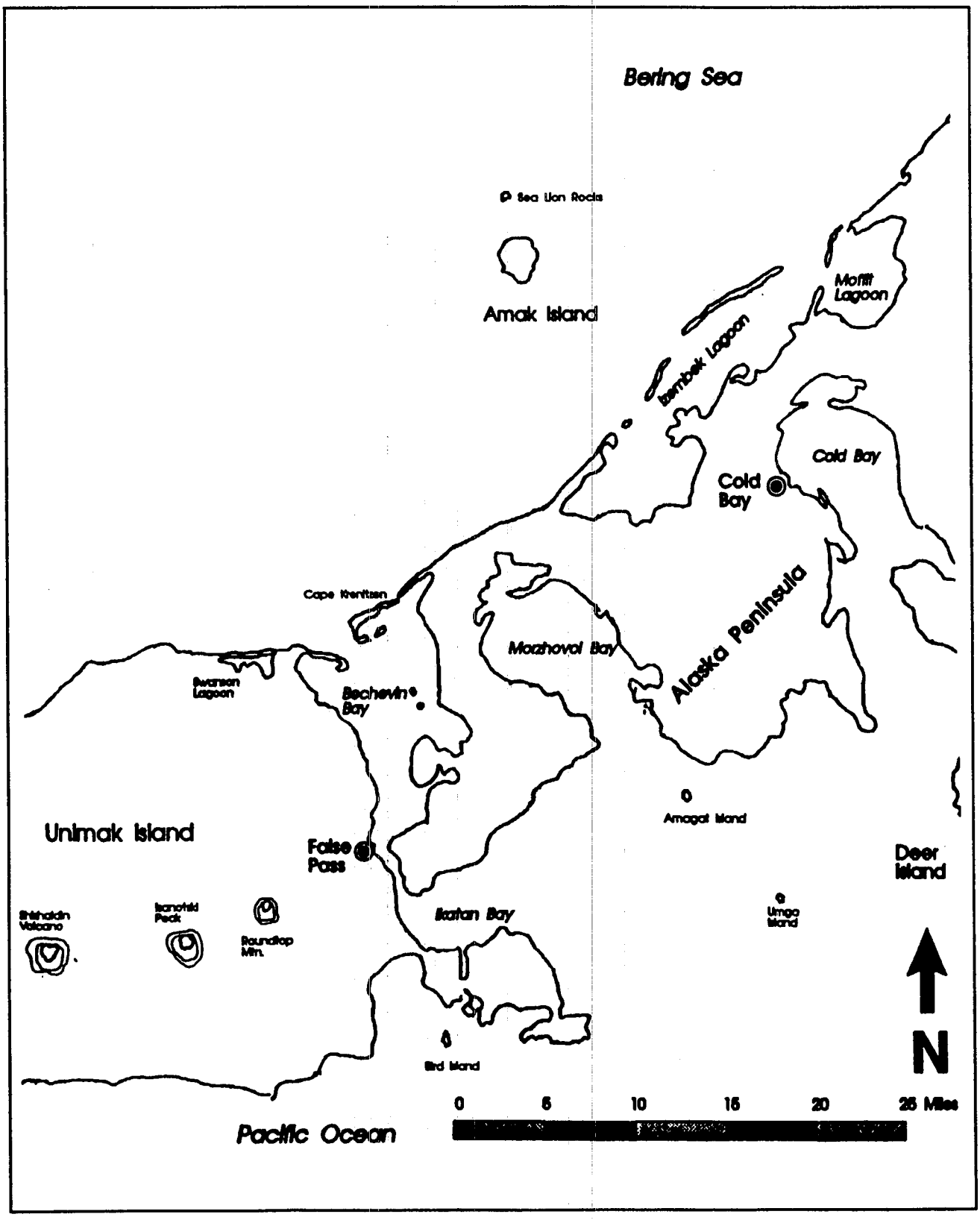


Figure 2-10
Marine and Terrestrial Mammals: False Pass Tourism Feasibility Study
(Richardson and Isaacs, 1990)

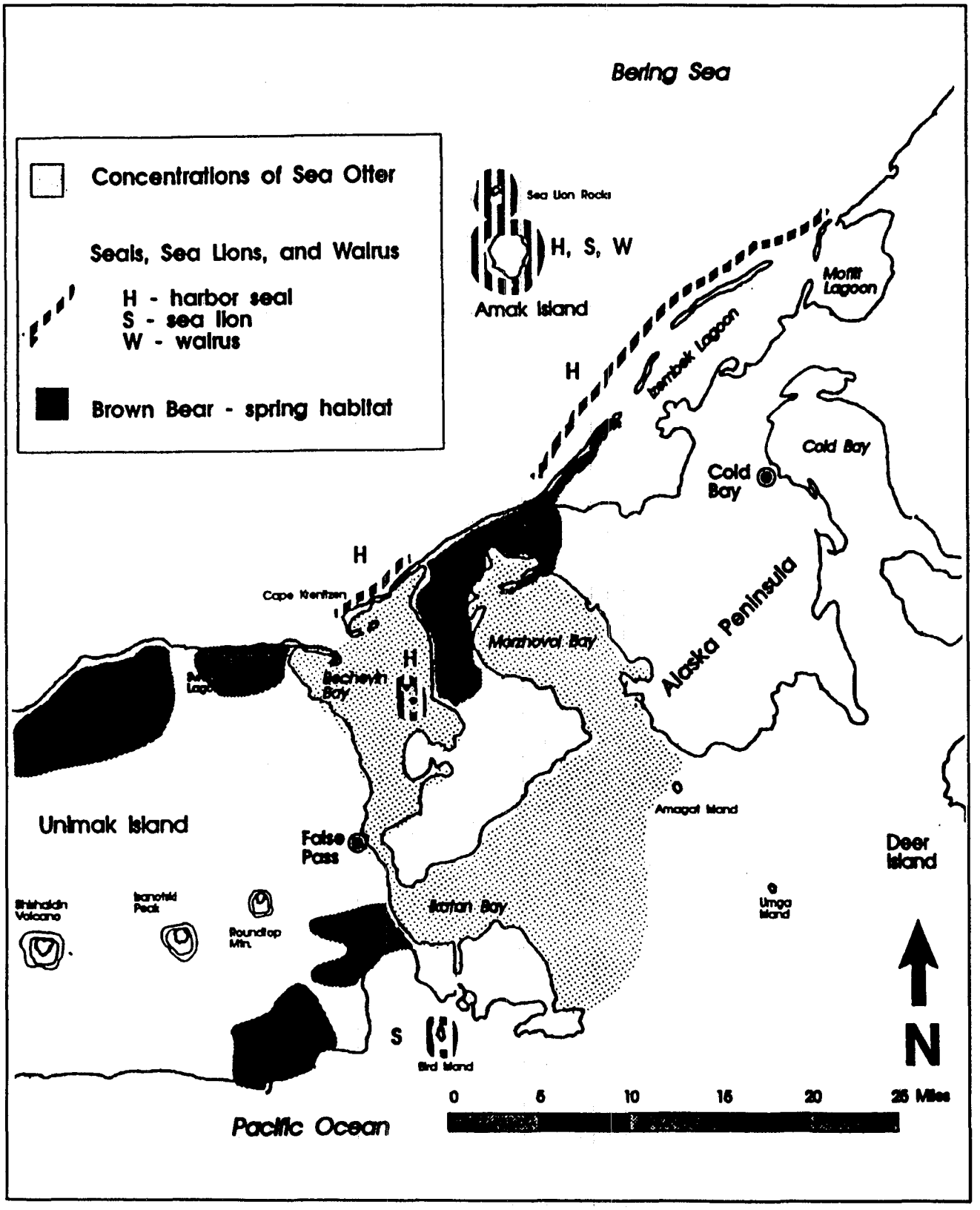
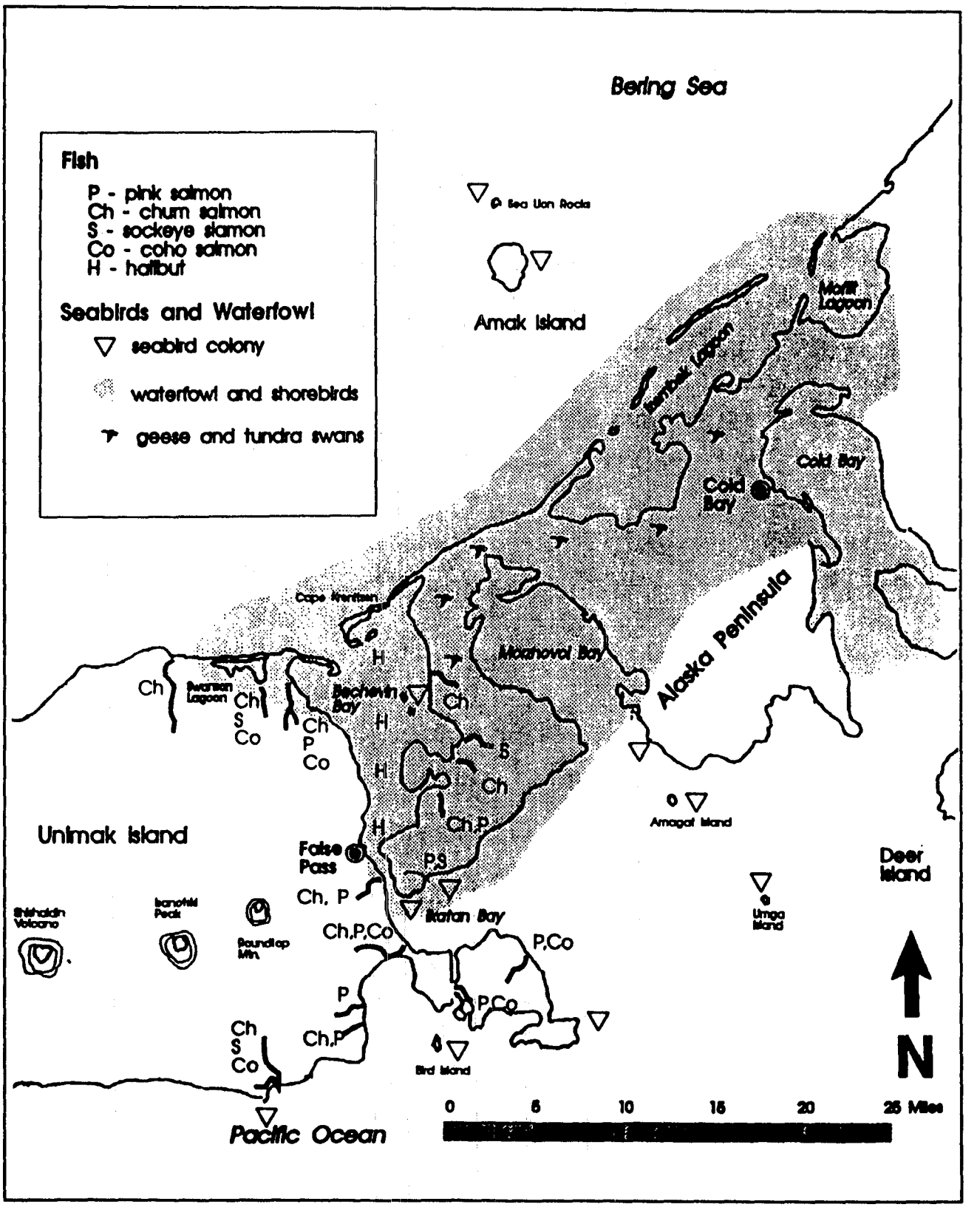


Figure 2-11
Fish, Seabirds, and Waterfowl: False Pass Tourism Feasibility Study
(Richardson and Isaacs, 1990)



cessing and sample descriptions, and analytical methods. The study addressed approximately 31 fisheries in specific places in southcentral Alaska.

Major findings included the following:

- 1986 angler expenditures totaled $127.1 million ($74.2 million resident and $52.9 million non-resident);
- Angler expenditures directly supported 2,178 jobs in sportfishing-related businesses; and
- Total earnings generated by sportfishing in southcentral Alaska was approximately $65.3 million.

Strengths and Limitations. This was a detailed study requiring extensive data collection and analysis. Strengths included developing hard information on angler use levels and expenditures. Survey and analysis methods were well-documented, providing a good understanding of the basis of the findings. Disadvantages include the length of time and amount of money the study required. There may also be some questions about analytical methodologies used and the applicability of results to other areas.

Technical Support Requirements. The complexity and scope of the study required extensive technical and staff capabilities, including survey design, survey execution, tabulation and analysis of survey results, and analysis of economic benefits.

5. Study of Regional Harbor Space Needs: Field Observations, Key-Informant Interview

Summary. This report was prepared for the U.S. Army Corps of Engineers (COE) in 1980 to assess existing and potential trailered-boat recreational demand at southcentral Alaska boat harbors. It combined field observation of trailered boat use activities with administration of a survey of boat owners at boat launch sites. The results were to be used in COE boat harbor planning efforts to set priorities for facility expenditures. The study consisted of several elements:

- Boat count and characteristics surveys (field observations) were conducted during selected high use weekends at Homer, Whittier, Seward, Deep Creek, and along the Glenn Highway north of Anchorage.
- Field surveys (key informant) were held with boat owners to

obtain information on boat use trends and preferences.

- Interviews (key informant) were conducted with boat dealers to obtain information on current and long term recreational boating trends.
- Finally, future recreational boating demand was forecast using a combination of population increases and increases in boat slip demand.

Findings indicated that Homer had the highest number of observations, and that two-thirds of all observations fell in the 10- to 20-foot length range. Mean annual boat use was approximately 38 days per year, and boat use was divided between 55 percent saltwater only and 45 percent saltwater/freshwater mix. Anchorage residents made up 75 percent of all boaters surveyed, fishing was the primary activity two-thirds of all boaters, and preferences for new facilities included additional boat slips, ramps/cranes for launching, and more onshore storage space.

Strengths and Limitations. The study provided firm field observations of small use at selected locations during selected sampling period over one season. The key informant interviews also provided information on factors affecting small boat use and future trends. Local high school students were used for boat counts and interviews, keeping the costs down and producing results over one season. However, the limits on sampling periods and key informant interview questions limit the statistical validity and applicability of results.

Technical Support Requirements. The study required the ability to design a valid field observation program, and useful key informant interview questions. Use of local high school students kept staffing costs down.

B. Key-Informant Sample

Figure 2-12.

C. Sample Questionnaire

Figure 2-13.

D. Examples of ROS and VMS Maps

Figures 2-14 and 2-15.

Figure 2-12
Sample Key Informant Protocol Used in Research Associated with the Glacier Bay Oil Spill (Northern Economics et al. 1990)

INVOLVED GROUP: TYPE OF DATA TO BE COLLECTED:
Recreational fishermen, and etc. (continued)

Recreational fishermen, guide and charter businesses, tourism industry

- o Individual recreational fishermen:
  - o number of days and location where fishing was prohibited or limited due to real or perceived contamination.
- o Fishing guide services/charter businesses:
  - o number of days and location where fishing was prohibited or limited due to real or perceived contamination;
  - o estimated dollar loss due to cancellations or lack of business during spill event;
  - o paid employment and leasing of vessels/equipment for spill response and cleanup;
  - o voluntary manhours and vessels/equipment used for spill response and cleanup.
- o Alaska Sportfishing Association:
- o Kenai River Sportfishing Association:
- o Cook Inlet Professional Sportfishing Association (CIPSA):
- o Alaska Flyfisherman's Association:
- o South Peninsula Sportfishing Association:
- o Homer Charter Boat Association:
  - o number of days and location where fishing was prohibited or limited due to real or perceived contamination;
  - o members affected - possible key informants.
- o Tourism industry:
  - o estimated dollar loss due to cancellations or lack of business during spill event.

Figure 2-13
Sample Survey Questionnaire
(National Park Service 1988)

The following questions are typical of mail surveys conducted by local watershed associations. Questions can be open-ended or close-ended, and can be formatted in many ways.

Q-1 Which of these activities do you presently enjoy on your property and the adjacent river?

____ hunting	_____ fishing	____ swimming
____ tubing	_____ canoeing	____ hiking
_____	_____ other (please specify)	

Q-2 How often do you or members of your family use the river area for the following activities?

Activity	Amount of Use			
	Never	Rarely (Once/ Season)	Occasionally (Several Times/ Season)	Frequently (One or More Times/Week Season)
Fishing	1	2	3	4
Hunting	1	2	3	4
Canoeing/ Boating	1	2	3	4
Swimming	1	2	3	4

Q-2 provides a much greater range for responses than Q-1. In addition to writing a close-ended question well, you should have a good idea of what answers to expect on any given question.

A pre-test of a small group of people will give you some good insights on what responses are most likely. You can incorporate these into your multiple choice close-ended questions.

Figure 2-13 (Cont'd)
Sample Survey Questionnaire
(National Park Service 1988)

Q-3 What qualities of the river are most important to you?

This kind of question is excellent when you want people to write anything - and everything - they wish. One disadvantage, however, is that open-ended questions are difficult and time-consuming to analyze. Furthermore, it takes respondents longer to answer open-ended questions, so that if there are too many such questions on a questionnaire, it is easy for them to become discouraged and not complete it. Therefore, close-ended questions are frequently used. For example, the question above may be rewritten as:

Q-4 Which of the following qualities of the river are most important to you? (Please circle your answer)

a) scenic qualities
b) recreational opportunities
c) wildlife
d) cultural/historic resources
e) natural areas

The answers to this question will be easier to analyze than those to Q-3, but Q-4 doesn't allow respondents any choices other than those which are listed. This presents a problem; if respondents don't see an answer they can mark down, they are likely to skip the question entirely. Q-4 can be changed to a "partially open-ended question" by providing respondents a designated place to write in their own answers.

Q-5 Which of the following qualities of the river are most important to you? (Please circle your answer)

a) scenic qualities
b) recreational opportunities
c) wildlife
d) cultural/historic resources
e) natural areas
f) other _____

Partially open-ended questions are very useful, but the analysis of them is still time-consuming. Generally, the more close-ended questions you use, the more efficient your analysis and the better your chances for a high response rate. (This is especially true with a large number of mailings.)

How a question is asked is important.

Notice the difference between Q-3, Q-4 and Q-5.

Figure 2-14
Sample Visual Quality Objectives Map
(USDA Forest Service)

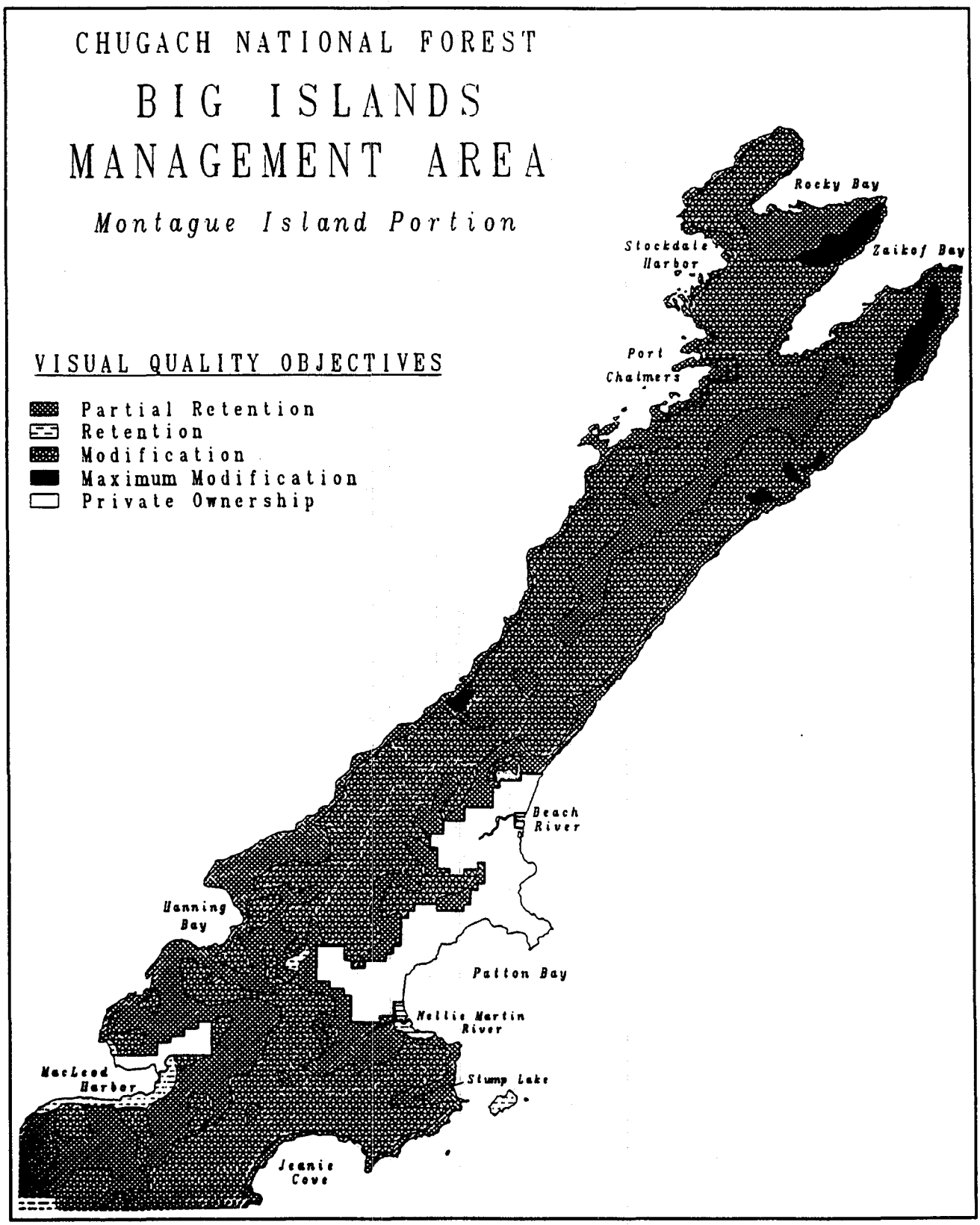
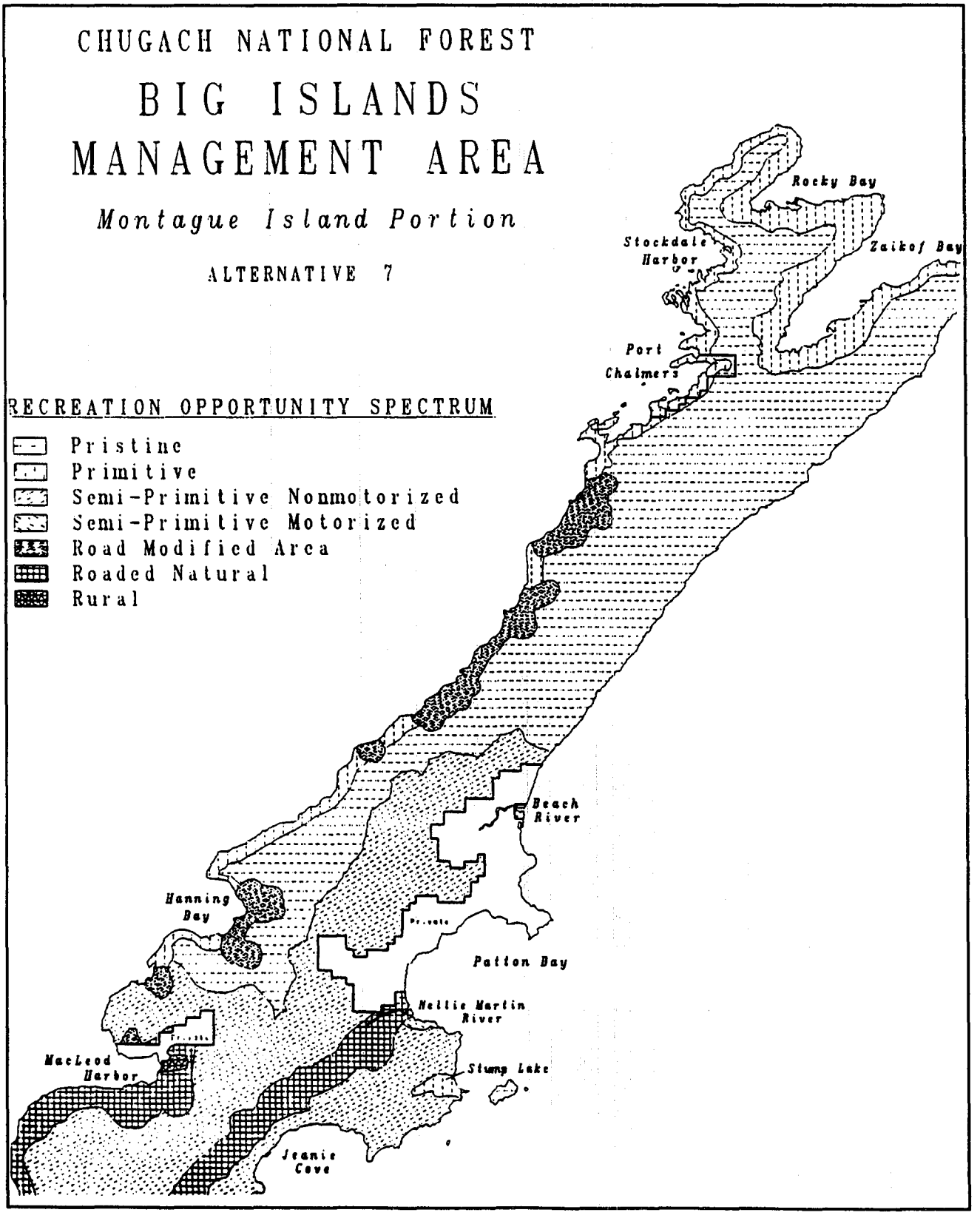


Figure 2-15
Sample Recreational Opportunity Spectrum (ROS) Map
(USDA Forest Service)



2.4 Bibliography (Part 2)

ADF&G. 1986. *Cook Inlet & Copper River Basin Rainbow/Steelhead Trout Management Policy.* A report developed by the Cook Inlet Sport Fish Planning Team and the Division of Sport Fish, Alaska Department of Fish and Game. December 1986.

ADF&G. 1988. *Southwest Alaska Rainbow Trout Management Plan.* A report developed by the Division of Sport Fish, Alaska Department of Fish and Game. December 1988.

ADF&G. 1990. *Southwest Alaska Rainbow Trout Management Policies.* A report to the Alaska Board of Fisheries by the Division of Sport Fish, Alaska Department of Fish and Game. February 1990.

Brunson, M. and B. Shelby. 1990. "A Hierarchy of Campsite Attributes in Dispersed Recreation Settings." *Leisure Sciences*, Volume 12, pp. 197-209.

Cooperrider, A.G. et al. 1986. "Habitat Evaluation Systems." In: *Inventorying and monitoring of Wildlife Habitat.* U.S. Department of the Interior, Bureau of Land Management. Service Center. Denver, CO. XVIII, pp. 757-776.

DeVelice, R.L., J.W. DeVelice and G.N. Park. 1988. "Gradient Analysis in Nature Reserve Design: A New Zealand Example." *Cons. Biol.* 2:206-217.

Engelking, L.D. and P.S. Bourgeron. 1991. "Assessing the Gray Ranch's Biodiversity Representativeness — Utilizing Gradient-Oriented Transects." Paper presented at Eighteenth Annual Meeting of the Natural Areas Association, Estes Park, CO.

EPA. 1990. "Environmental Monitoring and Assessment Program: An Overview." U.S. Environmental Protection Agency, Office of Modeling, Monitoring Systems and Quality Assurance (RD 680) Washington, DC. EPA/600/9-90/001. January, 1990. 5 pp.

Isaacs, J. et al. 1985. *Commercial Recreation Service Providers Study.* A report for the Bristol Bay Coastal Resource Service Area.

Jerry, D. 1991. *Alaska Acquisition Priority System (APS).* U.S. Fish and

Wildlife Service, Division of Realty, Region 7, Anchorage, AK. 40 pp.

Jones & Stokes, Inc. et. al. 1987. *Southcentral Alaska Sport Fishing Economic Study*. Prepared for the Alaska Department of Fish and Game. November 1987.

Margules, C.R. 1989. "Introduction to Some Australian Developments in Conservation Evaluation." *Biolog. Cons. 50*:1-11.

Muchoney, D.M., D.H. Grossman and R. Solomon. 1991. "Rapid Ecological Assessment for Conservation Planning." Paper presented to ACSM/ASPRS/Auto Carto 10 Annual Conference, Baltimore, MD, March 24-29. *Technical Papers*, Volume 4, pp. 141-145.

National Park Service. n.d. *Riverwork Book*. Prepared by the Mid-Atlantic Regional Office, Division of Park and Resource Planning, National Park Service, U.S. Department of the Interior.

National Park Service. 1990. *The River and Trails Conservation Assistance Program. Annual Report, 1989*. U.S. Department of the Interior,.

Northern Economics et. al. 1990. *Economic Impacts of the* S.S. Glacier Bay *Oil Spill*. A report for the U.S. Department of the Interior, Minerals Management Service, Alaska OCS Region. November 1990.

Office of Technology Assessment. 1986. *Assessing Biological Diversity in the United States: Data Considerations*. Background Paper No. 2, OTA-BP-F-39 (Washington, DC: U.S. Government Printing Office). 72 pp.

Richardson, J. and J. Isaacs. 1990. *Tourism Development in False Pass*. A study for the False Pass Tribal Council. November 1990.

Rue, S., N. Hemming, and M. McGuiness. 1987. *A Method of Evaluating the Recreational Potential of Alaskan Rivers*. A report for the Wildlife Federation of Alaska, submitted to the National Park Service, Alaska Regional Office. February 1987.

Scott, J.M., B. Csuti, J.E. Estes, and S. Caicco. 1988. "Beyond Endangered

Species: An Integrated Conservation Strategy for the Preservation of Biological Diversity." *Endangered Species Update*, 5(10):43-48.

Sea Kayaker Magazine, Volume Six, Number Four, Spring 1990. Seattle, WA.

Timothy, K.G. and D.F. Stauffer. 1991. "Reliability of Selected Avifaunal Information in a Computerized Information System." *Wildl. Soc. Bull. 19*:80-88.

USDA Forest Service. 1974. *National Forest Landscape Management - Volume 2*. Handbook Number 462. April 1974.

USDA Forest Service. 1979. *Visual Character Types*. A report by the Alaska Region, Division of Recreation, Soils and Watersheds, Series No. R10-63. U.S. Department of Agriculture. May 1979.

USDA Forest Service 1985. *The Limits of Acceptable Change (LAC) System for Wilderness Planning*. General Technical Report INT-176. U.S. Department of Agriculture. January 1985.

USDA Forest Service. 1986. *1986 ROS Book*. A compendium of information and publications on the Recreational Opportunity Spectrum methodology. U.S. Department of Agriculture.

USDA Forest Service. 1987. *Big Islands Management Area: Final Environmental Impact Statement*.

USFWS et al. 1990. *Alaska Submerged Lands Act Report: Analysis of Inholdings, Acquisition Priorities and Recommendations to Reduce Impacts of Conservation System Units in Alaska*. Prepared by the U.S. Fish and Wildlife Service, Bureau of Land Management, National Park Service, and USDA Forest Service. 1990. U.S. Government Printing Office.

Vaske, J., F. Kuss and A. Graefe. 1990. *Visitor Impact Management: A Review of Research*. A report published by the National Parks and Conservation Association.

Verner, J., M.L. Morrison, and C.J. Ralph. 1984. Wildlife 2000: *Modelling*

Habitat Relationships of Terrestrial Vertebrates. University of Wisconsin Press. 470 pp.

Woodward-Clyde Consultants. 1979. *Study of Kenai Peninsula Regional Harbor Space Needs.* A report to the Department of the Army, Alaska District, Corps of Engineers. September 1979.

Agency Contacts and Coordination

Dave Patterson, Recreation Planner, U.S. Fish and Wildlife Service
Helen Clough, Dillingham Field Office, U.S. Fish and Wildlife Service
Art Weiner, Alaska Department of Natural Resources
Al Meiners, Alaska Department of Natural Resources
Allison Rein, USDA Forest Service, Chugach Region
Steve Hennig, USDA Forest Service, Chugach Region
Mike Mills, Alaska Department of Fish and Game
Doug Whittaker, U.S. Department of Interior, National Parks
Jack Mosby, U.S. Department of Interior, National Parks

3. Protection Tools, Techniques, and Strategies

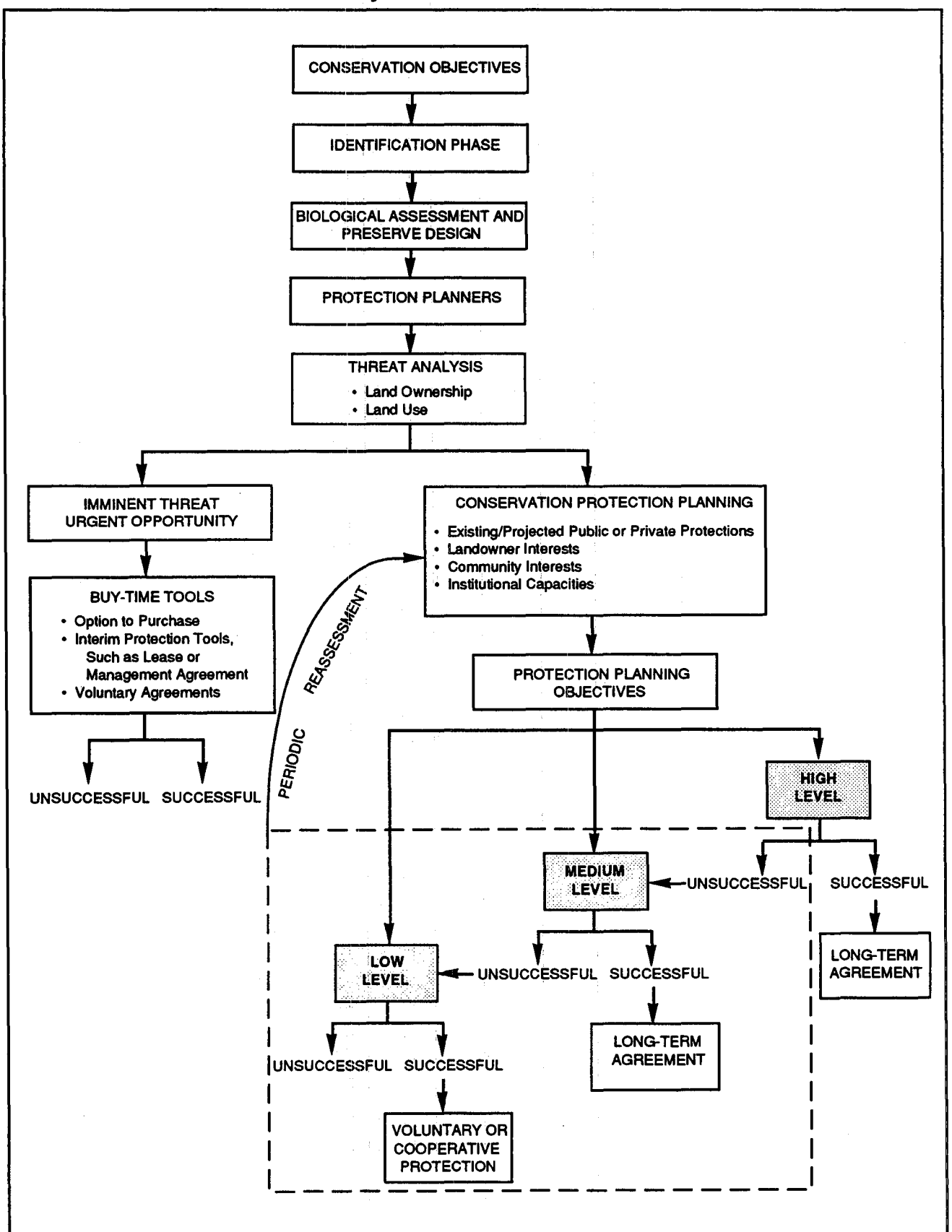
Outline of Key Topics

3.1 Introduction

Once the strategic fish and wildlife and recreation sites have been identified, their relative protection priorities have been established, and initial ecological boundaries have been delineated for optimum protection, the next principal task is to develop a protection plan and implement it. This is a critical step in the overall conservation process for both government agencies and private conservation organizations ("conservation entities"). Protection planning necessitates the coordinated involvement of protection-area design experts, protection planners, and negotiators and experienced lawyers, among other trained individuals. Figure 3-1 illustrates this process.

Throughout this part of the handbook, reference is made in the left-hand margin to case studies that illustrate the tools, techniques, and strategies discussed. These case studies may be found in Part 5.

Figure 3-1
Summary of the Protection Process



3.2 Protection Planning

Protection planning is the bridge between identifying strategic natural resources and actually moving those resources into protected status. A conservation entity first determines whether there is a need for further protection. If the need is identified, then the conservation entity must determine the appropriate level of protection for each individual site.

3.2.1 Assessment of the Need for Protection

A. Land Ownership

One of the first questions protection planners ask is who owns the land. As mentioned in Part 1 of this handbook, this step entails an examination of the public records at the recorder's office, assessor's office, and probate office to determine legal title.

The types of owners holding legal title can vary widely: state, federal, or local governmental entities; private individuals; public and private corporations; trusts; charitable organizations; and others. Though a piece of land may be owned by a single person or legal entity, a number of different interests may still be involved within that single ownership. For instance, a single private corporation may hold title to land, but it may have numerous shareholders who all have different views about how the land should be used. Similarly, if title is held in the form of a family trust, there a may be a number of beneficiaries and trustees with different needs, wants, and concerns about the land.

B. Land Use

Determining what the owners are using the land for involves examining existing local public zoning and land-use laws and regulations and any contemplated or proposed changes. These laws may restrict the uses that can be made of the land in a manner consistent with the needs of the identified natural resource, thereby potentially reducing the immediate need for implementing any additional protection. However, public zoning and land laws are not necessarily permanent forms of protection. The laws themselves are subject to legislative changes; and generally, there are procedures for landowners to obtain variances for activities that would not otherwise be allowed. Therefore, the existence of restrictive public land laws does not automatically obviate the eventual or even present need for additional protection.

In addition to public restrictions, there may also be private land restrictions. Deed restrictions (discussed in more detail below) are a common form of private land use regulations. For corporate owners, this question of land use also means examining corporate policies regarding land ownership. Though not permanent, these policies may be adequate to protect an identified resource, at least in the short term.

In the absence of any public or private restrictions, the question of land use turns on identification of the actual uses being made of the property. Even if those uses are presently compatible with conservation, it is important to evaluate the likelihood that more intensive or consumptive uses may be made in the future, which may damage the natural resources.

C. Threat Analysis

After identifying the strategic natural resources, who the owners are, and what the land uses are, protection planners can then assess the threat to the natural resources on each site. This analysis is the linchpin in the protection planning process, and requires experienced planners and protection-area designers using a combination of sound information and good judgment.

In sum, the threat analysis process consists of answering the following questions:

(1) What are major threats to key ecological objectives?
- How serious is the threat?
  - What is the degree of impact?
  - Is the threat long-term or short-term?
  - Is the threat broad or localized?
- How urgent is the threat?
  - Can future actions by the conservation entity easily eliminate the threat?
  - Is the threat immediately present or likely to become worse in the future?

(2) What broad protection strategies are required to address those threats?

(3) Can the conservation entity or its partners achieve those strategies, and at what cost?

Often the answers to these questions depend on extensive scientific research developed during the identification process.

3.2.2 Developing a Protection Plan

Based on the threat analysis, a conservation entity can decide to take one of four different actions:

(1) Low-level protection action (Landowner contact and education; voluntary agreement; right of first refusal)
(2) Medium-level protection action (Lease, license, management agreement; deed restriction; less than fee acquisition)
(3) High-level protection action (Fee acquisition; dedication)
(4) No action

If the conservation entity decides that some level of protection is appropriate, it must make initial decisions about actual protection strategies. Even if it decides that no action is needed at the present time, it may change that determination as circumstances change. The range of actions to achieve the levels of protection mentioned above is described in more detail in the sections on protection tools, below.

A. The Concept of Levels of Protection

The concept of achieving different levels of protection is fundamental to the use of any of the protection tools. While something as simple as landowner contact affords very little, if any, real protection, it is also very inexpensive. In most cases, a proportionately greater commitment of resources is necessary to accomplish a higher level of protection. The challenge is to allocate limited resources to achieve the highest level of protection for the greatest number of priority sites.

Thus, once a conservation entity determines what to protect and why, it should select the most cost-effective protection tools to accomplish the appropriate level of protection—which may not always be the most stringent under the circumstances. As a simple example, suppose a tract of land that the planners want to protect is in a portion of a planned reserve that is not fragile ecologically, borders a core natural area, and has been used for many years for farming and hunting in a manner compatible with the needs of the wildlife on the property. The land is held by family members and has been in the family's ownership for many generations. The family members will sell, reluctantly, but only at top dollar. In this case, acquisition of a

conservation easement by gift over the land restricting the uses that all future owners may make of the land, or even a voluntary landowner agreement, may be a more appropriate level of protection and expenditure of resources than a fee acquisition by a conservation entity.

B. Why Acquiring the Land is Not Enough: The Need to Consider the Full Array of Tools

Conservation entities have used, and continue to use, land acquisition far more frequently than any other protection tool. Acquisition of title to the land provides a very high level of protection for a strategic natural resource, and is an essential and very effective protection tool. However, in certain instances it is not necessarily the exclusive or most effective approach:

- Fee acquisition is expensive if the property must be purchased at full market value, and it is unlikely that a conservation entity will be in a position to buy all the land it would like to, particularly if the planned protection area is large.

- Owners may not be willing to sell or donate their property, for a variety of reasons.

- If the area includes significant public lands, the local community may resist further withdrawals from private ownership and the loss of public revenues that would result if a government agency (or private organization exempt from property taxation under state law) acquires the property.

- Purchasing fee land shifts land-ownership burdens and associated liabilities to the conservation entity. Given the long-term costs associated with ownership, the conservation entity should avoid purchase if other protection tools will work given existing ownership.

Thus, conservation entities must consider a wide array of protection tools, techniques, and strategies in working with landowners to maintain strategic fish and wildlife habitats and recreation opportunities—especially for a large landscape. The following section discusses a range of protection options which under the proper circumstances, can be used cost-effectively to accomplish conservation goals.

3.3 Protection Tools

As mentioned above, the protection tools range from landowner contact to ensure that a landowner is aware of the presence of a special ecological feature, to fee acquisition and dedication of the land to a legally established nature preserve. Some of the tools are purely voluntary agreements that rely on the owner's personal motivations to protect an ecological feature of that owner's land. Most of the tools, however, involve legally binding and enforceable documents and often entail the payment of money by the conservation entity for the transfer by the landowner of some or all of the rights to use the property.

The advantages and disadvantages of each tool vary in terms of cost, strength of protection, quickness and ease of implementation, duration of protection, and flexibility. These differences and the inherent trade-offs in using the tools—especially between cost and strength of protection—are at the heart of protection planning.

Use of any given tool may be an end in itself or a means to negotiate a stronger, and generally more costly, level of protection in the future. Moreover, the tools may often be used in combination with one another to yield a higher level of protection than any would produce alone. For instance, a right of first refusal, which is a low level of protection, may be coupled with a lease to a conservation entity, which is a medium level of protection. This combination approaches a relatively high level of protection by preserving a natural resource in the short-term (the lease) and potentially in the long-term if the owner decides to sell (the right of first refusal); this is a level of protection neither tool alone would produce.

The organization of the basic protection tools below can be thought of as roughly equivalent to the rights of ownership that the landowner is willing either to give up or retain but forego exercising, in return for some other benefit (such as cash, exchange land, tax deductions, personal satisfaction). Ownership of land is often conceived of as a bundle of sticks, with each stick in the bundle being the equivalent of each separate property right: the right to live on the land, the right to farm, the right to cut trees, the right to extract minerals, the right to build a house, etc. Since fee ownership is the largest estate in land that the law allows, it consists of the complete bundle. In this way, as one moves down the list of protection tools, one will find that the landowner either gives up more sticks in the bundle or sets those sticks aside not to be used. This ranges from landowner contact and education, where the landowner gives up none of the sticks, to fee ownership or dedi-

cation of the entire fee estate, where the owner gives up all the sticks. In spite of this general hierarchy, the lines between the differing levels of protection are not always clear. Therefore, it is important to recognize that the organization and categories of tools below are, to some extent, necessarily arbitrary.

Table 3-1 provides a general summary of protection tools and strategies.

3.3.1 Low-Level Protection Tools

A. Landowner Contact and Education

Landowner contact involves simply ensuring that the landowner is aware of a natural attribute of his or her property identified through the inventory process. Contact generally entails:

SEE CASE STUDIES:
5.2.1A Cannon River
5.2.1B Siskiyou County

- The exchange of information between the conservation entity and the owner about the feature, its history, and its present condition;
- A discussion of the feature's importance and of any laws or regulations that affect use of the land, if appropriate; and
- The gathering of information by the conservation entity's representatives about the landowner's underlying needs, desires, and concerns.

What distinguishes landowner contact from all of the other protection tools is that the landowner is not asked to take any actions, prevent any activities, or make any commitments, voluntary or otherwise.

In many instances, landowner contact is used first because it is an inexpensive way to gain a potentially adequate interim level of protection. Many landowners are interested in conservation and are generally pleased to find out that they have something special on their land. The goal is to lay the groundwork to direct that interest to a positive action with respect to their property. (See Appendix C for materials on contacting landowners.)

1. Prevent Inadvertent Degradation of a Significant Natural Resource

By ensuring that the landowner knows that there is a special natural attribute on the property, the conservation entity at least eliminates the possibility that the landowner might damage or destroy the natural feature through mere inadvertence. Most natural features are destroyed because the

Table 3-1
Summary of Strengths, Limitations, and Requirements of Protection Tools

PROTECTION TOOL	STRENGTHS	LIMITATIONS	REQUIREMENTS
Landowner Contact and Education	• Low cost • Covers large area quickly • Prevents destruction through inadvertence • Builds relationship to negotiate stronger levels of protection in the future • Opportunity to gain information about site and owner • Encourages informed management	• Very low level of protection, if any • Interim protection only, if any.	• Identification of strategic sites • Trained fieldworkers with expertise in habitat and recreation and excellent people skills • Stylish brochures, attractive information package • Newsletters • File or database system for reporting information from contacts
Voluntary Agreements: Registration and Cooperative Management Agreements	• All advantages of landowner contact and education, above • Flexible • Higher level of protection than landowner contact alone • Can function as holding action while funds for stronger protection level obtained	• Low level of protection, depends entirely on voluntary commitment • Interim protection only • Ill suited for core areas	• Same as above, plus: • Plaque, certificate, or other memorial • Well-drafted sets of voluntary landowner agreement forms • Word processing equipment • Trained negotiators with skills needed to customize forms and create specialized agreements
Rights of First Refusal	• Protects against changes in use if current owner decides to sell • Can buy time	• Little warning or time to arrange financing for purchase price • Contingent entirely on owner deciding to sell and terms of actual offer	• Same as fee acquisitions, below
Leases, Licenses, and Management Agreements	• Flexible • Allows for active management or restoration short of paying full purchase price • Does not require acquisition • Works well in buffer areas	• Interim protection only • May be ill-suited for core areas	• Experienced negotiators with knowledge and skills in finance, land use, real estate, and law • Experienced land managers with expertise in habitat and recreation • Detailed management plan developed by experts • Experienced attorneys with expertise in real estate law, tax law, estate and family planning law, and environmental/natural resources law • Well-drafted sets of form legal documents • Word processing equipment and other administrative capabilities (telecopying, photocopying, etc.) • Skilled administrative staff • Reliable information about market rents and fees • May need hazardous materials evaluation • Clear policies and procedures for decision making and management

Table 3-1 (Cont'd)
Summary of Strengths, Limitations, and Requirements of Protection Tools

PROTECTION TOOL	STRENGTHS	LIMITATIONS	REQUIREMENTS
Conservation Easements	• Flexible • Usually restricts land use permanently • Keeps property in private hands and on the tax rolls • Can be low cost because of tax incentives to donate • Works well in buffer areas, especially if historic uses are compatible	• May be ill suited for active management or restoration of core areas, unless restrictions on landowner's use are very tight, and rights granted very broad • Possible management difficulties when there is a change in ownership • Requires high level of monitoring	• Experienced negotiators with knowledge and skills in finance, land use, real estate and law • Experienced land stewards with expertise in habitat and recreation • Experienced attorneys with expertise in real estate law, tax law, estate and family planning law, and environmental and natural resources law • Well-drafted sets of form legal agreements • Word processing equipment and other administrative capabilities (telecopying, photocopying, etc.) • Skilled administrative staff • Appraisal • Title report and underlying documents • Survey, where needed • Thorough hazardous materials evaluation • Easement documentation report prepared by experts • Clear policies and procedures for decision making and management
Deed Restrictions and Reverters	• Permanent restrictions • Keeps property in private hands and on the tax rolls • May be able to recover costs on re-sale	• May be difficult to resell to a buyer willing to take subject to the restrictions • May be difficult to enforce	• Same as above
Acquisition of Undivided Interests	• Buys "seat at the table" in management decisions • Potential step to full fee ownership • Way to divide ownership among conservation partners making contributions of different value toward purchase	• Can present serious management problems, especially in the absence of a well drafted co-tenancy agreement • Undesirable legal remedies in the event of deadlock	• Same as fee acquisitions, below
Acquisition of Remainder Interests Subject to Restricted Life Estates	• Low cost way to gain possession and control in the future	• Uncertain date of transfer of possession (depends on death of last tenant) • Management problems during occupancy of life tenant	• Same as fee acquisitions, below

Table 3-1 (Cont'd)
Summary of Strengths, Limitations, and Requirements of Protection Tools

PROTECTION TOOL	STRENGTHS	LIMITATIONS	REQUIREMENTS
Acquisitions of Partial Interests: Water, Timber, Mineral, Grazing Rights and Access Rights	• Lower cost way to control resource than full fee acquisition • Keeps title to land in private hands and on the tax rolls	• May not be permanent (e.g.,other owners may be able to reapply for rights or rights acquired may be term rights only) • May not completely control use of the resource • Difficult to establish good title in seller	• Same as fee acquisitions, below, plus: • Technical experts, (such as hydrologists and water rights attorneys in the case of water rights acquisitions)
Fee Acquisitions	• High level of protection, gives full ownership and control	• Can be expensive if property is not donated • If government owned, public may perceive that property is withdrawn from the private domain and may reduce local tax revenues	• Experienced negotiators with knowledge and skills in finance, land use, real estate and law • Experienced land stewards with expertise in habitat and recreation • Experienced attorneys with expertise in real estate law, tax law, estate and family planning law, and environmental and natural resources law • Well-drafted sets of form legal agreements • Word processing equipment and other administrative capabilities (telecopying, photocopying, etc.) • Skilled administrative staff • Professional specialists (land surveyors, geologists, water quality engineers, appraisers, hazardous waste inspectors, structural engineers, etc.) • Appraisal • Title report and underlying documents • Survey, where needed • Thorough hazardous materials evaluation • Clear policies and procedures for decision making and management
Dedications	• High level of protection, privately owned land, especially if title will be retained by a private conservation organization (protects against condemnation or conversion) • Can be flexible by allowing only specific interests to be dedicated	• Uncertain incentives for private owners	Same as fee acquisitions, above

owner is either unaware of the feature or does not know how to manage the property. Once informed, any landowners will go out of their way to protect the special natural feature.

2. Gather Information about the Site and the Landowner's Interests

Landowner contact provides an opportunity to assess the threats to a significant natural resource by gathering information about the condition of the resource and the landowner's plans for his or her property. If a higher level of protection is or becomes appropriate, then the contact with the landowner may also provide information about the landowner's underlying interests and therefore suggest how to structure a transaction that will satisfy those interests and at the same time adequately protect the strategic natural feature on the land.

3. Encourage Informed Management of the Resource

The exchange of information with the landowner about the natural feature and how to manage it is an important part of landowner contact. Once a landowner who was previously unaware of a significant natural resource located on his or her land becomes informed about the resource, he or she may prove to be a very good manager of it. Indeed, in many cases the landowner, with management advice or assistance from the conservation entity if the landowner requests it, may be as good as or better than the conservation entity at managing the resource than the conservation entity, especially where its resources are limited. Furthermore, the conservation entity may gain valuable information from the landowner about how to improve its own management of the resource. The landowner may already have been managing the land properly and may, in fact, be engaging in some special practice that has contributed to the well-being of the resource and that the conservation entity can learn from.

4. Build a Relationship as a Base for Future Negotiations

The first contact with a landowner is extremely important because it is the building block on which the conservation entity will base any expanded protection efforts with that landowner. Because of the importance of this first contact, in almost every case a representative of the conservation entity should try to arrange to meet the landowner in person at the landowner's property. The meeting should be informal, although the conservation representative should be prepared to discuss protection options if the land-

owner wants to do so. Face to face, the conservation representative will gain a better understanding of the landowner, and the landowner will have an individual with whom to connect interest in the natural feature. The landowner may well turn to the representative or organization in the future when the owner considers whether to sell the land or otherwise take any action that might affect the natural feature.

B. Voluntary Agreements: Registration and Cooperative Management Agreements

1. Registration

Registration is a landowner's voluntary commitment to protect a natural feature of his or her property. It is essentially the same as landowner contact, except that the conservation representative asks the landowner to make a voluntary commitment to checking with the conservation representative before making any changes in land use that could conceivably harm the feature. The owner does not usually commit to spend money or actively manage the natural feature. The commitment may or may not be in writing, and the landowner does not receive any payment for it.

It is often assumed that voluntary protection provides no guarantee of protection because it is simply the owner's word and not a legally enforceable document. However, depending on the initiative of the individual landowner, it may provide a good deal of protection for the natural resource.

A registry program can broaden and accelerate a protection program by enabling a conservation entity to contact many owners quickly and at relatively low cost, and encourage them to make psychological commitments to protect their land. Registration can provide some level of protection for sites that may not justify current expenditures of time and money but are of some importance. In this manner, registration can also function as a holding action, yielding some immediate protection and providing time to raise funds for stronger and more expensive protection strategies.

Both government agencies and private conservation organizations have successfully implemented registry programs. The effectiveness of the particular conservation entity depends on the attitudes of the local community and the experience and training of the field representatives.

Select Only Sites That are Significant. Before contacting owners, the conservation entity should select sites on the basis of a sound identification process, so that the registry sites are meaningful. A registry program should also include an "official" list of the sites maintained, a sort of honor roll of those who have agreed to voluntarily protect significant natural features on their lands.

The Importance of Adequate Recognition. A landowner who agrees to register his or her property should receive a plaque, certificate, or other memorial in recognition of his or her commitment. The strength of this protection tool is the sense of pride it can instill in a landowner—pride in ownership of something special and pride in playing a role in preserving the area's natural heritage. It is also a symbol visible to family, friends, and the community; and it helps to foster continuity of conservation commitment as ownership of the land within a family or other group changes.

Voluntary Landowner Agreements. A *voluntary landowner agreement* is a written agreement containing a purely elective commitment by the landowner to refrain from harming a natural resource and a promise to allow the conservation entity (usually a private conservation organization) to enter his or her land and manage or restore the natural resource. The agreement is not recorded and is not legally binding on the owner or the property. An important distinguishing feature of the agreement is that it does not typically require either the landowner or the conservation entity to make any payments or incur any liabilities to the other.

Written voluntary landowner agreements are often part of a registry program. The question of whether or not to ask for the voluntary agreement in writing depends on the particular landowner and the circumstances. If the landowner is a corporation, then the conservation representative should request a written agreement signed by someone with the requisite authority. The reason for a signed agreement in this case is the need for continuity as personnel change within the company. However, if the landowner is an individual, the answer is less clear. Since the agreement is not legally enforceable, asking the landowner to sign a piece of paper does not provide any more protection unless the landowner will take the agreement more seriously if he or she does so.

A voluntary landowner agreement can be very flexible in its terms. It can, for instance, incorporate a "best practices" management plan for traditional

uses; this plan should be jointly developed by experts in the conservation entity and the landowner or user organizations within the community. The agreement should, however, be based on realistic expectations about the landowner, and should not try to compel the landowner to do anything significantly different from what he or she has historically done on the property.

In general, a voluntary landowner agreement should include at least the following provisions:

- Description of the property and natural feature,
- Term of the agreement (usually cancelable by the landowner on 30 days' notice),
- Agreement not to take any action that could degrade the natural feature,
- Consent to inspections by the conservation entity and management or restoration activities by the conservation entity at its expense,
- Agreement to notify the conservation entity before selling the property,
- Assurance that the agreement is voluntary and does not create any binding obligations or liabilities on either party, and
- Assurance that the conservation entity will not record the agreement.

Before entering the property to perform any monitoring or other activities on the property, the conservation entity should make certain that it is covered by adequate insurance.

2. Cooperative Management Agreements/Memoranda of Understanding

SEE CASE STUDIES:
5.2.2A Tanana
5.2.2B Mad River
5.2.4A Nipomo Dunes

Usually, *cooperative management agreements*, or memoranda of understanding, refer to voluntary agreements between a government agency and a private landowner, as distinguished from *voluntary landowner agreements*, which are generally used to describe a voluntary agreement between a private conservation organization and a private landowner. However, the concepts of the two types of agreements are basically the same. In sum, cooperative management agreements are typically voluntary written agreements that relate to the coordinated management of public and private property, that either party can terminate upon a specified period of advance

notice and that do not involve the payment of money or the assumption of legally enforceable obligations.

3. Consider Financial Incentives

Although voluntary landowner agreements and cooperative management agreements do not generally involve the payment of money to the landowner, a conservation entity may consider using appropriate financial incentives. For instance, a government agency may be able to encourage more landowners to participate if it provides a reduction in property tax assessments where the owner voluntarily increases the protection level by entering into an enforceable contract with the conservation entity to keep his or her property in its existing natural state. Also, a conservation entity may consider compensating a landowner for research or other active information gathering. These are usually enforceable contracts with penalties, however, and not merely voluntary arrangements.

4. Private Initiatives for Recreation Sites

A conservation entity may also consider financial incentives for the purpose of encouraging private initiatives to put the land to certain uses that are compatible with ecological or recreational objectives. For example, if a landowner is considering timber harvesting rather than a low-density campground, recreation objectives could be accomplished by providing a low-interest loan for the campground development, thereby allowing an alternative to timber harvest.

C. Rights of First Refusal

SEE CASE STUDY: 5.2.3A Canelo Hills

In many cases, a conservation entity may be able to obtain a *right of first refusal* to purchase the property if and when the landowner decides to sell. This may apply when a landowner is using his or her property in a manner consistent with the natural features of the property and there is a concern from a conservation standpoint only about what a new owner might do; it may also apply where a landowner is not otherwise interested in selling his or her property. Rights of first refusal can be useful in certain circumstances when it is not critical to acquire the property at the present time, but it would be disadvantageous if the property were sold to someone else who may not be as careful about managing the land. It can be used by the conservation entity to buy time.

The right of first refusal is not triggered, and the conservation entity would have no right to acquire the property, unless the owner first has an offer which the owner intends to accept. A right of first refusal is an agreement between a landowner and conservation entity that gives the conservation entity the right to match any genuine purchase offer that the landowner is willing to accept on the property. There is usually a specified period, such as 30 days, during which the conservation entity must match the offer. A less common variation of the right of first refusal is the *right of first offer*, which gives the conservation entity the right to purchase the land on the same terms and conditions as the landowner intends to offer it for sale, before the landowner actually solicits other offers.

If a right of first refusal is triggered and the conservation entity decides not to accept the offer, the landowner can then sell the property to the third party which made the original offer, on the same terms and conditions as presented to the conservation entity. In negotiating rights of first refusal, the parties must think about how much, if any, the landowner can then vary the price or other terms of the purchase by the original offering buyer without re-triggering the right of first refusal, and whether the right is one time only or continues if for any reason the original deal does not close.

Some payment must be made for the right of first refusal to make it legally enforceable, although this payment can be nominal. Rights of first refusal only last for a certain term, though the term is generally longer than an option term would be. Rights of first refusal should, if possible, be coupled with a management agreement, license, lease or other agreement to give the conservation entity assurance that the property will be properly maintained during the right-of-first-refusal period.

In practice, rights of first refusal can be cumbersome for both the landowner and the conservation entity. If a landowner has a willing buyer and wants to sell, it is difficult for the owner to have to make that buyer stay committed for a specified period while a third party decides whether or not to purchase the property instead. Therefore, rights or first refusal may limit the marketability of the property. Likewise, the conservation entity could receive a notice of an offer at any time, without expecting it, and have only a short period to respond and secure the funding needed to purchase the property.

3.3.2 Medium-Level Protection Tools

SEE CASE STUDIES:
5.2.4A Nipomo Dunes
5.3.1D Controller's Trust

A. Interim Protection: Leases, Licenses, and Management Agreements

Land leases, licenses, and management agreements are all agreements by which a conservation entity receives the right to actively manage or restore a natural attribute on a landowner's property, or to prevent the owner from permitting any activities that would damage natural features, or any combination of the two. A long-term lease or management agreement can provide crucial interim protection for a natural attribute of the land, and generally they are preferable to licenses for reasons described below.

1. Differences among Leases, Licenses, and Management Agreements

A lease, license, or management agreement can achieve the same objectives, but they have different legal implications. The circumstances dictate whether one is better than the other in any particular instance. A *lease of the land* is a right to possess the land and is a hybrid of a real property interest and a contract right. A *management agreement* is not a possessory interest in the property and is simply a contract right. A *license* is a very limited form of agreement that is personal to the holder of the license and allows for limited access to the landowner's property for brief duration and for specific purposes; it is a mere privilege and does not give the holder of the license any rights to possession or other interests in the land. These differences mean that the remedies available for breach by the landowner may vary. Usually an interest in real property entails a broader range of remedies (including the right to require specific performance of the terms of the contract rather than merely the right to receive monetary damages, which may be inadequate); therefore, a lease generally provides for stronger remedies than a license or management agreement.

Generally, the duration of a lease is much longer than that of a license or management agreement. A management agreement will usually be for a one-year or two-year term, renewable for an additional one-year term at the election of the parties; however, either party can often terminate the agreement, without cause, upon 30 or 60 days' advance written notice. A lease is typically for a much longer period, sometimes up to 99 years depending on local law and custom. The lease may provide for one or more renewal periods, sometimes with an increase in the rent required, at the end of the term and at the tenant's election. A license is usually very short term, often for less that a year, although it can be for as long as the parties agree subject again to local law and custom.

Under a lease, the tenant typically pays the owner rent, while under a management agreement, the owner usually pays the manager a fee. The holder of a license pays the owner a fee. Any of these payments may be nominal. In addition, under a land lease, if use is exclusive to the tenant, the tenant is frequently responsible for payment of all or a portion of the costs associated with real property ownership, such as real property taxes, insurance, and maintenance.

2. Comparison to Conservation Easements

A lease is very much like a *conservation easement* (discussed below), except that a lease is for a specific term, while a conservation easement is usually perpetual in duration. A lease is a very flexible tool, but one should be carefully crafted to accomplish a specific objective. While a primary advantage of using a lease is its flexibility, a corresponding disadvantage is its impermanence.

Conservation easements are usually negative (they prohibit the landowner from building structures, cutting trees, etc.), while leases and management agreements are usually affirmative; in some cases, however, active management rights may be an important feature of a conservation easement. Leases allow someone to use someone else's property, live on the property, graze cattle, etc.; and management agreements allow someone to do something on someone else's property.

3. Consider Combining with Right of First Refusal or Option to Purchase

SEE CASE STUDY: 5.2.5H Stillwater

In combination with a right of first refusal or option to purchase, a lease or management agreement can provide interim protection while also offering a means for the conservation entity to buy time to acquire fee title. Often, the conservation entity can negotiate with the landowner to apply a portion of the lease payments to the purchase price of the property.

B. Deed Restrictions and Reverters

1. Deed Restrictions

Deed restrictions provide a conservation entity a way to place perpetual restrictions on the use of land without retaining ownership. The entity must first acquire the property—whether by gift, bargain sale, or purchase—and

then resell it to a private buyer with the restrictions attached. Often, because of the effect of the restriction, the resale price will be less than the market value at the time of acquisition. However, deed restrictions allow the conservation entity to recover some, if not most, of the original purchase price for the property, and then return the property to the private sector with certain future uses permanently restricted.

In general, when fee title is conveyed from one owner to the next, the seller may retain some rights in the form of a deed restriction. A landowner may, for example, sell a portion of his or her land on the condition that the land not be used for purposes incompatible with the adjacent land that is not being sold. This condition is written into the deed of conveyance and, upon recordation of the deed, becomes a legally enforceable restriction binding on all future owners.

For example, in residential subdivisions, elaborate deed restrictions are typically placed on all lots sold to prevent many activities deemed incompatible with the character of the neighborhood. Deed restrictions bind all future owners of the restricted lots in the subdivision and can be enforced by them. Consequently, one neighbor can enforce the restrictions against another. The sale price of the restricted land reflects the value of the restriction. It can either increase or decrease the value, depending on the nature of the restriction, for which no separate payment is made.

While traditional deed restrictions are negative, it is possible to retain affirmative rights in a transfer of property. Deed restrictions are a form of contract between the owner of the restricted land and the owner of the benefited land or other holder of the right to enforce the restrictions, and this contract binds all future owners. As such, the restrictions can be legally enforced with an order of specific performance, as long as they do not violate public policy.

A basic problem with deed restrictions, however, is that they are often difficult to enforce. The restrictions must be drafted not only to encompass current threats but also to anticipate possible future threats. However, the broader the terms of the restrictions, the more difficult it may be for the conservation entity to demonstrate a violation. In addition, in the absence of a *reverter* (discussed below), the conservation entity may have to go to court to seek an injunction to enforce them. This is potentially costly, and the organization may not become aware of the violation until the damage

is done. Nevertheless, deed restrictions can be an effective tool, particularly in situations where the threats to a natural resource are easily identifiable and the organization is able to monitor activities on the property closely.

2. Reverters

A normal deed restriction can be enforced with a court order of specific performance. However, if a deed restriction includes a *right of reverter*, the injured party can, at least in theory, automatically step in and claim title to the land if the restriction is violated.

Reverters are not common, and they too are difficult to enforce. Courts will generally take all possible measures to compel the landowner to comply with a restriction before they will compel the owner to surrender ownership of the property to the conservation entity. The threat of a reverter can make it easier for a conservation entity to enforce a restriction by giving the entity more bargaining leverage, but it can also make the property less marketable upon re-sale. As a result, the conservation entity should be certain in advance that it can resell the property subject to the restriction. That usually means having an identified private buyer already legally committed to buy the property subject to the deed restrictions at the time the entity acquires the property.

C. Less Than Fee Acquisitions: Conservation Easements, and Undivided Interests, Remainder Interests, and Partial Interests

1. Conservation Easements

SEE CASE STUDIES:
5.2.5A Virginia Coast Reserve
5.2.5B Brule River
5.2.5C Hammond
5.2.5D Flying D Ranch
5.2.5E Hawaii
5.3.2H ACE Basin

A *conservation easement* is a legally binding agreement in which the owner voluntarily restricts present and future uses of the land. It specifically prohibits certain activities so that a habitat, public recreation site, or other natural feature of the land can be protected. The restrictions are enforced by a qualified holder of the conservation easement, generally a nonprofit conservation organization or government body having an interest in the natural values being protected. Conservation easements provide a way for these groups to regulate development of land without having to acquire full ownership and control of the property. At the same time, easements encourage traditional uses that do not degrade the natural features of the land.

A thorough and precise threat assessment is the basic driving force of an ef-

fective conservation easement. Conservation easements should be shaped by the specific threats to the natural resource that is the subject of the protection efforts. It is important for a conservation entity, therefore, to rely on sound scientific research to identify the major threats and compatible land-use practices.

The exact terms of a conservation easement are negotiated between the easement holder and the landowner, and they vary widely from conservation easement to conservation easement. Just as each piece of land and each owner is different, each conservation easement is unique; and its terms should be carefully tailored to the particular situation. Moreover, this is a complex and technical area of the law, particularly if the owner intends to claim a charitable deduction for a gift of a conservation easement (see discussion of tax techniques in Part 3.4.2 below). Each conservation easement should be framed with reference to the state and federal laws governing its use. (For a description of the types of provisions a conservation easement might contain, see the outline of a conservation easement in Appendix D.)

Conservation entities throughout the country have used conservation easements of some sort for over 30 years. A growing body of knowledge exists on the efficacy of such easements. They tend to work best to protect buffer areas—natural areas that are not fragile and do not require active management or restoration around existing parks and preserves—from incompatible uses. Restrictions that are clear and easy to observe work best, such as: do not build houses, cut trees, or mine. The finer points of land management, such as requirements that the landowner maintain the best management practices, prevent trespass, or protect exotic species, are more difficult to enforce and demand that the conservation entity work closely with the landowner. Nevertheless, conservation easements are very flexible tools because the restrictions on the land as well as the rights of the landowner and the easement holder can be specifically tailored.

Restrictions on Use of the Land. Most conservation easements are negative; i.e., they limit what a landowner can do with the land. A conservation easement can include almost any kind of restriction that the landowner and the easement holder agree to, as long as the restriction furthers the conservation purposes of the easement. For example, restrictions on use might include prohibitions on some or all industrial and commercial activities, on removal and disturbance of native vegetation, on construction of new houses or structures, and so forth. In some cases, the conservation easement

may require that the land be left completely in its then-existing natural state. In other cases, it may allow limited development in less ecologically sensitive areas or "buffer zones," provided it does not harm the ecological or natural values of the land. In addition, subject to local subdivision land laws, the restrictions in the conservation easement may apply to only a portion of the owner's lands, or may impose differing levels of restrictions on different parts of the land.

Rights of the Conservation Easement Holder. The conservation easement holder should always have the expressed right to inspect the property to ensure compliance and enforce the easement if necessary. The landowner may also give the easement holder affirmative rights to perform specified activities on the property. If the land requires active management to preserve, restore, or enhance its natural values, then the easement holder should consider obtaining positive resource-management rights. For instance, the holder may obtain the right to come on the property to fence, plant, and monitor native vegetation.

The conservation easement normally does not allow the easement holder to do anything that the landowner is prohibited from doing. For example, if the landowner agrees not to build a house on the land, the easement would not usually give the holder the right to build a house. The result of this easement is that no one can build a house on the land.

Rights Retained by the Landowner. The landowner generally retains rights not specifically limited or relinquished under the conservation easement. Alternatively, the landowner may retain the rights specified to the landowner under the conservation easement. The landowner still owns the land and under the terms of most conservation easements can continue existing uses if they are consistent with the conservation purposes. For example, the owner may retain the right to continue to live in an existing residence (but not enlarge it or build another one) or continue to farm the agricultural portions of the land (but not any wetlands). The landowner is obligated to pay real property taxes on the land and to ensure that the restrictions are not violated.

Usually Perpetual in Duration. Conservation easements normally restrict the land forever—legally stated as *in perpetuity*—for two main reasons: (1) to ensure that the land is permanently maintained as a viable nature reserve and (2) to give maximum tax benefits to the landowner making a donation

of the easement. It is possible under the law in some states for a conservation easement to have only a specified term (some states set a minimum of ten or 15 years), at the end of which the easement will expire. However, if a landowner is donating the conservation easement to a qualified easement holder either through an outright gift or bargain sale, and if the owner intends to claim a charitable deduction, then the Internal Revenue Code requires that the easement be in perpetuity. If the conservation easement will not be perpetual, it may be simpler to use a lease or management agreement instead. In addition, the state enabling statute may require that the conservation easement be perpetual.

Landowner Cooperation and Education. As mentioned above, conservation easements are usually in perpetuity, which is certainly a long time. A conservation easement results in an enduring partnership between the landowner and the conservation easement holder. Both parties will have a lasting financial and emotional interest in the same piece of property. While the original grantor of the easement remains the landowner, enforcement should generally not be a problem. Later owners, however, may not understand the conservation easement as well as the original owner. Consequently, the easement holder must work closely with the new owners to ensure that they are familiar with the specific terms of the conservation easement and, if need be, the importance of the conservation easement and the natural features it is designed to protect.

Need for an Easement Documentation Report. In order to monitor the easement area and enforce the terms of the conservation easement, the easement holder should provide for an easement documentation report to be attached to the recorded conservation easement at the time of closing. Such a report consists of aerial and ground-level photographs and other documents evidencing in detail the condition of the easement area and the natural features that are the subject of the easement, at the time the original grantor enters into it. The report serves as a baseline from which the easement holder can monitor changes in the condition of the easement area. If adverse changes are due to the landowner's violation of the terms of the easement, the report may be the conservation easement holder's only real hope of enforcing the restrictions contained in the easement, whether through negotiations with the owner or, in the worst case, through court action. In addition, an easement documentation report is required under Internal Revenue Service regulations at the time of the gift of a conservation easement if a landowner is to claim a deduction for the value of the gift. (See Appendix D for a

checklist for preparing an easement documentation report.)

State Conservation Easement Statutes. Most easements grant a privilege that burdens the land of one owner for the benefit of another owner's adjoining land. For instance, a right-of-way easement may give the owner of Parcel A the right to cross the adjoining Parcel B in order to get to and from a public road. These easements are referred to as *appurtenant easements*, and they generally bind all future owners of the burdened land. Because a conservation easement is held by a private nonprofit corporation or government body and does not necessarily benefit any neighboring land, the easement is said to be a personal right or an *easement in gross*. Under common law, an easement in gross is not assignable and cannot burden the land in perpetuity. Therefore, in order for a conservation easement to be enforceable in perpetuity without requiring the holder to obtain title to adjoining land, there must be a state statute enabling use of perpetual conservation easements in gross.

Most states have enacted some version of the Uniform Conservation Easement Statute promulgated by the National Conference of Commissioners on Uniform State Laws in 1981. Alaska adopted the Uniform Conservation Easement Act in 1989 (see Appendix D for a copy of Alaska's statute). State laws contain specific requirements regarding the purposes of conservation easements, the entities that may hold a conservation easement, the term, and many other elements of the easement.

The Difficulties of Valuing Easements. Conservation easements may be bought and sold like any other interest in property. The value of a conservation easement, however, poses a very difficult appraisal question. In theory, the value is equal to the difference in fair market value of the property before the conservation easement and the value of the property after the conservation easement. Depending upon the terms of the easement, the value could range from 1 to 99 percent of the value of the property. Typically, the seller of a conservation easement receives a single payment at closing. As the price approaches 100 percent of fair market value, then, all other things equal, it may be preferable for the easement holder to purchase the fee title to the property given the considerations regarding co-ownership described above.

Tax Incentives for Landowners to Donate Conservation Easements. There are three tax incentives for donating conservation easements: reduced property

tax assessments, charitable income-tax deductions, and estate-tax deductions. Upon the grant of a conservation easement, the assessed value of the land affected could in principle be reduced in proportion to the value of the easement, because the landowner is surrendering development potential and therefore the *highest and best use* of the property. Whether or not a landowner can receive a property tax reduction depends largely on the particular local jurisdiction in which the property is located. The landowner will generally need to apply for the reduction and to justify the amount of the claimed reduction by relying on a sound appraisal. (For a discussion of charitable income-tax deductions for gifts of conservation easements, see Part 3.4.2 below.)

2. Acquisitions of an Undivided Interest

SEE CASE STUDY: 5.2.5F Elkhorn Slough

An *undivided interest* is a certain percentage of all of the rights of the real property, and not to any specific part of the land. For example, a conservation entity may acquire an undivided ten percent interest in a 100-acre property, and the original landowner may retain the remaining 90 percent. These percentages reflect interests in the entire property, rather than an identifiable ten acres of ecologically significant land owned by the conservation entity and the 90 remaining acres owned by the original landowner. An undivided interest can provide a conservation entity with a "seat at the table" to make decisions about how the land and the natural resources on it are to be managed—short of acquisition of the entire parcel; however, this can result in serious management problems and should generally be avoided (see below). In addition, it can be an interim step in the physical division of land into ecological and non-ecological portions, based on the relative percentage interests.

A conveyance of an undivided interest may also be a step in a plan of an individual landowner to transfer the entire fee to the conservation entity over a number of years. In such a case, the landowner should provide for a bequest in his or her will of the remainder of the property to the conservation entity in the event the landowner dies before conveying all interests.

Potential for Management and Decision-Making Problems: Partition May be an Inadequate Solution. A basic problem with undivided interests is that they create the potential for a difficult scheme of co-ownership. One or more other parties, potentially not sharing the same interests in conservation, have some control in the management and use of the property. Unless the

conservation entity can reach a mutually agreeable management plan with the other owner or owners of the other undivided interest or interests in the property, the only real solution to deadlock is to have the property *partitioned* either by voluntary agreement of the parties or by court judgment. If the judge cannot partition the land in kind, he or she may order a sale of the property and distribute the proceeds to the co-owners in proportion to their percentage interests.

For example, if the conservation entity owns a ten percent undivided interest in a 100-acre parcel of land where each acre is of equivalent value, then the conservation entity could expect to receive ten acres when the property is partitioned. However, there is no guarantee that the conservation entity will be able to protect the most ecologically significant land because there is no assurance as to which ten acres of the land the conservation entity would receive. In addition, the conservation entity faces the prospect of inconsistent uses on the lands of its neighbors created by the partition.

Need for a Co-Tenancy Agreement. A possible way to prevent this problem, at least for the short-term, is for the conservation entity to secure a lease or management agreement from the other owners giving it management authority over those decisions that could affect the natural feature. In any event, it is a good idea to have a *co-tenancy agreement*, especially if the landowner will continue to live on or use the land. The purpose of the co-tenancy agreement is to clearly set forth the rights and obligations of the parties with respect to ownership and management of the property and to provide a mutually acceptable mechanism for decision-making. A conservation entity should consider including a buy-out mechanism in the event of management deadlock, and should also consider coupling the co-tenancy agreement with a right of first refusal.

3. Acquisitions of a Remainder Interest Subject to a Restricted Life Estate

SEE CASE STUDY: 5.2.5G Santa Cruz Island

A common vehicle for conservation land acquisition involves the *retained life estate*. A government agency or conservation organization can acquire title to a piece of land by gift or purchase but provide in the deed that the seller retains full use and control of the property *for life*. There is no limit on the identity or number of people who can be named as holders of life estates on the same property, as long as they are living at the time of the conveyance. For instance, the seller himself or herself could be designated as the life tenant, and his or her living children and grandchildren could also

be life tenants. What the conservation entity then has is a future interest in the property—the right to possess the land upon the expiration of the life estate.

The holder of the life estate retains all the rights and responsibilities of ownership during his or her life, except that upon the death of the last life tenant, full title immediately and automatically vests in the owner of the remainder interest, i.e., the conservation entity. When the life tenant occupies the property, the relationship between the holder of the remainder interest and the life tenant is like that of a landlord and tenant. A life tenant has certain responsibilities to maintain the property that are implied by law and is prohibited from committing waste. That is, the life tenant cannot engage in any activity, or fail to act, in a manner that would not preserve the land for the holder of the remainder interest in substantially the same condition as when the life tenant received possession. However, these restrictions are often difficult to enforce; and a life estate should generally be coupled with conservation restrictions in a deed, lease, or conservation easement in order to protect the condition of the property, and specifically its conservation values, during the life estate.

For the landowner, the value of the sale or donation of a remainder interest is usually very low in present value terms, especially if the landowner is young. For instance, if the holder of the life estate has an actuarial life expectancy of over 20 years, then the remainder interest might be worth less than ten percent of the current fair market value of the property. This is due to the time value of money. (See discussion of gifts of remainder interests in Part 3.4.2 below.)

Even though the life tenant may own most of the value of the property, that value cannot usually be used as collateral for a mortgage. The reason is that the life tenant could die at any time, thereby extinguishing the mortgage.

In most cases, the acquisition of fee title subject to a retained life estate should only be used as a last resort when all other options are not mutually acceptable. Even then, the conservation entity should generally try to acquire the interest through a gift by the landowner or through purchase at a nominal price based on the present value of the gift. Experience has shown that this arrangement has sometimes created significant management problems, because of the difficulty a life estate donor often has in appreciating that he or she is no longer the full fee owner but, in a sense, the tenant of

the conservation entity on the that entity's land. A life estate holder may think he or she can sell or encumber the property at will, or may demand the conservation entity maintain the property at its expense, even though, in the absence of an agreement to the contrary, the holder of the life estate remains responsible for up-keep. Thus, it is generally preferable to use a conservation easement rather than a life estate with a remainder. A conservation easement can be structured to allow the landowner to continue to live on and use the land.

4. Acquisitions of Partial Interests: Water, Timber, Grazing, Mineral Rights and Access Rights

SEE CASE STUDY: 5.2.5H Stillwater

Often, the acquisition of less than a fee interest in the property may be sufficient to accomplish the desired resource-protection objective. Depending on the law in the particular state, the conservation entity may also be able to purchase such partial interests as mineral rights, timber rights, water rights, grazing rights, and access rights without purchasing the land itself (the *surface estate*). Whether or not it is appropriate to purchase a partial interest depends on a thorough and exacting analysis of the threats to the identified habitat or recreation site.

Mineral Rights. In all states, *mineral rights* constitute an interest in real property that is severable from the surface estate. Usually, the conservation entity will acquire the mineral rights at the same time it acquires the surface rights, but it is possible, and sometimes necessary, to buy the surface rights alone.

There are two main types of mineral rights: *Subsurface* mineral rights typically include oil and gas, geothermal steam, and precious metals (such as gold, silver, copper, etc.). *Surface* minerals usually include such materials as coal, peat, and in some states, building stone, sand, and gravel that are harvested by strip mining and similar techniques that have a severe impact on the surface land. These two types of mineral rights may have very different effects on the natural resource that the conservation entity is seeking to protect.

As with all property, the customs and laws concerning minerals vary from state to state. Whenever acquiring an interest in property, a conservation entity should find out the status of the mineral rights. Minerals may be owned by someone other than the surface owner, and those minerals may in turn be leased out to yet another party. In Alaska, for example, the re-

gional Native corporations own all of the subsurface rights associated with a village corporation's lands. Any decisions regarding sand and gravel interests owned by an Alaska Native corporation should be carefully reviewed by an attorney familiar with the effect of the Alaska Native Claims Settlement Act on sand and gravel rights.

If any mineral rights are held by someone other than the seller, or if the seller intends to retain the mineral rights, then in order to protect a natural feature, it is also necessary to understand the geology of an area sufficiently to evaluate the threat of outstanding mineral interests. It is further necessary to understand state mineral laws to know what rights mineral holders have on the property and how those rights might damage a natural resource. Mineral owners generally have the right to enter the property and disturb the surface to explore and extract minerals. However, sometimes the owners of severed mineral rights will only have the right under private deed restrictions, or under laws or regulations, to the area below 500 feet under the surface and therefore would have to drill "directionally" for oil from a neighboring property, for instance.

If the holder of the mineral rights has any rights to extract surface minerals or rights to enter and use the surface to extract subsurface minerals (*surface rights*), then the conservation entity may need to negotiate prohibitions or restrictions on surface use with the holder. For instance, the conservation entity and the holder may agree that the holder can drill a specified number of wells on a designated corner of the property that is not ecologically significant. Where the seller of the land insists on retaining mineral rights, restrictions on surface entry will generally be necessary to justify acquisition of the land for conservation purposes. It is always advisable to record any such restrictions in the real property records.

Timber Rights. *Timber rights* are an interest in property that is severable from the surface estate—much like mineral rights—and, in turn, can be leased out to second or third parties. Ownership of timber rights is governed by state laws. In many cases, timber rights are term rights; i.e., the owner may lease or otherwise transfer his or her rights to a third party for a specified period of years. In Alaska, timber revenues associated with Alaska Native regional corporations are subject to revenue sharing pursuant to Section 7i of the Alaska Native Claims Settlement Act.

Generally, most states treat timber as part of the real property as long as the

trees are in the ground. However, once the trees are cut, they are personal property and governed by the legal regime relating to personal property rights.

Water Rights. In general, *water rights* are the right to use the body of water and do not entail ownership of the water itself. As with mineral and timber law, water law varies a great deal from east to west across the United States, and from state to state. Generally, in the East and the Midwest, water rights belong to the adjacent landowner unless there is some agreement to the contrary. These are called *riparian rights.* There is no relative priority as between riparian rights holders. In many western states and in Alaska, the right to use water is separate or severable from the land and is based on the concept of first in time, first in right. These are called *appropriative rights.* Appropriative water rights can generally be acquired and changed to different places and uses (with state approval in Alaska).

Other crucial distinctions involve the hydrological and legal differences between surface water and groundwater. Groundwater is generally connected to surface streams; therefore, protection of stream flows or wetlands may require good groundwater strategies. Groundwater law is often less well developed than surface water law, and therefore rights and restrictions on use are often unclear. In Alaska, groundwater and surface water are treated as a unified system for administrative purposes.

Water law is extremely complex, and a thorough discussion of water law is beyond the scope of this handbook. A conservation entity should use an attorney specializing in water law if water rights are being purchased.

Water is the only interest in property that is constantly moving and changing. How the water flows is a key to protecting the natural resource on the property. A legal strategy will usually not succeed without an adequate quantitative and technical comprehension of the hydrological system. Water is highly site-specific, and hydrological modelling may be needed. Thus, if water rights are an important part of the property to be acquired, a hydrologist is a crucial member of the conservation entity's team. Generally, a water budget should be established for the overall system, defining total inflows and outflows and the amount of water that must be acquired or protected and the amount that must be left for compatible uses.

In addition to acquiring water rights, there are other specialized protection

strategies relating to water. For instance, a conservation entity may pursue in-stream water right claims before state agencies to protect vital water flows for fish and other biota.

Grazing Rights. The right to graze livestock is another interest in land that is frequently severed from the fee estate. Like mineral and timber rights, the owner may grant a third party the right to graze the owner's land or a portion of the land for a period years. In addition, the Bureau of Land Management often leases grazing rights on public domain land to private individuals and entities, under the Taylor Grazing Act. This act is not applicable in Alaska; federal grazing rights do exist for cattle and reindeer in Alaska (e.g., Kodiak Island).

Access Rights. *Access rights* are the right to cross another landowner's property to get to and from the other land. To protect recreation sites, a conservation entity may acquire access rights for the benefit of the public. Often the acquisition of access rights is crucial to the protection of habitat areas as well; but it is not, in and of itself, a protection tool for habitats. Therefore, this is one of the few tools that is not generally applicable to both recreation sites and habitats.

Typically, a conservation entity acquires access rights through a perpetual easement. Under the terms of the easement document, the parties can agree to limit the access rights in a variety of ways. The access rights may be restricted in time; i.e., the rights may be in effect for a certain number of years. The access rights also may cover only a designated portion of the landowner's property. For example, they may be limited to certain trails or roads beyond the owner's residence or a corporate retreat. The access rights can also contain restrictions on use, such as the means of access (vehicles, pedestrians, horses, etc.) and time of year or day public access is to be permitted.

A significant issue for the landowner in granting public access for recreational purposes is liability for injury or death. Many states have statutes that limit the landowner's liability if the owner grants public access for recreational, educational, or similar purposes, as long as the landowner satisfies certain conditions such as the posting of warning signs. If the state does not have this kind of statute, the conservation entity should be prepared to explore alternatives (such as liability insurance) with the landowner.

Difficulty of Assuring Good Title. Confirming that the seller holds title to mineral, water, timber, or grazing rights is frequently a difficult legal and practical proposition. Title reports usually do not include ownership of these partial interests, and title insurance for partial interests is not generally available. In addition, third-party creditors may have liens on the partial interest that are difficult to discover. The conservation entity may be able to obtain title insurance showing title to the property vested in the surface owner subject to no liens that would affect the partial interest purchased. However, this provides some, but not a complete, level of assurance that no third-party creditors have a prior right in the interest; it does not insure that the conservation entity has good title to the interests purchased. For all of these reasons, the conservation entity must be particularly careful when purchasing interests severed from the surface estate.

3.3.3 High-Level Protection Tools

SEE CASE STUDIES:
5.2.6A Santa Rosa Plateau
5.2.7A Diamond/Occidental
5.2.7B Parrott Ranch

A. Fee Acquisitions

Fee acquisition entails the outright purchase of all of the landowner's interest in a particular piece of property. Fee title is the largest bundle of rights possible to hold in connection with a piece of property. Government agencies and conservation organizations often prefer fee acquisition because it provides full and permanent control of the property. Sellers also often prefer it because fee acquisition requires the government agencies to offer the fair market value of the entire interest in the property.

As mentioned above, acquisition of fee title has been the most frequently used protection tool by many conservation entities. Historically, fee title acquisition has been the highest level of protection afforded most tracts of land. However, apart from questions of proper management, acquiring title to the owner's interest in the land does not necessarily insure protection of natural features of the property. There may still be outstanding mineral rights, timber rights, water rights, leases, etc., that could threaten protection. In Alaska, for instance, while the village corporations own the surface land of the area around their villages, their respective regional corporations own the subsurface rights.

Likewise, the property, if held by a private conservation organization, could be condemned for a public purpose, such as a road or utility line. The conservation entity would receive monetary compensation, but those funds might not be enough to protect an equivalent resource; and the road or util-

ity line may threaten the natural resources beyond the immediate loss of the land it occupies.

While nothing may really be permanent in conservation, fee title acquisition represents a major commitment of resources on the part of the organization or agency and generally affords a very strong, long-term level of protection.

1. Purchase Agreements Versus Option Agreements

Typically, purchase and sale agreements for a fee interest in property include various conditions precedent to the conservation entity's obligation to purchase the property, such as the right to complete a comprehensive physical inspection of the property, assurances with respect to the seller's good title, and in limited cases, the conservation entity's ability to obtain financing. Under a purchase and sale agreement, if the conditions are satisfied, the purchaser is obligated to complete the acquisition. In instances where a conservation entity is negotiating for a purchase of a piece of property but has not completed fund-raising or obtained all necessary approvals, the conservation entity should make purchase and sale agreements subject to the availability of financing. In these cases, it may be more appropriate to use an option agreement (See Part 3.4.1 below).

B. Dedications

Dedications involve the placement of land, or a partial interest in land, by a private owner or public agency, into a legally established state or federal nature preserve system or conservation trust. The placement of the property into the preserve can include the entire fee interest in the land or a partial interest such as timber or mineral rights. If the owner dedicates specific rights, he or she retains title to the land and can retain the right to live on the land, to transfer title to the land, continue traditional compatible uses, and the like. In that respect, dedications of specific interests are similar to conservation easements and can be flexible tools.

Formal dedication of land or specific rights in land is among the highest level of protection for privately owned land. The natural area is protected by statute against condemnation in almost all cases, except generally for condemnation due to an *imperative and unavoidable public necessity* as found by the governor, legislature, or other government agency after a pub-

lic hearing. Subject to the limited exception for necessary condemnations, a dedicated natural area is also protected against all public and private conversion of the area to a different use. Dedications are legal in Alaska.

1. State Natural Areas

Both publicly and privately owned land can be dedicated under most state systems. However, in order to be available as a protection tool, there must be a specific state enabling statute; not all states have state natural area systems. Other than critical habitat areas, Alaska does not have any state laws establishing state natural area systems for which dedication would be applicable.

Statewide natural area systems typically do not require that the owner give up title. Dedication may restrict certain activities and may require certain management practices on the property. The terms of the dedication are set forth in *articles of dedication* which are recorded in the official records of the jurisdiction in which the property is located, and bind the property forever. While most state systems provide for a method of undedicating areas, tradition and history behind these programs make it politically most difficult to terminate the designation. Dedication is usually irrevocable by the landowner.

Some states provide for dedication to a legally established state trust rather than to a natural preserve area system. In the case of a trust, the beneficiaries are the people of the state, and the trustee is a responsible government agency. Usually any change in the trust must be approved by a court.

The dedication process varies form state to state. Under some programs, the state actually acquires an interest in the land comparable to a conservation easement. Most state statutes provide for property tax relief in the enabling statute, similar to the relief provided for conservation easements. In addition, dedication of certain rights in a tract of land may entitle the landowner to a tax deduction for a charitable contribution if it qualifies under state law as a qualified conservation contribution.

2. Federal Designations

The USDA Forest Service, the Bureau of Land Management, the U.S. Fish and Wildlife Service, and other federal agencies have programs for designating lands they own as research natural areas, wilderness areas, national

wildlife refuges, experimental ecological areas, or areas of critical environmental concern. These designations give additional protection to federally owned property.

3.4 Maximizing the Use of Protection Tools: Techniques and Strategies

A number of techniques and strategies can be applied to the protection tools described above to maximize their effectiveness in accomplishing conservation goals, at the least cost to a conservation entity. In a real sense, these techniques and strategies are limited only by the conservation planner's imagination and available resources, and no "menu" could ever be complete or current enough. However, the sections below describe a wide variety of protection techniques and strategies that have worked well for The Nature Conservancy in the proper circumstances. Many of the techniques and strategies are commonly used and are essential to effective implementation of the protection tools. Table 3-2 summarizes the applicability of these techniques and strategies.

3.4.1 Options

A. In General: A Way to Buy Time

An *option* is the exclusive, unilateral right to purchase property or interest in property at a specified price and by a certain date. The obligation to purchase the property or property interest is solely within the discretion of the conservation entity that has negotiated the option. That is, at the future date specified in the option agreement for exercise of the option, if the conservation entity is in the position to complete the purchase and desires to proceed, it may then notify the landowner of its exercise of the option and thereafter close the sale. However, if at the exercise date the entity is either unable or does not desire to complete the purchase, then it may let the option lapse and thereby waive its right to purchase the property. Options can apply to purchase of fee title or less than fee interests, such as conservation easements.

Options are extremely useful and flexible tools that allow the conservation entity to lock in a purchase price and tie up the property with a legally binding agreement while allowing time to seek funding, assemble other tracts of land, obtain approvals, and satisfy other preconditions for its purchase—without having to commit to the full purchase price. Conditions precedent in a purchase agreement may serve the same function without causing the conservation entity to forfeit the deposit, but the period for satisfaction of these types of contingencies is much shorter in a typical purchase agreement (30 to 60 days) than the option exercise period in a typical option agreement (six months to one year), and the contingencies are more specific. However, the larger the price the conservation entity pays for the option, the greater the risk if the conservation entity determines not to ex-

ercise the option. Generally, a conservation entity should not enter into an option unless it is fairly certain that it will in fact exercise the option; the conservation entity's reputation for completing transactions is important in convincing landowners to enter into option agreements.

B. Option Price

Options are really a combination of two separate agreements: an option agreement and an agreement of purchase and sale. The option agreement covers the period for exercise of the option, the manner of exercise, and the payment the conservation entity is required to make to the landowner for the option. As a result, options always involve two separate payments: (1) the payment to purchase the option (the *option price*, or the *option consideration* as it is often referred to in legal documents), and (2) the payment to purchase the real property if the option is exercised (the *purchase price*).

The option price depends on many factors, such as the length of the option, the purchase price, the motivation of the seller, the market demand for the property, and the likelihood that the option will be exercised. Purchases by conservation entities usually entail short-term options of less than one year and for a nominal option price.

If the option is not exercised by the date specified, the option price is forfeited. The option period is intended to give the prospective purchaser time to seek the necessary approvals to purchase the property and to make commitments in reliance of the availability of the property.

C. General Points about Option Agreements and Use of Options

The following general points should be noted in the use of options:

- Since foreclosure of a prior lien can wipe out the option, it is important for a conservation entity to make sure that there are no prior liens that will be foreclosed on during the option period (except for regular real property taxes).

- A conservation entity should provide plenty of time to perform due diligence reviews.

- A conservation entity should make sure that the option term is long enough to obtain necessary funding and approvals.

Table 3-2
Summary of Strengths and Limitations of Protection Techniques and Strategies

TECHNIQUES AND STRATEGIES	STRENGTHS	LIMITATIONS	APPLICABLE PROTECTION TOOLS
OPTIONS	• Allow conservation entity to buy time at potentially low cost • Flexible; can provide interim conservation restrictions during the option period • Short form of option should be recorded to give notice to third parties • Subject to rule against perpetuities • Could be terminated by foreclosure of prior lien on the property	• Must pay option price • Rule against perpetuities • May be wiped out by prior liens	• Fee Acquisitions • Less Than Fee Acquisitions (including Conservation Easements and Acquisition of Partial Interests)
TAX TECHNIQUES:			
Gifts	• Reduce cost to conservation entity • Potential income tax and estate tax benefits to donor (depending on particular facts and circumstances and subject to donor's compliance with applicable tax laws and regulations) • Donor must obtain a qualified appraisal	• Partial interest rule • Taxpayer must satisfy requirements of tax law and regulations	• Fee Acquisitions • Conservation Easements, Remainder Interests, and Undivided Interests
Bargain Sales	• Reduce cost to conservation entity • Potential income tax and estate tax benefits to donor (depending on particular facts and circumstances and subject to donor's compliance with applicable tax laws and regulations) • Donor must obtain a qualified appraisal	• Partial interest rate • Taxpayer must satisfy requirements of tax law and regulations	• Fee Acquisitions • Conservation Easements, Remainder Interests, and Undivided Interests
Bequests	• Potential estate tax benefits to donor (depending on particular facts and circumstances and subject to donor's estate's compliance with applicable tax laws and regulations) • Provisions in will relating to bequest should be checked by recipient conservation entity before donor's death	• Voluntary agreement (donor can revoke any time before death) • Taxpayer must satisfy requirements of tax law and regulations	• Fee Acquisitions • Conservation Easements, Remainder Interests, and Undivided Interests, subject to partial interest rule
Installment Sales	• Possible way for conservation entity to finance purchase • Potential tax deferral for seller (depending on particular facts and circumstances and subject to donor's compliance with applicable tax laws and regulations)	• Taxpayer must satisfy requirements of tax law and regulations	• Fee Acquisitions
Tax-Free Exchanges	• Can serve as alternative to cash payment for conservation entity if it is an exchange using the entity's surplus property (see Land Exchange) • Potential tax deferral benefit for seller (subject to seller's compliance with tax laws and regulations)	• Taxpayer must satisfy requirements of tax law and regulations	• Fee Acquisitions • Conservation Easements
Sale under Implied Threat of Condemnation	• Can reduce cost to conservation entity through tax benefits to seller. • Must be threat of imminence of condemnation by a public entity • Potential tax deferral benefit to seller (subject to seller's compliance with tax laws and regulations)	• Taxpayer must satisfy requirements of tax law and regulations	• Fee Acquisitions

Table 3-2 (Cont'd)
Summary of Strengths and Limitations of Protection Techniques and Strategies

TECHNIQUES AND STRATEGIES	STRENGTHS	LIMITATIONS	APPLICABLE PROTECTION TOOLS
LAND EXCHANGES	• Alternative to all-cash purchase by a conservation entity	• Depend on conservation entity's having available surplus land that is not of ecological significance and that seller is willing to acquire instead of cash • Government agencies must comply with certain laws and regulations relating to exchanges	• Fee Acquisitions • May be applicable to Less Than Fee Acquisitions, such as Partial Interests and Conservation Easements, depending on the particular conservation entity and the laws and other requirements relating to that entity
SALE-LEASEBACKS	• Can help conservation entity finance acquisitions through collection of rent • Allows seller to continue traditional uses subject to conservation restrictions for certain period after transfer of title	• May be restrictions on government agency's ability to lease back	• Fee Acquisitions
COOPERATIVE TRANSACTIONS:			
Advance Acquisitions	• Buys time for government agency	• Private conservation organization takes risks for government agency	• Fee Acquisitions • Less Than Fee Acquisitions
Facilitating Acquisitions	• Economies of scale • Private conservation entity may be able to perform due diligence or other aspects of the transaction more quickly, cheaply, or easily than a government agency		• Fee Acquisitions • Less Than Fee Acquisitions
CREATIVE FINANCING TECHNIQUES:			
Installment Sales	• Possible way for conservation entity to finance purchase • Potential tax deferral for seller (depending on particular facts and circumstances and subject to donor's compliance with applicable tax laws and regulations)	• Taxpayer must satisfy requirements of tax law and regulations for installment sale treatment	• Fee Acquisitions
Rolling Options	• Way for conservation entity to defer payments and buy time	• Risk of not being able to exercise subsequent options and therefore not acquiring the whole property	• Fee Acquisitions
Seller Financing	• Alternate source of potentially low-cost interim funding for conservation entity	• Security for repayment of loan from seller may be an issue, particularly for government agencies, which may not be able to give a mortgage or deed of trust on the property	• Fee Acquisitions
Undivided Interests Reflecting Percentage Interest Contributions	• Way to combine resources from partner conservation entities	• Potential management problems • Need co-tenancy agreement for period of co-ownership	• Fee Acquisitions
CONSERVATION BUYERS/ CONSERVATION LOANS	• Way to keep the land in the private sector • Way to allow traditional uses subject to conservation restrictions	• Need to negotiate ancillary conservation agreements with buyer	• Fee Acquisitions • Less Than Fee Acquisitions

- The longer the term of the option, the more important are interim restrictions on use of the property. These restrictions may be spelled out in the option agreement itself or in a separate lease or management agreement. (Note that upon acquisition of title by the conservation entity pursuant to the option, these other interests would terminate in most states by operation of law under the doctrine of *merger of title.*)

- A conservation entity should always review title and record a short form (*memorandum*) of the option agreement in the official records of the jurisdiction in which the property is located. During the option period, the owner cannot sell the property to anyone else, nor under most options can the owner change the condition of the property. A memorandum or short form of the option should be recorded to protect the conservation entity against losing the right to the property in favor of innocent third-party purchasers or encumbrancers.

- Options, like rights of refusal, can be tricky to enforce under local laws. They are subject to the rule against perpetuities, and as a result they can be void if they are not carefully drafted so as not to violate the rule.

3.4.2 Tax Techniques

The conservation entity's cost of acquiring land can be reduced by addressing the tax incentives available to private landowners under the federal tax laws. These tax techniques fall in essentially two categories:

(1) Techniques that allow the taxpayer to reduce income taxes payable by taking a current income-tax deduction, and in the case of an individual taxpayer, to reduce estate taxes by deducting the value of the donation from his or her estate (gifts and bargain sales), and

(2) Techniques that allow the taxpayer to defer taxes on gains (installment sales, tax-free exchanges, and sales under threat of condemnation).

These tax techniques are governed by the Internal Revenue Code, together with the regulations of the Internal Revenue Service (IRS) interpreting the

code. This is an ever-changing area of the law; and the rules under the code and regulations are in many cases complicated and technical, producing results that vary widely depending on the particular circumstances of the transaction and the tax status of the landowner.

Therefore, the following caution cannot be emphasized enough: *The landowner should always retain his or her own qualified tax counsel (attorney or accountant) and should never rely on the conservation entity or on any of the entity's representatives or attorneys for any tax advice.* It may be appropriate to put this sort of disclaimer in a letter to the landowner in situations where it is unclear whether the landowner is looking to the conservation entity for tax counsel.

The following discussion is very general and does not cover state and local tax laws, which often, but not necessarily, mirror the federal law in these areas. Thus, the landowner should generally be cautioned to be sure to consider all tax ramifications of the transaction.

Changes in the tax laws resulting from the Tax Reform Act of 1986 lessened the attractiveness of many of the tax techniques, especially gifts and bargain sales. The lower marginal tax rates effected by the act reduce the benefit of the tax deduction to the taxpayer, and the bite of the alternative minimum tax further restricts the potential tax benefit if the taxpayer has too many tax preference items (deductions and credits). Before 1986, the after-tax cost to a landowner of donating highly appreciated property (land worth far more than the owner originally paid for it) could be lower than that of selling the property and paying taxes on the gains. This is no longer the case; however, tax incentives can still constitute a significant motivating ingredient in structuring a transaction.

The following summary is general and is, of course, subject to changes in the Internal Revenue Code and regulations. Protection planners and negotiators should stay abreast of these changes.

A. Gifts and Bargain Sales

The Internal Revenue Code encourages gifts to public charities by granting individuals and corporations deductions from their income taxes for the amount of their charitable contributions. An individual donor may also benefit by reducing his or her total estate for estate tax purposes, and the

estate tax deduction is not subject to any of the percentage limitations discussed below with respect to the income tax deduction.

As a general rule, gifts of appreciated property are currently deductible for federal income-tax purposes based on the property's fair market value at the time the gift is made, subject to special rules affecting the amount of the deduction (such as the percentage limitations and alternative minimum tax discussed below). A number of factors affect the amount allowable as a deduction, the extent to which the amount is currently deductible, and therefore, the income tax savings from a charitable contribution. These factors include the nature of the recipient of the donation (e.g., public charity versus other charity), the type of donor (corporate or individual), the type of property donated (e.g., real or personal), the use to which the recipient puts the property, the donor's tax bracket, the amount of any charitable deduction carryovers from prior years, the donor's holding period, and the total donor's tax preference items for the tax year. In this area, the Tax Reform Act retained the distinction between capital gain property and ordinary income property.

The Internal Revenue Code imposes percentage limitations on the deductibility of gifts. As a general rule, in the case of individual donors, gifts of appreciated real estate to *public charities* are fully deductible for federal income-tax purposes up to 30 percent of the donor's adjusted gross income (gross income less allowable deductions) for the tax year in which the gift is made. Any amount of the gift in excess of that 30 percent limitation can be carried forward after the first tax year and deducted against income for the next five years after the gift, provided that the amount does not exceed the 30 percent limitation in any of those subsequent years. Government bodies and publicly supported tax-exempt conservation organizations fit under the category of public charities. In spite of the general 30 percent limitation, the donor can elect to take a deduction of up to 50 percent of adjusted gross income by claiming a deduction only for his or her cost basis in the property, exclusive of any appreciation.

The appreciation portion of a charitable donation is considered a tax preference item for purposes of the alternative minimum tax and, therefore, is included in the alternative minimum tax base. This means that if the taxpayer, either individual or corporate, is subject to the alternative minimum tax, the net effect will be that the amount of the deduction is limited to the taxpayer's cost basis in the property. The alternative minimum tax gener-

ally includes more income and fewer deductions than the regular income tax, although the alternative rates are lower than the regular rates. Whether a taxpayer is subject to the alternative minimum tax depends on the taxpayer's adjusted gross income and the total amount of tax preference items as a percentage of the adjusted gross income.

A deduction for a gift of property is measured by the fair market value of the property at the time of the gift, subject to the percentage limits and alternative minimum tax mentioned above. For any gift in excess of $5,000, the donor must substantiate the fair market value of the gift by furnishing the IRS with a *qualified appraisal.* In sum, a qualified appraisal must describe the property, give the date of the appraisal, the date of the contribution and any special conditions attached to it (such as restrictions on the conservation entity's use), identify the appraiser and his or her qualifications, and state the appraised value of the property and how the appraiser arrived at that value. The appraisal must be performed no earlier than 60 days before the date of the gift, and be effective as of a date no later than the date of receipt of the gift. The appraisal also must be signed by the appraiser, who cannot be related to or employed by the donor; and the fee for the appraisal may not be based on a percentage of the appraised value.

An independent, expert appraisal is the key element in any gift or bargain sale of land. If the IRS accepts the appraisal, then it establishes the fair market value of the property. Donors of land or of an interest in land will need their own appraisals, done at their own expense, to substantiate the value of their charitable contributions for their tax purposes. A conservation entity should not recommend appraisers to donors, but its staff might want to have available for reference a list of appraisers familiar with the type and location of the interest donated.

As a general principle, in order for the donor to be entitled to a deduction, the donor must give all of his or her rights in the property, rather than any partial interest, and the property must be of value to the conservation entity. If a donor retains too much control over the property or attaches too many conditions on the use, then the IRS may disallow the deduction regardless of whether the transaction otherwise would seem to fit the requirements of a gift or bargain sale. There are narrow exceptions to the so-called *partial interest rule* for gifts of conservation easements and gifts of remainder interests and undivided interests to conservation entities. These exceptions allow the donor to retain some interest in the property and still take a deduction, as discussed below.

1. Outright Gift

A landowner may donate all of his or her interest in the land to a government agency and a conservation organization. By making an *outright gift* of the land, the donor receives the maximum tax benefits available: a charitable deduction based on the fair market value of the land subject to the percentage limitation described above. If a donor is not prepared to make an outright gift of the entire fee estate, there are a number of other alternative methods of giving, including gifts of an easement or remainder interest in the land for conservation purposes.

2. Bargain Sale

SEE CASE STUDY: 5.2.9A Kartchner Caverns

A landowner may sell the property for less than the fair market value. This sale is a gift to the extent of the difference between the fair market value and the sale price, with the remainder considered an ordinary sale. The landowner may treat the amount of the gift portion of the *bargain sale* as a charitable contribution for income tax purposes. Often, bargain sales apply to situations where the landowner would like to recover his or her initial investment in appreciated property and give only the amount of the appreciation to the conservation entity.

In order to be entitled to an income tax deduction, the taxpayer must be able to demonstrate that value in excess of the sale price did exist at the time of the sale. To prove this excess value, the taxpayer must obtain a qualified appraisal of the purchase price, as discussed above. If the donor sells the property subject to a mortgage, then the amount of the debt is included on the proceeds realized upon sale for tax purposes, whether or not the conservation entity assumed the debt. This reduces the amount of the gift. If the donor later has to satisfy the debt, that event could be considered a subsequent charitable contribution.

The taxpayer must also be able to demonstrate that he or she intended the donation. To demonstrate *donative intent*, the donation should be specifically mentioned in the purchase and sale agreement itself or in an informal memorandum drawn up at the time of sale.

Unlike an outright gift, the taxpayer will realize some gain with respect to the sale portion of the transaction that must be reported to the IRS as income. If the appreciated property has been held for more than one year, it

will qualify as capital gains property and receive favorable tax treatment. The Internal Revenue Code in effect splits a bargain sale into two simultaneous transactions and requires an allocation of basis between the sale portion and the gift portion in order to compute the amount of the gain on the sale. To compute this amount, the taxpayer multiplies the cost basis by a fraction which is the sales proceeds divided by the fair market value of the property. The resulting product is then subtracted from the sales proceeds to give the taxable gain on the sale.

3. Gift of a Conservation Easement

Conservation easements make a financially appealing vehicle for charitable giving, although conservation entities in some areas of the country are finding it increasingly difficult to obtain gifts of easements except from financially secure and highly motivated individuals. The donor of a conservation easement may take a present income tax deduction for a charitable contribution in the amount of the fair market value of the easement.

The IRS has extensive regulations and rulings dealing with this area of the law. The primary requirements for deductibility are that:

(1) The easement protect scenic or other natural values of the land,
(2) The easement be perpetual in duration,
(3) The landowner have a donative intent, and
(4) The easement cover the entire estate in the property.

The first two requirements are fairly clear. To satisfy the donative intent requirement, the donor must establish the intent early in the transaction and independently. After the fact, the donor must also evidence the amount of the gift through a qualified appraisal and complete IRS Form 8283. The fourth requirement presents particularly difficult issues. Importantly, if the landowner does not own all of the mineral rights associated with the land, the IRS will not allow a charitable deduction unless the transaction satisfies certain limited conditions under the regulations, which involve the date on which the severance occurred (before or after June 13, 1976) and the probability of surface disturbance by mining. It is often problematic for the property to qualify for a tax deduction; the taxpayer needs to review the detailed regulations very closely with an experienced attorney.

4. Gift of a Remainder Interest with a Retained Life Estate

A current income tax deduction is allowed to an individual for the value of a charitable contribution of a remainder interest in a personal residence or farm, or a remainder interest in any real property donated exclusively for conservation purposes. Thus, a landowner may donate his or her property to a conservation entity, retain the right to use it for the rest of his or her life, and still obtain a current charitable deduction.

The amount of the charitable income tax deduction is equal to the fair market value of the remainder interest given at the time of the contribution, as determined by actuarial tables published by the IRS. The tables use an interest rate factor that is based on 120 percent of the federal midterm rate for the month in which the valuation of the property took place. Because of the time value of money, the amount of the deduction will usually be small, especially compared to an outright gift. This reflects the principle of *present value*—the fact that a dollar today is worth more than a dollar next year since the dollar today could be invested at market rate interest in a safe instrument and grow by the end of the year. Moreover, the younger the donor, the longer the life expectancy and the effect of the time value of money, and the smaller the value of the current deduction.

It may be advantageous for the taxpayer, therefore, to combine a gift of a remainder interest with a simultaneous or immediately prior gift of a conservation easement. The gift of the conservation easement could provide a greater current charitable deduction. However, the conservation easement and the remainder interest should probably be held by two different conservation entities to reduce the risk that the IRS might collapse the two transactions and disallow the larger deduction for the conservation easement. As always, a landowner should consult with his or her own tax counsel before using this technique.

Regardless of the tax aspects, life estates can create serious management problems during the life of the donor and should generally be used only as a last resort. (See the above discussion of acquisitions of remainder interests subject to restricted life estates.)

5. Gift of an Undivided Interest in Land

Under certain circumstances, it may be more advantageous from a pure tax standpoint for a donor to give a parcel of land in installments over a period

of years than to make an outright gift. This may be due to the percentage limitations or alternative minimum tax, for instance. The best way of accomplishing these installment gifts is through donation of an *undivided interest* in each applicable tax year.

A gift of an undivided interest of a landowner's entire interest in his or her land is deductible in the same manner as other gifts of land. Until the entire interest has been donated, the donor should stipulate in his or her will that the portion of his or her remaining undivided interest not yet contributed be devised to the recipient of the earlier undivided interest donations.

In addition, the conservation entity should enter into a subscription agreement with the donor under which the donor legally commits to give the interest(s) to the conservation entity at a future date or at future dates. A subscription agreement can allow the conservation entity a way to enhance a gift and at the same time allow the donor the opportunity to take a deduction on the date the interest is actually given rather than on the date of the agreement.

B. Bequests: Gifts by Will

Gifts of land or of interests in land, such as a conservation easement, may be made to a government agency or conservation organization through a donor's will. The benefit to the donor is that the fair market value of the land is fully deductible for estate tax purposes and is not subject to the rules that might limit the amount of a federal income tax deduction if it were a lifetime gift. However, depending on the circumstances, lifetime gifts can yield greater overall tax benefits for the individual and his or her family.

Ideally, the conservation entity should agree in advance to the bequest. Whenever possible, an experienced attorney for the recipient conservation entity should review the section of the donors' will that applies to the bequest, while the donor is still living. If there are any potential flaws with the proposed bequest, either in the language or the manner of the bequest, it is easier for the conservation entity to work out the problem with the donor than with the donor's estate.

For a conservation entity, a bequest alone may not provide much assurance about protection of a significant natural resource. Bequests are voluntary and non-binding agreements, because the donor can revoke or change them

at any time. In addition, by themselves, bequests do not provide any legally enforceable guarantee of protection while the donor is alive. A bequest does, however, represent a strong psychological commitment on the part of the donor to preserve the land.

A donor's signing a will agreeing to donate land is frequently compared with donating a remainder interest in land and reserving a life estate. But the donation of a remainder interest is a stronger level of protection in the sense that it cannot be revoked. When donating a remainder interest, the donor receives an immediate charitable deduction of the present fair market value of that remainder interest. With a bequest, the deduction benefits the donor's estate upon death of the donor.

C. Installment Sales (Section 423)

Installment sales allow a seller to spread out taxable gain on appreciated property over two or more tax years. In an installment sale, the seller receives only a portion of the purchase price in cash at the closing (the time when the deed is delivered). The balance of the purchase price is paid over time according to the terms of a promissory note which the buyer delivers to the seller at closing. Under Section 423 of the Internal Revenue Code and regulations, installments must be spread out over at least two years. The taxpayer automatically receives installment sale treatment if the buyer is contractually obligated to pay the proceeds over two or more years; if the taxpayer does not want installment sale treatment, he or she must elect out of it. The taxpayer is not entitled to installment sale treatment if he or she "cashes out" of the promissory note and obtains the benefit of the present value of the income stream by selling the note on the secondary market. As with the other tax-deferment techniques mentioned below, the Internal Revenue Code and regulations impose strict requirements on what types of sales qualify for installment sale treatment.

An additional consideration to be addressed in installment sales is what kind of security the seller will require from the conservation entity to secure payment of the additional installments. The amount of the loan (*seller financing*) is evidenced by a promissory note delivered to the seller at closing, which may be *unsecured*; that is, the security for repayment would be the net worth of the conservation entity (after claims of secured creditors are satisfied), or it may be secured by specific property, such as the real property sold, other real property, personal property, a letter of credit, or any

combination of these. Often, government agencies are prohibited by law or policy from encumbering real property by granting a mortgage or deed of trust on property they own. In those cases, one possible solution is to use alternative sources of security. Another possible solution is a cooperative transaction with a private conservation organization which would hold the property until the loan is repaid in full.

D. Tax-Free Exchanges (Section 1031 Exchanges)

Under Section 1031 of the Internal Revenue Code, a taxpayer can make a *tax-free exchange* of property for investment or for productive use in a trade or business for *like kind* property. The IRS has issued extensive and technical regulations and rulings as to what constitutes an exchange, what is like kind property, and when a property is being held for investment or for productive use in a trade or business. It is thus crucial for the taxpayer to follow formalities very carefully or the tax results can be disastrous for him or her. The following is intended only to provide a broad overview of the requirements for tax deferral:

- There must be an actual exchange of property. If a taxpayer receives or is deemed to receive the sales proceeds at the time of the sale, then the transaction will be fully taxable. If the taxpayer has the right to receive cash at closing, then regardless of whether the taxpayer exercises that right or actually receives the cash, the taxpayer will be deemed to be in receipt.

- The property transferred and the property received in the exchange must be of like kind. Real and personal property are not considered like kind. However, for real estate, *like kind* has been broadly interpreted by the courts, and most types of real property are considered like kind. For instance, agricultural land can be exchanged for a shopping center, and both properties would be considered like kind for purposes of satisfying this requirement.

- The property transferred and the property received must be held for productive use in a trade or business or for investment. Like kind exchanges, therefore, cannot include dealer property or personal residences.

- Neither the property transferred nor the property received can fall into any category of specifically excluded property, which for real estate purposes consists of partnership interests.

Simultaneous exchanges are generally the safest type of tax-free exchange for tax purposes. In a simultaneous exchange, the escrows for the transfer of the old property and the receipt of the new property occur concurrently. However, the Internal Revenue Code does permit delayed or so-called "Starker" exchanges (named after a court case in which a delayed exchange was found to satisfy the requirements of the Section 1031; the principle has since been codified). In general, for a delayed exchange, the taxpayer must identify the like kind property within 45 days after the closing and must receive title to the exchange property within 180 days, or by the taxpayer's filing date, whichever is earlier. Delayed exchanges are more risky for the taxpayer, but would not involve the participation of a conservation entity purchaser since the exchange transaction would occur entirely after the closing of the conservation entity's purchase.

If an exchange is completed and the properties are of equal value, all income taxes on the transaction are deferred. The taxpayer retains the cost basis from the old property, and it becomes the basis for the exchange property. If the properties are not of equal value and the taxpayer receives some cash (or non-qualifying personal property) in the transaction (called *boot*), the cash (or non-qualifying personal property) is subject to income tax on the gain, and the cost basis in the property received is adjusted upward accordingly. In addition to cash boot, there may also be mortgage boot. If the property transferred is subject to debt, then the debt relief is boot. However, the taxpayer can offset the mortgage debt on the property transferred by the mortgage debt assumed or taken subject to on the property received.

The simplest tax-free exchange is a two-party exchange where the buyer purchases property from the seller and the seller transfers other property to the seller in exchange for the property. However, most exchanges involve much more complicated multi-party exchanges because it is rare that the buyer will have property that the seller wants and that the properties will be of equivalent value. Many exchanges involve third-party intermediaries so that the buyer does not have to take title to any property except the property it wishes to acquire from the seller (this is particularly important because of potential liability for hazardous materials).

A typical structure involving a simultaneous multi-party tax-free exchange and the purchase of ecologically significant land might look as follows. The seller/taxpayer enters into a purchase agreement with the buyer/conservation entity for a piece of conservation property, which the conservation entity wants to acquire to add to an existing reserve. The purchase agreement requires the conservation entity to cooperate with the seller in the seller's tax-free exchange, at no additional cost or liability to the conservation entity, if the seller is able to identify like kind property (exchange property) before the closing. Under the purchase agreement, the conservation entity is not obligated to acquire title to any exchange property, and the seller's like kind exchange is not a condition to the seller's obligation to sell the conservation property to the conservation entity. The seller then enters into a contract with an independent intermediary to acquire exchange property to be identified by the seller, and convey the exchange property to the seller, subject to the original purchase agreement with the conservation entity and conditioned upon that transaction closing. After the seller identifies the exchange property, the intermediary enters into a purchase agreement to acquire it from its third-party landowner for the negotiated price. At the simultaneous closing, the intermediary acquires title to the conservation property from the seller, sells the conservation property to the conservation entity for cash, uses the cash to acquire title to the exchange property from the third party landowner, and then transfers the exchange property to the seller, to complete the exchange.

Recent regulations adopted by the IRS allow *direct deeding* as an alternative to the complex multi-party exchange described above. Under these regulations, the conservation entity can contract to purchase the exchange property, with the seller's approval of all the terms of the sale. The conservation entity signs all of the closing documents, including the escrow instructions, except that the third party seller of the exchange property is instructed to convey the property directly to the conservation entity's seller. The conservation entity never has to take title to the exchange property.

E. Implied Threat of Condemnation (Section 1033 Sales)

Under Section 1033 of the Internal Revenue Code, all federal income taxes on the sale of property to a government agency as a result of an involuntary conversion can be deferred. An *involuntary conversion* is broadly defined; any "threat or imminence" of condemnation will suffice. Revenue Ruling 74-8 provides that a state does not need the actual authority to con-

demn the property at the time of the sale if the state could readily obtain the needed authority in the event that a voluntary sale is not agreed to. There must, however, be a sufficient expectation that the government agency would in fact follow through with the condemnation if the landowner refused to sell. For instance, if the funding is dependent on a bond referendum, there is no "threat or imminence" of condemnation until the bond issue is approved by the voters. Furthermore, there must be a sufficient expectation of condemnation. Most tax counsels advise the taxpayer to obtain a letter or other satisfactory expression of a threat of imminence of condemnation. This is often a very difficult requirement to satisfy.

The idea behind Section 1033 is that an involuntary conversion may result in unplanned and burdensome tax consequences for a landowner. Thus, the federal tax law allows the landowner some relief by deferring payment of the tax. Under Section 1033, the landowner can defer the gain realized from sale, however, only to the extent that the owner uses the payment to acquire replacement property within three years of the tax year in which the sale occurred. A sale under Section 1033, therefore, is much like a tax-free exchange under Section 1031, except that the time period to find replacement property is considerably longer (three years instead of 180 days). There is also another significant difference. The definition of *replacement property* for purposes of Section 1033 is narrower than that under the like-kind provisions of Section 1031. Under Section 1033, the replacement property must be "similar or related in use" to the property sold under threat of condemnation.

The Internal Revenue Service has ruled that the same tax deferral benefits apply under Section 1033 if the landowner sells the property first to a private nonprofit organization acting as an intermediary for a government agency. Therefore, as long as the involuntary conversion standard is satisfied, the private landowner is not penalized in any way if the sale is made to a private nonprofit organization in a cooperative transaction.

It should also be noted that there may be limits on when a government agency can use condemnation and therefore when this tax technique of Section 1033 sales can be invoked. Although private lands can generally be condemned by a public authority for any public purpose upon payment of just compensation, certain property, such as some types of holdings by Native Americans, cannot be condemned.

F. Stock Purchases: No Longer a Viable Tax Technique

Occasionally a parcel of land is the principal asset of a closely held corporation. In such cases, it used to be beneficial for the shareholders of the corporation to sell stock instead of the real estate. A private organization could acquire the stock of the corporation, dissolve the corporation, dispose of the surplus assets, and retain the real estate or convey it to a government agency. Under the old tax laws before radical changes in 1986, such a transaction could offer significant tax advantages to the shareholders because capital gains on the appreciated property could be avoided. However, the conservation entity purchasing the stock still ran the business risk of unwitting assumption of the corporation's liabilities (including tort claims), along with the assets.

With the limited exception of some corporate reorganizations, under the Tax Reform Act of 1986, liquidation or distribution from the corporation to the shareholder will now be a taxable event in almost every case. In addition, a distribution from a wholly owned subsidiary to a nonprofit corporation will also be subject to taxation on the appreciation unless the asset is used by the nonprofit for purposes unrelated to its principal business. Therefore, in virtually every instance it will be preferable to purchase the real estate itself, rather than the stock, especially in view of the risk of becoming liable for claims against the corporation that arose prior to the acquisition.

3.4.3 Land Exchanges

SEE CASE STUDIES:
5.2.10A Red Rock
5.2.10B Lyons Falls

Sometimes it is beneficial to use land with very little or no ecological or other natural value to purchase land with significant natural value, instead of using cash. This may save the time and transaction costs involved in selling off the marginal land to fund programs to protect land with more important natural features.

For example, a cooperative project between a private conservation organization and a government agency involving a government land exchange might work as follows:

(1) The government agency (most frequently the Bureau of Land Management or the USDA Forest Service) identifies a natural area that the agency wants to acquire to add to an existing holding and provides the conservation organization with a letter of

intent requesting the conservation organization's participation in the exchange.

(2) The agency identifies surplus land that it owns, obtains an appraisal and conducts an evaluation to determine that it has no ecological significance.
(3) The conservation organization secures an option to purchase the natural area property.
(4) The conservation organization and government agency review title, physical condition, etc. of the natural area property.
(5) The conservation organization reviews the exchange property (for natural resources, public uses, economic values, marketability, environmental condition, etc.).
(6) The conservation organization arranges for the purchase of agency's surplus land by an outside buyer.
(7) The conservation organization exercises the option and purchases the natural area property.
(8) The conservation organization transfers the natural area property to the agency; the agency conveys the agency's surplus land to the conservation organization in exchange.
(9) The conservation organization sells the surplus land to an outside buyer.

The Federal Land Exchange Facilitation Act of 1988 was enacted to facilitate and expedite land exchanges of federal land under the authority of the Secretary of Agriculture and the Secretary of the Interior. The act streamlines procedures for land exchanges and requires each secretary to promulgate rules for land exchanges. Rules to implement the act were proposed in 1989 and substantially revised in October 1991 to make them uniform for both the USDA Forest Service and the Bureau of Land Management. The proposed rules include authority for Forest Service to conduct land-for-timber exchanges. Final rules will be adopted after public comment.

Exchanges on federal lands in Alaska are also subject to Section 1302 of the Alaska National Interest Lands Conservation Act (ANILCA). Alaska state law covers land exchanges affecting state lands. The state land exchange statute and Section 1302 of ANILCA are included in Appendix F.

Land exchanges, as used here, involve a much broader strategy than the technique of tax-free exchanges described above. Tax-free exchanges are limited to certain types of property and must satisfy a number of specific

and formal requirements under the Internal Revenue Code and regulations. Land exchanges need not satisfy those requirements, although tax benefits afforded by Section 1031 of the code would not, of course, be available to the landowner if those requirements are not met.

3.4.4 Sale-Leasebacks

A *sale-leaseback* is often a way for a conservation entity to finance a portion of the acquisition of property and at the same time allow the seller to continue a traditional use, such as agriculture or grazing, for a limited period of time in accordance with conservation restrictions set forth in the lease. The lease can be for a stated term of years or can be a periodic lease which is automatically renewed unless terminated by either party (such as a month-to-month lease), or a life estate (term of the lease fixed by the life of the tenant).

3.4.5 Cooperative Transactions: Private Nonprofit Organizations and Government Agencies

Nonprofit organizations such as The Nature Conservancy frequently assist government agencies in conservation land acquisition. These private organizations often have the flexibility to meet landowner needs that are difficult or impossible for the agency to accommodate.

A. Advance Acquisitions

There frequently is a long period between when a government agency targets a piece of property for purchase and when the agency can actually begin negotiations and sign a purchase agreement. If requested by a government agency, a private organization can negotiate a transaction, acquire an option—or even purchase the property in advance of the agency—and then convey the property to the agency at a later date when the agency has secured the necessary funds. Any of the basic protection tools involving acquisitions of interests can be completed by a nonprofit organization acting for a state or federal agency. By cooperating in an *advance acquisition*, the conservation organization incurs costs and takes risks for the agency. For instance, the conservation organization bears the risk that public funds will not become available for the purchase of the property from the organization and that the organization will need to seek other ways to recover its costs, which are often quite substantial.

An advance acquisition can result in substantial savings and other benefits to a government agency. Some landowners prefer to negotiate with private

organizations rather than government agencies. The ability of the private conservation organization to purchase real property sooner can prevent price escalations, as well as ensure that the property is not sold to a new owner for incompatible development during the interim period.

B. Facilitating Acquisitions

A private nonprofit organization may be able to devote the expertise or professional staffing that a government agency may not have available to achieve conservation objectives for a particular site. In those instances, the conservation organization can assist the government agency. The extent of the conservation organization's involvement can vary. The organization may, for instance, carry out the negotiations to purchase a parcel of land and perform the necessary due diligence, and then at or before closing assign the right to acquire the property interest to the government agency. In this example, the conservation organization would never acquire title to the property; it acts purely as an intermediary. The conservation organization can also carry out a variety of other special functions—such as helping to expedite appraisals, conducting private negotiations, and acquiring and disposing of unrelated property—that a public agency may not be capable of because of financial or internal policy constraints.

3.4.6 Creative Financing Techniques

SEE CASE STUDIES:
5.2.11A Ice Mountain
5.2.11B Dickens-Lewis Farms
5.2.11C Matagorda

As discussed in Part 3.4.1, options provide time to fund the acquisition of real property. Sale-leasebacks and installment sales, also described above, provide ways for a conservation entity to finance a purchase. There are a number of additional, generally more sophisticated ways to finance acquisitions, including:

- *Lease-options*, where a percentage of the lease payments made by the conservation entity is applied to the purchase price;
- *Rolling options*, where the conservation entity has the right to exercise consecutive options to purchase portions of the property over time, to correspond with expected funding appropriations;
- *Seller financing*, where the conservation entity pays only a portion of the purchase price in cash at the time of closing and pays the balance over time, usually secured by a mortgage on

the property (government agencies often cannot purchase property subject to a mortgage or deed of trust, however); and

- *Partnership acquisitions*, where each partner takes an individual in terest in the property reflecting its percentage cash contribution, and governed by a management agreement.

3.4.7 Conservation Buyers/ Conservation Loans

SEE CASE STUDY: 5.2.8A Ruby Valley

A conservation entity can purchase a piece of property that contains a significant natural feature on a portion of it but which contains another portion that is not ecologically significant or sensitive. The entity can then sell the non-ecologically-significant portion to a conservation-minded buyer, usually with some conservation restrictions (deed restrictions or restrictions in a conservation easement). This may eliminate unnecessary management responsibility for the entity and also provide funds to recover part of the purchase price for the ecologically significant lands. The ability of a conservation entity to sell off the non-ecologically-significant portion of the land depends on local subdivision laws.

A conservation entity may also make a loan to a conservation-minded buyer to enable that buyer to acquire ecologically significant land, in return for permanent conservation restrictions and/or an option to purchase the land. Both strategies potentially keep all or a portion of the property in private hands and on the tax rolls, and are probably best suited for land that does not require active management and can support compatible uses such as controlled agriculture or timber harvesting.

3.5 The Importance of Due Diligence

3.5.1 The Need for Due Diligence Reviews before Acquiring Any Interest in Real Property

Most of the protection tools, strategies, and techniques involve the acquisition of an interest in real property. As noted in Part 1 of this handbook (the overview of the land conservation process), it is important to recognize that before a conservation entity acquires any real property interest, it should perform adequate due diligence to assure itself, among other things, of the following matters:

(1) What the value of the interest is;
(2) That the conservation entity will acquire good title to the real property interest, subject to acceptable on- and off-record conditions of title; and
(3) That the physical condition of the property is acceptable and in particular that the property does not contain any hazardous materials.

This is by no means a complete list of the due diligence considerations involved, but these are generally the main areas of investigation. The sections below give a general overview of these three main areas of due diligence for acquisition of an interest in ecologically significant real property. However, each transaction is different, and the range of considerations about a particular property interest will usually be far more involved and encompassing. In addition, conservation entities usually have their own special requirements for satisfying due diligence reviews. (See Appendix G for more detailed checklists for the due diligence reviews.)

3.5.2 Appraisals

It is essential for a conservation entity to obtain an independent and reliable appraisal by a qualified and duly licensed appraiser before acquiring any interest in property. An appraisal documents the value of an interest in real property and is important for two main reasons. First, the conservation entity needs information on the value of the interest to be acquired before the entity can effectively negotiate a purchase of that interest. Second, appraisals are required by applicable law or internal policy for real property acquisitions by public and private conservation entities. Pursuant to the Internal Revenue Code, nonprofit organizations cannot confer any value that inures to the benefit of a private individual, such as paying more than fair market value; government agencies are subject to similar restraints.

A. Basic Concepts: Fair Market Value and Highest and Best Use

Two concepts are basic to appraisals: *fair market value* and *highest and best use*. The following definitions of those two terms are taken from *The Dictionary of Real Estate Appraisal*, American Institute of Real Estate of the National Association of Realtors (1984):

1. Fair Market Value

Fair market value is defined as "the most probable price in cash, terms equivalent to cash, or in other precisely revealed terms, for which the appraised property will sell in a competitive market under all conditions requisite to fair sale, with the buyer and seller each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress.

"Fundamental assumptions and conditions presumed in this definition are:

(1) Buyer and seller are motivated by self-interest;
(2) Buyer and seller are well informed and are acting prudently;
(3) The property is exposed for a reasonable time on the open market;
(4) Payment is made in cash, its equivalent, or in specified financing terms;
(5) Specified financing, if any, may be the financing actually in place or on terms generally available for the property type in its locale on the effective appraisal date; and
(6) The effect, if any, on the amount of market value of atypical financing, services, or fees shall be clearly and precisely revealed in the appraisal report."

2. Highest and Best Use

"The definition of the term *highest and best use* includes:

(1) The reasonable and probable use that supports the highest present value of vacant land or improved property, as defined, as of the date of the appraisal;
(2) The reasonably probable and legal use of land or sites as though vacant, found to be physically possible, appropriately sup-

ported, financially feasible, and that results in the highest present land value; and

(3) The most profitable use."

Implied in these definitions is that the determination of highest and best use takes into account the contribution of a specific use to the community and community development goals, as well as the benefits of that use to individual property owners. Thus, in certain situations the highest and best use of land may be for parks, greenbelts, preservation, conservation, wildlife habitats, and the like.

Most analyses of the fair market value of the property are based on its highest and best use. Fair market value is readily established if there is a sale on the open market by a willing and knowledgeable seller and a willing and knowledgeable buyer. However, in the absence of an actual sale under these hypothetical conditions, any attempt to establish the fair market value is merely an estimate. Appraising real property is an inexact science, and great care must be taken in choosing a qualified appraiser (preferably with MAI qualifications), who has experience appraising similar properties in the same area as the land in question, and in specifying the parameters of the appraisal. In addition, under the Financial Institutions Reform and Recovery Act of 1989 (FIRREA), Title XI - Real Estate Appraisal Reform Amendments, after December 31, 1991, all appraisals done in connection with "federally related" transactions (transactions engaged in, contracted for, or regulated by a federal banking agency and requiring an appraisal) must be done by appraisers who are either licensed or certified by the state.

Care should be taken to make sure that conservation entities comply with all applicable laws and internal policy requirements relating to appraisals *before* committing to a price.

B. Main Issues

Two basic issues are important to address in reviewing appraisals of ecologically significant land (see Appendix G for materials on how to review an appraisal):

- The assumptions underlying the appraised value are crucial. It is important to consider them carefully, and to work with the appraiser in advance of the appraisal to establish reasonable assumptions.

- Whether the property being appraised is a fee estate or a less than fee estate, such as a conservation easement, will have a significant impact on the value. Particularly in the case of conservation easements, the exact restrictions on use and rights retained by the landowner must be clearly addressed by the appraisal.

3.5.3 Title and Survey Review

A. In General

In real estate transactions, title is the sum of all evidence that constitutes proof of the ownership of particular property. Confirming the condition of title to land is one of the first steps a conservation entity needs to undertake before proceeding to acquire any interest in real property. This entails ordering a preliminary title report and copies of all of the underlying documents early in course of the transaction. It often takes a significant amount of time to clear title problems before the transaction can close. Title insurance, though always advisable (see below), is not a substitute for a thorough investigation of title matters.

A conservation entity should consider whether to order a survey of the property if a current survey is not available from the seller. In many instances, the physical boundaries of property, marked by a fence for example, do not correspond to the actual legal description of the property. Thus, a physical inspection of the land may be misleading as to the extent of the property owned by the seller. A survey delineates the perimeter measurements of a piece of land and shows its legal boundaries and precise acreage. It also can show title problems that would not otherwise be disclosed by a preliminary title report, such as unrecorded road rights-of-way, trespass structures, etc. A conservation entity should always review and approve a survey if the purchase price is based on a per-acreage dollar figure. Surveys can be costly, especially if the area is remote and rugged, and no previous survey data exist. (See Appendix G for materials regarding title and survey review.)

B. Title Insurance

A conservation entity should always obtain a policy of title insurance covering its interest in any insurable real property that it acquires, whether by gift or purchase, at the time the property interest is acquired. The policy

limit should generally be equal to the amount of the fair market value of the property, or the purchase price if less, depending on the entity's internal risk assessments and the requirements of the title insurance company. In addition to fee estates, insurable real property interests include conservation easements, remainder interests, leases, and undivided interests.

A title insurance policy is a contract under which a title insurance company indemnifies the owner of an interest in identified real property against certain losses to title, up to the stated liability amount. The scope of insurance under the policy is determined under three main clauses, sometimes identified as schedules:

- *Schedule A:* sets forth the stated liability (usually the purchase price or fair market value), the name of the insured, the nature and extent of the real property interest insured, the name of the person or entity in whom title is vested, and a description of the real property covered by the policy.

- *Schedule B:* sets forth specific exceptions to title. These exceptions are peculiar to the particular property described in the policy. Some exceptions can be deleted when certain conditions of title and supporting evidence demonstrates that the exception does not effect the property.

- *Schedule C:* sets forth the printed exclusions from coverage and the procedures for asserting a claim.

Title insurance companies offer a number of different insurance coverages to fit various types of real estate transactions, such as purchases, loans, and leases. There are two main types of insureds: owners and lenders. An owner's policy insures that the conservation entity owns the described property subject to the printed and special exceptions listed in the policy, and is the type of policy a conservation entity would get when it purchases a piece of property. A lender's policy insures a secured lender of the priority of the lender's mortgage over the described real property, subject to the printed and special exceptions listed in the policy.

There are also two main scopes of title insurance coverage: The conservation entity must decide which to obtain upon acquiring an interest in real property.

- *Standard Coverage:* Insures against loss or damage up to the policy limit, plus costs and attorneys' fees incurred under the policy caused by: title being vested in a person other than the one named in the policy; title defects except as specifically listed in a separate schedule and except for any off-record risks; unmarketablity of title (not the land or value); and lack of access to a physically open street or highway, provided that the land described actually abuts at least one such street.

- *ALTA Extended Coverage:* Insures against the same as above, plus: defects, easements, liens and encumbrances not disclosed by the public records; prior mechanics' liens; rights of parties in possession or rights discoverable by inquiry of parties in possession and not shown on the public records; discrepancies or conflicts in boundary lines and shortages in area not reflected in the public records; and tax or assessment liens not disclosed by the public records.

ALTA extended coverage is generally more expensive, and most title companies will require an ALTA survey to provide this coverage. Some title companies may accept an affidavit of the seller in lieu of a survey, but this is not common. Title insurance policies vary from state to state, and the conservation entity should be very familiar with the policies used.

It is important to note that, depending on the particular state, some partial interests in real property, such as water rights, timber rights, grazing rights and mineral rights, may not be insurable. In addition, special insurance requirements and policies may apply to government agencies. Typically, the federal government requires title insurance in a special form referred to as a "USA Form 1963 Policy."

3.5.4 Hazardous Material Review

Under many federal, state, and local environmental laws, a conservation entity, as a purchaser of real estate—and in many instances also as a lender, manager, or tenant—may be liable for hazardous materials cleanup and damages, whether or not the entity caused the problem or even knew about the problem. In many cases, those cleanup obligations may exceed the value of the property. Therefore, *before* acquiring any interest in property, a conservation entity should perform a thorough investigation of the environmental condition of the property.

Sometimes, physical evidence on the property or indications of suspicious previous uses will reveal a potential environmental problem. However, an environmental problem will often not be apparent during an on-site inspection, without intrusive and usually very costly testing and monitoring. Therefore, great care must be given to the extent of the environmental inspection in each transaction, and the conservation entity should always specify responsibility as between the parties for environmental problems that existed before the transaction is completed.

The predominant environmental law in this area is the Comprehensive Environmental Response, Compensation, and Liability Act, known as CERCLA or "Superfund." In very general terms, under the provisions of CERCLA any one or more "potentially responsible parties" can be compelled to pay for the costs of remedying a release or threatened release of hazardous substance on contaminated property, whether or not that party or those parties were at fault.

Potentially responsible parties are broadly defined to include:

- The current owner or operator of the property,
- Any previous owner who owned the property at the time of any release of the hazardous substance,
- Any person or entity who generated hazardous substances that were disposed of on the property, and
- Any person or entity who arranged for the transport of the hazardous substance to a waste facility.

The hazardous substances covered include hundreds of listed substances and include many that are commonly used. The liability of potentially responsible parties is joint and several, strict and long-lived.

The defenses to CERCLA are extremely limited: they consist of acts of war, acts of god, and acts of "third parties." Third parties are persons or entities not contractually related; therefore, a purchaser cannot be a third party, unless the purchaser fits under a very narrow special exception for an "innocent landowner." To be an innocent landowner, the purchaser must at the time of acquiring the property have undertaken a reasonable investigation consistent with industry practice in an effort to avoid liability and must not have discovered any reason to believe that a release of a hazardous sub-

stance occurred on the site. What level of investigation satisfies this requirement is not clear, but the exception underscores the reason for a conservation entity to perform a careful environmental inspection before acquiring the property. The purpose of the investigation should be to attempt to actually discover the presence of any hazardous substances, not just to meet the innocent landowner's standard. In this way, liability can be assessed and the seller can be bound by contract to perform any necessary cleanup before the conservation entity makes an irrevocable commitment to acquire the property at a set price.

Parties to a real estate transaction can enter into a "hold harmless" agreement under which one party agrees to indemnify the other against costs incurred under CERCLA for hazardous materials. Therefore, a conservation entity can request that a seller or donor indemnify the entity against any environmental liabilities regarding the property that is the subject of the transaction. However, the "hold harmless" agreement does not release any party from liability to the government agency responsible for enforcing CERCLA, with respect to the occurrence or cleanup of hazardous substances.

In addition to CERCLA, there is a host of other federal, state, and local environmental laws that could result in additional or separate bases of liability for contaminated real property. Questions of sovereign immunity relating to the liability of governmental agencies under CERCLA and other environmental laws are complex and beyond the scope of this handbook. If a property presents any potential environmental liability issues, a conservation entity should have an experienced environmental engineer examine the situation. (See Appendix G for materials regarding hazardous materials review)

3.5.5 The Need for Recordation of All Interests in Real Property

If the conservation entity acquires a right to acquire an interest in real property that will be in effect for a relatively long period of time (such as a right of first refusal or an option), it should always record the document granting that right, or a short form of the document, to give notice to third parties of the entity's rights. Recording the document prevents any third party who later purchases an interest in the property from the landowner or loans money to the landowner secured by the property, in good faith without knowing about the conservation entity's interest (a *bona fide purchaser* or a *bona fide encumbrancer*), from acquiring an interest in the property that

is superior to the conservation entity's interest and could cause the entity's interest to be extinguished.

Similarly, if the conservation entity acquires an interest in real property, whether it be a fee estate, partial interest, conservation easement, lease or any other interest, it should always make certain that the instrument transferring the interest is recorded. Title companies will require that the interest be of record in order to issue a title policy. Each recorder's office frequently has its own set of procedures and requirements for recordation. Generally, the conservation entity can learn about these procedures and requirements by working with the title company.

3.6 Bibliography (Part 3)

American Institute of Real Estate of the National Association of Realtors. 1984. *The Dictionary of Real Estate Appraisal.*

Arthur Anderson & Co. 1991. *Charitable Giving: A Tax Guide for Individual Donors.* Excellent short guide on tax aspects of charitable contributions for individuals.

Arthur Anderson & Co. 1991. *Tax Economics of Charitable Giving.* 11th edition. Essential guide to tax aspects of charitable contributions.

Brenneman, R.L. and S. M. Bates. 1984. *Land-Saving Action: A Written Symposium by 29 Experts on Private Land Conservation in the 1980s.* Island Press, Covelo, California. Volume of case studies and articles on creating and managing land conservation organizations, initiating and completing conservation transactions and federal taxation.

Diehl, J. and T.S. Barrett. 1988. *The Conservation Easement Handbook: Managing Land Conservation and Historic Easement Programs.* Alexandria, Virginia: the Trust for Public Land and the Land Trust Exchange. Thorough, very readable discussion of conservation easements, including sample forms and checklists.

Fisher, R. and W. Ury. 1981. *Getting to Yes: Negotiating Agreement Without Giving In.* Penguin Books. Well researched, easy-to-read book on effective negotiation principles and strategies.

Goss, F. (ed.). 1989. *Environmental Evaluations for Real Estate Transactions: A Technical and Business Guide* Government Institutes, Inc.. A basic non-legal discussion of environmental inspections and issues in the context of real estate transactions.

Hoose, P.M. 1981. *Building an Ark: Tools for the Preservation of Natural Diversity through Land Protection.* Covelo, California: Island Press. Well written "classic" book on traditional land protection tools, ranging from landowner notification to dedications (currently out of print).

International Right-of-Way Association. 1987. *Principles of Right-of-Way Acquisition.* Overview of the theory and methods of the acquisition, management, and disposal of real estate,

Journal of Land Trusts' Exchange. Journal published quarterly by the Land Trust Exchange and distributed to members and subscribers. Contains articles intended to assist regional and local nonprofit land conservation organizations. (13 Albert Meadow, P.O. Box 364, Bar Harbor, Maine 04609).

Land Trust Alliance and National Trust for Historic Preservation. 1990. *Appraising Easements: Guidelines for Valuation of Historic Preservation and Land Conservation Easements.* Booklet on valuing easements for charitable contribution purposes.

Montana Land Reliance and Land Trust Exchange. 1982. *Private Options: Tools and Concepts for Land Conservation.* Island Press, Covelo, California. Collection of articles and oral presentations on conservation topics resulting from two national conferences, one sponsored by each of the Montana Land Reliance and the Land Trust Exchange, in 1981.

Small, S.J. 1988. *Preserving Family Lands: A Landowner's Introduction to Tax Issues and Other Considerations.* Powers & Hall Professional Corporation, Boston, Mass. Simple, easy-to-read booklet describing options available to individual landowners to protect family land and the tax consequences associated with the options; includes chapters on gifts of conservation easement, remainder interests, and gifts by will.

The Back Forty: The Newsletter of Land Conservation Law. Published by the Land Conservation Law Institute, a joint program of Hastings College of Law and The Land Trust Alliance. Practical newsletter published ten times each year, covering current developments in the laws affecting land conservation, including tax, real estate, land use, estate planning, and exempt organization law. (Subscription information can be obtained by writing to the Land Conservation Law Institute, c/o The Land Trust Alliance, 900 Seventeenth Street, Suite 410, Washington, D.C. 20006).

U.S. Department of the Interior. 1982. *New Tools for Land Protection: An Introductory Handbook.* Office of the Assistant Secretary for Fish and Wildlife and Parks. A general handbook describing educational

approaches, regulatory approaches, acquisition approaches, financing and tax incentives. Includes a number of case studies at the end.

U.S. Environmental Protection Agency. 1990. *Reducing Risk.* Handbook describing threats analysis approach to preserving biodiversity.

4. Innovative Conservation Initiatives

Outline of Key Topics

4.1 Introduction

To best ensure the long-term preservation of natural systems, the scientific community has long advocated developing conservation initiatives to encourage compatible uses of the environment. Many scientists, government agencies, and conservation organizations believe that the future of conservation lies in this direction. The goal of these initiatives is to combine advanced scientific methodologies, creative action, and effective partnerships to create models of how to save large, self-sustaining natural systems in a way that both people and nature can live together and flourish.

These innovative conservation initiatives are monumental in scope. They generally seek to protect a landscape that is very large in size, typically encompassing a complete watershed with naturally functioning ecological processes. Such a landscape exhibits one or more of the following features:

- Outstanding examples of ecosystems, or terrestrial or aquatic communities, which are endangered or inadequately protected;
- Concentrations of rare species;
- A large, relatively undisturbed example of a natural community once characteristic of its ecoregion, but now fragmented or degraded; and/or
- A critical migratory stopover point for birds or a corridor for other animals.

A natural *system* includes viable core natural areas containing critical habitats, species, and other significant biological resources. Long-term conservation also requires reasonable insulation from threats. Thus, a system is designed to include buffer areas immediately surrounding the core natural areas. These buffer areas withstand human pressure through their size and configuration or, frequently, by accommodating human uses and economic activities that are compatible with preservation of the core area.

Conservation initiatives directed at protecting systems continue to draw on traditional protection tools, strategies, and techniques, such as land acquisition and management. Indeed, the systems they safeguard often begin with combinations of protected areas, whose enlargement or connection enhances their ecological processes and viability. However, these conservation initiatives often require the invention of new techniques, the forging of new partnerships, and the development of new ways to promote compatible human uses and sustainable economic development.

The concept of partnerships is central to these conservation initiatives. Systems generally are too large and encompass too many different interests for any single government agency or private conservation organization to protect adequately the natural resources and satisfy the variety of stakeholders. Therefore, initiatives to protect systems frequently bring together a number of government agencies, private conservation organizations, businesses, academic institutions, public and private landowners, private resource-users, and interest groups—each bringing its own special knowledge, skills, and interests. Local citizens must be involved for any initiative to succeed. The initiatives draw upon the expertise of local citizens, are sensitive to their concerns, and encourage their active participation to protect their natural environments over the long term.

Throughout this part of the handbook, reference is made in the left-hand margin to case studies that illustrate the tools, techniques, and strategies discussed. These case studies may be found in Part 5.

4.2 Innovative Conservation Initiatives

4.2.1 Debt-for-Nature Swaps

SEE CASE STUDIES:
5.3.1A Bolivia
5.3.1B Costa Rica
5.3.1C Ecuador
5.3.1D Controller's Trust

A *debt-for-nature swap* is an innovative and complex financial mechanism that involves the reduction or extinguishment of a critical debt obligation in exchange for programs typically designed to promote sustainable development of natural resources. To date, such swaps have been used primarily for creation and management of habitat protection areas in Latin America, but the concept can be expanded to other geographic areas and other types of conservation and environmental problems.

A. Background: The Link between Debt and the Environment

Most of the countries comprising the earth's tropical forest belt are plagued with poverty, rapid population growth, and economic underdevelopment. The tremendous foreign debt burden of many of these countries has aggravated these critical social problems. As a result of pressure from the international banking community to repay their debts and at the same time address critical social problems with a shrinking revenue base, these nations have seen public funds to protect and manage wildlife habitats evaporate. In those countries where public funds for conservation may be available, the funds are usually far too inadequate.

The looming foreign debt forces many countries into rapid, short-term exploitation of their natural resources. Foreign debt requiring payment in U.S. dollars rather than local currency frequently must be paid by exporting natural resources that can be sold internationally for U.S. dollars. Latin American countries contain over 50 percent of the world's remaining tropical rain forests, yet the rich biological diversity contained in those rain forests is being rapidly lost as an area almost the size of Austria is destroyed each year. In effect, these countries sell their forests, soils, fish, and wildlife to stay solvent.

However, this form of debt servicing is not sustainable over the long run. The nation's irreplaceable national endowment of natural resources is depleted, and the resources are lost forever to future generations. Fragile ecosystems representing tens of millions of years of evolution are being overrun by inappropriate land uses that are not sustainable even in the short term. This serious situation results from poor water- and soil-conservation practices and from unplanned and inefficient clearing, farming, grazing, mining, and logging of species-rich tropical rain forests.

Debt-for-nature swaps attempt to take advantage of the linkage between

debt and the environment to provide a "win-win" solution based on the preservation of the country's natural heritage within the context of a sustainable economic system.

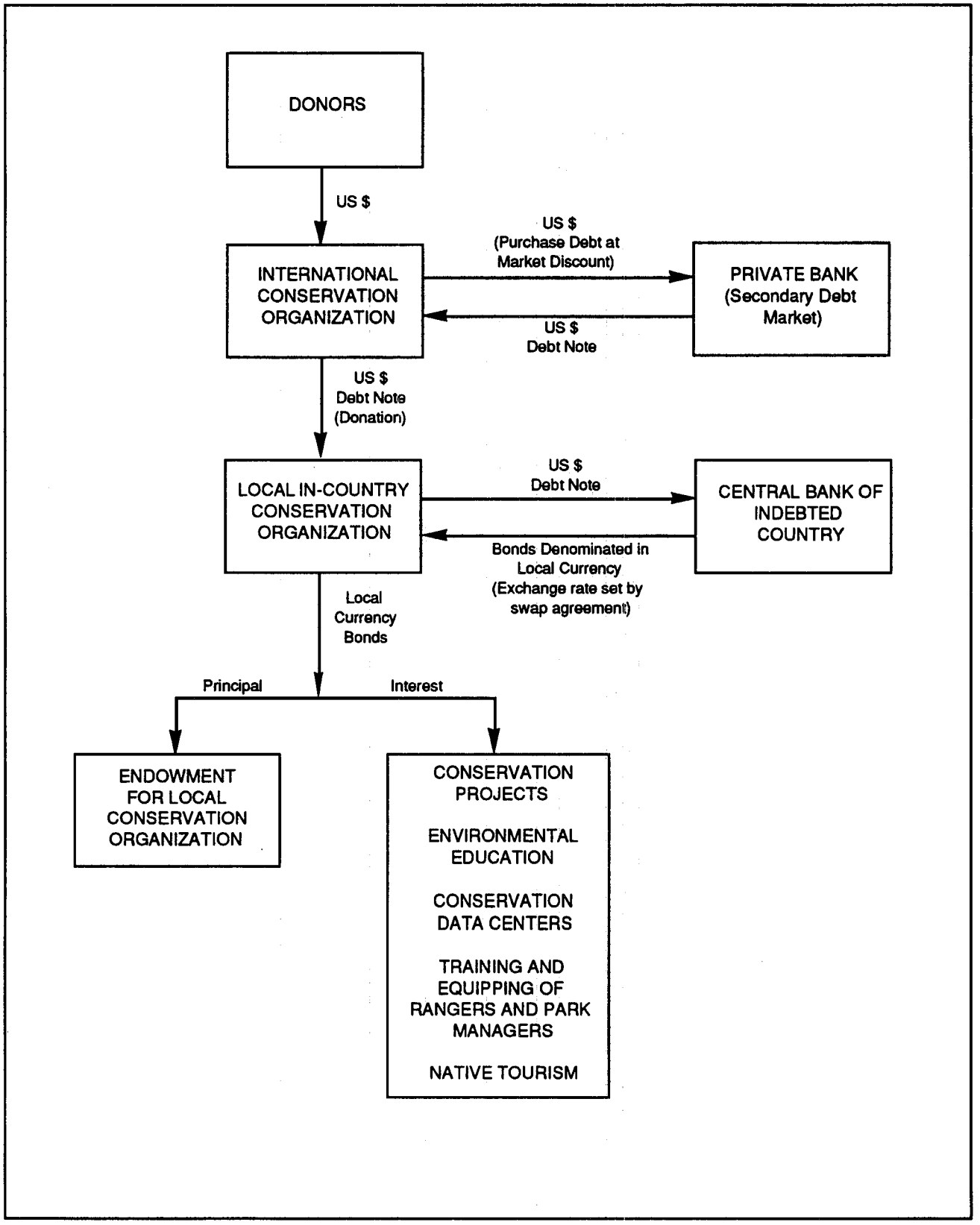
B. How a Basic Commercial Bank Debt-for-Nature Swap Works: The Multiplier Effect

Simply stated, debt-for-nature swaps convert unpaid loans to indebted countries into funds for conservation activities in those countries: a certain amount of foreign debt is canceled in exchange for local investments in programs that will improve the management of natural resources.

Typically, the first step in a swap transaction is that a local conservation organization, with the support of an international nonprofit conservation organization (both of these organizations are often referred to as NGOs which stands for "non-governmental organizations"), meet with the central bank or finance ministry representing the debtor government to decide if a debt-for-nature swap is appropriate or possible. The basic questions are whether the debt is available at a low enough price from the creditor bank and whether the government will convert the foreign debt into local debt at a high enough exchange ratio, to produce the multiplier effect discussed below.

If the government and conservation organization representatives decide that the transaction is feasible, then the parties negotiate a swap agreement, including the terms by which the debtor government will convert the debt into local currency bonds. That is, they decide how much the government would be willing to exchange foreign debt acquired by the international conservation organization—and donated to the government—into bonds issued by the government to the local conservation organization. For example, the government may agree to exchange donated foreign debt with a face value of $100 for $50 worth of bonds in local currency. If the international conservation organization is able to acquire the foreign debt for $25, then the funds available for local conservation are effectively doubled. The swap agreement also provides that the converted funds will be used to support conservation programs and sustainable development in the debtor country. The exact terms of the agreement and the description of eligible uses of the converted funds depend on the particular circumstances and vary widely from country to country. (Figure 4-1 provides a schematic illustration of the elements of a debt-for-nature swap.)

Figure 4-1
Diagram of Debt-for-Nature Swap Transaction



After the terms of the swap has been agreed to, the international conservation organization acquires part of the country's debt from the creditor, usually a commercial bank. The bank may donate some or all of the debt, but more often the conservation organization purchases the debt on the open market, using dollars or other hard currency obtained through fund-raising. Because the debts of many developing countries have little chance of being fully repaid, their value on the debt market is sharply discounted from the original face value on the secondary debt market. For instance, the international conservation organization may purchase debt with a face value of $100 for as little as $10.

The international conservation organization then donates the debt to a local conservation organization (in this way, the international conservation organization is often referred to as the "donor" organization). The local organization will then exchange the debt for bonds denominated in local currency in accordance with the terms worked out with the debtor government and central bank under the swap agreement at the outset of the transaction. The local bonds issued by the central bank are, in effect, promissory notes from the government to the local conservation organization—an agreement by the government to invest funds to support specific conservation projects in that country upon cancellation of the debt. The local conservation organization uses the interest paid on these bonds by the government to support specific conservation projects. When the bonds mature, the principal paid out by the government must also be used by the local organization for conservation purposes, and may be used to endow the local organization's conservation activities or to capitalize a permanent national conservation trust fund.

The funds used for the conservation projects, in addition to going toward the protection of land, help establish conservation data centers and employ, train, and equip a number of local conservation workers and managers in the country's nature reserves. The funds also support a range of environmentally sound business enterprises. In addition, the funds support programs that encourage eco-tourism, which in turn feeds money back into the local economy. Because of all of these factors, debt-for-nature swaps help create long-term employment opportunities and, together with sustainable harvesting, help create a stable, self-sufficient local economy.

C. The Incentives for All the Players to Participate

Compelling reasons exist for all of the players to participate in this involved financial transaction. In selling debt to an international conservation organization, the commercial bank removes delinquent debt from its loan portfolio. Most banks are satisfied to recoup the market value of the debt, even if it is only a fraction of the original amount of the loan, because of the risk that the loan might never be repaid.

For their part, a number of debtor governments have responded positively to an opportunity to retire a portion of their foreign debt and do so with readily available local currency rather than hard-to-earn U.S. dollars. Additionally, the bonds that the government issues to meet its obligation often have longer maturities than the original debt note. This provides an opportunity for the debtor country to reschedule that portion of the debt that is swapped. However, the most compelling reason for the debtor country government is the opportunity to invest within its own country rather than sending funds to a foreign commercial bank.

Lastly, conservation organizations find these transactions worthwhile because they can substantially multiply every dollar they spend on conservation in the developing world, thereby increasing the impact of severely limited resources. If an international conservation organization can go to the open market to purchase $100 of debt for $10 and allow the local conservation organization to convert those debt notes into $50 worth of local currency for conservation projects, then the two organizations have effectively generated $5 of conservation for every dollar spent. This leveraging, or *multiplier effect*, is the critical element of these swap transactions, particularly due to the scarcity of funds and limited time available to address the conservation problems in Latin America.

D. Potential Stumbling Blocks

Debt-for-nature swaps are very complicated transactions involving a large number of varying interests. There are a number of potential stumbling blocks that the parties need to address, including the following:

- Buying a portion of the debt can pose problems for the international conservation organization if the secondary debt market is thin and the debt is not available for a low enough price. The

debt-for-equity swap turns on the strength of the security (if any) for repayment that the creditor may have, the creditor's expectations that it will be repaid, and its incentives to "cash out" at significantly less than the book value of the debt. Commercial banks may balk at the transaction because of the so-called *debt contamination* dilemma—if a bank sells any portion of the debt at a discounted rate, the entire loan may have to be written down on its books to reflect the discounted sale price. The problem is compounded by the fact that the debt is often held by multiple creditors—a consortium of commercial banks—and it may be difficult to get the necessary approval of the creditors to complete the debt conversion.

- Tax incentives hinder commercial banks from donating rather than selling debt.

- Debt-for-nature swaps depend on the willingness of the debtor government to exchange the debt for local currency worth more than the international conservation organization pays for it on the secondary market. This leverage concept is the underpinning of the whole strategy. In addition, the government must have a demonstrated commitment to promoting sustainable development, honoring its local debt obligations, and working with the local conservation organization.

- The potential for inflation poses another serious problem. The debtor government may be tempted to print more local currency to service the bonds, thereby devaluing the local currency and increasing the relative cost of living. The debt-for-nature swap must be designed to reduce this risk.

- Local opposition often exists to the perceived threat of undue foreign influence in local land management. The international conservation organization must be sensitive to this problem and rely on an established, credible local conservation organization to take the lead in the transaction. It is important to develop widespread community support of the plan, to educate the local community about the benefits of the plan and the primary role of the local conservation organization, and encourage them to participate in designing and implementing the programs that will affect them.

E. National Conservation Trust Funds

SEE CASE STUDY:
5.3.1A Bolivia

Almost a dozen countries in Latin America are putting in place national-level conservation trust funds, creating a predictable, stable income stream for natural resource management. Continuity of funding is a key to the long-term success of debt-for-nature swaps, especially given the countries' precarious economic situation. By using debt swap proceeds to create independent, country-wide conservation trust funds, these countries have been able to begin developing a profitable, diversified investment portfolio and to begin planning for sustainable resource management over the long term. Generally, a variety of different interests have been given an opportunity to influence use of the funds, including key representatives of the government, private conservation organizations, the local communities and indigenous peoples, and sometimes the international donor community.

These conservation trust funds act as intermediaries, channelling funds to qualified private and public agencies involved in natural resource management and protection. They are in the best position to determine their nation's environmental priorities using their evolving national conservation strategies and guidelines. They are also the best judges of the needs, abilities, and capacity of the organizations involved in actually carrying out the projects. Accordingly, administrators of the funds can contract with fiduciary agents to professionally manage the investments of the trust's principal in order to maintain its value and provide income to fund projects on an on-going basis, while at the same time playing a critical role in project assessment, resource allocation, and oversight.

4.2.2 Public/Private Partnerships

SEE CASE STUDIES:
5.3.2A Preservation 2000
5.3.2B Coachella Valley
5.3.2C Las Vegas Valley
5.3.2D Florida Keys
5.3.2E McCloud River
5.3.2F Cedar Creek
5.3.2G Big Darby Creek
5.3.2H ACE Basin
5.3.4A Texas Hill Country

Public/private partnerships are cooperative transactions on a magnified scale (see Part 3.4.5). In themselves, they are not new; government agencies and private conservation organizations have frequently joined forces over the years in acquiring conservation lands. In the context of innovative conservation initiatives, however, public/private partnerships generally take on novel types of conservation efforts, involve novel combinations of many different institutions and interest groups, or involve the creation of new institutions to deal more effectively with local conservation.

A. Mitigation

SEE CASE STUDIES:
5.3.2B Coachella Valley
5.3.2C Las Vegas Valley
5.3.3A Platte River Trust
5.2.6A Santa Rosa Plateau

Frequently, public/private partnerships arise out of mitigation. In general, *mitigation* refers to methods of compensating for past or actual or potential damage or destruction to the natural environment or an important feature of it. Mitigations can involve actions relating to the particular land or resources damaged, and can also consist of in-kind acreage or cash funds for conservation.

Ways to accomplish environmental mitigation include:

- Payment of penalties which are for violations of applicable environmental laws and which are used for any of the purposes described below;
- Acquisition of sufficient land or natural resources to compensate for loss;
- Restoration of a damaged habitat or other natural feature;
- Creation of new habitat or other lost or damaged natural feature; and
- Creation of "mitigation banks" or endowments of land or funds to be used for conservation purposes, including stewardship.

Mitigations are often ways to offset the adverse effects on habitat areas from future developments. For example, habitat conservation plans, discussed below, represent one way to build a consensus plan based on mitigation, to compensate in advance for the loss of habitat for threatened or endangered species from planned development.

B. Habitat Conservation Plans

SEE CASE STUDIES:
5.3.2B Coachella Valley
5.3.2C Las Vegas Valley
5.3.4A Texas Hill Country

Effective public/private partnerships can be built through the development of habitat conservation plans under the Endangered Species Act of 1973. In general, under Section 7 of the act, federal agencies that authorize, fund, or permit any actions that may affect a federally listed species must enter into a formal consultation with the U.S. Fish and Wildlife Service (USFWS) to ensure that those actions are not likely to jeopardize the continued existence of species listed as endangered or threatened. The purpose is also to ensure that the actions are not likely to result in the destruction or adverse modification of the designated critical habitat, if any, for such species.

The Endangered Species Act expressly prohibits the taking of any listed species of wildlife on private lands (*taking* is broadly defined as killing, harming, harassing, or significantly impairing essential behavioral patterns such as breeding, feeding or sheltering). Before 1982, the only takings exempted from this strict prohibition were for scientific research, captive breeding, and similar conservation actions. Thus, any bulldozing, clearing, or development of habitat area of a threatened or endangered species constituted a violation of the act. However, 1982 amendments to the act dramatically expanded the exemptions to provide for the taking of federally listed species that is "incidental to and not for the purpose of carrying out otherwise lawful activities." As a result, the USFWS was given broader discretion in regulating incidental takings.

The purpose of the 1982 amendments is to reduce conflicts between listed species and private development and create a regulatory mechanism that encourages creative partnerships between public agencies and private organizations in the interests of endangered species and habitat conservation. This mechanism consists of the creation of a detailed conservation plan or habitat conservation plan (often called an HCP). When it approves a plan, the USFWS issues a Section 10(a) permit authorizing incidental taking of a listed species as long as the parties responsible for the incidental taking implement appropriate conservation measures for habitat maintenance, enhancement, and protection—as a part of their development projects. These mitigation measures can take many different forms. Often they include off-site mitigation and specifically, payments to fund creation or enhancement of a dedicated preserve for the listed species.

An applicant for a Section 10(a) permit must prepare a habitat conservation plan. There are no clear specific requirements about what a habitat conservation plan must contain. The reason is that the intent of existing law and regulations is to encourage creative and flexible plans that are crafted to each particular situation. However, there are a number of essential elements of a valid plan.

In general, a habitat conservation plan must include a description of:

(1) Impacts likely to result from the proposed taking of one or more federally listed species, including delineation of conservation plan boundaries, collection and synthesis of necessary biologi-

cal data focusing on listed species, and determination of proposed activities that may effect takings within the plan area;
(2) Measures that the affected parties will undertake to monitor, minimize, and mitigate for such impacts, as well as the funding that will be made available to undertake such measures, and procedures to address unforeseen circumstances;
(3) Non-take alternatives and reasons why the affected parties did not adopt them; and
(4) Additional measures that the USFWS may require such as establishment of an institutional framework to ensure that the mitigation measures are actually implemented.

In determining whether or not to issue a Section 10(a) permit, the USFWS considers a variety of factors, including an adequate demonstration by the applicant that:

(1) The taking will be merely incidental to otherwise lawful activities and not the purpose of the proposed activities;
(2) The applicant will, to the maximum extent practicable, take measures to minimize and mitigate the impacts of the taking;
(3) The applicant will ensure that adequate funding of the conservation plan and procedures to deal with unforeseen circumstances will be provided;
(4) The incidental take will not appreciably reduce the likelihood of survival and recovery of the listed species;
(5) The applicant will ensure that additional measures required by the USFWS will be provided; and
(6) The USFWS is assured that the conservation plan will actually be implemented.

The law provides for a period of public comment before the USFWS can issue the permit. Any person can object to the permit. The USFWS must also comply with the requirements of the National Environmental Policy Act of 1969 (NEPA), as amended, with respect to adoption of a habitat conservation plan. As a result, the USFWS has to perform an environmental review of any permit and accompanying plan. If the permit and plan could have a significant environmental effect, the USFWS has to develop either an environmental impact statement or environmental assessment, depending on the effect on the human environment. An environmental impact statement is subject to extensive public review.

The process of gaining approval of a habitat conservation plan and implementing it, especially for a large plan area, can be a very long and difficult one, as suggested by the above outline of the process. In addition to the need for good scientific data, effective use of the process demands motivated participation by all of the major stake holders, a willingness on the part of each of the participants to compromise to reach consensus, and an adequate funding mechanism.

In spite of the potential obstacles, habitat conservation plans can work well on a region-wide basis, involving a large number of public agencies, public and private landowners, conservationists, and other interest groups. The process of developing regional habitat conservation plans can lead to a strong consensus for plans which preserve natural habitats within the context of a sustainable and viable local economy. Frequently, these plans, which are a form of mitigation, represent solutions arising out of controversy and deadlock. Two of the most successful examples of regional HCPs are described in the Coachella Valley and Las Vegas Valley case studies in Part 5.

C. Coordinated Resource Management Plans

SEE CASE STUDIES:
5.3.2E McCloud River
5.3.2F Cedar Creek

Coordinated Resource Management and Planning (CRMP) is a process designed to reach a consensus plan among public and private landowners, resource users, government resource managers, and interest groups, for the management and use of natural resources in a specified area. The plan is based on sound scientific studies of ecological relationships within a geographically defined planning area. The principal objective is to achieve uses of natural resources that are compatible with sustainable conservation of the area's natural values.

The CRMP process began in the 1950s with model programs undertaken by the Soil Conservation Service. Early successes in Nevada, Oregon and California, together with generally intensified controversies over natural resource use, prompted the Soil Conservation Service and the Bureau of Land Management to enter into an agreement in 1971 sanctioning use of the CRMP process nationwide. Authority for federal and state agencies to participate in the CRMP process in any given state depends on the particular statutes and delegation of authority for that state. The CRMP process is now used in various parts of the country by the BLM as well as a number of other federal and state agencies.

4.2.2 Public/Private Partnerships

The basic concept driving the CRMP process is that through the active participation of all the stake holders in land-use decisions affecting an entire ecoregion, a comprehensive plan can be produced that all of the parties find acceptable and that will protect, improve and maintain the area's natural resources for the long-term.

Government agencies usually initiate and organize a CRMP to address actual or potential conflicts affecting the lands that they manage. The land area covered by the CRMP is intended to be an entire watershed or other geographically defensible area that incorporates all of the public and private lands necessary to solve the resource management issues. Legal ownership patterns are not an important factor in determining the planning area subject to the CRMP, and CRMPs have covered areas less than 1,000 acres and greater than 1,000,000 acres.

The focus of the CRMP process is on local community involvement and planning. Representatives of all individuals, entities, interest groups, and agencies that could potentially be affected by the plan are invited to join the coordinating group and participate in the planning process. However, the CRMP process is not mandatory, and it depends solely on each party's voluntary commitment to the process.

Although each CRMP is different, the planning process generally reflects the following basic structure. Once the lead agency has defined the planning area and the planning group and gathered background information on the planning area (such as maps, resource inventory data, hydrologic surveys, environmental impact statements, land use plans, aerial photographs, and other materials), the agency then assembles all of the participants in an effort to identify resource management issues and planning objectives. Through a series of face-to-face discussions in a candid, neutral forum, the members of the planning group attempt to reach a consensus on specific actions and projects needed to achieve the objectives.

The members of the planning group then cooperate to develop a workable Coordinated Resource Management Plan, which includes a brief description of the planning area, resource uses, participants in the planning group, and problems, as well as a statement of the objectives, an implementation strategy for coordinated resource uses, and a monitoring procedure. The plan does not become effective unless all of the participants sign it.

After the unanimous adoption of the plan, the planning group meets at least once a year to evaluate progress and the need for any amendments to the plan based on changed circumstances. The plan cannot be amended without the unanimous consent of all of the participants. The plan has an unlimited term, and any participant can withdraw from the plan only after giving one year's advance notice. Compliance with the plan does not usually involve any of the participants' assuming monetary obligations beyond those they would have had in the absence of the plan.

The CRMP process is similar in many respects to the habitat conservation planning process under the Endangered Species Act, discussed above. It can be an involved and slow-going process, and its greatest strength—a broad-based consensus—is also its most vulnerable point. It depends on good scientific data for complex ecosystems as well as the motivated involvement of all of the key parties in the plan area and their willingness to compromise to reach a consensus plan. But, like HCPs, it offers a flexible way of resolving conflicts for an entire region in a constructive, problem-solving, and enduring manner.

D. Advisory Councils

In many cases, advisory councils, steering committees, or similar groups are effective in coordinating public/private partnerships. These groups usually consist of volunteers representing the gamut of interests involved in land-use decisions for a particular area. Often they include representatives of conservation organizations, academic institutions, businesses and labor unions, governmental agencies, public and private landowners, concerned local citizen groups, and other interested individuals, groups, or organizations. Advisory councils can be a powerful vehicle for consensus-building among divergent interests and for necessary local input in the conservation planning process.

4.2.3 Conservation Trust Funds

SEE CASE STUDY: 5.3.3A Platte River Trust

Conservation trust funds are a mechanism to provide steady and reliable cash flows to fund conservation projects. The goal is for the income generated by the trust to support land conservation projects in perpetuity, and also provide for continuous investment of funds for related activities and needs such as equipment, training and stewardship, educational programs, community outreach, and sustainable development. Conservation trust funds are similar to endowments for private universities, or annuity funds.

They diversify the income source and help insulate conservation programs from periodic budget deficits, economic cycles, absence of public money, and other funding problems that could otherwise prove fatal to a conservation protection and management program.

A number of possible choices are available for the legal form of the conservation trust fund; it can be set up as a private nonprofit 501(c)(3) corporation, a grant-making foundation, and other entities. Each of these legal entities has differing tax, administrative, and operational implications and should be considered carefully with an experienced attorney.

4.2.4 Compatible Uses and Sustainable Economic Development

SEE CASE STUDIES:
5.3.4A Texas Hill Country
5.3.4B Central Valley
5.3.4C Cosumnes River
5.3.4D Virginia Coast Reserve

Often there appears to be an inherent conflict between environmental protection and economic development; however, this need not necessarily be the case. In conserving natural features of large landscapes, conservation entities of all sorts are increasingly recognizing that they must find ways to accommodate compatible human uses within protected natural areas. This means developing a thorough understanding of the socio-economic and ecological needs of the area and inventing strategies that will balance competing demands and more importantly, foster a symbiotic relationship between the two. The emphasis on developing compatible uses is generally applicable to the buffer areas which surround core natural areas.

The range of compatible human uses varies widely and depends on the particular system, but examples of compatible uses for any given area might include:

- Agriculture, grazing, timber harvesting, or mineral exploration in accordance with best practices management standards;
- Managed public recreation, such as fishing, hunting of non-native species, hiking, camping, wildlife observation, photography, and nature study;
- Subsistence uses;
- Limited residential development with open-space designations that can enhance the value of the development.

The revenues to local communities from public visits to protected areas often offset any loss in local tax revenue from ownership of the protected area by a conservation agency.

4.3 Bibliography (Part 4)

Gibson, E.J., and R.K. Curtis. 1990. "A Debt-for-Nature Blueprint" *Columbia Journal of Transactional Law*, Volume 28, No. 2, 1990. An 80-page technical article on debt-for-nature swaps.

Handbook on California Coordinated Resource Management and Planning. 1990.

Jenkins, R.E., Jr. 1991. "The Bioreserve Concept." Vice President-Science, The Nature Conservancy. An article providing an overview of The Nature Conservancy's concept of systems.

"Last Great Places: The Nature Conservancy's Protection Initiative for the 1990s." *The Nature Conservancy Magazine*, Volume 41, Number 3, May/June 1991. A general, easy-to-read presentation of The Nature Conservancy's concept of "systems" in the Conservancy's membership magazine.

U.S. Fish and Wildlife Service. 1989. *Draft Conservation Planning Guidelines*. U.S. Fish and Wildlife Service, Region 1, Portland, Oregon, and Sacramento, California.

5. Case Studies

Outline of Key Topics

Outline of Key Topics (Cont'd)

5.1 Introduction

This part contains a series of case studies designed to illustrate the concepts discussed in Parts 3 and 4. Part 5.2 contains case studies for Part 3, Protection Tools, Techniques, and Strategies, while Part 5.3 provides studies for Part 4, Innovative Conservation Initiatives.

These case studies are drawn from the work of The Nature Conservancy in the United States and Latin America. They have been selected because they demonstrate how the various tools and strategies work when applied in real-world situations. Even though most of the studies do not occur in Alaska, it is hoped that parallel situations can be found to those facing the Restoration Planning Work Group.

NOTE:

All dollar amounts, acreages, and other figures in the case studies in Part 5 are approximate only.

wanted to increase the protection of the resources in the area.

The Conservancy approached the timber company and the BLM to try to develop a cooperative management agreement to achieve these goals. After about two years of discussions among the owners, they were able to reach agreement.

The cooperative management agreement provides a framework for each of the three principal property owners—the Conservancy, the timber company, and the BLM—to manage each of their properties within a cooperative management area consisting of about 300 acres. The area excludes portions of the timber company land and the BLM land, which the timber company and BLM wanted to keep open to off-road vehicle use. The owners agreed to allow public access and also agreed to hire a caretaker, who would live in a trailer on the BLM land. The three owners also entered into a memorandum of understanding with the gun club to facilitate coordinated management.

The most important aspect of the agreement is that it called for a management plan to be approved by all of the parties. One part of the plan consists of a biological inventory of the cooperative management area, while the other part spells out in detail the management objectives and deals with each of the three properties separately to meet the different owners' interests.

The process of developing the plan and gaining approval of it was long and involved. The parties included local landowners, the gun club, and other interested parties in the process so that all concerned groups and individuals would be satisfied with the plan. Approval of the plan took about two years after the initial signing of the cooperative management agreement.

The property owners under the agreement meet regularly with the caretaker, the gun club, and other local owners and community members to discuss management issues. If there is a significant issue, the parties often resolve it through an amendment to the agreement.

The cooperative management area has received a great deal of public use and has become a very popular natural attraction. The area is a very visible community asset, and the cooperative management agreement has helped create and preserve it as such.

efforts within the watershed. To assist in this effort, the Minnesota County Biological Survey has conducted a detailed inventory of rare and endangered features in Rice and Goodhue counties. This inventory will be critical to the development of a land protection plan throughout the watershed, based on the growing awareness of the need for protection.

The Conservancy will try to serve as a catalyst for the partnership, work with local citizens to develop a watershed research program, develop a strategy for protecting the largest remaining remnant of maple-basswood forest in Minnesota which is found in the watershed, and coordinate the development of a watershed-wide land protection plan.

B. Siskiyou County, California — Landowner Notification

Background

Pallid bird's beak, a rare annual plant of the figwort family, is found only in Siskiyou County, California, and mainly on privately owned residential lots. It grows to two feet high and has very small leaves and clusters of tube-like flowers tinged with maroon and ending in a two-lipped, beak-like tip. Early in the season the plant is pale yellowish-green, hence the common name "pallid." Later it may turn golden or even maroon; however, to most people it is a very inconspicuous plant.

Protection Strategy

Field work jointly funded by The Nature Conservancy and the Shasta-Trinity National Forest resurveyed all the sites where this plant was once known and similar habitat in the vicinity. This cooperative effort included both public and private lands and resulted in a comprehensive look at the world's distribution of this plant. Public land managers, including the County Agricultural Commissioner, who is responsible for roadside spraying activities, received copies of a Draft Species Management Guide from the USDA Forest Service. Private owners were contacted by The Nature Conservancy.

Pallid bird's beak grows in openings where the ground is gravelly and there is little soil, and in some areas of past disturbance such as logged areas, roadside cuts, and old skid roads. Roadwork (spraying, widening, maintenance, landscaping), logging, burning and even foot and vehicle traffic can damage this rare plant. Major changes in land use, such as road building,

grading, tilling, construction, residential development, and landscaping can permanently alter the habitat, thereby eliminating future growth potential for the plant.

The Conservancy's landowner notification program is trying to reduce these types of threats by educating owners. Staff inform owners whose properties contain the plant and others who live near its forest or roadside occurrences about the impact their activities may have on this rare but undramatic-looking wildflower.

Among those contacted are two substantial property owners in the county: Sierra Pacific Industries and the Shasta Abbey. Sierra Pacific Industries, a large lumber concern, cooperated with the survey work and is now considering a voluntary agreement to protect plants on its site. Shasta Abbey, a Buddhist monastery, has already found two additional previously undiscovered populations of the plant on its property.

5.2.2 Voluntary Agreements: Registration and Cooperative Management Agreements

A. Tanana Chiefs, Alaska — Cooperative Agreement for Technical Assistance in Resource Management

Background

Under the Alaska National Interest Lands Conservation Act (ANILCA), the U.S. Secretary of the Interior is specifically authorized to enter into cooperative agreements or otherwise cooperate with Native corporations and other appropriate persons and organizations in order to provide for

(1) Continuation of subsistence uses by local rural residents on federal public lands (ANILCA §809) and
(2) Management by private owners within, or adjacent to or near a national wildlife refuge, in a manner compatible with major purposes of the refuge including the opportunity to continue subsistence uses [ANILCA §304(f)(1)].

Protection Strategy

In June 1991, the U.S. Fish and Wildlife Service (USFWS) entered into a cooperative agreement with the Tanana Chiefs Corporation, the regional Native corporation serving as the tribal consortium contracting agency for 43 native villages of the Tanana Chiefs region for the purposes mentioned

in (1) above. Under the agreement, the USFWS agrees to provide funds to the corporation to give technical assistance and guidance in implementing a subsistence management program. Specifically, the corporation determines subsistence uses of fish and wildlife resources by certain villages, and monitors and reports the subsistence harvests of caribou in other villages. The corporation also agrees to provide assistance in study design, data collection, and data analysis, without reimbursement by the USFWS. The term of the agreement is six months.

The cooperative agreement allows the Native villagers to participate in planning for resource management that directly affects their day-to-day lives, and provides an opportunity for employment of local residents in rural areas. The USFWS obtains good information and is better able to develop a workable resource management plan. Moreover, although this particular agreement related to public land, there is statutory authority, as mentioned above, for similar agreements affecting privately owned lands.

B. Mad River Slough and Dunes, California — Cooperative Management Agreement

Background

In northern California, The Nature Conservancy owns and manages a preserve called the Lanphere/Christensen Dunes, located within an area known as the Mad River Slough and Dunes. The preserve consists of forested dunes and slough, and contains a number of rare plants. To the south of the preserve is land owned by a large private timber company, but that land is not commercial and is not used for timber harvesting. In addition, to the south of the timber company's property is land owned by the Bureau of Land Management (BLM). Another piece of property in the this area is owned by a local gun club.

Protection Strategy

Several years ago, the Conservancy, upon purchasing a parcel of property on the southern edge of the preserve which adjoins the timber company's property, began exploring the possibility of coordinated management of the larger Mad River area. The Conservancy was considering ways to allow public access through the southern end of the preserve, while at the same time maintaining restrictions against use of vehicles on the dunes. Up to this time, there was no public access to the area. The Conservancy also

wanted to increase the protection of the resources in the area.

The Conservancy approached the timber company and the BLM to try to develop a cooperative management agreement to achieve these goals. After about two years of discussions among the owners, they were able to reach agreement.

The cooperative management agreement provides a framework for each of the three principal property owners—the Conservancy, the timber company, and the BLM—to manage each of their properties within a cooperative management area consisting of about 300 acres. The area excludes portions of the timber company land and the BLM land, which the timber company and BLM wanted to keep open to off-road vehicle use. The owners agreed to allow public access and also agreed to hire a caretaker, who would live in a trailer on the BLM land. The three owners also entered into a memorandum of understanding with the gun club to facilitate coordinated management.

The most important aspect of the agreement is that it called for a management plan to be approved by all of the parties. One part of the plan consists of a biological inventory of the cooperative management area, while the other part spells out in detail the management objectives and deals with each of the three properties separately to meet the different owners' interests.

The process of developing the plan and gaining approval of it was long and involved. The parties included local landowners, the gun club, and other interested parties in the process so that all concerned groups and individuals would be satisfied with the plan. Approval of the plan took about two years after the initial signing of the cooperative management agreement.

The property owners under the agreement meet regularly with the caretaker, the gun club, and other local owners and community members to discuss management issues. If there is a significant issue, the parties often resolve it through an amendment to the agreement.

The cooperative management area has received a great deal of public use and has become a very popular natural attraction. The area is a very visible community asset, and the cooperative management agreement has helped create and preserve it as such.

5.2.3 Rights of First Refusal

A. Canelo Hills Cienega Preserve, Arizona — Right of First Refusal with Assignment to a Conservation Buyer

Background

The 254-acre Canelo Hills Cienega Preserve, which the Arizona Chapter of The Nature Conservancy manages, is the result of acquisitions of eight separate tracts from two private landowners, over an 18-year period. The initial acquisitions in 1974 that led to the establishment of the Preserve included a partial purchase by the Conservancy of the Ewing Ranch. The Conservancy wanted to purchase all of the Ewing property, but the owners were unwilling to sell the entire ranch.

Protection Strategy

As a condition of the initial purchase, the Conservancy acquired a right of first refusal on the remainder of the Ewing parcel. The right of first refusal required the owners to give the Conservancy the right to match any offer to purchase the remaining ranch property or any portion of it. Under the terms of the right of first refusal, if the owners sold only a portion of the property, the right of first refusal would continue to apply to the balance of the ranch.

Since the initial acquisitions, the Conservancy has acquired six additional tracts as a direct result of the right of first refusal.

5.2.4 Interim Protection: Leases, Licenses, and Management Agreements

A. Nipomo Dunes, California — Mosaic of Management Agreements, Management Leases, and Cooperative Management Agreements

Background

Native coastal dune and wetland ecosystems occupy only a small fraction of their original range in California. So little habitat remains that many coastal plant and animal species are now threatened with extinction. The Nipomo Dunes, which stretch for about 75 miles along California's central coastline, are the largest intact example of this habitat type remaining in the state. Named by the Chumash Indians, these relatively undisturbed dunes and their associated wetland hollows shelter more than 18 rare or endangered plant species and afford nesting habitat for the federally protected

California least tern. They also provide a home for other imperiled species such as the sea otter.

Protection Strategy

The Nature Conservancy's active involvement in protection of the dunes began in the late 1980s with the purchase of 567 acres. Through a variety of management partnerships with a number of public agencies, the Conservancy is now helping to protect the biological diversity of over 110,000 acres of the Nipomo Dunes. In some cases the Conservancy actually manages the lands, while in others it simply participates in management planning or specific projects, such as research.

Management Partnerships

These management partnerships include the following arrangements:

Long-Term Management Lease from Santa Barbara County Parks Department. In 1988, the Conservancy purchased 567 acres in the central coast from a private partnership, with a grant from the California Coastal Commission. A year later, the Conservancy conveyed the property to Santa Barbara County and leased the property back, together with about 30 additional acres, for the purpose of protecting, preserving, and enhancing the dune habitat.

The 25-year management lease with the county gives the Conservancy substantial control over management. The Conservancy's rights include the right to conduct inventories, revegetate with native vegetation, restore habitat, conduct research, build fences, engage in prescribed burnings, and limit public access for recreation to protect the habitat.

Cooperative Agreement with Vandenberg Air Force Base. Vandenberg Air Force Base, located on 100,000 acres just south of the Conservancy's holdings, is a missile test-launch facility of the Strategic Air Command. Because missile testing requires vast expanses of open land, nearly 90 percent of the base's lands remain in a natural state. Many species and habitats that have been lost to development elsewhere still exist in relative abundance on the base.

In 1988, the Conservancy and Vandenberg Air Force Base entered into a cooperative management agreement which defines areas of mutual interest and cooperation between the two parties in inventorying and managing

ecologically significant areas with the base and the Conservancy's preserve. Under this agreement, the Air Force has engaged the Conservancy, with Air Force funding, to conduct inventories of sensitive species on the base and throughout the Nipomo Dunes, to write an integrated resource management plan for the base, to monitor populations of rare species, and to study and make recommendations for the management and restoration of three imperiled natural communities.

Following this cooperative agreement, The Nature Conservancy and the Department of Defense entered into a national cooperative agreement under which they established a general policy of cooperation and coordination to identify, document, and maintain significant habitat on military bases all over the country.

Management Agreement with the California Coastal Commission and Pacific Gas and Electric. As a condition to construction of the Diablo Canyon nuclear facility, the State Coastal Commission required Pacific Gas and Electric (PG&E) to provide public access to a portion of the dunes. Under an agreement with the Coastal Commission and PG&E, the Conservancy will, using funds from PG&E, manage the area and organize and operate a docent-led tour program for marine mammal and other wildlife observation. The Conservancy also has the right to restrict public access to protect the coast. The parties are working on a management plan for the area.

This network of management agreements, together with other forms of protection such as conservation easements and fee acquisitions, is helping to maintain both the biological core areas and the buffer areas of the Nipomo Dunes. The project will eventually encompass more than 200,000 acres.

5.2.5 Less-than-Fee Acquisitions

A. Virginia Coast Reserve — Best Management Practices Conservation Easement Program for Resale of Seaside Farms in Buffer Areas

Background

In 1969, a group of New York investors announced plans for a luxurious, multi-million-dollar recreation and retirement community on the three southernmost Virginia barrier islands. The plans for the massive development called for filling marshlands, dredging the bays, and carving miles of

inland waterways into the islands. The development threatened a rare ecosystem. The Nature Conservancy purchased an adjoining island to establish a foothold in the area, and then, after months of negotiations with the developer, was able to purchase the three islands (see discussion on public/private partnerships and sustainable development in Part 4.2.2 and 4.2.4, respectively).

By the 1980s The Nature Conservancy had acquired over 35,000 acres on the Eastern Shore of Virginia, including all or part of each of the 14 islands now established as the Virginia Coast Reserve. The Conservancy also had acquired an additional 8,000 acres on the mainland waterfront. The chain of islands is virtually undeveloped, constituting the only remaining fragment of coastal wilderness along the Atlantic Seaboard.

The Virginia Coast Reserve encompasses the United States' last intact fully functioning barrier island ecosystem on the unglaciated coast. It is a major nesting area for colonial shorebirds and an important winter staging area for Atlantic Flyway waterfowl and neo-tropical birds. The Virginia barrier island ecosystem captures a 60-mile-long island, marsh/lagoon and mainland creek/bottomland natural community without the waterfront development and marsh alterations found along most of the Atlantic Coast today.

Protection Strategy

As a community partner, The Nature Conservancy is working with local landowners, governments, businesses, and community members to preserve the farms and fishing villages that form the exterior buffer around the 43,000-acre core preserve. The buffer area of the Virginia Coast Reserve is made up of over 60 miles of scenic waterfront farms along with four very small seaside villages focused mainly on seafood. While the buffer area does not contain the extremely sensitive and critical elements of the core, it is a major supporting part of the barrier island ecosystem.

Historically, the uses of the buffer area have been consistent with continued preservation of the more fragile natural features of the core area. However, rising real property taxes, together with low yields from small farms, have created a great temptation for many seaside farmers to sell their lands to developers. Over the past 20 years, much of the coastline along the Atlantic has been claimed by recreation and residential development, and there is tremendous development pressure along the entire Virginia Coast. In addition to the threat of high-density development, there has been a

growing problem with pollution of the watershed from intensive row-crop agriculture on the many seaside farms. These farms have been the dominant land use for over 30 years, and significant amounts of nutrients are entering the coastal creeks and bays as the result of direct runoff and seepage into the groundwater.

Conservation Easement Program

One of the Conservancy's primary protection tools in the buffer area, in addition to community planning, zoning, and demonstration of ecologically sound and economically viable development models, is the acquisition and resale of waterfront farms with perpetual conservation easements, based on extensive scientific research. The main purpose of the easement program is to protect the biological integrity of adjacent watersheds, shallow bays, and the barrier-island estuarine system. While some limited construction is allowed in the buffer area, the easements restrict density and type of construction to a level that will not harm the estuarine environment. The Conservancy works with landowners to design easements that not only protect the integrity of the watershed but also protect the traditional uses such as farming and seafood harvesting.

As part of this easement program, the Conservancy is developing detailed conservation plans for each priority site to show an overall context for residential, farming, and other land uses. The site plans are designed to protect the assets of the entire area and to keep land values from being diminished by the restrictions contained in the conservation easements.

The Conservancy's staff meet regularly with the owners of high-priority sites in the buffer area, on a very informal basis. The landowners are not asked to make any commitments, voluntary or otherwise; but the goal of these contacts is to establish a relationship and encourage the landowner to speak with the Conservancy before selling his or her property to anyone else. In this manner, the Conservancy can help secure an opportunity to purchase the land if the owner decides to sell. The Conservancy can then work with a conservation buyer to create a conservation easement for the land, which will be binding on the buyer and all future owners when the buyer purchases the land from the Conservancy.

The conservation easements are flexible and tailored to each individual tract of land. They are, however, specifically grounded in the two major threats to the area: high-density residential development and agricultural runoff.

The Conservancy worked for a year on scientific studies addressing these threats, in order to develop standards that could be incorporated into the easements and still allow for compatible uses to the extent possible.

One set of these studies focused on compatible low-density development. High-density development posed the biggest threat to the water quality of the ecosystem, including the seafood industry upon which much of the local economy depended. The studies found that nutrient pollution from waste water (septic systems) was the most serious problem. In essence, the studies showed that if there was more than one septic system for every seven acres, water quality problems would result. Thus, the findings suggested very low densities. Using the studies, the Conservancy's scientists developed a formula for the amount of development that would be compatible with the integrity of the ecosystem, based on differently configured farms. These standards are reflected in the conservation easement's maximum limits on future development of a particular tract of land.

Another set of studies focused on compatible agriculture on seaside farms. These studies indicated that a vegetated buffer strip, particularly a wooded one, between the farm and the water would help prevent the runoff problem. Therefore, the conservation easements generally require a 100-foot strip of forest, grass, or natural vegetation between any farm and the wetlands, water bodies, or streams. At least 60 feet of the buffer strip must be wooded. No commercial logging or clear-cutting of forest in the buffer strip is allowed; but the owner can harvest and manage other forest land on the property in accordance with the State Division of Forestry's best management practices. The easements also require commercial farming operations to comply with sound, generally accepted agricultural practices as set forth in the U.S. Department of Agriculture Soil Conservation Service's farm conservation plan for farms in the area.

Typically, the terms of the conservation easements restrict the use of the property to single-family residences and agricultural and conservation purposes, such as wildlife observation and non-commercial outdoor recreation and hunting by the owner and guests. They prohibit inappropriate uses, such as commercial, institutional, and industrial uses except for certain, often historic, uses such as fish and shellfish harvesting. The easements incorporate specific best management parameters or practices for such traditional uses.

The conservation easements also define the extent of compatible development, such as the maximum number of homes, inns, amount of farmland, etc., and locate where they can and cannot be placed. In particular, the easements require a minimum distance of 500 feet between any building improvements and wetlands, waters, and perennial streams, based on the Conservancy's research concerning the needs of the watershed. The easements also define the use of existing woodlands, roads, and sometimes potential common amenities such as docks. Septic drainfields are required to be located at least 100 feet from any wetlands, tidal waters, or perennial streams. The easements generally do not contain any standards dealing with aesthetics.

This approach of buying property and reselling with conservation easements has been difficult and slow-going. Even though the easement program is both labor- capital-intensive, the program has been used successfully with many seaside farms. The new landowners have been able to continue to receive the economic value they need from the property, and resale values have not been adversely affected by the terms of the easements. In fact, to the extent that entire neighborhoods participate in the program, the conservation easements have tended to increase property values.

B. Brule River, Wisconsin — A Conservation Easement Program in a "Wilderness" Neighborhood to Preserve the Status Quo; The Need for Regular Monitoring and a Stewardship Endowment

Background

Along a nine-mile stretch of the Brule River in Wisconsin, there is a string of private lands within the Brule River State Forest. The private lands are mostly undeveloped, consisting of expensive second homes and vacation cabins which have generally been in family ownership for generations. This area contains one of Wisconsin's largest and highest-quality virgin pine forests, with many individual trees approaching 300 years of age, including Wisconsin's largest single white pine tree. The tall pines along the river provide nesting sites for a population of endangered bald eagles and ospreys, both of which hunt the Brule for fish. The area also contains one of the state's largest cedar swamps, with a population of the endangered tall white bog orchid. The unusually rich and diverse forest habitats along the river support more than 90 bird species, many of which are rare in the state.

Protection Strategy

Building on scientific research begun in the 1940s, The Nature Conservancy commissioned a thorough inventory and biological analysis of the area in 1979. The Conservancy then discussed the findings with the landowners in the project area.

This area is ideally suited for conservation easements. The historic use of the property for homes and recreation is consistent with the preservation of the plants and animals identified in the studies. None of the private lands contain fragile natural communities, and there is no need for active management or restoration. Though the status quo is acceptable for conservation purposes, there is the danger that in the absence of legally enforceable restrictions, one of the landowners will eventually develop the property. Each of the owners has an interest in getting its neighbors to agree to a conservation easement in order to preserve the natural character of the area and protect his or her own existing uses. When each landowner extends protection to the other, the conservation values in the whole neighborhood are protected and enhanced.

Conservation Easement Program

Negotiations with the landowners began in early 1981. To date, the Conservancy has acquired conservation easements protecting over 4,959 acres of these private lands from 17 different landowners, many of whom are different family members with varying interests. All of the easements have been donated to the Conservancy.

The owners agree to restrict commercial development, construction of new buildings, manipulation or degradation of the watercourses, off-road vehicle use, spraying, logging and mining. The owners reserve the right to continue to use the private homes and vacation cabins, and to continue to use the property for recreation. The easements do not require the owner to allow public access to the private land—an important point for these landowners since they occupy residences on the land.

There are still a few owners holding about 150 acres within the project area who have not donated easements, and the Conservancy continues to work with them to complete the project. As mentioned above, owners who have donated conservation easements help encourage their neighbors to do the same.

Monitoring

The Conservancy has invested a great deal of time and resources in monitoring the easements. At the beginning of the easement program, Conservancy staff visited sites in the easement area every three to four years to monitor compliance with the easements. However, these visits proved far too infrequent, and there were a number of relatively minor violations of the easements, which if not corrected, could have resulted in significant damage to the ecological features that the easements were aimed at protecting. For example, the Conservancy found that after a storm some of the owners frequently would clean up the property thinking it was an opportune time to harvest fallen timber, but they did not realize that this could result in harm to the ecosystem.

Conservancy staff now make personal visits once a year to all sites of concern within the easement area. This has been a crucial preventative measure. The Conservancy staff tour the property with the owner or caretaker in charge of managing the property, to spot any apparent violations and to answer any questions about management that the owner or caretaker might have. The baseline condition of each easement property is reflected in an easement documentation report, which the Conservancy and the landowner approved at the time the easement was originally donated. The Conservancy staff take these reports with them during the tours to enable them to compare the condition of the property and look for potential violations.

The Conservancy also discovered in these visits that many of the caretakers did not have copies of the conservation easements and were unaware of their terms. Therefore, the Conservancy made sure that all caretakers had the easements and the easement documentation reports. During the annual visits the Conservancy also often discovered that there had been a change in ownership and that the new owners were either unaware of the existence of the easement or unfamiliar with its terms. The conservation easements require the owner to notify the Conservancy of changes in ownership, but many owners often neglect to do so. The annual visits allow the Conservancy to detect these changes in ownership and work with the new owners to help them comply with the terms of the easements.

Stewardship Endowment

Establishing a stewardship endowment for each easement at the time the easement is acquired is one aspect of the program that the Conservancy did

not emphasize enough at the start—but is now focusing on. Monitoring easements is very personnel- and capital-intensive, and it is essential to have funds set aside for management at the time the easements are acquired. At the beginning of the program, the Conservancy encouraged the donors of the easements to contribute funds for stewardship in connection with their contributions of the easements, but did not always succeed in obtaining dedicated stewardship funds. Now the Conservancy generally solicits a stewardship endowment from the landowner or secures other sources of funds before it accepts an easement.

C. Hammond Homestead, Lake Clark, Alaska — Donation of Conservation Easement; Compatible Family Homesite

In the summer of 1991, in one of the first conservation easement transactions in Alaska, former Governor Jay Hammond and his wife Bella donated a conservation easement to The Nature Conservancy over half of their Lake Clark, Alaska, homestead. The Hammonds homesteaded 127 acres in the 1950s, raised their two daughters in a log home on the site, and returned to take up full-time residence after the governor's second term in office. The Hammonds wanted to permanently protect the land, but to continue to be able to enjoy it and allow their children to retain title to the land adjoining their home. Under the terms of the easement, the family will be able to continue traditional uses on the land, such as hiking and picking berries on the lakefront. Restrictions include construction of improvements, subdivision, building of roads and trails, changing of topography, and the planting of crops.

D. Flying D Ranch, Montana — Donation of a Conservation Easement Over a Large Landscape

Background

Turner Enterprises, Inc. owns 107,120 acres of land, which it calls the Flying D Ranch, located in the southwestern portion of Montana. Lying within the greater Yellowstone ecosystem, the property encompasses large, relatively intact, functioning natural systems. Two major rivers bound the ranch, and the numerous streams that flow through the property contain trout and a variety of aquatic species. The ranch is also host to a diversity of vegetation types including subalpine forests, meadows, juniper savannah, dryland grassland, and riparian corridors. It provides habitat for grizzly bears and supports a variety of big game species, such as elk, mule deer,

whitetail deer, black bear, and mountain lion, as well as raptor species including bald eagle, golden eagle, and prairie falcon. In addition to its wildlife values, the property contains a number of cultural resources.

Protection Strategy

In the late 1980s, The Nature Conservancy approached Turner Enterprises to explore ways to protect the land. The Conservancy wanted to ensure that the ranch would not be subdivided, resulting in the fragmentation and loss of the ecosystem, which is strategically located along the buffer of Yellowstone National Park. Turner Enterprises was interested in permanently preserving the ranch as long as it could continue existing uses and have the ability to undertake certain other limited uses in a manner compatible with conservation of its natural values.

In December 1989, Turner Enterprises donated a conservation easement over the entire 107,000-acre ranch to The Nature Conservancy to preserve the natural features of the property in perpetuity. The corporation also donated funds to pay for the easement documentation report and the Conservancy's stewardship start-up expenses. The easement restricts subdivision, development, and other uses of the property that are inconsistent with conservation and also specifically protects nesting habitats of rare and endangered raptors on the property.

Under the conservation easement, Turner Enterprises is able to continue traditional uses in a manner compatible with the conservation values of the property. These uses include:

- Farming, ranching, and other pre-existing agricultural uses in accordance with baseline levels;
- Recreational hunting of waterfowl and game animals and fishing by the principal shareholders and employees of the corporation and their families and guests, at levels that will not significantly reduce fish and wildlife populations;
- Limited guest ranching related to restricted fee hunting and fishing;
- Managed timber harvesting;
- Development of water resources for irrigation, and for domestic and recreation purposes; and
- Residential use by employees and principal shareholders of the corporation and their families.

At the time Turner Enterprises donated the easement, a number of bunkhouses and residences existed on the property, in addition to ranch improvements. The easement provides for the continued use by the corporation of these existing improvements and permits construction of a specified number of additional housing facilities for agricultural employees of the ranch and for limited guest ranching. The easement also allows for the construction of a specified number of additional personal residences. All of the additional structures must be located at mutually approved sites on the property and must be built in a manner harmonious with the surrounding countryside. Except for the replacement of any existing building with a structure of the same size and at the same location, and for construction of the limited number of new structures at approved sites, no other buildings can ever be placed on the property.

E. Hawaii — Conservation Easements with Positive Management Rights

Background

The rain forests and other native systems of Hawaii provide habitat for many rare birds, plants, and invertebrates found nowhere else in the world. Many of the Hawaiian forests have been converted to agricultural uses; and the remaining forests are greatly threatened by ungulate animals—namely goats, pigs, and deer—which were introduced to the islands some time ago.

Ownership of most of the private lands in Hawaii is concentrated in a number of very large corporations and trusts. The Nature Conservancy has been working with these large private owners—including Castle & Cooke, Amfac/JMB, Maui Land & Pineapple Company, the Campbell Estate, Haleakala Ranch, and Molokai Ranch—to protect the native habitats. Protection merely by setting aside lands for preserves without active management has not been successful in Hawaii. Therefore, the Conservancy's principal tools, in addition to fee acquisitions, are conservation easements granting the Conservancy affirmative management rights.

Conservation Easements with Positive Management Rights

Typically, these conservation easements give the Conservancy the right to build fences, control ungulates, regulate access, remove weeds, and conduct research. Exercise of these affirmative management rights can be enormously expensive. Fencing in remote areas, for instance, may cost up to

$50,000 per mile. Therefore, securing adequate funding for management is a major concern for the Conservancy and other conservation agencies in Hawaii.

Because of the importance of the watershed to their own agricultural lands and to urban development, private landowners are increasingly concerned about protecting the watershed from degradation by ungulates and invasive weeds. Consequently, they also often look to the Conservancy under the conservation easements to perform needed management. Recently, the Conservancy has entered into conservation easements that take an innovative approach to this problem; they give management rights to both the landowner and the Conservancy. Under these easements, the owner and the Conservancy agree on a management plan; and one designated party, after consulting with the other party, is responsible for implementing a watershed management plan.

The Conservancy also supported legislation that established a state program to provide incentives for management by private owners. A private owner who agrees to restrict his or her land permanently for conservation purposes can apply to the state to receive matching money for conservation management from the program. The Conservancy also supported legislation to increase funding and develop plans for the management of state lands, which neighbor the private lands, to increase the effectiveness of watershed management on public and private lands.

Some of the specific conservation easement projects in which The Nature Conservancy has been involved in Hawaii included the following:

Kamakou Preserve, Molokai. The Conservancy established this 2,774-acre preserve in 1982 through a perpetual conservation easement from Molokai Ranch, Ltd. The preserve protects native rain forest, shrublands, bogs, and dry forest and is habitat for five native forest birds and several endangered plant species. The preserve is also a key watershed for Molokai and is adjacent to state natural area reserve lands. Kamakou is managed by the Conservancy in cooperation with the State Division of Forestry and Wildlife. Portions of the preserve with maintained roads and trails are open to the public.

Waikamoi Preserve, Maui. The Conservancy established this 5,230-acre preserve in 1983 through a perpetual conservation easement from Haleakala

Ranch Company. The preserve protects native forest and shrubland, providing essential watershed for Maui, and is habitat for 12 Hawaiian birds and numerous other native species. Staff from the Conservancy and from the adjacent Haleakala National Park conduct regular guided hikes.

Kanepuu Preserve, Lanai. The Conservancy established this 584-acre preserve in 1991 through a perpetual conservation easement from Castle and Cooke, Inc. Kanepuu is the last significant remnant of a once-vast tropical dry-land forest on Lanai. Such forests, composed of unusual Hawaiian trees, once covered the lowlands in dry areas, but have been destroyed by fire and grazing throughout most of the state. The Conservancy is working to restore Kanepuu through fencing and replanting, and is also working to establish public access to the preserve.

Kapunakea Preserve, Maui. The Conservancy is working to establish a 1,200-acre preserve in 1991 through a perpetual conservation easement from Amfac/JMB Hawaii, Inc. Kapunakea is located in the West Maui mountains, which contain at least 127 different types of rare plants, animals, and natural communities—30 of which are known from nowhere else in the world. The native rain forests provide all of the fresh water for West Maui. Once the conservation easement is finalized, Conservancy staff will manage the preserve and assist with the management of the adjacent 8,000-acre Puu Kukui Watershed Management Area owned by Maui Land & Pineapple.

F. Elkhorn Slough, California — Partnership Acquisition of Undivided Interests with Later Land Division and Transfer of Interests

Background

Elkhorn Slough in Monterey County, California, is the second largest coastal estuary in the state. The belt of mudflats and marsh in the slough support tens of thousands of shorebirds in the winter, as well as numerous other species of birds, marine invertebrates, fish, plants, and animals. This area has also been traditionally used for agriculture, particularly strawberries, and some grazing.

The Nature Conservancy established a preserve in the slough in the early 1970s after heavy industry, including a generating plant at the mouth of the slough, was introduced to the area and began to threaten the slough's future.

The Conservancy has added to the preserve over the years through fee acquisitions and conservation easements, in most cases working in close partnership with the California Coastal Conservancy, a state agency.

Protection Strategy

Recently, the California Coastal Conservancy approached the Conservancy and expressed an interest in funding the acquisition and restoration of upland habitat in the Slough. The Nature Conservancy was able to negotiate the acquisition of a 150.6-acre tract containing wetlands and agricultural lands that are an important part of the watershed, in a partnership with the Coastal Conservancy and a local agricultural trust called the Monterey County Agricultural and Historic Land Conservancy. The transaction involves the division and compatible management of the property into a nature area and model farm. The coastal zone plan for the slough calls for maintaining the traditional agricultural uses and at the same time protecting the wetlands.

The Nature Conservancy is purchasing an undivided interest in the tract from the private owners, and the Agricultural Conservancy is purchasing the remaining undivided interest. The Coastal Conservancy is providing a cash grant, which will be allocated between The Nature Conservancy and the Agricultural Conservancy. The Agricultural Conservancy will deliver a promissory note for the balance of the purchase price (the total purchase price less the Coastal Conservancy's cash grant) to the seller with interest only at nine and one-half percent until the balance is due in five years. Repayment of the note is secured by a deed of trust on the entire property.

The acquisition of the property as tenants-in-common by The Nature Conservancy and the Agricultural Conservancy is essentially a holding mechanism pending subdivision of the property into two parcels with values reflecting the parties' respective percentage interests. Following the closing, The Nature Conservancy and the Agricultural Conservancy will subdivide the property into a wetlands and buffer parcel, and an agricultural parcel. After the subdivision is completed, The Nature Conservancy will transfer its undivided interest in the agricultural parcel to the Agricultural Conservancy, so that the Agricultural Conservancy owns the agricultural parcel in fee, and the Agricultural Conservancy will transfer its undivided interest in the wetlands and buffer parcel to The Nature Conservancy so that The Nature Conservancy will own the wetlands and buffer parcel in fee. At

that time, the seller agrees to release the deed of trust from the wetlands and buffer and encumber the agricultural parcel only.

Portions of the buffer and agricultural area are subject to leases for strawberry production, which The Nature Conservancy and the Agricultural Conservancy will renew until the note is repaid. Once the note is repaid, the leases will be terminated, and the Agricultural Conservancy will then establish the agricultural parcel as a model environmentally compatible farm in accordance with a management plan to be jointly prepared after the closing by both organizations. No strawberry or other farm operations will be conducted on the buffer after the leases are terminated.

G. Santa Cruz Island, California — Fee Acquisition Subject to a Restricted "Life Estate"

Background

Santa Cruz Island, the largest of the islands off the southern California coast, encompasses 62,000 acres. This rugged island in the Santa Barbara Channel supports spectacular biological diversity. It is home to over 625 types of plants, 217 species of birds, and 19 species of native reptiles, amphibians, and terrestrial mammals. Many of the species are endemic to the Channel Islands, such as the island fox, which is the smallest fox species in North America, and the Santa Cruz Island scrub jay.

Until the late 1970s most of the island was owned by the Santa Cruz Island Company, whose sole shareholders were two family members. The company had been formed in 1880 as an income generating venture on the island to graze livestock and also produce wine, wool, and other products for export. In addition to fee ownership of over 90 percent of the island, the company's principal assets were income from cattle grazing leases, income from producing oil and gas wells on and off the island, and income from other leases of portions of the island, including a transmitter facility. The two family members who owned the company were descendants of the individual who purchased the company from its founder's family in the 1930s.

Protection Strategy

In 1977, The Nature Conservancy negotiated the eventual acquisition of fee title to the company's holdings on the island, consisting of approximately

55,000 acres, subject to what amounted to a restricted "life estate" in one of the principal shareholders. This was achieved through a complicated series of related transactions, which generally consisted of the following:

- The Santa Cruz Island Company granted the Conservancy an option to purchase a conservation easement over the company's entire holdings on the island to preserve and protect in perpetuity the ecological features and natural values of the island.

- At the same time, the company granted the Conservancy an option to purchase fee title to the island subject to a deed reservation in the company for a term of 30 years in the southern portion of the island. The option to purchase fee title had to be exercised concurrently with the option to purchase the conservation easement.

- The Conservancy exercised the options and purchased the fee and conservation easement in 1978. The conservation easement over the northern portion of the island merged with the Conservancy's fee estate. Simultaneously with the purchases, the Conservancy leased-back the northern portion of island to the company, subject to the same restrictions as those contained in the conservation easement, for a term of 30 years. The conservation easement remained over the southern portion of the island, in which the Conservancy held a remainder interest subject to the company's term of years estate.

- Concurrently with its purchases of the property interests in the island, the Conservancy also purchased a majority of the stock of the company. The company used the purchase proceeds to redeem and retire all of the stock of one of the family members, leaving the other family member and the Conservancy as the sole shareholders.

The result of these transactions was that the Conservancy had an involved co-ownership relationship with the remaining family shareholder of the company for his lifetime. The shareholder retained control of the company, was able to continue compatible traditional activities on the island through the deed reservation and lease, and was able to retain participation in the income-producing leases through his stockholding in the company. The

Conservancy was able to manage the conservation features of the property through the lease restrictions covering the northern portion of the island and the conservation easement restrictions over the southern portion of the island.

When the shareholder died in 1987, all of the stock in the company passed to the Conservancy. As the sole shareholder of the company, the Conservancy then gained full control of the island preserve. Although the lease and term of years have not yet technically expired, they have no effect on the Conservancy's operations on the island since the Conservancy is, in effect, the same as the company. The Conservancy is now in the process of liquidating the company.

The Conservancy is restoring the island preserve to its pre-ranch state, the way that the Chumash Indians left it in the early 19th century when they were forcibly removed from the island. For over a century, thousands of feral sheep and pigs, together with cattle, had overgrazed the island, ravaging the native grasses and shrubs and seriously threatening the habitat of endemic species and other native wildlife. Through the removal of cattle and sheep from the preserve, the Conservancy has facilitated the regeneration of the native grasses and shrubs, including some which were believed to be on the brink of extinction. The results of the Conservancy's restoration efforts have been marked, particularly compared with the portion of the island that is held by another private owner and is still grazed.

The Conservancy maintains public access to the island. It conducts educational tours and collects fees from visitors to the island. Those fees are used in the management of the island.

H. Stillwater, Nevada — Acquisition of Water Rights and Transfer to Wetlands to Protect Waterfowl Habitat

Background

In one of the most important ecological sites along the inland portion of the Pacific Flyway, the Truckee and Carson rivers flow out of the High Sierra into the Great Basin Desert of Nevada, where they dissipate into two historically great wetland complexes.

The Carson River flows into the Stillwater/Lahontan Valley wetlands. Located in northern Nevada about 60 miles east of Reno, the Stillwater

National Wildlife Refuge and Management Area and the Lahontan Valley wetlands (the Stillwater ecosystem) represent the most critical wetland ecosystem in Nevada, and a key "stepping stone" in the Pacific Flyway. Stillwater supports one-half of the state's waterfowl, including 200,000 ducks, 10,000 geese, and one of the largest white-faced ibis nesting colonies in the West. In addition, Stillwater provides a foraging base for wintering bald eagles, peregrine falcons, and the great white pelican. Because of its large numbers of dowitchers (over one-third of the Pacific Flyways's total population), Stillwater has been designated as a Western Hemispheric Shore Bird Reserve—one of only 13 in the world.

Inextricably tied to the Stillwater wetland ecosystem is the Truckee River and Pyramid Lake Ecosystem. The Truckee River flows into Pyramid Lake, one of the unique aquatic sites and home of two species of fish: the cui-ui, on the federal Endangered Species List, and the Lahontan cutthroat trout, on the federal Threatened Species List. In addition, Anaho Island in Pyramid Lake is one of the largest white pelican rookeries in North America.

The Newlands Irrigation Project radically altered the water flows affecting these ecosystems. Built during the early part of this century, it is one of the oldest reclamation projects in the country and was the federal government's first effort at making the desert bloom. The project diverts water from the Truckee River to the Lahontan Reservoir on the Carson and supplies irrigation water for about 60,000 acres in the Lahontan Valley.

As a result of the project and increased water diversions for agricultural purposes, both Pyramid Lake and the Stillwater wetlands began to retreat. In 1973, as the result of litigation over the federally endangered cui-ui, a federal court ordered greater water efficiencies within the Newlands Project. While this benefited the Truckee River and Pyramid Lake ecosystems, the result of litigation, together with drought, accelerated the problems with for Stillwater. The Stillwater wetlands shrank to less than 5,000 acres from historic levels approaching 50,000 acres. This set up an apparent "fish versus ducks" conflict pitting one ecosystem (Pyramid Lake) against another (Stillwater).

In addition to the water problem, high concentrations of arsenic, boron, and other heavy minerals leached into soil from irrigated farm fields in the area and found their way into the "desert delta" ecosystem of the Lahontan

Valley, posing a toxicity problem of potentially major proportions. Due to the lack of water and the poisons, large numbers of fish and waterfowl began to perish. Seven million fish died in 1987, and waterfowl populations dropped to 40 percent of their normal levels. Many scientists feared that an ecological catastrophe was near at hand for both ecosystems.

At the same time, the Pyramid Lake Paiute Indian tribe was vigorously fighting to protect its cultural heritage in the ecosystem at Pyramid Lake. The maintenance of Truckee flows into the lake is critical to maintaining spawning habitat for the endangered cui-ui and to keeping the lake itself stable and healthy. The Paiute tribe depends on income from cutthroat-trout anglers at Pyramid Lake and views the cui-ui as a social and religious token. The Fallon Shoshone Paiute Indian tribe, which is smaller than the Pyramid Lake tribe, was also trying to protect its heritage at Stillwater.

Protection Strategy

The Nature Conservancy worked with government agencies, farmers, Native Americans, conservationists, and other interested parties to develop a concept that would provide the answer to the conflict: If total demand for water was reduced, both ecosystems could be preserved. In particular, the Conservancy determined that the most effective way of reducing demand was to acquire marginal farmland within the Newlands Project from willing sellers, retire the farmland, and then transport the resulting surplus water directly to Stillwater and the Lahontan Valley wetlands. This farmland include those with only marginal soils and those contributing heavily to toxicity. The Conservancy's plan received a significant boost when the state water engineer ruled that appropriative rights for irrigation water could be transferred to the wetlands, reversing a century of federal irrigation practice favoring agriculture over all other uses. This allowed the acquisition and delivery of the first water rights ever transferred for conservation purposes within a federal reclamation project.

Biologists estimate that approximately 55,000 acre-feet of clear, clean water is needed to maintain the Lahontan Valley wetlands at a size of approximately 26,000 acres. The Conservancy has worked for over two and one-half years to secure funds and acquire water rights needed for this project; the acquisitions are expected to take years more to complete. The Conservancy endorsed a $47 million state parks and wildlife bond issue (Nevada "Question 5") which will yield at least $5 million for the wetlands. The

Conservancy also supported the passage of major federal legislation in the Truckee-Carson Settlement Act, settling long-standing water disputes and resulting in another $16 million for the project.

Water Rights Acquisition and Transfer Program

Under the water rights acquisition program, farmers in the Stillwater area agree to sell their water rights to the Conservancy at fair market value, thereby reducing the draw on scarce water. Occasionally, the Conservancy buys the farmer's land as well and then sells it to another private landowner subject to a covenant not to re-irrigate with inactive water rights. The farmer is free to purchase active water rights to irrigate the farmland, but cannot effectively increase the present draw on the Truckee and Carson rivers.

The Conservancy is attempting to balance the needs of the farmers and other water users with the environmental needs of the Stillwater wetlands. The project addresses the economic and social concerns of farmers in the area by focusing only on marginal farmland.

In addition, the Conservancy has a working agreement with the Pyramid Lake Paiute Indian tribe, under which the tribe consents to this "cui-ui neutral" water-rights transfer plan. Under the agreement, the tribe will not protest the transfers as long as the water draw on Pyramid Lake is not increased (it is not under this water-rights transfer plan). In fact, the Conservancy has agreed to transfer the water rights at Stillwater at a reduced rate. That is, the Conservancy will only transfer so-called "eligible" water rights—the per-acre amount of the total water rights that is actually usable on the farm property which they belonged to. Eligible water rights are typically less than total actual water rights.

The Conservancy, which has been working closely with federal and state agencies in the project, will sell all of the water rights it purchases under this arrangement to the U.S. Fish and Wildlife Service (USFWS) and the Nevada Department of Wildlife at the Conservancy's cost. Many of the water rights have already been transferred to the USFWS. The Conservancy has acquired over $1.6 million worth of land and water (4,873 acre-feet) for the wetlands in Stillwater. Together with direct purchases of water rights by the USFWS, over 7,400 acre-feet of water has been saved for restoration of the wetlands.

5.2.6 Cooperative Transactions: Nonprofit Organizations and Government Agencies

A. Santa Rosa Plateau, California — Cooperative Acquisition Involving a Large Number of Parties and Mitigation Banking

Background

The Santa Rosa Plateau is a relatively undisturbed area in Riverside County, California, containing a number of rare and endangered plant communities including englemann oak woodland, native grasslands, riparian woodlands, and south coast mixed chaparral. Tenejas, deep stream bed pools, offer year round water for wildlife. Rare, threatened, or endangered species include mountain lions, golden eagles, California badgers, and the California gnatcatcher.

Riverside County is the fastest growing county in the state, and there is a great deal of pressure to develop the plateau. In 1984, after three years of negotiations, the Conservancy purchased two parcels totalling 3,100 acres of the Santa Rosa Plateau from a subsidiary of the Kaiser Aluminum Corporation for $5 million. The property was a small portion of the huge Rancho California community that Kaiser was developing. However, there still remained the threat of housing development on the rest of the plateau.

In 1990, a developer submitted plans to the County of Riverside to build more than 2,000 houses, an 18-hole golf course, a hotel, and stores on a 3,825-acre portion of the plateau called Santa Rosa Springs that bisected the two parcels owned by the Conservancy. The county granted the first of several approvals to build the project, but said that it also wanted to study possible ways to acquire the property. The State Wildlife Conservation Board had money appropriated to buy property in the area and expressed an interest in Santa Rosa Springs. The county formally requested that the Conservancy help negotiate a transaction.

Protection Strategy

At the same time the developer submitted its plans, the Metropolitan Water District of Southern California was planning a large reservoir project within the county. The water district knew that it would incur some mitigation obligations as a result of developing the reservoir. Therefore, the water district stated that it desired to contribute to the purchase of the Santa Rosa Springs property in order to establish a "mitigation bank" (see the discussion on mitigations in Part 4.2.2).

At first, the Conservancy thought it could buy the entire property and then convey undivided interests in the property in accordance with the proportion of funds contributed by the state, the county, and the water district. However, the water district intended to put the property in a trust to hold as a mitigation bank to fund whatever mitigation obligations were ultimately required in connection with the reservoir project. The other potential co-owners preferred that the water district own its portion outright rather than in trust.

Then, a parcel tax, which the county intended to use to fund the purchase, failed. As a result, the county needed to obtain municipal bond financing. The underwriter of the bond maintained that the county's property had to be used as collateral for repayment of the bond obligation, the other potential co-owners preferred not to have encumbered property.

Consequently, the Conservancy devised a way to divide physical ownership of the property in accordance with the financial contributions each party would make, and place the entire property under joint management.

Ultimately, all parties agreed to a complex deal involving habitat mitigation banking, municipal bond financing, appropriations of state bond funds, and private funds. The developer agreed to a sale price of $35.4 million plus 20 acres of non-conservation land owned by the Conservancy—a price well below the appraised value of $43.5 million for Santa Rosa Springs. Riverside County agreed to provide $15 million of the purchase price. The Metropolitan Water District of Southern California agreed to contribute $15.4 million of the purchase price. The state would provide $5 million in state bond money, while the Conservancy provided $300,000 in land and closing costs.

The purchase closed in April 1991, and the Conservancy conveyed the properties to the state, water district, and county. The Conservancy is managing the properties for the group, along with the 3,100-acre property it had previously purchased, as a single unit. The properties are now undergoing extensive restorative work by Conservancy land stewards.

This complex transaction represented the largest wilderness purchase ever made by Riverside County and the first time that the Metropolitan Water District of Southern California had ever banked land to replace natural areas it would later use for a reservoir project. The transaction was possible

because a variety of public agencies and private organizations were able to work together.

5.2.7 Fee Acquisitions

A. Diamond/Occidental Sale, Eastern States – Fee Acquisitions

Background

In the late 1980s, after Sir James Goldsmith acquired Diamond/Occidental, he began to sell the company's surplus real estate to pay for his purchase. The Nature Conservancy purchased or assisted in the purchase of several of the Diamond/Occidental properties that were put on the market.

Protection Strategies

Following are brief descriptions of some of those transactions, most reflecting interesting variations from straightforward fee acquisitions:

Sunkhaze Meadow, Maine. Sunkhaze Meadow, Maine, consist of approximately 10,500 acres encompassing one of the largest peatland systems in Maine and containing an excellent example of an inland bog. The Nature Conservancy purchased this property and re-sold it to the U.S. Fish and Wildlife Service (USFWS). This was the first purchase of ecologically valuable property by the Conservancy in the Diamond/Occidental sell-off.

Victory Bog, Vermont. Victory Bog in Vermont is a critical wildlife habitat for the great blue heron. At 7,600 acres, the bog is the largest level bog in northern New England and is located adjacent to a state fish and wildlife management area and a state forest. It is thus a very strategic site.

Diamond/Occidental included this property in a package sale of 89,000 acres in Vermont and New Hampshire. A purchaser came forward and entered into a contract to acquire the entire package. The Nature Conservancy was able to negotiate an arrangement with the contract purchaser to buy the Victory Bog property. The Conservancy then leased the property to the State Department of Forest, Parks and Recreation, while the department worked on obtaining financing to buy the property from the Conservancy. Six months later, the Vermont Housing and Conservation Fund provided the funds, and the Conservancy re-sold the property to the department at its cost. The department and the State Department of Fish and

Wildlife entered into a cooperative management agreement to manage the state forest and state management area as a single unit.

Nash Stream, New Hampshire. The Nash Stream property in New Hampshire consists of about 45,000 acres of Northern Forest timberlands and provides important habitat for rare plants. The State of New Hampshire, through its Land Conservation Investment Program, entered into an agreement to purchase the Nash Stream property from a contract purchaser of the Diamond/ Occidental properties for about $12,000,000. The state used about $8,000,000 of its own funds at closing to pay the purchase price; The Nature Conservancy and the Society for the Protection of New Hampshire Forests (a state land trust) loaned the balance of the purchase price to the state. The state agreed to grant a mortgage on the property to secure repayment of the loan to the contract purchaser. The state was able to repay the loan in nine months when it completed a sale of a conservation easement over the property to the USDA Forest Service.

B. Parrott Ranch, California — Federal/State/Private Partnership for a Large Cooperative Acquisition

Background

The Parrott Ranch is one of the largest contiguous wetland and riparian forest complexes remaining on the Sacramento River in California's Central Valley. It borders seven miles on unleveed river and is a critical part of the Pacific Flyway. Up to 30 percent of all wintering mallards in the Central Valley have been sighted on the property, more than 20 percent of all wood ducks in California spend at least part of the winter at the ranch, and 18 percent of all greater sandhill cranes migrate to California to winter at the ranch. The wetlands and riparian forests also provide habitat for a number of threatened and endangered species, including bald eagles, Swainson's hawk and the western yellow-billed cuckoo.

The Parrott Ranch, which consists of more than 18,000 acres, retains most of its natural contours, in contrast to almost all of the other farms in the valley. Historically, the ranch had been used for diversified range and agricultural purposes, such as livestock grazing, hog farms, almond orchards, rice fields, and row crops. The property also has been used for recreational purposes, as well as the production of natural gas. There is a significant gas field underlying the property, and a number of producing gas

wells are located on various portions of the ranch. Largely through the efforts of its owners, the ranch had retained its conservation values and presented an opportunity for restoration and preservation.

Protection Strategy

The Nature Conservancy, in cooperation with government agencies, approached the private owners of the ranch in 1988 to discuss possible protection of the property. The ranch had been in the Parrott family since 1861 and was held by a family-controlled corporation. The family members respected the strong family heritage in the ranch and wanted to maintain that heritage and the natural qualities of the property. However, they held differing interests with respect to future management of the property. Some owners wanted to sell the ranch and liquidate the corporation, while others wanted to continue to enjoy recreation on the property. Still others wanted to increase agricultural production and increase the profitability of the farm.

After nearly two years of negotiations, the Conservancy, in partnership with the U.S. Fish and Wildlife Service (USFWS), the California Wildlife Conservation Board (the State WCB), and the California Department of Fish and Game, reached a final agreement to purchase fee title and conservation easements covering approximately 14,000 acres of the ranch, for their appraised fair market value of $13.7 million. The transaction satisfied the various interests of the different owners. They received cash for the ranch and got it quickly; they were able to keep the corporation intact and retain 4,000 acres for agriculture; they retained the right to receive royalties from controlled oil and gas exploration; and they had the right to use some of the property for limited recreation. In return, the delicate riparian forest habitat was safeguarded against development through fee ownership and conservation easements held by public and private conservation entities.

The transaction represents one of the largest wetland/riparian forest conservation projects involving federal and state agencies and a private conservation group. In April 1991, the purchase of 13,494 acres in fee property and conservation easements from the Parrott corporation closed (the additional acreage was acquired in July 1991). The Conservancy purchased all of the property interests from the Parrott corporation as part of an advance acquisition for the federal and state government agencies pending their efforts to secure final funding. Then, in a series of separate closings several months later, when public funds became available, the Conservancy

transferred all of the property interests to the USFWS except for 1,521 acres in fee, which the Conservancy transferred to the State WCB, and also except for a conservation easement over approximately 2,951 acres, which the Conservancy will retain. (The final transfer from the Conservancy to the USFWS of a conservation easement over 3,490 acres is also pending.)

Funding for the purchase consisted of several sources, reflecting the division of public/private ownership. Eleven million dollars consisted of public funds, including $3 million contributed by the North American Wetlands Conservation Council, making this the first project to be funded by the 1989 North American Wetlands Conservation Council Act. The California Wildlife Conservation Board contributed $2.3 million of the public funds. The final $2.7 million was furnished by the Conservancy, which will seek to recover the funds expended through private donations.

Management

The property, including the 4,000 acres retained by Parrott, is managed as a single unit under a cooperative management agreement involving the Conservancy, Parrott, the USFWS, the State WCB, and Ducks Unlimited. The parties have also agreed to an overall conservation and restoration plan for the ranch. Under the agreement, they meet at least once a year to discuss management issues. In fact, the group has already met four times since the original closing and will most likely meet much more frequently than the annual meeting called for by the agreement.

The partners will undertake a huge restoration program on the fee and easement portions of the ranch acquired from Parrott. The long-term goal is to reestablish thousands of acres of riparian forest and oak savannah, wetlands, and native grasslands in areas where they historically existed on the ranch.

The Conservancy, USFWS, and State WCB will also work with Parrott and the other land managers to coordinate all permitted uses on the ranch, such as visitor use, trespass control, and gas development. For example, the Conservancy and Parrott have coordinated with an oil and gas company to ensure that future exploration and development of gas and minerals on the property are compatible with conservation of the property and the restoration objectives.

5.2.8 Conservation Buyers

A. Ruby Valley, Nevada — Conservation Buyers; Ranchlands and Wetlands

Background

The Ruby Valley in Elko County, Nevada, contains a large wetland complex. It provides vital breeding and migratory habitat for birds on the Pacific Flyway and numerous other waterfowl and shore birds, including trumpeter swans, white faced ibises, white pelicans, greater sandhill cranes, peregrine falcons, and redhead ducks.

Conservation Objectives

The Ruby Valley has been used for many years for livestock grazing, and the wetlands are often located within private ranches, which are subject to heavy grazing. In late 1987 and early 1988, The Nature Conservancy participated in two complex transactions involving conservation buyers. These transactions protected the wetlands and at the same time allowed the ranch activities to continue.

UX Ranch — Cooperative Purchase With Lease-Back and Option to Repurchase Subject to a Conservation Easement

Background. UX Ranch in the Ruby Valley contains approximately 3,584 acres consisting of part wetlands and part grazing land. In 1987, the UX Livestock Corporation, like many other ranchers in the valley, found itself in financial difficulty. The Federal Land Bank had a mortgage on the property, and the owner faced the possibility of foreclosure if it could not pay the loan. In addition, a private individual had loaned UX Livestock an additional $118,000, secured by a lien of the farm and ranch equipment.

Conservation Objectives. The Conservancy wished to protect the wetlands, and the American Farm Land Trust wanted to preserve the ranchland. The two joined in a cooperative purchase of the ranch in a transaction that protected the wetlands but at the same time preserved the ranchlands and gave the owner of the ranch the ability to continue its operations and the possibility of repurchasing the land.

Protection Strategy. The Conservancy and the Farm Land Trust purchased the entire ranch from UX Livestock in December 1987 for $300,000. They then leased the ranch portion of the property back to the seller. The lease

incorporated the terms of a conservation easement regulating grazing on the wetlands to be compatible with waterfowl use, and preserving the use of the ranchlands for ranch activities. The organizations also granted the seller an option to repurchase the entire property, including the wetlands, for the original purchase price adjusted by a small fixed annual increase, and subject to the reservation by the Conservancy and the Farm Land Trust of the conservation easement.

At the closing, the Federal Land Bank received $250,000 of the sales proceeds, and in an agreement reached with the Conservancy and the Farm Land Trust before the closing, agreed to cash out its note (absorbing a $50,000 discount) and reconvey its mortgage. The individual creditor also received $55,000 at closing. Before the closing, the Conservancy, the Farm Land Trust, and UX Livestock were able to negotiate a satisfactory restructuring of the farm debt with the individual creditor; and this payment represented the first installment in a payment schedule over time. Both the reconveyance of the mortgage by the Federal Land Bank and the restructuring of the debt from the individual creditor were express conditions to the closing of the purchase of the ranch by the Conservancy and the Farm Land Trust. UX Livestock paid the additional $5,000 over the purchase price necessary to satisfy the creditors, and did not receive any cash out of the transaction.

The Conservancy and the Farm Land Trust acquired the property as tenants-in-common, reflecting their percentage cash contributions in the transaction. The Conservancy acquired an undivided two-thirds interest in the ranch, while the Farm Land Trust acquired the remaining one-third. The organizations had many parallel interests, but did not share some interests. The Farm Land Trust wanted to preserve the ranch as a commercially viable operation—and that meant maximum grazing, while the Conservancy wanted to limit grazing to preserve the wetlands.

The two organizations entered into a cotenancy agreement to govern management of the property and provide a mechanism for coordinating their varying interests. Under the agreement, the Conservancy takes the lead on management decisions affecting the wetlands, while the Farm Land Trust takes the lead for the ranchlands. In the event either believes that a management decision made by the other party has an adverse impact on the area for which it is primarily responsible, the agreement provides for an arbitration procedure to resolve the dispute.

The lease-back to UX Livestock incorporated the restrictions of the conservation easement that UX Livestock would have to take subject to if it exercised its option to purchase. Under these restrictions, the property is divided into two zones: a wetlands zone and a ranchlands zone. Use of the ranchlands is only lightly restricted: UX Livestock could graze, range, and pasture cattle and other livestock within a baseline level and could perform any ranching activities. A building area for ranch improvements was provided. The ranchlands must stay in ranching use; however, the wetlands zone is very tightly restricted. UX Livestock can only graze during specified times of the year, so as not to conflict with bird migrations and nesting, and is prohibited from overgrazing. The company cannot plant any hay or other crops in the wetlands zone, which would convert wetlands to farm land. Oil and gas exploration is permitted on dry ground subject to approval by the Conservancy as to its exact location and further subject to strict requirements. UX Livestock pays only costs associated with land ownership under the lease (such as insurance, taxes, etc.) and does not pay any additional rent. Thus, economically, the lease works as if UX Livestock still owned the ranch.

The lease is coterminous with the option to repurchase. Under the option, UX Livestock has the right, at any time within five years after the closing of the purchase by the Conservancy and the Farm Trust, to repurchase the property for a price equal to the original purchase price, plus an additional $5,000 per year to cover financing costs. If UX Livestock exercises the option, the Conservancy and the Farm Trust reserve a conservation easement over the entire property, reflecting the two-zone scheme described above. If UX Livestock repurchases the property and then resells within three years, the Conservancy and the Farm Trust share in any profits. The purpose of this provision is to discourage speculation. If UX Livestock does not exercise the repurchase option, the Conservancy and the Farm Trust will attempt to resell the property on the open market to another conservation buyer willing to purchase subject to a conservation easement.

7-H Ranch — Purchase with Sale-Out of Ranchlands Subject to a Conservation Easement over Ranchlands and Restrictive Lease of Wetlands

Background. The 7-H Ranch is a 5,959-acre ranch in the Ruby Valley that, like UX Ranch, contains part wetlands and part ranchlands. The Travellers Insurance Company foreclosed on the ranch in the late 1980s.

5.2.8 Conservation Buyers

Protection Strategy. In August 1987, The Nature Conservancy entered into an option to purchase the entire ranch from Travellers, and during the option period arranged for the purchase of the ranchlands portion only by a conservation buyer from the Conservancy. In February 1988, the Conservancy purchased the ranch for $1,150,000 and simultaneously sold the ranchlands portion for $850,000 to the conservation buyer subject to a conservation easement. The Conservancy financed the conservation buyer's purchase of the ranchlands. The conservation buyer paid $140,000 in cash at the closing and delivered a note in the amount of $285,000, secured by a deed of trust on the ranchlands. The balance of the purchase price was paid by the conservation buyer's assignment of its interest as holder of a note in the amount of $425,000, secured by development property in Arizona. The Conservancy also cooperated with the conservation buyer in completing a tax-free exchange as part of the transaction. In addition to the land, the property purchased by the Conservancy included complicated water rights, an assignment of oil and gas leases, and valuable personal property.

Under the conservation easement over the ranchlands, there is a procedure to establish the appropriate level of grazing use within the first year of operations. The Conservancy determines the baseline level so that there is enough forage, but the conservation buyer has the right to take the determination to arbitration if it disagrees. This is a similar procedure to that incorporated into both the lease and conservation easement for UX Ranch.

The scope of ranching activities permitted on the ranchlands under the conservation easement is very broad. For instance, the conservation buyer is able to operate an existing airstrip and one non-commercial feedlot. The conservation easement prohibits clearly inappropriate uses, such as dumping, cutting trees, and mining.

The Conservancy simultaneously sold over time the wetlands to the Nevada Department of Wildlife (NDOW). In the sale of the ranchlands to the conservation buyer, NDOW reserved access easements over the ranchlands to get to and from the wetlands. NDOW also leased the wetlands for limited grazing purposes to the conservation buyer for 50 years, subject to conservation restrictions. When and where grazing can occur is tightly regulated, and there are also strict limitations on the level of grazing. The rent under the lease is fixed for the first 15 years, and then adjusts to market rent.

The Conservancy is now in the process of completing the transfer of all of its interest in the property (the fee interest in the wetlands and the conservation easement over the ranchlands) to NDOW. Shortly after the Conservancy's purchase of the ranch, the Conservancy transferred the water rights pertaining to the wetlands to NDOW, to facilitate NDOW's participation in a water rights adjudication in the valley. In February 1992, NDOW will make its final payment for the purchase of the wetlands from the Conservancy.

5.2.9 Tax Techniques

A. Kartchner Caverns, Arizona — Facilitating a Bargain Sale through Donor Recognition

Background

The Kartchner Caverns in southeastern Arizona, which consist of over two and one-half miles of caves, are of great geological significance. They are home to some of the world's longest stalactites—fragile, icicle-shaped deposits of a carbonate of lime formed over millions of years.

The discoverers of the caverns approached The Nature Conservancy to discuss possible ways to protect the caverns. The caverns and the ranchlands above them were owned by a family corporation, which was reluctant to sell. The Arizona Department of State Parks became interested in turning the caverns into a state park and opening them to carefully controlled public access over time. The department asked the Conservancy to negotiate a purchase of the caverns on the department's behalf.

Protection Strategy

In 1988, the Conservancy negotiated with the family owners a purchase option of the caverns and the appropriate area of overlying ranchland. The Conservancy offered to name the caverns after the family. The family had a proud heritage, and the preservation of the family name in association with the property that had been in their hands for generations appealed to them greatly. The family agreed to sell the property at a significantly reduced bargain sale price.

In addition, the Department of State Parks was able to use the bargain sale component of the option to get a much faster appropriation from the state legislature than it otherwise might have been able to. The reason was that

the term of the option was relatively short, and if the state legislature did not act quickly, it would lose the bargain sale opportunity. The department would probably be compelled to purchase at full fair market value in the future.

The department received the appropriation, and the Conservancy assigned the option to purchase the caverns to the state, which plans to open the caverns to the public for the first time in 1993. The purchase of the caverns was also instrumental in helping to pass state legislation to establish a dedicated fund capitalized by revenues from state parks for the acquisition and development of future state parks. The Kartchner Caverns will probably contribute substantially to the fund when the caverns open to the general public. State Parks anticipates that public visitation will be very high due to the statewide fame of the site.

B. Lehigh Pond, Pennsylvania — Combination Bargain Sale and Land Exchange

Background

Lehigh Pond, a 3,800-acre tract of land near the Pocono Mountains in eastern Pennsylvania, provides important waterfowl habitat and contains many rare plants. The Pennsylvania Game Commission was interested in acquiring the property from the developer who owned it, but the state had a very limited budget for acquisitions.

Protection Strategy

The property had appreciated in value since the developer originally purchased it, and the developer therefore had a very low cost basis in the property. The Nature Conservancy, in cooperation with the state, Ducks Unlimited, and the Wildlands Conservancy, negotiated to purchase the property from the developer on a bargain sale basis, using the charitable tax deduction for the gift portion as an incentive for the developer to sell the property for less than its fair market value. In addition, the Conservancy built in the possibility of a like-kind exchange of property, which the developer wanted.

The transaction also involved the payment of the purchase price in two installments, allowing the Conservancy and the state time to raise additional money, and also allowing the developer the opportunity to spread out the

gain on the sale over future tax years. To achieve this, the transaction was actually structured as two separate options: one on one half of the property, and the other, which would be exercisable a year later, on the other half. In October 1990, the Conservancy exercised the first option, closed on this property, and then, simultaneously with its acquisition, sold the property to the state. One year later, the Conservancy exercised the second option and acquired the property, and then at the second closing, simultaneously transferred the property to the state. The Conservancy provided some purchase money to make up a short-fall in the state's available public funds to allow the state to acquire the property under the first option.

5.2.10 Land Exchanges

A. Red Rock, Nevada — Land Exchange and Cash Sale

Background

The Red Rock Canyon Recreation Lands, located less than 25 miles west of Las Vegas, Nevada, contain outstanding natural features and provide habitat for desert tortoises and numerous other plants and animals, many of which are unique to the Southwest. Red Rock Canyon includes an important scientific preserve—the Pine Creek Research Natural Area—and also contains an important Indian archeological site. Red Rock's sheer 3,000-foot red-sandstone escarpment is a prominent natural and recreational feature in the Las Vegas Valley and attracts more than 500,000 visitors annually.

The area along the eastern boundary of Red Rock has long been subject to urban development pressure. Howard Hughes Properties, a subsidiary of Summa Corporation, owned 25,000 acres of land nestled in the Red Rock Canyons foothills, and in the early 1980s proposed building a planned community there called Summerlin, with a population of 250,000 people. Efforts to expand Red Rock to address the concern about development began in 1983 when agencies began an exhaustive search for suitable Bureau of Land Management (BLM) lands to trade with Howard Hughes Properties. In 1986, $3 million in Land and Water Conservation Fund monies were appropriated as part of an overall plan to protect 5,030 acres, including a key 439-acre parcel adjacent to the Red Rock Visitor's Center, through purchase of the land from Howard Hughes Properties. Although significant, the appropriation constituted only a portion of the market value of the 439-acre parcel.

Protection Strategy

In September 1988, after over five years of negotiations with Howard Hughes Properties, The Nature Conservancy, in cooperation with the BLM and other public agencies and private organizations, completed an innovative exchange and sale transaction that preserved the 5,303 acres of land (including the 439-acre parcel) to provide a buffer area between Summerlin and Red Rock. Under the exchange agreement worked out by the Conservancy, Howard Hughes Properties agreed to trade the 4,864-acre property along the eastern boundary of Red Rock in exchange for 3,768 acres of BLM land adjacent to Summerlin, but closer to Las Vegas. Under the sales agreement, the Hughes company agreed to sell the 439-acre parcel for substantially less than its fair market value. The BLM used $2.8 million of the 1986 Congressional appropriations toward the cash purchase.

Through the combination sale and exchange, Hughes in effect made a large gift to the BLM for the benefit of the public. In addition, as a pre-mitigation measure, the company agreed to place $620,000 in a permanent fund to be administered jointly by the BLM and the Nevada Department of Wildlife for protection of the desert tortoise.

B. Lyons Falls, New York — Exchange of Fee for Conservation Easements over Exchanged Land and Additional Land

Background

Lyons Falls consists of three tracts of land, totalling 17,000 acres, near the Adirondack Mountains in New York. It is part of a larger wild and scenic river corridor, and includes biologically diverse northern forest habitat. There is also significant public recreation use of the area, which has traditionally been used for timber harvesting.

Protection Strategy

The Nature Conservancy, in cooperation with the New York State Department of Environmental Conservation, worked with a local paper company to find a way to protect the land from being degraded while at the same time allowing economically viable timber harvesting to continue in the area in a manner compatible with conservation.

The Conservancy purchased two tracts of the Lyons Falls property from

private owners and transferred fee title to the property to the paper company, in exchange for conservation easements on those properties and a third tract of land. The paper company retained the timber rights on all three tracts, but agreed under the conservation easements to conduct all timber harvesting in accordance with the state's best management practices. The conservation easements also provided access to the three tracts for public recreation and prohibited any future development of the properties. The Conservancy then sold the conservation easements to the state at the Conservancy's cost.

The Conservancy was therefore able to use a land exchange to multiply the area protected. Since the primary threats to the area were development and uncontrolled timber harvesting, the conservation easements provided an adequate level of protection of the natural features, allowed the land to stay in private hands, and permitted the economic base of the area—timber harvesting—to continue in a manner compatible with long-term conservation. The transaction provided the additional benefit that the public was assured continued access for non-consumptive recreation.

5.2.11 Creative Financing Techniques

A. Ice Mountain, West Virginia — Nominal Down Payment and Short-Term Balloon Mortgage Loan from Seller

The Nature Conservancy identified a piece of property known as Ice Mountain in West Virginia that it wished to acquire from a developer. The developer wanted to sell the property immediately, but the Conservancy did not have the funds. The Conservancy put down a nominal sum to buy the property, and the developer transferred the deed and took back a note for virtually the entire purchase price, secured by a mortgage on the property. If the Conservancy could not obtain the money to repay the note at the end of one year, the Conservancy would reconvey the property to the developer in lieu of foreclosure. If, however, the Conservancy was able to raise the money, it could prepay the loan at any time within the one-year period and obtain title free of the lien of the mortgage.

B. Dickens-Lewis Farm, Rhode Island — Rolling Options

The Conservancy acquired a series of options on different portions of a single property, the Dickens-Lewis Farm in Rhode Island—each at a bargain sale. Each option was exercisable in successive one-year periods.

Except for the first option, the Conservancy could not exercise any subsequent option unless it closed on the prior option.

This strategy allowed the Conservancy time to raise funds for the acquisition and tied the property up so that no one else could buy it and develop it in the interim. It also gave the seller the opportunity to extend the time over which he could take an income tax deduction for the bargain sale, since the amount of the gift in each year exceeded the limit he was allowed to deduct as a percentage of gross income and he had to carry forward the deduction into later years.

C. Matagorda Island, Texas — Consecutive Partial Releases from Seller's Mortgage

Background

Matagorda Island snakes along the Texas Gulf Coast for 38 miles, and is one-half to four miles wide. It contains significant wetlands providing habitat for 320 species of birds, including endangered whooping cranes, threatened piping plovers, and brown pelicans. In the fall and spring, thousands of migrating birds descend on the island. It is also a staging area for the flight of migrating neo-tropical songbirds to and from Mexico and Central America.

Before 1985, ownership of the 50,500-acre island was divided into two distinct holdings. The northern part of the island, approximately 38,998 acres, was owned by the U.S. Fish and Wildlife Service (USFWS) and managed as the Matagorda Island State Park and Wildlife Management Area. The USFWS had acquired the property from the U.S. General Services Administration, which had in turn acquired the property from the Department of Defense. The Department of Defense had used the island as a bombing range during World War II and had abandoned the range after the war. The southern part of the island, consisting of approximately 11,502 acres, was held by a private owner. Except for an abandoned Air Force base on the northern part and a few ranch roads and buildings on the southern part, the island was largely undeveloped; however, like other coastal barrier islands in Texas, Matagorda was threatened by heavy development.

Protection Strategy

In 1985, the USFWS asked The Nature Conservancy to negotiate the pur-

chase of the southern half of the island, for the benefit of the USFWS, in order to complete the island's protection. The problem was that the USFWS did not have sufficient appropriations at the time to pay the full amount of the purchase price, and would probably not have the total funds needed for another three years. However, the Conservancy was able to structure a sales transaction with the private owner of the land that allowed the USFWS the time it needed to arrange for funding.

The Conservancy purchased the property in advance for eventual resale to the USFWS in the following manner. At the closing of the purchase and sale transaction, the Conservancy paid a portion of the total purchase price in cash and gave the seller a three-year note for the balance of the purchase price secured by a mortgage on the property. At closing, the Conservancy would receive title to a portion of the property on the extreme southern end of the island, equivalent in value to the cash portion of the purchase price, free of the mortgage. Then, in accordance with a partial release agreement spelled out in the mortgage, the Conservancy would make periodic payments of principal, and the seller would release a corresponding amount of the property from the mortgage. The Conservancy would make the principal payments to the seller as funds became available to the USFWS to purchase the property from the Conservancy.

Management

The island is now owned in its entirety by the USFWS. It is operated as a part of Aransas National Wildlife Refuge and is managed under a joint management agreement by the USFWS, Texas Parks and Wildlife, and the Texas General Lands Office, which administers all public lands of the state. The Conservancy leases the old family lodge on the island from the USFWS, and will fund the conversion of the lodge and an adjoining building into a research and educational facility. The Conservancy will bring schoolchildren and other members of the local community to the island to teach them about its ecological features.

5.3 Case Studies for Part 4 (Innovative Conservation Initiatives)

5.3.1 Debt-for-Nature Swap

A. Bolivia — Bilateral Debt-for-Nature Swap and National Conservation Trust Fund

Background

In August 1991, the governments of the United States and Bolivia completed two landmark bilateral debt-for-nature swap agreements under which the U.S. agreed to forgive a total of over $370 million of debt, or 81 percent of Bolivia's debt to the U.S. government. In exchange, Bolivia is converting a portion of the debt notes into local currency bonds, which the Bolivian government will give to *FONAMA* (*Fondo Nacional para el Medio Ambiente*, or National Fund for the Environment). This is the first national conservation trust fund in Latin America to provide ongoing capital for biodiversity conservation and sustainable development projects. The Nature Conservancy supported the establishment of *FONAMA*, which was created in December, 1990. The Conservancy is working to develop similar conservation trust funds in Colombia, Costa Rica, Jamaica, Panama, El Salvador, and the Dominican Republic.

Bilateral Debt-for-Nature Swap

The first of the two swap transactions forgives 80 percent of the $38 million in debt which Bolivia incurred through the U.S. Food for Peace initiative under the Enterprise for the Americas Initiative. The remaining 20 percent, or $7.6 million, will be repaid by Bolivia over 15 years. The Bolivian government will make annual interest payments worth $200,000 on the forgiven debt to *FONAMA*.

The second and larger transaction forgives $341 million in debt which Bolivia incurred through U.S. Agency for International Development assistance loans. In exchange, Bolivia has voluntarily agreed to issue a local currency bond worth $20 million, paying to *FONAMA* the equivalent of $2 million per year for ten years.

FONAMA — National Conservation Trust Fund

FONAMA is a multiple-purpose fund designed to support conservation activities in Bolivia. It acts both as a trust fund using interest and principal in bilateral debt-for-nature swaps and commercial bank debt-for-nature swaps, and as an investment fund for conservation projects financed mainly through donations from outside agencies and organizations.

NOTE:

All dollar amounts, acreages, and other figures in the case studies in Part 5 are approximate only.

The main objective of *FONAMA* is to collect and administer funds aimed at supporting projects to conserve the renewable natural resources of Bolivia. Funds currently support five main program areas:

(1) Sustainable use of renewable natural resources by promoting protection and management of species and ecosystems for productive purposes,
(2) Comprehensive basin management by promoting protection and management of catchment basins to maintain the integrity of rivers and streams,
(3) Research and education,
(4) Management of protected areas and preservation of biodiversity by supporting natural parks and management of other conservation units, and
(5) Development of communities associated with environmental program.

FONAMA is also considering programs involving environmental impact studies and environmental pollution control.

FONAMA coordinates an overall country plan for conservation and sustainable development. It structures its portfolio of environmental projects on the basis of findings made by the newly created office of the Secretary General of the Environment under the environmental action plan for Bolivia, developed in cooperation with the Bolivian Environmental Defense League. The overall country-wide plan is based on coordination of regional conservation units, which are combinations of management areas of significance in the conservation of species and ecosystems in a specific region. In addition to coordinating the natural environmental plan, *FONAMA* lends support to both international donor agencies and implementing local agencies.

FONAMA is structured to act as an independent umbrella trust with sub-accounts responsive to specific programs or donors, such as the Enterprise for the Americas. In addition to various governmental representatives and academic institutions, three conservation organizations serve on the administering board of the *FONAMA*, including the Bolivian Indigenous Peoples Federation.

The sub-accounts within *FONAMA* are its basic operating units. Bilateral

debt donations and commercial debt donations are converted into local bonds, and the interest generated by the bonds, as well as the principal, are deposited into separate accounts. Each account is administered by an administrative council consisting of representatives from *FONAMA*, the office of the Secretary General of the Environment, donor agencies or organizations, and local organizations carrying out projects financed by that account. It is at the administrative council level that decisions are made regarding the operation and implementation of specific environmental projects. Any public or private Bolivian organization can participate in *FONAMA* projects by requesting (1) funds to carry out a specific project, (2) authorization to purchase commercial debt and open an account, or (3) authorization to provide other technical assistance to carry out projects.

Although Bolivia is the second poorest country in the Northern Hemisphere, the government has supported the program, recognizing that sustainable resource management must be integrated into any sustainable economic system. The government has also actively solicited involvement by private conservation organizations and indigenous peoples.

FONAMA reflects a recognition that protection alone is insufficient to conserve natural resources in the long run. As mentioned above, monies from *FONAMA* support environmental education, training, scientific research, and compatible economic development activities to ensure a mutually beneficial balance between protected areas and the people that live in and around them.

The Conservancy, in addition to helping establish *FONAMA*, played a key role in forming a coalition of U.S. environmental groups that helped achieve successful passage of Congressional legislation in 1990 authorizing the U.S. to negotiate arrangements with selected Latin American and Caribbean countries to reduce loans made under the P.L. 480 Food for Peace Program, and through this restructuring, make funds available to environmental programs.

B. Costa Rica — National Resources Conservation Fund; Use of Funds Produced by Commercial Bank Debt-for-Nature Swap

Background

Costa Rica has 12 different ecological zones ranging from dense rain forests to high-elevation sub-alpine meadows—all packed into a small coun-

try about the size of West Virginia. It harbors 10,000 plant species, over 200 species of mammals, and more bird species than are found in the U.S. and Canada combined. A comprehensive national system protects about 11 percent of Costa Rica's territory in national parks and another 14 percent in some form of protected reserve. Nevertheless, the rate of tropical forest-destruction in Costa Rica is the highest in all of Latin America. Moreover, many of the protected areas are still heavily used by loggers and miners and are often burned and deforested. Rangers are underpaid, poorly trained, and poorly equipped to manage the protected areas. These problems exist throughout Latin America.

Framework for Debt-for-Nature Swaps

In 1987, Costa Rica created an institutional framework to allow for the pooling of funds from donors of public foreign debt in order to finance protection of Costa Rica's national parks and equivalent resources, as well as a multitude of other conservation programs. Acting through the Central Bank of Costa Rica and the Ministry of Industry, Energy, and Mining, the Costa Rican government entered into a debt-for-nature agreement with the National Parks Foundation, a leading private conservation organization, and the Costa Rican Cooperative Bank (BANCOOP), an intermediary bank. The purpose was to exchange up to $5.4 million aggregate face value of public foreign debt for local monetary stabilization bonds. The key part of the agreement is that the proceeds of the bonds are devoted to the establishment of a Natural Resources Conservation Fund.

The debt-for-nature swap agreement provided for very favorable leveraging of conservation dollars for donor organizations. Under the agreement, the government committed to exchange each dollar of donated public debt for local currency bonds worth 75 cents. Because Costa Rican debt was then selling for about 17 cents on the dollar on the secondary market, conservation organizations could buy the debt and donate it to the National Parks Foundation at a discount of more than 88 percent.

The local bonds issued by the government in exchange for the retired debt have a maturity of at least two years more than the retired debt. Only the interest payments are immediately available to fund conservation projects, because the bonds cannot be sold. Principal on each bond begins being paid in the second year of the bond. When the local conservation organization needs more cash, however, the bonds may be used as collateral for loans.

BANCOOP, the intermediary bank, administers the fund on behalf of the National Parks Foundation. The foundation channels monies from the fund to qualified public and private agencies involved in natural resources management and protection, for projects agreed upon by the donors and the Ministry of Natural Resources. The funds are being used to expand, manage, and protect many of Costa Rica's protected areas, building up the infrastructure for eco-tourism and scientific research. The fixed costs of the protected areas, already set by law, take up 90 percent of the public funds budgeted.

Use of Proceeds from Commercial Bank Debt-for-Nature Swap

In 1989, The Nature Conservancy, working with American Express, brokered a $5.6 million swap for the National Parks Foundation. The Costa Rican debt was purchased from the original lenders for the discounted rate of 13 cents on the dollar.

The swap money is being used for the following programs:

- Braulio Carillo National Park will receive continued support for 17 park guards protecting the 100,000 acres of rain forest within the park;
- The marine-turtle protection project undertaken by the Boy Scouts of Costa Rica will continue to provide around-the-clock guard service of the nesting beaches during the nesting season;
- Five years of funding will be provided for the operating budget of the Conservation Data Center;
- The National Parks Foundation and the Neotropical Foundation were able to begin endowment funds to support their basic operating costs; and
- With the Conservancy's help, Costa Rica is now creating a $50 million "conservation superfund" to support land acquisition and management of programs that will protect natural parks.

Public Education

An essential part of the Costa Rican debt-for-nature program is that it is driven by local citizens and organizations. International conservation organizations, like The Nature Conservancy, work with the local community so that people can see the value that the protected areas will have for them.

In addition, local conservation organizations participate actively in the debt swaps, proposing and administering the programs that are funded.

C. Ecuador — Cooperative Debt-for-Nature Swap With a Consortium of Commercial Banks

Background

Ecuador holds a wide variety of ecological riches. Its Amazonian rain forests, Andean highlands, coastal savannah and mangrove forests, and Galapagos Islands are home to more than 1,400 species of birds, up to 20,000 species of plants, and various endangered animal species, such as the spectacled bear, mountain tapir, and the jaguar. Many of its many plants and animals live nowhere else in the world.

Debt-for-Nature Swap

In October 1987, *Fundacion Natura* (the Foundation), the leading private environmental conservation group in Ecuador, entered into a debt-for-nature agreement with the government's monetary board to exchange up to $10 million in national debt for local currency bonds. The interest on these bonds is used to finance the Foundations's broad range of activities in conserving and improving Ecuador's national parks.

Subsequent to the execution of the debt-for-nature agreement, The Nature Conservancy and the World Wildlife Fund (WWF) jointly purchased $9 million of Ecuadorian debt from a consortium of New York banks at 12 cents on the dollar. The Conservancy and the WWF then donated this debt to the Foundation, which subsequently swapped the debt at the government's central bank for $9 million worth of local currency bonds maturing over the next seven years. Each dollar invested resulted in over eight dollars of new conservation capital, which in turn generated interest and principal payments for the life of the new debt instrument.

The Foundation is not the exclusive beneficiary of the conservation funds. It serves as a conduit to support conservation efforts involving other non-governmental groups and public programs. Specifically, interest payable on the local lands is used by the Foundation to finance the following activities:

- Protection and management of protected areas and their buffer zones (such as demarcation of boundaries, elaboration of management plans, management of selected species), development of park infrastructure, nature interpretation, general environmental education, and sustainable use of natural resources;
- Identification, acquisition, and management of small nature reserves to protect areas of high biological diversity;
- Training of Ecuadorian park personnel through the organization and implementation of in-country workshops, field courses, and related activities to improve the local capacity for protecting and managing Ecuador's natural resources; and
- Research and information management to identify and analyze the status and location of the endangered species and ecosystems in Ecuador.

The donor conservation organization and the Foundation agree on specific projects, within the framework of national policies, consistent with the Foundation's and donor organization's objectives and purposes. Upon maturity, the principal of the bonds will be used by the Foundation to endow its future activities.

In Ecuador's 1.6-million acre Condor Reserve, The Nature Conservancy is working directly with the Ecuadorian Park Service, the Foundation, and other local partner organizations to develop community outreach and education programs that will promote eco-tourism and local cottage industries. In addition, the Conservancy is experimenting with agro-forestry techniques and new wildlife harvest techniques in the reserve to allow these traditional activities to continue without harming the ecological health of the reserve.

D. Controller's Trust, California — "Debt-for-Nature" Swap to Create State Land Trust; Long-Term Lease for Conservation Management

Background

In October 1975, a 13-year acrimonious lawsuit began between the California State Controller and the Bank of America when the controller demanded payment from the bank for service charges that the bank deducted from dormant accounts. The bank filed suit, and the controller filed a countersuit alleging that the bank had illegally deducted service charges

from the accounts of customers with whom the bank had lost contact and that the bank had failed to turn over abandoned accounts to the state. In 1980, the court ruled against the bank; however, there still remained the question of the amount of the damages. The controller and the bank fought bitterly over the issue for nearly seven years. The bank paid $25.4 million as a partial settlement in 1985, but could not reach agreement over the approximately $53 million that the controller contended the bank still owed.

In 1987, the controller proposed that the bank pay part of the damages by contributing environmentally sensitive lands that it had accumulated in its portfolio as a result of foreclosures on agricultural and development loans. The concept became stuck in the execution stage because the controller's office had no mandate to manage land, and the variety of the land itself would have meant that many different state land-management agencies would have been involved. The delicate settlement negotiations would probably not have survived this complication. Also, there was tremendous local opposition to state management of the largest piece of land involved (the 30,000-acre Dye Creek Ranch). The Nature Conservancy, after reviewing a list of potential properties, offered to manage all the properties and to work with the local opposition to address its concerns.

Debt-for-Nature Swap to Establish Trust

The result was that the bank agreed to pay the $53 million balance of the settlement by transferring $35.7 million in cash to the controller and approximately 41,000 acres of valuable wildlife lands with a book value of $17.2 million to the Controller's Trust, administered jointly by the Tehama County Bank and the Bank of California, as co-trustees for the benefit of the State of California. The deal was called California's first debt-for-nature swap.

Long-Term Management Lease

In 1988, several months following the settlement, the bank co-trustees entered into a long-term management lease with the Conservancy, under which the Conservancy agreed to manage all of the properties in the Controller's Trust. The properties consisted of blue oak woodland and mixed riparian forest in Tehama and Sonoma counties, and redwood forest in Santa Cruz County. The stated purpose of the lease is to protect, restore, and enhance the properties in the Controller's Trust and to encourage compatible recreational, agricultural, and educational uses by the pub-

lic. Under the lease, the Conservancy agrees to pay all real property taxes and other costs of managing the properties, and is given broad management authority and the right to collect revenues from compatible uses of the properties and apply it to management of the properties. The term of the lease is 25 years, with successive automatic ten-year renewals, unless either party elects to terminate before the then-current term expires.

Before entering into the lease, the Conservancy met with Tehama County residents who had been vehemently opposed to state ownership of lands in their community. The local community was concerned primarily about the loss of property taxes, and the Conservancy agreed to pay the taxes. The community was also worried that the property would no longer be available for cattle grazing. The Conservancy worked out a way to allow grazing on the property to continue, to the extent that it was compatible with protection of the blue oak woodland. Finally, the local community feared that waterfowl, deer, and pig hunting would be discontinued, and the Conservancy devised a way to allow them to continue to hunt without harming the natural values of the property.

The Conservancy manages the properties by using income generated from compatible uses, such as controlled cattle grazing and hunting, on some of the properties in the Controller's Trust. Dye Creek in Tehama County is an example. It is a 38,000-acre area of blue oak woodlands between the foothills of the Sierra Nevada and Cascade ranges and the lowlands of the Sacramento River valley, and it is home to peregrine and prairie falcons, golden eagles, cooper's hawk, numerous waterfowl, and mule deer. The Conservancy subleases portions of the property to a cattle company and a hunt club, both of which must use the property in a manner compatible with the ecological values of the land. The Conservancy also allows public access for non-consumptive uses, such as naturalist-led walks and explorations.

An essential aspect of the lease is that the Conservancy can use funds generated from compatible uses on one property to manage and restore other, more ecologically sensitive lands in the trust. The monies generated by Dye Creek have helped finance much of the management and restoration of the other properties. This is important, particularly since the management needs of some properties may be less than the income they produce.

The Conservancy prepares a management plan for each of the properties

every five years. It develops the plan with informal consultation with an advisory committee designated jointly by the State Controller and the Conservancy.

5.3.2 Public/Private Partnerships

A. Preservation 2000, Florida — Public/Private Partnerships Promoted by Multi-Billion-Dollar State Land Preservation Fund; Statewide Project-Selection Mechanism

Background

Preservation 2000 is a statewide program to conserve Florida's natural heritage using a $3 billion land preservation fund based on $300 million in yearly bonded funds over a ten-year period from 1990 to 2000. It has promoted a number of partnerships between state and local agencies and private conservation organizations to fulfill its purpose.

In 1990, the Florida legislature provided funding for the first year of the program through an increase in the debt portion of the state documentary stamp tax. The legislature allocated annual funding among seven existing programs as follows:

Conservation and Recreation Lands ("CARL")	50%
Save Our Rivers	30%
Florida Communities Trust (urban matching)	10%
Parks Inholdings and Additions	3%
Forestry Inholdings and Additions	3%
Game & Freshwater Fish Inholdings & Additions	3%
Rails to Trails	1%

CARL is the state's largest land preservation program and receives one-half of the annual Preservation 2000 funds. CARL was established to acquire "environmentally endangered lands" or other lands serving the following public purposes:

(1) Protection of natural floodplain, marsh, or estuary where necessary to protect water quality or fish and wildlife habitat;
(2) State parks, recreation areas, public beaches, state forests, wilderness areas, or wildlife management areas;
(3) Restoration of altered ecosystems; and
(4) Preservation of significant historic or archeological sites. The

Division of State Lands uses CARL funds to acquire conservation lands.

How the CARL Project Selection Process Works

The State of Florida has developed a long and competitive process of review and approval of potential acquisition projects. That process, which involves the Land Acquisition Advisory Council, consists of the following general steps:

Project Proposals. Project proposals are made to a Land Acquisition Selection Committee, which is an arm of the Advisory Council. The committee includes six members from various state-government conservation agencies. Project applications are accepted from any source, including state agencies, local governments, nonprofit organizations, and landowners. Committee members listen to public presentations of project proposals before making any preliminary selections of projects for further review.

Preliminary Selections. After the public presentations, the committee votes to make preliminary selections of projects. A vote of three out of the six total committee members is needed. The Florida Natural Areas Inventory provides a professional analysis of environmental values and standard mapping services. The Department of Natural Resources also furnishes a written assessment of resources, use, and acquisition for each potential site. Committee staff review projects according to various criteria (e.g., endangerment, cost, ease of acquisition, etc.). The committee then takes a second vote, and those projects that are approved move on to the initial project design phase. The staff of the Division of State Lands conducts the project design and focuses on the details of land acquisition.

Public Meetings and Final Selections. More public meetings and testimony are provided for the projects that have received preliminary approval from the committee before it makes final selections. Four out of the six committee members must vote to approve a project for it to be finally approved.

Rankings. The committee then ranks the approved projects by tallying independent rankings made by each committee member.

Approval. Finally, the board of trustees of the Internal Improvement Trust Fund (the governor and cabinet) review all ranked projects and approve or

disapprove them. After board approval, the Division of State Lands can then proceed to negotiate the acquisition. The final terms of the negotiations must again be approved by the trustees.

Conservation Initiatives

The Nature Conservancy and the Florida Audubon Society have worked closely with the state agencies involved in the project application and ranking processes. The Conservancy has also purchased a number of the approved sites in cooperation with the state and then transferred them to government agencies. The following are a few examples:

- In November 1990, the Department of Natural Resources (DNR) and Sarasota County, in cooperation with the Conservancy, completed the first Preservation 2000 project, by purchasing for $11.8 million a 914-acre addition that quadrupled the size of the Oscar Scherer State Recreation Area. This site is one of the last remaining habitats for the federally threatened scrub jay.

- In December 1990, the Conservancy transferred to Brevard County a 237-acre property called the Enchanted Forest near Titusville. The Conservancy had purchased the property from its owners for $3.9 million. The property is the home of century-old oak trees and several imperiled species, and before the Conservancy's acquisition was to be developed into an industrial park.

- In May 1991, the DNR, in cooperation with the Conservancy, contracted to purchase for $7 million the 365-acre Curry Hammocks in Martin County. The property, which contains a virgin strand of tropical hardwood hammock, consists of two miles of undeveloped shoreline along the Atlantic and Gulf of Mexico. The area is threatened by development.

- In June 1991, the Conservancy, at the request of the Suwannee River Water Management District, purchased 4,610 acres that protect the headwaters of the Steinhatchee River, for $1.49 million. The district had asked the Conservancy to purchase the property before the end of June because the seller needed to complete the transaction by the end of its fiscal year.

- In September 1991, the South Florida Water Management District, in partnership with the Conservancy, purchased 3,663 acres within the Corkscrew Regional Ecosystem Watershed for $2.05 million. The property contains more than 500 acres of freshwater marsh and is critical to the ecological health of the adjacent Corkscrew Sanctuary.

B. Coachella Valley, California — Public/Private Partnership Born out of Regional Habitat Conservation Plan

Background

Development of Palm Springs in Riverside County, California, started in the 1920s and the 1930s, and accelerated in the 1940s. With time, the developments began to expand from Palm Springs to the center of the Coachella Valley, which is roughly ten miles east of the city. By the early 1970s, the valley was being developed at a rate of about two and one-half square miles a year, and a study by the University of California at Riverside determined that the entire valley floor would be built out by the turn of the century. Major wildlife corridors were being eliminated, and the study proposed creating a permanent preserve to halt the rapid decline in populations of the endemic Coachella Valley fringe-toed lizard and other desert wildlife. In 1980, so much of the desert habitat had been lost that the U.S. Fish and Wildlife Service (USFWS) emergency-listed the lizard as an endangered species under the Endangered Species Act.

Since the lizard was found throughout the Coachella Valley, all future developments were placed in jeopardy because they might illegally damage lizard habitat by virtue of the prohibitions against "takings" of listed species under the act. An estimated $19 billion of development was at stake. A six-year controversy began, pitting developers, the county, and the cities in the valley on one side, and environmentalists and the USFWS on the other. The conflict also embraced a multitude of other interest groups involved in land-use decisions affecting the valley.

Environmentalists wanted compensation for the project and assurances that the lizard would be protected by a nature preserve, as recommended by the earlier university study. They demanded that the developers provide one acre of dedicated lizard habitat for each acre of land developed. The developers were unwilling to accept this proposal because they believed it far too onerous and calculated that it would cost them less to fight the restrictions

in court than to surrender expensive land. The county and the cities were concerned about housing needs and losses in public revenues that would result from prohibition of future development. The USFWS seemed prepared to hold off on its approvals until a satisfactory solution was arrived at, and the developers were bracing for a long court battle.

Regional Habitat Conservation Plan

By late 1983 the conflict seemed irreconcilable, and the parties appeared to be headed irreversibly toward litigation. However, based on a then-new and seldom-used amendment to the Endangered Species Act allowing for incidental takes under a habitat conservation plan (HCP), The Nature Conservancy, working with the USFWS and the other parties involved, developed a basic solution: Use the HCP mechanism under the Endangered Species Act to establish a large preserve for the fringe-toed lizard with sufficient habitat and buffer area so that the lizard would be permanently protected, and then allow development to continue in the rest of the Coachella Valley. This plan entailed some loss of habitat in areas of greatest development pressure, but the trade-off would be a secure, perpetual preserve for the lizard.

The Conservancy obtained a grant to undertake an extensive scientific study of the entire Coachella Valley to identify suitable habitat for the lizard under the HCP. The general concept of a preserve was acceptable to all of the parties from the outset; however, the questions of how to form the preserve and where to get the money were more difficult matters. The area identified by the Conservancy's study as the ideal preserve consisted of about 13,000 acres in dozens of different ownerships. A steering committee was formed to study possible ways to address the problem of putting the preserve together. The committee consisted of 35 people who reflected the wide range of interests at stake, including representatives from cities, environmental groups, developers, and government agencies.

One idea the steering committee had was that the Bureau of Land Management (BLM) exchange its surplus lands with the private owners in the proposed preserve. But the BLM was unwilling to shoulder the entire financial responsibility for the plan and contribute the $20 million necessary to implement it.

The Nature Conservancy created a mechanism for achieving the preserve based on the concept that if a number of other parties participated on an

incremental and coordinated basis, then the BLM could provide enough exchange land to make the HCP work. Basically, the Conservancy acted as a catalyst for the parties.

The funding participation plan was as follows. The USFWS contributed $10 million through a Congressional appropriation, and the BLM contributed $5 million worth of exchange land. The California Department of Fish and Game and the Wildlife Conservation Board had already purchased $1 million of land and committed to $1 million in additional funds. The Conservancy would raise $2 million to match a grant provided by the Richard King Mellon Foundation, and the developers would pay mitigation fees totalling $7 million.

The developers objected to the mitigation fees, but they wanted certainty and speed—the ability to proceed with their projects on the basis of predetermined costs and without fear of a sudden injunction. The Conservancy was able to get the unanimous consent of the developers to the plan.

This solution benefited all of the interest groups. The environmentalists and the USFWS secured a permanent preserve, and the developers and the county and cities were able to provide needed housing for the public.

By the spring of 1986, all of the funding necessary to create the preserve under the HCP was in hand. The Conservancy was able to negotiate fee acquisitions of most of the land, which the Conservancy then conveyed to public agencies. The Coachella Valley Preserve represents one of the first successful implementations of a regional HCP under the Endangered Species Act.

C. Las Vegas Valley, Nevada — Public/Private Partnership Born out of Regional Habitat Conservation Plan for the Desert Tortoise

Background

For some time, scientists have been concerned about the declining numbers of desert tortoises throughout their range in the American Southwest. A respiratory disease, combined with accelerating loss of habitat, caused massive deaths of desert tortoises in the late 1980s. On August 4, 1989, the U.S. Fish and Wildlife Service (USFWS) emergency-listed the desert tortoise as a federally endangered species.

The emergency listing of the desert tortoise brought all development in the Las Vegas Valley of Nevada to an immediate halt. Under Section 10 of the Endangered Species Act, if an endangered species or its habitat is harmed, mitigation is required in accordance with a habitat conservation plan before any development permits can be granted. Housing developments were planned for much of tortoise habitat found in most urban areas of the Las Vegas Valley, and the bulldozing necessary to construct the houses directly threatened the desert tortoises, as well as the loss of habitat and the increased road traffic that the completed houses would cause. The construction of schools, homes, roads, sewer lines, power lines, office buildings, water mains, hospitals, and countless other development projects were at stake, as were thousands of jobs and millions of dollars. The result was an impasse which deeply divided the community.

Regional Habitat Conservation Plan

After two years of negotiations, The Nature Conservancy, working together with the USFWS, developers, ranchers, business leaders, other conservationists, Clark County, and the cities of Las Vegas, North Las Vegas, Henderson, and Boulder City, developed a short-term habitat conservation plan (HCP) for the desert tortoise. The HCP was acceptable to all the parties and provided for both the long-term preservation of the desert tortoise as a species and the continued balanced growth in the Las Vegas Valley. The HCP was based on a simple premise. In exchange for allowing the development of 22,352 acres in the central part of Clark County to proceed over a three-year period, at least 400,000 acres of high-quality desert tortoise habitat must be perpetually preserved in the outlying areas of the county.

The biological recommendations contained in the short-term HCP were developed by a technical advisory committee (TAC) established by the county. The members of the TAC were leading biologists from all over the country specializing in desert tortoises. The biological recommendations made by the TAC were reviewed and debated by a desert tortoise steering committee before those recommendations were incorporated into the short-term HCP.

The steering committee, organized under the leadership of the county, gave all of the affected interest groups involved in the controversy an opportunity to participate in the resolution of the problem. In addition to represen-

tatives of Clark County, the steering committee was comprised of representatives of city government (Las Vegas, North Las Vegas, Henderson, Boulder City, and Mesquite), state government agencies, the USFWS, the Nevada Department of Wildlife, the Bureau of Land Management, multiple user groups, conservation groups (including the Conservancy), environmentalists, Southern Nevada Homebuilders, Nevada Cattlemen's Association, and other local businesses. The steering committee met monthly for two years before adopting the short-term HCP.

In August 1991, the USFWS formally approved the short-term HCP by issuing a short-term 10(a)1(B) permit to the county and the cities. That permit allows the county and the cities to approve construction permits for developments within the 22,353-acre area identified in the HCP, subject to its mitigation terms.

Under the short-term HCP, the county and the cities will impose a $550-per-acre mitigation fee on developers in order for them to obtain grading permits to build new projects in the Las Vegas Valley. The mitigation fees will pay for the short-term HCP, which authorizes the county to collect up to $12.3 million in mitigation funds, assuming every allowable acre is developed. These monies will be put into a "mitigation bank" to fund the purchase of desert tortoise preserves, known as Tortoise Management Areas, as well management of the preserves, public education, and related activities. In the meantime, a special state assembly bill gave the county authority to collect the funds under the short-term HCP to purchase desert tortoise habitat.

The short-term HCP identified certain Bureau of Land Management (BLM) land in the outlying areas of Clark County as outstanding desert tortoise habitat, and recommended the elimination of livestock grazing on that land as a key measure to establishing preserve habitat for the desert tortoise. Accordingly, The Nature Conservancy is helping Clark County acquire privately held grazing rights and associated real property interests in the BLM land. The Conservancy purchases the grazing rights, the underlying water rights to which they are appurtenant, and other property interests at their fair market value from ranchers who are willing to sell. The Conservancy then transfers the grazing rights and other property at cost to the county, which uses the money from the mitigation fees and tax assessments to purchase the rights.

During the non-use period, scientific studies are performed as part of the long-term HCP approval process to determine if grazing and desert tortoise preservation are compatible. The ranchers who sell the grazing rights to the Conservancy are prohibited by a recorded covenant from reapplying for the grazing permits until conclusive studies find that grazing and desert tortoise preservation are compatible. No grazing rights will be permanently canceled unless those studies show that grazing will threaten the continued survival of the desert tortoise.

The short-term HCP reflects a compromise. Neither the developers nor the environmentalist got all that they wanted. However, the developers are able to have certainty and speed in continuing with their projects, and the environmentalists are able to obtain an agreement, based on sound biological studies, to ensure the long-term survival of the desert tortoise. Scientists and environmentalists have agreed that the loss of the urban developable acreage is a small price to pay for the preservation of 400,000 acres of permanent desert tortoise habitat. A central premise of the short-term plan is the concept that more habitat can be saved through consensus-building than through litigation. The Clark County Steering Committee continues to meet to develop the long-term HCP, which must be adopted before the end of the three-year short-term plan, and will likely result in the designation of additional preserve acreage.

In October 1991, the Conservancy, in partnership with Clark County, completed the first purchase under the short-term HCP of grazing rights and related real property known as Myers Ranch. Negotiations began with the rancher began shortly after the USFWS emergency-listed the desert tortoise. Together with 80,000 acres of the Walking Box Ranch, which the Conservancy has under option to purchase, the 150,000-acre Myers Ranch will form the nucleus of the preserve for the desert tortoise. The Conservancy is negotiating with other willing sellers in the area.

The success of the short-term HCP for the desert tortoise has depended on four key factors:

(1) A biologically sound plan for the preservation of desert tortoises;
(2) A process of bringing all of the stake holders to a single conflict resolution forum;
(3) Involving the largest affected local political subdivision, in this

case the county, as the lead local agency, so that only one habitat conservation plan is developed, rather than a number of plans; and

(4) Building a broad consensus for the plan.

D. Florida Keys — Public/Private Partnerships to Save a Marine Ecosystem

Background

Stretching along the southern tip of the Florida peninsula lies one of the best examples of naturally functioning tropical ecosystems in the continental United States. In the Florida Keys, the subtropical and temperate zones of peninsular Florida meet the tropics of the Caribbean, creating a rich, rare blend of species and communities of species. The biological diversity of the Keys ecosystem is found both on land and in the surrounding marine waters.

The Keys ecosystem consists of three main components: (1) the marine ecosystem, including extensive coral reefs, seagrass beds, and surrounding marine waters; (2) West Indian hardwood hammocks; and (3) Caribbean pinelands. The lush West Indian tropical hammocks of North Key Largo, although imperiled throughout their range, persist largely intact on this island. Moreover, Key Largo supports four globally endangered species: the American crocodile, Schaus's swallowtail butterfly, and the Key Largo wood rat and cotton mouse. Big Pine Key and several smaller islands are a sanctuary for the diminutive Key deer, an endangered subspecies found nowhere else. The Keys' adjacent reef hosts 63 species and subspecies of stony corals, 42 of soft corals, and more than 400 fish species.

This 220-mile-long stretch of cays and small islands is undergoing extensive development which threatens habitat and water quality throughout the ecosystem. Excessive nutrients from agricultural runoff and wastewater discharges appear to be a principal cause of the degraded water quality. In addition, an estimated one million tourists use the area for recreation—such as scuba diving, snorkeling, boating, and sportfishing—and often damage the fragile coral reef through inadvertence. The result is that the quality of both the surface and ground water has decreased dramatically, especially the coral reef system.

Conservation Initiatives

The efforts to protect the Keys from these immediate threats require coordinated efforts by a variety of federal, state, and local government agencies; private conservation organizations; and private landowners, business groups, and other interested parties. This effort must search for new ways to strike a balance between conservation and continued economic vitality. Because much of the threatened biological diversity is under water, traditional protection tools such as land acquisition are only part of the solution.

Late in 1987, The Nature Conservancy began an ambitious program to protect and manage biologically significant areas in partnership with a number of local, state, and federal agencies, including the U.S. Environmental Protection Agency and National Oceanic and Atmospheric Administration (NOAA), and a number of private conservation groups, including the Wilderness Society and the Clean Water Fund. The goal of the partnership is to adopt measures that address land-based pollution threats to the water and to arrange for the long-term protection of critical natural areas harboring the rarest species and habitats.

The Conservancy and the other partner agencies and institutions are working to secure long-term protection and management for the coral reef and marine ecosystem. They are also working to secure policies and practices to address threats to water quality. Programs include the following:

- In 1990, the Conservancy and the other partner organizations persuaded Congress to designate the waters of the Florida Keys as a national marine sanctuary. This designation was only the beginning, however, of the protection of the sanctuary. The Conservancy is now working with NOAA, the Center for Marine Conservation, and other agencies in developing public support for a comprehensive resource-based management plan to implement the designated status. The plan is due in May, 1993.

- An important first step in development of the management plan is creation of a good scientific inventory of species. Under a cooperative agreement with the National Park Service, the Conservancy is working with the Park Service and other agencies to develop a marine heritage program for the Keys and

Caribbean, including aquatic ecosystem classification, source files and mapping capacity, and use of methodologies that will be universally applicable.

- The Conservancy is working with the University of Miami Rosenstiel School of Marine Science and others to conduct high-leverage research and reports on the natural resources and water quality threats, the regulatory framework, and alternative wastewater technologies. The purpose is to provide information to decision-makers in the agencies.

- The Conservancy is encouraging research to assess the impacts of South Florida agricultural sources on water flow and quality.

- The Conservancy is working to develop a methodology to assess and rank top-priority threats.

- The Clean Water Fund, Coral Reef Coalition, and others are working with the Conservancy to develop and maintain public support for the sanctuary.

- The Conservancy is supporting monitoring programs being conducted by the Florida Institute of Oceanography.

- EPA, the Conservancy, and others are working to ensure that a good water-quality study is part of the sanctuary management plan, as well as effective measures to address water-quality threats.

- NOAA has also entered into a cooperative agreement with the Conservancy to provide a framework for cooperation to promote interpretive, historical, scientific, and educational activities, and for the solicitation of private donations for the support of such activities. The agreement also provides a framework for cooperation in establishing, planning, managing, protecting, and fostering public understanding of the natural marine sanctuaries and national estuarine research reserves, with initial emphasis on the Florida Keys Natural Marine Sanctuary. Under the cooperative agreement, the Conservancy is performing a

number of studies concerning the ecosystem and is developing a volunteer program for the new sanctuary.

E. McCloud River, California — Demonstration Preserve; Coordinated Resource Management Plan for a Watershed

Background

The McCloud River in the northernmost part of California is a unique watershed and that supports prolific aquatic wildlife. The river begins at a large volcanic spring at the base of Mt. Shasta and flows south from the mountain, tinted turquoise-grey by the mountain's volcanic ash and glacial silt. Its cold, fast-moving, stable flows and deep pools create perfect habitat for the Shasta rainbow trout and a lesser-known strain called the McCloud River red band trout.

Most of the corridor along the McCloud River is privately held by fishing clubs and individuals; the majority of the rest of the basin is managed by the USDA Forest Service, Pacific Gas and Electric (PG&E), and private timber companies. The McCloud River remained predominantly in its natural state until 1945, when Shasta Dam was constructed on the southern part of the river. The dam blocked salmon and steelhead runs and inundated 15 miles of the river canyon. In 1965, a second, smaller hydroelectric dam was constructed on the northern part of the river, creating a reservoir on the upper river. In addition to the damaging effects of the dams on water flows, pressure on natural resources increased from public recreational use. Timber harvesting and the construction of logging roads in the area also intensified and threatened the continued preservation of resources.

Donation of Land; Establishment of Demonstration Preserve

In 1973, The Nature Conservancy received a gift of six-mile stretch along the middle of the McCloud River from the McCloud River Club, one of the oldest private fishing clubs in California. This stretch, consisting of about 2,330 acres, lies between the two dams; and its natural resource values remained protected principally through the careful management of the club and the lack of public access. The club donated half of its total holdings to the Conservancy to create a permanent preserve because of the club's concern about the river's future health. In addition to trout, the preserve contains the rare Shasta salamander and a number of other threatened and endangered plants and animals.

When the preserve was first established, the Conservancy's primary objective was to protect the native fishery. Public use was a secondary consideration. During 1974 and 1975, the Conservancy conducted an extensive biological survey and found that a portion of the preserve could be opened to carefully managed public use, including catch-and-release fishing, without damaging fish habitat. The Conservancy opened a portion of the preserve to public use for the first time the following year, and has kept it open on a limited basis ever since. Only ten anglers a day are allowed on the upper two-and-one-half-mile portion of the preserve; the lower three and one-half miles are dedicated strictly to wildlife and scientific research. Even though on busy weekends the Conservancy may turn away ten to 20 anglers, most of them have said that they would rather forego fishing for the time being than overfish the area and damage the resource. In addition to fishing, the Conservancy allows hiking on trails within the preserve.

The main purpose of the Conservancy's McCloud River Preserve is to provide a showcase preserve for private landowners, public agencies, and other Conservancy preserves. The preserve demonstrates management techniques and research programs, and serves as a model public-use program. The preserve, which has remained pristine, serves as a baseline model and is now in its fifth year of water quality monitoring. In cooperation with the USDA Forest Service, PG&E, and the California Department of Fish and Game, the Conservancy collects data on sediment distribution in the water during the winter months. Other research projects, such as a wolverine study and a study of aquatic diversity along riparian areas, are also being performed in the preserve.

Coordinated Resource Management Plan

In 1989, in order to preserve the quality of the McCloud River resources and to minimize intensifying conflicts over logging, rafting, fishing, hiking, and other activities throughout the watershed, the USDA Forest Service initiated a coordinated resource-management planning process (CRMP) among the principal landowners, administering public agencies, and interested parties in the entire McCloud River drainage area. The USDA Forest Service, which serves as lead agency in the process, assembled representatives of the California Department of Fish and Game, the Conservancy, private fishing clubs and other private landowners, major timber companies, PG&E, Shasta County, and conservationists to participate in the CRMP.

The chief objectives of the CRMP for the McCloud River are to:

(1) Enhance and improve habitat for wildlife and fish by coordination of activities involving other resources and by specific habitat-improvement projects,
(2) Improve water quality for fisheries and other beneficial uses,
(3) Improve and coordinate recreational resource opportunities,
(4) Maintain soil resources for beneficial uses,
(5) Develop the timber resource to its reasonable attainable potential in harmony with other resources, and
(6) Recognize and protect the property rights of the private landowners.

In July 1991, after two years of participation in the coordinated planning process, the members of the planning group completed a CRMP, which all planning group members signed. The plan addresses, in general terms, a broad range of management practices, including logging and road construction, recreational development, road and trail access, river use, fisheries, wildlife habitat, wildfire management, soil and watershed management, and livestock grazing management.

The coordinating group establishes specific management guidelines under the umbrella of the agreement and evaluates proposed projects to make sure they are consistent with the purposes of the CRMP. Each participant agrees to be bound by the plan, but any participant can withdraw from the CRMP upon one-year's advance notice. The coordinating group agrees to meet at least four times each year to consider issues facing the watershed.

The CRMP for the McCloud River offers a comprehensive vehicle for the coordinating group to address potential future threats in a constructive way before there is irreversible damage to the natural resources. Importantly, it involves active participation by all of the major stake holders in resource-use decisions affecting the area and provides a uniform framework for management of the entire watershed.

F. Cedar Creek/Tule Mountain, California — Integrated Resource-Management Plan

Background

The Cedar Creek watershed, located about 30 miles south of Alturas, Cali-

fornia, includes the Tule Mountain grazing allotment managed by the Bureau of Land Management (BLM). The allotment consists of a number of pastures grazed by cattle and sheep and also includes deer, pronghorn antelope, and some sage grouse. Cedar Creek, which flows through the allotment, once supported a viable trout population, but its waters have warmed and it no longer serves as a cold-water fishery.

In 1987, the BLM designated the Tule Mountain allotment as the first "riparian demonstration area" within the Alturas resource area. As the BLM began evaluating riparian management of the allotment, it found that it had to view riparian management as an integrated activity, involving all of the surface uses. Management was not solely a one-dimensional resource-use question, such as range management or wildlife. Moreover, the 60,000-acre watershed, of which the BLM-owned land is a part, consists mostly of privately owned lands. Uses on these private lands also had to be taken into account. In addition, the allotment is used for recreational purposes—primarily seasonal hunting of game—and those recreational interests also had to be considered.

The main issues facing management of the watershed included:

(1) Encroachment of sagebrush and juniper, limiting the opportunities for foraging by livestock and wildlife;
(2) Overgrowth of vegetation, hampering reproduction of native grasses and limiting browse and habitat for many game and non-game wildlife species;
(3) Loss of healthy riparian vegetation and cover along Cedar Creek as the result of livestock grazing, contributing to an increase in water temperatures and the loss of cold-water fishery and important wildlife habitats; and
(4) Degraded water quality of riparian zones and meadows.

Conservation Initiatives

The BLM determined that the best way to resolve the issues was to develop an integrated resource-management plan, which would be a multiple-use activity level plan and incorporate habitat- and allotment-management plans into a single plan for the watershed. The integrated planning process is effectively the same as a coordinated resource management planning; it is comprehensive planning that cuts across legal ownership and looks at geographical boundaries.

To promote maximum involvement of all landowners and other interest groups in the 60,000-acre watershed, the BLM assembled a 13-member steering committee to advise the BLM area manager on riparian management, as well as on the variety of other uses within the allotment. The committee consisted of: a farm advisor; a representative of California Trout, a private nonprofit environmental organization; two representatives of the California Department of Fish and Game (one for fisheries and one for wildlife); a representative of the California Four-Wheel Drive Association; a representative of county government; a representative of the State Water Quality Control Board; a representative of the Soil Conservation Service; a rancher; a representative of recreation; a representative of the organized sportsmen of Modoc County; and a representative of the Sierra Club and Audubon Society. In organizing this committee, the BLM succeeded in encouraging the active participation of representatives of all of the owners and users of resources in the watershed.

The steering committee established a technical review committee, which conducted research into the issues affecting management of the watershed. Based on the research, the steering committee made recommendations to the BLM area manager.

In 1990, as the result of the two-year planning process, the BLM wrote an integrated plan signed by all landowners and steering committee members. The goal of the integrated plan is "to maximize the stability, productivity and diversity of riparian and watershed systems in the Tule Mountain allotment through cooperative, interdisciplinary problem solving which addresses riparian and watershed management on a broad front featuring range, fisheries, wildlife, watershed, and recreation opportunities."

The plan envisions a ten-year implementation process. A main objective is to manage livestock grazing to allow a complete recovery of the riparian zone and a re-establishment of the cold-water fishery. The result of the restoration and management projects is intended to be the creation of a system of interrelated upland and riparian habitats. These habitats are to consist of stable, productive riparian systems with well-vegetated streambanks and flood plains, and productive uplands with open perennial grasslands; scattered patches of brush, juniper, and pine woodlands; and aspen thickets.

Under the plan, the BLM has fenced the 3,700-acre Cedar Creek drainage

area to prevent livestock from grazing along the water. Several private landowners also have granted the BLM a perpetual conservation easement to manage the drainage area. The BLM will perform prescribed burns in other parts of the allotment, with two burns of more than 1,500 acres each to date.

The plan also implements a schedule of rest-rotation grazing, which is a grazing management scheme under which rest periods for individual pastures are incorporated into a grazing rotation. There are also restoration projects relating to juniper cutting, aspen stand rejuvenation, and water management.

Public education is another important element of the plan. The allotment area is intended to be a showcase preserve—a means for demonstrating techniques for riparian restoration and subsequent management. Restoration activities have included volunteer planting sessions. In 1990, over 300 volunteers planted 10,000 trees over a two-day period.

The plan has been very successful in achieving its restoration objectives to date and in fostering a sense of cooperation among public agencies, public and private owners, and other interest groups involved in the area.

G. Big Darby Creek, Ohio — Public/Private Partnerships

Background

Big Darby Creek winds for 80 miles through six heavily cultivated counties in central Ohio. Because of its geologic and developmental history, the stream harbors an extraordinary variety of wildlife: 86 species of fish (12 of which are rare or endangered), 40 species of unioid mollusks (12 of which are rare or endangered), 176 species of birds, 34 species of mammals, and 31 species of reptiles and amphibians. This diversity is also reflected in the 107 heritage element occurrences found in the basin by the Ohio Department of Natural Resources (ODNR). In addition, ODNR has designated approximately 82 miles of the Big and Little Darby creeks as state scenic rivers, and the Ohio Department of Environmental Protection classifies much of the stream as "exceptional warm water habitat."

Surprisingly, the survival of the Big Darby's ecological diversity has been mainly due to accident and coincidence rather than purposeful conservation efforts. Despite draining a major agricultural watershed only 20 miles from

downtown Columbus, the river remains one of the few free-flowing rivers in the Midwest. In addition, it has not served as outflow for extensive industrial or municipal wastes. Active conservation is now necessary, however, to conserve this watershed. Over the past decade, water quality conditions in the Big Darby have deteriorated due to a number of environmental threats, principally agricultural runoff, deforestation of the stream corridor, and suburbanization.

The 560-square-mile watershed embraces many jurisdictions with many land uses, including agriculture, manufacturing, and residential. These factors, and the watershed's sheer size, recommend the use of partnerships as the primary method of protection, since no single agency or organization can hope to make a significant impact working alone.

Conservation Initiatives

The Nature Conservancy has joined over 25 public and private organizations to develop innovative biological assessment programs in addition to agricultural, forest restoration, land-use planning, and protection projects. The project benefits from the different contributions made by the various participants.

The partnership projects include the following:

- A cooperative venture between the Conservancy and researchers at the Ohio State University has led to the development of a computer-based information system. This model not only is able to tract land uses within the watershed, but can also simulate a variety of cause-and-effect relationships between land-use changes and water quality.

- The Conservancy is working with farmers, government agricultural professionals, academicians, and members of the business community to establish a hay cooperative for the watershed. This group will organize the marketing of the product and the management of the facility, and even design the building in which the co-op will be housed. The Conservancy hopes that by providing expertise and staffing to establish an alternative, more environmentally benign crop in the area, it will also help foster the watershed's agricultural economy.

- Groups of volunteers organized by the Conservancy are working in a number of ways to re-establish the presettlement riparian forest. During just two weekends over the past two years, more than 600 volunteers planted in excess of 4,000 tree seedlings on land purchased by the Conservancy with the help of area corporations and foundations. Recently, hundreds of volunteers collected thousands of acorns in a massive seed collection effort. These seeds were delivered to ODNR Division of Forestry personnel, who will grow the acorns in one of their state nurseries. The Division of Forestry will in turn provide the Conservancy and partner organizations with oak seedlings, and thus help ensure a steady supply of hardwood seedlings for reforestation efforts.

- The Conservancy is actively involved in public education. The Conservancy was one of the first recipients of a grant from the Ohio Environmental Education Fund. The award was made to facilitate the development of a Big Darby brochure, as well as a slide program complete with a script and a captioned slide library. The brochure and program will introduce people to the significance of the watershed, its many characteristics, and the major threats to the aquatic system. The Conservancy performed the work in coordination with some of its major partner agencies, who reviewed the text and provided slides. The Conservancy has distributed several copies of the finished product to a group of partner agencies for their use. They intend to incorporate various portions of the provided program into their own agency presentations.

- The Nature Conservancy is working closely with the Columbus and Franklin County Metropolitan Park District to establish a new Metropark on Columbus' northwest side. The Upper Darby Metropolitan Park will serve as a buffer between the stream and the rapidly developing suburban areas of Madison and Franklin counties. It will also function as a tangible example of the benefits of public/private sector cooperation. Once completed, the park will preserve approximately 1,400 acres of important riparian habitat in a stretch of river corridor about four and one-half miles long.

Additional initiatives are in various stages of planning. For example, discussions are underway to include Big Darby Creek as a featured exhibit in the new aquatic exhibit being constructed for the Columbus Zoo. The Conservancy expects that this exhibit will be an immeasurable help in publicizing the subsurface treasures that it and its partner agencies are trying to preserve.

Recently, the state office of the United States Geological Survey (USGS) has, in conjunction with the Conservancy's Ohio field office, designed and submitted to the USGS national office a proposal to study the recolonization of stream bed macroinvertebrates. This study will supply badly needed information about the sediment flow within the stream and the organisms which make up the bottom of the food chain.

In sum, the Big Darby project provides a model of how an entire ecosystem can be preserved without impairing an area's economic potential.

H. ACE Basin, South Carolina — Private Initiatives; Conservation Easements and Deed Restrictions; and Cooperative Public Land Acquisitions

Background

The Ashepoo, Combahee, and South Edisto (ACE) Basin—located south of Charleston, South Carolina, where three rivers converge—represents one of the largest undeveloped estuaries on the East Coast of the United States. The basin consists of diverse habitats including pine and hardwood uplands; forested wetlands; fresh, brackish, and salt-water tidal marshes; and barrier islands and beaches. The basin's unique estuarine system, the largest of its type in the state, provides habitat for a rich diversity of finfish and shellfish. The basin offers a variety of recreational uses and hosts a wealth of wildlife resources including such endangered and threatened species as the bald eagle, woodstork, osprey, loggerhead sea turtle, and shortnose sturgeon.

In the mid-1700s, tidal swamps bordering the rivers were cleared and diked for rice cultivation. Tidewater rice culture and associated plantation society established land-use practices that are largely responsible for the basin's current diverse resource values. Today, many former rice fields are managed through control of water levels to provide valuable habitat for migra-

tory and resident waterfowl. The North American Waterfowl Management Plan has identified protection of these managed wetlands as a primary goal.

Conservation Initiatives

A coalition of the South Carolina Wildlife and Marine Resources Department, the U.S. Fish and Wildlife Service (USFWS), The Nature Conservancy, Ducks Unlimited, and private citizens has been formed to protect and enhance the traditional uses of the ACE Basin. The project area consists of approximately 350,000 acres. The local community, including numerous landowners, have endorsed the ACE Basin Habitat Protection and Enhancement Plan that has been developed to preserve the natural values of the project area.

The ACE Basin project area is owned primarily by private individuals who manage their property for agricultural, forestry, and wildlife purposes. Many of these private tracts of land are 2,000 acres or larger. There has been very limited residential development in the basin, although it is very similar in development potential to the resort communities of Hilton Head or Myrtle Beach, before those areas were intensively developed.

The principal objective of the ACE Basin plan is to maintain the natural character of the project area by promoting wise resource management on private lands and protection of strategic tracts by public conservation agencies and private conservation organizations. The plan encourages the continuation of private ownership while protecting and enhancing current land use practices. Specifically, the plan consists of the following key elements:

Private Landowner Initiatives and Cooperative Management Agreements. Continued stewardship by private landowners is essential to the success of the plan. Landowners have an opportunity to improve their wildlife habitat through cooperative management agreements. Wildlife management assistance will be available to private owners from the South Carolina Wildlife and Marine Resources Department and the USFWS.

Voluntary Conservation Easements and Deed Restrictions. Landowners may choose to place a conservation easement or deed restriction on their property to limit development and other potential future uses that could harm the natural values of the ACE Basin. All of the coalition partners are involved in the efforts to acquire conservation easements and deed restrictions. The

coalition partners have also worked together to produce a model conservation easement.

The partner conservation agencies and organizations meet one-on-one with the individual landowners and tailor the easement closely to each property to allow uses that do not significantly alter the habitat integrity of the Basin. The easements allow traditional land uses such as controlled agriculture, forestry, hunting, and fishing, provided they are consistent with the conservation easement objectives. Industrial, commercial, and multifamily development are examples of uses that the conservation easement would prohibit. Easement properties remain in private ownership and are not usually open to the public.

Even if a particular landowner is not interested in granting a perpetual conservation easement, representatives from the partner organizations and agencies will meet with the owner to discuss the best practices management plans and other ways to continue historical uses in a manner compatible with the ecology of the property. Many landowners have demonstrated a strong voluntary commitment to conservation.

To date, The Nature Conservancy has obtained donations of two conservation easements over plantation lands totalling 6,232 acres. The Conservancy is also working to promote best management practices for forestry and agriculture throughout the basin.

Cooperative Public Land Acquisition. Government agencies and private conservation organizations evaluate possible acquisition of strategic parcels of ecologically significant property for long-term protection and public use. Any acquisition is made at or below fair market value from willing sellers only; the public agencies do not use any condemnation procedures to acquire habitat.

The land management plan for any property purchased addresses public use. Various public uses are allowed, depending on the type of habitat and the specific management objective for the property. These uses may include, but are not limited to, hunting, commercial and recreational fishing, wildlife observation, hiking, and photography. Small areas used by endangered species—such as bald eagles during nesting season—are closed as needed. The land management plan permits continuation of existing access for public use, including boating access.

In this way, publicly managed lands serve to maintain and enhance present habitat diversity while also improving recreational and educational opportunities. Public ownership is a crucial part of the plan because unique resource components and critical habitats require intensive management and protection efforts. However, public land acquisition constitutes only a limited part of the total plan for the ACE Basin.

In addition to the ecological value of the ACE Basin, the region is rich in history. The ACE Basin effort aims to preserve historic and cultural landmarks, such as old plantation homes, forts, graveyards, and churches.

To date, the following parts of the land acquisition component of the plan have been achieved:

- Conservation agencies have acquired five of the eight core islands constituting the Natural Estuarine Research Preserve located in the St. Helena Sound. The Nature Conservancy has acquired four of the five islands through purchases and donations.

- The Conservancy has acquired the two separate tracts totalling 2,787 acres which so far comprise the ACE Basin National Wildlife Refuge. Further acquisitions are contemplated for the refuge.

- The state owns the 12,000-acre Bear Island Wildlife Management Area in the heart of the ACE Basin. The Nature Conservancy donated 2,713 acres to the state in 1986 to help form the management area.

5.3.3 Conservation Trust Funds

A. Platte River Trust, Nebraska — Conservation Trust Fund Created to Compensate for Damage to Waterfowl Habitat

Background

In the late 1970s, a consortium of electric power companies from the Midwest joined to form the Missouri Basin Power Project, and proposed construction of a $1.6-billion dam and reservoir called Grayrocks on the Laramie River in Wyoming. The Laramie River is a tributary to the North Platte River, which runs across the central portion of Nebraska. The State

of Nebraska and the National Wildlife Federation (NWF) objected to the plans for Grayrocks.

The state was concerned that the dam and reservoir would curtail the amount of water available to farmers in Nebraska's Platte Valley for irrigation purposes. The NWF was apprehensive about the impact that Grayrocks would have on wildlife habitat in the Platte Valley. Some 80 percent of the world's population of migrating sandhill cranes, hundreds of thousands of itinerant ducks and geese, and globally endangered whooping cranes require the river and its adjoining wet meadows, and its shallow sandbars and wide, unobstructed river channels, as a critical stop-over point in the Central Flyway. Millions of birds must stop to rest and feed in the Platte River valley while en route to northern summer breeding grounds.

The state and the NWF filed suit in U.S. district court against the project, claiming that Grayrocks, by diverting water from the Laramie, would jeopardize wildlife habitat and irrigation of farmland in the Platte Valley. The court issued an injunction prohibiting the project from proceeding. At the time the injunction was issued, $150,000,000 had been invested in construction of the dam.

Establishment of Conservation Trust Fund

Following the injunction, negotiations between the parties resulted in 1978 in a court-approved settlement which established the Platte River Whooping Crane Maintenance Trust, Inc. to preserve and maintain critical habitat lands and allowed construction of the Grayrocks dam and reservoir to continue. The trust, which is a private nonprofit 501(a) corporation set up as a satellite of the NWF and the state, receives its tax-exempt status under the umbrella of those two entities. It was created for the purpose of preserving migratory bird habitat in the Big Bend reach of the Platte River in Nebraska—approximately 80 miles of river from Chapman to Overton. The owners of the project capitalized the trust with a one-time lump sum payment of $7,500,000 in cash. The maintenance trust declaration, which formally established the trust, requires the trustees to invest this principal, primarily in the form of stocks, high-quality bonds, and mutual funds, with the objective of generating enough income to finance the trust's habitat acquisitions and other programs and activities, including its administrative expenses. The declaration anticipates that the trust will operate in perpetuity.

How the Trust Works

Three trustees are responsible for administering the trust: one individual named by each of the three parties to the lawsuit. The original principal sum of $7,500,000 cannot be used unless all three trustees consent. All other decisions regarding use of the income for the conservation purposes of the trust are made by majority consent. Each trustee has a fiduciary obligation to the beneficiaries of the trust and the migratory waterfowl, and not to the party to the original lawsuit that appointed the trustee.

Early on, the trustees adopted a series of well-defined policy criteria to facilitate decision-making on specific projects in advance of any specific controversy. In addition, the trustees have approved a detailed habitat conservation plan for the Big Bend reach. These two steps were crucial to allowing for the implementation of protection projects, and have led to unanimous decisions on nearly every project by the trustees. The primary activities and programs of the trust include (1) purchase of wildlife habitat, (2) research relating to habitat management, (3) habitat reclamation, (4) restoration and management of in-stream flows of the Platte River, and (5) public education.

In the first ten years of its existence, the trust reported an increase in assets to $13,500,000, including $5,000,000 in land and $500,000 in equipment. With financial assistance from The Nature Conservancy, the trust purchased title to, and conservation easements over, more than 8,000 acres of land including 16.5 miles of river frontage in the first ten years after its formation. This acreage includes lands now safeguarded by the National Audubon Society and the USFWS. The trust also restored approximately nine miles of crane roosting habitat and 200 acres of grassland. The trust recognizes that it does not have enough money to buy every acre on the Platte; therefore, in addition to fee and conservation easement acquisition programs, it has concentrated on working with landowners to adopt best management practices developed through trust research. In addition, since water rights cannot be purchased in Nebraska, the trust has tried to inform public and private planning for water management.

The trust allows compatible recreational use and maintains all farm land it owns in the highest state of production consistent with the needs of the protected wildlife. The predominant land use in the area is agriculture, and the trust has focused on becoming a part of the local community. The trust

also uses the income generated from agricultural leases of its lands to supplement the trust income and fund its activities.

Income from the trust supports an eight-person staff, which includes an executive director, an avian ecologist and habitat manager, a plant ecologist, an office manager, a river maintenance foreman, and a two-person river maintenance crew. The trust income also supports use of very advanced computer modelling technology that is vital to the trust's operations. Staff fly over the Platte River using video cameras and convert the recorded images into a GIS map. Computer models use the information to simulate how the river functions. The goal of the trust is to be the definitive source of expertise on the Platte River and its ecosystem processes. It has published many studies, all geared toward management needs relating to the Platte River.

5.3.4 Compatible Uses/ Sustainable Economic Development

A. Texas Hill Country — Large-Scale Conservation; Compatible Uses; Public/Private Partnerships; Multiple Benefits Acquisitions; Physical Resource Conservation

Background

The Texas Hill Country located entirely within the so-called Balconian Biotic Province in central Texas is a massive, diverse landscape of about 18,560 square miles (11.9 million acres). The Hill Country is bordered on the west side by dry desert, on the south side by scrub vegetation, on the east side by blackland prairie and the edge of the eastern deciduous forests, and on the north side by the southern extreme of the great plains. Within the Hill Country itself there are a number of rare and endangered plant and animal species that depend on the springs, recharge zones, and rivers that also flow to the coast. There are 35 plant species of concern, 17 plant communities, and a number of federally endangered animals including two songbirds—the golden cheeked warbler and the black capped vireo—whose ranges include most of the Hill Country.

The eastern side consists of densely populated metropolitan areas, including Austin and San Antonio. The San Antonio area relies exclusively on the Edwards Aquifer, which forms the eastern boundary of the Hill Country and is recharged there. All the rivers, except the Bracos and Colorado rivers, begin in the Hill Country. The south side is primarily cultivated agricultural land and depends on the water source for irrigation. Public

recreation use of the area is heavy, including skin diving and floating on the rivers. In addition, there are a number of smaller cities, rural water companies, individuals, and military bases that rely on the aquifer for drinking water.

In the central portion of the Hill Country there is tremendous development pressure for retirement projects and recreational uses such as golf courses. Small cities are growing rapidly, and agricultural land is being converted into small subdivisions, resulting in loss of habitat. Some of the agricultural uses that predominate the Hill Country pose a problem of runoff, which threatens the water quality. Many habitat areas have been destroyed as a result of eradication of trees to make way for grazing pasture for sheep, goats, and cattle.

Conservation Initiatives

The Hill Country is such a large area, with so many traditional uses and so many parties involved, that it would clearly be impossible to buy it all to establish nature reserves protected from the various threats. The Nature Conservancy is trying to help form a number of different public/private partnerships to protect at-risk natural communities and habitats, as well as underground and surface water resources and the biological resources dependent on them—all in a manner compatible with economic and human use of the area. Those elements are illustrated in the types of project discussed below.

Protection of Edwards Aquifer

The Conservancy, in cooperation with partner agencies and organizations, will work with owners to acquire Edwards Aquifer recharge sites and upland habitat areas that have multiple benefits. For example, in order to stabilize water availability and protect the water quality, the Conservancy plans to acquire streambeds that introduce water into the aquifer. The sides of many streambanks also provide critical habitat for an endangered songbird. Consequently, in reviewing inventory data, the Conservancy will look for the best tracts that are both high-quality terrestrial habitat for the bird and high-value recharge locations.

The Conservancy is also undertaking projects to protect aquifer-dwelling species and spring-dependent species. The Conservancy is working to

maintain sufficient water flows in the aquifer at the right times and in the right places to sustain the species that live there. The Conservancy has identified at least 40 species that are endemic to the aquifer. In addition, the Conservancy is working to maintain adequate water levels in the aquifer to provide spring outflow for spring-dependent species and riparian habitat.

The Conservancy will also be involved in helping to manage demand for water consumption from the Edwards Aquifer. In particular, the Conservancy will cooperate with the Department of Defense and the Edwards Underground Water District to conduct water audits. The Conservancy will also participate in municipal and commercial Xeriscape "Water-Savings" demonstration projects.

Partnership with the Department of Defense

The Department of Defense (DOD) is the single largest owner in the Hill Country. It owns the Fort Hood Military Base, which consists of over 217,000 acres and is the largest base in the United States, in addition to other smaller bases. The Conservancy has entered into an agreement with the DOD, supplementing a national cooperative agreement, under which the DOD will work with the Conservancy to inventory the habitat area on the bases and reservoir properties, and to participate in an information exchange.

Rural Initiatives

The Conservancy is working with local communities to adopt water-efficient measures and technologies and to encourage economic diversification. This effort is important because it involves impact-avoidance planning—that is, working with the communities to help them make wise and sustainable resource-management decisions in advance of problems that require more expensive remedial efforts, and working with local groups to develop heritage tourism programs.

Scientific Inventories, Monitoring, and Research

The Conservancy is performing research concerning groundwater and surface water flows and instream river requirements, impacts of recreational use, control of exotic species, and a wide variety of areas that affect management of the Hill Country's natural areas. The Conservancy is also com-

pleting a species inventory and a country-wide remote-sensing survey of vegetation communities.

Community Relations and Education

To foster growing awareness of the need for protection, the Conservancy will prepare a Hill Country ecological atlas and educate local communities and the media about the Hill Country's natural areas.

Economic Compatibility

The Conservancy is working with local landowners, particularly farmers and ranchers, to encourage them to adopt land management practices consistent with conservation. In addition, the Conservancy is working to promote markets for ecologically compatible products.

Austin Area, Texas Hill Country — Developing a Regional Habitat Conservation Plan

Background. West of Austin in Texas' Hill Country, the community found itself deadlocked over opposing land-use choices: Developers wanted to create housing, roads, and business enterprises in the desirable western half of Travis County, while conservationists demanded protection for the region's seven federally listed endangered species. The prohibitions against takings contained in the Endangered Species Act halted a number of building projects in the Austin area.

Habitat Conservation Plan. In response to repeated clashes over environmental protection and land use in the area surrounding Austin, the City of Austin asked The Nature Conservancy to organize an innovative form of cooperative conservation by bringing together a steering committee of government officials, environmentalists, developers, and other business groups to negotiate a multi-purpose resource protection and use plan. The Balcones Canyonlands Conservation Plan is a region-based approach under the habitat conservation plan (HCP) provisions of the Endangered Species Act. The goal is to ensure the long-term survival of imperiled species by permanently protecting large habitat areas while at the same time facilitating development. The plan has been several years in the making.

The steering committee has established a biological advisory team to help determine the amount and configuration of habitat needed to support viable

populations of imperiled species. The preserve lands selected will also help protect drinking water sources from potential contamination and provide urban open space opportunities. The final HCP will chart which lands should be protected as preserves and which are less sensitive and appropriate for development.

By substituting a comprehensive regional plan operated and administered at a local level, this conflict-resolution technique gives builders an alternative to expensive and lengthy federal review of individual projects. Experts estimate that the conservation plan will save as much as $400 million, which landowners would have spent in submitting individual Endangered Species Act Section 10(a) permit applications. Moreover, for environmentalists, the plan will secure a higher quality of protection than a string of discrete fee acquisitions or probable legal skirmishes would have.

A recently completed draft plan calls for a preserve system of about 65,000 acres. The preserves will include several cave clusters sheltering five endemic cave-dwelling invertebrates, several watersheds, and significant expanses of oak-juniper habitat for the golden-cheeked warbler and black-capped vireo—two critically endangered songbirds. If implemented, the plan will save enough fragmented habitat to sustain the species while permitting development to proceed.

Cooperative Acquisition of RTC Land. In connection with the habitat conservation plan process, the Conservancy recently entered into a letter of intent on behalf of the City of Austin to acquire 10,155 acres of high-quality habitat from the Resolution Trust Corporation (RTC). The RTC has an incentive to sell the property because it has another 10,000 acres of residential and commercial property that is not developable and therefore not marketable unless the regional habitat conservation plan is adopted. Moreover, the RTC has tremendously high carrying costs for the property—about $1,000,000 each year in property taxes and administrative expenses. The property acquired from the RTC could form a key part of the preserve implemented by the habitat conservation plan.

Other Regional HCPs. Regional habitat conservation plans for other urban areas within the Hill Country are being considered.

Summary

Thus, the Texas Hill Country is an enormous and formidable project involving four key elements:

(1) Economic compatibility,
(2) Multiple public/private partnerships,
(3) Multiple benefits acquisitions and voluntary protection, and
(4) Physical resource conservation.

It is a five-year project that is still in an initial phase of development and implementation.

B. Central Valley, California — Ricelands/Wetlands — Conjunctive Uses

Background

California's wetlands have been reduced by almost 90 percent. Only 60,000 acres of wetlands are reliably protected in public and private refuges and by conservation easements. Populations of migratory waterfowl and shorebirds have been severely affected; in many cases, their numbers have declined 50 to 80 percent in the 1980s alone. These species need a large increase in winter habitat to prevent further declines due to crowding, hunger, and disease.

California's rice industry is a very visible user of water in a state struggling with five years of drought. Despite its contributions to the local economy, the rice industry is publicly perceived as being an extreme waster of scarce water resources. Due to this perception, a variety of public policies upon which the industry vitally depends—including access to the water itself—are at risk politically. The industry is now also legally bound to a rapid reduction in the acreage of stubble burned each fall.

Much of the former wetlands in the Central Valley have been converted to agricultural use. Rice in California is grown on 400,000 to 600,000 acres of the Sacramento Valley, for the most part on lands that were originally wetlands. These lands are characterized by virtually impervious clay soils, where rice is usually the only viable crop. Rice fields are designed to be flooded. If flooded in the fall to a depth of six to 12 inches, rice fields can provide a good source of winter forage for waterfowl.

Conjunctive Use Project

The Ricelands/Wetlands Conjunctive Use Project proposes using the valley's cultivated ricelands after the harvest to create actual winter wetland habitat for waterfowl. The Nature Conservancy has contracted with Marc Reisner, author of *Cadillac Desert*, to develop the program.

For rice production, water is spread on the fields in mid-April and drained off in late summer to early fall. The ricelands then lie fallow from October through the following March or April. The project envisions a shallow flooding of the winter-fallow rice fields in October or early November, precisely the time that the migratory waterfowl arrive in force. The flooded acreage should produce abundant high-quality food—especially invertebrates and seed-rich water grasses—adding enormously to the health and sustenance of birds using these wetlands.

By mid-February, when waterfowl populations have begun to migrate north and as even more water is available from winter storms, the project lands would be available for flooding to greater depths for temporary offstream storage of the Sacramento River's peak flows. This additional offstream storage may increase the carrying capacity of existing reservoirs by providing alternative means of diverting flood waters, thus allowing water authorities to raise delivery capability at low cost and without constructing expensive and potentially environmentally destructive new dams. Flooding the fields in winter also shows promise as a method of disposing of rice stubble, which will benefit air quality in the Sacramento Valley by helping rice growers to meet the mandated burn-reduction targets.

Water stored offstream would be released back into rivers in March. It may be possible to time these releases to help out-migrating salmon and other anadromous fish reach the open ocean, and to bolster delta water-quality standards.

The Nature Conservancy plans to establish a 3,000- to 5,000-acre pilot project and conduct hydrologic and biological studies to provide the practical and scientific underpinnings for a full-scale implementation of the concept. The Conservancy has arranged with a leading water-rights attorney for legal review and for recommendations on policy changes needed to implement the project over the long term.

Under the Ricelands/Wetlands Conjunctive Use Project, the Conservancy plans to:

- Coordinate the various parties whose involvement is needed;
- Conduct the research;
- Refine the process and reach agreement on operational and financial aspects with water districts, willing rice growers, and other affected parties;
- Publicize and promote the benefits of this approach; and
- Seek out an institutional framework for the project.

The project potentially provides multiple benefits at very little cost while maintaining the economic base the rice industry provides for the Sacramento Valley.

Rice growers are under tremendous political pressure as visible users of water in a drought period. They benefit from a way to help increase the water supply without taking away from their agricultural activities. The water districts and public are concerned about the scarcity of water. They benefit from a relatively low cost increase in the water supply. Environmentalists are worried about the loss of wetlands, but the amount of money it would take to purchase habitat at market prices is prohibitive. The program would increase *de facto* wetlands for waterfowl during the critical migratory season without the need for purchasing fee property.

The project is also an important consensus-building effort between conservationists and agriculture—groups which have often been at odds over wildlife issues for many years.

C. Cosumnes River, California — Compatible Agricultural and Limited Development; Volunteer Efforts to Restore Riparian Forest

Background

The Cosumnes River is the only remaining free-flowing river system that drains into the Central Valley of California. Its regular annual flooding in the valley lowlands supports some of the best examples of valley riparian forest in the state and creates ideal seasonal wetlands for winter waterfowl and the greater sandhill crane.

In the Central Valley, agriculture has been a traditional way of life and has coexisted with the wildlife habitat for many years. However, the combination of rapid urban expansion, diminished habitat, and relatively few public lands poses one of the greatest threats to biodiversity in the state. Sacramento's growth and development are pressing south toward the Cosumnes area, and more intensive development of the river basin is inevitable.

Conservation Initiatives

The Nature Conservancy is working with agencies and other organizations to develop a management plan for the Cosumnes River area. The plan will strictly protect core natural areas and provide for surrounding buffer areas where compatible land uses such as agriculture, ranching, and housing can co-exist with the natural landscape. The goal is to shape a mosaic of appropriate land uses which are compatible with the long-term protection and restoration of the river ecosystem.

For example, the Conservancy is considering possible ways that the inevitable residential development of buffer areas may be designed in such a manner that the development will blend in with both private and public open space. Experience has shown that proximity to open space has a significant positive effect on the value of the development. Therefore, in some instances, dedication of private or public open space may benefit the developers and the local community while also meeting the needs for conservation.

In the Cosumnes River area, the Conservancy is also reforesting at least 200 acres with native valley oak. The effort entails recontouring the fields with machinery and planting by hand, mostly with the help of thousands of volunteers and thousands of acorns gathered from resident trees. In November 1991, the Conservancy arranged a day-long "planting marathon," in which 450 volunteers from the northern California business community converged at the Cosumnes Preserve to plant valley oak, willow, and cottonwood trees native grasses on 100 acres. Volunteers with the Conservancy's Habitat Restoration Team have planted a total of more than 60,000 trees on 464 acres along the Cosumnes River, as well as the Kern and northern Sacramento rivers.

D. Virginia Coast Reserve — Sustainable Development

Background

About 22 years ago, The Nature Conservancy established a 2,000-acre preserve on the Virginia Coast. That preserve now extends over 43,000 acres and takes in almost all of the last chain of undisturbed barrier islands on the Atlantic Coast.

The Virginia Coast Reserve has been designated by the United Nations as an international Biosphere Reserve. It is the heart of what many people consider to be one of the most significant functioning ecosystem complexes in the eastern United States. Biosphere reserves are large, multi-purpose areas intended to protect functioning natural systems and conserve species; they are intended to become models of how people should live with nature.

The Virginia Coast consists of a narrow finger of land extending for about 70 miles and containing hundreds of miles of shoreline and relatively undisturbed landscape. In the heart of this natural system is the Virginia Barrier Islands, a chain of 18 offshore islands. This system embraces sandy beaches, maritime vegetation and forests, and rich salt marshes which provide habitat for more than 250 species of waterfowl, shorebirds, and raptors. Bird migratory stopover sites boast some of the East Coast's highest fall bird counts. The reserve's rich, spawning-ground estuaries yield enough clams, crabs, and oysters to support a multi-million-dollar seafood industry. All or part of 14 islands have been acquired by The Nature Conservancy to form its Virginia Coast Reserve. Federal or state refuges have been established on the other islands.

Conservation Initiatives

For many years, conservationists have realized that to function over time, preserves must be part of a larger system bound not only by biological ties, but by economic and cultural ties as well. The Virginia Coast Reserve is one of the first efforts the Conservancy made to balance protection and compatible human development on a large scale. The Conservancy collaborates with local landowners to develop conservation plans for private properties. The Conservancy also works with the local community, as well with state and federal institutions, to target opportunities for compatible economic growth where both business and conservation can work to mutual benefit.

To date, some of the Conservancy's projects include the following:

- Assisting in the formation of Citizens for a Better Eastern Shore (CBES), a local citizens' action group which includes all major socio-economic sectors. Widespread local community involvement is crucial and takes time to build.

- By purchasing several farms and reselling them subject to conservation easements, demonstrating to local landowners that low-density uses of waterfront property do not adversely impact land value. (See discussion of Virginia Coast Reserve in Part 5.2.5.) Without demonstrating economic results, the program would have floundered.

- Working cooperatively with CBES, the NAACP, the Farm Bureau, and other organizations to secure a new county zoning ordinance to protect natural resources and provide affordable rural lots.

- Providing outside technical assistance and seed funds to help launch the Northampton Housing Trust, now a staffed local organization devoted to providing affordable housing.

- Working with local water personnel in a cooperative venture to ensure sustainable oyster grounds in the coastal bays.

- Working with the University of Virginia in a long-term ecological research study launched by a $2 million grant from the National Science Foundation.

The Conservancy and community leaders have agreed to develop a strategic plan and feasibility analyses for economic development. A national nonprofit organization, the Corporation for Enterprise Development (CFED), will lead and facilitate this undertaking.

The Conservancy, the community, and CFED have agreed to work toward the five goals of the Northampton County Comprehensive Plan: (1) conserve natural resources; (2) preserve the county's rural character; (3) pursue economic self-sufficiency for all citizens; (4) provide adequate public services to all citizens; and (5) support agriculture, seafood production, light

industry, and tourism as the basic industries in the county. CFED's work will include:

- A professional economic-health assessment of the county, analyzing key variables of economic health, as well as opportunities and constraints for development.

- A strategic plan for economic development which proposes a hard-nosed, implementable agenda for community action.

- Feasibility studies for two or three of the most promising development opportunities (e.g., nature tourism, biosphere reserve products), which build upon the community's strengths and demonstrate ecologically compatible development. These studies would include analysis of market viability, financing options, and economic benefits to the community.

The planning process will include citizen participation through a local steering committee, task forces, and a community retreat. Strategies will foster job creation and wealth generation, but not at the expense of local quality of life.

5.4 Bibliography (Part 5)

Bureau of Land Management. 1989. *Cedar Creek/Tule Mountain Integrated Resource Management Plan, Alturas Resource Area.* U.S. Department of the Interior, Susanville District.

The Coachella Valley Story. Documentary film produced by the California Nature Conservancy with funding from the Richard King Mellon Foundation.

Platte River Whooping Crane Habitat Maintenance Trust, Inc., The First 10 Years 1979-1989. (2550 North Diers Avenue, Suite H, Grand Island, Nebraska 68803).

The Nature Conservancy. 1991. *Preservation 2000 Annual Report 1991.* The Nature Conservancy, 2699 Lee Road, Suite 500, Winter Park, Florida 32789.

6. Glossary of Terms

A

Abstract of title. See *title abstract.*

Acceptance. Agreement to an offer to enter into a contract. (See also *statute of frauds.*)

Access right. The right of an owner to have ingress and egress to and from one owner's property over land owned by someone else, such as to connect an otherwise landlocked parcel to a public road.

Accommodation recording. Recording of instruments with the recorder by a title company merely as a convenience to a customer and without assumption of responsibility for correctness or validity.

Accretion. The gradual change in a channel of water, as a result of natural causes (distinguish avulsion).

Acknowledgment. A formal declaration before a duly authorized officer (such as a notary public) by a person who has executed an instrument that such execution is his or her own. An acknowledgment is necessary to entitle an instrument (with certain specific exceptions) to be recorded, to import constructive notice of its contents and to entitle the instrument to be used as evidence without further proof. The certificate of acknowledgment is attached to the instrument or incorporated therein.

Acquisition Priority System (APS). An automated system developed by the Alaska Region of the U.S. Fish and Wildlife Service to evaluate proposed additions to federal conservation management areas in Alaska. Based on the ARC/INFO GIS, this procedure rates proposed additions with respect to seven resource and three management criteria.

Acre. A measure of land equalling 4,840 square yards, or 43,560 square feet.

Adjacent. Lying nearby or adjoining.

Adjoining. In actual contact with or abutting on.

Ad valorem. A Latin phrase meaning "according to value." In connection

with real estate transactions, used to indicate real property taxed according to its value.

Adverse possession. A method of acquiring title to real property through possession of the property that is open, without permission, exclusive, and continuous over the statutorily prescribed period of time by a person other than the legal owner of record. Some states have additional conditions, such as the payment of real property taxes for the statutory period. Adverse possession incorporates a trespass principle. (See also *prescriptive easement.*)

Affidavit. A sworn statement reduced to written form made under oath before an authorized official.

Agreement of sale. See *purchase agreement.*

ALTA. Acronym for American Land Title Association, a national association of which most large title insurers are members. Policy forms sponsored by the organization are used by most states.

ALTA title policy. A type of title insurance policy issued by title insurance companies which expands the risks normally insured against under the standard title insurance policy in order to include unrecorded mechanic's liens, unrecorded physical easements, facts a survey would show, and rights of parties in possession, such as tenants and buyers under unrecorded instruments. A *survey* is usually required.

Appraisal. A written estimate or opinion prepared by a real estate expert of the fair market value on a specified date of a described piece of property, based on an analysis of facts surrounding that property (e.g., land use potential, sales of nearby comparable property); can be a brief "windshield" appraisal in letter form or a very detailed report containing analysis of all the known facts.

Appropriative rights. Application of water to a beneficial use. Modern appropriative rights are based on state permits and relate to a quantifiable amount of water (distinguish *riparian rights*).

Appurtenant. Belonging to, accessory to. Something incident to a chief or principal thing, as an easement.

APS. See *Acquisition Priority System.*

Arbitrary map (ARB). A title plant "subdivision" or map made by a title company for its own convenience in locating property in an area in which all the descriptions are by metes and bounds. On this subdivision, the lots are given arbitrary numbers selected by the title company. The deeds and other instruments affecting these lots are posted to what is called an arbitrary account.

Assessed valuation. A value placed on property by a unit of government such as a county or city for taxation purposes; usually has a relationship to fair market value.

Assessment. Legal charge against real estate to cover the proportionate cost of a public improvement, e.g., paving a street, installing a sidewalk.

Assessor's parcel. A piece of land specifically referenced by a number given by the county assessor for the purposes of collecting property taxes; does not necessarily represent a legally subdivided parcel or reflect the legal boundaries of the property.

Assignment. A transfer of a person's interest in property, or any estate or right held by that person, to someone else.

Assumption of mortgage (or deed of trust). This occurs when a buyer acquires title to real property and assumes liability for payment of an existing debt, which is secured by a mortgage or deed of trust on the property. Depending on the lender, the buyer may either become a co-guarantor for the payment of the debt or solely responsible for the repayment. An assumption of a mortgage or deed of trust should be distinguished from purchasing property subject to a mortgage or deed of trust [see *subject to mortgage (or deed of trust)*].

Attorney-in-fact. See *power of attorney.*

Avulsion. The sudden perceptible change in a channel of water, causing land to be washed away from one landowner's property and added to another landowner's property (distinguish *accretion*).

B

Bargain sale. A sale of real property at less than fair market value to a charitable organization. The difference between the charity's purchase price and the property's fair market value may, within certain restrictions, be taken by the seller as a charitable contribution deduction against income tax liability.

Base and meridian lines. Imaginary lines used by surveyors to find and describe the location of private and public lands. In government surveys, base lines, which run due east and west, and meridians, which run due north and south, are used to establish township boundaries.

Basis. (1) *Cost basis:* the dollar amount assigned to property at the time of acquisition for the purpose of determining gain, loss and depreciation in order to calculate the income tax to be paid upon the sale or exchange of the property in accordance with IRS provisions. (2) *Adjusted cost basis:* the cost basis after the application of certain additions for improvements, deductions for depreciation, etc.

Beneficiary. See *deed of trust.*

Bill of sale. A written instrument evidencing the transfer of title to personal property from vendor to vendee.

Biodiversity. The variety of life and its processes.

Biological and Conservation Data System (BCD). A set of relational data bases programmed in Advanced Revelation, designed and used by The Nature Conservancy to facilitate gathering and managing information for conservation planning.

Biological management. Activities that provide, maintain, or improve the condition, number, quality, defensibility, or viability of the *element occurrences* for which an area was protected.

Biological monitoring. The continual assessment of the condition, numbers, quality, and viability of specific *element occurrences* (species and ecosystems) over a period of time.

Bona fide purchaser or lender. A person who buys or loans in good faith, without notice of any existing problem and who pays or loans something of value (does not include gifts).

Breach. Failure to perform a contractual obligation after being given any specified opportunity to cure; gives non-breaching party the right to remedies available under the contract or applicable law.

Buffer zone. An area of natural vegetation surrounding a reserve that may receive some human use but acts as a defense against influences from adjacent unprotected lands.

C

Cap rate. See *capitalization rate.*

Capitalization rate. The rate at which a stream of income is converted to a present value or capital amount. The capitalization rate, or *cap rate,* is an indication of the rate needed to attract the average investor to a particular kind of investment.

Cash Flow. The net income generated by a real property before depreciation and other non-cash expenses and before recognition of personal income tax effects.

CATS. See *Conservation Action Tracking System.*

CCA. See *Community Characterization Abstract.*

CC&R's. See *covenants, conditions, and restrictions.*

Chain of title. A chronological list of documents which comprise the record history of title of a specific piece of real estate.

Closing. Final stage of real estate transaction where actual transfer of interest in land in exchange for *consideration* takes place.

Closing agent. See *escrow.*

Closing costs. Various expenses incurred in the buying and selling of real estate over and above the price of the real estate, including title insurance, escrow fees, notary fees, transfer taxes, recording costs, etc.

Closing statement. A written accounting given either by an escrow holder or attorneys to the parties at the completion of a real estate transaction.

Cloud on title. An encumbrance on the title that, if valid, could jeopardize all or part of the owner's claim to the property.

Commission. A real estate agent's compensation for performing the duties of the agency; in real estate practice, a percentage of the selling price of property, percentage of rentals, etc. A fee for services.

Commitment. See *title commitment.*

Common law. A body of unwritten law, founded on general custom, usage, or common consent; prevails in England and most of the United States.

Community. A group of interacting plants and animals.

Community Characterization Abstract (CCA). A subset of the Biological and Conservation Data System data bases containing information on the generalized distribution and occurrence of natural communities (along with descriptions and relevant ecological information).

Community property. Property that has been acquired by husband and/or wife during a marriage and which has not been acquired as the separate property of either spouse. Exists only in states with community property laws.

Compliance monitoring. See *legal monitoring.*

Condemnation. See *eminent domain.*

Condition precedent. A clause in a contract which provides that unless and until a given event occurs, the full effect of a contract will not take place.

Condition subsequent. A condition attached to an already *vested estate* or to a contract whereby the estate is defeated or the contract extinguished through the failure or non-performance of the condition.

Conservation Action Tracking System (CATS). A series of databases in the Biological and Conservation Data System (BCD) which are designed to facilitate monitoring protection and management activities for a conservation site.

Conservation Data Centers. Inventory programs set up by The Nature Conservancy in Latin America (see *Heritage Program*).

Conservation easement. A conveyance of rights through a legally recordable document whereby a real property owner gives up certain specified rights in a parcel of property or agrees to maintain specific conditions on his or her property for certain stated purposes concerning conservation.

Conservation entity. A state or federal government agency involved in conservation or a private nonprofit conservation organization.

Consideration. Anything of value given or promised by a party to enter into a contract, e.g., money, an act or forbearance or a promise to act or forebear acting. It may be a benefit conferred upon the other party or a detriment suffered by the party.

Constructive notice. Notice imparted by the public records of the jurisdiction when documents entitled to recording are recorded.

Contiguous. Being in actual contact, touching along a boundary or at a point.

Contingent. Depending on an uncertain event.

Conveyance. Any written instrument which transfers the title to or interest in real estate.

Co-op. A cooperative transaction where a private conservation organization acquires land at the request of a government agency with the understanding that the property will be conveyed to that agency at a later date.

Cooperative management agreement. A voluntary protection agreement between a public agency and a private landowner. See *registry.*

Comprehensive Resource Management Plan (CRMP). Conservation plan provided by a government agency in coordination with landowners and other interested parties for the management and use of natural resources in a specified geographic area.

Covenants, conditions, and restrictions. Commonly called *CC&Rs*, the term usually refers to a written recorded declaration which sets forth certain covenants, conditions, restrictions, rules or regulations established by a subdivider or other landowner to create uniformity of buildings and use within tracts of land or group of lots. The restrictions also can be established by deed. CC&Rs are sometimes referred to as *private zoning.*

Cover type. A non-technical higher-level floristic and/or structural description of vegetative cover.

CRMP. See *Coordinated Resource Management Plan.*

CS. See *current status.*

Current status. The current protection level for a tract as recorded on a *natural diversity scorecard.*

D

Date down. A re-examination of the title records to cover the time period from the original completion of the title examination down to the present (usually the time of recording of the documents of the title order).

Deed. A legal instrument by which title to an estate or interest in real property is conveyed or transferred from one person to another. The person who transfers the interest is called the *grantor.* The one who acquires the interest is called the *grantee.*

Deed in lieu of foreclosure. A deed to real property made by a defaulting borrower to a lender in order to avoid foreclosure proceedings. (See *foreclosure*)

Deed of trust. A legal instrument used in some states in lieu of a mortgage, and which is legally (but generally not physically) held by a third party, usually a title company, as security for the repayment of a loan or other obligation. The landowner or debtor is called the *trustor.* The party to whom the legal title is conveyed (and who may be called on to conduct a sale thereof if the loan is not repaid) is the *trustee.* The lender is the *beneficiary.* When the loan is paid off, the trustee is asked by the beneficiary to issue a reconveyance. This reconveyance corresponds to the

release that the holder of a mortgage executes when the loan secured by the mortgage is paid off.

Deed restriction. Limitations in deed to a property that dictate certain uses that may or not be made of the property.

Dedication. All rights to alter the element occurrences on a parcel of land have been placed into a legally established nature preserve system or conservation trust.

Deferred taxes. Taxes that are postponed while a special use designation of the property is maintained under state and local laws, such as deferred open space or agricultural taxes. During the period in which the preferred use is maintained, the property is assessed without regard to its development potential. Upon termination of the special use designation (e.g., when property is developed), the difference between the full rate which would have been payable had the property not been specially designated, and the reduced rate, is assessed in lump sum, retroactively usually for 5 to 10 prior years ("rollback rates"). Sometimes there are additional penalties.

Deficiency judgment. A personal judgment in a foreclosure action rendered by a court after a determination has been made that the value of the security pledged for a loan is insufficient to pay off the debt of the defaulting borrower.

Designation. The setting aside of land for conservation purposes by a public agency through administrative measures, usually involving some formal classification, such as Research Natural Area.

Digitize. Enter spatial data into a Geographic Information System (GIS).

Documentary transfer tax. A state-sanctioned act permitting a jurisdiction in a state to adopt a tax to apply on all transfers of real property located in that jurisdiction.

Dominant tenement. A superior holding benefited by an easement. For example, a landowner having a beneficial easement over the land of another has a dominant tenement over the other owner's land. See *servient tenement.*

Due diligence. In real estate transactions, an investigation made by the purchaser of real property in order to verify title and condition and any claims or representations made by the seller.

E

Earnest money. A down payment made by a purchaser of real estate as evidence of good faith; a deposit or partial payment.

Easement. A conveyance of rights, other than a tenancy or possessory right, in a piece of property through a legally recordable document to someone other than the owner who holds title to the property, such as an access easement or a conservation easement.

Easement in gross. A personal right held by someone over land owned by someone else.

Ecological take lines. The boundaries that delineate the area necessary for the viability and defensibility of one or more element occurrences. Site boundaries as opposed to existing property (tract) boundaries. Ecological take lines should include all lands that should be included in a preserve. (See also *site*.)

Ecoregion. An area with a similar biota and physical environment.

Ecosystem. A biological community, its physical environment, and the associated processes through which matter is cycled and energy flows among the components.

Element (EL). See *elements of natural diversity*.

Element of natural diversity. Individual species of plants and animals and the associated natural communities in which they live.

Element occurrence (EO). A term used by The Nature Conservancy to mean an example of an element that is located at a certain place. The boundaries of an element occurrence are determined by the extent of the stand for a community or extent of the habitat for a plant or animal species. Requirements for entry as an element occurrence differ from element to element; the central requirement is that the particular locality must be of critical importance in sustaining the element during all or part of its life cycle or span of existence. It is important to note that,

for plant and animal species, the EO refers to all the individuals of a given species at a single given locality. In other words, three individuals of a rare plant species, all found at the same spot, represent a single occurrence, not three occurrences. The case can arise, of course, where three separate and distinct examples (individuals or colonies) of a rare plant are found in the same general area (for example, within the same square mile but each a half mile from the other); these are properly treated as three separate element occurrences, easily distinguished at the scale of the topological maps. For communities, not all examples of a listed community are necessarily occurrences. Emphasis is more on quality of the stand, especially for the more common communities.

Element occurrence rank (EO rank). A Nature Conservancy assigned code used to compare the quality, condition, viability, and defensibility of different occurrences of the same element. Ranks are coded A (excellent), B (good), C (marginal), or D (poor).

Element rank. The Nature Conservancy code assigned to each element in the element ranking process that shows its relative status of endangerment.

Elements of natural diversity. The basic units of the classification system and the targets of the heritage inventory and natural diversity conservation. These units are natural entities that, taken collectively, represent the full array of natural diversity for the state or region covered. The units are of three main types:

- *Communities* [plant communities (PC) and natural communities (NC)]: The coarse filters that capture numbers of species, abiotic factors, and other entities or phenomena associated with such types.
- *Special plants* (SP): Native species that, due to their rarity, cannot reliably be captured by a community type approach.
- *Special animals* (SA): Native fauna that, due to their rarity or unpredictable distribution, cannot reliably be captured by a community type approach.

In addition, some states have adopted into their classifications other types or classes of elements such as geological or a catch-all class ("other") to handle elements of marginal interest such as champion trees.

Eminent domain. The right of a unit of government acting on behalf of the people it represents to take private property for public use upon payment of just compensation.

Encroachment. When a building, wall, fence or other improvement encroaches upon (overlaps) the land of an adjoining owner, there is said to be an *encroachment*, provided that the adjoining owner has not consented to the location of the encroaching improvement on his or her land.

Encumbrance. A claim, lien, charge, or liability attached to and binding upon real property and which reduces the fair market value but may not prevent conveyance of the owner's rights in that property to someone else.

Endorsement. In title insurance matters, a special document or rider added to a title policy to alter its terms, usually to increase coverage. Some states have standard endorsements; the availability and cost differ.

EO. See *element occurrence.*

Equity. (1) The difference between the fair market value and the existing debt on a property; (2) A branch of remedial justice by and through which relief is afforded to suitors in courts of equity.

Escheat. A forfeiture of title to real property or personal property to the state.

Escrow. The deposit of documents and/or funds by the parties to a real estate transaction with a neutral third party (generally a title company) for delivery upon performance of a certain condition, such as for a real property closing. The holder of the funds and documents is called the *closing agent, escrow agent* or *escrow holder.* See *escrow instructions.*

Escrow agent. See *escrow.*

Escrow holder. See *escrow.*

Escrow instructions. Written instructions from a party to a real estate transaction (or the party's attorney) to the closing agent outlining terms,

conditions, and responsibilities of the closing agent. If the instructions are from all of the parties in a real estate transaction, then the instructions are referred to as *joint escrow instructions*. See *escrow*.

Estate. The degree, quantity, nature and extent of a person's interest in real property, such as: fee simple estate, life estate, lease, etc. Also, the term *estate* may be applied to the property left after death of a person.

Exchange land. Non-ecologically sensitive real property acquired for the express purpose of trading with an owner in lieu of cash for ecologically sensitive land for protection purposes (potential tax benefits for owner).

Extinction. The disappearance of a species throughout its range.

F

Fair market value. The most probable price in cash, terms equivalent to cash, or in other precisely revealed terms, that a willing buyer would pay for property and a willing seller would accept, each acting prudently, knowledgeably, and in his or her self-interest, and assuming neither is under undue duress.

Fee; Fee simple; Fee simple absolute; Fee simple estate. Absolute ownership unencumbered by any other interest or estate; subject only to the limitations of eminent domain, escheat, police power, and taxation. The largest estate in land permitted by law.

Fiduciary. A person in a position of trust and confidence, who holds personal or real property in trust for another.

Financing statement. The instrument which is filed in order to give public notice of a security interest in personal property, thereby protecting the interest of the secured party in the collateral.

First lien mortgage. A mortgage that has first priority over all other claims against the property except taxes and bonded indebtedness.

Fixture. Something which was originally personal property and has become "affixed" or attached to the land or improvements in such a manner as to be considered real property.

Foreclosure. Mandatory transfer of title to property used as security by

court order in satisfaction of an unpaid debt.

Forfeiture of title. A penalty for the violation of conditions or restrictions imposed by the seller upon the buyer in a deed or other proper document. For example, a deed may be granted upon the condition that if liquor is sold on the land, the title to the land will be forfeited (that is, lost) by the buyer (or some later owner) and will revert to the seller.

G

Gap Analysis. A comparison of the distribution of elements of biodiversity with that of protected areas to identify elements or groups of elements which are inadequately protected.

Geographical Information System (GIS). Computer data bases that provide sophisticated mapping capability. Geographic/mapped information is entered into the computer, where a GIS can be used to produce area maps and overlays. Base maps can be easily updated as new information becomes available.

Good faith buyer or mortgagee. See *bona fide purchaser or lender.*

Gradient Analysis. A method of using information concerning the factors which determine the distribution of natural communities and General Linear Modeling techniques to predict where specific natural communities occur on the landscape, and to judge their stability and protectability.

Grant. A technical legal term in a deed of conveyance bestowing an interest in real property to another.

Grantee. See *deed.*

Grantor. See *deed.*

Ground lease. An agreement for the use of the land only, sometimes secured by improvements placed on the land by the user.

Groundwater rights. Rights which apply to water flowing or percolating through the earth without following any particular channel. May consist of *overlying rights* (similar to riparian rights in the owner of the overlying land) or *appropriative rights*, depending on the law of the particular state.

H

Habitat. The physical structure and vegetational composition and physiognomy of an area whose characteristics determine its suitability for supporting particular plants and animals.

Habitat Conservation Plan (HCP). A conservation plan required under the Endangered Species Act in order to allow incidental takings of a listed species.

Heritage Program. Mechanism created by The Nature Conservancy in the early 1970s to inventory, map, and index information objectively about relatively rare or otherwise important biological elements in each state. Typically a State Heritage Program is begun under the Conservancy's auspices, usually under contract to the state government, and is transferred to the appropriate government agency after two or more years. Some State Heritage Programs remain operated and funded by the Nature Conservancy itself. Each State Heritage Program maintains a standardized data base that helps The Nature Conservancy in conservation planning and in determining what is rare in a state and where it exists. The data base also aids federal, state, and other private land-use decision-makers in avoiding conflicts between development and conservation interests by providing timely and objective information.

Highest and best use. The reasonable and probable use that supports the highest present value of property; concept used in appraisals to determine fair market value of property (See *appraisal* and *fair market value*).

Homestead. A statutory protection from execution or the establishment of title by occupation of real property in accordance with the laws of various states or the Federal Government.

I

ICA. See *Invertebrate Characterization Abstract.*

Improvement. A valuable addition made to real estate; principally refers to buildings.

Injunction. A court order prohibiting some act, or compelling an act to be done (see also *specific performance*).

Installment note. See *promissory note.*

Instrument. A written legal document, created to effect the rights of the parties, giving formal expression to a legal act or agreement for the purpose of creating, modifying or terminating a right (such as promissory notes, deeds, mortgages, leases, assignments).

Intended status (IS). The level of protection desired but not yet attained for a tract of land as reported on a Natural Diversity Scorecard.

Internal rate of return. The rate of discount which makes the net present value of an investment equal to zero.

Intestate. A person who dies having made no will, or having made a will which is defective in form. In this case, the person's estate descends to the person's heirs as determined by state law or next of kin.

IS. See *intended status.*

Invertebrate Characterization Abstract (ICA). A subset of the Biological and Conservation Data System data bases which contains taxonomic and generalized life history, ecological, and distributional information on invertebrate species.

J

Joint escrow instructions. See *escrow instructions.*

Joint tenancy. An estate owned by two or more persons in equal shares created by a single transfer. Upon the death of a joint tenant, the surviving joint tenant(s) take(s) the entire property and nothing passes to the heirs of the deceased.

Judgment. The decision of a court of law awarding to one of the parties in an action or proceeding monetary amounts or nonmonetary orders which affect the rights of the parties. Judgments generally become liens on real property when they are recorded.

Junior lien. A lien recorded subsequent to another lien on the same property or made subordinate by written agreement to a later recorded lien.

Jurat. See *acknowledgment.*

L

Land Acquisition Priority System (LAPS). A method developed by the

U.S. Fish and Wildlife Service to automate data concerning proposed additions to the National Wildlife System and produce a national priority list (NPL).

Landowner registry. See *registration.*

Landscape. A miles (or kilometers) wide area where a cluster of interacting communities or ecosystems is repeated in similar form.

Lease. A conveyance that creates a possessory estate in an interest in real estate. It is a temporary interest, which is a principal characteristic that distinguishes a lease from other interests such as easements. This is a strict definition of *lease.* Many conveyances are informally called leases even though they do not create a possessory estate. Examples of such leases are the following: agriculture, grazing, haying, lumbering, mining, gas and oil leases.

Leasehold estate. A tenant's right to occupy real estate during the term of the lease.

Lease-in. A legal contract by which a conservation entity assumes management responsibility for a piece of property for a set length of time. (See also *management agreement.*)

Lease-out. A legal contract by which conservation entity conveys use of a piece of property to another organization or individual for a set length of time.

Legal. When used with reference to describing real property, means legal description.

Legal monitoring. Periodic inspection of properties for which the conservation entity has legal rights (purchased, donated, or retained at transfer of title) to ascertain whether the owner is in compliance with the terms of the deed restrictions.

Letter of intent. In context of cooperative transactions, letter signed by authorized official on behalf of a government agency stating that the agency in question will purchase specific property acquired for the agency by the private conservation organization.

License. Permission or authority to do a particular act or series of acts on land belonging to another without possessing any estate or interest in that land (no possessory interest in real estate changes hands; see *lease*). The right is personal and of brief duration.

Lien. A charge against property whereby the property is made security for the payment of a debt.

Life estate. An estate or interest in real property, which is held for the duration of the life of some certain person. It may be limited by the life of the person holding it or by the life of some other person.

Liquidated damages. A sum agreed upon by the parties to be full damages if a certain event occurs. Many states have formal legal requirements for enforceability.

Lis pendens. Notice of action of pending litigation which will, if successful, affect the title to the real property.

M

MA. See *managed area.*

MAI. Designates a person who is a member of the American Institute of Real Estate Appraisers, a generally respected organization of appraisers.

Managed area (MA). An area of land under unified conservation management and designated by a single name, such as a private conservation organization preserve, state nature preserve, federal wildlife refuge, etc. May be a single contiguous property or may be made up of parcels that are not directly connected. A managed area may be a part of a larger site or may contain one or more sites. There may be managed areas within managed areas, e.g., a research natural area in a wilderness area in a national forest. The most encompassing managed area is a *major management unit* (the national forest in the preceding example). The purpose of taking note of managed areas is to identify the total landscape on which natural elements are protected and where natural conditions are generally allowed to prevail. For information management purposes, The Nature Conservancy gives a managed area has a name and a unique identifying code. (See also *preserve*)

Management agreement. An agreement that provides a manager with the right to enter the land and perform certain tasks. A management agreement is a bilateral agreement that is signed by both parties and conveys rights and responsibilities upon both parties. In some instances, such agreements are written and executed to establish a legally binding relationship between the two parties. In such instances, the agreement is very similar to a lease and is often a recorded document. In other cases, management agreements are not intended to be legally binding and are simply a signed agreement between a landowner and a managing entity. In such cases, agreements are voluntary and provide a level of protection similar to registration of the property.

Map scale. The ratio of the distance on a map to distance in the real world, expressed as a fraction—the larger the denominator, the large the scale; e.g., 1:24,000 is smaller than 1:100,000.

Marketable title. Title to property which a reasonably prudent and informed buyer will accept from a reasonable seller and which is free from encumbrances and any reasonable doubt as to its validity.

Mechanic's lien. A lien given by state law to those who do work or provide materials for the improvement of real property to secure payment of compensation for the work done or material supplied.

Memoranda of understanding. See *Cooperative Management Agreement.*

Merger of title. The absorption of one estate into another.

Metes and bounds (measurements and boundaries): Usually refers to a type of legal description in which all of the exterior lines of the parcel of land are described in succession to form a closed area.

Monitoring. See *biological monitoring* and *legal monitoring.*

Mortgage. A written document by which land is used as security for the repayment of a loan or other obligation. In this document, the landowner is called the *mortgagor.* The lender is the *mortgagee.* Legal title to the property is conveyed from the landowner to the lender and the landowner retains an equitable interest in, and generally most posses-

sory rights to, the property. When the debt is repaid, the lender reconveys title to the landowner.

Mortgagee. See *mortgage.*

Mortgagor. See *mortgage.*

N

Natural diversity. A term that refers, collectively, to all species, subspecies, distinctive populations, and genetic variants of plants and animals, within their natural habitats, and to the communities and ecosystems into which they are organized. The Nature Conservancy attempts to encompass this diversity efficiently by means of its classification of the "elements of natural diversity."

Natural Diversity Scorecard. An output format of the Biological and Conservation Data System (BCD) which arrays element occurrence information roughly in order of descending importance based on rarity and endangerment.

Natural Heritage Inventory Program. See *Heritage Program.*

Non-judicial foreclosure. See *power of sale.*

Non-recourse. Type of loan secured by property in which the lender can only look to the security for repayment of the debt if the borrower defaults and is barred from seeking action against the borrower personally if the value of the security is less than the debt (compare *deficiency judgment*).

Note. See *promissory note.*

O

Official records. The books in which all deeds and other instruments filed in the recorder's or county clerk's office are recorded.

Option agreement. Agreement whereby the seller gives a buyer the right but not the obligation to buy certain described property within a specified time period at a given price. An option is binding upon the seller and becomes a contract (and binding upon the buyer) if properly exercised by the buyer.

P

Parcel. Generally, this refers to a piece of land, usually a specific part of a larger portion of land (see *assessor's parcel*).

Partition action. Court proceedings by which co-owners seek to sever their joint ownership (see *tenancy in common*).

Patent. A conveyance by the government of title to government land to a private party.

PCA. See *Plant Characterization Abstract.*

Personal property. Moveable property; property that is not designated by state law as real property (e.g., money, goods, evidences of debt, rights of action, furniture, automobiles, etc.).

Plant association. A plant community of definite floristic composition, presenting a uniform physiognomy and growing in uniform habitat conditions.

Plant Characterization Abstract (PCA). A subset of the Biological and Conservation Data System which contains taxonomic and generalized life history, ecological, and distributional information on vascular plants.

Plat. Map, plan, or chart of a city, town, section, or subdivision indicating location and boundaries of properties. Usually provides the officially recognized property locations and boundaries.

Plat book. A public record of various recorded plats in a stated area.

Plot. Parcel of land consisting of one or more lots or portions thereof usually described by reference to a recorded plat.

Possessory estate. Estate in land that gives the holder of the estate the right to occupy and possess real property.

Possibility of reverter. See *reverter.*

Power of attorney. A document by which one person (called the *principal*) authorizes another person (called the *attorney-in-fact*) to act for

him or her in a specific manner in designated transactions.

Power of sale. The right of a mortgagee or trustee, when the mortgage or deed of trust so provides, to sell the secured property following certain steps prescribed by law but without judicial proceedings if the borrower defaults in payment of the promissory note, or otherwise breaches the terms of the mortgage or deed of trust (often referred to as *non-judicial foreclosure*).

Prelim; Preliminary title report; Preliminary report. A signed and dated formal report issued by a title company or title attorney, which sets out in detail the condition of title to a particular parcel of land. A preliminary report should be distinguished from a title policy; a preliminary report is issued solely for the purpose of facilitating issuance of a title policy and cannot be relied upon. (See also *title commitment* and *title insurance.*)

Prescriptive easement. A right to use another's property which is not inconsistent with the other's rights and which is acquired by an open, adverse, exclusive and continuous use for the statutory period. It resembles adverse possession but differs in that the adverse user gains only an easement, not fee title. See also *adverse possession.*

Present value. The amount invested now in order to receive a specified sum in the future, given an assumed rate of interest, term, and frequency of compounding.

Preserve. A conservation-entity-owned, managed, or monitored area (that is, the conservation entity usually has a legal interest in the tracts involved).

Preserve design. The process by which specific ecological boundaries are determined and mapped at a site as a result of intensive field investigation.

Preserve monitor. An individual who is responsible for monitoring one or more preserves.

Preserve monitoring. See *biological monitoring* and *legal monitoring.*

Principal. (1) The outstanding balance of money borrowed; (2) A person who employs another to act as his or her agent. (e.g., see *power of attorney.*)

Priority. Refers to the order of preference, rank, or position of the various liens and encumbrances affecting the title to a particular parcel of land. Usually the date and time of recording determine the relative priority between documents.

Priority site list. A list of sites derived from a state site tracking report that, if protected, will make the greatest contribution toward preserving the state's and the nation's natural diversity. In selecting priority sites, reference is made to the natural diversity scorecard and element ranking forms as well as the site tracking report. The priority site list is the protection agenda and includes potential registry sites, as well as sites requiring more permanent protection.

Project. A real estate transaction in which a conservation entity acquires a legal interest in a parcel of land or assists another conservation entity in acquiring a legal interest in a parcel of land. A project usually involves a single tract at a single site but can include multiple tracts and multiple sites. A single tract can be involved in more than one project; for example, a tract may be first protected with a voluntary agreement then later purchased.

Promissory note. A signed written instrument acknowledging a debt and promising payment, according to specified terms and conditions.

Protection planning. The general process by which the sites on which examples of targeted elements occur assume definition as projects.

Protection status. The degree to which current designations and management practices protect ecological values of plants, animals, and natural communities.

Protection tools. Various legal and quasi-legal arrangements for land protection, including landowner contact, registration, management agreement and lease, conservation easement, acquisition, and dedication.

Purchase agreement. A written contract entered into between the seller

and the buyer in which they agree upon the terms and conditions of a sale of property.

Q

Quiet title. A court action brought to clarify ownership of a tract of land and to remove a *cloud on title.*

Quitclaim deed. In most jurisdictions, a deed of conveyance whereby whatever interest the grantor has in the property described in the deed is conveyed to the grantee without any guarantees as to the status of the title.

R

Rapid Ecological Assessment (REA). The sequential use and evaluation of high-resolution satellite images, aerial photography and videography, and field verification and sampling to quickly locate high-quality communities and landscape clusters deserving protection.

Real property. Land, improvements, and *fixtures.*

Reconveyance. The transfer of title to land from one person to the immediate preceding owner. With respect to deeds of trust, an instrument called a *reconveyance* (or *recon*) is commonly used to transfer legal title from the trustee to the trustor (borrower) after the underlying debt has been paid in full.

Recording. The filing of a document with the recorder or county clerk for the purpose of having it copied into the public records. The recording of a document gives notice to the public of its contents. The requirements for recording vary among jurisdictions.

Registry. A non-binding agreement between a private organization or public agency and the owner of a natural area whereby the owner will protect the natural elements occurring on the property and notify the agency or organization should title to the property be transferred or should the viability or health of the natural elements decline. Some state registry programs are merely lists of important natural areas. Registry programs are designed to encourage landowners to protect natural elements on their property.

Release clause. A clause in a financing instrument stating that, upon compliance with certain conditions, the lien of the instrument, as to a spe-

cifically described lot or area, will be removed from a blanket lien on the whole area involved.

Remainder. A future interest in a grantee that is capable of becoming possessory upon the expiration of the preceding estate in real property. A remainder never divests the preceding estate. A remainder cannot follow a *fee simple estate*, but can follow any other kind of possessory estate, such as a *life estate*. Remainders are vested or contingent. A vested remainder is created in an ascertained person and is not subject to a condition precedent. A contingent remainder is either created in an unascertained person or is subject to a condition precedent.

Reserve. See *preserve.*

Restriction. See *deed restriction.*

Retained rights. Indicates some right held back when title to property changes hands (e.g., mineral rights, timber rights, right-of-way over land, right to hunt or fish, or some other active use of land.)

Reverter. A future interest remaining in the grantor that gives the grantor the automatic right to full possession and ownership of real property upon the happening of some event.

Right of survivorship. The right of a surviving tenant or tenants to succeed to the entire interest of the deceased tenant; the distinguishing feature of a joint tenancy.

Right-of-way. Right to use or cross over the property of another.

Riparian land. The smallest parcel of land in a single chain of title, from the original government grant to the present, which is contiguous to a stream or water course and within its watershed. Lands severed from contiguity at any point in the chain of title lose their associated riparian rights unless intent to preserve the riparian rights is clearly manifested.

Riparian rights. The right to divert and use water by the owner of land abutting a stream or water course, provided the use does not unreasonably interfere with the riparian rights of other owners along the same

water course. (See *riparian land.*)

Rollback taxes. See *deferred taxes.*

Rule against perpetuities. Common law rule, codified in most states, which provides that an interest in property must vest, if at all, no more than 21 years after a life in being at the creation of that interest. Both rights of first refusal and options are future interests which are subject to this rule. Courts have evolved doctrines, and many states have specific statutes which ameliorate the harshness of the rule.

S

Sale-leaseback. A property sales transaction in which, at the time of the sale, the seller retains occupancy by concurrently agreeing to lease the property back from the buyer.

Secured party. The party holding the *security interest in* property.

Security interest. Form of interest in real or personal property which provides that the property may be sold by default to satisfy the debt or other obligation for which the security interest was given.

Separate property. Real property owned by one spouse exclusive of any interest of the other spouse (see *community property*).

Servient tenement. An estate in land that bears the burden of an easement. For example, an owner whose land is encumbered by an easement which benefits another land owner, has a servient tenement on his or her land.

Site. An area on the landscape which supports one or more occurrences of *elements of natural diversity*, whose boundaries are drawn in such a way as to ensure the continued viability of those *element occurrences.*

Special assessment. See *assessment.*

Special warranty deed. A deed that limits the liability of the grantor to claims arising from the grantor or his or her heirs.

Species richness. The number of species of a particular interest group found in a given area.

Specific performance. An equitable remedy granted by a court requiring a person to undertake some positive act (see also *injunction*).

Statistical Package for the Social Sciences (SPSS+). A statistical software program available for use on microcomputers. In its data entry mode, the program is particularly useful for survey research for recreational planning. Information can be coded directly into data files from survey forms or responses. The statistical analysis and aggregation capabilities provide a full range of analytical tools for researchers.

Statute of frauds. A statute requiring certain contracts (including all contracts dealing with real estate) to be in writing and signed before they are enforceable at law.

Stewardship. Preserve management designed to protect and enhance the important *element occurrences* on the *preserve.*

Subdivision. A tract of land divided, by means of a map, into lots, generally for residential purposes.

Subject to mortgage (or deed of trust). The acquisition of title to real property encumbered by a mortgage or deed of trust where the buyer does not assume personal liability for repayment of an existing debt.

Subordination agreement. An agreement by which one *encumbrance* (for example, a mortgage) is made subject to another *encumbrance* (such as a lease). To *subordinate* is to *make subject to*, to make of lower priority.

Succession. The natural change of plant and animal communities that leads to a stable *community* type in an area, following disturbance or colonization of previously unoccupied substrates.

Surface rights. Rights to enter upon and use the surface of a parcel of land, usually in connection with an oil and gas lease or other mineral lease. Surface rights may be implied by the language of the lease (no explicit reservation or exception of the surface rights) and other times they are explicitly set forth.

Survey. The measurement by a surveyor of real property delineating the

perimeter measurements of a piece of land to determine its acreage and boundaries.

System. A landscape, usually large in size with naturally functioning ecological processes, and containing outstanding examples of ecosystems, natural communities, and species that are endangered or inadequately protected. A system includes core natural areas containing significant biological resources. Long-term protection also requires reasonable insulation from threats. A system is therefore designed to withstand human pressure through its size and configuration or by accommodating compatible human use (see *buffer zone*). A system must be an ecologically viable landscape, typically a watershed, which encompasses one or more of the following features:

- High-quality examples of terrestrial or aquatic communities which are endangered or inadequately protected;
- Concentrations of rare species;
- A large, relatively undisturbed example of natural community once characteristic of its ecoregion, but now fragmented or degraded;
- A critical migratory stopover point or corridor.

T

Tax deed. A deed issued for property that has been sold by the county or state for non-payment of taxes.

Tax-free exchange. The trade or exchange of one piece of real property for another without the need to pay income taxes on the gain at the time of the trade.

Tenancy in common. Co-ownership of property by two or more persons who hold undivided interests, without right of survivorship; interests need not be equal.

Thematic Mapping (TM). An analysis of remote-sensing imagery which separates the landscape into distinct layers based on reflectance values, in order to delineate differences in vegetative cover.

Title. The sum of all the evidence that constitutes proof of property ownership.

Title abstract. Condensed history of the title to real property together with a statement of all liens, restrictions, or encumbrances. The purpose is to apprise a potential buyer of the current ownership status of a piece of property.

Title binder. Similar to a *title commitment* but usually insures for a shorter period.

Title by adverse possession. Ownership acquired by notorious and open occupation and use of property and recognized against the paper title owner. Must be adjudicated to be fully binding.

Title commitment. An agreement by the title insurer to issue a title insurance policy within a specified time after a valid and sufficient instrument creating an insurable estate, interest, or lien is executed, delivered, and recorded, and after a policy premium is paid. A title commitment (binder) shows the condition of title as of a certain date.

Title company. A company that is either a title insurer or underwritten title company. Title companies often provide escrow services as well. (See also *title insurer* and *underwritten title company*).

Title endorsement. See *endorsement.*

Title exceptions. Matters that do or may affect title to a piece of property and which the title insurance will not insure against. (See *title exclusion*).

Title exclusions. Standard matters that are excluded from coverage in a form title insurance policy, such as zoning and environmental laws, unrecorded rights of eminent domain, matters known to the insured, but not disclosed, claims arising out of bankruptcy, and other matters.

Title insurance. An insurance policy (contract) that insures the fee or other interest held in real property and indemnifies the holder for loss sustained by a title that proves defective. Title insurance, like a title commitment and title report, shows the condition of title as of a certain date. (See also *title report, title commitment,* and *ALTA title insurance.*)

Title insurer. A company authorized to issue title insurance.

Title opinion. A statement by a title attorney to a client as to the condition of the title based upon a search of the title.

Title policy. See *title insurance.*

Title report. A "snapshot" of the condition of title as of a certain date. Unlike a *title commitment* or *title insurance*, a title report contains no agreement to insure against title defects not identified in the report. Usually used as the working document from which a title company ultimately issues a title policy at closing. Title reports may be prepared by a title insurer, title abstracter, or attorney, depending on the state.

Title search. Examining and checking ownership papers on file at a courthouse or statehouse to make sure there are no liens against the property or any defect in the title. The product of a title search may be a title report, an attorney's certificate of title, a title abstract, or an insurance company's title commitment (title binder) that is used in the issuance of title insurance.

TM. See *Thematic Mapping.*

Township. In the survey of public lands of the United States, a territorial subdivision six miles long, six miles wide, and containing 36 sections, each one mile square, located between two range lines and two township lines.

Tract. A single unit of real property owned by one owner or group of owners with undivided interests that can be conveyed by one deed.

Transfer taxes. See *documentary transfer taxes.*

Trustee. See *deed of trust.*

Trustor. See *deed of trust.*

UCC. See *Uniform Commercial Code.*

U

Underwritten title company. Title company that often does its own title search and may provide a title insurance policy of a title insurer, but cannot itself issue title insurance.

Uniform Commercial Code. A unified and comprehensive method for regulation of secured transactions in personal property, adopted in some form by all states except Louisiana.

V

Vertebrate Characterization Abstract (VCA). A subset of the Biological and Conservation Data System which contains taxonomic and generalized life history, ecological, and distributional information on vertebrates.

Vest. To give title to or to pass ownership of real property.

Vesting. The names, status and manner in which title of ownership is held in a particular piece of real property; also the portion of the title report or policy setting forth the above.

Voluntary landowner agreement. See *management agreement.*

Voluntary protection project. See *project* and *registry.*

Warranty deed. A deed in which the grantor, for himself or herself and his or her heirs, guarantees to defend the title to the property against any future claims arising prior to conveyance.

W

Wild deed. A deed in which none of the parties named have any apparent interest in the property as described.

Appendices

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Note

These Appendices include materials (such as checklists, outlines, and annotated agreements) which The Nature Conservancy uses under appropriate circumstances and have been included in this handbook as general guides. They are not intended to be complete compilations of all of the considerations or consequences involved; accordingly, they will need to be modified to meet the particular needs and policies of each conservation entity and also will need to be adapted to the facts and circumstances of each transaction. Before using any of the materials contained in these Appendices, the user should consult with an experienced attorney and should also obtain all required approvals of the conservation entity.

Portions of Appendices E.1, G.4, and G.5 are based on materials prepared by the law firm of Morrison & Foerster and have been used by The Nature Conservancy as an original source in preparing those items, with Morrison and Foerster's permission.

Appendix A
Summary of Existing Institutional Protections for Habitat Areas and Recreation Sites on Private Land within the *Exxon Valdez* Oil Spill Area

APPENDIX A

Summary of Existing Institutional Protections for Habitat Areas and Recreational Sites on Private Land within the Exxon Valdez Oil Spill Area.

Prepared for

The Nature Conservancy

by

James W. Wickes

December 11, 1991

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Introduction

This appendix summarizes existing federal, state and local laws, regulations and ordinances that protect, to varying degrees, wildlife habitat and recreational sites located on private land within the Oil Spill Area.

This appendix is not an exhaustive list of laws, regulations, ordinances or related permits and authorizations for each potential use or activity involving private land. Instead, this appendix focuses on significant laws and regulations that encourage the protection of wildlife habitat and recreational areas on private lands when development of private land or associated resources occurs.

Many state and federal environmental laws and regulations are focused on the protection of: specific resources or values, such as endangered species, cultural resources, water quality or fishery resources; specific activities, such as mining or logging; or land with special characteristics, such as wetlands or coastal lands.

Regulating the use and development of private land in the United States is traditionally the domain of state or local governments. Land use plans, zoning and subdivision rules are enforced by certain cities and boroughs within the Oil Spill Area. This regulation may limit the type or intensity of allowed uses on private lands for the purposes of protecting public health, safety or welfare.

Several state and federal programs summarized here apply to private lands under certain geographic or jurisdictional circumstances. For example, activities on land located within the defined coastal zone must be consistent with the Alaska Coastal Management Program before otherwise required state or federal permits are issued. If an activity on private land requires a federal permit, the activity may become subject to the review of other federal or state programs. For example, development of wetlands usually requires a federal permit under Section 404 of the Clean Water Act (CWA). This federal permit involvement in turn triggers other requirements, such as water quality certification under Section 401 CWA, review under the National Historic Preservation Act, and others, including the ACMP if the proposed activity is also within the defined coastal zone.

If the proposed activity requiring a federal permit is considered significant enough, the activity's environmental impacts may be subject to study and disclosure under the National Environmental Protection Act (NEPA) process. Although it does not control the results of federal

permitting processes (and therefore is not summarized in this appendix), the NEPA process itself may reveal additional effects that make the proposed activity subject to regulation under other programs.

The brief summaries contained in this appendix are meant to provide an introduction to how a given statute, regulation or ordinance may affect private land use and development. The summaries are not meant to be definitive explanations of the statutes, regulations or ordinances.

Copies of the statutes, regulations, ordinances and plans summarized here are too voluminous to reproduce as part of this appendix. Federal and state statutes and regulations cited in the summaries are available at major libraries in Alaska or from respective agency offices in Anchorage. Local government ordinances and plans can be obtained by contacting respective borough or city offices (addresses given on last page of this appendix). Coastal District Plans are on file at the Anchorage office of the state Division of Governmental Coordination.

Alaska Coastal Management Program

Program: Alaska Coastal Management Program (ACMP)

Administered by: Alaska Coastal Policy Council; Governor's Office of Management and Budget, Division of Governmental Coordination (DGC).

Purpose and Scope: The ACMP's general purpose is to balance resource development and protection in Alaska's coastal areas. Among the specific objectives of the Alaska Coastal Management Act is: "the protection and management of significant historic, cultural, natural and aesthetic values and natural systems or processes with the coastal area," AS 46.40.020(5). With regard to specific coastal habitats, ACMP standards discourage development unless there is no feasible prudent alternative, 6 AAC 80.130.

The ACMP also enhances the state's role in federal resource decision-making that affects coastal areas and the role of local governments in state and federal decision-making.

The program applies to all land, including private land, and water within the coastal zone. Within the Oil Spill Area, most areas up to elevations of 1000 feet are within the defined coastal zone and are subject to the ACMP.

Description: The ACMP overlays an additional requirement for actions of federal and state agencies, in addition to otherwise applicable statutory and regulatory requirements: the ACMP requires these agency actions also to be consistent with the standards and policies of the ACMP. With some exceptions, federal law requires ACMP consistency for discretionary federal agency actions, and the Alaska Coastal Management Act imposes the same requirement for state agency actions. Agency actions subject to ACMP consistency determinations include any federal or state agency permit decisions related to the

development and use of private lands.

Statewide coastal standards (6 AAC 80) adopted by the Coastal Policy Council and policies of approved local district plans form the state program or ACMP.

Coastal zone boundaries are depicted on maps in an atlas prepared by the Alaska Department of Fish and Game, Habitat Division (Coastal Zone Boundaries of Alaska, 1988) and in local district plans.

Local governments and coastal resource service areas established within the Unorganized Borough may develop district coastal management plans. The Unorganized Borough is that area in the state which lies outside incorporated local government boundaries. District plans usually supplement statewide standards and policies and provide greater detail with regard to allowable land and resource use. Within the Oil Spill Area, district plans exist for the cities of Cordova, Valdez and Whittier and for the Kenai Peninsula and Kodiak Island boroughs. There is no district plan for portions of the Oil Spill Area outside these local government units; statewide standards comprise the ACMP for these areas.

Development projects proposed for the coastal zone are reviewed by state resource agencies and the affected local district(s) for consistency with the ACMP. Where more than one state permitting agency is involved, DGC coordinates the review and determines the project's ACMP consistency. State permits otherwise required for a proposed activity cannot be issued unless the activity is determined to be consistent with the ACMP. Under federal law, the state must agree that a proposed use or activity is consistent with the ACMP before any federal permit or license is issued to a non-federal applicant. Mitigating stipulations are sometimes added to a permit as a condition of an affirmative ACMP consistency determination.

The ACMP has standards for the management of the following resources and activities: coastal development; geophysical hazard areas; recreation; energy facilities; transportation and utilities; fish and seafood processing; timber harvest and processing (defers to Alaska Forest Practices Act); mining and mineral processing; subsistence; certain habitats; air, land and water quality (defers to ADEC statutes and regulations); historic, prehistoric and archeological resources.

ACMP's habitat standard lists certain habitats, including estuaries, wetlands, rivers, stream, lakes and important upland habitat. These habitats are to be managed to maintain or enhance biological, physical and chemical characteristics which contribute to the habitat's support of living resources.

ACMP's recreation standard lists as criteria for designating areas of recreational use: significant recreational use or major tourist destination and potential for high quality recreational use.

ACMP permits the designation of coastal areas which merit special attention (AMSA) because of important natural or cultural values, including areas of high natural productivity or essential habitat and areas of substantial recreational potential. Activities proposed within AMSAs are evaluated for ACMP consistency purposes in terms of particular AMSA management guidelines as well as applicable ACMP policies.

With regard to AMSAs or district designations on private land, ACMP relies upon other authority (such as zoning) to implement prescribed management rules, unless a proposed activity or development on private land also requires state or federal permits. In the latter case, required state or federal permits would not be issued for an activity that is not consistent with the ACMP. This authority to withhold

required state or federal permits for inconsistent activities is the nexus of the ACMP.

Authority:

Alaska Coastal Management Act of 1977 (AS 46.40).
Project Consistency with ACMP (6 AAC 50).
Standards of the ACMP (6 AAC 80).
Guidelines for District Coastal Management Programs (6 AAC 85).
Coastal Zone Management Act of 1972, as amended, 16 USC 1456.
Federal Consistency with Approved Coastal Management Program, 15 CFR 930.

Land Use Regulation

Program: Zoning

Administered by: Local governments in the Oil Spill Area: Kenai Peninsula Borough, City of Seward, City of Homer, Kodiak Island Borough, City of Cordova, City of Valdez, City of Whittier and
Unorganized Borough portions of the Study Area: Alaska Department of Natural Resources

Purpose and Scope: The purpose of land use regulation is generally to provide for public health, safety and welfare. Zoning is the mechanism that gives force to a governmental land use plan. Among the purposes cited in the various local government zoning ordinances reviewed here are to provide planned and orderly use of land and to protect the environment. Zoning applies to private land within the jurisdiction of the zoning authority.

Description: DNR has the authority to zone land, including private land, in the Unorganized Borough. In the Oil Spill Area the Unorganized Borough comprises the Prince William Sound area outside the cities of Cordova, Valdez and Whittier and outside the Kenai Peninsula Borough. DNR has used its zoning authority sparingly to zone several state land disposal areas (outside the Oil Spill Area) in order to restrict the use of these lands after they were conveyed from state to private ownership. DNR also has authority to zone private inholdings within state park units.

The Kodiak Island Borough (KIB) exercises area-wide zoning powers, including areas within borough cities. KIB has several zoning districts that reflect habitat protection purposes: wildlife habitat, conservation and natural use districts. KIB's Natural Use District is the most restrictive of development by prohibiting the construction of most structures.

Little, if any, private land is included in this district. The Conservation District encourages open space preservation by requiring large lots for single family residential and agricultural purposes. Land in the borough not otherwise zoned when the current ordinance was adopted (1981) was automatically zoned Conservation. This district contains substantial acreage of private ANCSA corporation lands. The Wildlife Habitat District is designed to protect and maintain wildlife habitat and its productivity. Most lands in this district are public lands known as the trade lands related to the Terror Lake hydropower project.

Kenai Peninsula Borough (KPB) has two zoning districts: the municipal district comprising land within cities which exercise zoning power and the rural district comprising all other land in the borough. Land use in the rural district is generally unrestricted. Within the Oil Spill Area and the KPB, there are three cities. The cities of Homer and Seward exercise zoning power. Zoning for land within the city limits of Seldovia is done by the KPB. Generally, the corporate boundaries of these cities cover relatively small areas and most private land is zoned for residential, commercial or industrial uses. As a rule, private lands are not zoned as Open Space Recreation (Homer) which comprises public recreation sites, nor are private lands zoned as Park or Resource Management districts (Seward). Seward's Resource Management zone comprises flood plains, steep slopes and other predominantly public lands whose development would pose safety problems.

The City of Valdez covers a large area, but most of the land within its boundaries are state or federally owned. Valdez has a Conservation zone which is used to protect critical habitat among other values. However, only public lands are included in this district. Neither are private lands zoned for Parks and Recreation, although Valdez' subdivision ordinances do provide for the reservation or dedication of private

lands for public purposes such as parks.

The City of Whittier has 8000 acres of land within its corporate boundary; only ten percent of this is privately owned. Most private land is zoned for some development purpose. Most federal lands are zoned as Open Space.

The City of Cordova has a Conservation District, but, as a rule, limits land so zoned to public lands. As part of its coastal district plan, Cordova has zoned some private land along with public lands as Conservation for future development for its recreational values. Cordova's coastal district plan establishes management districts within Cordova. These districts are incorporated into Cordova's zoning code.

Authority:

Zoning regulations in the unorganized borough (AS 38.05.037), Zoning District Regulations (11 AAC 91);
Zoning of private land within state parks (AS 41.21.025);
Respective zoning ordinances of local governments in the Oil Spill Area.

Subdivision: Unorganized Borough

Program:	Platting Authority in Unorganized Borough
Administered by:	Alaska Department of Natural Resources (DNR)
Purpose and Scope:	DNR serves as the platting authority with limited power in the Unorganized and Third Class boroughs.
Description:	In the Oil Spill Area, the Unorganized Borough comprises the Prince William Sound area outside the cities of Cordova, Valdez and Whittier and outside the Kenai Peninsula Borough. DNR's platting authority is limited statutorily to the replat, vacation or other changes to existing subdivision plats. A bill (HCS CSSB 81(FIN)) now is before the State Legislature that would expand DNR's platting authority to original plats. Because of DNR's current limited platting authority, no technical or design standards now apply to new (original) subdivisions in the Unorganized Borough (except for DEC's separate subdivision waste water review standards).
Authority:	AS 29.03.030; AS 40.15.070; AS 40.15.075 11 AAC 53

Subdivision: Local Government Ordinances

Program: Local Government Subdivision and Platting Ordinances

Administered by: Local governments in the Oil Spill Area: Kenai Peninsula Borough, Kodiak Island Borough, City of Cordova, City of Valdez, City of Whittier

Purpose and Scope: Subdivision and platting ordinances generally attempt to promote adequate and efficient street and road systems, provide for utility easements, set standards of survey and map accuracy, set standards for improvements and provide for other public purposes.

Within the Oil Spill Area, the local governments listed above have the authority to approve subdivision plats within their respective boundaries.

Description: The subdivision ordinances of these local governments deal with the usual subdivision design and platting requirements. They provide standards for lot dimensions and size, set street widths and arrangement, require dedications of streets, utility easements and other uses, and other standards and controls.

The City of Valdez requires reservation or dedication of land within certain sized subdivisions for additional public uses (including parks and recreation).

Authority: Respective local subdivision ordinances.

Subdivision: DEC Plan Review

Programs: Subdivision Plan Review

Administered by: Alaska Department of Environmental Conservation (DEC)

Purpose and Scope: The purpose of DEC's subdivision plan review program is to ensure that there is (or will be) adequate means of disposing domestic waste generated on each lot created by subdivision. Disposal is adequate if there is no threat to public health, to the quality of surface or ground waters or to potable water supplies. DEC's approval applies to all public and private property subdivisions in the state with certain exceptions.

Description: By regulation, DEC prohibits the subdivision, sale, lease or other conveyance of interest in a subdivision lot unless plans for the subdivision have been approved by DEC according to the criteria listed above.

DEC's subdivision plan review is required in addition to approvals by respective platting authorities.

DEC's water quality focused review provides an indirect measure of protection for dependent wildlife habitat and recreational values.

Certain subdivisions do not require this review: those with minimum lot sizes of 400,000 square feet (over 9 acres); for certain changes to subdivisions previously approved by DEC; and conveyances under Section 14(c) of the Alaska Native Claims Settlement Act.

DEC's plan review is in addition to subdivision requirements of established platting authorities.

Authority: Plans for Pollution Disposal (AS 46.03.090)
Subdivision Plan Review (18 AAC 72.300)

Section 22(g)

Program

Alaska Native Claims Settlement Act (ANCSA), Section 22(g).

Administered by:

U.S. Department of the Interior, Fish and Wildlife Service (FWS)

Purpose and Scope:

The apparent purpose of Section 22(g) is to retain federal management over those national wildlife refuge lands that were conveyed by ANCSA from federal ownership to village corporations and to give the United States the option to reacquire these lands in the event of any subsequent land sale.

Within the Oil Spill Area, the village corporation lands located within Kodiak National Wildlife Refuge are affected.

Description:

Section 22(g) puts special management restrictions on village corporation land conveyed from those federal wildlife refuge units that existed on December 18, 1971, the date ANCSA was enacted.

Although the village corporations hold the surface estate to this land in fee (the corresponding subsurface estate is still owned by the U.S.), provisions in the village corporation land patents make these lands "subject to the laws and regulations governing use and development" of the refuge. On its face, Section 22(g) zones this otherwise private land as "federal wildlife refuge land."

Section 22(g) also gives the United States a first right of refusal in the event of any sale of these lands by the village corporation.

It is likely that affected village corporations will challenge this provision at some future date.

There are no federal regulations that specifically address Section 22(g).

Authority:

Alaska Native Claims Settlement Act, as amended, Section 22(g) (43 USC 1621(g)).

Federal Regulation of Wetlands

Program: Clean Water Act (Section 404): Discharge of Dredged or Fill Material into U.S. Waters (including wetlands).

Administered by: U.S. Army Corps of Engineers (Corps); U.S. Environmental Protection Agency (EPA)

Purpose and Scope: The stated purpose of the federal Clean Water Act is to restore and maintain the chemical, physical and biological integrity of the Nation's waters. The current definition of "U.S. waters" for the purposes of Section 404 comprises virtually all waters of the U.S. including most, if not all, wetlands. The placement of dredged or fill material on private or public land which is classified as wetland is subject to regulation.

Description: The Clean Water Act prohibits the discharge of dredged or fill material into U.S. waters without a permit issued by the Corps. U.S. waters include tidally affected waters, those capable of supporting interstate commerce, intrastate waters whose use, degradation or destruction could adversely affect interstate or foreign commerce, and wetlands adjacent to all U.S. waters.

Wetlands are defined as water-inundated or saturated areas with characteristic soils and vegetation typical of water saturated areas. Criteria for determining if lands are wetlands are contained in "Federal Manual for Identifying and Delineating Jurisdictional Wetlands." The 1989 Manual currently in use is under review.

The Corps reviews Section 404 permit applications to ensure compliance with applicable requirements of other laws and to ensure that permits are otherwise in the public interest. In addition, Section 404 permits are reviewed against the substantive criteria outlined in the Section 404(b)(1) guidelines developed by EPA. If a proposed activity does not comply with these EPA guidelines as

applied by the Corps, the Corps will deny the permit except if the economics of navigation and anchorage otherwise justify the permit. EPA has statutory veto authority over Section 404 permits.

The Clean Water Act gives a state the option to assume control of Section 404 regulation by administering a federally approved state program. Section 404 remains a federal program in Alaska.

Authority:

Section 404, Clean Water Act (33 USC 1344) (formerly known as the Federal Water Pollution Control Act);
33 CFR 320 through 330: Regulatory Programs of the Corps of Engineers;
40 CFR 230: Guidelines for Specification of Disposal Sites for Dredged or Fill Material (EPA's 404(b)(1) guidelines).

Fish Habitat Permit

Program: Fish Habitat Permit (formerly Anadromous and Fish Passage permits)

Administered by: Alaska Department of Fish and Game (ADFG), Habitat Division

Purpose and Scope: The anadromous fish and fishway statutes are designed to protect and conserve Alaska's fish populations and their habitat within anadromous water bodies and to regulate activities within all fish streams to guarantee the free and efficient passage of fish. These laws apply to water bodies whose banks and bottoms are privately owned.

Description: Under the fishway statute, persons proposing activities within or across a fish stream which may impede the free passage of fish must provide a durable and efficient fishway and a device for efficient fish passage around the activity or obstruction. Activities or construction which potentially impede the fish passage include culvert installation, stream realignment or diversion, dams, low-water crossings, construction, placement, deposition or removal of any material or structure below ordinary high water.

Under the anadromous fish statute, activities within or across a waterbody identified by ADFG as important for the spawning, rearing or migration of anadromous fish require ADFG approval with respect to methods and timing.

Activities in anadromous streams and water bodies that require permission include construction, road crossings, gravel removal, placer mining water withdrawal, equipment use in the waterway, stream realignment or diversion, bank stabilization, blasting, and the placement, excavation, deposition, disposal or removal of any material from the waterway.

Authority: Fishway Statute (AS 16.05.840)
Anadromous Stream Statute (AS 16.05.870)
Waters Important to Anadromous Fish (5 AAC 95.010), ADFG periodically updates this listing in its "Catalog of Waters Important for Spawning, Rearing and Migrating Anadromous Fish."

Forest Management

Program: Alaska Forest Management Program

Administered by: Alaska Department of Natural Resources (DNR)

Purpose and Scope: Generally, the Alaska Forest Practices Act of 1990 aims to manage Alaska forest resources to provide a perpetual supply of timber resources by prescribing acceptable forest management practices. The Act also aims to protect both water quality and fish habitat from significant adverse effects of logging. Forests resources on private land are regulated under this Act.

Description: The Act restricts timber harvesting in riparian forests along certain anadromous and related streams and waterbodies within forested lands.

For coastal spruce or hemlock forests (which define most forested lands in the Oil Spill Area) on private land, the Act prohibits any harvest of riparian timber within 66 feet of a "Type A" water body. A Type A water body is anadromous, has a gradient of eight percent or less, has banks held in place by vegetation and has a bottom of rubble, gravel, sand or silt. Anadromous wetlands, lakes and estuaries are also Type A water bodies.

Timber harvesting on private lands near certain other waterbody types (within 100 feet of "Type B": anadromous streams whose banks are contained by geomorphology and not by vegetation and within 50 feet of "Type C": steep, narrow mountain tributaries to anadromous waters) is permitted but is subject to slope stability regulations.

The Act establishes riparian standards for state forest lands that are more stringent than for private lands.

Variances from riparian standards or any other requirement of the Act may be granted if the state forester determines that a proposed activity, because of

site-specific circumstances, is not likely to cause significant harm to fish habitat or water quality.

There are no special riparian management requirements for timber growing on private land along waterbodies that do not fall into one of these three types. Management of such timber is subject to forest management practices required by the Act and eventual regulations.

The Act requires a detailed plan be submitted and approved before timber operations can begin. Such plans are subject to interagency review and due deference must be given to expert agencies comments. The Act and its eventual regulations comprise Alaska Coastal Management Program standards with regard to timber harvest and processing in the coastal zone.

Protection, maintenance and enhancement of wildlife habitat on private forest lands is encouraged through voluntary cooperation between the private landowner and the Alaska Department of Fish and Game (ADFG). The Act specifies methods that ADFG may use, with the owner's consent, to protect habitat areas on private land. These include: purchase of fee title, purchase of conservation easements and land exchanges.

Conversion of forest land to other purposes is exempt from the Act's reforestation requirement that would otherwise apply.

The Act and its eventual regulations are intended to meet the federal Clean Water Act Section 319 requirements for state management of silvaculture non-point pollution sources.

Regulations to implement provisions of the 1990 Act have been proposed (public review draft) but are not adopted as of this writing.

Authority: Alaska Forest Practices Act, as amended (AS 47.17)

Surface Coal Mining Control and Reclamation

Program: Alaska Surface Mining Control and Reclamation Program

Administered by: Alaska Department of Natural Resources (DNR)

Purpose and Scope: The essential purpose of this program is to control surface coal mining operations in Alaska in a way that prevents adverse environmental effects from this activity. Surface coal mining operations on private land in Alaska are subject to the program's requirements. Coal resources occur in the Oil Spill Area.

Description: This program was developed in response to a federal statute (30 USC 1201) that required federal regulation of surface coal mining operations unless respective states developed acceptable programs for carrying out federal standards. Alaska's program meets federal statutory requirements for regulating surface coal mining operations within the state.

The program permits surface coal mining operations only after the state's approval of a mining plan and a reclamation plan. All activities conducted on or affecting the surface of land are subject to the program's regulation, including access roads, excavations, impoundments, stockpiles, storage areas or other facilities resulting from or incidental to the coal mine.

The program evaluates the effects of proposed mining and reclamation plans against the effects on fish and wildlife resources, cultural resources, hydrology, water supply, vegetation and other resources. An essential part of the evaluation is to determine whether a proposed reclamation plan is technically feasible. A performance bond is required to guarantee funds for an approved reclamation plan.

The program also allows for the

designation of areas containing coal resources as unsuitable for surface coal mining. Lands where reclamation is not feasible shall be determined unsuitable by DNR. Lands with other conflicting use or management plans or with other significant resources susceptible to damage from surface coal mining may be determined unsuitable. The designation process begins by petition from individuals or organizations before a mining permit application is approved.

Authority: Alaska Surface Mining Control and Reclamation Act (AS 27.21)
Regulations Governing Coal Mining in Alaska (11 AAC 90)

Mining Reclamation

Program: Mining Reclamation

Administered by: Alaska Department of Natural Resources (DNR)

Purpose and Scope: This program is charged with preventing unnecessary and undue degradation of land and water resources as a result of mining operations and to reclaim mined areas. By state statute, these reclamation requirements apply to private as well as public lands.

Description: In 1990, state legislation was enacted which requires mining and reclamation plans for all mining operations in Alaska (except for surface coal mining which is regulated under a separate program). The law establishes minimum reclamation standards for mining operations and requires that all mines submit a reclamation plan and obtain a reclamation bond before starting operations.

Operations covered by this law include mining both otherwise locatable and leasable mineral deposits and other materials including sand and gravel. The law also covers construction of facilities, roads, transmission lines and other support facilities.

Regulations to implement this statute are not yet adopted.

Authority: Reclamation statute (AS 27.19)

State Water Quality Certification

Program: Certificate of Reasonable Assurance

Administered by: Alaska Department of Environmental Conservation (DEC)

Purpose and Scope: The objective of the federal Clean Water Act (CWA) is to restore and maintain the chemical, physical and biological integrity of the Nation's waters. States may implement certain provisions of the Act.

One such provision is Section 401. The purpose of Section 401 is to have the affected state certify that discharges into navigable waters proposed by applicants for federal permits or licenses will have minimal impacts on water quality.

Section 401 certification applies to any activity on public or private lands which may result in any such discharge and which requires a federal permit.

Description: Before a federal permit or license is issued for an activity, the state must certify that any proposed discharge, whether from point or non-point sources, meets the quality standards of the Clean Water Act. DEC is the state agency authorized to issue such compliance certificates for Alaska.

DEC reviews the proposed discharge in terms of applicable State of Alaska water standards (18 AAC 70) which are at least as stringent as federal standards. If the proposed discharge is in compliance, DEC issues a Certificate of Reasonable Assurance (reasonable assurance that water quality standards will be met).

Section 401 certification by DEC is necessary before any otherwise required federal permit is issued, including permits under CWA Section 402 (NPDES), CWA Section 404 and Section 10 (Rivers and Harbor Act of 1899) which are summarized in this appendix.

Authority: Clean Water Act, Section 401 (33 USC 466).
State Certification of Activities Requiring a Federal License or Permit (40 CFR 121).
Waste Disposal Permit Procedures (AS 46.03.110).
Certification For Other Federal Licenses and Permits (18 AAC 15.180).
Water Quality Standards (18 AAC 70).

Pollutant Discharges/Wastewater Disposal

Program: National Pollutant Discharge Elimination System (NPDES) (EPA)
Wastewater Disposal Permit (DEC)

Administered by: U.S. Environmental Protection Agency (EPA)
Alaska Department of Environmental Conservation (DEC)

Purpose and Scope: The federal NPDES program is designed to prevent water pollution by regulating the discharge of pollutants from point (or discrete) sources into waters of the U.S., including wetlands. The state's wastewater disposal program has a similar purpose of preventing pollution by waterborne wastes and applies to wastewater disposal into and onto all land, surface waters and ground waters within the state.

Description: Most land development involves the generation of waterborne wastes or wastewater. The disposal of wastewater, whether it is generated on public or private land, is subject to federal and state regulatory programs summarized here.

Under Section 402 of the Clean Water Act, EPA regulates the discharge of pollutants from point sources into U.S. waters. The discharges must meet the substantive standards of the Clean Water Act before EPA will issue the required NPDES permit.

Pollutants are broadly defined by the Clean Water Act to include spoil, solid waste, incinerator residue, sewage (but not sewage from vessels), garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water.

Point sources are defined by the Clean Water Act to include any pipe, ditch,

channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. Point sources are distinguished from non-point or area sources of pollution.

Although the Clean Water Act gives the state the option of assuming administration of the NPDES program, the program remains federally run in Alaska.

NPDES permits do not apply to fill and dredged material permits administered by the Corps under Section 404 of the Clean Water Act. Nor do NPDES permits apply to discharges from non-point pollution sources, such as runoff from a logged area. Discharges from non-point pollution sources associated with logging activities are regulated by the state under the Alaska Forest Practices Act as part of the state's overall non-point source pollution management responsibility under Section 319 of the Clean Water Act.

Under state law, DEC regulates wastewater disposal as it affects all land and all waters in the state. Wastewater means wastes which are waterborne or in a liquid form and includes sewage and grey water from dwellings and other structures and wastewater from manufacturing, industrial, development of natural resources, and facilities construction.

DEC regulates disposal of solid wastes under a separate program.

For activities requiring a federal NPDES permit, DEC's required Section 401 Certificate of Reasonable Assurance also serves as DEC's wastewater disposal permit.

Authority:

Section 402, Clean Water Act, formerly called the Federal Water Pollution Control Act (33 USC 1251).
National Pollutant Discharge Elimination System (40 CFR 122).
Criteria and Standards for the NPDES (40 CFR 125).
Waste Disposal Permit (AS 46.03.100 & .110)
Plans for Pollution Disposal (AS 46.03.090).
Water Quality Standards (18 AAC 70).
Wastewater Disposal (18 AAC 72).

Water Use

Program: Water Management Program

Administered by: Alaska Department of Natural Resources (DNR)

Purpose and Scope: Water in Alaska is reserved for the people of the state for common use. Water is appropriated by individuals for beneficial purposes but is subject to prior water appropriations and to a general water reservation for fish and wildlife.

Description: This program provides a method for allocating legal water rights for the use of surface and subsurface waters of the state. Water rights are issued by the state, upon application, when the water is used for some useful purpose. After beneficial use of water begins, a Certificate of Appropriation may be issued. A Certificate of Appropriation is the legal document which conveys water rights.

Beneficial uses include uses for the following purposes: domestic, agricultural, irrigation, manufacturing, fish and shellfish processing, industrial, navigation and transportation, mining, power, public, sanitary, fish and wildlife, recreational uses and maintenance of water quality.

Unless applying for an instream water reservation, private applicants must also show a legal interest in land where the water will be used and a legal right to move water over other land (if necessary) to the place of water use.

The Alaska Water Use Act allows private parties and public agencies to apply for reservations of water for instream uses including fisheries, navigation, recreation and water quality purposes. DNR can issue water appropriations which are subject to conditions considered necessary to protect these public

interest values, even if no instream flow right exists on a particular waterbody.

Authority: Alaska Water Use Act (AS 46.15)
Water Management (11 AAC 93)

Structures Affecting Navigable Waters of the U.S.

Program: Permits under Section 10, Rivers and Harbors Act

Administered by: Department of the Army
U.S. Corps of Engineers (Corps)

Purpose and Scope: The Rivers and Harbors Act of 1899 gives the Corps its basic responsibility to manage the navigable waters of the U.S. The Corps' main charge under Section 10 of this Act is to prevent obstructions to navigation on these waters. This section applies to all tidally influenced waters shoreward to the mean high water line and all navigable freshwater waters landward to the ordinary high water line.

Description: A Corps permit is required before construction of any structure in or over any navigable water, excavating material from or depositing material into a navigable water, or doing any work that may affect the course, location or condition of any navigable water.

Section 9 of this Act grants the Corps authority over other dikes and dams, and the U.S. Coast Guard is responsible for permitting bridges and causeways. Section 10 of the Act permits the construction of docks, piers, wharfs, breakwaters, jettys, etc.

In the Oil Spill Area, many private lands are located on and are only accessible by navigable waters; the development of these private uplands would likely involve building such structures permitted under Section 10 in the waters of the U.S.

While the Corps traditionally has evaluated the effect of the proposed structure on navigation, the Corps' current regulations list environmental and other factors that are weighed in Section 10 and other Corps permit decisions, including conservation, aesthetics, wetlands, historic properties, recreation values, fish and

wildlife values, floodplain values, land use, water quality and others.

The construction of a Section 10 structure may also require a Section 404 Clean Water Act permit.

Authority: Section 10, Rivers and Harbors Act of 1899 (33 USC 403).
Permits for Structures in or Affecting Navigable Waters of the U.S. (33 CFR 322).

Endangered Species Act

Program: Endangered Species Act of 1973, as amended

Administered by: U.S. Fish and Wildlife Service (FWS)
U.S. National Marine Fisheries Service (NMFS)

Purpose and Scope: The stated purposes of this Act include the conservation of both endangered and threatened plant and animal species and the environment upon which these species depend. The Act protects such fish and wildlife species from direct harm wherever they occur in the United States, without regard to land ownership.

Description: This Act extends federal protection to species (or subspecies) which are in danger of extinction (endangered species) throughout all or a portion of their geographical range and those species which are likely to become endangered in the foreseeable future (threatened species).

The Act prohibits "taking" endangered fish and wildlife species within the United States. "Take" is defined as "harass, harm, pursue, hunt, shoot, wound, kill, capture or collect or to attempt to engage in any such conduct." Violations are subject to civil and criminal penalties.

Endangered plant species are afforded less protection than animals by the Act. Listed plants are protected from removal or malicious damage if on federal land. These federal prohibitions apply to listed plants on private land only if damaging the plants violates state law (Alaska has no parallel endangered species law), is done in violation of state criminal trespass law, or unless, as with critical habitat alterations, federal permits or other federal involvement is required for the activity.

Areas of habitat that are critical to a listed species' conservation may be

designated by FWS. This critical habitat designation may include private lands, but activities on critical habitat on private land are not restricted by the Act unless direct harm to listed wildlife would result (if the species is present, for example) or unless a federal permit or other federal involvement is required for the activity (Section 7 of the Act).

Section 7 requires federal agencies to consult with FWS or NMFS, as appropriate, to insure that federal actions do not jeopardize listed species or critical habitats. Federal actions include permits and licenses issued to non-federal applicants. For example, a Clean Water Act Section 404 permit application would be reviewed for its potential impact on listed species, if any, including critical habitat on private lands affected by the proposed activity.

Section 10 of the Act allows FWS and NMFS to issue permits for incidental takings of endangered species provided the activity is otherwise legal and the applicant submits a habitat conservation plan. Permits may be issued if the FWS or NMFS finds that the plan manages the activity to minimize and mitigate to the maximum extent possible such takings, will not appreciably reduce the likelihood of species survival and is adequately funded.

FWS is responsible for evaluating terrestrial and fresh water species for endangered or threatened status and, in Alaska, polar bear, walrus and sea otters. NMFS is responsible for marine species. Lists of endangered and threatened species are periodically prepared and published in the Federal Register.

Authority:

Endangered Species Act of 1977, as amended (16 USC 1531)
50 CFR 17 (FWS)
50 CFR 17.11 and 17.12 (Listing of Endangered and Threatened Species)
50 CFR 222 (NMFS)

Bald Eagle Protection Act

Program: Bald Eagle Protection Act of 1940, as amended.

Administered by: U.S. Fish and Wildlife Service (FWS)

Purpose and Scope: The purpose of this law is to protect both bald and golden eagles, their eggs and their nests. This protection is afforded without regard to land ownership; it applies to public and private land.

Description: This law makes it illegal to "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import" bald or golden eagles, their eggs or nests.

Take includes "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

Permits can be issued to allow these otherwise prohibited acts for scientific and exhibition purposes and for religious purposes of Indian Tribes. Taking permits can also be issued to protect wildlife, agricultural interests and other public purposes in a given locality. The Act expressly authorizes permits to take golden eagles to protect domesticated flocks and herds.

Apart from prohibitions against cutting down a nest tree, land use activities and development on private lands are not expressly regulated by FWS. However, certain activities done in close proximity to nesting trees during critical nesting or rearing periods could disturb the birds and therefore arguably constitute a violation. When the birds are seasonally absent, development that alters the habitat (but not nest trees) on private land is not subject to regulation under the Act.

Some federal and state land managing agencies restrict activities in close proximity to eagle nest trees to avoid disturbing the birds. FWS is currently

drafting forest management guidelines for buffer areas around eagle nests. These guidelines will not carry the force of law with respect to private lands.

Authority: Bald Eagle Protection Act (16 USC 668)
50 CFR 22 (Eagle permits)

Marine Mammal Protection Act

Program: Marine Mammal Protection Act of 1972, as amended (MMPA)

Administered by: U.S. National Marine Fisheries Service (NMFS)
U.S. Fish and Wildlife Service (FWS)

Purpose and Scope: The purpose of the MMPA is to ensure that marine mammals are maintained at healthy population levels. Congress further found that efforts should be made to protect from the adverse effect of man's actions rookeries, mating grounds and areas of similar significance for each species of marine mammals.

Description: This MMPA imposes a perpetual moratorium on taking marine mammals unless a mammal population is determined to be at its optimum sustainable level. The term "take" means to harass, hunt, capture or kill or to attempt to do so.

The moratorium does not apply to Alaska Natives who may take marine mammals for subsistence purposes and for making and selling handicrafts and clothing. The Act also allows taking by permit for scientific and research purposes.

Despite the stated intent of the MMPA to protect important upland areas for these species, there seems to be no express authority granted by MMPA for land use regulation of rookeries, mating grounds or other haul out areas that are important habitats for these species.

As with the Endangered Species Act (ESA), however, most human development activity on these upland areas when the mammals are present is likely to constitute a prohibited taking. It is unclear, however, if the MMPA protects these upland sites (public or private) when the mammals are not present. However, if a marine mammal is also listed under the ESA, its critical habitat on private land is protected in the manner described in the summary of ESA.

In Alaska, FWS has jurisdiction over polar bears, sea otters and walrus. NMFS has jurisdiction over whales, porpoises, seals and sea lions.

The State of Alaska currently has no management authority over mammals covered by the MMPA.

Authority: Marine Mammal Protection Act of 1972, as amended (16 USC 1361 et seq.).
50 CFR 18 (FWS)
50 CFR 216 (NMFS)

Historic, Cultural and Archeological Resource Preservation

Program: National Historic Preservation Act of 1966, as amended (NHPA); Alaska Historic Preservation Act (AHPA)

Administered by: Lead Federal Agencies
Advisory Council on Historic Preservation (ACHP)
State Historic Preservation Office (SHPO) (DNR)

Purpose and Scope: The purposes of these acts include the preservation and protection of significant historic, cultural and archeological resources (cultural resources). Cultural resources located on private land are considered to be part of the private land estate. These laws nonetheless apply to activities affecting cultural resources on private land when there is federal involvement.

Description: Section 106 of NHPA requires lead federal agencies (those responsible for a federal, federally assisted or federally licensed activity, including activities on private land that require federal permits or licenses) to take into account the activity's effects on properties eligible for inclusion on the Register of Historic Places. The Register is an inventory of historic, architectural, archeological and cultural resources of local, statewide or national significance. An owner usually must agree to have his property listed, but even unlisted properties, if they meet eligibility criteria, are treated as though they were listed for the purposes of NHPA Section 106.

With regard to National Landmark properties, NHPA requires a higher protection standard. Section 110 requires lead federal agencies to design the proposed undertaking in a way that minimizes, as much as possible, any harm. Landmark status is given to historic places of nationwide significance.

Before permits are issued, the lead

federal agency determines if significant cultural resources are threatened by an undertaking. This determination is reviewed by SHPO and ACHP. ACHP is a cabinet-level independent federal agency. Review and consultation with SHPO and ACHP assists the lead federal agency in identifying cultural resources, assessing affects upon them and considering alternatives to avoid or reduce adverse affects. However, the authority for determining an undertaking's compliance with NHPA rests with the lead federal agency, not with SHPO or ACHP.

State law provides for the preservation of cultural resources that are threatened by public construction projects undertaken by the state or its governmental agencies. Although such state sponsored construction usually is confined to land owned by the state, cultural resources on private land that is acquired by the state for construction purposes would be protected under AS 41.35.070. It is possible that this protection extends as well to land in which the state holds a less-than-fee title interest, such as a right-of-way easement or a land lease, for example.

Authority:

National Historic Preservation Act of 1966, as amended (16 USC 470 et seq.).
Protection of Historic and Cultural Properties (36 CFR 800).
Executive Order 11593.
Alaska Historic Preservation Act (AS 41.35); 11 AAC 16.

Addresses of Local Governments within the Oil Spill Area

City of Cordova
P.O. Box 1210
Cordova, AK 99574
Phone: (907) 424-6200

City of Homer
491 East Pioneer Avenue
Homer, AK 99603
Phone: (907) 235-8121

City of Seldovia
P.O. Drawer D
Seldovia, AK 99663
Phone: (907) 234-7643
[For information about Seldovia's planning, platting and zoning functions, contact Kenai Peninsula Borough].

City of Seward
P.O. Box 167
Seward, AK 99664
Phone: (907) 224-3331

City of Valdez
P.O. Box 307
Valdez, AK 99686
Phone: (907) 835-4313

City of Whittier
P.O. Box 608
Whittier, AK 99693
Phone: (907) 472-2327

Kenai Peninsula Borough
144 North Binkley Street
Soldotna, AK 99669
Phone: (907) 262-4441

Kodiak Island Borough
710 Mill Road
Kodiak, AK 99615
Phone: (907) 486-5736

Appendix B
Habitat Identification

RAPID ECOLOGICAL ASSESSMENT FOR CONSERVATION PLANNING

Douglas M. Muchoney
Dennis H. Grossman
and
Rob Solomon

The Nature Conservancy
1815 North Lynn Street
Arlington, Virginia 22209

ABSTRACT

The ability to identify and manage conservation sites is often limited by the lack of comprehensive information. The Nature Conservancy has developed Rapid Ecological Assessment (REA), an integrated methodology to provide the multiple scale, up-to-date information required to guide conservation actions. REA relies on analysis of aerial photography, videography and satellite image data to identify conservation sites, and to direct field sampling and research for cost-effective biological and ecological data acquisition.

The REA methodology allows for integration and analysis of digital remote sensing data, digital terrain data, and additional thematic map and tabular data, which significantly improves sampling design and classification accuracy. The use of airborne and satellite image data analysis, existing information and field sampling provides a reliable and efficient means to inventory and monitor natural resources. The repeatability of the methodology makes it suitable for both inventory and subsequent monitoring activities.

This paper describes an application of the REA methodology at The Nature Conservancy's Virginia Coast Reserve. The methods and results of REA inventory and ecological classification of this fragile Atlantic barrier island system are presented and discussed in relation to conservation planning.

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INTRODUCTION

The Nature Conservancy is a nonprofit organization dedicated to sustaining biological diversity on earth through protection of animal and plant habitat. The Conservancy has over 550,000 members, and has protected more than 5.5 million acres of critical habitat in the United States, Canada and Latin America. An international network of conservation data bases has been created by the Conservancy, with the assistance of federal, state and foreign governments. There are a total of 82 data centers which operate in all 50 U.S. states, several U.S. National Parks and designated Biosphere Reserves, Puerto Rico, Canada, the South Pacific and 13 countries in Latin America and the Caribbean.

The data management system of the data centers is the Biological and Conservation Data (BCD) System, a PC-based relational database developed and maintained by the Science Division of The Nature Conservancy. The BCD contains extensive information on species and communities types and occurrences, sites, land ownership parcels, managed areas, and sources of information. The Science Division of The Nature Conservancy is concerned primarily with the identification and inventory of rare animals, plants, natural communities and ecosystems. To support these efforts and complement the BCD, The Nature Conservancy has established the Spatial Data Information Center at its headquarters in Arlington, Virginia.

RAPID ECOLOGICAL ASSESSMENT

The ability to identify and manage important conservation areas is often limited by the lack of current and comprehensive information. The Nature Conservancy is developing and implementing rapid ecological assessments (REAs) which will provide the information gathering and management framework to fully support important conservation initiatives. REA addresses the critical need for conservation action where baseline biological and ecological data are inadequate, and strengthens capacity for conservation planning at different spatial scales.

REA describes an integrated methodology developed for the cost-effective acquisition, integration, management and application of conservation information. The analytical products from appropriate image data (aerial photography, videography and satellite imagery), combined with expert and existing information direct field sampling priorities for cost-effective biological and ecological data acquisition and the setting of research objectives. REA can be used to distinguish sites of high conservation potential through a telescoping process which utilizes different types and scales of satellite and aerial images. Cost-effective data acquisition efforts are then carried out to provide the critical information needed to support different levels of conservation planning. This integration of airborne and satellite imagery analysis with existing information creates an important complementary top-down link to existing bottom-up conservation methods.

The spatially referenced information is optimally managed in a Geographic Information System (GIS) environment for ease of analysis and generation of map products.

Other conservation information is managed through manual files and the Biological and Conservation Data relational database system.

A primary objective of the image data analysis is to accurately classify the landscape which in turn enables inventory and integrated planning to proceed. The REA methodology allows for detailed overlay analysis of digital remote sensor data with digital terrain data and additional thematic maps and tabular data, which significantly improves the accuracy of classification (Saterwhite et al, 1984; Wheeler and Ridd, 1985). This integration of airborne and satellite imagery analysis, with existing information and field sampling provides a reliable, repeatable and efficient means to inventory and monitor natural resources. The repeatability of the methodology (Franklin, 1987) makes it suitable for both assessment and subsequent monitoring activities.

REA is currently being applied to support many facets of conservation planning at The Nature Conservancy as a complement to existing heritage and conservation data center methodology. Remote sensing and cartographic analysis permits managers to view different elements of the landscape in context with the overall environment and to visualize the entire conservation unit as a single entity. In addition, important map data, such as tract boundaries and ownership, can be overlaid with the images using efficient and low-cost GIS technology.

Remote sensing data provide critical information to natural resource managers and scientists which aid in site design, inventory and monitoring. The format of the GIS allows managers to easily capture, display and update site information. This information provides a permanent record of site history and status. These data can also be used for quantitative analysis of the spatial and temporal distribution of communities and species.

VIRGINIA COAST RESERVE

The Nature Conservancy's Virginia Coast Reserve (VCR) has been designated by the United Nations as a Biosphere Reserve. The Virginia Eastern Shore is one of the most important natural ecosystems remaining in the eastern United States and an area of global environmental significance. It encompasses the southern 70 miles of the Delmarva Peninsula and there are hundreds of miles of shoreline and undisturbed landscape with significant ecological values.

The heart of the ecosystem is the Virginia Barrier Islands, a chain of 18 offshore islands to the east of the Eastern Shore mainland. The island system includes sandy beaches, maritime vegetation and forests, and extensive salt marshes. The Nature Conservancy has acquired all or part of 13 of these islands which form part of its Virginia Coast Reserve, while federal and state agencies have protected an additional four islands. The Reserve provides habitat for over 200 species of waterfowl, shorebirds and raptors, including the rare piping plover and peregrine falcon.

The Rapid Ecological Assessment of VCR and the immediate surrounding area was performed to provide the conservation information essential to its long-term protection and management. The specific objectives of the REA were to develop suitable and current base maps, develop a sampling frame and stratification for field inventory, generate an accurate community and land cover classification, and populate the BCD database with biodiversity information on the Reserve.

The dynamic nature of the marine system required that new base maps be developed. For this purpose, SPOT (Satellite Probatoire pour l'Observation de la Terre) panchromatic data quadrangle maps were produced. These maps are from 1990, compared to 1968 for the U.S. Geological Survey (USGS) quads available for the area. The SPOT quads also provide for ease of capture of photographic information, and contextual information for community and cover patch annotation. The panchromatic data, with their 10 meter spatial resolution, were used to update the USGS quad transportation information and to identify agricultural field boundaries. The SPOT quads provided a standard, comprehensive photo-like map base. Anthropogenic features such as roads and buildings were easily defined, as were vegetation patch boundaries.

In highly modified landscapes, a large amount of pre-classification segmentation can be performed using the SPOT panchromatic data. Some vegetation and land cover classification boundaries are readily and accurately definable, such as field/forest or water/sand. These "hard" boundaries are mapped immediately on the SPOT base map. The "fuzzy" boundaries need to be defined using manual interpretation of aerial photography and satellite images. Boundaries can also be identified, although it may not be possible to define the class represented. The fuzzy boundaries and classes are then identified using digital classification of multispectral satellite data, such as Landsat Thematic Mapper (TM) and SPOT data. The satellite data classification process is greatly facilitated by masking out the human-modified landscape components. This concentrates the classification on the unknown and reduces confusion between natural and agricultural vegetation.

Landsat Thematic Mapper data from 25 July 1989 (WRS 14/34, ID 4256615140) were used to stratify and eventually classify the communities and cover of the area. An unsupervised classification was initially performed and available soil maps analyzed to delineate sample points for field survey. Evaluation of existing information and knowledge of environmental factors that influence the distribution of communities and species indicated that their would be limited value in incorporating environmental parameters, such as soil, topographic and hydrologic information into the stratification procedure. In other areas where topographic or other gradients are identifiable and where accurate information on their location is available, this information is included in the stratification and/or subsequent classification.

Species occurrence and community information already captured in the BCD were used to identify areas with the most potential to support these species and communities. The purpose of the pre-classification, or stratification, was to ensure that the entire range of potential existing environmental conditions would be sampled. 100 square-meter plots

were allocated based on probable importance, size, total area and accessibility. Field surveys were performed in July and September of 1990. Plot data consisted of:

geographic coordinates
topographic position
substrate
drainage
community or anthropogenic cover
species composition and cover
disturbance/modification information
land use
potential threats
vegetation structure

The plot data were used to drive a supervised maximum-likelihood classification and to assess its accuracy. Natural community and anthropogenic classes were identified for use with the TM data, although future classifications will conform more closely to the Virginia Division of Natural Heritage Community Classification and the Ecological Community Classification for the Southeastern United States (Allard, 1990). The dominant species of each community are also included.

Beach
Fore-Dune Grasses: Cakile edentula, Ammophila breviligulata, Spartina patens
Beachgrass Dunes: Ammophila breviligulata
Brackish/Freshwater Marsh: Spartina patens
Salt Marsh: Spartina alterniflora
Scrub/Shrub: Myrica cerifera, Iva frutescens
Emergent Maritime Forest: Pinus taeda, Zanthoxylum americana
Mixed Forest: Liquidambar styraciflua, Pinus taeda Persia palustris
Salt Flat: Salicornia virginica
Mud Flat
Deepwater Habitats
Shallow Water Habitats
Agriculture
Transportation
Urban

Preliminary analysis indicates that the TM data were adequate for identifying the predominant communities found on the Eastern Shore. SPOT multispectral (XS) data are also being evaluated for their utility in performing community classifications for coastal zone ecosystems. Aerial photointerpretation is being used to classify communities and land cover to a finer level than was possible using the Thematic Mapper and SPOT data. Investigations are being made into the capability of different classification strategies to

locate populations, Phragmites communis, an invading exotic species that has become established on several of the islands.

CONCLUSIONS

REA uses remote sensing data, in conjunction with existing physiographic and biological information, to provide a framework for biological inventory and conservation planning. The community and land cover classification information, coupled with existing cadastral, species occurrence and conservation data available from the BCD provide a sound basis for reserve management. Potential threats such as soil erosion and habitat fragmentation can be identified. Natural community modification and encroachment of exotics may be identifiable depending on the extent and type of degradation. The REA data also provide an excellent framework for ecosystem monitoring.

LITERATURE CITED

Allard, D.J, 1990. Southeastern United States Ecological Community Classification. Arlington, Virginia: The Nature Conservancy, 96 pp.

Franklin, S.E, 1987. Terrain Analysis from Digital Patterns in Geomorphometry and Landsat MSS Spectral Response. Photogrammetric Engineering and Remote Sensing, 53:59-65.

Satterwhite, M., W. Rice, and J. Shipman. 1984. Using Landform and Vegetative Factors to Improve the Interpretation of Landsat Imagery. Photogrammetric Engineering and Remote Sensing, 50:83-91.

The Nature Conservancy, 1976. Virginia Coast Reserve Study: Ecosystem Description. Arlington, VA: The Nature Conservancy, 568 pp.

Wheeler, D.J., and M.K. Ridd. 1985. A Geographic Information System for Resource Managers Based on Multi-Level Remote Sensing Data. Technical Papers: 1985 ASP-ACSM Convention, Vol. 2. March 10-15, Washington, D.C., pp. 528-537.

Gradient Analysis in Nature Reserve Design: A New Zealand Example

ROBERT L. DeVELICE*
Biological Resources Centre
Department of Scientific and Industrial Research
Wellington, New Zealand

JEAN WARD DeVELICE*
Biological Resources Centre
Department of Scientific and Industrial Research
Wellington, New Zealand

GEOFF N. PARK†
Biological Resources Centre
Department of Scientific and Industrial Research
Wellington, New Zealand

Abstract: *Direct and indirect gradient analysis methods were tested to assist in nature reserve design in New Zealand. Graphic descriptions were made of community-environment relationships. Environmental factors considered included altitude, solar radiation, geologic substrate, soil drainage, and landform.*

Classification identified 21 lowland forest community types in the northwestern South Island study area. These community types and their composite species appear to be arranged along soil fertility, landform, and temperature gradients. Direct gradient analysis was particularly useful in portraying the relationship of the plant communities to perceived environmental gradients.

Comprehensive gradient diagrams for an ecological district may be compared with gradient diagrams depicting the district's current reserves, if any. A representative reserve system may be achieved if "gaps" between the two diagrams are filled in by expanding the reserve system and/or modifying existing reserve boundaries. Based on this technique, a recommendation is made to incorporate a unique coastal forest remnant in a national park proposal for the study area.

Resumen: *Métodos directos e indirectos del análisis de gradiente fueron probados para asistir en el diseñó de reservas de la naturaleza en Nueva Zelandia. Se prepararon descripciones gráficas de las relaciones comunidad-ambiente. Los factores ambientales considerados incluyeron altitud, radiación solar, substrato geológico, drenaje del suelo, y forma del terreno.*

Se clasificaron 21 tipos de comunidades de selva baja en el área de estudio del noroeste de South Island. Estos tipos de comunidades y sus especies compuestas aparentemente están distribuidas a lo largo de los gradientes de fertilidad del suelo, forma del terreno, y temperatura. El análisis directo de gradientes fué particularmente útil para representar la relación de las comunidades vegetales con los gradientes ambientales percibidos.

Los diagramas globales de gradiente para un distrito ecológico pueden ser comparados con diagramas de gradiente que muestran las reservas actuales del distrito, si las hay. Así, puede obtenerse un sistema representativo de reservas llenando los vacios entre los dos diagramas mediante la expansión del sistema de reservas y/o la modificación de los límites existentes de las reservas. Basandonos en esta técnica, hacemos una recomendación para que un remanente—único en su género—de bosque costero se incorpore a una propuesta para un Parque Nacional en el área de estudio.

*Current address: Mountain Research Station, University of Colorado, Nederland, Colorado 80466. Correspondence should be addressed to R. L. DeVelice.
†Current address: Department of Conservation, P.O. Box 10-420, Wellington, New Zealand.
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Introduction

Natural areas are currently being inventoried throughout New Zealand for potential inclusion in a nature reserve system. The area to be covered is large (New Zealand land area totals 270,000 km^2), and the range of vegetation-environmental variation is correspondingly great. Methods are needed to ensure the protection of a representative system of nature reserves. Ideally, reserves should encompass the full range of environmental gradients (Austin & Margules 1984). Gradient analysis provides a means of assessing the representativeness of reserves by describing the pattern and range of vegetation-environmental variation. Incomplete representation of vegetation-environmental units may be identified in current reserves and recommendations made for reserve expansion. The principal objective of this research is to apply gradient analysis to identify vegetation-environmental patterns in New Zealand and to assess the representativeness of current reserves in including this range of variation.

Development pressures threaten the remaining remnants of the natural environment, and the methods described may provide an efficient means of assessing which remnants to include in a representative reserve system. Although this example is based on New Zealand data, the methodology is equally applicable internationally.

Research focused on lowland forests because they are poorly represented in present reserves. Furthermore, they are at risk because of logging and conversion to agricultural uses. In contrast, montane forests are better studied and represented in national parks, forest parks, and reserves.

Currently, nature reserve evaluation in New Zealand is largely based on "ecological districts." The districts are defined on the basis of similarities or differences in geology, landform, climate, soil, vegetation, and disturbance (Simpson 1982). At present New Zealand has been divided into 268 ecological districts (M. McEwen, personal communication). A goal of nature reserve inventory in New Zealand is to identify areas that represent all the natural ecosystems occurring in each district. This process will facilitate the "preservation of representative samples of all classes of natural ecosystems and landscapes which in the aggregate originally gave New Zealand its own recognisable character" (New Zealand Reserves Act 1977, p. 747).

Following requirements outlined by Austin & Margules (1984), the methods described and used in this study permit the assessment of representativeness of nature reserves by providing a classification of ecological units and defining the relevant properties of the units via gradient analysis. Representativeness of reserves may be evaluated by comparing gradient diagrams for proposed and/or existing reserves against comprehensive gradient diagrams for the district. Full descriptions of the techniques used can be found in Whittaker (1973), Mueller-Dombois & Ellenberg (1974), Orloci (1975), Baker & Nelder (1978), Hill (1979*a*,*b*), Gauch (1982), and Beals (1984).

Classification is useful as a means of summarizing relationships in gradient analysis (Whittaker & Gauch 1973). Species' distributions vary individually along environmental gradients (Gleason 1926), so classification of distinct, clearly separated communities would seem unfounded and arbitrary. However, it is difficult to communicate information about vegetation communities of an area without classification. Community types defined by classification may be diagrammed in direct gradient analysis for interpretive purposes.

Environmental variables used as axes in diagrams are generally chosen to reflect only the major gradients. The closer the measurements used to express environmental gradients are to factors known to directly influence plant response, the better the gradient model produced (Austin, Cunningham, & Fleming 1984).

In addition to direct gradient analysis, indirect gradient analysis may have useful reserve design applications. These techniques involve the ordering of points (e.g., plant species, sample plots) on axes. The ordering procedures are based on quantitative assessments of similarity measures among samples. Indirect gradient analysis summarizes species-environment relationships in a way that complements direct gradient analysis.

Study Area

The study area encompasses the lowland forest portion of the Punakaiki Ecological District (described in Simpson, 1982) in the northwestern South Island (Fig. 1). In the chosen district the vegetation is in a pristine or near-pristine state (Park & Bartle 1978).

The western boundary of the district is formed by the Tasman Sea; the eastern and southern boundaries follow the crest of the Paparoa Range (Fig. 1). The northern boundary is delineated by the Cape Foulwind flatlands. Geologically, the district is diverse (Bowen 1964). The crest of the Paparoa Range rises to 1500 m and is characterized by Precambrian gneiss, granite, and greywacke derived from granite. The area of Precambrian substrates was generally at altitudes too high to support lowland forests and thus was not included in this lowland forest evaluation.

The dominant geologic feature of the lowland forest segment of the district is the Punakaiki Syncline, and the density of study plots was highest in the syncline. The syncline contains small areas of Tertiary (Eocene) quartz sandstone and conglomerate with coal seams, extensive limestone (Tertiary-Oligocene), and calcareous mudstone (Tertiary-Miocene). An extensive karst land-

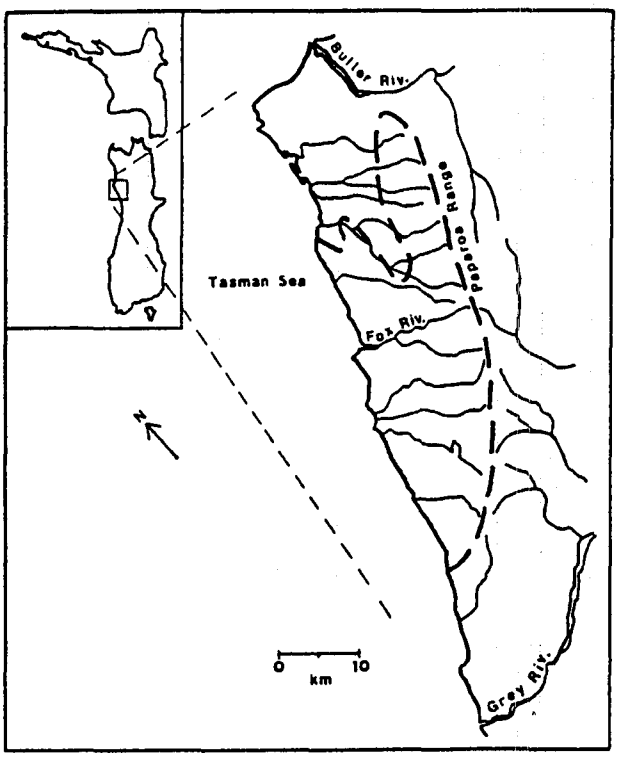

Figure 1. Location of the Punakaiki Ecological District (based on mapping by the Biological Resources Centre, 1983), bounded by dashed line. The mouth of the Fox River is at 42°02'S, 171°23'E.

scape occurs in the syncline. Much of the runoff in the karst area flows through cave systems. Limestone escarpments are present at both the coastal and inland margins of the syncline. Holocene beach gravels and sands are extensive along the south coast of the district, that is, in the Barrytown Flats.

The district's climate is comparatively warm for the latitude (42°S) due to a warm ocean current. Also, the Paparoa Range shields the district from cold "continental" air from the east of their crest (Dennis 1981).

High annual rainfall ranging from 2,800 mm on the coast to circa 8,000 mm at the Paparoa crest (Department of Lands and Survey 1978) results in rapid leaching of soil nutrients. In the steeper areas the rapid leaching effect is countered by land slips exposing fresh (nonleached) surfaces. Moisture availability is seldom limiting in the district, except in cases of flooding in areas of poor drainage.

Forests in the district are diverse (Franklin & Nicholls 1974; Park & Bartle 1978; McKelvey 1984). General patterns as described by Park & Bartle (1978) are as follows: the coastal hill country supports broadleaved forest with few conifers (Podocarpaceae). Dominant canopy species include *Metrosideros robusta, Melicytus ramiflorus, Hedycarya arborea,* and *Rhopalostylis sapida.* Further inland, and on coastal ridges, southern beeches (*Nothofagus* spp.) and conifers (particularly *Dacrydium cupressimum*) become more dominant. The lowest fertility sites in the district support high density–low volume forests characterized by such species as *Lepidothamnus intermedius, Metrosideros umbellata, Nothofagus solandri* var. *cliffortioides,* and *Leptospermum scoparium.*

Methods

Sample plots were located using the gradsect method (Gillison 1983; Gillison & Brewer 1985). The method involves preferential sampling along the maximum perceived environmental gradients. In the Punakaiki Ecological District the major gradients appear to be geologic substrate (especially as it affects soil fertility), altitude, landform, soil drainage, and disturbance (primarily landslides, windthrow, and human-caused fires).

Data collected in each 500 m^2 sample plot included cover class estimates for each vascular plant species, description of structural (tier-class) distributions of dominant species, site characteristics (e.g., slope, aspect, altitude, landform, geology), and measurements of surrounding horizon for use in estimating incoming solar radiation. All plots were circular except in some narrow ridge-top situations where plots were 10 × 50 m rectangles positioned with the long axis parallel to the ridgetop. Taxonomic nomenclature follows Allan (1961) and Moore & Edgar (1976) with revisions according to Edgar & Conner (1983).

A solar radiation index was calculated for each plot. The index, based on Revfeim (1982), is the ratio of annual global radiation estimated at the sample site and global radiation measured on a horizontal, exposed surface. A sample on a horizontal surface would have a radiation index of 1. The Revfeim method is simple to use but does not account for shading by surrounding horizon. To account for horizon shading, the complex radiation estimation computer package "CLOUDY" (Austin, Cunningham, & Fleming 1984) is currently being tested. The array of surrounding horizon estimates are used as input to the program. Again, the index produced is the ratio of annual radiation at the sample site and horizontal surface radiation.

Analysis included classification by Two-way Indicator Species Analysis (TWINSPAN) (Hill 1979*a*), refinement of the TWINSPAN clustering using subjective association table analysis (Mueller-Dombois & Ellenberg 1974), qualitative direct gradient analysis (Whittaker 1967), and indirect gradient analysis by Detrended Correspondence Analysis (DECORANA) (Hill 1979*b*). Additionally, Generalized Linear Modelling (GLM) (Baker & Nelder 1978) was performed to quantitatively assess species presence-absence distributions among 607 National Forest Survey plots sampled throughout the Paparoa Range during the 1950s (Masters, Holloway, &

McKelvey 1957). Many of these plots lie in adjacent ecological districts, and thus the GLM results may not exclusively represent conditions in the Punakaiki Ecological District. GLM is a multivariate procedure that, in the present application, provides for the development of predictive equations of species presence based on individual site factors and their interactions. This predictive power may help ensure valid extension of survey results to unsurveyed areas within the same ecological district (Austin 1983). The rigorous level of 1% was used for acceptance of a given model.

Results and Discussion

Classification results are shown in Table 1. Site factors, vegetation canopy height, and epiphyte information for each community type (CT) are summarized in Table 2. The 21 CTs included in Table 1 are ordered from relatively warm sites of high soil fertility through cool, low-fertility sites. The tree species given are arranged according to occurrence on sites of decreasing fertility.

The CTs reflect underlying environmental gradients as perceived by qualitative direct gradient analysis (Fig. 2). The first division of TWINSPAN separated communities characteristic of warm and typically higher fertility sites often characterized by emergent *Metrosideros robusta*, with *Melicytus ramiflorus*, *Hedycarya arborea*, and *Rhopalostylis sapida* from cool sites supporting *Nothofagus* spp. and low fertility *Lepidothamnus intermedius* sites. The former are presented on the lower portion of Figure 2 whereas the latter are at the upper portion.

Overlap in environmental regimes does occur among many of the CTs identified, as shown in Figure 2, for example in CTs 10, 11, 17, and 18 and CTs 1, 4, and 5. When possible, information differentiating these overlapping CTs is presented in the following discussion. However, such information is not available in all cases. The overlapping CTs may represent random variations in species composition, different ages of forest development on the same site, or different CTs on different sites where the differentiating site factors are not presented in Figure 2.

The axes of the diagram (Fig. 2) are qualitatively defined. Altitudes within the lowland forests of the district range from 0 to 450 m. However, some highly contrasting vegetation types may occur at the same altitude, or their relative positions may be reversed, depending upon relative "maritime influence," cold air drainage, and exposure to high winds. With increased altitude (and decreased temperature), a given community tends to occur on sites with progressively higher radiation indexes. That is, a given community may extend to higher altitude in cases where the slope receives a higher amount of solar radiation to compensate for altitude effects. However, radiation index overlaps widely among many CTs (Table 2) and does not appear to be a major factor affecting vegetation distribution in the district.

The low altitude, warm (apparently frost-free) forests of the district feature *Metrosideros robusta* in CTs 1, 2, and 3 on stable sites (Table 1, Fig. 2). However, much of the district is characterized by steeply dissected country with unstable soils under a high rainfall regime. This combination has resulted in frequent mass soil and talus movement. In many cases the frequency of such catastrophic disturbance on a given site may exceed the establishment rate of emergent *M. robusta*. In such cases, CTs 4, 5, and 6 are found and may be regarded as seral stages of *M. robusta* communities (Table 1, Fig. 2). This hypothesis is substantiated by the fact that *M. robusta* seedlings generally germinate only as epiphytes and thus require support trees on which to grow. Primary succession after mass soil movement leads initially to forest of CTs 4, 5, and 6. Trees in these communities provide germination sites for *M. robusta*. *M. robusta* emergents may develop given sufficient time without initiation of another primary succession.

Mass soil movement exposes new substrate surfaces that are presumably higher in nutrients than stable, leached sites. Young, high fertility geological surfaces and a mild climate have favored luxuriant vegetation development, particularly in CT 1 on coastal marine and stream terraces of Holocene age (Fig. 2). Epiphyte and liana cover is heavy and diverse.

A diagnostic feature of CTs 2 and 3 that contrasts with the related CT 1 is the presence of *Weinmannia racemosa*. *W. racemosa* is characteristic of cool upland sites throughout New Zealand and suggests the slightly more exposed conditions of CTs 2 and 3. Similarly, coastal CTs 4 and 5 are characteristic of warmer sites relative to inland CT 6 (see Table 2 for distances inland) where *W. racemosa* is more dominant.

Although the CTs 2 and 3 are characteristic of low altitudes they extend to medium altitudes on higher radiation index sites (Fig. 2). They occur primarily on limestone and calcareous mudstone (Table 2). CT 3 is characteristic of upper slopes and ridges (Fig. 2). Upper slopes and ridges at higher altitudes generally support CTs dominated by *Nothofagus truncata*—10, 11, 12, 17, and 18 (Table 1, Fig. 2).

The *Nothofagus truncata* ridge sites are generally more stable because they are flat relative to the slopes below. Because of the relative lack of periodic mass soil movement, comparatively nutrient-rich geologic surfaces are rarely exposed in this zone. High rainfall speeds the rate of nutrient leaching and favors development of communities characteristic of low soil fertility sites. *N. truncata* and *Dacrydium cuppressimum* are low soil fertility indicators relative to *Metrosideros robusta*, *Melicytus ramiflorus*, and *Rhopalostylis sapida*.

Table 1. Mean cover and constancy of major tree species present in lowland forest community types.

	Community type						
Species[a]	*1* *(n = 10)*	*2* *(n = 31)*	*3* *(n = 7)*	*4* *(n = 9)*	*5* *(n = 2)*	*6* *(n = 9)*	*7* *(n = 3)*
MYRAUS	<1/50	<1/13	<1/14	—	20/100	—	—
MACEXC	7/70	<1/19	<1/14	5/100	—	<1/11	—
RHOSAP	52/100	11/90	8/57	39/100	8/50	11/78	1/33
MELRAM	18/100	10/90	6/57	33/100	33/100	20/100	7/100
METROB	26/100	14/100	6/86	—	—	<1/11	—
HEDARB	7/100	9/100	5/100	13/100	19/100	8/89	<1/100
DACDAC	4/40	2/32	<1/14	—	<1/100	<1/11	11/100
ELADEN	—	<1/3	9/10	—	—	—	—
MYRSAL	<1/40	11/97	26/86	—	—	9/67	6/100
PRUFER	1/30	3/81	3/71	<1/11	<1/50	<1/33	5/67
WEIRAC	<1/10	36/100	36/86	<1/11	—	18/100	30/100
NOTFUS	—	—	—	—	—	—	—
NOTMEN	—	—	—	—	—	—	5/33
DACCUP	3/30	9/56	3/57	<1/11	<1/100	<1/11	<1/33
NOTTRU	—	—	—	—	—	—	—
PODHAL	<1/10	<1/16	1/71	—	<1/100	<1/11	—
QUISER	—	2/52	1/86	<1/11	—	<1/33	1/33
METUMB	—	—	—	—	—	—	—
PHYASP	—	—	—	—	—	—	—
NOTSOL	—	<1/3	—	—	—	—	—
LEPINT	—	—	—	—	—	—	—
LEPSCO	—	—	—	—	—	—	—

	Community type						
Species[a]	*8* *(n = 6)*	*9* *(n = 9)*	*10* *(n = 5)*	*11* *(n = 4)*	*12* *(n = 7)*	*13* *(n = 5)*	*14* *(n = 1)*
MYRAUS	—	<1/11	<1/20	—	<1/29	<1/20	<1/100
MACEXC	—	—	—	—	—	<1/20	—
RHOSAP	—	<1/22	1/40	1/50	<1/14	13/60	—
MELRAM	—	<1/22	1/80	1/25	<1/57	7/80	3/100
METROB	—	—	1/60	—	<1/14	<1/20	—
HEDARB	<1/33	<1/56	1/80	2/75	<1/71	11/100	<1/100
DACDAC	11/100	<1/44	—	—	—	3/60	—
ELADEN	—	—	<1/20	—	—	<1/20	—
MYRSAL	18/100	7/100	10/100	9/100	8/100	14/100	38/100
PRUFER	3/83	1/78	1/100	2/100	8/86	1/100	15/100
WEIRAC	30/100	32/100	39/100	26/100	41/100	26/80	38/100
NOTFUS	26/83	50/100	—	<1/25	—	—	38/100
NOTMEN	50/100	46/100	29/100	<1/25	10/43	—	—
DACCUP	8/83	<1/67	<1/60	<1/75	<1/43	22/100	15/100
NOTTRU	5/33	<1/11	40/80	74/100	33/86	—	—
PODHAL	1/33	1/44	<1/20	1/75	<1/43	1/60	<1/100
QUISER	5/67	1/44	1/80	1/50	<1/86	4/60	15/100
METUMB	—	—	—	—	<1/14	—	—
PHYASP	<1/33	<1/11	—	—	—	<1/20	—
NOTSOL	<1/17	<1/11	—	—	31/100	—	—
LEPINT	—	—	—	—	—	—	—
LEPSCO	—	—	—	—	<1/14	—	—

	Community type						
Species[a]	*15* *(n = 7)*	*16* *(n = 3)*	*17* *(n = 11)*	*18* *(n = 9)*	*19* *(n = 6)*	*20* *(n = 9)*	*21* *(n = 4)*
MYRAUS	—	—	—	—	<1/17	—	1/25
MACEXC	—	—	—	—	—	—	—
RHOSAP	<1/14	—	<1/9	<1/11	<1/17	—	<1/25
MELRAM	<1/29	—	—	<1/11	<1/17	—	4/75

Table 1. Continued

Species[a]	Community type 15 (n = 7)	16 (n = 3)	17 (n = 11)	18 (n = 9)	19 (n = 6)	20 (n = 9)	21 (n = 4)
METROB	—	—	—	<1/11	<1/17	—	—
HEDARB	<1/43	<1/33	<1/64	<1/33	<1/83	<1/22	4/75
DACDAC	<1/57	—	2/45	<1/22	—	—	<1/25
ELADEN	—	<1/33	—	—	<1/17	—	—
MYRSAL	8/100	11/100	12/100	20/100	4/83	<1/56	8/100
PRUFER	5/86	10/100	<1/91	<1/78	<1/100	<1/33	4/100
WEIRAC	41/100	23/100	28/100	35/100	31/83	19/89	17/100
NOTFUS	25/100	23/100	<1/9	—	—	—	4/25
NOTMEN	50/100	26/100	24/100	<1/11	5/67	<1/56	16/50
DACCUP	8/100	15/100	16/100	13/100	8/100	13/78	—
NOTTRU	<1/14	27/100	47/100	59/100	27/50	2/11	21/25
PODHAL	<1/43	<1/33	1/64	<1/78	1/100	1/89	<1/75
QUISER	6/71	7/100	5/91	4/89	3/100	13/100	4/100
METUMB	—	—	<1/18	2/11	1/50	8/100	20/100
PHYASP	—	1/33	3/27	2/44	3/17	5/100	—
NOTSOL	—	—	<1/18	—	43/100	31/100	—
LEPINT	—	—	—	—	—	25/100	—
LEPSCO	—	—	<1/9	—	—	22/78	—

[a] *Species codes:*
MYRAUS, Myrsine australis *(Myrsinaceae)*
MACEXC, Macropiper excelsum *(Piperaceae)*
RHOSAP, Rhopalostylis sapida *(Arecaceae)*
MELRAM, Melicytus ramiflorus *(Violaceae)*
METROB, Metrosideros robusta *(Myrtaceae)*
HEDARB, Hedycarya arborea *(Monimiaceae)*
DACDAC, Dacrycarpus dacrydioides *(Podocarpaceae)*
ELADEN, Elaeocarpus dentatus *(Elaeaocarpaceae)*
MYRSAL, Myrsine salicina *(Myrsinaceae)*
PRUFER, Prumnopitys ferrigineus *(Podocarpaceae)*
WEIRAC, Weinmannia racemosa *(Cunoniaceae)*
NOTFUS, Nothofagus fusca *(Fagaceae)*
NOTMEN, N. menziesii *(Fagaceae)*
DACCUP, Dacrydium cuppressimum *(Podocarpaceae)*
NOTTRU, Nothofagus truncata *(Fagaceae)*
PODHAL, Podocarpus hallii *(Podocarpaceae)*
QUISER, Quintinia serrata *(Escalloniaceae)*
METUMB, Metrosideros umbellata *(Myrtaceae)*
PHYASP, Phyllocladus aspleniifolius *var.* alpinus *(Podocarpaceae)*
NOTSOL, Nothofagus solandri *var.* cliffortioides *(Fagaceae)*
LEPINT, Lepidothamnus intermedius *(Podocarpaceae)*
LEPSCO, Leptospermum scoparius *(Myrtaceae)*

Among species of *Nothofagus* in the study area, *N. truncata* characteristically favors the better drained soils, particularly on warmer sites, and often occurs as pure stands on upper slopes, elevated knolls, and ridges with minimal shading by surrounding topography (Park & Bartle 1978; Wardle, Bulfin, & Dugdale 1983). *N. solandri* var. *cliffortioides* characterizes the most infertile sites (may be poorly or well drained), whereas *N. fusca* is dominant on higher fertility, deep, well-drained soils (Adams 1976; Wardle, Bulfin, & Dugdale 1983). *N. menziesii* often codominates with *N. fusca* but is more cold-tolerant than *N. fusca* and is thus more dominant at higher altitudes and in valleys subject to temperature inversions (Wardle, Bulfin, & Dugdale 1983). Generally, *Nothofagus* spp. are important only on soils derived from calcareous Tertiary parent materials other than limestone (Table 2, CTs 8–12, 14–21). When on limestone, *Nothofagus* spp. are restricted to elevated slopes, terraces, and ridges (Park & Bartle 1978). The soil fertility of such sites would generally be poor or moderate.

The bed of the syncline is characterized by *Nothofagus* spp. communities and communities codominated by *Nothofagus* spp. and *Dacrydium cuppressimum*. Ponding of cold air occurs in the syncline and such lower temperatures favor the growth of *Nothofagus* spp., particularly *N. fusca* and *N. menziesii*. In contrast, at altitudes above the ponding of cold air on the inland limestone escarpment, the vegetation shifts composition to warmer communities where *Nothofagus* spp. are absent.

Dacrycarpus dacrydioides is an emergent primarily on alluvial sites (i.e., CT 8), in *Metrosideros robusta* terrace communities (i.e., CTs 1 and 2), and on flat talus areas below the inland limestone escarpment (i.e., CT 7;

Table 2. Selected site and vegetation characteristics of lowland forest community types.

CT[a]	n	Alt.[b]	Dist.[c]	R.I.[d]	PM[e]	Can. ht[f] mean	Can. ht[f] max.	Ep.[g]
1	10	22/6	.6/.1	.95/.03	SG, MG	14/1	23/1	H
2	31	151/18	2.1/.4	.99/.03	MG, M, L, LT	16/1	30/1	H
3	7	135/19	1.4/.3	.93/.05	M, L	14/1	26/1	M, I
4	9	58/18	1.4/.3	.99/.06	ST, LT	10/1	14/1	M, I
5	2	3/.5	.1/.02	1.00/0	MG	5/1	6/1	M, H
6	9	172/44	3.2/1.0	.88/.06	SG, MG, L, LT	10/1	15/1	M
7	3	95/24	5.3/1.8	1.00/.01	ST, LT	16/2	35/3	M, H
8	6	55/12	5.4/.9	1.01/.01	SG, M	23/2	32/2	L
9	9	71/13	5.2/.9	.98/.03	SG, M	25/2	33/3	L
10	5	288/39	2.0/.4	1.06/.02	M, L	18/1	25/2	L, M
11	4	161/29	2.2/.9	.92/.06	M, C, G	18/2	24/5	L, M
12	7	175/25	1.0/.2	.92/.04	L, C	21/2	24/2	L, M
13	5	99/31	3.0/1.6	.89/.05	M, LT	15/3	27/5	M, H
14	1	268/—	2.7/—	.99/—	L	22/—	30/—	H
15	7	80/14	4.1/.4	1.00/.01	SG, M	28/2	35/2	L, M
16	3	158/50	4.9/2.4	1.01/.01	SG, M	25/4	32/1	L, M
17	11	133/18	4.1/.7	.99/.03	SG, M	19/2	31/2	L, M
18	9	115/17	3.7/.5	.96/.05	M, L, S	21/2	29/2	L, M
19	6	174/22	1.0/.3	.98/.05	SG, M, C	18/3	25/2	L, M
20	9	322/50	6.9/1.2	.99/.04	SG, S	11/1	17/2	L
21	4	431/42	4.6/1.6	1.07/.02	M, L	14/1	19/1	L

[a] *Community type: alphabetic names for each type are given in Table 1.*
[b] *Mean altitude (m) and standard error.*
[c] *Mean distance (km) from coast and standard error.*
[d] *Mean radiation index and standard error (see text for details).*
[e] *Parent material: MG, Holocene marine gravel; SG, Holocene and older stream gravel; M, Tertiary mudstone; L, Tertiary limestone; LT, limeston talus; S, Tertiary sandstone; C, Mesozoic conglomerate; G, Precambrian granite gneiss.*
[f] *Mean and maximum canopy heights (m) and standard errors.*
[g] *Epiphyte load: H, heavy; M, moderate; L, light.*

Table 1, Fig. 2). *D. dacrydioides* generally occurs on sites of higher soil fertility than other New Zealand conifers.

On stream terraces, CT 8, featuring *Dacrycarpus dacrydioides*, represents a more advanced stage of succession relative to CT 9 (Table 1, Fig. 2). Establishment of emergent conifers (*D. dacrydioides*, *Dacrydium cupressimum*) is a longer process than the establishment of *Nothofagus* forests in such inland stream terrace situations. This relatively slow rate of conifer emergence suggests that many of the *Nothofagus* forests lacking emergent conifers (i.e., CTs 9–12, Table 1) are seral to conifer-*Nothofagus* spp. codominated communities (i.e., CTs 8, 14–19, Table 1). The oldest, most leached stream terraces are represented by CTs 17 and 20 (Fig. 2).

The DECORANA species ordination (Fig. 3) substantiates the importance of fertility, landform, and temperature gradients in determining species distributions in the Punakaiki Ecological District. The first axis is strongly suggestive of a soil fertility gradient with species characteristic of low fertility soils having low scores and species of higher fertility soils having higher scores. The second axis is suggestive of a landform-temperature gradient, with species of warmer sites (e.g., *Metrosideros robusta*) or upper slopes and ridges (e.g., *Nothofagus truncata*) having low scores relative to species of cooler sites on flats (e.g., *N. fusca*) and slopes (e.g., *N. menziesii*). Cosmopolitan species such as *Weinmannia racemosa* (Fig. 3) occur centrally in the ordination plane.

GLM results for *Nothofagus* spp. in the 607 National Forest Survey plots are presented in Table 3 and Figure 4. These results are representative of the overall performance of GLM for predicting tree species distributions in relation to environment in the Paparoa Range. The factors of altitude, topography (arranged in order of increasing steepness, i.e., flat < moderate < rolling < steep) and soil drainage yield poor models for *N. menziesii* and *N. truncata* (Table 3). The peak in *N. menziesii* occurrence at the highest altitudes (Table 3) is consistent with Wardle et al.'s (1983) suggestion of high cold tolerance in *N. menziesii*. The peak at the relatively low 120–179 m altitude range suggests a higher proportion of cold-air accumulation sites at that altitude in the region relative to intermediate altitudes. The distribution of *N. truncata* in relation to topography (Table 3) indicates a preference for slopes in contrast to flats. A more refined treatment of topography would probably indicate a preference for upper slopes and ridges, as suggested by Figure 2.

The *N. solandri* var. *cliffortioides* and *N. fusca* models explain 63% and 68% of the deviance, respectively (Table 3). *N. solandri* var. *cliffortioides* occurs most

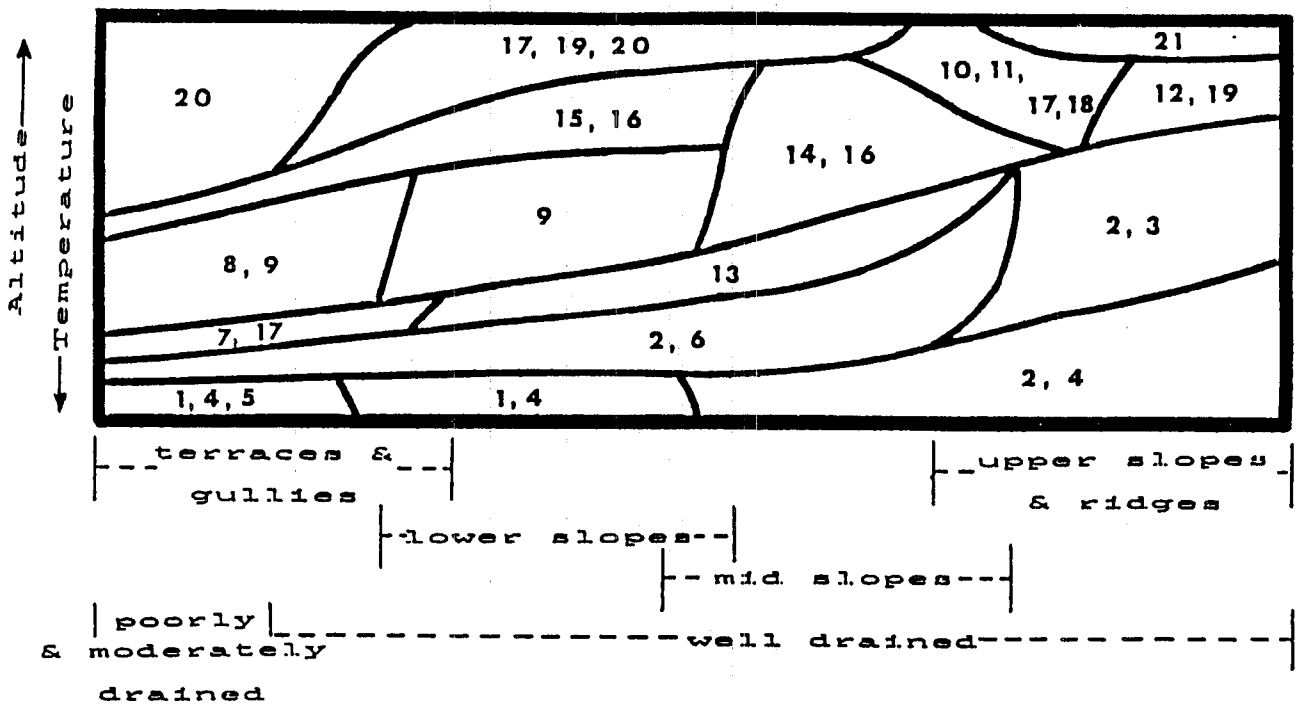

Figure 2. Qualitative direct gradient analysis diagram of lowland forests, Punakaiki Ecological District. Numerals refer to the community types given in Table 1. Arrows indicate direction of increased altitude and temperature. Solar radiation index increases from left to right within each landform type.

frequently on flat, poorly drained surfaces and is rare on well-drained sites (Table 3). On flatter topography, *N. fusca* demonstrates a pattern of occurrence similar to *N. menziesii*, with the highest occurrence at low and high altitudes (Figs. 4a,b). However, as topography steepens, *N. fusca* occurrence is lowest at low altitudes and peaks at approximately 350 m (Figs. 4c,d). Apparently, *N. fusca* is at a competitive disadvantage in occupying steep slope sites at low altitudes in contrast to higher altitudes. In all topographic conditions, *N. fusca* occurs primarily on better drained soils (Fig. 4), a feature supported by Wardle et al. (1983).

In summary, for the *Nothofagus* spp. of the Paparoa Mountains, GLM suggests that *N. menziesii* is a cosmo-

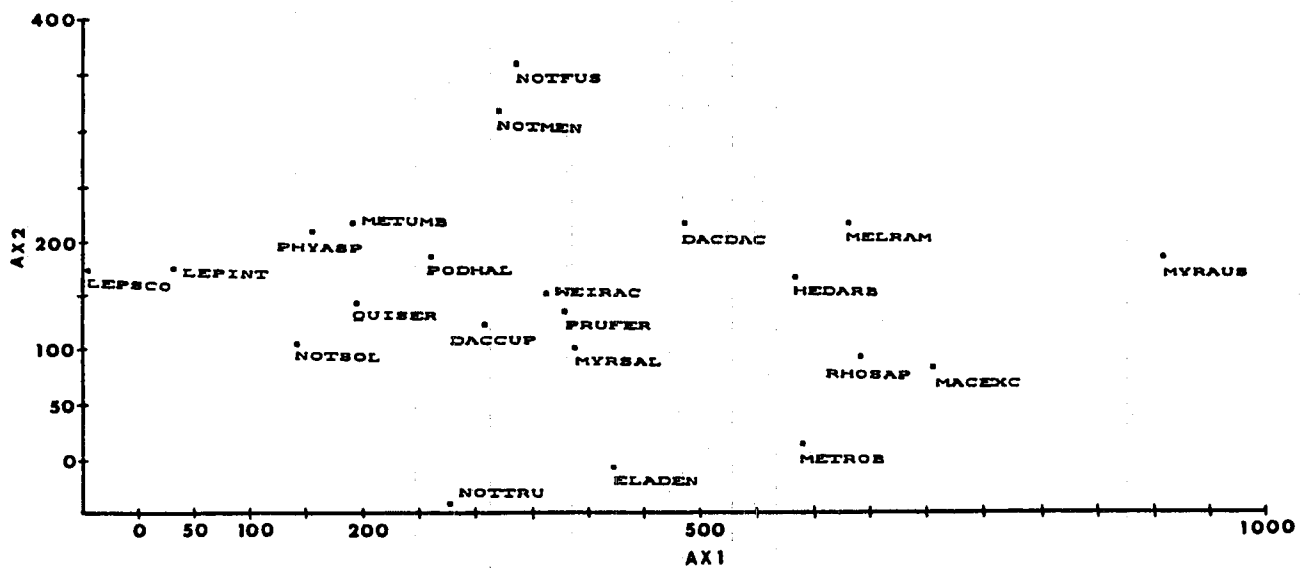

Figure 3. DECORANA diagram of major tree species in the Punakaiki Ecological District. The full name of each species code is given in Table 1.

Table 3. Binomial GLM models predicting probability of occurrence of *Nothofagus* species in the Paparoa Mountains.

	Total		*"Best" Model*			
Species[a]	*Deviance*	*df*	*Model*[b]	*Deviance*	*df*	*Deviance explained*
NOTMEN	86.26	48	A	71.01	44	17.7%
NOTTRU	90.27	48	T	68.69	45	23.9%
NOTSOL	121.4	48	T + D	44.45	43	63.3%
NOTFUS	100.4	48	T + D + A.T	32.31	27	67.8%

	Classes			*Probability of occurrence*
	Altitude (m)	*Topography*	*Drainage*	
NOTMEN	<120			.62
	120–179			.66
	180–239			.56
	240–334			.50
	>335			.74
NOTTRU		flat		.37
		moderate		.53
		rolling		.58
		steep		.65
NOTSOL		flat, moderate	poor	.64
		flat, moderate	moderate	.31
		flat, moderate	well	.19
		rolling	poor	.42
		rolling	moderate	.15
		rolling	well	.09
		steep	poor	.50
		steep	moderate	.20
		steep	well	.11
NOTFUS	(refer to Fig. 4)			

[a] *Species: NOTMEN,* Nothofagus menziesii; *NOTTRU,* N. truncata; *NOTSOL,* N. solandri *var.* cliffortioides; *NOTFUS,* N. fusca.
[b] *A, altitude; T, topography; D, drainage; A.T, altitude and temperature interaction.*

politan species averaging greater than 50% occurrence but with a tendency to occur along altitudinal patterns similar to those of *N. fusca* on flatter sites. *N. truncata* prefers steeper sites, whereas *N. solandri* var. *cliffortioides* favors flat, poorly drained conditions. These findings certainly follow the patterns portrayed in qualitative direct gradient analysis (Fig. 2) and DECORANA species ordination (Fig. 3). For example, *N. menziesii* occurs in communities throughout the topographic, soil drainage axis of the qualitative direct gradient analysis diagram (Fig. 2), suggesting its cosmopolitan character, whereas its position in DECORANA suggests its affinities with *N. fusca.* In contrast, *N. solandri* var. *cliffortioides* has a low DECORANA score on axis 1 in association with other poor drainage–low fertility species (Fig. 3). Similarly, the *Nothofagus* community where *N. solandri* var. *cliffortioides* is the only *Nothofagus* species present (i.e., CT 20) is shown to occur predominantly on poorly or moderately drained terraces as diagrammed by qualitative direct gradient analysis (Fig. 2).

GLM will be most informative when the factors used directly affect plant distribution and performance. Further, sample sizes must be large to reduce uncertainty in GLM interpretation. The 157 plots collected in the current study were considered too few to conduct GLM. Uncertainty is increased with small numbers of observations per cell in the contingency table. As the number of environmental factors considered increases, the number of cells and necessary observations in the contingency table increases as their product. Thus, for most nature reserve design applications, GLM may not be a practical technique.

All of the community types identified here (Table 1) and the gradient patterns depicted in Figure 2 are currently protected in designated nature reserves in the Punakaiki Ecological District. Thus, based on this study, the reserve system of the district may be viewed as being representative of the districts lowland forests. Most of the vegetation sampled and approximately 80% of the district is currently proposed for reservation as a National Park (National Parks and Reserves Authority 1985). Ideally, all community types and gradient patterns depicted in Figure 2 including successional vegetation and natural disturbance processes should also be represented within the National Park proposal. However, the occurrence of CTs 1, 2, and 5 on coastal marine shingle terraces (bottom left of Fig. 2) are not represented in the National Park proposal. These communities and landforms are represented in a 20 ha forest remnant (June 1981). The National Park proposal excludes this remnant (42°09'S, 171°20'E) primarily because of its small size, isolation from the main body of

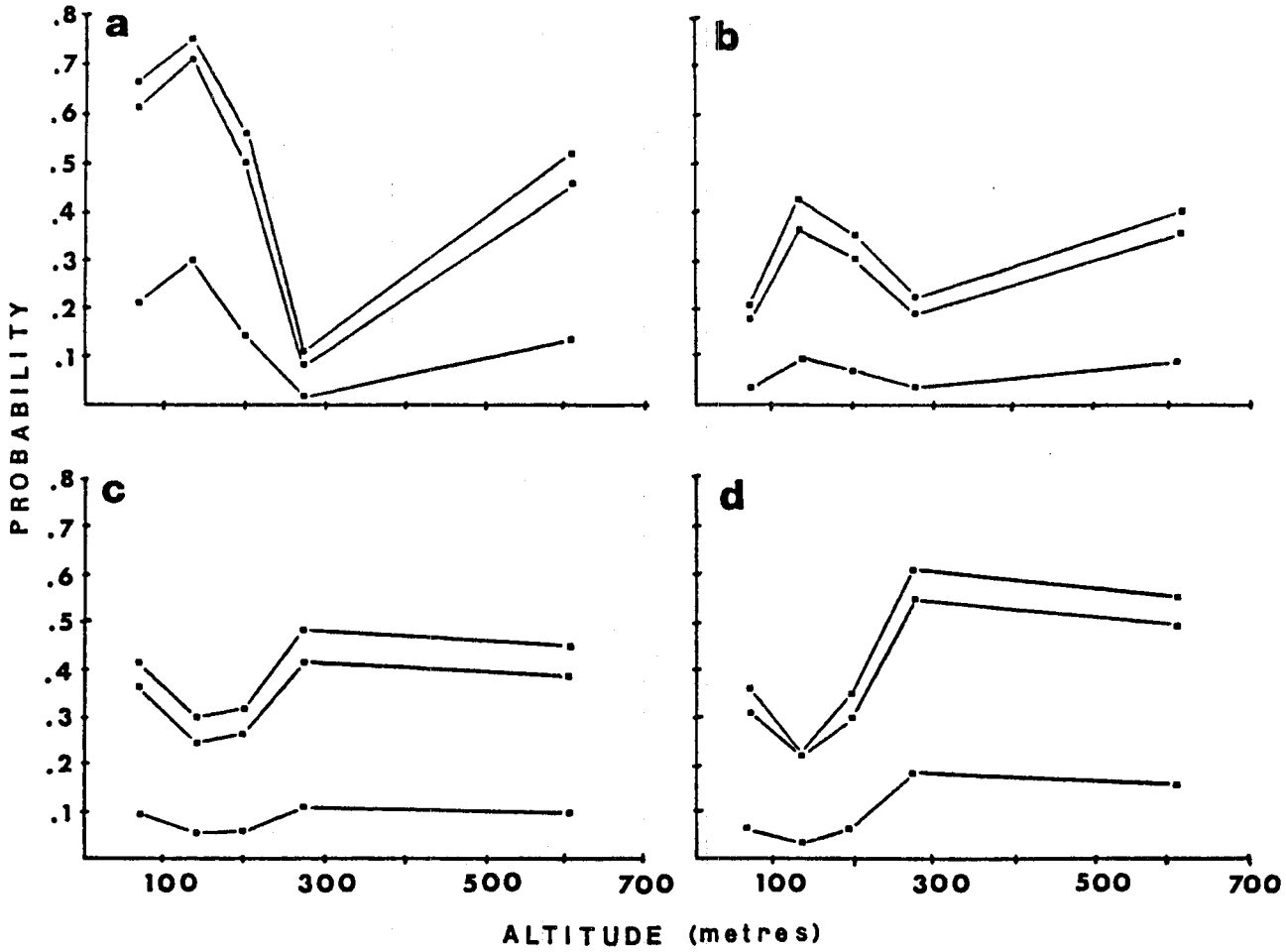

Figure 4. GLM diagram depicting probability of occurrence of Nothofagus fusca *in the Paparoa Range. The upper line in each graph represents well-drained sites, the central line moderately drained sites, and the lower line poorly drained sites. Graph: a, flat topography; b, moderate topography; c, rolling topography; d, steep topography. See Table 3 for deviance values.*

the proposal (circa 1 km), and disturbance threat from proposed adjacent mining operations (National Parks and Reserves Authority 1985).

The remnants vegetation and landforms are vital elements of the district's ecological identity. CTs 1 and 2 represent extremes in the range of compositional variation in the Punakaiki Ecological District based on TWINSPAN (Table 1). These luxuriant forests cluster at one end of TWINSPAN, whereas the other end includes forests of the low-fertility CT 20.

Vegetation patterns in the remnant are complicated by the effects of meandering streams, and the natural integrity of the area depends on the maintenance of current hydrologic systems. Alteration of water tables by adjacent mining could destroy the current vegetation.

Vegetation in the remnant essentially varies along a primary succession gradient on marine shingle ridges of varying age. Sites closest to the sea represent the youngest surfaces, have the least soil development, and support vegetation of the lowest stature. As distance from the sea increases, soil development becomes progressively more advanced and forest stature increases by 30 m. In a horizontal distance of 500 m, altitude increases a maximum of 10 m yet vegetation changes dramatically in species composition from CT 5 on the coast, through CT 1, and eventually to CT 2 at 400 m inland.

Within the Punakaiki Ecological District this is the best remnant of once extensive marine terrace forests. Most of these forests have been cleared and drained and converted to farms. This remnant is a vital component of a representative reserve system in the district. The present Punakaiki National Park proposal (National Parks and Reserves Authority 1985) would be fully representative of the district's lowland forests only if this remnant were included within its boundaries.

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Literature Cited

Adams, J. A. 1976. Nutrient requirements of four *Nothofagus* species in North Westland, New Zealand, as shown by foliar analysis. New Zealand Journal of Botany 14:211–223.

Allan, H. H. 1961. Flora of New Zealand. Volume 1. Indigenous Tracheophyta: Psilopsida, Lycopsida, Filicopsida, Gymnospermae, and Dicotyledones. Government Printer, Wellington, New Zealand.

Austin, M. P. 1983. Problems of vegetation analysis for nature conservation. Pages 101–130 *in* K. Myers, C. Margules, and I. Musto, editors. Survey Methods for Nature Conservation. Volume 1. Commonwealth Scientific and Industrial Research Organization, Canberra, Australia.

Austin, M. P., R. B. Cunningham, and P. M. Fleming. 1984. New approaches to direct gradient analysis using environmental scalars and statistical curve-fitting procedures. Vegetatio 55:11–27.

Austin, M. P., and C. R. Margules. 1984. The concept of representativeness in conservation evaluation with particular relevance to Australia. Technical Memorandum 84/11. Commonwealth Scientific and Industrial Research Organization, Canberra, Australia.

Baker, R. J., and J. A. Nelder. 1978. The GLIM System. Release 3: Generalized Linear Interactive Modelling. Rothamsted Experimental Station, Harpenden, Herts, England.

Beals, E. W. 1984. Bray-Curtis ordination: An effective strategy for analysis of multivariate ecological data. Pages 1–55 *in* A. MacFadyen and E. D. Ford, editors. Advances in Ecological Research, Volume 14. Academic Press, Orlando, Florida.

Biological Resources Centre. 1983. Ecological Regions and Districts of New Zealand. Boundaries and Names. Sheet 3. 2nd ed. Department of Scientific and Industrial Research, Wellington, New Zealand.

Bowen, F. E. 1964. Geologic map of New Zealand. Sheet 15 Buller. Department of Scientific and Industrial Research, Wellington, New Zealand.

Dennis, A. 1981. The Paparoas Guide. Native Forests Action Council, Nelson, New Zealand.

Department of Lands and Survey. 1978. The Punakaiki-Paparoa Region. Department of Lands and Survey, Hokitika, New Zealand.

Edgar, E., and H. E. Conner. 1983. Nomina nova III, 1977–1982. New Zealand Journal of Botany 21:421–441.

Franklin, D. A., and J. L. Nicholls. 1974. Ecological survey of New Zealand's indigenous forests. Sheet No. 18 Grey. Forest Research Institute, Rotorua, New Zealand.

Gauch, H. G. 1982. Multivariate Analysis in Community Ecology. Cambridge University Press, Cambridge, England.

Gillison, A. N. 1983. Gradient oriented sampling for resource surveys—the gradsect method. Pages 349–374 *in* K. Myers, C. R. Margules, and I. Musto, editors. Survey Methods for Nature Conservation. Commonwealth Scientific and Industrial Research Organization, Canberra, Australia.

Gillison, A. N., and K. R. W. Brewer. 1985. The use of gradient directed transects or gradsects in natural resource surveys. Journal of Environmental Management 20:103–127.

Gleason, H. A. 1926. The individualistic concept of the plant association. Bulletin of the Torrey Botanical Club 53:7–26.

Hill, M. O. 1979*a*. TWINSPAN—a FORTRAN program for arranging multivariate data in an ordered two-way table by classification of the individuals and attributes. Ecology and Systematics, Cornell University, Ithaca, New York.

Hill, M. O. 1979*b*. DECORANA—a FORTRAN program for detrended correspondence analysis and reciprocal averaging. Ecology and Systematics, Cornell University, Ithaca, New York.

June, S. 1981. Scenic reserves of North Westland. Biological Survey of Reserves Series No. 7. Department of Lands and Survey, Wellington, New Zealand.

Masters, S. E., J. T. Holloway, and P. J. McKelvey. 1957. The National Forest Survey of New Zealand 1955. Volume 1. The Indigenous Forest Resources of New Zealand. Government Printer, Wellington, New Zealand.

McKelvey, P. J. 1984. Provisional classification of South Island virgin indigenous forests. New Zealand Journal of Forestry Science 14:151–178.

Moore, L. B., and E. Edgar. 1970. Flora of New Zealand. Volume 2. Indigenous Tracheophyta: Monocotyledons except Graminaea. Government Printer, Wellington, New Zealand.

Mueller-Dombois, D., and H. Ellenberg. 1974. Aims and Methods of Vegetation Ecology. John Wiley, New York.

National Parks and Reserves Authority. A Proposal for a Punakaiki National Park. National Parks and Reserves Authority, Wellington, New Zealand.

New Zealand Reserves Act. 1977. Number 66. New Zealand Government, Wellington, New Zealand.

Orloci, L. 1975. Multivariate Analysis in Vegetation Research. W. Junk, the Hague, the Netherlands.

Park, G. N., and J. A. Bartle. 1978. An evaluation of the lowland forests of the West Paparoa Ecological District with a proposal for a representative reserve in the Porarari. Department of Scientific and Industrial Research—National Museum Report. Wellington, New Zealand.

Revfeim, K. J. A. 1982. Estimating global radiation on sloping surfaces. New Zealand Journal of Agricultural Research 25:281–283.

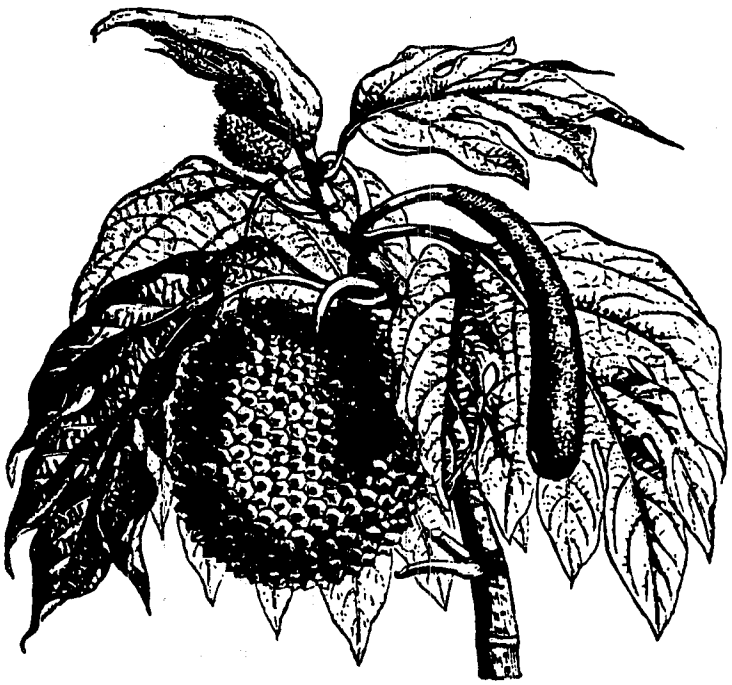
Simpson, P. 1982. Ecological regions and districts: A natural subdivision of New Zealand. Biological Resources Centre Publication 1. Department of Scientific and Industrial Research, Wellington, New Zealand.

Wardle, P., M. J. A. Bulfin, and J. Dugdale. 1983. Temperate broadleaved forests of New Zealand. Pages 33–71 *in* J. D. Ovington, editor. Temperate Broadleaved Evergreen Forests. Ecosystems of the World 10. Elsevier, New York.

Whittaker, R. H. 1967. Gradient analysis of vegetation. Biological Review 42:207–264.

Whittaker, R. H., editor. 1973. Handbook of Vegetation Science, Part V. Ordination and Classification of Communities. W. Junk, the Hague, the Netherlands.

Whittaker, R. H., and H. G. Gauch, Jr. 1973. Evaluation of ordination techniques. Pages 287–321 *in* R. H. Whittaker, editor. Handbook of Vegetation Science, Part V. Ordination and Classification of Communities. W. Junk, the Hague, the Netherlands.



Advantages and Limitations of Ecological Classification for the Protection of Ecosystems

DeVelice and his colleagues' paper (see p. *206*) attempts to mesh classification and gradient analysis in order to define the functional patches in a landscape, and to apply their findings to the design of a nature preserve system and the long-term protection of their study area. This approach is attractive. However, a brief discussion of several conceptual issues is in order to ensure its usefulness.

Two closely related trends in ecology are of interest to conservation because they apply directly to design and management of preserves. First, the renewed focus on gap dynamics (Pickett and White 1985, Shugart 1984) most appropriately leads to viewing communities or ecosystems as forming intricate mosaics over large areas. This search for patterns and processes is rooted in the classic discussions of Aubreville 1938, Richards (1952), and Watts (1925, 1947). As interest centers on the dynamics of the elements of the mosaic, a landscape approach (Forman and Godron 1986; Naveh and Lieberman 1984) is developing in order to fit function and structure (Risser et al. 1984). Second, this landscape approach raises the question of scale (Allen and Starr 1982; O'Neil et al. 1986; Urban et al. 1987). Spatial and temporal scales interact (Connell and Slayter 1977; Raup 1957; Shugart 1984; Urban et al. 1987; Webb et al. 1972; Whittaker and Levin 1977) and are closely related to each other for a particular phenomenon (Allen et al. 1984; Delcourt et al. 1983; Forman and Godron 1986). In that vein, the respective role of regional and local processes on community structure and diversity (Ricklefs 1987) is being recognized.

Questions that need to be addressed are:

- What is the mosaic structure of a landscape?
- What are the dynamics of each element?
- At which scale is the landscape in quasi equilibrium?
- What is the range of temporal and spatial scales at which patterns and processes operate?

Literature in the field of conservation biology increasingly reflects the interest in landscape ecology and hierarchy theory (e.g., Noss 1985, 1987 *a* and *b*; Pickett and Thompson 1978; White 1987). The concept of ecological communities is central to answering the above questions. Communities are a convenient way of dividing the landscape into discrete units that are repeated in space and time. Communities vary along environmental gradients. Disturbances at various scales overlie these gradients and create further patchiness in space. Therefore, a vegetated community may differ from other communities in the surrounding matrix either because the environmental conditions are different or because it is at a different successional age. When an ecological classification is validated, the above questions may be answered for a particular study area. However, there are several reasons to be cautious in accepting this approach.

First, in a field like conservation biology, the value system has to be clearly defined in order to formulate goals and objectives (Noss 1987*a*). Otherwise, the term "representativeness" is meaningless. Conservation's philosophical problem of how to preserve systems in an ever-changing world of processes (White 1987; White and Bratton 1980) may be left unaddressed but will not disappear. Furthermore, to be effective, an ecological classification needs to be used in the context of a well-formulated conservation strategy (e.g., Bourgeron 1988; Jenkins 1976).

Second, in order to be useful in setting national or regional conservation and management priorities, the classification process needs to be rigorous (e.g., Pfister and Arno 1980; Westhoff and van der Maarel 1978). Also, with data from a limited area, the classification process used by DeVelice et al. summarizes only some of the relations among neighboring communities. The next step is to check those communities against an already existing formal classification at the regional/national level (Westhoff and Van der Maarel 1978). This approach has much more than an academic interest: it has management implications because it increases the

knowledge of diversity patterns (e.g., Feoli and Lagonegro 1982). As it stands now, the work done by DeVelice and his colleagues is merely an "a posteriori" classification in mathematical guise. As Kuchler (1951) stated, the use of a posteriori classifications is limited because they are not systematic. Ecological validity isn't proven by being able to speculate upon the interpretation of an ecological classification obtained by a numerical technique.

The third reason to be cautious when evaluating ecological classification is that environmental and spatiotemporal relationships of community types may not be well documented. Relating vegetation units to one another through gradient analysis provides a sharp picture of landscape dynamics. However, gradient analysis needs to be done with quantitative data. Beyond the environmental relations among communities, generalized successional models need to be at least hypothesized, with the assumptions clearly formulated. These assumptions include the role of processes active at various scales. Work done in the U.S. Northern Rockies on generalized successional models overlaid on existing classification systems (e.g., Arno et al. 1985; Fisher and Bradley 1987; Fisher and Clayton 1983; Keane et al. 1988) is of tremendous importance to preserve selection and design based on an ecological classification (Bourgeron 1986). In a landscape perspective, the size of patches and the frequency of disturbances relative to the area are factors in determining a possible dynamic equilibrium (Romme and Knight 1982; Shugart 1984; Urban et al. 1987).

In conclusion, using an ecological classification as the foundation for protecting ecosystems is attractive. Where a preserve includes all identified communities, landscape diversity may be stable. However, there are several necessary steps to follow in order to provide reasonably valid guidelines for preserve selection, design, and stewardship. Even when these steps are carefully followed, there are many reasons to be cautious when implementing the results for actual reserves (e.g., White 1987). The failure of DeVelice and his co-workers to follow these steps and, at least, address larger issues (such as the assumptions of a stable disturbance rate, climate fluctuation, etc.) seriously limits their success. However, recent studies in different areas of conservation and ecosystems (Scott et al. 1987, Ricklefs 1987, Swanson et al. 1988, Urban et al. 1987) show the way to successful integration of various ecosystem dimensions toward understanding the functioning of natural systems.

PATRICK S. BOURGERON

Rocky Mountain Heritage Task Force
The Nature Conservancy
Lakewood, Colorado 80228, U.S.A.

Literature Cited

Allen, T. F. H., and Starr, T. B. 1982. Hierarchy: Perspectives for ecological complexity. University of Chicago Press, Chicago, Illinois.

Allen, T. F. H., Hoekstra, T. W., and O'Neill, R. V. 1984. Interlevel relations in ecological research and management: some working principles from hierarchy theory. USDA Forest Service Gen. Tech. Rep. RM-110. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado.

Arno, S. F., Simmerman, D. G., and Keane, R. E. 1985. Forest succession on four habitat types in Western Montana. Gen. Tech. Rep. INT-177. USDA, Intermountain Forest and Range Experiment Station, Ogden, Utah.

Aubreville, A. 1938. La forêt coloniale: les forêts de l'Afrique occidentale française. Ann Acad Science Colon. 9:1–245.

Bourgeron, P. S. 1988. Conservation of natural diversity: The role of an ecological classification. In Proceedings of a Symposium on Land Classification Based on Vegetation: Applications to Management. USDA, Intermountain Forest and Range Experiment Station, Ogden, Utah, *in press*.

Bourgeron, P. S. 1986. The Nature Conservancy's classification system, its development and use in the Western United States. Pages 26–31 in D. J. Loop, editor. Proceedings of the Montana Natural Areas Conference, Billings, Montana. The Nature Conservancy Big Sky Field Office, Helena, Montana.

Connell, J. H., and Slayter, R. O. 1977. Mechanisms of succession in natural communities and their role in community stability and organization. Amer. Nat. 111:1119–1144.

Delcourt, H. R., Delcourt, P. A., and Webb, T. III. 1983. Dynamic plant ecology: the spectrum of vegetation change in space and time. Quat. Sci. Rev. 1:153–175.

DeVelice, R. L., DeVelice, J. W., and Park, G. N. 1988. Gradient analysis in nature reserve design: A New Zealand example. Conservation Biology 2:206–217.

Feoli, E., and Lagonegro, M. 1982. Syntaxonomical analysis of beech woods in the Apennines (Italy) using the program package IAHOPA. Vegetatio 50:129–173.

Fisher, W. C., and Bradley, A. F. 1987. Fire ecology of Western Montana forest habitat types. Gen. Tech. Rep. INT-223. USDA, Intermountain Forest and Range Experiment Station, Ogden, Utah.

Fisher, W. C., Clayton, B. D. 1983. Fire ecology of Montana forest habitat types east of the continental divide. Gen. Tech. Rep. INT-141. USDA, Intermountain Forest and Range Experiment Station, Ogden, Utah.

Forman, R. T. T., and Godron, M. 1986. Landscape ecology. John Wiley & Sons, New York, New York.

Jenkins, R. E. Jr., 1976. Maintenance of natural diversity: approach and recommendations. Pages 441–451 *in* Transactions of the 41st North American Wildlife Conference, 1976 March 24, at the Wildlife Management Institute, Washington, D.C.

Keane, R. E., Arno, S. T., and Brown, J. K. 1988. Modeling cumulative fire effects in ponderosa pine/douglas-fir forests. Ecology: submitted.

Kuchler, A. W. 1951. The relation between classifying and mapping vegetation. Ecology 32:275–283.

Naveh, Z., and Lieberman, A. S. 1984. Landscape ecology. Springer-Verlag, New York, New York.

Noss, R. F. 1983. A regional landscape approach to maintain diversity. BioScience 33:700–706.

Noss, R. F. 1985. On characterizing presettlement vegetation: how and why. Natural Areas Journal 5:5–19.

Noss, R. F. 1987*a*. Protecting natural areas in fragmented landscapes. Natural Areas Journal 7:2–13.

Noss, R. F. 1987 *b*. Corridors in real landscapes: a reply to Simberloff and Cox. Conservation Biology 1:159–164.

O'Neil, R. V., DeAngelis, D. L., Waide, J. B., and Allen, T. F. H. 1986. A hierarchical concept of the ecosystem. Princeton University Press, Princton, New Jersey.

Pfister, R. D., and Arno, S. F. 1980. Classifying forest habitat types based on potential climax vegetation. Forest Science 26:52–70.

Pickett, S. T. A., and Thompson, J. N. 1978. Patch dynamics and the design of nature reserves. Biological Conservation 13:27–37.

Pickett, S. T. A., and White, P. S. 1985. The ecology of natural disturbance and patch dynamics. Academic Press, New York, New York.

Raup, H. M. 1957. Vegetational adjustment to the instability of site. Pages 36–48 *in* the Paper from the Proceedings of the Union Conserv. Nature Nat. Resour.

Ricklefs, R. E. 1987. Community diversity: relative role of local and regional processes. Science 235:167–171.

Richards, P. W. 1952. The tropical rain forest: an ecological study. Cambridge University Press, Cambridge, England.

Risser, P. G., Karr, J. R., and Forman, R. T. T. 1984. Landscape ecology: directions and approaches. Illinois Natural History Survey Special Publ. No. 2. Illinois Natural History Survey, Champaign, Illinois.

Romme, W. H., and Knight, D. H. 1982. Landscape diversity: the concept applied to Yellowstone Park. BioScience 32:664–670.

Scott, J. M., Csuti, B., Jacobi, J. D., and Estes, J. E. 1987. Species richness: a geographic approach to protecting future biological diversity. BioScience 37:782–788.

Shugart, H. H. 1984. A theory of forest dynamics. Springer, New York, New York.

Swanson, F. J., Kratz, T. K., Caine, N., and Woodmansee, R. G. 1988. Landform effects on ecosystem patterns and processes: geomorphic features of the earth's surface regulate the distribution of organisms and processes. BioScience 38:92–98.

Urban, D. L., O'Neill, R. V., and Shugart, H. H. Jr. 1987. Landscape ecology: a hierarchical perspective can help scientists understand spatial patterns. BioScience 37:119–127.

Watts, A. S. 1925. On the ecology of British beech woods with special reference to their regeneration. II. The development and structure of beech communities on the Sussex Downs. J. Ecol. 13:27–73.

Watts, A. S. 1947. Pattern and process in the plant community. J. Ecol. 35:1–22.

Webb, L. J., Tracey, J. G., and Williams, W. T. 1972. Regeneration and pattern in the subtropical rain forest. J. Ecol. 60:675–695.

Westhoff, V., and Van der Maarel, E. 1978. The Braun-Blanquet approach. Pages 287–399 *in* Whittaker, R. H., editor. Classification of plant communities, Dr. W. Junk by Publishers, Boston, Massachusetts.

White, P. S. 1987. Natural disturbance, patch dynamics, and landscape pattern in natural areas. Natural Areas Journal 7:14–22.

White, P. S., and Bratton, S. P. 1980. After preservation: the philosophical and practical problems of change. Biological Conservation 18:241–255.

Whittaker, R. H., and Levin, S. A. 1977. The role of mosaic phenomena in natural communities. Theor. Popul. Biol. 12:117–139.

APPENDIX B.3
EXAMPLES OF FEDERAL AND STATE DATA BASES

National Park Flora (NPFLORA)

NPFLORA seeks to keep a list of all taxa of vegetation within each of the national parks. Information collected includes species names, taxonomic characteristics, and state and federal status (from lists of threatened, endangered, sensitive, or other special status species). It is designed to be a reference for managers and planners. Its coverage is limited to National Park Service lands, and the information is mostly presence/absence in nature. Data entry is ongoing as information becomes available from specific parks and monuments. Computerization is incomplete, but some information is available in Alaska NPS Units.

Nationwide Rivers Inventory

This data base contains information on segments of streams and rivers in the coterminous United States which are deemed to be potential candidates for Wild and Scenic Rivers designation. Information is restricted to segments 25 miles or more in length (unless other outstanding values are known to exist), and includes cursory information on surface flow, cultural development, and fish and wildlife values. No species-specific information is contained in the data base, and it is unclear whether or not any information has been added since 1982.

National Natural Landmarks Program

This data base contains information from inventories completed under the National Natural Landmarks Program for 33 ecological units in the United States. Data vary considerably between studies, as does the amount of actual field research which went into the studies. Coverage includes all physiographic provinces of the United States, and the information generally provides a very coarse filter for identifying ecologically significant areas that could be future candidates for National Natural Landmark designation. Results are published in the form of completed reports, and only the titles are computerized. The Alaska Natural Heritage Program has summarized all registered Alaska sites in computerized format.

National Park Service Endangered Species Data Base

This is a system-wide data base collating information from all National Park Service units on federally listed threatened and endangered species on Park Service lands. Designed to be used for planning and management purposes, this data base is partially computerized, and the extent of the coverage of computerized data bases is not clear. System-wide data have been manually collated and computerized in some regions. Some regions have occurrence data, while others merely have lists with presumed presence/absence data. Relatively few federally listed species occur in Alaska.

Wild and Scenic Rivers System

Designated Wild and Scenic Rivers were inventoried for cultural, ecological, geological, historical, and recreational values; and the information was used to generate environmental impact statements for each designated river segment. Coverage amounts to only about 60 percent of the river segments designated by Congress as wild and scenic. No information exists in a centralized computer data base, but individual environmental impact statements may be in word-processing files. Reports were stopped due to funding and staffing constraints, and few have been produced since the mid-1980s.

Biosphere Reserve System Data Files

Six biosphere reserves have attempted to collate all environmental information from disparate sources into single volumes covering each reserve. Subsets of data are to be computerized for easier access and search. Taxonomic coverage varies from unit to unit, but all have basic information on flora and vertebrate fauna. Coverage is limited to National Park Service units designated as Biosphere Reserves under UNESCO's Man and the Biosphere Program. In Alaska, information is being gathered on these sites and exists largely in noncomputerized form.

Miscellaneous National Park Service Data Bases with Restricted Coverage

The National Park Service also keeps data bases on sub-state areas of interest. These include the Bear Information System (which tracks sightings and management actions for trapped or radio-tagged bears in Yellowstone), the Ground Cover System (which computerizes vegetation plot data taken in Yellowstone), the Great

Smoky Mountains Vegetation Data Base (which manages information on botany and ethnobotany and maintains an up-to-date plant checklist for the park), and the Channel Islands Information System (which computerizes a variety of population dynamics data for over 2,000 species of plants and animals in the Channel Islands National Park). The Alaska national park system is relatively new, and resource inventory information is gathered on a park geographic base. This information varies in focus, extent of coverage, and detail between parks.

BLM Integrated Habitat Inventory Classification System (IHICS)

This data base contains information collated from districts and resource areas on wildlife habitat sites, standard wildlife habitat features (strata), and special habitat features. It is designed to identify and delineate specific vegetation types known to be associated with specific wildlife species. Coverage varies widely, both by geography and by taxonomy. Some state offices have included substantial numbers of nongame species in their IHICS coverage, while others have limited coverage to game or other economically important taxa. Alaska reportedly has limited coverage for some wildlife species.

BLM Forest Inventory

This data base is a combination of computerized and manual files on the timber types, commercial or noncommercial potential, and boundaries of timbered lands administered by the Bureau of Land Management. Information is taken by combining aerial surveys with subsequent field verification. Data are not centralized, but are available from state and district offices, either as mapped information or sometimes as computer files. In Alaska BLM manages very little commercial timber, although forests are harvested for personal use. Data sets have been compiled to identify the location of suitable timber for these purposes.

BLM Fire Management Data

These files contain information on vegetation response and resource changes resulting from wildfires and prescribed burns. Surveys assess post-fire vegetation, soil condition, and changes in species composition. Some studies have been conducted to determine data on successional changes after controlled burns. Unfortunately, although data collection is standardized, it exists

almost entirely in unpublished, localized files. Data for Alaska are compiled into the Alaska Initial Attack Management System administered by BLM- Alaska Fire Service in computerized format, and relate more specifically to fire predictive modelling and fire management strategies conducted over large land areas.

BLM Threatened and Endangered Species Data Bases

These data bases are based on standard data base and input forms outlined in the Bureau of Land Management manual. Theoretically, there are two separate data bases, one dealing with actual observations of threatened and endangered plants and one for actual observations of threatened and endangered animals. However, there are no centralized data bases, and these are kept at the various field offices of the BLM. Some offices have their own individual computerized data bases (most of which are on some version of dBase III software). Several states rely on the Natural Heritage Data Bases for one or both, contracting the maintenance and update of these to the state natural heritage program. The Alaska Natural Heritage Program currently provides data to populate the Alaska TES data base.

USFWS Winter Waterfowl Surveys

Data from these surveys, conducted in January of each year at known concentration areas for migratory waterfowl, are used to monitor changes in the distribution and numbers of wintering waterfowl, especially those with inaccessible breeding grounds. Data are computerized at the Office of Migratory Bird Management at the Patuxent Research Center in Laurel, Maryland. Coverage is biased toward the coterminous United States and known traditional wintering areas. Waterfowl data in Alaska are available for parts of the Alaska Peninsula and southwestern Alaska.

North American Breeding Bird Survey

Information from over 2,000 roadside counts each year throughout North America, including Alaska, and covering 500 species of breeding birds is gathered by a network of agency professionals and cooperators. The information is used to track trends in species distribution and abundance. It is computerized and maintained by the Office of Migratory Bird Management at the Patuxent Research Center.

National Wildlife Refuge Management Information System

This is an umbrella system for all refuge administrative and resources information. Data vary depending on the character of the refuge and its mission. The system is designed to cover all refuges throughout the National Wildlife Refuge System. Designed to cover all cogent biological information on individual refuges, the system is still being populated, with completion nationwide tentatively scheduled for 1996. Refuge wide natural resource data sets are being constructed for Alaska Wildlife Refuges.

National Wetlands Inventory

This data base contains information on the distribution of wetlands throughout the United States based on aerial photography with subsequent ground survey. Products are detailed maps of wetland areas at a scale of 1:100,000. In addition to mapping the existence of wetlands, the data base seeks additional estimates of the rate of attrition of wetlands in different parts of the United States. Approximately 20 percent of Alaska has been completed.

Wetlands Plant Species Data Base

This data base contains information on habitat type, indicator status, occurrence by U.S. Fish and Wildlife Service region, and selected botanical references for wetland plant species found in the United States. Its purpose is to assist biologists in making wetland delineations. It covers all 50 states and the Caribbean territories and trusts, and includes all 5,400 species of plants known to be associated with wetlands. The data base is computerized and maintained by the Wetlands Ecology Group of the Wildlife Enhancement Division.

Endangered Species Information System (ESIS)

This system was designed to provide biological, ecological, and distribution information on each federally listed threatened and endangered species. Based on the "Procedures for the Computerization of Fish and Wildlife Information" ("Procedures" for short) system, this data base has not been regularly updated or widely used since its completion. Designed to provide a centralized source for data on listed species, its use proved cumbersome and unwieldy, as did attempts to update information. Currently, this data base is in a state of limbo, although some use still occurs at specific offices. The U.S. Fish and Wildlife Service has been negotiating with The Nature Conservancy to

convert ESIS to the Biological and Conservation Data System (BCD) format, and for the Conservancy to be responsible for update and maintenance of the information. The Conservancy has responded to a sole-source request for proposals, and negotiations with the Office of Endangered Species are ongoing.

Habitat Suitability Index (HSI) Models

This data base consists of a series of modules, termed HSI models, which contain brief literature reviews of species-habitat requirements, and which identify important habitat factors limiting the occurrence and abundance of species. The models include a formula for rating habitat values based on habitat variables. The primary use of these models has been inventory, impact assessment, and wildlife planning activities, and in the determination of mitigation targets. Reports, which are developed for selected individual species of vertebrates and invertebrates, are published as narrative volumes. The U.S. Forest Service in Alaska has cooperated in the production of some HSI models for shorebirds and waterfowl.

Fish and Wildlife Reference Service

This is a bibliographic data base which documents reports and other technical materials from the Federal Aid in Fish and Wildlife Restoration Programs, the Anadromous Fish Conservation Program, the Endangered Species Grants Program, the Cooperative Fish and Wildlife Research Units and state fish and wildlife management agencies. Coverage also includes documents published papers, technical publications, theses and other species materials such as Endangered Species Recovery Plans. Coverage is truly national in scope, and subject matter includes virtually all biota. The data base is accessible and searchable on the dialog system, and is updated at least twice annually. It contains citations back to about 1950.

Waterfowl Breeding Ground Surveys

Computerized in this data base are aerial and ground counts of waterfowl nesting areas made in May and June of each year to estimate the size of breeding populations of 10 species and to estimate waterfowl production. Water areas are also mapped and counted. Specific information on breeding adults, brood sizes, and habitat changes are recorded as well. These data are narrowly focused on the northern states and the Prairie Pothole Region, but

some Alaska data are taken. They are computerized and maintained by the Office of Migratory Bird Management.

Sandhill Crane Surveys

Annual surveys of each of the recognized sandhill crane populations are conducted and the results are manually stored in the states or on the refuges on which the surveys were conducted. The Pacific Flyway lesser sandhill crane population is surveyed on the ground in the Central Valley of California during the winter. In Alaska sandhill crane inventory is a part of USFWS waterfowl surveys.

Coastal Area Characterization Studies

Information was collected on the distribution, habitat associations, population trends or relative abundance, and legal or protective status of selected flora and fauna of coastal areas. The data were largely derived from secondary sources and published in volumes dealing with coastal regions of the United States. Virtually all of the Pacific Coast was included in the final publications. No attempts to update or maintain the information have been identified. This was part of an effort to identify areas where special management considerations were required. A related effort, the Coastal Ecological Inventory, contained information on land-use designations, important fish and wildlife species and their habitats, fish and wildlife species in need of special protection, and specific uses of specific coastal areas. Publications for both of these programs are available from the National Coastal Ecosystems Team of the U.S. Fish and Wildlife Service, Slidell, Louisiana.

Marine and Waterbird Colony Data

Data from surveys of colonial nesting birds are collected annually and synthesized in five-year cycles for the Atlantic, Gulf, and Pacific coasts. Data include species occurrence, relative abundance of species within the colonies, and locational information. Data are generally published in reports once every five years and are sometimes available on computer at regional offices of the U.S. Fish and Wildlife Service. Data on the Gulf Coast have been updated regularly, while data collection and synthesis on the Pacific Coast has been spotty. Alaska data are maintained by Art Sowls, USFWS, in Homer, Alaska.

The U.S. Fish and Wildlife Service has a number of other data bases whose geographic coverage does not include the Pacific Northwest and Alaska. Those data bases are not covered here.

U.S. Geological Survey Land Use/Land Cover Data and Maps

This data base contains digital data on land use and land cover for development of 1:250,000 and 1:100,000 scale maps. Land categories are broad (e.g., wetlands, barrenlands, rangelands, forest lands, tundra, etc.), and are delineated to a minimum map unit of approximately ten acres. Output is available as digital data from the National Cartographic Information Center, or as maps from the various Mapping Centers. Coverage for Alaska is derived from LANDSAT data and analyzed using computer assisted mapping methodologies. Mapping projects were derived from cooperative federal and state interagency efforts and exist for approximately two-thirds of Alaska.

USFS Forest Inventory and Analysis

This data base contains inventories of forest lands in the continental United States, excluding USDA Forest Service and Bureau of Land Management lands. Data are collected by Forest Service personnel and cooperators (primary state forestry personnel) and are aggregated by Society of American Foresters forest cover types. Data are updated on a ten-year cycle, with some states updated each year. Data are computerized and available at regional offices. Inventory data exists for forested lands in Alaska.

Range Analysis and FSRAMIS

Range analysis is a continuous inventory of range conditions on all national forest rangelands, and includes data on existing and potential vegetation. It is an ongoing attempt to monitor range condition on national forest lands. Additional data on each individual allotment are combined with the above information and managed in the FSRAMIS system. Systems are organized by region and data are available at the regional offices.

RPA Range Data

This attempt to synthesize data from all rangelands in the United States is coordinated by the USDA Forest Service, and the information is taken from forest plans, Bureau of Land Management grazing environmental impact statements, and the Soil Conservation

Service National Resources Inventories data. Data are aggregated at the ecosystem level. Summaries of range conditions, trends, productivity, and potential are produced at the ecosystem level and are claimed to be 75 to 80 percent accurate at that level. The information was last updated in 1989, and is coordinated by the Rocky Mountain Forest and Range Experiment Station in Fort Collins, Colorado.

USFS Research Natural Areas Data Base

This is a data base that logs continuing inventory information on existing and proposed Research Natural Areas. Its primary purpose is to assess whether or not proposed RNAs contain vegetation types not represented in the Research Natural Area System. Although listed as a USDA Forest Service data base, the continuous data-entry and updating is done on files maintained by The Nature Conservancy at their Arlington, Virginia, headquarters. In Alaska, Research Natural areas have only been proposed in the Chugach National Forest. New additions to the Tongass National Forest are being considered.

USFS Resource Planning Act (RPA) Wildlife Data

These data cover a variety of terrestrial and aquatic vertebrates whose occurrence is listed by USDA Forest Service region, state, national forest unit, and also by ecosystem, vegetation type, and seral stage. Habitat associations and population estimates generally exist for those species managed for consumptive uses. The information in these data bases is used to identify trends in the fish and wildlife portion of the RPA assessment, a joint project with the SCS RCA assessment. The data were last synthesized in 1989. Data are general in scope and have limited use for site-specific predictions or management decisions.

USFS WILDHAB

This data base is maintained by the Pacific Northwest Region of the USDA Forest Service, and includes information on terrestrial vertebrates and fishes. Information logged includes habitat associations, special habitat features, relative abundance, reproduction potential and performance, food habits, and legal or protective status. The data themselves are stored on a USFS computer in Fort Collins and are difficult to access, although much is available through publications.

NOAA Marine Living Resources Data Base

These data are collected and mapped for approximately 100 vertebrates and selected invertebrates found in the Exclusive Economic Zone (EEZ). Included in the coverage are marine mammals, some coastal birds, fish of economic or sport value (or of forage value for economic species), and invertebrates of economic value. Data on each species include location as juveniles and adults, qualitative information on concentrations within a given area, and digitized locational data for mapping. Some data also cover pollution discharges within coastal counties, as well as population and economic data by coastal county. The file on Arctic Alaska was begun in 1980 and completed in 1987. No updates are known.

NOAA National Estuarine Inventory

This National Oceanic and Atmospheric Administration data base primarily contains information on the physical makeup of estuarine areas, but also contains some biological land use data. These data are designed to assist in the assessment of resource use in coastal and estuarine systems, allowing users to evaluate and identify marine and estuarine resource development strategies that result in maximum public benefit and minimum environmental damage. An atlas has been produced and data base structures finalized. The degree to which data has been updated is not clear.

NMFS Icthyoplankton Survey Data Base

Data on icthyoplankton resources are collected quarterly from a grid of stations by both Soviet and U.S. research vessels under a cooperative agreement. Approximately 200 species are surveyed. These data are used to estimate the spawning biomass of commercially important fish species. Data for Alaska have been collected and computerized since about 1973.

OTHER ALASKA STATEWIDE DATABASES

University of Alaska Museum

The Museum contains a statewide assemblage of animal and plant collections with associated records containing locational, taxonomic, and systematic information. Plant information is automated through the Northern Plant Documentation Center at the University of Alaska herbarium and contains computerized records

of both vascular and nonvascular Alaskan species. Animal coverage includes both vertebrate and invertebrate species collections.

State of Alaska/DNR Resource Management Mapping Program

Conducted throughout the 1980s, the State of Alaska Division of Natural Resources conducted a regional scale, natural resource mapping project to assist in state regional planning efforts. These datasets were automated into GIS format and include vegetation, soils, landforms, hydrology, and other data layers.

Regional Profiles/Federal/State Land Use Planning Team

In the early 1970s a series of regional profiles were produced by a team of federal and state experts to characterize both natural and cultural features of the state. These provide characterization in a broad sense and have maps associated. Some features included original work and other are from summarized secondary sources. Although information is outdated now, it still remains useful in many areas where very little new information exists.

Alaska Natural Heritage Program/Biological Conservation Data Base

The Alaska Natural Heritage Program Conservation data base is a computerized data base management system that summarizes and tracks the locations, status and biological features of the state's rare and sensitive plant and animal species and vegetation communities. The data base follows nationally standardized methodologies.

State of Alaska Dept. of Fish and Game/Anadromous Fish Stream Catalog

The Alaska Department of Fish and Game Habitat Division maintains a computerized data base tracking the upper and lower limits or occurrence of anadromous fish streams on a regional statewide scale updated yearly. Associated textual data is also tracked together in a GIS system.

Appendix C
General Guidelines for A Registry Program

GENERAL GUIDELINES FOR A REGISTRY PROGRAM

1. Inventory: Complete an inventory of the best sites, and research ownership.

2. Information Package: Prepare an information package for each site, including basic information on the natural feature, how to identify and manage it, map showing the significant natural feature, the name, address and telephone number of the owner, and directions to the site.

3. File System: Establish a file or database system for notifying the landowners, setting up meetings and keeping records of information.

4. Letter: Send each landowner a short introductory letter and an attractive informational brochure. The letter should:

   a. Explain inventory process by which the owner's land was identified.
   b. Describe the natural feature on the owner's land and why it is important.
   c. Request a few minutes of his or her time to meet in person to discuss informally the natural feature, and state that you will be calling the landowner soon to set up a convenient time to meet at the property.
   d. Identify and briefly describe the conservation entity you represent.

5. Telephone Call: Follow up the letter with a phone call (e.g. 10 days after sending letter) to request an opportunity to meet in person. Best to call in advance to set up a specific appointment or give a day you will be in the area and would like to drop by (be prepared for the landowner to be unfamiliar with or cautious about the reason for your call; landowner will often have misplaced or not read the introductory letter). This phone call is the most difficult step. Try to establish credibility and emphasize the idea that you have interesting information about the owner's land that he or she may not have.

6. Preparation: Prepare for the meeting by obtaining as much information as you can about the local area, property values, the landowner, etc. Be in full command of the facts.

7. Meeting: Meet with the landowner in person at the property.

   a. Be on time.
   b. Be energetic and upbeat, but do not appear nervous or ill at ease.

c. Present an impressive information packet to the landowner and focus your discussion on the materials in the packet. Discuss what the natural feature is, how you have come to understand that it was on the property, what organization you represent, and if appropriate, why the natural feature is important.
d. Gear the visit to the owner and be an active listener. This is crucial. Try to spend most of the visit listening rather than talking. Pay attention to nonverbal as well as verbal communication.
e. Provide objective information, do not make value judgments. Never tell the landowner what to do; speak of your concerns to the landowner and ask for his or her suggestions.
f. If the landowner responds positively, consider asking for a voluntary protection agreement but do not press the matter if the landowner shows any hesitation.
g. The meeting should last about 1-1/2 hours, but schedule enough time to stay longer if the landowner wants you to.
h. Leave the information packet with the landowner after the visit.

8. Report: Complete a written report summarizing the information obtained during the meeting, including at least:

a. Extent of the owner's knowledge about the natural feature.
b. The owner's attitudes about the natural feature and conservation.
c. The owner's plans for the property.
d. Historical uses.
e. The condition of the natural feature.
f. Threats to the natural feature.
g. The owner's financial situation, including estimated basis and value of the property.
h. General comments.

9. Thank You Note: Immediately after the meeting send a personal thank you note, thanking the landowner for taking the time to meet and, if appropriate, taking such good care of the natural feature.

10. Follow Up: Follow up with periodic phone calls, information letters or bulletins, but do not become a nuisance. Visit the landowner in person at least once a year, and look for any changes in the condition of the property. If appropriate, discuss proper management.

11. Accessible Records: Keep records of all contacts and information about each owner. The records should be easily accessible for further protection planning efforts.

Appendix D
Conservation Easements

OUTLINE OF A CONSERVATION EASEMENT

This is a general outline for purposes of illustration only. The terms of any particular conservation easement and the applicability of any specific examples listed below will depend on the circumstances and parties involved, and the formal requirements for the easement document will depend on applicable state law. In addition, if the landowner is seeking a charitable deduction for granting the conservation easement, the easement document must satisfy all IRS requirements. Nevertheless, this outline provides an idea of the types of provisions a basic conservation easement might contain.

I. INTRODUCTION

A. Name in which landowner holds legal title to the property.

B. Representation that landowner is the sole owner of fee title to the property.

C. Description of property covered:

1. Legal description and amount of total acreage.

2. Map of easement area.

D. Statement of purpose of easement: e.g. to identify, preserve, enhance and protect the ecological, scientific and aesthetic values of the property.

E. Description of significant natural elements to be protected.

F. Description of current threats to the property.

G. Statement that the Easement Holder is qualified by state statute to hold conservation easements.

H. Grant of conservation easement by which the landowner transfers rights to protect the property to the Easement Holder. Transfer includes the right of access by designated roadways.

II. EASEMENT DOCUMENTATION REPORT

A. Baseline report documenting the existing condition of easement area, including maps and photographs.

III. EASEMENT HOLDER'S RIGHTS

A. Examples: construct and maintain fences, trails; post signs and control access; hike and camp; conduct scientific research, field trips and educational

activities; apply biocides locally; introduce, manipulate and eliminate flora and fauna, including removal of non-native trees vegetation; construct and maintain firebreaks; other rights which may be appropriate under the circumstances.

B. Generally, the rights to enter onto the property, to inspect the easement area, to enforce the terms of the conservation easement and to take all actions that the Easement Holder considers necessary to identify, preserve, protect, monitor, enhance and restore the natural values and flora and fauna on the property.

IV. LANDOWNER'S RESERVED RIGHTS

A. Examples: inspect the property for fire and safety hazards; hike along existing trails, in accordance with regulations to be developed to insure that the activities would not adversely affect the ecological values of the property; camp on the property, in accordance with regulations to be developed; hunt game and fish, in accordance with regulations to be developed; maintain existing roads and trails; use horses, pack animals and jeeps on existing roads for hunting, fishing, hiking, camping and road maintenance; use existing cabin for personal use.

B. All retained rights to be exercised in a manner consistent with the conservation purposes of the easement.

V. PROHIBITED USES BY LANDOWNER

A. Examples: change, disturb, alter, or impair the natural values of the property; graze; mine; cut or remove native vegetation; use off-road vehicles; construct or improve roads and trails; subdivide the property; use billboards or like structures; construct buildings; dump or dispose of hazardous materials or garbage; use property for commercial or industrial purposes; engage in or permit other acts which may harm the natural values of the property.

B. Generally, uses or practices that are inconsistent with the conservation purposes of the easement.

VI. OTHER PROVISIONS

A. Remedies include negative injunction, specific performance and restoration.

B. All leases, licenses, mortgages, deeds of trust and other rights in the property are subject to the terms of the conservation easement.

C. Landowner agrees to cooperate in obtaining governmental approvals, if necessary.

D. Easement Holder to obtain title insurance insuring the easement, subject only to approved exceptions.

E. No hazardous materials or environmental contamination.

F. Easement Holder can assign to another conservation organization or to a qualified governmental agency.

G. Easement Holder and landowner agree to indemnify each other for losses resulting from the other's use of the property.

H. Easement Holder and landowner to maintain adequate comprehensive liability insurance.

I. No public access to areas where natural values would be disturbed.

J. Landowner to maintain all existing roads.

K. Landowner to pay all real property taxes.

L. Easement Holder has the right to share in condemnation proceeds attributable to its interest in the conservation easement.

M. Miscellaneous legal provisions: change of conditions; notices; recordation; liberal construction to effect purpose of conservation easement; entire agreement; joint and several obligations; headings and interpretation of agreement; severability; attorneys' fees; exercise of rights in Easement Holder's discretion and no waivers; binding on successors and constitutes covenant running with the land; governing law; counterparts.

Appendix D.2

CONSERVATION EASEMENT

THIS INDENTURE, made this _____ day of _____, 19__,

W I T N E S S E T H :

WHEREAS, _____, residing at _____, hereinafter called the Grantor, is the owner in fee simple of certain real property, hereinafter called the "Protected Property," which has ecological, scientific, educational and aesthetic value in its present state as a natural area which has not been subject to development or exploitation, which property is described as follows:

see Exhibit A attached

WHEREAS THE NATURE CONSERVANCY, hereinafter called the Grantee, is a non-profit corporation incorporated under the laws of District of Columbia whose purpose is to preserve and conserve natural areas for aesthetic, scientific, charitable and educational purposes; and

WHEREAS, the Protected Property is a natural area which provides significant habitat for fish, wildlife and plants and has substantial value as a natural, scenic and educational resource; and

WHEREAS, preservation of the Protected Property is for the scenic enjoyment of the general public and will yield a significant public benefit; and

WHEREAS, the preservation of the Protected Property is pursuant to federal, state and local governmental conservation policy; and

WHEREAS, the Grantor and Grantee recognize the natural, scenic, aesthetic, and special character of the riparian wetland and marshland on the Protected Property and have the common purpose of conserving the natural values of the Protected Property by the conveyance to the Grantee of a Conservation Easement on, over and across

12/17/90

CONSERVATION EASEMENT
ANNOTATED,

EXPLANATION OF EASEMENT TERMS
IN PLAIN ENGLISH

These paragraphs explain the purposes for which the easement is being created. They also recite the names of the owner of the property as well as the holder of the easement and set forth the broad, conservation objectives of the parties in protecting the property. Finally, there is a recitation as to how the easement will comply with the I.R.S. statute and regulations for charitable contribution deductions for the gift of the easement.

Describes the property to be protected.

States that TNC is a conservation organization; needed to meet I.R.S. test of being a "qualified conservation organization" to hold easement for charitable deduction purposes.

States the conservation purposes involved in the protection of the property. Designed to "track" the conservation purposes test in the Internal Revenue Code for charitable deductions for gifts of conservation easements.

Recites Grantor and Grantee's common purposes of protecting the property.

the Protected Property which shall conserve the natural values of the Protected Property, conserve and protect the special animal and plant populations, and prevent the use or development of that property for any purpose or in any manner which would conflict with the maintenance of the Protected Property in its current natural, scenic and open condition for this generation and future generations; and

WHEREAS, Grantor and Grantee have the common purpose of conserving and protecting in perpetuity the Protected Property as "a relatively natural habitat of fish, wildlife, or plants, or similar ecosystem," as that phrase is used in P.L. 96-541, 26 USC 170(h)(4)(A)(ii), as amended and in regulations promulgated thereunder; and

WHEREAS, "ecological, scientific, educational and aesthetic value," "natural, scenic and open condition" and "natural values" as used herein shall, without limiting the generality of the terms, mean the condition of the Protected Property at the time of this grant evidenced by reports, photographs, maps and scientific documentation possessed (at present or in the future) by the Grantee and which the Grantee shall make available on any reasonable request to the Grantor, his successors and assigns, and which more particularly may include, but are not limited to, the following described items:

a) the appropriate survey maps from the United States Geological Survey, showing the property lines and other contiguous or nearby protected areas;

b) a map of the area drawn to scale showing all existing man-made improvements or incursions (such as roads, buildings, fences or gravel pits), vegetation and identification of flora and fauna (including, for example, rare species locations, animal breeding and roosting areas, and migration routes), land use history (including present uses and recent past disturbances), and distinct natural features (such as large trees and aquatic areas);

Quotes the specific conservation purpose test from the Internal Revenue Code which is usually most relevant for properties which are of interest to TNC.

Provides for the preparation of a Baseline Documentation Report to document the condition of the property at the time of the conveyance of the easement so that future changes in the property can be measured.

c) an aerial photograph of the property at an appropriate scale taken as close as possible to the date the donation is made;

d) on-site photographs taken at appropriate locations on the property; and

e) an easement documentation report including, among other things, an owner acknowledgement of condition, background information, legal information, ecological features information, and land-use and man-made features information.

NOW, THEREFORE, the Grantor, for and in consideration of the facts above recited and of the mutual covenants, terms, conditions and restrictions herein contained and as an absolute and unconditional gift, does hereby give, grant, bargain, sell and convey unto the Grantee, its successors and assigns forever a Conservation Easement in perpetuity over the Protected Property consisting of the following:

1. The right of visual access to and view of the Protected Property in its natural, scenic and open condition.

2. The right of the Grantee, in a reasonable manner and at reasonable times, to enforce by proceedings at law or in equity the covenants hereinafter set forth, including but not limited to the right to require the restoration of the Protected Property to the condition at the time of this grant. The Grantee, or its successors or assigns, does not waive or forfeit the right to take action as may be necessary to insure compliance with the covenants and purposes of this grant by any prior failure to act. Nothing herein shall be construed to entitle the Grantee to institute any enforcement proceedings against

Technical legal language which actually conveys the interest in the land represented by the conservation easement from one party to the other.

The following paragraphs enumerate the specific, limited rights which the landowner is conveying to TNC:

1. right to look at property in its open state.

2. right to enforce the provisions of the easement and to require the property to be restored to its open condition if there is a breach of the easement.

the Grantor for any changes to the Protected Property due to causes beyond the Grantor's control, such as changes caused by fire, floods, storm or the unauthorized wrongful acts of third persons. In the event that the Grantee becomes aware of an event or circumstance of non-compliance with the terms and conditions herein set forth, the Grantee shall give notice to the Grantor, his successors or assigns, at his last known post office address, of such event or circumstance of non-compliance via certified mail, return receipt requested, and request corrective action sufficient to abate such event or circumstance of noncompliance and restore the Protected Property to its previous condition. Failure by the Grantor to cause discontinuance, abatement or such other corrective action as may be requested by Grantee within thirty (30) days after receipt of notice shall entitle Grantee to bring an action at law or equity in a court of competent jurisdiction to enforce the terms of this agreement; to require the restoration of the property to its prior condition; to enjoin such non-compliance by ex parte temporary or permanent injunction in a court of competent jurisdiction to enforce the terms of this agreement; and/or to recover any damages arising from such noncompliance. Such damages, when recovered, may be applied by the Grantee, in its discretion, to corrective action on the Protected Property, if necessary. If such court determines that the Grantor has failed to comply with this agreement, Grantor shall reimburse Grantee for any reasonable costs of enforcement, including costs of restoration or court costs and reasonable attorneys fees, in addition to any other payments ordered by such court. Grantor hereby waives any defense of laches with respect to any delay by the Grantee, its successors or assigns, in acting to enforce any restriction or exercise any rights under this Easement.

3. The right to enter the Protected Property at all reasonable times and, if necessary, across other lands retained by the Grantor, for the purposes of (a) inspecting the Protected Property to determine if the

3. right to inspect the property; right to protect the property against violations of the terms of the easement; right to study and take samples of the natural features of the property.

Grantor, or his successors or assigns, is complying with the covenants and purposes of this grant; (b) enforcing the terms of this Conservation Easement; (c) taking any and all actions with respect to the Protected Property as may be necessary or appropriate, with or without order of court, to remedy or abate violations hereof; and (d) observing and studying nature and making scientific and educational observations and studies and taking samples in such a manner as will not disturb the quiet enjoyment of the Protected Property by the Grantor, his successors and assigns.

4. The right, but not the obligation to monitor rare plant and animal populations and plant communities and to manage them, if needed, for their continued survival and quality on the Protected Property.

4. right to monitor and manage rare plants on the property if necessary.

And in furtherance of the foregoing affirmative rights, the Grantor makes the following covenants, on behalf of _____ successors and assigns, which covenants shall run with and bind the Protected Property in perpetuity:

This is the key section of the easement. These are the restrictions on the Grantor's use of the property. TNC should revise these to make sure they are tied to the needs of the natural features of the property we are trying to protect.

COVENANTS

Without prior express written consent from the Grantee, on the Protected Property:

The following is a list of the activities which may pose threats to the natural features on the property we are trying to protect, and which are prohibited on the protected property under the terms of the easement.

1. There shall be no construction or maintenance of buildings, camping accommodations or mobile homes, fences, signs, billboards or other advertising material, or other structures, other than those structures which currently exist.

1. no structures.

2. There shall be no ditching, draining, diking, filling, excavating, dredging, mining or drilling, removal of topsoil, sand, gravel, rock, minerals or other materials, nor any building of roads or change in the topography of the land in any manner excepting the maintenance of existing foot trails.

2. no disturbance of the land.

3. There shall be no removal, destruction or cutting of trees or plants (except as is necessary to construct and maintain foot trails), planting of trees or plants, use of fertilizers, spraying with biocides, introduction of non-native animals, grazing of domestic animals, or disturbance or change in the natural habitat in any manner.

3. no cutting of vegetation

4. There shall be no dumping of ashes, trash, garbage, or other unsightly or offensive material, hazardous substance, or toxic waste, nor any placement of underground storage tanks in, on, or under the Protected Property; there shall be no changing of the topography through the placing of soil or other substance or material such as land fill or dredging spoils, nor shall activities be conducted on the Protected Property or on adjacent property which could cause erosion or siltation on the Protected Property.

4. no dumping.

5. There shall be no manipulation or alteration of natural water courses, lake shores, marshes or other water bodies, nor shall there be activities conducted on the Protected Property which would be detrimental to water purity, or which could alter natural water level and/or flow.

5. no manipulation of watercourses.

6. There shall be no operation of snowmobiles, dunebuggies, motorcycles, all-terrain vehicles, or any other types of motorized vehicles.

6. no motorized vehicles

7. There shall be no hunting or trapping except to the extent specifically approved by the Grantee as necessary to keep the animal population within the numbers consistent with the ecological balance of the area.

7. no hunting/trapping.

8. Prior to undertaking any changes in the use of the Protected Property the Grantor shall consult with the Grantee regarding the proposed changes to determine the

8. requires consultation with TNC if use of land is changed.

effect of such changes on the natural values being protected on the Protected Property. Grantee shall have the right to approve such changes in use, such approval not to be unreasonably withheld.

NEVERTHELESS, and notwithstanding any of the foregoing provisions to the contrary and as expressly limited herein, the Grantor reserves for _____, ___ heirs, successors and assigns the following reserved rights, which may be exercised after providing written notice to the Grantee; provided, however, that the exercise of such rights will not interfere with either the essential natural, open and scenic quality of or the conservation interest associated with the Protected Property:

The Grantor can retain any rights with respect to the property which don't interfere with the conservation purposes of the property, and specifically:

RESERVED RIGHTS

1. The right to use the Protected Property for all purposes not inconsistent with this grant.

1. right of use, if subject to easement.

2. The right to sell, give or otherwise convey the Protected Property or any portion or portions of the Protected Property, provided such conveyance is subject to the terms of this easement.

2. right of sale or gift, if subject to easement.

3. The right to maintain views from established overlooks or to maintain existing foot trails on the Protected Property.

3. right to maintain views and foot trails on property.

Nothing contained in this Conservation Easement shall give or grant to the public a right to enter upon or to use the Protected Property or any portion thereof

The easement does not give the public any right of access.

where no such right existed in the public immediately prior to the execution of this Conservation Easement.

The Grantor, for _____ and on behalf of ___ successors and assigns, agrees to pay any real estate taxes or other assessments levied by competent authorities on the Protected Property and to relieve the Grantee from any duty or responsibility to maintain the Protected Property. If the Grantor or ___ successors and assigns, becomes delinquent in payment of said taxes or assessments, such that a lien against the land is created, the Grantee, at its option, shall have the right to purchase and acquire the Grantor's, or ___ successor's or assign's, interest in said Protected Property by paying funds to discharge said lien or delinquent taxes or assessments, or to take other actions as may be necessary to protect the Grantee's interest in the Protected Property and to assure the continued enforceability of this Conservation Easement.

Grantor will continue to be responsible for payment of taxes and for maintenance of the property. If the Grantor fails to pay the taxes so that a lien is placed on land which would extinguish the easement, the Conservancy could pay the taxes to protect the easement and the Grantor would be obliged to convey his interest in the land to TNC.

The Grantor agrees that the terms, conditions, restrictions and purposes of this grant will be inserted by ___ in any subsequent deed or other legal instrument by which the Grantor divests _____ of either the fee simple title to or his possessory interest in the Protected Property.

Any future transfers of the property must be made subject to the easement.

Any notices required in this Conservation Easement shall be sent by registered or certified mail to the following address or such address as may be hereafter specified by notice in writing:

Grantor: _____.

Grantee: The Nature Conservancy, 1800 North Kent Street, Arlington, Virginia 22209.

Provides for addresses for notices to the parties.

If any provision of this Conservation Easement or the application thereof to any person or circumstance is found to be invalid, the remainder of the provisions of the Conservation Easement and the application of such provisions to persons or circumstances other than those as to which it is found to be invalid shall not be affected thereby.

If one provision of the easement is found invalid, that fact won't invalidate the other provisions.

The covenants agreed to and the terms, conditions, restrictions and purposes imposed with this grant shall not only be binding upon the Grantor but also ____ agents, personal representatives, successors and assigns, and all other successors to him in interest and shall continue as a servitude running in perpetuity with the Protected Property.

The easement is binding on all successors to the Grantor and shall run with the land.

And the Grantor does further covenant and represent that the Grantor is seized of the Protected Property in fee simple and has good right to grant and convey the aforesaid Conservation Easement, and that the Protected Property is free and clear of any and all encumbrances, and that the Grantee shall have the use of and enjoy all of the benefits derived from and arising out of the aforesaid Conservation Easement.

Grantor represents that the title to the property is free and clear.

The following provisions are designed to comply with the requirements of the Internal Revenue Code for charitable contribution deductions for conservation easements.

The parties hereto recognize and agree that the benefits of this easement are in gross and assignable, and the Grantee hereby covenants and agrees, that in the event it transfers or assigns the easement it holds under this indenture, the organization receiving the interest will be a qualified organization as that term is defined in Section 170(h)(3) of the Internal Revenue Code of 1986 (or any successor section) and the regulations promulgated thereunder, and which is organized and operated primarily for one of the conservation purposes specified in Section 170(h)(4)A of the Internal Revenue Code, and further covenants and agrees that the terms of the transfer or assignment will be such that the transferee or assignee will be required to continue to carry out in perpetuity the conservation purposes which the contribution was originally intended to advance.

The Conservancy agrees that if the easement is transferred, it will only be to another qualified organization which will carry out the same conservation purposes for the property.

For purposes of compliance with Treasury Regulations Section 1.170A-14(g)(6)(ii), the Grantor hereby agrees that at the time of the conveyance of this conservation easement to the Grantee, the donation of this

This acknowledges that the easement is a valid interest in the land with a fair market value tied to a percentage value of the property as a whole.

conservation easement by the Grantor gives rise to a real property right, immediately vested in the Grantee, with a fair market value of said conservation easement as of the date of contribution that is at least equal to the proportionate value that this conservation easement at the time of the contribution, bears to the fair market value of the property as a whole at that time.

That proportionate value of the Grantee's property rights shall remain constant. When a change in conditions which makes impossible or impractical any continued protection of the property for conservation purposes, and the restrictions are extinguished by judicial proceeding, the Grantee, upon a subsequent sale, exchange or involuntary conversion of the Protected Property, shall be entitled to a portion of the proceeds in a manner consistent with the conservation purposes of the original contribution or for the protection of a "relatively natural habitat of fish, wildlife, or plants or similar ecosystem," as that phrase is used in P.L. 96-541, 26 USC 170(h)(4)(A)ii, as amended and in regulations promulgated thereunder.

Whenever all or part of the Protected Property is taken in exercise or eminent domain by public, corporate, or other authority so as to abrogate the restrictions imposed by this Conservation Easement, the Grantor and the Grantee shall join in appropriate actions at the time of such taking to recover the full value of the taking and all incidental or direct damages resulting from the taking, which proceeds shall be divided in accordance with the proportionate value of the Grantee's and Grantor's interests as specified above; all expenses incurred by the Grantor and the Grantee in this action shall be paid out of the recovered proceeds.

TO HAVE AND TO HOLD the said Conservation Easement unto the said Grantee, its successors and assigns forever.

IN WITNESS WHEREOF, the Grantor has executed and sealed this document the day and year first above written.

If the property is taken by condemnation, any proceeds received by the Grantee for its interest in the conservation easement shall be used by the Grantee to advance the conservation purposes which this original easement were designed to protect.

Witness:

XXXXXXXX
Grantor

_____ _____

_____

Witness:

THE NATURE CONSERVANCY
Grantee

_____

By_____
_____ Its:

COMMONWEALTH OF VIRGINIA)
COUNTY OF) SS.

On this ____ day of _____, 1988, before me personally appeared _____, to me personally known, who, being by me duly sworn, did depose and say that ___ is the person named in the foregoing instrument, and acknowledged said instrument to be ____ free act and deed.

_____
Notary Public
My Commission Expires:

COMMONWEALTH OF MASSACHUSETTS)
COUNTY OF SUFFOLK) SS:

On this ____ day of _____, 1988, before me personally appeared _____, to me personally known, who being by me duly sworn did say that

___ is the Eastern Regional Director of The Nature Conservancy, the corporation named in the foregoing instrument; that the seal affixed to said instrument is the corporation seal of said corporation; and acknowledged said instrument to be the free act and deed of said corporation.

_____
Notary Public
My Commission Expires:

PROPERTY CONDITION CERTIFICATION

This is to certify that _____, the Grantor, and _____ representing the Grantee, The Nature Conservancy, do accept and acknowledge the following attached report as an accurate description of the current land uses and physical features as of _____ on the _____ easement property. The report, which is attached hereto and made a part hereof, contains __ pages (including appendices) beginning with this certification of condition; and including a summary sheet; a legal summary setting forth the easement's restrictions and retained rights; a description of and background information on the easement including acquisition, location, tract description, physical environment, ecological features, man-made structures/ improvements and land uses affecting the easement; a state map (optional) showing the easement location; a road map showing legal access to the property; a portion of a USGS topographic map showing tract boundaries; and a tracing (reduced) of a survey map of the _____ easement property. The appendices include Appendix A: a copy of the Easement; Appendix B: a copy of an aerial photograph of the easement area; Appendix C: a photostations map showing the location from which color slides or photos were taken; Appendix D: a photographic data sheet; Appendix E: slides or photos of the easement property; and Appendix F: an ecological and man-made features map of the _____ easement property.

The Grantor further certifies that to the best of ____ knowledge there are no structures thereon and that there has been no dumping or discharge of materials or other activities on the easement property which are inconsistent with the terms and covenants contained in the Conservation Easement, originally granted by the

Certification that the maps, photos and the attached report accurately reflect the condition of the property at the time of the conveynace of the easement. Needed so as to be able to introduce as evidence of property condition in cases of future violations.

Grantor to The Nature Conservancy recorded in the _____ County Deed Book, Volume _____, Page _____.

Grantor

date: _____ _____

THE NATURE CONSERVANCY
Grantee

date: _____ By_____

Article 3. Recording.

Secs. 34.15.260 — 34.15.340, 34.15.345, 34.15.350. Recording. [Repealed, § 43 ch 161 SLA 1988. For current law, see AS 40.17.]

Sec. 34.15.343. [Renumbered as AS 40.17.035.]

Chapter 17. Uniform Conservation Easement Act.

Sec. 34.17.010. Creation, conveyance, acceptance, and duration. (a) Except as otherwise provided in this chapter, a conservation easement may be created, conveyed, recorded, assigned, released, modified, terminated, or otherwise altered or affected in the same manner as other easements.

(b) A right or duty in favor of or against a holder and a right in favor of a person having a third-party right of enforcement may not arise under a conservation easement before the conservation easement is accepted by the holder and the acceptance is recorded.

(c) Except as provided in AS 34.17.020(b), a conservation easement is unlimited in duration unless the instrument creating the conservation easement provides a limitation on duration.

(d) An interest in real property in existence at the time a conservation easement is created is not impaired by the conservation easement unless the owner of the interest is a party to or consents to the conservation easement.

(e) The state or a municipality may not establish a conservation easement on property by eminent domain. (§ 1 ch 73 SLA 1989)

Sec. 34.17.020. Judicial actions. (a) An action affecting a conservation easement may be brought by

(1) an owner of an interest in the real property burdened by the easement;

(2) a holder of the easement;

(3) a person having a third-party right of enforcement; or

(4) a person authorized by other law.

(b) This chapter does not affect the power of a court to modify or terminate a conservation easement under the principles of law and equity. (§ 1 ch 73 SLA 1989)

Sec. 34.17.030. Validity. A conservation easement is valid even though

(1) it is not appurtenant to an interest in real property;

(2) it can be or has been assigned to another holder;

(3) it is not of a character that has been recognized traditionally at common law;

(4) it imposes a negative burden;

(5) it imposes affirmative obligations upon the owner of an interest in the burdened property or upon the holder;

(6) the benefit does not touch or concern real property; or

(7) there is no privity of estate or of contract. (§ 1 ch 73 SLA 1989)

Sec. 34.17.040. Applicability. (a) This chapter applies to an interest created on or after May 31, 1989 that complies with this chapter, whether designated as a conservation easement or as a covenant, equitable servitude, restriction, easement, or otherwise.

(b) This chapter applies to an interest created before May 31, 1989 if the interest would have been enforceable if it had been created after May 31, 1989 unless the retroactive application contravenes the constitution or laws of the state or the United States.

(c) This chapter does not invalidate an interest, whether designated as a conservation or preservation easement or as a covenant, equitable servitude, restriction, easement, or otherwise, that is enforceable under the law of the state. (§ 1 ch 73 SLA 1989)

Sec. 34.17.050. Uniformity of application and construction. This chapter shall be applied and construed to effectuate its general purpose to make uniform the laws with respect to the subject of the chapter among states enacting it. (§ 1 ch 73 SLA 1989)

Sec. 34.17.060. Definitions. In this chapter,

(1) "conservation easement" means a nonpossessory interest of a holder in real property imposing limitations or affirmative obligations to retain or protect natural, scenic, or open space values of real property, ensure its availability for agricultural, forest, recreational, or open space use, protect natural resources, maintain or enhance air or water quality, or preserve the historical, architectural, archaeological, or cultural aspects of real property;

(2) "holder" means

(A) a governmental body empowered to hold an interest in real property under the laws of the state or the United States; or

(B) a nonprofit corporation, charitable corporation, charitable association, or charitable trust exempted from taxation under 26 U.S.C. 501(c)(3) and empowered to retain or protect the natural, scenic, or open space values of real property, ensure the availability of real property for agricultural, forest, recreational, or open space use, pro-

tect natural resources, maintain or enhance air or water quality, or preserve the historical, architectural, archaeological, or cultural aspects of real property;

(3) "third-party right of enforcement" means a right provided in a conservation easement to enforce any of its terms granted to a governmental body, nonprofit corporation, charitable corporation, charitable association, or charitable trust that is not a holder. (§ 1 ch 73 SLA 1989)

THE NATURE CONSERVANCY(1/84)

EASEMENT DOCUMENTATION REPORT
CHECKLIST

Introduction: All items below must be provided on the Documentation Report. The volume and specificity of information required by this checklist will vary depending on the terms of the easement. The intent of this format is to allow flexibility in the documentation technique and to key the quantity and nature of the documentation to the terms of the easement. Some conservation easements may require very general descriptions of plant cover, geology, soils, etc. Other descriptions may need to be narrower in scope and more detailed to ensure adequate monitoring of specific element occurrences. The legal and biological monitoring functions may overlap to some extent.

Checklist:

_____ Cover Page
_____ Checklist
_____ Owner Ackowledgment of Condition (standard form letter must be notarized and should list all topics included in the documentation package)
_____ Background Information (brief narrative history of easement acquisition; summary of current status; location of/directions to property)
_____ Legal Information (list of restrictions and retained rights, easement recordation data, name of benefited preserve if applicable)
_____ Ecological Features (narrative description keyed to restrictions and retained rights: can include target element occurrences, other plant cover types, other wildlife, geology and soils, aquatic resources)
_____ Land Use and Man-made Features (narrative description of improvements, structures, trails, wells, power lines, pipelines, etc., include historic use if appropriate)

_____ Photographs (aerial photo [recommended]; on site photos should be keyed to restrictions and retained rights)
___aerial
___on-site

_____ Maps
___ location of property: 1) state map showing property location; 2) 8 1/2" X 11" section of local road map showing property location; 3) 8 1/2" X 11"or larger topo map section showing property boundary)
___ ecological and man-made features as needed (can be mapped on topo map above or on separate maps to ensure clarity and adequacy of documentation; can include target element occurrence locations, structures/buildings, other plant cover types, trails, geology and soils, wells, aquatic resources)

BE SURE TO DATE AND HAVE PHOTOGRAPHER/PREPARER SIGN ALL PHOTOS, MAPS, ILLUSTRATIONS, ETC. ALSO PROVIDE A DESCRIPTION OR MAP SHOWING WHERE ON SITE PHOTOS AND ILLUSTRATIONS WERE TAKEN (FOR ORIENTATION/COMPARISON PURPOSES).

CONSERVATION EASEMENT

THIS conservation easement is made this _____ day of _____ 199C by Kijik Corporation (referred to as "Kijik") and Bristol Bay Native Corporation (referred to as "BBNC"), their successors and assigns, hereinafter also referred to as "GRANTORS" and the United States of America acting through the National Park Service of the Department of the Interior, hereinafter called "GRANTEE."

WHEREAS, Section 1302 of the Alaska National Interest Lands Conservation Act (ANILCA) [16 U.S.C. 3192 (1982); 94 Stat. 2474, as amended] authorizes the Secretary of the Interior to acquire lands or interests in lands by purchase, donation, exchange or otherwise within the boundaries of any conservation system unit in the State of Alaska, other than National Forest wilderness; and

WHEREAS, the real property subject to this conservation easement lies within the boundaries of the Lake Clark National Park and Preserve (referred to as "Lake Clark"), a conservation system unit administered by the National Park Service, Department of the Interior (referred to as "NPS"); and

WHEREAS, GRANTORS, in combination, are the fee simple owners, both surface and subsurface, of the hereinafter described real property, located in the area of Tazimina Lakes, Lake Clark

National Park and Preserve, State of Alaska; and

WHEREAS, GRANTORS have consented to the conveyance of the interests in lands provided for in this conservation easement, in accordance with the provisions of section 1302(b) of the ANILCA; and

WHEREAS, GRANTORS AND GRANTEE, recognizing the uniquely attractive natural character, scenic qualities and subsistence values of the Tazimina Lakes area of the Lake Clark National Park and Preserve, acknowledge a common purpose to conserve these qualities and associated resources as well as to prevent use or development that may result in degradation of these qualities and values.

NOW THEREFORE, pursuant to the above referenced authority and in consideration of the sum of one million, four hundred sixty-seven thousand, eight hundred fifty-five dollars ($1,467,855.00), in hand paid, the receipt of which is hereby acknowledged, GRANTORS do hereby convey, warrant, sell and grant to GRANTEE, its successors and assigns, a conservation easement, which runs with the land in perpetuity, binding on the GRANTORS, their successors and assigns, to that real property located in the State of Alaska, more fully described in Exhibit A attached here to and made a part hereof (hereinafter referred to as the "subject property").

It is specifically understood and agreed by GRANTEE that GRANTORS' their successors' and assigns' property rights in and to the subject property are conveyed, conditioned and restricted by this conservation easement only as expressly provided for herein.

This conservation easement, after execution by the GRANTORS and acceptance and recordation by the GRANTEE, imposes the following conditions, stipulations and restrictions upon and to the subject property; and to that end and for the purposes of accomplishing the intent of this conservation easement, the GRANTORS, their successors and assigns, agree in perpetuity to do or refrain from doing, individually, severally or collectively the following upon the subject property:

CONDITIONS, STIPULATIONS AND RESTRICTIONS

1. The subject property shall be maintained in the same condition, state and character as exists at the time of execution of this document, except as may be subsequently authorized by the GRANTEE or its designated representative under the provisions of this conservation easement.

2. No cabins, buildings or other permanent structures shall be constructed, erected or installed on the subject property without the express written consent of the GRANTEE or its designated representative. The exterior of any buildings or

structures so approved and constructed, erected or moved onto said real property shall be of earth tone colors and contain no reflective material.

3. No tract may be subdivided or otherwise reduced in unit size as of the date of execution of this document.

4. Dumping or storing of trash, unsightly materials, hazardous waste, junked or wrecked vehicles and equipment, or similar items is prohibited.

5. No action will be taken that measurably diminishes the water quality of Tazimina Lakes.

6. No advertising signs or billboards shall be displayed or placed upon the subject property, with the exception of signs not larger than two feet square. No advertizing signs or billboards will be illuminated. Such signs or billboards larger than two feet square must be approved in writing by the GRANTEE or its designated representative.

7. No motorized form of transportation shall be used except as hereinafter reserved.

8. As may be authorized in writing by GRANTEE, GRANTOR may be relieved, but only in the absolute discretion of the

GRANTEE, of the development restrictions on and to the subject property. In the event GRANTOR wishes to make improvements precluded by this conservation easement, GRANTOR shall notify the GRANTEE, or its designated representative, of the proposed improvement or improvements in writing, and the GRANTEE or its designated representative shall, within 180 days time, respond providing the reasons for either the denial, approval, or conditional approval of the request.

After execution by GRANTORS and acceptance and recordation by GRANTEE of this conservation easement, GRANTORS, their successors and assigns, do hereby convey, warrant, sell and grant in perpetuity to GRANTEE, its successors and assigns, the following interests in land, which interests shall run with the land in perpetuity:

INTERESTS CONVEYED

1. A non-exclusive right of access over and across the subject property.

2. The right to enter upon the subject property for the purposes of inspecting, accomplishing and/or enforcing the conditions, stipulations and restrictions contained herein; provided, however, the GRANTEE shall not be obligated in any manner to perform or act, or take any affirmative action to accomplish the purposes stated herein and shall not be obligated

in any manner to assume or pay any costs incurred thereof.

3. The right to authorize members of the general public to enter upon the subject property for the use and enjoyment thereof for common recreational purposes which are authorized on lands owned by the GRANTEE and managed for National Park System purposes by the GRANTEE.

a. "Common recreational purposes" may be, but are not limited to the following:

(1) Hiking.

(2) Skiing and snowshoeing.

(3) Camping -- only on a temporary basis.

(4) Picnicking.

(5) Fishing.

(6) Photography.

(7) Swimming.

(8) Wildlife viewing.

(9) Landing and docking float planes on the beach.

(10) Boating and docking boats on the beach.

(11) Mountain climbing.

(12) Scuba diving and snorkeling.

b. EXCEPTING from this conveyance for recreational purposes all forms of public hunting and trapping unless specifically authorized in writing by the GRANTORS. The rights

conveyed to GRANTEE in paragraph "3" above do not authorize use of the subject property for hunting or trapping by the general public.

c. It is specifically agreed and understood that the rights conveyed to GRANTEE in paragraph "3" above do not authorize any member of the public to engage in any commercial activity.

4. It is further agreed and understood that by acceptance and recordation of this conservation easement the GRANTEE assumes no obligation to administer law enforcement activity related to the prohibitions of hunting and trapping on the subject lands.

TO HAVE AND TO HOLD the herein described conservation easement to the United States of America, its successors and assigns, forever. The interests in lands are being acquired for the National Park Service.

GRANTORS, for themselves and for their successors and assigns covenant with the GRANTEE, its successors and assigns, that they are well seized in fee simple, including the surface and subsurface estate, to the above described land, that they have the right to sell and convey the conservation easement herein conveyed, and that they will warrant and defend the United

States of America, its successors and assigns, in the quiet and peaceful use and enjoyment of the above granted easement against any person claiming any interest in whole or any part in the subject land.

Title is hereby warranted subject only to any conditions, restrictions, and limitations contained in Interim Conveyance Number 1337 dated March 20, 1987 and recorded at pages 175 through 180, Book 0015, of the Records of the Iliamna Recording District; and Interim Conveyance Number 1338, dated March 20, 1987 and recorded at Pages 212 through 215, Book 0015 of the Records of the Iliamna Recording District.

RESERVATION

The conservation easement is subject to the following general reservations:

1. Kijik, its successors and assigns reserve the right to utilize any existing trails for walking, hiking, and skiing.

2. Kijik, its successors and assigns reserve the right to enter the subject property for the purpose of hunting, fishing trapping, and berry picking; provided that all such uses shall be subject to and limited by the preference for subsistence required by the above-described Alaska National Interest Lands

Conservation Act (ANILCA); provided further, that the above described reservation on entry to the subject lands also includes a reservation of the method of entry, reserving to Kijik, its successors and assigns the right to use snowmobiles and similar motorized vehicles used for travel on snow, but only when there is adequate snow cover to protect soils and vegetation, and the reservation of the right to use motorboats and airplanes.

3. Kijik, its successors and assigns reserves the right to construct "temporary facilities" of types described in Paragraph (a) associated with fishing, hunting, trapping and berry picking activities only.

a. Temporary facilities authorized under the terms this document are defined as follows:

(1) Shelter -- A structure designed to provide temporary relief from the elements and is characterized as a lean to having one side open.

(2) Temporary Campsite -- A natural, undeveloped area suitable for the purpose of overnight occupancy without modification.

(3) Temporary Facility -- A structure or other man-made improvement that can be readily and completely dismantled

and/or removed from the site when the authorized use terminates. This term does not include a cabin.

(4) Tent Platform -- A structure usually made of manufactured timber products, constructed to provide a solid, level floor for a tent, with or without partial walls not to exceed three feet in height above the floor, and having only the tent fabric, the ridge pole and its support poles extending higher than three feet above the floor.

(5) Others -- Those which may be specifically permitted by the GRANTEE through its authorized agent.

GRANTEE agrees that the development by GRANTORS, their successors or assigns, of a hydro-power project on the Tazimina River does not violate any condition or restriction imposed herein, unless such development should include the placement of buildings or other facilities on the subject property, cause the inundation of the subject property above the ordinary high water levels of the Tazimina Lakes or Tazimina River, or should cause the water level of Tazimina Lake or Tazimina River to be lowered where these bodies of water form the boundary of the subject property.

IN WITNESS WHEREOF the GRANTORS have hereunto set their hands and seals the day and year first above written.

KIJIK CORPORATION

By_____

By_____

BRISTOL BAY NATIVE CORPORATION

By_____

By_____

After recording, return to:

NATIONAL PARK SERVICE
Attn: Garey E. Coatney
2525 Gambell Street, Suite 201
Anchorage, Alaska 99503

Appendix E
Fee Acquisitions

CHECKLIST FOR PREPARING AN AGREEMENT TO PURCHASE REAL PROPERTY

This checklist is intended as a general guide for documenting an agreement to acquire a fee interest in a tract of land for conservation purposes. The applicability of the items listed below will depend upon the particular circumstances of the transaction and the parties; the checklist is not intended to be an exhaustive list of all concerns that may be appropriate to address in the deal. However, the checklist should provide a basic "road map" of major items to consider in documenting the transaction and help negotiators and attorneys guard against overlooking significant points of the transaction in the documentation. A purchase agreement should always be prepared or reviewed by an experienced attorney before the conservation entity signs it.

I. PARTIES

A. Seller

1. In what name and in what form is Seller's title vested?

2. If the Seller is a corporation or partnership or if it involves joint ownership (such as tenancy in common, joint tenancy or community property), does the party signing the agreement have the required authority?

3. If Seller is a foreign entity (e.g. corporation, partnership or trust) or individual or consists of any foreign entities or individuals, consider whether federal or state tax withholding requirements apply and whether any special registration or notification requirements apply.

4. If Buyer or Seller is a foreign entity in the state where property is located, determine whether such entity needs to be qualified to do business in the state.

5. Where Seller is a partnership holding title in the partnership name, confirm whether a statement of partnership (or certificate of limited partnership) is required to be recorded in the county where the property is located.

6. If Seller is a trust, use the trustee's name. Determine if it is necessary for the beneficiaries also to sign?

7. Where Seller is acting through a power of attorney, obtain and review a copy of the

instrument. Confirm that the instrument has been or will be recorded before closing.

8. Where Seller is an individual, determine whether Seller is or was married. If Seller is or was married, obtain the signature of both spouses or a representation and warranty that the signature of the other spouse is not needed (because, for instance, the property is the signing spouse's separate property).

B. Buyer

1. How will buyer take title in and in what form?

II. PROPERTY

A. Land

1. Where is the property located, including the county it is in? Is it an addition to an existing preserve?

2. Obtain a legal description from a preliminary title report or from the seller's deed. Check the description, with a survey or engineer if necessary, to make sure it accurately describes the property intended to be purchased.

a. If the property to be purchased is only a portion of the Seller's property, attach a map to the agreement showing the property's approximate location and provide for determination of the precise description by a recorded survey to be prepared and approved by the parties before closing. Consider subdivision issues and whether any governmental approvals of the survey will be needed.

3. Attach a map of the property if one is available.

4. Is there access to the property?

B. All appurtenant real property interests (such as easements, water rights, mineral rights, grazing rights) should be included in the property description. If any of these rights are a significant or separately identifiable part of the property purchased, they should be specifically described.

C. If there are any buildings or other structures, they should be described.

D. If there are any personal property and fixtures, they should be described and an inventory of personal property provided for.

E. Determine if there are any interests in the property held by any third parties that, if not acquired, would defeat the purpose of purchasing the subject property.

III. PURCHASE PRICE

A. Amount

B. Method of Payment

1. Deposit/Option consideration.

a. How much?
b. Consider use of letters of credit, Certificates of Deposit or other cash equivalents.
c. If Buyer intends for Seller to retain the earnest money deposit upon default by Buyer, are there special rules for liquidated damage provisions in the state where the property is located?
d. Who will hold the deposit, Seller or escrow holder? It is preferable from the Buyer's viewpoint to have a neutral third party hold the deposit; this should be done whenever the deposit is a significant sum.
e. Will interest accrue? If so, to whom will it be paid and when?
f. When will deposit become non-refundable?

2. If the property is to be purchased subject to existing financing or if new financing is to be obtained:

a. Determine the terms of the financing and provide for a means to confirm those terms. If the property will be purchased subject to existing financing, arrange to obtain a beneficiary's statement before the closing and make that a condition to closing.

(1) Amount of loan
(2) Interest rate
(3) Maturity date

b. Review the loan documents.

(1) Right to sell or further encumber the property (<u>i.e.</u> is there a due on sale or

due on encumbrance clause and is the clause enforceable in this context?)
(2) Right to prepay indebtedness
(3) Subordination to future financing
(4) Partial release provisions
(5) Right to alter property

c. Is the loan to be non-recourse, and, if so, is it specified in the documents?

d. Is government financing involved, e.g. HUD or VA mortgages? If so, check applicable rules and regulations for special requirements pertaining to the transfer of the mortgage or the property.

e. If the existing mortgages are to be paid off, who pays any prepayment charges or fees?

IV. TITLE

A. Review of title:

1. What title insurance company will be used? Confirm and contact the title company as soon as possible.

2. Obtain a current preliminary report or title commitment and copies of all documents shown in the report, and ask Seller for any other instruments not shown in the report.

B. Will a survey be required?

1. If so, obtain an updated survey certified to Buyer and the title company by a licensed engineer or qualified surveyor.

2. Specify standards (cf. Minimum Standards adopted by ALTA/ACSM).

3. Will the title company give extended coverage title insurance based on the survey?

C. Provide for inspection of the property for off-record title problems (e.g. tenants, adverse possession, prescriptive easements).

D. Obtain and review copies of all leases and management agreements. Obtain estoppel certificates from tenants and managers on terms, deposits, default claims.

E. Amounts and status of property taxes and special assessments:

1. Will the sale of the property trigger a deferred tax, additional tax or reassessment of value?

2. Amount of payments?

3. When are payments due?

4. Are there any delinquent or unpaid installments?

F. Mechanics Liens: check with Seller to determine if any work was recently completed or is in progress on the property. If so, agreement should be reached with Seller concerning how to handle possible liens arising out of the work.

G. What is the extent of Seller's obligation to remove title defects? The agreement can provide, for instance, that Seller cure all title defects, or allow either party to terminate upon discovery of any material defect. It can also provide that Buyer can cure defects at its expense or permit Buyer to recover the expense by offsetting the cost against the purchase price. Provision for extensions of time and special title insurance needs should be considered if title defects are anticipated.

H. Evidence of title: title insurance should always be obtained in the amount of the purchase price. Ordinarily the Buyer will require standard coverage title insurance protection in acquisitions of undeveloped property for conservation purposes. However, it may be appropriate to require extended coverage insurance against off-record title problems in certain circumstances (e.g. concern about adverse possession claims) -- but extended coverage is more expensive and generally the title company will require a qualified survey. Review the form of policy which the title company intends to use to determine that it conforms with Buyer's expectations of coverage.

I. Any special title policy endorsements required (such as access)? If such endorsements are anticipated, provide for them specifically in the agreement.

J. Who pays title insurance premiums, transfer taxes, recording costs, and escrow costs?

K. What type of deed will Seller provide (e.g. warranty deed vs. quitclaim deed)? In most circumstances, a warranty deed, or at minimum a limited warranty deed, should be used.

V. CONDITIONS TO CLOSING

A. It is common to have conditions precedent in purchase agreements. However, be careful not to make the conditions overly broad so as to end up with an "illusory" contract (an "I will if I want to" contract), which might be unenforceable by the Buyer. To the extent that there are time limits on the Buyer's satisfaction of conditions and the Buyer's review is tied to objective standards where possible, this risk is diminished. Also, state law often imposes limits (such as an implied duty of good faith and fair dealing) on Buyer's discretion in opting out of the deal by relying on conditions that are overly broad.

B. Usually the conditions are for the benefit of the Buyer but not always -- some may be Seller's conditions or mutual conditions. The agreement should specify which party each condition is intended to benefit, and what the party's rights are if the condition is not satisfied (e.g. Buyer can terminate and get a return of all or a portion of the deposit -- if an option, agreement must provide that Seller retain some portion of the option consideration, even if only $10 or so, for the option to be enforceable).

C. The conditions will depend on the facts of the transaction and the parties. Examples of some standard conditions to Buyer's obligation to purchase include: review of title; physical inspection of the property; review of other documents which would be binding on Buyer or the property after the closing; truth of Seller's representations and warranties when made and at closing; performance of all of Seller's obligations at closing; no significant damage to conservation features of the property or valuable improvements on the property before closing. Consider carefully any unique requirements relating to the Buyer or the property.

VI. REPRESENTATIONS AND WARRANTIES BY THE SELLER

A. Will Seller make representations and warranties or will sale be "as is"? Even in an as is sale, Seller is generally required under state law to disclose any material defects of which it has knowledge. CERCLA laws defining an "innocent purchase" make it incumbent on Buyer to insist on Seller's minimum disclosure of all knowledge indicating the possible presence of contamination on the property.

B. Most purchase agreements contain representations and warranties of some sort, especially where the Buyer is paying fair market value. Representations and

warranties will depend on the purchase price and the particular circumstances of the property and the parties, and are highly negotiable. Representations and warranties serve two functions: (1) allocate risk between the parties, and (2) provide information to the Buyer about the property. Examples of some typical representations and warranties relating to land include: the absence of any hazardous materials on the property or underground storage tanks, lack of surface conditions constituting a nuisance, absence of off-record title problems, delivery of all relevant documents, etc. Consider carefully any unique requirements relating to Seller (such as authority) or the property (such as condition of title).

C. Knowledge limitations are often requested by sellers. The following are examples of knowledge limitations in descending order of the level of protection they afford the buyer: best knowledge after due and diligent investigation; best knowledge; actual knowledge; actual knowledge of specified individuals; receipt of written notice. Consider the wording and effect of such limitations carefully.

D. Provide for survival after closing and indemnity for breach. Consider extent to which Buyer could rely on Seller's indemnity -- is Seller of sufficient net worth to cover claims?

E. Remember that representations and warranties are not a substitute for due diligence.

VII. CLOSING COSTS AND PRORATIONS

A. What are the closing costs and who pays?

1. Possible closing costs include: title insurance, escrow fees, appraisal fee, survey fee, legal fees, notary fees, delivery fees, transfer taxes or revenue stamps, broker's or finder's commissions.

B. What amounts will be prorated between the parties, how and as of what date? (Generally, the only item to be prorated on an undeveloped parcel of land will be normal real property taxes and they will be prorated as of the closing with Seller responsible for the period before closing and Buyer responsible for the period on and after the closing).

VIII. DELIVERY OF POSSESSION

A. Date of Possession. Ordinarily, Seller delivers possession to Buyer on the closing. If Buyer is to

obtain possession earlier or Seller is to stay in possession after the closing (e.g. harvest crops or remove cattle), consider the need for a lease or other occupancy agreement or a deposit to cover damage to the property.

B. Is Seller required to terminate any leases or other occupancy agreements before the closing? If so, cover in the agreement, and specifically provide that such terminations will not result in liability to the Buyer (consider adding indemnity).

C. Provide for Buyer's right to enter the property before closing for tests, inspections, surveys, and other matters. Consider Buyer's need to carry liability/ property damage insurance for such inspections.

IX. PRESERVATION OF PROPERTY AND RISK OF LOSS

A. Provide that Seller will maintain the property in its existing condition before closing and will not impair its conservation values.

B. Consider the need for special prohibitions on the Seller's use of the property, such as restrictions on oil and gas activities, grazing, timber harvesting, entering into leases or other agreements. during the period before closing.

C. Ordinarily, the risk of loss is on the Seller before the closing (as long as the Buyer is not in possession). If there is an adverse change in the property for conservation purposes, such as a permanently destructive fire or a toxic spill, (or damage or destruction of any improvements for which value has been allocated), provide for termination by Buyer or ability to proceed with the purchase of all or a portion with proportionate reduction in purchase price.

X. BROKER'S COMMISSION

A. If no broker is involved, or if Seller is responsible for the brokerage commission, then specify this in the agreement and provide for an indemnity by the Seller.

B. If Buyer has used a broker:

1. Obligation to pay any commission should be defined in a separate written agreement and should be subject to delivery of deed and close of escrow.

C. Be alert to special problem areas involving brokers: where the broker is also acting as Seller; where the broker is representing both Buyer and Seller; and where the broker's right to a commission is disputed by the Seller.

XI. RIGHT TO ASSIGN THE AGREEMENT

A. Buyer should have the right to assign the contract, especially in all cash deal. However, this may present a "mutuality" problem (contract would not be enforceable by Buyer) if Buyer is allowed to assign the agreement without any further liability. If Buyer intends to assign the Agreement to a specific entity, consider whether or not it is appropriate to specifically provide for such an assignment.

B. Consider whether and under what circumstances Seller's consent to assignment is needed.

XII. RECORDATION OF SHORT FORM OF AGREEMENT

A. If there will be a long period between the date the purchase agreement is signed and close of escrow, or if an option is used, provide for recordation of a memorandum or short form of the agreement in the county in which the property is located. This gives "constructive" notice of the agreement and protects the Buyer against some innocent third party purchaser or encumbrancer acquiring an interest in the property that may defeat the purchase or take precedence over the Buyer's interest in the property.

XIII. EXECUTION OF AGREEMENT AND PAYMENT OF EARNEST MONEY DEPOSIT/OPTION CONSIDERATION

A. Execution of Agreement

1. Drafted by: _____.
2. Signed by: _____.
   a. Confirm authority of signatory.
3. Two originals sent to Seller.
4. One fully signed original returned signed by an authorized signatory of Seller.
5. Copy of signed original sent to the Title Company.

B. Earnest money deposit/Option consideration

1. Amount ($_____) authorized by _____.

OUTLINE OF AN OPTION TO PURCHASE REAL PROPERTY

This is a general outline for purposes of illustration only. The terms of any particular option and the applicability of any specific examples listed below will depend on the circumstances and parties involved, and the formal requirements for the option document will depend on applicable state law. Nevertheless, this outline provides an idea of the types of provisions a basic option to purchase might contain.

I. INTRODUCTION

A. Name in which Seller holds legal title to the property.

B. Description of property to be conveyed:

1. Legal description of land and amount of total acreage. Also description of related real property rights (such as water rights, grazing rights, mineral rights, access easements, etc.); description of any buildings, wells or other significant structures; and description of personal property, if any, and any important contract rights or intangible rights (such as permits).

2. Map of property.

C. Grant of option, by which Seller gives Buyer the exclusive right to acquire the property for a fixed price and on stated terms, by exercising the option within a specified time.

II. OPTION TERMS

A. Amount of option consideration (which Seller may keep if Buyer does not exercise the option but which is credited against the purchase price at closing if Buyer does exercise the option).

B. Option period.

C. Method of option exercise, particularly Seller's address for notification of exercise.

III. PURCHASE TERMS

A. Amount of purchase price.

B. Terms of payment (e.g. all cash at closing, or down payment of stated amount with balance evidenced by a

note secured by a mortgage or deed of trust on the property).

C. Closing date.

IV. TITLE

A. Seller to provide preliminary title report from a title company acceptable to Buyer, together with copies of underlying title exception documents.

B. Seller must convey good title to Buyer at closing by an approved warranty deed, subject to title exceptions approved by Buyer. Evidence of good title will be issuance by the title company at closing of a title insurance policy in the amount of the purchase price, showing title vested in the Buyer and subject only to the approved title exceptions.

V. REPRESENTATIONS AND WARRANTIES OF SELLER

A. Examples: no hazardous materials or contamination; no underground storage tanks; no surface conditions that create a nuisance; no claims of adverse possession or prescriptive easements; no boundary disputes; no unrecorded easements, rights of way, leases, licenses or other third party rights to use the property; no notice of any condemnation proceedings; no knowledge of any violations of law.

B. Generally, Seller is not a foreign person for federal tax withholding purposes (FIRPTA); and Seller has the right and authority to sell the property.

VI. CONDITIONS PRECEDENT TO BUYER'S OBLIGATIONS

A. Examples: approval of state of title; satisfactory physical and environmental site inspection; truth of Seller's representations and warranties; no material damage to the property before closing; commitment of acceptable title company to issue policy of title insurance; board approval of transaction.

VII. OTHER PROVISIONS

A. Sale to close through escrow with an approved title company.

B. Seller will pay all real property taxes and assessments, including any deferred taxes, at or before closing. Regular non-delinquent real property taxes for the current tax year will be prorated between Buyer and Seller through escrow at closing.

C. Seller will deliver possession of property to Buyer at closing.

D. Seller will not enter into any new agreements that would be binding on Buyer after the closing without Buyer's consent.

E. Seller will indemnify Buyer against losses due any misrepresentation or any breach of Seller's obligations.

F. Seller will preserve the property in its existing condition.

G. Liquidated damages provision applicable to deposit once option is exercise.

H. Agreement as to who pays what closing costs and fees (such as title insurance, escrow fees, recording costs, revenue stamps or transfer taxes).

I. Seller and Buyer represent and warrant to each other that it has not dealt with any real estate brokers or finders and to indemnify the other against any commissions due as a result of its dealings.

J. Recordation of short form of option to give notice of option to third parties.

K. Seller to deliver a non-foreign affidavit to Buyer at closing.

L. Miscellaneous legal provisions: notices (includes addresses); entire agreement; joint and several obligations; headings and interpretation of agreement; amendments; survival of representations and warranties: severability; attorneys' fees; successors and assigns; governing law; counterparts.

OPTION EXERCISE AND CLOSING CHECKLIST

This is a general checklist for the exercise of an option (after an option agreement has been duly signed and delivered and a memorandum of the option recorded) and needs to be modified depending on the facts and circumstances of the particular transaction and the parties involved.

Project:

Option Exercise Date:

Closing Date:

Seller:

Seller's Attorney/Representative:

Parcel Number:

Property Description/Acreage:

Option Consideration:

Purchase Price:

Funding Source:

Project Team:

Title Company/Escrow Holder:

Co-op Partner:

I. PREPARING TO EXERCISE THE OPTION

A. Title Review

1. Order preliminary title report and copies of all underlying title exception documents.

2. Confirm receipt of preliminary title report and title exception documents.

3. Review preliminary title report and copies of all underlying title exception documents.

a. Confirm Seller is the record owner of the property and has full authority to sell.

b. Real property description.

(1) Confirm that legal property description conforms to expectation about actual boundaries of property.

(a) Confirm acreage if possible (see survey review below)

(2) Does the property comply with applicable subdivision laws?

c. Amounts and status of property taxes and assessments.

(1) Any delinquent real property taxes?

(a) If so, confirm Seller will pay current at or before closing.

(2) Any potential deferred taxes (agricultural tax, timber tax, etc.) or additional tax liability upon closing?

(a) If so, confirm Seller pays at or before closing.

d. Any mortgages or liens to be paid off? Any prepayment penalties?

(1) If so, confirm Seller pays at or before closing

e. Severed mineral rights?

(1) Review of mineral reservations, oil and gas leases, drilling agreements and other documents.

(i) Need for agreement with mineral interest holder limiting rights of surface entry?

(2) Impact of past, present and future oil and gas exploration in the area on conservation purposes and value.

4. Notice of approval/disapproval of title exceptions.

a. Drafted by: _____.

b. Send to Seller.

5. Title Policy to be subject only to Exception Nos. _____.

6. Endorsements to title policy:_____ _____.

B. Access to the Property

1. Adequate physical access confirmed by: _____.

2. Legal access confirmed by: _____.

C. Survey Review

1. Survey performed by licensed surveyor or registered engineer in accordance with Minimum Standard Detail Requirements for Land Title Surveys ("ALTA/ACSM Requirements").

2. Certified to Buyer and the Title Company.

3. Confirm acreage.

4. Any off-record title problems (see below)?

D. Off-record Title Problems?

1. Survey and/or site inspection.

a. Who performed site inspection, how thorough and under what circumstances?

2. Boundary or fence problems?

3. Evidence of potential adverse possession or prescriptive easement?

4. Any tenants or residential structures?

E. Water

a. Any water rights?

(1) Review all water permits, applications and other documents.

(2) Confirm title with State Water Engineer's Office.

(a) Confirm not subject to mortgages or other liens.

(3) Confirm eligibility/percentage active rights.

(4) Confirm requirements for transfer or assignment under state law and practice.

(5) Upon closing, will need to file recorded and certified copy of recorded deed with the State Engineer's Office.

b. Adequate to support desired uses and wildlife?

c. Cost of water use.

F. Buildings or Other Improvements?

a. Type, size and description.

b. Availability of utilities, water, sewage, etc.

c. Age and condition: structural, mechanical and electrical problems?

d. Permit and code compliance.

G. Personal Property or Fixtures (e.g. irrigation equipment)?

(1) Inventory prepared by: _____.

(2) Review title.

(a) Perform UCC-3 lien search if important personal property.

(3) Age and condition?

H. Hazardous Substances Review

1. Perform physical inspection and prepare report.

2. Review completed inspection report.

   a. Who completed the report and on the basis of what information was it completed?

   b. Any suspicious previous uses (e.g. gasoline pumps, landfill, etc.) on property or in area?

   c. Any signs of underground storage tanks?

   d. Presence of hazardous materials (e.g. asbestos, PCB's, etc.) in structures?

   e. Any problems with leaching soils, landfill or pesticides?

   f. Any dump sites on the property?

   g. Any problems on border zone property that might pose a threat to the subject property or groundwater?

3. Additional inspection or action needed?

I. Liability Review

1. Any potential natural or artificial hazards on the property that could result in liability to third parties for injury or death, e.g. open ditches, abandoned farm equipment or home appliances, such as refrigerators, etc.?

2. How much will it cost to repair or remove the hazard?

J. Leases and Management Agreements

1. Are there any leases, agricultural management agreements or other like agreements?

   a. If so, must confirm termination, without liability, before closing.

K. Confirm Purchase Price

1. Purchase price established by: appraisal ____/ opinion of value _____/ other _____.

2. Review appraisal and underlying assumptions.

   a. Appraisal performed by MAI or AIREA appraiser?
   b. Appraisal meets standards of co-op agency, if any, acquiring the property.

3. Need to update appraisal?

L. Confirm Availability of Funds

1. Acquisition.

   a. Carrying costs (direct and indirect).

2. Stewardship.

M. Re-read the Option Agreement

1. Any other special conditions to satisfy?

N. Review Management Issues with Local Land Stewards

1. Confirm with: _____ preparedness to implement management plan.

O. Review Purchase with Co-op Partner

1. Letter of intent with: _____.

2. Purchase price and reimbursement of costs (direct and indirect).

3. Confirm satisfaction of co-op partner's internal requirements (e.g. title review, hazardous substances review, appraisal review, documents review, board approval, etc.)

P. Project Approval

1. Prepare project approval package.

2. Determine level of authority needed.

3. Review transaction with:
   _____.

4. Obtain and document required approval.

II. EXERCISING THE OPTION

A. Option exercise letter.

1. Drafted by: _____.

2. Send to Seller at address specified in Option by certified mail.

B. Consider attaching conditions to exercise of option (Caution: may result in a counteroffer thereby giving Seller the right to terminate)?

III. PREPARING FOR THE CLOSING AFTER EXERCISING THE OPTION

A. Closing documents and other items to be prepared or obtained:

1. Option Agreement

2. Deed (grant or warranty vs. quitclaim)

3. Bill of Sale (if personal property included)

4. Water Rights Assignment, if necessary

5. Assignment of Leases and Right to Receive Revenue, if appropriate

6. Assignment of Intangible Property (such as permits, trade names, and so forth), if appropriate

7. Joint Escrow Instructions

8. Others:

B. Send closing documents to Seller and title company for approval

C. Review and approve closing settlement statement to be prepared by the escrow company

1. Prorations (real property taxes; others?)

2. Closing costs (title insurance, escrow fees, recording fees; transfer taxes; any others?)

D. Tax documents necessary to close (e.g. W9, non-foreign affidavit; any state tax requirements?)

E. Confirm all closing conditions met

1. Review Option Agreement:

   a. No adverse change in physical condition
   b. Title
   c. Truth of Seller's representations and warranties

2. Confirm that title insurance arrangements have been made; obtain details for recording documents, notary requirements, etc.

F. Arrange for execution of closing documents

1. Confirm that Seller has required authority to sign, particularly if the Seller is a corporation or partnership or if joint ownership is or may be involved (tenancy in common, joint tenancy, community property).

G. Arrange for transfer of funds

H. Obtain any keys to the property

IV. POST-CLOSING MATTERS

A. Review title policy to make sure it conforms to escrow instructions.

B. Send originals of all documents to headquarters office with completed legal document cover memo.

C. Add property damage insurance for any structures and liability insurance.

D. Notify property tax manager.

E. Notify land stewards.

Appendix F
Land Exchanges

Chapter 50. Exchange of State Land.

Revisor's notes. — Through administrative reorganization, the Department of Natural Resources has eliminated the division of lands. Duties and responsibilities given to the division of lands under this chapter have been assigned to other divisions of the department. Duties and responsibilities given to the director of the division of lands under this chapter have been assigned to the deputy commissioner for operations, who has been given the additional title "director of lands."

Cross references. — For reservations to which contracts for sale, lease or grant of state land and deed to state land, properties or interest in state land are subject, see AS 38.05.125.

NOTES TO DECISIONS

Statute authorizing exchange of land between state, United States government and regional corporation held not invalid. — See State v. Lewis, 559 P.2d 630 (Alaska), appeal dismissed and cert. denied, 432 U.S. 901, 97 S. Ct. 2943, 53 L. Ed. 2d 1073 (1977). (Decided under former AS 38.95.060.)

Sec. 38.50.010. Authorization. Subject to the requirements of this chapter, the director, with the concurrence of the commissioner, is authorized to dispose of state land or interest in land by exchanging it for land, interest in land, or other consideration. Exchanges shall be for the purpose of consolidating state land holdings, creating land ownership and use patterns which will permit more effective administration of the state public domain, facilitating the objectives of state programs, or other public purposes. (§ 1 ch 240 SLA 1976)

Sec. 38.50.020. Value of properties exchanged. (a) The land, interest in land, and other consideration which the state receives in an exchange made under this chapter shall be equal to or exceed the appraised fair market value of the land, interest in land or property exchanged by the state; however, the director may accept cash from, or pay cash to, any other party to an exchange in order to equalize the value of the property or other consideration conveyed and received by the state. If the director determines that the property to be exchanged is not equal in appraised fair market value or if the value cannot be

ascertained with reasonable certainty, the director may enter into an exchange on a finding that the appraised fair market value of the property to be received, together with the value of other public benefits, equals or exceeds the value of the property which the state will relinquish. An exchange or a final agreement to exchange is subject to legislative review under AS 38.50.140 if the exchange or a final agreement to exchange involves state land having an appraised or estimated fair market value of more than $5,000,000, or is for other than equal appraised fair market value.

(b) An appraisal required by this section is presumed accurate and valid for a period of one year from the time the appraisal is completed. After that time, or if the director has reason to believe that the value of the appraised property has changed significantly during the original one year period, a reappraisal of the property is required. (§ 1 ch 240 SLA 1976; am §§ 68, 69 ch 152 SLA 1984)

Opinions of attorney general. — It would neither be necessary nor appropriate to factor in a discount on the fair market value of federal land located within the National Wildlife Refuge System for purposes of a land trade with the state to reflect any possible revenues from potential oil and gas leases to which the state is entitled under the Mineral Leasing Act of 1920 when no known reserves exist and when exploration, development and production remain a matter of conjecture. April 10, 1986, Op. Att'y Gen.

NOTES TO DECISIONS

Cited in Messerli v. Department of Natural Resources, 768 P.2d 1122 (Alaska 1989).

Sec. 38.50.030. Parties. (a) The director may exchange land and interests in land with a government agency, organization, corporation, individual, or other person. At the beginning of discussions concerning a proposed exchange, the director shall require proof that each party to the negotiations is the owner of, or is legally entitled to, the property which the party desires to exchange and proof that a person acting as an agent for a principal has the authority to negotiate an exchange in behalf of the principal.

(b) The director may negotiate an exchange involving more than one party; however, in order to ascertain whether the equal value requirements of this chapter have been met, the director shall consider only the land and other consideration which the state would convey and receive if the exchange were executed. (§ 1 ch 240 SLA 1976)

Sec. 38.50.040. Land subject to exchange. Except as otherwise provided in this chapter, the director is authorized to convey for purposes of exchange any state land or interest in land regardless of the authority under which the land or interest was obtained by the state. (§ 1 ch 240 SLA 1976; am § 13 ch 181 SLA 1978; am § 17 ch 182 SLA 1978; am § 70 ch 152 SLA 1984)

Opinions of attorney general. — Land acquired by eminent domain for the Anchorage state office complex could be transferred in a land exchange and used for a different purpose free from any special use restrictions. There was some risk, however, of a challenge by the former owners of the land, particularly those still litigating the issue of just compensation for the earlier taking. July 24, 1986, Op. Att'y Gen.

Sec. 38.50.050. Conveyance of mineral rights. Subject to the requirements of this chapter, the director is authorized to exchange mineral rights in state land to the extent that the conveyance is authorized by the state constitution and applicable federal law. The director may not exchange or receive the surface estate of land or the mineral rights in it, one without the other, unless the separation of estate is necessitated by a prior separation of ownership or by restrictions in applicable law, or the director otherwise finds that the conveyance or receipt of the surface or mineral estates, one without the other, is necessary to achieve a significant public purpose. (§ 1 ch 240 SLA 1976)

Sec. 38.50.060. Reservations and covenants. The director may include in any patent or other instrument issued under this chapter any reservations and covenants relating to the land which the director considers necessary to protect or promote the public interest. Reservations and covenants may include, but are not limited to, those relating to access, environmental protection, and use or development rights. The director may receive land which is subject to reservations and covenants if the director finds that the reservations and covenants are consistent with the public interest. (§ 1 ch 240 SLA 1976)

Sec. 38.50.070. Valid existing rights. Conveyances made by the state under this chapter are subject to valid existing rights, including, but not limited to, contracts, permits, leases, rights-of-way, and easements. Unless jurisdiction is waived, the appropriate state agency shall continue to administer valid existing rights as long as any revenues derived from the rights are distributed as provided in the exchange agreement. (§ 1 ch 240 SLA 1976)

Sec. 38.50.080. Prohibition against future considerations and alienation of selection rights. (a) The director may not negotiate or enter into a land exchange agreement which requires the identification of land, interest in land, or other consideration, except for the performance of necessary survey work, at any time after the agreement is initially executed.

(b) The director, in implementing the provisions of this chapter, may not alienate or agree not to exercise selection rights granted to the state in the Alaska Statehood Act or other applicable law authorizing the state to select land or interest in land. (§ 1 ch 240 SLA 1976)

Sec. 38.50.090. Coordination with other state agencies. (a) During the negotiation of a land exchange, the director shall consult with other departments and other divisions of the Department of Natural Resources relative to matters which are within their jurisdiction. If land under the jurisdiction of a state agency other than the Department of Natural Resources may be involved in a proposed exchange, the director shall afford the head of that agency an opportunity to participate in the discussions respecting the land.

(b) The director shall be afforded an opportunity to review and comment on any land exchange proposed by a state agency other than the Department of Natural Resources and the University of Alaska. (§ 1 ch 240 SLA 1976; am § 71 ch 152 SLA 1984)

Sec. 38.50.100. Finding requirement as to alternatives. Before circulating notice under AS 38.50.110, the director shall consider other alternatives to achieve the objectives of the proposed exchange in an effort to determine whether the proposed exchange will best serve the public interest. In making this determination, the director shall consider, among other things, the advantages and disadvantages of acquiring the land or interest in land for the state by means of purchase, lease, or selection under the Alaska Statehood Act, or condemnation. In addition, the director shall consider alternatives to the disposal through exchange of the state land or interest in land, including, but not limited to, lease or sale. (§ 1 ch 240 SLA 1976)

Sec. 38.50.110. Notice of proposed exchange. (a) Not more than 60 days nor less than 30 days before a public hearing is scheduled under AS 38.50.120 the director shall circulate a notice containing the information specified in (b) of this section except as provided in (c) of this section. The director shall

(1) publish or post the notice as provided in AS 38.05.945, except as otherwise specified in this section; the director shall publish the notice in a newspaper of general circulation in the vicinity of the land which

the state will receive and in the three most populated cities of the state;

(2) mail the notice to any person who has filed a request for notice of proposed exchanges;

(3) mail the notice to each member of the legislature;

(4) mail the notice to each municipality the boundaries of which encompass or are located within six linear miles of land involved in the proposed exchange;

(5) circulate the notice to the Office of the Governor and to all state departments;

(6) mail the notice to any corporation organized under the Alaska Native Claims Settlement Act, which corporation owns or has selected land located within a radius of 15 linear miles from land or property involved in the proposed exchange; and

(7) mail the notice to any other party, including an organization of land users, that the director considers appropriate.

(b) The notice of proposed exchange shall include the following information:

(1) a statement of the proposed action and a legal or other appropriate description of the tracts and potential uses of land involved in the proposed exchange;

(2) a map of sufficient scale to allow identification of each tract in relationship to reference points which are easily identified by laymen;

(3) the name and post office address of each party to the proposed exchange;

(4) a statement that any person asserting a claim to the property involved or desiring to comment or to obtain further information concerning the exchange should contact the office designated in the notice;

(5) the date, time, and place of a public hearing which has been scheduled in connection with the proposed exchange.

(c) The director shall provide the information required under (b) of this section in the notice required under AS 38.05.945(b) for exchanges of

(1) less than 500 acres of state land; or

(2) state land having an appraised or estimated fair market value of less than $100,000. (§ 1 ch 240 SLA 1976; am § 14 ch 181 SLA 1978; am § 20 ch 182 SLA 1978; am §§ 72, 73 ch 152 SLA 1984)

Revisor's notes. — Former AS 38.50.110(a)(6) was amended by § 14, ch. 181 SLA 1978 and was repealed by § 20, ch. 182 SLA 1978. Although it appears likely that the repeal of former AS 38.50.110(a)(6) in ch. 182 was intended to be covered by the contingent effective date contained in § 27 of that Act, it was not included in that section or any of the other special effective date sections. Consequently, the repeal is treated as having the constitutional effective date of 90 days after ch. 182 became law, and this repeal is treated as superseding the amendment contained in ch. 181.

Sec. 38.50.120. Public hearings. (a) The commissioner may hold as many public hearings as is considered appropriate. For an exchange of state land having an appraised or estimated fair market value of more than $5,000,000, there shall be at least three public hearings in one or more municipalities close to the state land proposed for exchange before it is submitted to the legislature for approval.

(b) A person who desires to testify at a hearing shall be provided an opportunity to do so, subject to reasonable time limits. In addition, the director shall hold the hearing record open for at least two weeks following the conclusion of a hearing in order to receive supplemental or additional statements. (§ 1 ch 240 SLA 1976; am § 74 ch 152 SLA 1984)

Sec. 38.50.130. Report on proposed exchange. (a) In conjunction with the public notice required by AS 38.50.110, the director shall prepare and distribute the report required by this section to the parties listed in AS 38.50.110(a)(2) — (7) and to any other party who requests it. The report shall contain, among other things, a copy of the notice required by AS 38.50.110 and a discussion in a concise format designed to facilitate public understanding of the issues of

(1) the physical characteristics of the land involved, including the surface and mineral resources associated with the land;

(2) the appraised fair market value of each tract involved in the exchange or, if the exchange is for other than equal appraised fair market value, the nonmonetary values which are involved;

(3) the benefits and detriments which can be expected to accrue, including possible social, economic, and environmental impacts; and

(4) alternatives to the proposed exchange.

(b) Upon termination of the period provided for agency and public comment, the report and the proposed land exchange may be revised, if appropriate, to reflect comments or other information which has come to the director's attention. A brief summary of all comments and information received shall be appended to the report. (§ 1 ch 240 SLA 1976; am § 71 ch 59 SLA 1982)

Sec. 38.50.140. Legislative review. Within 10 days of the convening of a regular legislative session, the governor shall transmit to the president of the senate and the speaker of the house of representatives any proposal for a land exchange required to be submitted to the legislature for approval under AS 38.50.020(a) that is scheduled to occur before the next legislative session. If exigent circumstances seriously affecting state interests so require, the governor may submit the proposed exchange to the legislature at some other time. A finding of exigent circumstances shall be carefully documented in the letter of transmittal. The director is authorized to conclude a proposed exchange agreement upon approval by the legislature of the proposed

exchange agreement. A decision by the legislature to disapprove a proposed exchange shall be accompanied by a recommendation to the governor with respect to future actions which the director should take concerning the exchange. (§ 1 ch 240 SLA 1976; am § 75 ch 152 SLA 1984)

Sec. 38.50.150. Execution of exchange. If a deed, contract of exchange, or other instrument of conveyance which the director receives to effectuate an exchange is properly executed, acknowledged, and authorized by the appropriate party, the director shall accept conveyance of title to the land and other property which the state is to receive as consideration, and shall issue a patent, contract of exchange or other instrument of conveyance to the appropriate party for the property which the director is then obligated to convey. Before acceptance by the director of a deed, contract of exchange or other instrument, no action taken by the director or by any other state official creates a right against the state with respect to state land. (§ 1 ch 240 SLA 1976)

Sec. 38.50.160. Regulations. The commissioner may adopt regulations under the Administrative Procedure Act (AS 44.62) necessary to carry out the purposes of this chapter. (§ 1 ch 240 SLA 1976)

Sec. 38.50.170. Definitions. In this chapter, unless otherwise specified,

(1) "commissioner" means the commissioner of natural resources;

(2) "director" means the director of the division of lands;

(3) "state land" means all land including shore, tide and submerged land or unsevered resources belonging to or acquired by the state excluding interests in land severed or constructively severed from the land. (§ 1 ch 240 SLA 1976)

Chapter 95. Miscellaneous Provisions.

Article

Revisor's notes. — Through administrative reorganization, the Department of Natural Resources has eliminated the division of lands. Duties and responsibilities given to the division of lands under this chapter have been assigned to other divisions of the department. Duties and responsibilities given to the director of the division of lands under this chapter have been assigned to the deputy commissioner for operations, who has been given the additional title "director of lands."

LAND ACQUISITION AUTHORITY

16 USC 3192.

SEC. 1302. (a) GENERAL AUTHORITY.—Except as provided in subsections (b) and (c) of this section, the Secretary is authorized, consistent with other applicable law in order to carry out the purposes of this Act, to acquire by purchase, donation, exchange, or otherwise any lands within the boundaries of any conservation system unit other than National Forest Wilderness.

(b) RESTRICTIONS.—Lands located within the boundaries of a conservation system unit which are owned by—

(A) the State or a political subdivision of the State;

(B) a Native Corporation or Native Group which has Natives as a majority of its stockholders;

(C) the actual occupant of a tract, title to the surface estate of which was on, before, or after the date of enactment of this Act conveyed to such occupant pursuant to subsections 14(c)(1) and 14(h)(5) of the Alaska Native Claims Settlement Act, unless the Secretary determines that the tract is no longer occupied for the purpose described in subsections 14(c)(1) or 14(h)(5) for which the tract was conveyed and that activities on the tract are or will be detrimental to the purposes of the unit in which the tract is located; or

Post, pp. 2493, 2494.

(D) a spouse or lineal descendant of the actual occupant of a tract described in subparagraph (C), unless the Secretary determines that activities on the tract are or will be detrimental to the purposes of the unit in which the tract is located—

may not be acquired by the Secretary without the consent of the owner.

(c) EXCHANGES.—Lands located within the boundaries of a conservation system unit (other than National Forest Wilderness) which are owned by persons or entities other than those described in subsection (b) of this section shall not be acquired by the Secretary without the consent of the owner unless prior to final judgment on the value of the acquired land, the owner, after being offered appropriate land of similar characteristics and like value (if such land is available from public lands located outside the boundaries of any conservation system unit), chooses not to accept the exchange. In identifying public lands for exchange pursuant to this subsection, the Secretary shall consult with the Alaska Land Use Council.

(d) IMPROVED PROPERTY.—No improved property shall be acquired under subsection (a) without the consent of the owner unless the Secretary first determines that such acquisition is necessary to the fulfillment of the purposes of this Act or to the fulfillment of the purposes for which the concerned conservation system unit was established or expanded.

(e) RETAINED RIGHTS.—The owner of an improved property on the date of its acquisition, as a condition of such acquisition, may retain for himself, his heirs and assigns, a right of use and occupancy of the improved property for noncommercial residential or recreational purposes, as the case may be, for a definite term of not more than twenty-five years, or in lieu thereof, for a term ending at the death of the owner or the death of his spouse, whichever is later. The owner shall elect the term to be reserved. Unless the property is wholly or partially donated, the Secretary shall pay to the owner the fair market value of the owner's interest in the property on the date of its acquisition, less the fair market value on that date of the right retained by the owner. A right retained by the owner pursuant to this section shall be subject to termination by the Secretary upon his

determination that such right is being exercised in a manner inconsistent with the purposes of this Act, and it shall terminate by operation of law upon notification by the Secretary to the holder of the right of such determination and tendering to him the amount equal to the fair market value of that portion which remains unexpired.

(f) DEFINITION.—For the purposes of this section, the term "improved property" means— "Improved property."

(1) a detached single family dwelling, the construction of which was begun before January 1, 1980 (hereinafter referred to as the "dwelling"), together with the land on which the dwelling is situated to the extent that such land—

(A) is in the same ownership as the dwelling or is Federal land on which entry was legal and proper, and

(B) is designated by the Secretary to be necessary for the enjoyment of the dwelling for the sole purpose of noncommercial residential use, together with any structures necessary to the dwelling which are situated on the land so designated, or

(2) property developed for noncommercial recreational uses, together with any structures accessory thereto which were so used on or before January 1, 1980, to the extent that entry onto such property was legal and proper.

In determining when and to what extent a property is to be considered an "improved property", the Secretary shall take into consideration the manner of use of such buildings and lands prior to January 1, 1980, and shall designate such lands as are reasonably necessary for the continued enjoyment of the property in the same manner and to the same extent as existed before such date.

(g) CONSIDERATION OF HARDSHIP.—The Secretary shall give prompt and careful consideration to any offer made by the owner of any property within a conservation system unit to sell such property, if such owner notifies the Secretary that the continued ownership is causing, or would result in, undue hardship.

(h) EXCHANGE AUTHORITY.—Notwithstanding any other provision of law, in acquiring lands for the purposes of this Act, the Secretary is authorized to exchange lands (including lands within conservation system units and within the National Forest System) or interests therein (including Native selection rights) with the corporations organized by the Native Groups, Village Corporations, Regional Corporations, and the Urban Corporations, and other municipalities and corporations or individuals, the State (acting free of the restrictions of section 6(i) of the Alaska Statehood Act), or any Federal agency. Exchanges shall be on the basis of equal value, and either party to the exchange may pay or accept cash in order to equalize the value of the property exchanged, except that if the parties agree to an exchange and the Secretary determines it is in the public interest, such exchanges may be made for other than equal value. 48 USC note prec. 21.

(i)(1) The Secretary is authorized to acquire by donation or exchange, lands (A) which are contiguous to any conservation system unit established or expanded by this Act, and (B) which are owned or validly selected by the State of Alaska.

(2) Any such lands so acquired shall become a part of such conservation system unit.

Appendix G
Due Diligence

HOW TO REVIEW AN APPRAISAL

This checklist presents a very general summary of how to review an appraisal of unimproved land. Many conservation entities have their own legal and other requirements concerning appraisals; therefore, care must be taken to ensure that any given appraisal satisfies all applicable requirements for a particular conservation entity and transaction. Much has been written about appraisals and the appraisal process generally, and there are many additional sources of information.

1. Report Format

a. Appraisal Report (full narrative report) - generally a detailed written presentation and analysis of the facts and reasoning behind an individual appraiser's estimate of value. Includes information in sufficient detail so that the reader can determine how the appraiser arrived at his or her opinion of fair market value.

b. Letter of Opinion (letter narrative, form report) - a shorter statement or letter provided by an appraiser who is knowledgeable about a particular market, indicating his or her conclusion about the value for a particular piece of property. Often called a "windshield appraisal" because a real estate professional familiar with market prices will often estimate the property's value after driving by and viewing the property. Does not contain the level of detail, background information or analysis normally found in an appraisal report. Less expensive and appraiser is usually able to provide it more quickly than the report.

2. Who Performs the Appraisal

There are few federal, state and local laws regulating who can appraise real estate. Bankers, real estate brokers or anyone else who has a knowledge of the local real estate market can provide an appraisal. However, since members of professional appraisal societies, such as the American Society of Appraisers (ASA), the American Institute of Real Estate Appraisers (identified by the designation MAI), the Society of Real Estate Appraisers (SREA or SRA) or the American Association of Certified Appraisers, Inc. (AACA), must comply with professional standards, they are generally recognized as competent appraisers. (Membership in such societies alone will not guarantee a good appraisal but is only one factor to consider when hiring someone to do an appraisal). An appraiser should also have experience in the the type of property (such as ranches, conservation easements, rural property, residential) and in the vicinity in which the property is located.

Appraisers and the appraisal process are generally subject only to the standards of professional organizations. However, the Fianancial Institutions Reform and Recovery Act of 1989

(FIRREA), born out of the savings and loan crisis, imposes uniform standards on the performance of appraisals in connection with all "federally related" transactions (transactions engaged in or contracted for or regulated by a federal banking agency and which require an appraisal). Under FIRREA, all appraisals in federally related transactions must be performed by appraisers licensed or certified by state agencies and the content of the appraisers must satisfy certain requirements. In addition, there may be other special requirements for the qualification of appraisers or the nature of the appraisal that apply to any particular conservation entity.

3. What is Fair Market Value (FMV)

Fair Market Value has been described in various ways in different parts of the country, but the most commonly accepted definitions are the following ones that are used by the courts:

a. "Fair Market Value" is the highest price estimate, in terms of money, that a property will bring if exposed for sale on the open market allowing a reasonable time to find a purchaser who brings with him or her the knowledge of all the uses to which the property is adapted and for which it is capable of being used; or

b. "Fair Market Value" is defined as the amount in cash, or on terms reasonably equivalent to cash, for which in all probability the property would be sold by a knowledgeable owner willing but not obligated to sell to a knowledgeable buyer who desires but is not obligated to buy. In ascertaining that figure, consideration should be given to all matters that might be brought forward and reasonably be given substantial weight in bargaining by persons of ordinary prudence, but no consideration whatever should be given to matters not affecting market value. The cash, or on terms reasonably equivalent to cash, requirement is important and numerous courts have noted this factor.

"Properly adapted" and "capable of being used" are key parts of this definition for they have special significance in the acquisition of environmentally sensitive and critical lands. A controversial issue in appraising land for purchase by conservation agencies is whether the highest and best use for a particular property is as developed property or as an open, natural area.

4. Methods to Determine FMV

a. Cost approach - Basically, the appraiser computes the replacement cost of the property. This approach is particularly useful for estimating the value of buildings or other improvements, but not vacant land.

b. Income approach - In using this approach, appraisers determine the net income of the property and then capitalize it at the normal rate for that type of investment. This method can be extremely useful in evaluating properties that are about to be developed, or that are subject to a zoning or rezoning application. However, this method is most applicable to improved properties such as apartment houses or other commercial buildings.

c. Market data approach (comparable sales) - This approach compares the subject property with similar properties that have recently sold in the same market area. It is this approach that is most commonly used by appraisers, and it is extremely applicable to the purchase of raw land.

Important information to be included in the appraisal report is the information about other recent sales of property which are compared to the subject property to arrive at value. Sufficient information should be included to enable the reader to see the facts of the sales the appraiser cites as comparable (based on factors such as time, location, size, special conditions of sale, sufficient numbers of sales of nearby properties) and to determine the reasoning of the appraiser (adjustments) in comparing such sales to arrive at a value of the subject property.

The basic factors or property characteristics to be compared are recognized as:

i. time interval between sale date and appraisal date

ii. motivation of sale transactions

iii. location, including proximity to roads, schools, etc.

iv. similarity of highest and best use characteristics, including intensity of utilization of that use

v. physical similarities and dissimilarities

5. Keys Parts of the Appraisal Report

a. Clear, intelligent description of property. Must describe accurately the interest (fee, less than fee, right of way) and the purpose of the appraisal (estimate FMV for sale, for tax purposes). Should include references to deeds and surveys, if available. Generally should also include photographs of the property.

b. An analysis of the highest and best use of the property. Should analyze potential for improvements, which may involve such factors as land capability analysis and local zoning. Should be supported by explanation or justification.

c. Comparable Sales. Review carefully the comparable sales used by the appraiser to determine FMV and make sure that they are actually comparable in time, location and property characteristics.

d. Rationale and conclusion for FMV. Each approach to or method of valuation should be developed separately and in enough detail for the reader to understand the basis for the appraiser's final conclusion of value.

e. Date of appraisal. The date the appraisal was prepared is important since market conditions may change over time.

f. Qualification of appraiser. The experience and judgement of the appraiser are critical because the field of appraising is for the most part regulated only by individual professional associations, and there are really no uniform standards. Therefore, a description of the appraiser's education, professional background (including membership in professional assocations) and appraisal experience (particularly for similar properties) should be made available to the reader.

6. Cost of Appraisals

The appraiser should always be willing to tell you in advance what the fees will be. Fees will often depend upon the assignment. For the most routine reports the appraiser can give you a fixed fee. However, if the report is of unusual nature, most appraisers will base the fee upon the number of hours expended. In these cases the appraiser should provide an estimate that establishes your maximum cost. At no time should the cost of the appraisal be tied to the appraised values or the property (for example, the basis for the appraisal fee cannont be that for every additional $10,000 in appraised value, the appraiser will receive an additional $50 in fees).

Jane Prohaska
Regional Counsel
The Nature Conservancy
May, 1991

HAZARDOUS WASTE AND REAL ESTATE TRANSACTIONS

"Like termites and zoning laws, hazardous wastes are a fact of life which may profoundly affect the value of real property and expose the parties involved in a real estate transaction to significant liability."

Hazardous Waste and the Real Estate Transaction,
A Practical and and Theoretical Guide

"You have to be an idiot not to look at the environmental risks before buying a piece of property."

Wall Street Journal

I. The Problem

A. From Love Canal in Niagara Falls, NY to your own backyard

B. - 26,000 federally listed hazardous waste sites in 1988
- 50,000 sites projected
- Contaminated site owners include: private individuals, corporations, government agencies, non-profits

C. Costs of Investigation and Cleanup

1. EPA estimates $9,000,000 average cleanup cost per site
2. Cost breakdowns:
   - investigations: $500,000 to $600,000 (takes 18 to 24 months)
   - remedial design: $200,00 to $400,000 (takes 6 to 8 months)
   - remedial action: $200,000 to $10,000,000 to ?? (takes years)
     - soil cleanup:
       * $150 to $350/cubic yd. of soil removed
     - ground water cleanup:
       * gasoline - $50,000 to $5,000,000
       * solvents - $400,000 to $40,000,000
       * metals - $50,000 to $1,000,000

D. Expanded scientific knowledge of toxic properties of chemicals and sensitivity of analytical techniques

E. Growing public awareness

II. Legal Remedies

A. Common Law: Damages for past problems

- Nuisance
- Trespass
- Negligence/strict liability for ultra-hazardous activities
- Real estate misrepresentation/fraudulent non-disclosure vs. caveat emptor

B. Environmental Regulation - 1970s: Prevention

- Safe Drinking Water Act
- Clean Air Act
- Toxic Substances Control Act
- Resource Conservation and Recovery Act (RCRA) - solid waste management
- Similar state laws

C. Problem: these approaches did not provide satisfactory tools for combating abandoned contaminated sites

D. Federal government response: CERCLA or "Superfund"

- CERCLA - Comprehensive Environmental Response Compensation and Liability Act of 1980

- SARA - Superfund Amendments and Reauthorization Act of 1986

  Purpose: To identify and clean up existing hazardous waste sites and to provide for a source of funds to pay for the work

- Components:
  * government agency responsibility - Environmental Protection Agency
  * "superfund" - $1.8 billion for clean up
  * assign liability to identified private parties
  * liens to recover costs
  * disclosure requirements

E. State Government Responses

- "Superfund" legislation
- Super liens (Massachusetts)
- Disclosure requirements (Pennsylvania, Minnesota, Illinois, Indiana)
- Land transfer approvals (New Jersey)

III. CERCLA Statutory Framework

Federal law holds owners and operators of property responsible where there has been a release of a hazardous substance or pollutant or contaminant from a facility into the environment

A. Definitions

1. Hazardous substances/pollutants/contaminants

   a. Any substance which upon release and exposure may cause death, disease, behavioral abnormalities or presents "substantial danger to the public health or welfare of the environment"
   b. Characteristics - toxicity, ignitibility, reactivity, corrosivity
   c. Substances specifically identified by statute/regulation
   d. Includes many substances in common usage: cleaning solvents, paints, swimming pool chlorine, pesticides (dioxins), PCBs (transformers)
   e. Excludes petroleum, oil and natural gas - often covered by other laws
   f. Asbestos ??

2. Release

   a. Any spill, leak or disposal, including disposals that were lawful when they occurred
   b. May be escape of minute amounts over time or dumping in large quantity
   c. Intentional or accidental
   d. Threatened release

3. Facility

   a. Buildings, structures, vehicles
   b. Pipes or pipelines (including sewers)
   c. Storage containers, tanks
   d. Land, landfills
   e. Any area where a hazardous substance has been deposited or has otherwise come to be located
   f. Migrating substances

4. Environment

   a. Soil
   b. Air
   c. Water: lakes, ponds, wells, groundwater

5. Owner or operator

   a. Current owner or operator, owner or operator at time of disposal/release and anyone else in chain of title
   b. Individual corporate officers/shareholders
      - involvement in management
   c. Partners or joint venturers
   d. Lender/secured creditor
      - foreclosure
      - participation in management
   e. Generators, transformers
   f. Lessor/lessee
   g. Conservation easement holder

B. Standard of Liability

1. Strict liability: not dependent upon negligence or wrongdoing or illegality at time of release
2. Joint and several liability: <u>all</u> responsible parties each individually liable for <u>all</u> costs
3. Retroactive liability
4. Unending liability
5. Indemnification/hold harmless agreements - no defense to government enforcement

C. Defenses

1. Act of God
2. Act of war
3. Innocent purchaser/"due diligence" standard

Current owner is not liable if the release was caused by a third party and current owner:

* <u>did not know and had no reason to know of the release</u>: undertook all appropriate inquiry into previous ownership and uses consistent with good commercial or customary practice, taking into account:
  - specialized knowledge or experience
  - relationship of purchase price/value
  - commonly known or reasonably ascertainable information
  - obvious presence or likely presence of contamination
  - inspection
* <u>due care</u> exercised with respect to hazardous substance concerned
* <u>precaution</u> taken against foreseeable acts or omissions of third parties
* <u>discloses</u> any information about hazardous substances learned during ownership

Public awareness up, standard of inquiry up

Legislative proposals

D. Damages

1. Cost of investigation and cleanup
2. Disposal costs
3. Costs of continued monitoring/evaluation
4. Litigation costs/attorneys' fees
5. Cost to prevent additional harm, e.g., security measures, provisions of alternative water supplies, evacuation and housing, etc.
6. Damages to natural resources
   - restoration costs
   - value of lost use
   - government recovery only
7. Punitive damages/civil and criminal fines

E. Insurance

1. Liability insurance
   - pollution exclusion clauses/pollution insurance
   - excludes coverage for damage to property owned by insured
2. Title insurance

V. Prevention

A. Inspect

* on-site, physical inspection essential
* walk the property
* look for "red flags"
* check surrounding area as appropriate

B. Investigate

* current and historic uses of property and adjacent properties
* ownership/chain of title
* records
  - environmental agencies
  - land records
  - owner's records
* interview owner, employees, neighbors, etc.

C. Consult

* in-house staff
* environmental consultants/experts
* lawyers

D. Negotiate

1. Purchase/sale agreements

a. Protecting the buyer
- right to investigate/inspect with contingencies
- seller's warranties (which survive closing)
- indemnification/release

b. Protecting the seller
- selling property "as is"
- required disclosures

c. Alternatives if contamination discovered

- Sever contaminated property
- Abandon transaction
- Renegotiate
  - cleanup responsibility/government approval
  - adjust purchase price
  - delay closing
  - apportion costs/escrow funds
  - indemnification (only as good as the financial security of the parties involved)
  - recision

2. Mortgages/contracts for deed/leases

a. "due diligence" before financing
b. restrictions on use
c. compliance requirements
d. inspection rights/monitoring
e. indemnification
f. avoid nonrecourse financing/involvement in management

E. Assess the Risk

Review the intended use of the property in light of the likelihood and extent of the contamination itself and associated liability and the cost of "cleanup."

Jane Prohaska
The Nature Conservancy
May, 1991

ENVIRONMENTAL CHECKLIST*THINGS TO THINK ABOUT

I. Problem Areas/Uses of Concern

* landfills, trash dumps
* agricultural lands (pesticide use, storage, disposal)
* railroad yards
* filling stations/automobile repair shops
* paint shops
* dry cleaners
* photo processing
* timber/paper products processing
* mining
* nurseries
* golf courses
* swimming pools
* electric shops/computer producers
* any industrial site (soil or water contamination from industrial chemicals)
* asbestos (insulation, ceiling tiles)
* air conditioning systems
* septic systems
* underground storage tanks
* electrical transformers (PCBs - polychlorinated biphenyls)
* injection/extraction into or from groundwater or aquifers
* illegal disposal sites

II. Areas of Inquiry

* current/historical uses
* ownership history
* use/handling/storage/disposal of known hazardous substances and other wastes
* type/location of buildings, sheds, storage areas, structures, etc.
* environmental compliance/complaints
  - licenses or permits (get copies)
  - prior spills and cleanup
  - pending or prior inquiries/investigations/litigation
* insurance coverage/claims
* proximity to floodplains, wetlands, coastal zones or surface water and groundwater sources
* geologic and hydrologic review
* problems on adjacent property/impacts on adjacent property

III. On-Site Inspection

* places to check
  - ponds, streams, lagoons, wells, other water sources

- inside buildings - drainage systems, storage areas, loading docks, hazardous waste handling areas
- dumpsters, railroad cars
- landfills (open dumps, trash piles, permitted sanitary landfills, suspect fill areas)
- roadsides, ditches, areas with convenient public access
- above/underground storage tanks
- incinerators, burning pits
- septic reservoirs, catch basins, surface impoundments

* look for "red flags"
  - sludge
  - discolored or odorous soil
  - absence of vegetation/stressed vegetation
  - fouled standing or surface water
  - old, leaking or rusted pipes, electrical equipment, containers, tanks, barrels or stockpiles
  - odorous or turbid well water
  - unusual or irregular depressions, mounds, or hummocky ground surface

IV. Review of Records

* agency records
  - EPA, local or state environmental agencies, fire departments, building inspectors
  - check for permits, complaints, investigations, hazardous waste site lists
  - check surrounding areas (1-mile radius)
* company records
  - internal environmental audits
* land records
  - ownership history
  - "deed" disclosures (Minnesota, Pennsylvania)

V. Interviews

* current and former owners
* operators
* employees
* tenants
* neighbors

VI. Aerial Photographs, Maps

* geologic, hypdrogeologic, soils, topographic maps
* oil/gas company maps
* check for evidence of historic change

VII. Environmental Consultants/Experts

* selection
* scope of work

VIII. Soil/Water Sampling

* review prior test results
* conduct new tests
* limited sampling/cost control

CHECKLIST FOR REVIEWING A PRELIMINARY TITLE REPORT

This checklist is intended as a general guide to reviewing a preliminary title report for acquisition of fee title to real property that is relatively undeveloped. The types of exceptions to title and the number of exceptions will depend on the particular property, and the scope of coverage and standard exceptions vary from state to state. It is essential to be familiar with the standard provisions of the title insurance form that will be applicable to the property.

1. Date. Note the date the Preliminary Title Report ("Report") was issued. The Report should not be more than 30 days old. If it is, order an updated Report from the title company.

2. Legal descriptions. Check to make sure that the Report describes the same land the buyer expects to acquire. There are 3 main ways that the Report can describe the land:

   a. By reference to a previously recorded instrument (i.e. prior deeds, judgements or maps).

   b. By a metes and bounds description. These descriptions generally use courses and distances. Follow the courses and distances around the perimeter of the property's boundary lines -- there must be a starting point, the boundary lines must run continuously from one point to another and when complete, the end point must meet up with the point of beginning, i.e. the description must "close". If the description does not close, you may need to obtain a quitclaim deed for the missing piece, or pursue a quiet title action (lengthy and costly). Metes and bounds descriptions can also involve very complicated issues of interpretation if part of the description is tied to a physical monument (such as a tree) that no longer may be found on the land, or if any of the boundaries are fixed by reference to a stream, river or other body of water, which inevitably move over time; if any of these situations exists it may be advisable to obtain a survey and expert legal advice, depending on the value of the land at issue.

   c. By reference to U.S. government surveys. These descriptions are based on the rectangular survey system, which divides land into rectangular units, e.g. Southwest quarter of the northeast quarter of the southeast quarter, Section 36, Township 2 North, Range 4 East, Mount Diablo Base and eridian -- often abbreviated as SW1/4 NW1/4,SE1/4 36T2NR4E MDB&M.

   Sometimes a Report will use a combination of these methods (for instance, reference a tract map and then give the metes and bounds description).

It is crucial to note that the Report generally excludes certain partial interests in the land, such as oil, gas and mineral rights, timber rights and water rights. You cannot rely on title insurance for assurances as to title to these real property rights.

Many legal descriptions do not include the acreage. Note that even if the description does provide the acreage you still will want for review purposes to distinguish "net" or "usable" acreage from gross acreage. Net or usable acreage will be the gross acreage less any roads, ditch or utility easements or the like. In addition, be sure to check if the legal description specifically excludes any areas (such as roads) from the description of the land.

3. Vesting. Check the "vesting" stated in the Report, which refers to the name of the owner of the land covered by the Report. Note if there are any discrepancies between the name on the Report and the name of the seller, or if any other person or entity has any interest in the property. If there are any such discrepancies, you may need to obtain a quitclaim deed directly from that other person or entity or, preferably, have an interim deed recorded from that other person or entity in order to transfer title to the same person or entity the buyer is acquiring the property interest from.

4. Additional Insured Property. Confirm whether the Report covers all the interest in the real property the buyer is acquiring. If the land is dependent on access easement rights over someone else's property, then be sure that the access easement is described as a separate parcel to be insured under the title policy.

5. Access. Check to make sure that there is adequate legal access to an open public road. See if the general insuring provisions of the policy cover access and make sure that there are no exceptions impairing access rights. It is often a good idea to get an endorsement specifically insuring access.

6. Exceptions. Review the documents referenced in the Report. Confirm the following:

   a. Copies of All Documents. Make sure that you have received copies of all of the exception documents.

   b. Applicability. Does each exception describe the same real property you are concerned with? Check the legal description -- does the document refer to the same property referred to in the Report? If a survey is available, check the survey to see if the document is referenced or plotted. If the exception is not shown on the survey, then it could be that the exception no

longer affects the property (because of an earlier subdivision or otherwise) and you should have the title company remove the exception.

c. Roads and Easements. Locate all roads and utility easements (such as gas lines, telephone lines, ditch easements, etc.) on a map and on the ground. Make sure they will not interfere with the buyer's intended purposes.

d. Rights, Obligations, Costs. What are the liabilities, obligations and rights of the parties under the title exception documents (e.g. obligations to maintain roads, pay for services, share water with a neighboring landowner, etc.)?

e. Taxes. With respect to real property taxes, make sure that all taxes are current. Ask the title company when each installment of taxes is due and payable and when each installment is delinquent. Then, check the effective date of the Report -- it may show taxes not yet payable but it may be outdated. The buyer does not want to purchase property when the Report shows outstanding (i.e. "due or payable") taxes, or, in the worst case, when there are unpaid back taxes and penalties, which the buyer would be responsible for upon acquiring title to the property since the lien for the taxes attaches to the land. Also check to make sure there is no exception for deferred or additional taxes, which might be triggered upon the sale.

f. Third Party Interests. Look for any interests of third parties in the property (such as a right of way over the property benefitting a neighbor, or a lease of oil and gas). If there are any oil and gas leases, you can often get them removed as exceptions if there are no producing wells on the property by asking the title company or the seller to obtain a quitclaim deed from the lessee. The title company may accept an affidavit of the seller that there are no leases in effect if it is difficult or impossible to get a quitclaim from the lessee.

g. Mortgages. Also check for the interests of any secured creditor under any mortgage, deed of trust, mechanics lien or other instrument. You should make sure that the seller pays any such lien holder off at or before closing and obtains a recordable release or reconveyance of the lien (unless the buyer specifically agrees to purchase the property subject to the lien, in which case all documents relating to the lien should be carefully reviewed and the lien holder should sign an estoppel certificate for the benefit of the buyer

confirming the status of the documents and the terms of the underlying debt).

h. Survey. If there is a current survey, the Report should reference the survey and specifically describe any encroachments by any fences or buildings on the property, or off of the property. If there is a significant boundary line problem, it may be advisable to get a boundary line agreement with the adjoining landowner. In addition, some encroachments can be insured against through endorsements to the policy, though this is not necessarily the complete solution. Each encroachment must be carefully examined to assess the risk involved.

i. Unusual Exceptions. Make sure you fully understand what every exception on the Report means. If you do not, begin by asking the Title Company to explain the exception and the reason for it, and then follow-up with further research or discussion with experts, as needed.

7. Additional Information. The title company may show informational notes regarding matters affecting the property of which it has knowledge (generally these are at the end of the Report but they may sometimes be included with the rest of the exceptions). These matters are for information only and it is good practice to clarify with the title company that they will not be in the final policy issued from the Report. At the end of the Report, the title company may also note any requirements it may have for closing the transaction and issuing the policy, such as corporate or partnership documents to evidence authority.

8. Changes to the Report. After you review the Report, it is often worthwhile to mark up the Report to show any errors or changes you will require, and then send the mark-up to the title company, requesting an amended Report or advising the title company that the mark-up reflects the policy you will need at closing. The sooner you do this before the closing, the better, to give you an opportunity to work out any problems with the title company and the seller. If you require a lot of changes to the Report, it is often a good idea to attach a marked Report to the escrow instructions to show precisely the content of the title policy that the buyer will require at closing.

CHECKLIST FOR REVIEWING A SURVEY

This checklist is intended as a general guide to reviewing a survey in connection with the acquisition of fee title to real property that is primarily undeveloped. A survey can be a drawing or an aerial photograph of the property. It is often the quickest and easiest way to identify the physical aspects of the property, its size and its boundaries. If the purchase price of the property is determined on the basis of the total acreage, then an accurate survey is essential. A title company will almost always require a survey in order to issue extended coverage title insurance (an "ALTA" policy).

1. Date. Note the date the Survey was issued (if the survey has been revised, the last revision date shown). The Survey generally should not be more than 30 days old. If it is, order an updated Survey or a certificate to confirm the absence of any changes.

2. Legal description. Check to make sure that the legal description of the survey exactly matches the description in the preliminary title report (the "Report") for the property. All parcels must be identified. If the legal description is in terms of metes and bounds, make sure that it closes by tracing it out on the survey.

3. Report. The Survey should reference the most recent Report.

4. Exceptions. The Survey should reference and plot all recorded title exceptions in the Report (complete with book and page or document number information). It is helpful if the survey shows the exceptions by their corresponding exception number in the Report.

5. Certification. The survey must be certified to the Buyer, in the precise name in which the Buyer will take title, and also to the title company if extended title insurance coverage will be obtained. The certificate must meet Buyer's standards.

6. Signature. The survey must be signed, sealed and dated by a licensed surveyor or engineer. Check to make sure the license number of the surveyor clearly appears on the seal or stamp, and also check the expiration date of the license to make sure it has not expired.

7. Acreage. The survey should indicate the total acreage and the acreage of each parcel.

8. North Arrow. The survey should always contain an arrow indicating which direction is north. This is one of the first items you should check in order to get an orientation. Note that north may not be towards the top of the page.

9. Legend. The legend should consist of a complete list of all symbols used in the survey.

10. Access. Confirm access to adjacent and physically open streets. Adjacent highways do not necessarily provide access, since there may not be a legal or physical entry point.

11. Water Boundaries. Any survey of land abutting tidelands, submerged land, rivers, streams, or lakes should be researched with the utmost care, since these boundary lines are generally ambiguous. Special laws addressing accretion and avulsion may affect the boundaries.

12. Contour Lines. The survey should include contour lines for large tracts, showing grade elevations in specific increments.

13. Encroachments. The survey should show all fences, buildings and other significant improvements and any encroachments.

14. Flood Zone. The survey should state whether or not the property appears on any U.S. Department of H.U.D. Flood Insurance Boundary Map and, if so, further state map number and whether or not property appears in the "Flood Hazard Area" shown on the map.

15. Water. The survey should show the location and direction of flow for existing streams, rivers, or surface drainage system.

16. Vicinity Map and Adjacent Property. The survey should include a sketch or map of the general vicinity of the property so that it can be readily located in relationship to nearby towns, highways, and other reference points, and should describe all adjacent land.

17. Utility Lines. The survey should show any utility lines as they service the property, and indicate whether they are above or below ground.

18. Additional Changes. If any revisions to the survey are needed, call and discuss them with the surveyor and consider following up with a confirming letter. Requested changes may result in additional charges, so confirm amount of charges and Buyers' willingness to pay them before instructing the surveyor to proceed.

Appendix H
Background on The Nature Conservancy

The Nature Conservancy is committed to saving native plants, animals, and natural communities by preserving the lands and waters that sustain them. The Conservancy uses rigorous scientific approaches to identify threatened natural communities and species, their best remaining locations, and what they need to survive. The Conservancy then works with landowners to protect the high-priority sites often through the purchase or donation of the land itself or of a partial interest in the land, or through cooperatively designed management agreements with landowners, both public and private. The Conservancy maintains and enhances the long-term health of the protected sites by way of careful monitoring and stewardship, while at the same time allowing compatible uses of the sites for education and research, public recreation, and limited development.

In 1990, the Conservancy launched a major new program aimed at managing large landscapes. Called "Last Great Places: An Alliance for People and the Environment," this conservation effort recognizes that the best way to foster the vitality of natural processes is to consider the larger, ecosystem-wide landscape. It is the first systematic attempt of its kind to protect vast natural communities and represents a significant new direction for the Conservancy. The program, which the Conservancy hopes will ultimately protect 75 sites in the United States, Latin America, and the Pacific, emphasizes the importance of public/private partnerships in managing land and water areas in ways that benefit both people and nature. In the view of Conservancy scientists, this large-ecosystem approach is an important new way to manage and maintain any natural system over the long term.

Organization

The Nature Conservancy is an international private nonprofit corporation, organized in 1951 under the laws of the District of Columbia for scientific and educational purposes. The Conservancy's activities are funded by individual and corporate contributions, foundation grants, and membership dues.

The Conservancy's international headquarters are located in Arlington, Virginia, and field offices are located in every state. The organization employs over 1,000 professional staff members, with backgrounds varying from systems ecology, biology, and forestry to real estate, business, and law. In addition, there are thousands of volunteers working at almost every level of the organization. A board of governors, elected by the members of the Conservancy, oversees the organization's operations. There are

over 600,000 members of the Conservancy, including 500 corporate associates.

The Conservancy has expanded its programs to encompass areas outside the United States. The Pacific program, headquartered in Hawaii, is working to identify and protect threatened areas in Pacific island and Asian countries, including tropical forests and marine ecosystems in Indonesia, Melanesia, and Micronesia. In Latin America, the Conservancy has joined forces with over 30 local organizations covering 17 countries to provide infrastructure, community development, education, professional training, and long-term funding for legally protected but underfunded areas throughout the continent.

Identification

To identify rare or endangered natural elements and their locations within a particular state, the Conservancy generally uses State Natural Heritage Inventory Programs. State government agencies usually administer these ongoing inventories, and researchers in the Heritage programs use inventory techniques and assessment methods that Conservancy scientists have developed. The information collected by the inventory indicates the relative rarity of plant and animal species, aquatic and plant communities, and other significant ecological features. The systematic inventory process also shows whether natural elements of critical ecological importance are protected. In this manner, the data is useful in setting protection priorities scientifically and effectively, and also in guiding development siting decisions, resource planning, and other conservation initiatives. In Latin America and the Pacific, the Conservancy has created Conservation Data Centers, which are very technologically advanced inventory programs that have worked effectively to identify critically threatened species and communities in that part of the world. There are a total of 79 Natural Heritage Inventory Programs and Conservation Data Centers worldwide.

Protection

Most often, the Conservancy undertakes a project based either on Natural Heritage Program inventory data or a protection plan that is designed to enlarge an existing protected area according to relative priorities that the heritage program indicates. Before the Conservancy proceeds with a potential project, its senior management first review it to make sure that it meets the Conservancy's criteria. If it does, then Conservancy staff develop and refine the protection plan for the particular site and work with each

landowner to negotiate a protection transaction. Often these transactions involve purchases and gifts of land, but the Conservancy uses a host of other tools, including conservation easements and voluntary landowner agreements. Upon final approval of the project, the Conservancy raises funds for the purchase of land or interests in land. In many cases, the Conservancy assists public agencies and other private organizations in efforts to protect plant, fish, or wildlife habitats.

Stewardship

The Conservancy's stewardship staff and volunteers maintain more than 1,600 preserves and employ techniques such as prescribed burnings, reforestation, fencing, wetlands and stream bank restoration, removal of non-native species, reintroduction of endemic plant and animal populations, and other activities that both maintain the preserves and encourage the growth of the native plants and animals found there. The Conservancy's land stewards also help encourage and demonstrate compatible uses, such as controlled agriculture, grazing, timber harvesting, mineral exploration, and limited residential development. These uses are generally confined to those portions of the preserve lands that lie beyond ecologically important and fragile areas. The Conservancy-maintained preserves vary in size from less than one acre to more than 300,000 acres. Volunteer committees and professional staff carry out the actual management after a long-term management plan based on sound biological studies has identified stewardship needs. Most Conservancy preserves are open for educational uses and recreation such as hiking, nature study, wildlife observation, and photography.

Statistics

To date, the Conservancy and its members have saved over 5.5 million acres of land in the United States and Canada. The Conservancy closes an average of one conservation transaction each day, and has completed at least one project in every state of the nation. Its programs in Latin America, the Caribbean, and the Pacific, begun in the early 1980s, have helped local partner organizations protect over 23 million acres outside the United States. While the Conservancy has transferred many of the areas it has protected to government authorities and other local private conservation organizations, it owns and manages more than 1,600 preserves totalling nearly 1,300,000 acres, constituting the largest private system of nature sanctuaries in the world.

14.2.1

Draft Annotated Outline
DRAFT RESTORATION PLAN

10/9/92

i. Cover Letter **(front/back [Trustee signatures]) Editor (1 pg)**

ii. Acknowledgements **(Planning Team) John**

iii. Table of Contents **Editor**

iv. Executive Summary **Editor/John/Bob L.**

I. Introduction

A. Purpose of document

Presents the proposed action (see Restoration Framework, page 1) and explains the function of the Draft Restoration Plan as providing overall direction for the restoration process and guidance for implementation of annual work plans, including all anticipated annual and periodic activities. Explains the relationship among alternatives, options and restoration projects and types of actions to implement them. **John/Bob L. (1 pg)**

B. Background

Summarizes the history of the oil spill, including the cleanup; pre-settlement NRDA program; A summary of Trustee Activity since the settlement, including the role of the U.S. District Court of Alaska; criminal and civil settlements; and the EVOS trustee organization and administration. Presents the number and nature of the public's comments received on the Restoration Framework and how they were used. **Ray/Veronica (5-10 pgs)**

C. Spending guidelines for EVOS settlement

1. Civil settlement

Summarizes guidelines for spending civil settlement money. Includes a description of the decision-making process for expenditures. **Chris (2 pgs)**

2. Criminal settlements (state and federal)

Summarizes state and federal guidelines for spending criminal settlement money. Explains

relationship to civil settlement guidelines. **Chris (2 pgs)**

D. Relationship to Draft Environmental Impact Statement

Following a brief outline of the NEPA process, the relationship of the Draft Environmental Impact Statement (DEIS) to the Draft Restoration Plan will be explained. Explains that the DEIS will be programmatic in nature and the impacts of the preferred restoration alternative will be presented and compared with those of all other restoration alternatives. **Ray (1 pg)**

II. Injured Resources and Services

A. Criteria for selecting injured resources and services

Injury criteria will be listed and briefly explained. Any changes from those in the Restoration Framework will be explained. **Sandy (2-3 pgs)**

B. How criteria are applied

The decision-making process for applying the injury criteria will be explained. **Bob L./Sandy (2-3 pgs)**

C. Conclusions: List of resources and services injured: tables/graphics of resources and services that meet the injury criteria

Presents summary of information on the range of injuries from the ecosystem level to individual resources and services as we now understand it. Injuries will be explained in terms of injured life history stages or user groups, the geography of the injury, and the status and prospects for natural recovery. **Bob Spies/Veronica/Sandy/Bob L. (40-80 pgs)**

III. Restoration Options

A. Explanation of restoration options

Briefly explains restoration options: their origins, the evolution of these public and professional ideas into options and the central importance of them to the plan. ***Karen (3 pgs)***

B. Evaluate restoration options

1. Criteria for evaluating restoration options

Identifies and defines criteria that are used in evaluating and ranking candidate restoration options. Explains any changes from Restoration Framework. **Karen (3 pgs)**

2. How criteria are applied

Describes the process used in ranking options (as high, medium, or low) for each criteria. Includes a description of the process used to generate candidate restoration alternatives. Bob L. (3-5 pgs)

C. Evaluate habitat protection and acquisition options

Describes the evaluation process that will be used in identifying and prioritizing habitat for protection and acquisition, including how protection for services will be approached. Includes description of threshold criteria, habitat types, and the imminent threat analysis for determining whether accelerated protection is required due to immediate threats to restoration potential.

Description of other habitat acquisition issues including 1) land management: which agencies would manage the acquired land; how land management considerations (such as the need for survey, and locatable, contiguous blocks) influence purchases; 2) tools for land acquisition: describes the range of potential tools from development moratoriums to fee-simple purchase; 3) multi-species analysis: describes how the decision to purchase may depend on the benefits provided to more than one resource or service type. Bob L./Art/Veronica (10 pgs)

IV. Restoration Plan Alternatives

Indicates that this section presents a range of restoration alternatives. It explains that while a preferred alternative is presented, clearly no final decision will be made as to the selection of a preferred alternative until the public has had opportunity to comment and the Trustees can take full consideration of the public's opinion. The reason for presenting a preferred alternative at this time is the Trustee's desire to indicate direction at this point in the process and to facilitate compliance with the National Environmental Policy Act of 1969, as amended, i.e., simultaneous publication of the Draft Environmental Impact Statement. **Bob L./Sandy will write up-front (5 pgs)**

A. Description of alternatives

3 - 5 Alternatives will be presented.

1. No action alternative (natural recovery)

   Describes the scope and nature of the no action alternative. Explains reliance on natural processes and the limited activities that would occur. Distinguishes between these and the more active restoration options presented in other alternatives. **Bob L./Carol/Karen/Veronica (? pgs)**

2. Other alternative

   Describes the scope and nature of one of the other alternatives (not including the preferred alternative). Presents a summary of the options included in the alternative and considers the following: responsiveness to recognized injuries and the proposed action, timing of implementation, geographic scope of application, and relative amounts of funding required for option categories presented in the alternative (e.g., management of human uses, habitat protection, etc.). **Bob L./Carol/Karen/Veronica (? pgs)**

3. Preferred alternative

   Describes the scope and nature of the preferred alternative. Presents a summary of the options included and considers the following: responsiveness of the alternative to recognized injuries and the proposed action, timing of implementation, geographic scope of application, and relative amounts of funding required for option categories (e.g., management of human uses, habitat acquisition and protection, etc.). **Bob L./Carol/Karen/Veronica (? pgs)**

4. Other alternative

   See annotation for V.A.2. **Bob L./Carol/Karen/Veronica (? pgs)**

B. Comparison of alternatives

   Describes the significant differences between the alternatives so the public can readily see the choices presented. ***Sandy/Veronica (3-5 pgs)***

V. Implementation Process for Life of the Settlement

A. Development of annual budget and work plans (i.e., selection of projects/studies for a given year legal compliance etc...)

Describes the process and timeline the Trustee Council will follow in prioritizing annual research and restoration needs. **Mark F. (3-5 pgs)**

B. Operations/Administration

How the Trustee Council, staff, etc. will operate the restoration program. This will include an organization chart/flow diagram of how restoration program will operate. **Dave Gibbons (3-5 pgs)**

C. Funding mechanisms

1. Current mechanism

Describes the current funding mechanism (court registry account). Explains how the process functions and its effects on the nature, extent and future of the restoration program. **Mark Brodersen (3-4 pgs)**

2. Endowment

Describes the various approaches to endowments that could be suitable for the restoration program. Explains how endowments could function and affect the nature, extent and future of the restoration program. **Mark Brodersen (3-4 pgs)**

D. Monitoring/Evaluation

Presents elements of an integrated, long-term monitoring program designed to follow the rate of recovery of injured resources and services and to evaluate the effectiveness of restoration activities. Also presents an evaluation process to determine if plans, projects and related activities have been implemented as designed. **John/Mark F. (5-7 pgs)**

E. Public participation/Public education

Describes how the Trustee Council will continue to provide for meaningful public involvement over the life of the settlement. This will include information about the Public Advisory Group (i.e., the process used to establish it and any accomplishments to date) and all other efforts by Trustee Council staff to accomplish this goal.

Explains what actions the Trustee Council will take to provide for an appropriate level of public education about the restoration program. Although this is related to public participation efforts, it differs in that the Trustee Council will generate educational products relating to restoration. Educational efforts may, in part, take the form of annual work plan projects. **Peg/LJ Evans (10-15 pgs)**

F. Amendments to the final Restoration Plan

Describes the process for amending the final plan. **Mark F. (2 pgs)**

Appendices

A. Restoration options

Summarizes all options and suboptions. The descriptions will be more detailed than those in the Restoration Framework. **Various authors (70 pgs)**

B. Charter of the Public Advisory Group

Copy of the Public Advisory Group charter **Editor**

List of PAG principal interests Editor

List of current PAG members and their affiliation Editor

C. List of other publications **Editor**

(i.e., 1990 Progress Report, etc...)

D. Court settlement documents **Editor**

E. Glossary **Editor/Chris**

Brochure

Annotation

The brochure summarizes the draft plan and includes the comment sheet for the plan. It is a stand-alone summary that can be distributed separately from the plan for those who are uninterested in reading the full document. **Bob L./Sandy/Editor/Illustrator (2-4 newspaper size pages)**

d:\sandy\aoutline.tc

DRAFT ALTERNATIVE THEMES 10/30/92

	Alternative 1 Natural Recovery	Alternative 2 Protection	Alternative 3 Limited Restoration	Alternative 4 Moderate Restoration	Alternative 5 Expanded Restoration	Alternative 6 Comprehensive Restoration
Theme[1]	No action other than monitoring.	Protect injured resources and services from further degradation or disturbance in order to complement natural recovery.	Use only the most effective techniques to protect and restore injured services and resources injured at a population level.	Allow for all reasonable actions to protect and restore injured services and resources injured at a population level.	Use only the most effective techniques to protect, restore, and enhance all injured resources and services.	Allow for all reasonable actions to protect, restore, and enhance all injured resources and services.
Variables[2]: 1. Injury	N/A	All injured resources and services. Includes sublethal effects and injuries not well documented.	Limited to resources injured at a population level and injured services.	Limited to resources injured at a population level and injured services.	All injured resources and services. Includes sublethal effects and injuries not well documented.	All injured resources and services. Includes sublethal effects and injuries not well documented.
2. Knowledge of Recovery	N/A	Known and unknown.	Known.	Known and unknown.	Known and unknown.	Known and unknown.
3. Effectiveness of Restoration Activities	N/A	Most certain to prevent further degradation or decline.	Most certain to produce the greatest improvement in rate and/or degree of recovery or prevent further degradation or decline.	Reasonably certain to produce at least moderate improvement in rate and/or degree of recovery or prevent further degradation or decline.	Most certain to produce the greatest improvement in rate and/or degree of recovery or prevent further degradation or decline.	Reasonably certain to produce at least moderate improvement in rate and/or degree of recovery or prevent further degradation or decline.
4. Geographic Constraint	N/A	Within EVOS area only.	Within EVOS area only.	May include areas outside EVOS.	Within EVOS area only.	May include areas outside EVOS.
Settlement Characteristics	N/A	Direct Restoration	Direct Restoration	Direct Restoration, Replacement, and Acquisition of Equivalent Resources	Direct Restoration, Replacement, Acquisition of Equivalent Resources, and Enhancement	Direct Restoration, Replacement, Acquisition of Equivalent Resources, and Enhancement

[1]All alternatives include monitoring.

[2]Major variables used to construct alternatives. Other factors have been considered in the evaluation of options.

14.2.1

STATEMENT TO: PUBLIC ADVISORY GROUP

Mr. Chairman:

I am the Native Land Owners representative. I am from the Village of Chenega Bay. In my capacity as President of Chenega Corporation, and a member of the Chenega Bay IRA Council, I have met with Native representatives of Tatitlek, Port Graham, English Bay, Eyak, Valdez, Seward, Chugach Alaska Corporation, and the regional nonprofit, Chugachmiut, to discuss the 1993 draft work plan. I have shared my views with them, and I now share them with you. The draft work plan is, in my opinion, too heavily weighted toward agency involvement, with little indication that contracts outside the agencies will be awarded.

Mr. Chairman, I believe that this Group, which is charged under the MOU with responsibility of advising the Trustees Council, must advise the Trustees Council that a significant population of the residents of the impacted area are ready, willing, and able to undertake many of the projects contained within the 1993 draft work plan. I believe that we should send a message to the Trustees Council that the Native landowners are ready, willing, and able to carry out many functions which the agencies propose. We can do it, and in the process, cut out a lot of delay, a lot of expense, and involve the local population in many of these projects.

Because my interest group is comprised of the largest private landowners in the affected area, it is clear that we can control costs, including logistical support, because we are already there. Timeliness is a key element of the restoration process. I am speaking for my constituents when I say that we can respond in a timely manner to restoration goals for projects which are to be approved by the Trustees. In addition, we have an intimate knowledge of the areas impacted. Our people have been active participants in the response to the oil spill since the first days of the spill. The impacted areas are of vital importance to us.

Today, I want to impress upon the Public Advisory Group that the goal of restoration of natural resources and the restoration or replacement of services supplied by those natural resources is of the highest priority to us. It is our common goal. I am concerned that the 1993 draft work plan, laudable in its purpose, may result in something less in its execution. I am concerned that agencies may change the projects which we recommend in this work plan into supplemental appropriations or additions to their budgets. As the body which is intended to advise the Trustees Council, we must not let this happen. We must let the Trustees Council know that the settlement with Exxon is only the beginning. The restoration process must be timely, cost efficient, and involve the Native landowners. I am requesting that we advise the Trustees Council to direct the agencies to make certain that the Native interests have

a significant role in the restoration projects to be funded for 1993 and beyond.

Charles W. Totemoff

RESOLUTION OF THE PUBLIC ADVISORY GROUP

RESOLUTION NO. _____

WHEREAS the United States of America and the State of Alaska entered into a Memorandum of Agreement and Consent Decree ("MOA") on August 28, 1991, in which the United States and the State of Alaska agreed to act as co-equal trustees; and

WHEREAS the MOA provided that all future Natural Resource Damage Recoveries from Exxon must be used "for purposes of restoring, replacing, enhancing, rehabilitating or acquiring the equivalent of natural resources injured as a result of the oil spill and the reduced or lost services provided by such resources;" and

WHEREAS the trustees for the State of Alaska and the United States of America entered into a Memorandum of Understanding ("MOU") on October 1, 1992, the purpose of which MOU was to confirm the establishment of and the authority granted to the Exxon Valdez Oil Spill Trustee Council; and

WHEREAS the MOU confirms in writing that the Trustees Council may take any action consistent with applicable law, and other authority "necessary to restore the natural resources injured, lost or destroyed as a result of the oil spill; and

WHEREAS the Trustees Council established, pursuant to the MOU, appropriate policies and procedures, including standards and procedures "for meaningful public participation, including the receipt of advice by the Council of advice from the Public Advisory Group on behalf of the Trustees;" and

WHEREAS the federal members of the Trustees Council and the state members of the Trustees Council are to take action in order to release settlement funds and transfer those funds to the United States Department of Interior Natural Resource Damage Assessment and Restoration Fund and to an account designated by the State of Alaska, respectively with the Trustees Council sharing the expectation that the federal portion of the budget will be completed within thirty (30) days of receipt in Washington D.C.; and

WHEREAS the 1993 draft work plan has been reviewed and submitted for public comment and for advice from the Public Advisory Group on behalf of the Trustees; and

WHEREAS the Public Advisory Group believes that significant participation in restoration contracts is a necessary component, pursuant to the MOU, in order to restore, replace, enhance, rehabilitate, or acquire the equivalent of natural resources

injured as a result of the oil spill, and the reduced or lost services provided by such resources; and

WHEREAS the 1993 Draft Work Plan appears heavily in favor of agency-control of all work projects;

NOW THEREFORE BE IT RESOLVED BY THE PUBLIC ADVISORY GROUP that the Trustees direct the Restoration Team and agencies to work with Native landowners in the impacted area to be certain that a significant role in 1993 work projects is contracted to such entities; and

BE IT FURTHER RESOLVED that the Public Advisory Group advise the Trustees Council accordingly.

ADOPTED the 2nd day of December, 1992, by a vote of _____ in favor, _____ against, and _____ abstained.

_____
Secretary

ATTEST:

_____
Chairman

14.2.1

VALDEZ CHARTER BOAT ASSN.

November 30, 1992

Ms. Donna Fischer
P. O. Box
Valdez, AK 99686

Dear Donna,

As local businessmen whose investments are directly impacted by commercial, sports fishing and tourism we are actively seeking your assistance to solicit funding for projects to restore our rapidly deteriorating wild stocks.

Recent research brought to my attention that there is a serious need to evaluate not only our numbers for long term survival but the reasons for the decline. From the periods of 1987 to 1991 the Pink and Chum Salmon escapement counts in the eastern Prince William Sound district reflects a fairly consistent average. (Compilation of material attached). The 1992 escapement count for this same region has seen an alarming decrease.

There are several points that made a direct link to the 1989 Exxon Oil Spill-

a. Mr. Sam Sharr (ADF&G research biologist - Cordova) states that all eastern sound salmon fry (small fish) depart the sound via the western corridor. In 89 the fry moved through the corridor as usual, oil and all.
The return time line is three years, the 92 decline in all probability could be from the mortality of the fry traveling through the oil.

b. Due to lack of funding, research data is not available for the Coho wildstocks of the eastern district. It is appalling that the state has left a very vital component of the fisheries to luck. Addressing longevity of wildstock, should man made stock suffer some devastation could be a key to survival of a species. Several Valdez sportsfishermen have noted a tremendous decline in 92 Coho wildstock common to the eastern district; ie: Irish Cove, Sunny Bay, Hells Hole, St. Mathews Bay and Bear Trap Bay. The impact of loss of wildstock will have economic impact for Valdez and Cordova in both commercial and sports fishing. The subsistence fishing for the village of Tatitlek will also have direct impact.

Eastern PWS District Pink and Chum Salmon Escapement counts

(Orca Inlet, Simpson & Sheep, Gravina, Fidalgo, Valdez Arm/Port Valdez)

PINK SALMON			1965-1989 average (422,105)			
Year	** Orca It.	** S & S	** Gravina	** Fidalgo	Pt. Vlz/ Vlz Arm	Total
1992	2,258	15,264	33,512	37,295	116,054	204,383
1991	8,940	62,820	118,510	132,550	151,560	474,380
1990	6,350	55,610	113,360	109,520	158,820	443,660
1989	9,790	45,150	106,900	59,890	138,000	359,730
1988	4,000	64,480	95,280	81,070	119,370	364,200
1987	27,700	91,840	120,530	115,360	159,140	514,570
CHUM SALMON		1965-1990 average (94,661)				
1992	341	2,258	8,503	11,023	15,897	38,185
1991	200	3,730	20,970	43,010	18,450	86,360
1990	1,120	10,770	37,170	17,730	48,310	115,100
1989	1,120	18,740	36,420	23,700	32,100	112,080
1988	1,400	38,690	93,750	33,110	91,970	258,920
1987	2,230	38,100	50,440	29,680	63,170	183,620

** Designates areas that are wildstock

The Valdez Arm and Port Valdez would not see such a smaller reduction due to the hatchery productions.

This information can be located in the following Annual Commerical Fishing Management Reports.

14.2.1

CORDOVA DISTRICT FISHERMEN UNITED

P.O. Box 939

Cordova, Alaska 99574

Phone (907) 424-3447 Fax (907) 424-3430

November 16, 1992

Draft Work Plan Comments
Exxon Valdez Trustee Council
645 "G" Street
Anchorage, Alaska 99501

Dear Sirs:

The Board of Directors for Cordova District Fishermen United has reviewed the Exxon Valdez Restoration Draft 1993 Work Plan and offers the following comments on the work plan proposals. Since the actual restoration plan will not be completed prior to the 1993 field season, CDFU suggests that priority be given to proposals that are time-critical. We are primarily concerned with restoration projects related to the impacts on commercial fisheries in Prince William Sound (PWS), especially those concerning pink, sockeye and chum salmon, and Pacific herring.

Considering the time-critical factor, it is extremely disappointing that the 1993 Work Plan does not include a herring injury study. This omission is particularly puzzling since the Summary of Injury in Appendix A repeats the same information which was included in the 1992 Restoration Framework (Volume I):

> "A large percentage of abnormal embryos and larvae were found in samples from oiled areas of Prince William Sound collected during the 1989 reproductive season. Larvae in oiled areas also had a greater incidence of eye tumors. Analysis of histopathological abnormalities in tissues of adult herring reveal the occurrence of some lesions whose presence would be consistent with exposure to oil. Whether the adult population has been affected by these larval injuries and lesions *will not be determined until the 1989 and 1990 cohorts return to spawn in 1992 and 1993.*"

CDFU strongly recommends that the Herring Injury study (Fish/Shellfish Study Number 11) proposed in the 1992 Draft Work Plan be incorporated and funded in the 1993 Work Plan. Of all of the currently proposed projects, none has such a narrow window of opportunity as a herring injury project. During this past year, it was noted that the three-year age class of herring was missing from the schools of fish harvested in Prince William Sound. This is the age class which will be returning in 1993 to spawn as four-year olds. If, indeed there has been injury to these herring stocks, it is essential that we have a study to examine and assess the extent of the damage. The Summary of Injury recognizes that Pacific herring stocks have been adversely affected by oil, but we have no idea to what degree. A herring injury study is extremely time-critical and should be given special consideration and priority.

In addition to Pacific herring, CDFU is also concerned that there are no proposals to continue coded-wire tag recovery projects. The 1992 Work Plan included two coded-wire tag recovery projects: Fish/Shellfish Study 3, was closed out this year and the other, Restoration Project 60AB was funded only for the 1992 field season. Coded-wire tag studies provide accurate, real-time information for estimating catch contributions on a stock by stock basis. Many salmon stocks in western PWS were impacted by the oil spill and these same salmon runs are heavily utilized by commercial, sport and subsistence users. Restoration of affected stocks can best be accomplished through stock-specific management practices which reduce interception of injured wild salmon populations. There are a number of coded-wire tag projects which have been implemented to identify and monitor various pink and sockeye salmon stocks. Unfortunately, the investment of time, money and effort will be wasted due to a lack of funding for recovering these coded-wire tags and analyzing the data. At a minimum, CDFU encourages the Trustee Council to consider extending the coded-wire tag recovery and analysis program for pink salmon for a few more seasons so that local fisheries and hatchery managers have a more complete data set for making critical mixed-stock management decisions.

The time-critical factor is also significant to projects 93003, 93004 and 93024. Project 93003, "Pink Salmon Egg to Pre-emergent Fry Survival in Prince William Sound," is necessary to preserve the continuity of data that has been collected since 1989. According to the Summary of Injury:

> "In the autumn of 1989 egg mortality in oiled streams averaged about 15 percent, compared to about 9 percent in unoiled streams. *Subsequently, egg mortality has generally increased. In 1991 there was a 40 to 50 percent egg mortality in oiled streams.*"

Wild pink salmon stocks account for approximately 10% of the total annual pink salmon returns to PWS. Project 93003 is important in order to assess the persistence of oil-related damages to wild pink stocks. It will also provide valuable information for restoring injured populations and assist resource managers in formulating future harvest strategies.

Project 93004, "Documentation, Enumeration, and Preservation of Genetically Discrete Wild Populations of Pink Salmon Impacted by EVOS in Prince William Sound," is also time-critical. This project presents an opportunity to continue monitoring the damage and subsequent recovery of wild salmon stocks in PWS and provides a valuable management tool for managing the hatchery/wild mixed stock fishery. Project 93004 not only addresses the immediate restoration problems of wild pink salmon stocks, but also provides a permanent database of information that will be used for restoration and enhancement projects far into the future.

Project 93024, "Restoration of the Coghill Lake Sockeye Salmon Stock," is a project of particular interest to fishermen of PWS. Historically, the Coghill Lake sockeye run has been the backbone of the PWS sockeye fishery. Since 1988, sockeye returns to Coghill Lake have declined from an average of 250,000 fish to around 25,000 in 1991. Since the Coghill Lake population was distressed at the time of EVOS, outmigrating juvenile smolt which encountered oil may have contributed to further decreases in the sockeye returns.

The time-critical factor for the Coghill Lake restoration project is two-fold. First, immediate action needs to be taken in order to prevent further declines in the sockeye population. The fertilizing materials and expertise are in place and federal approval of the project is forthcoming, all that is needed is the funding to carry out the project. Secondly, there is a very narrow optimum time when application of the fertilizer is most effective. The optimum time for fertilizer application is during a few weeks in the spring at the beginning of the phytoplankton bloom in the lake. Currently, the food resources in Coghill Lake are very low and cannot support many sockeye fry. Fertilizing the lake will help jump-start the natural nutrient cycle until the normal nutrient input from salmon carcasses is revitalized.

In addition to these time-critical projects, CDFU supports the intent and objectives of projects 93025, 93028, 93051, 93060, 93061 and 93063. Project 93025, "Montague Island Chum Salmon Restoration," and project 93028, "Restoration and Mitigation of Wetland Habitats for Injured Prince William Sound Fish and Wildlife Species," are two examples of equivalent resources which may be enhanced to replace resources lost to EVOS. Rehabilitating chum spawning areas on Montague Island will help to reestablish wild stocks and preserve the genetic diversity of wild chum populations in PWS. In addition, this project has the potential for producing up to 300,000 pounds of chum salmon for the common harvest fishery, which could enhance the fishing economy of Cordova. Project 93028 would create wetlands habitat on Montague Island for anadromous fish and waterfowl by creating pools and ponds in riparian areas and flood plains uplifted by the 1964 earthquake.

Project 93051, "Habitat Protection Information for Anadromous Streams and Marbled Murrelets" addresses two critical issues important to CDFU. The State of Alaska maintains a catalog of anadromous fish streams which is a valuable resource for fisheries management, but the catalog is far from complete. It is currently estimated that approximately 50% of the anadromous fish streams in PWS have been identified and cataloged. Project 93051 is intended to be a comprehensive survey of lands throughout the spill-affected area and could provide valuable information to update the current anadromous stream catalog. This project will also identify and classify critical anadromous fish habitat for future restoration, protection, enhancement or acquisition measures. The marbled murrelet is a seabird which was heavily impacted by the oil spill and populations are still depressed. Marbled murrelets are occasionally encountered by commercial fishermen and are considered "endangered" in California, Oregon and Washington and "threatened" in Alaska. Project 93051 would gather data which can be used to restore injured murrelet populations through protection of nesting habitat.

Project 93063 will build upon data collected during the 1991 and 1992 field seasons which identified fifteen sites with potential for developing spawning channels. Funding for 1993 is to close out the project, analyze the data and prepare project designs for those sites most suitable for spawning channels. This project will ultimately provide alternative habitat for wild pink and chum stocks and reduce egg mortality and sub-lethal effects resulting from spawning in oil contaminated streambeds.

Finally, CDFU supports the funding of Project 93060, "Accelerated Data Acquisition," and Project 93061, "New Data Acquisition." These projects are related to identifying, evaluating and prioritizing critical habitat areas for protection and/or acquisition and will provide the basic information necessary for making informed decisions for selecting habitat for purchase from willing sellers. Project 93064, "Habitat Protection Fund" is essential to the overall plan to acquire threatened critical habitat. CDFU supports the use of restoration

funds to acquire imminently threatened areas and urges the Trustee Council to approve funding for the Habitat Protection Fund. Habitat acquisition has been identified as a primary means for preventing future harm and assisting the recovery of resources damaged by the oil spill. CDFU is particularly interested in habitat acquisitions in the Port Gravina and Port Fidalgo areas, and in Nelson, Simpson and Sheep Bays in Orca Bay in Prince William Sound.

Over the past two years, the scope of projects included in each subsequent work plan has rapidly narrowed. Appendix B, Evaluation of the Proposed Projects by the Chief Scientist presents comments by Dr. Spies on the fifty projects included in the 1993 Work Plan, but provides the public with no information on other projects which were submitted to the Trustee Council. Fisheries resources were among the most obvious resources impacted by EVOS, but only a handful of project proposals in the 1993 Work Plan actually deal with identifying injured fish populations and mitigating damages. For example, the Summary of Injury in Appendix A is quite clear in it's assessment of damage to Pacific herring, yet no herring injury project was funded for 1992 or even proposed for 1993.

Obviously there is a great gap between what is submitted to the Council and what ends up in the condensed and abridged version of the restoration work plan. CDFU is disappointed with the lack of true peer review in evaluating project proposals and the authority given the Chief Scientist to determine which projects are worthy of funding and which aren't. CDFU suggests that future work plans include a listing of all project proposals submitted to the Chief Scientist for review and comments describing why each proposal was rejected from further consideration. With only fifty projects to choose from in the 1993 Work Plan, it makes it very difficult to offer meaningful comment on areas that we feel need to be addressed.

CDFU appreciates the opportunity to comment on the 1993 Work Plan and will be actively participating in future phases of the restoration planning process.

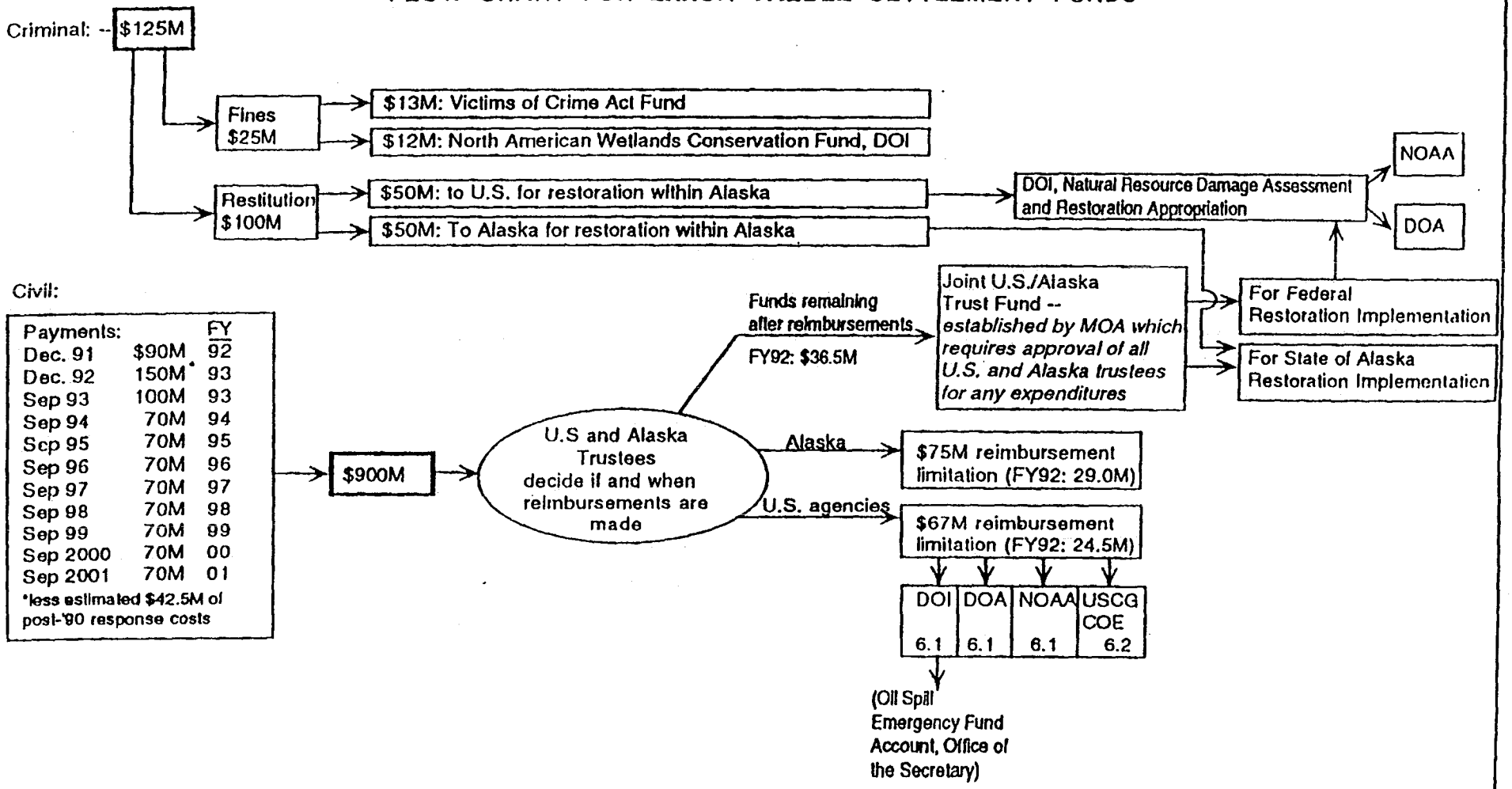
Sincerely,

CORDOVA DISTRICT FISHERMEN UNITED

Mary McBurney, Executive Director

cc: Senator-Elect Georgianna Lincoln
Senator Curt Menard
Senator Jay Kerttula
Representative-Elect Harley Olberg
ADF&G Cordova Office
UFA
UCIDA
Area K Seiners

FLOW CHART FOR EXXON VALDEZ SETTLEMENT FUNDS



Rev. 1/27/92

EXXON VALDEZ OIL SPILL

1993 Projects and Ideas Tables, Introduction and Instructions

INTRODUCTION

The following tables recapture the process that was used to evaluate ideas submitted by the public and trustee agencies for work in 1993, transform some into project descriptions, and then determine whether these projects should be recommended to the Trustee Council for inclusion in the 1993 Draft Work Plan.

A request to the public and trustee agencies for ideas was made in April and idea suggestions were accepted through most of June. While the Restoration Team requested that ideas be submitted on a standard prepared format, all correspondence was evaluated to determine whether it contained statements which could be considered to be "ideas". Thus any suggestion proposing any damage assessment or restoration activity (including purchase of land or moratoria on development of land) was considered to be an idea. Each piece of correspondence received a document identification number. Each significant comment or idea within a document was assigned an extension number. Critical information about each document, comment and idea was recorded in a data base. Sometimes precisely the same idea would be submitted more than once and would be noted as a duplicate. Similar ideas would often be combined and evaluated as a group. These ideas or groups of ideas were then judged against a set of criteria which determined what would then be developed as three page brief project proposals for inclusion in the 1993 Draft Work Plan. Lead trustee agencies or subgroups of the Restoration Team were then assigned to write the project descriptions based primarily upon their areas of resource management responsibility. Thus, an idea, whether received from the public or an agency, would nevertheless be developed into a proposal by a trustee agency.

The resulting proposals were evaluated according to technical merit first and then as to whether they should be part of the Restoration Team's recommendation to the Trustee Council for inclusion in the 1993 work plan.

Project/Idea Tables

The project/idea tables should enable anyone to track the fate of any idea submitted. In these tables, initials of one of the trustee agencies appear in the lead agency column. An explanation of these initials is found on the cover page for this and every table. The lead agency for some projects has yet to be determined and is purposefully left blank. The recommendations factor column displays a numerical code for the criteria which were used to evaluate an idea or group of ideas prior to preparation of a three page brief proposal. Explanation of the codes appears at the bottom of each

page. If ideas were not legal, technically feasible, or linked to an EVOS-related injury, they were rejected. If they were a damage assessment project and previously funded for closeout in 1992, or attempted to assess damage where injury was not apparent, they were rejected. A restoration idea was not recommended if there was no apparent restoration endpoint. A restoration plan is being prepared against which ideas will later be compared. Since a plan is not currently in place, restoration ideas which were not time critical or a lost opportunity if not conducted in 1993 were not recommended for funding this year though they may be considered in future years. The evaluation comments column to the right of the recommendation factors column often explains the factors further.

As noted above, only those ideas which passed the recommendation factors criteria evolved into three page proposals. The voting record column and the costs column is found only in the projects table because these are the project ideas which the RT is forwarding to the Trustee Council for consideration. Within this set however, the RT wished to assign priorities, and they did this by recording each RT member's recommendation as to whether to include a project in the 1993 work plan.

The tables which follow are:

Proposals Table The first column of this table displays the project number assigned to a three-page brief proposal and all of the ideas which were considered in developing that proposal. Each RT member's recommendation to include this in the 1993 work plan is displayed. The cost column displays the current request for this project though the combined costs for all component ideas from which this was developed may have originally been much greater. The project title is usually an attempt to describe a unified concept the project ideas represented.

Rejected Table Often several ideas were combined and then rejected as a whole on the basis of the recommendation factors noted. The data base combined all component ideas with the document listed at the top of each set of document idea numbers appearing in the document identification number column as was done for the project idea table. However, in this case, creation of a unique name was considered unnecessary. Therefore, what appears in the title column in this table is simply the name of the idea with which all other ideas in a set were combined.

Endowment Table A number of ideas were submitted suggesting endowments. This table lists these by document identification number. These ideas were not assigned to a specific project, but will be evaluated by a subgroup of the Restoration Team for presentation later to the Trustee Council.

Ideas Table, Sorted by Document Identification Number This table indicates whether a document was combined with another and whether lead documents were rejected or passed on to the 3 pager stage.

Ideas Table, Sorted by Idea Title This table contains the same information as the previous one, but allows someone to determine the fate of an idea when the user does not know the submitter's name or the document identification number.

Correspondence Table, Sorted by Submitter's Name A submitter will go to this table to find the document identification number and extension assigned to his or her idea. If the idea is a duplicate, note the identification number of the idea of which it is a duplicate. These numbers will be necessary in order to track the document in other tables.

INSTRUCTIONS FOR USING THE TABLES

1. Submitters trying to find the fate of their ideas would first look up their names in the correspondence table. Curious table users who did not submit ideas could look up title ideas in the ideas table sorted by title. Both would then determine the document identification number of the idea in which they were interested.

2. Users would then proceed to the ideas table sorted by document identification number. If the idea in question were combined with another, the users would then look up that lead identification number to determine the fate of all projects combined with the lead number. Projects which passed on to the 3 page project proposal stage would note the project number to which the approved ideas had been assigned.

3. Using the project number for passed ideas, the table user could then go to the project table, determine what other projects had been combined with theirs and the RT recommendations on that project.

4. For rejected ideas, the table user could go to the rejected tables to determine what other ideas had been combined into a single set, and then rejected and why.

EXXON VALDEZ OIL SPILL

1993 Proposals Table

This table allows users to determine what ideas were used to prepare 1993 brief project proposals by noting the contributing document idea numbers. Use these numbers to go to the "Ideas Table, Sorted by Document Identification Number" for more information. The "Proposals Table" also displays recommendation factors and evaluation comments which were considered before requesting preparation of brief proposals for these ideas. An absence of entries in the factors or comments columns indicates a good fit with criteria. In some cases the evaluation comments were more extensive than could be supported by the computer program used to create these tables. In these few instances, the complete comments are available upon request. In most cases, the designated lead agency prepared the brief proposal even if it was based on ideas submitted exclusively by the public. In several cases no lead agency is designated. These proposals were usually prepared by work groups set up by the Restoration Team. The Voting Record refers to whether individual Restoration Team members would like to see a project included in the 1993 work plan based on review of the brief project proposal. Cost refers to the current proposed cost regardless of costs appearing in the contributing ideas.

ABBREVIATION KEY:

FIELD	CODE	EXPLANATION
Lead Agency	ADEC	Alaska Dept. of Environmental Conservation
	ADFG	Alaska Dept. of Fish and Game
	ADNR	Alaska Dept. of Natural Resources
	DOI	United States Dept. of the Interior
	NOAA	National Oceanic and Atmospheric Administration
	USDA	United States Dept. of Agriculture

September 1992

Exxon Valdez Restoration 1993
Project Ideas

09/10/92 18:03:58

Project Num. Document ID#	Project Title	Lead Agency	Recommend. Factors	Evaluation Comments	Voting Record NOAA	ADNR	USDI	ADEC	USDA	ADFG	Cost
93001 920615298.28 920602084. 1 920615298.12	Recreation Resources Damage Assessment	USDA	6,	EVOS-linked impact unknown. Tailor study to determine whether injury has occurred to recreational services.	N	N	N	N	N	N	609600.
93002 920615297.32	Sockeye Overescapement	ADFG	7,		Y	Y	N	Y	Y	Y	714600.
93003 920615258. 3 920615297.37	Pink Salmon Eggs to Pre-Emergent Fry Survival in Prince William Sound	ADFG		Moved from damage assessment to management action. Valuable information will be gained on a yearly basis.	Y	Y	Y	Y	Y	Y	686000.
93004 920615297.33 920615298.42	Documentation, Enumeration, and Preservation of Genetically Discrete Wild Populations of Pink Salmon Impacted by EVOS in Prince William Sound	ADFG		Move from Damage Assessment to Management Action. Target pink salmon only - one year study.	Y	Y	N	Y	Y	Y	899100.
93005 920615296. 3 920615298.22 920615273.10 920615273.11 920601058.12 920615298.18 920601051. 3	Cultural Resources Information, Education and Interpretation	USDA		Develop brief 3 page description for public education.	Y	Y	Y	Y	Y	Y	400900.

KEY TO RECOMMENDATION FACTORS

1 = No linkage to Exxon Valdez Oil Spill, 2 = Not technically feasible, 3 = Inconsistent with laws or policies, 4 = Project previously funded for close-out, 5 = 1993 Close-out project, 6 = New Project where injury is apparent, 7 = Damage assessment continuation, 8 = No restoration endpoint, 9 = Not time critical 10 = No lost opportunity if not conducted in 1993, 11 = Involves long-term commitment.

Project Num. Document ID#	Project Title	Lead Agency	Recommend. Factors	Evaluation Comments	Voting Record NOAA	ADNR	USDI	ADEC	USDA	ADFG	Cost
93006 920615273. 8 920615273. 9	Site-specific Archaeological Restoration	DOI		Ensure prioritization of most important sites.	Y	Y	Y	Y	Y	Y	258600.
93007 920615298.20 920615273.14 920615296. 4	Archaeological Site Stewardship Program	DOI			Y	Y	Y	Y	Y	Y	193300.
93008 920615273.12 920615273.13	Archaeological Site Patrol and Monitoring	DOI		DOI-USFWS	Y	Y	Y	Y	Y	Y	295800.
93009 920615298.25 920622326.12 920615298.11 920615298.39 920612348. 4 920615298. 6 920604104. 1 920612237. 5 920604114. 1 920615298. 5 920622326.14 920622326.13 920615298. 7 920615298. 4 920615298. 9 920615298.26	Public Information, Education and Interpretation	USDA		USDA is lead - cooperate with others. Should have wide range of activities, but no construction.	Y	N	Y	Y	Y	Y	316700.

KEY TO RECOMMENDATION FACTORS

1 = No linkage to Exxon Valdez Oil Spill, 2 = Not technically feasible, 3 = Inconsistent with laws or policies, 4 = Project previously funded for close-out, 5 = 1993 Close-out project, 6 = New Project where injury is apparent, 7 = Damage assessment continuation, 8 = No restoration endpoint, 9 = Not time critical 10 = No lost opportunity if not conducted in 1993, 11 = Involves long-term commitment.

Project Num. Document ID#	Project Title	Lead Agency	Recommend. Factors	Evaluation Comments	Voting Record NOAA	ADNR	USDI	ADEC	USDA	ADFG	Cost
93010 920615273.19 920615279.18	Reduce Disturbance Near Murre Colonies Showing Indications of Injury from the EVOS	DOI			Y	N	Y	N	Y	N	56800.
93011 920615297.30	Develop Harvest Guidelines to Aid Restoration of River Otters and Harlequin Ducks	ADFG			Y	Y	N	Y	Y	Y	11200.
93012 920615297.35	Genetic Stock Identification of Kenai River Sockeye Salmon	ADFG	1		Y	Y	N	Y	Y	Y	300600.
93013 920615297.39 920615297.40	Combined with 93004	ADFG									
93014 920615297.17	Quality Assurance for Coded Wire Tag Application in Fish Restoration Projects	ADFG			Y	N	N	Y	Y	Y	94800.
93015 920615297.43	Kenai River Sockeye Salmon Restoration	ADFG	1		Y	Y	N	Y	Y	Y	732600.
93016 920615294. 5	Chenega Chinook and Coho Salmon Release Program	ADFG	9,	EVOS-linked impact unknown. Technical feasibility unknown. Needs to be run through Regional Planning Team and obtain licensing,etc. Not time critical	Y	Y	N	Y	Y	Y	25900.

KEY TO RECOMMENDATION FACTORS

1 = No linkage to Exxon Valdez Oil Spill, 2 = Not technically feasible, 3 = Inconsistent with laws or policies, 4 = Project previously funded for close-out, 5 = 1993 Close-out project, 6 = New Project where injury is apparent, 7 = Damage assessment continuation, 8 = No restoration endpoint, 9 = Not time critical 10 = No lost opportunity if not conducted in 1993, 11 = Involves long-term commitment.

Project Num. Document ID#	Project Title	Lead Agency	Recommend. Factors	Evaluation Comments	Voting Record NOAA	ADNR	USDI	ADEC	USDA	ADFG	Cost
93017 920615273.37 920615294. 6 920615297.10	Subistence Restoration Project	ADFG		To coordinate with other MMS studies and Interior and with Health Task Force. Focus on involving local communities and on "believeability".	Y	Y	Y	Y	Y	Y	281200.
93018 920615297.28 920615298.34	Enhanced Management for Wild Stocks in Prince William Sound, Special Emphasis on Cutthroat Trout and Dolly Varden	ADFG		Reduce to 2 years; address some technical concerns. Coordinate with Ken Holbrook on technical concerns.	Y	Y	N	Y	Y	Y	285200.
93019 920615270. 2	Chugach Region Village Mariculture Project	ADFG	9,10,	Consistency w/laws and policies unknown. Approved for economic and feasibility studies only. Feasibility is not long-term commitment. Concentra	N	N	N	N	N	N	589100.
93020 920612242. 1 920615297. 7 920514006. 1	Bivalve Shellfish Hatchery and Research Center	ADFG	9,10,	Approved - for feasibility study for bivalves.	Y	N	N	Y	N	Y	55700.
93021 920611233. 2	Restoration of Murres by Way of Transplantation of Chicks-Feasibility Study	DOI		Technical feasibility unknown.	N	N	N	N	N	N	
93022 920611233. 1	Evaluation to Feasibility of Enhancing Productivity of Murres by using Decoys, Dummy Eggs, and Recordings of Murre Calls to Simulate Normal Densities	DOI		Technical feasibility unknown.	Y	Y	Y	Y	Y	Y	281000.

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93023 920615291. 2 920615297. 6 920615294. 1 920618316. 2	Combined with 93038	ADEC		Funding contingent upon feasibility study results.							
93024 920615297.72	Restoration of the Coghill Lake Sockeye Salmon Stock.	ADFG		Drop from 93 budget Forest Service portion of cost, as it is already paid for. (A portion of FS budget to be dropped. Work with F.S. biologist. KH)	Y	Y	N	Y	Y	Y	191800.
93025 920615298.37	Montague Island Chum Salmon Restoration	USDA			Y	Y	N	Y	Y	Y	81500.
93026 920615297.48	Fort Richardson Hatchery Water Pipeline	ADFG	11	Is a replacement action for lost services. Is also an exception to long-term commitment criteria.	N	N	N	Y	Y	Y	3617000.
93027 920615294. 3 920528045. 1	Combined with 93038	ADEC	11	Budget estimate seems very low. Type A manual pick-up believed to be not appropriate. Machine clean-up needed, so also conisder.							
93028 920615298.35	Restoration and Mitigation of Essential Wetland Habitats for injured Prince William Sound Fish and Wildlife Species	USDA	9,10,	EVOS-linked impact unknown. But consider for limited implementation project.	Y	Y	N	Y	Y	Y	82100.

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93029 920615298.54	Prince William Sound Second Growth Management	USDA	9,10,	Revisit as limited implementation project.	Y	Y	N	Y	Y	Y	62000.
93030 920615297.69	Red Lake Restoration	ADFG	9,10,	Continuation of R113.	Y	Y	N	Y	Y	Y	77200.
93031 920615297.70	Red Lake Mitigation for Red Salmon Fishery	ADFG		ADOL - this would be legal since it would restore services. USDOI - also legal.	Y	Y	N	Y	Y	Y	153700.
93032 920615297.20 920615297.23	Pink and Cold Creek Pink Salmon Restoration	ADFG	9,10,1	Long term commitment is based upon associated bioenhancement of habitat above the stream. Approved for 20 and 23. Rejected for 21 (duplicate form).	Y	Y	N	Y	Y	Y	36100.
93033 920615297.31 920611233. 6 920615279.15 920615273. 2	Harlequin Duck Restoration And Monitoring Study in Prince William Sound, Kenai, Afognak and Alaska Penisula Oil Spill Areas	ADFG		No workshop and to be covered by peer review synthesis. Limit to oiled areas, but consider looking outside oiled areas if critical. Study to also	Y	Y	Y	Y	Y	Y	506600.
93034 920615273.23	Pigeon Guillemot Colony Survey	DOI		Restoration endpoint better defined in 3 pager.	Y	Y	Y	Y	Y	N	165800.

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93035 920615273.17	Potential Impacts of Oiled Mussel Beds on Higher Organisms: Contamination of Black Oystercatchers Breeding on Persistently Oiled Sites in PWS	DOI		Answer to criteria about restoration end-point, 1993 work critical and opportunity lost are all "yes" if tied to mussel beds.	Y	Y	Y	Y	Y	Y	107900.
93036 920615258. 1 920615273. 4	Recovery Monitoring of Intertidal Oiled Mussel Beds in Prince William Sound and the Gulf Of Alaska Impacted by EVOS	NOAA		Focus work on known sites that have previous records (documentation). Tailor new surveys focusing on newly discovered site located by other indivi	Y	Y	Y	Y	Y	Y	404800.
93037 920610230. 1	Experimental Evaluation Of Oiled/control Paired Design Used In Assessing Damage and Recovery of Inter and Subtidal Communities	NOAA		Careful attention to what is an oiled area and what is a control area in the technical approach (Treatment History).	N	N	N	N	N	N	201700.
93038 920615290. 1	Shoreline Assessment	ADEC			Y	Y	Y	Y	Y	Y	520700.
93039 920618316. 3 920610229. 1 920610229. 2 920616307. 1 920615297.19	Herring Bay Experimental and Monitoring Studies	ADFG	9,10,	Approved and combined with 6307, 229-01. Lead Agency ADF&G, cooperate with NOAA. Macrocystis will not survive in upper intertidal; therefore	Y	Y	Y	Y	Y	Y	516100.
93040 920615264. 1	Long term Ecological Recovery Monitoring Program	NOAA		Technical feasibility unknown. ADOL and USDOI believe this is legal.	Y	N	N	N	N	N	234000.

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93041 920615262. 2 920526039. 1	Comprehensive Restoration Monitoring Program Phase II: Monitoring Plan Development	NOAA		Delete implementation portion.	Y	Y	Y	Y	Y	Y	237900.
93042 920615261. 2 920514005. 1 920514001. 1 920615261. 1	Recovery Monitoring of Prince William Sound Killer Whales Injured by the EVOS using Photo Identification Techniques	NOAA		EVOS-linked impact unknown. Combined with 261-01, 005-01 and approved.	Y	N	N	Y	Y	Y	127100.
93043 920615273.15 920615279.14 920601058. 8	Sea Otter Population, Demographics and Habitat Use in Areas Affected by the EVOS	DOI		Approved. Combine with 279-14, 058-08	Y	Y	Y	Y	Y	N	291900.
93044 920615273.16	Combined with 93043	DOI		Only for 1993, not for 1994. Copy to Habitat Protection for information. HPWG should track results.							
93045 920615273.22	Surveys to Monitor Marine Bird and Sea Otter Populations in Prince William Sound During Summer and Winter	DOI		Objective A only. Only PWS boat surveys.	Y	Y	Y	Y	Y	Y	262400.
93046 920615297.14 920615297.15	Habitat Use and Behavior of Harbor Seals in Prince William Sound	ADFG			Y	Y	Y	Y	Y	Y	230500.

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93047 920618315. 1 920612236. 4 920615263. 1 920615259. 1 920615297.12 920615297.24	Recovery of Sediments, Hydrocarbon-degrading Microorganisms, Eelgrass Communities, and Fish in the Shallow Subtidal Environment.	NOAA		Applied Marime Science to write one 3-pager for subtidal.	Y	Y	Y	Y	Y	Y	1000700.
93048 920615298.48	Communication System for Oil Spill Program	USDA	10,	Lead agency FS with ADEC cooperating. Tailor proposal to maintain existing FM system while gathering information on converting to a cellular system.	N	N	N	N	N	N	1.E7
93049 920615273.18 920615279.19	Combined with 93022	DOI		Go to 3-pager and set estimated duration of project at one year only.							
93050 1234567. 9	Update: Restoration Feasibility Study #5 (Identification and Recordation of Information Sources Relevant to Land and Resources Affected by EVOS)				N	Y	N	Y	N	Y	10200.
93051 920615273.25 920615298.53 920612250. 1 920615298.44 920615273.26 920615298.27 920622326.10 920615298.45 920615297.27	Habitat Protection Information for Anadromous Fish Streams and Marbled Murrelets				Y	Y	Y	Y	Y	Y	1562100.

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93052 920615273.30	Identification and Protection of Important Bald Eagle Habitats (Rejected Idea Inadvertently Assigned a Project Number)		9,10,	Compare with other eagle studies for consistency.	N	N	N	N	N	N	188000.
93053 920608184. 1 920608184. 3 920608184. 2 920615290. 2 920615258. 2	Hydrocarbon Data Analysis, Interpretation, and Database Maintenance for Restoration and NRDA Environmental Samples Associated with the EVOS	ADFG		Develop for both state and federal documentation. Forwarded to the GIS Working Group.	Y	Y	Y	Y	Y	Y	105500.
93054 1234567. 6	Duplicate Project Inadvertently Assigned This Number, Withdrawn										
93055 1234567. 7	Duplicate Project Inadvertently Assigned This Number, Withdrawn										
93056 1234567. 8	Duplicate Project Inadvertently Assigned This Number, Withdrawn										
93057 920608191. 1 920615273.34 920615298.47 920612236. 2 920611233. 5	Damage Assessment GIS	ADNR			Y	Y	Y	Y	Y	Y	67500.

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93058	Habitat Protection and Acquisition				N	N	N	N	N	N	0.
920601051. 1 920612246. 1 920615296. 8 920618318. 1 920601058.10 920615279. 8 920615296. 1 920615279. 9 920615257. 1 920615293. 1 920615279.12 920615279.20 920609217. 1 920615288. 1 920615279.21 920601058.11 920601051. 2 920619323. 1 920615295. 1 920619321. 1 920622324. 1 920615297.68 920609221. 1											
93059	Imminent Threat Habitat Protection				Y	Y	Y	Y	Y	Y	42300.
920622326. 1											
93060	Accelerated Data Acquisition				Y	Y	Y	Y	Y	Y	43900.
920603092. 1 920615260. 1 920615298.40 920615297.29 920615298.46											

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93061 1234567. 2	New Data Acquisition				Y	Y	Y	Y	Y	Y	535000.
93062 1234567. 5	Restoration GIS				Y	Y	Y	Y	Y	Y	138400.
93063 1234567. 3	Survey/Evaluation and Instream Habitat and Stock Restoration Techniques for Anadromous Fish				Y	Y	Y	Y	Y	Y	59400.
93064 1234567. 4	Imminent Threat Habitat Protection: Acquiring Land (Set-Aside Money)				Y	Y	Y	Y	Y	Y	5125000.

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EXXON VALDEZ OIL SPILL

1993 Rejected Table

This table allows users to determine what ideas were rejected for inclusion in the 1993 work plan. Similar ideas were combined and considered as a unit. Use the individual document identification numbers to go to the "Ideas Table, Sorted by Document Identification Number" for more information about specific ideas. The "Rejected Table" also displays recommendation factors and evaluation comments which were considered before rejecting these ideas. In some cases the evaluation comments were more extensive than could be supported by the computer program used to create these tables. In these few instances, the complete comments are available upon request. In most cases, the designated lead agency and the title which appears only refer to the lead project with which other documents were combined. For information on other document titles and lead agencies, again, refer to the "Ideas Table, Sorted by Document Identification Number".

ABBREVIATION KEY:

FIELD	CODE	EXPLANATION
Lead Agency	ADEC	Alaska Dept. of Environmental Conservation
	ADFG	Alaska Dept. of Fish and Game
	ADNR	Alaska Dept. of Natural Resources
	DOI	United States Dept. of the Interior
	NOAA	National Oceanic and Atmospheric Administration
	USDA	United States Dept. of Agriculture
Status	R	Recommend Rejection

September 1992

Category Project Type	Document ID#	Title	Lead Agency	Status	Recommend. Factors	Evaluation Comments
Technical Support Services	920511138. 1	Oily Bilgewater/Oily Waste Treatment - Several Oil Spill Communities.		R	9,10,	Linkage to recovery of resources not demonstrated.
Manipulation and Enhancement Terestrial Mammals	920514007. 1	Transplant Project For Deer And Elk	ADFG	R	1,2,	
Manipulation and Enhancement	920514012. 1	Trans-Alaska Pipeline Removal Project	ADNR	R	3,	Outside TC authority. Consistency w/laws and policies is unknown.
Damage Assessment Ecosystem	920515016. 1	Toxicological Profile Of PWS	NOAA	R		EVOS-linked impact unknown. Technical feasibility unknown.
Management Actions Archaeology	920526031. 1	Study Of Petroleum Hydrocarbon Spectra At Selected Sites.	ADNR	R	8,9,10,	EVOS-linked impact unknown. Thousands of samples taken through NRDA.
Damage Assessment Marine Mammals	920526033. 1	Humpback Whale Project	NOAA	R	1,	
Manipulation and Enhancement Fish/Shellfish	920527041. 1	Bivalve Shellfish Rehabilitation Project	ADFG	R	9,10,	Technical feasibility unknown, at best.

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Technical Support Coastal Habitat	920601049. 1 920601049. 2 920601049. 3 920601054. 1 920601065. 1	Coastal Habitat Specimens, University of Alaska Museum	ADNR	R	8,9,11	No need on TS-1. Has carry over money to dispose of. Crchival is rejected. RT will deal with this the week of 7/20. Consider damage assessment by TC
Manipulation and Enhancement Services	920601050. 1	Oil And Grease Separator/Valdez Harbor		R	8,9,10,	Linkage of recovery of resources not demonstrated.
Manipulation and Enhancement Services	920601050. 2	Oil and Grease Separator/Fidalgo		R	8,9,10,	Linkage to recovery of resources not demonstrated.
Manipulation and Enhancement Services	920601050. 3	Oil and Grease Separator/Hazelet		R	8,9,10,	Linkage to recovery of resources not demonstrated.
Manipulation and Enhancement Services	920601050. 4	Valdez Landfill Upgrade		R	1,	
Manipulation and Enhancement Services	920601050. 5	Valdez Recycling		R	1,	

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Manipulation and Enhancement Services	920601050. 6	Valdez Sewage Treatment Plant Upgrade		R	1,	
Manipulation and Enhancement Services	920601050. 7	Valdez Garbage Scow Facilities		R	1,	
Manipulation and Enhancement Services	920601050. 8	Valdez/Remediate Existing Landfills		R	1,	
Manipulation and Enhancement Services	920601050. 9	Valdez Hazardous Waste Collection		R	8,9,10,	EVOS-linked impact unknown.
Manipulation and Enhancement Services	920601050. 10	Landfill Liner		R	1,	
Management Actions Services	920601050. 12	Oil Spill Cooperative/Training Center		R	8,9,10,	EVOS-linked impact unknown.
Management Actions Services	920601050. 13	Valdez Oversight of Oil Industry		R	9,10,	Consistency w/laws and policies unknown. ADOL believes that only items #6 and #7 are linked to restoration of EVOS damaged natural res

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Management Actions Recreation	920601050. 15	Improve Marine Parks	NOAA	R	9,10,11	EVOS-linked impact unknown.
Manipulation and Enhancement Services	920601050. 16	Assist Valdez in Handling Waste Oil		R	8,9,10,	EVOS-linked impact unknown.
Management Actions Services	920601050. 17	Train Valdez Personnel for Environmental Incidents		R	1,	
Manipulation and Enhancement Services	920601050. 18	Improve Public Health Facilities, PWS		R	1,	
Management Actions Fish/Shellfish	920601058. 5	Sockeye Salmon Escapement Evaluation - Ayakuluk River	ADFG	R	9,10,	EVOS-linked impact unknown.
Manipulation and Enhancement Coastal Habitat	920601059. 1 920601061. 1 920601062. 1 920601063. 1	Natural Product Natural Life Restoration	ADEC	R	9,10,	Technical feasibility unknown, at best. Birds do not feed on oligochaetes. Diatomaceous is not a fertilizer. Consistency w/laws and poli

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Management Actions Education	920601064. 1	Cordova Environmental Reporter	USDA	R	10,11	Not most cost effective because of Admin. Public Relations personnel and the PAG is coming on-line along with the general media.
Restoration Monitoring Fish/Shellfish	920603093. 1	Build Research and Monitoring Facilities and Program/Cook Inlet, Kodiak	NOAA	R	9,10,	EVOS-linked impact unknown.
Damage Assessment Terestrial Mammals	920604104. 2	Long-term Epidemiology Study Of Oil Spill Workers	ADEC	R	1,	Technical feasibility unknown. Consistency w/state and federal laws unknown. USDOI - legal. ADOL - illegal, nothing to do with natural res
Management Actions Education	920605137. 1	SAAMS - Alaska Sealife Center	NOAA	R	9,10,11	Legislature funded initial studies.
Damage Assessment Coastal Habitat	920610229. 3	Coastal Habitat Injury Assessment - Intertidal Algae	USDA	R	4,	
Restoration Monitoring Coastal Habitat	920610229. 4	Remote Monitoring Of Intertidal Recovery	USDA	R	9,10,	Technical feasibility unknown.
Damage Assessment Sub-Tidal	920610230. 2	Experimental Studies Of Interaction Between Subtidal Epifaunal Invertebrates	ADFG	R	9,10,	

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Management Actions Birds	920611233. 3	Identification Of Seabird Feeding Areas From Remotely Sensed Data And Impact On Restoration	DOI	R	8,9,10,	Technical feasibility unknown.
Manipulation and Enhancement Birds	920611233. 4	Marbled Murrelet Vocalizations In Conjunction With Artificial Nests	DOI	R	8,	Technical feasibility unknown. We don't believe that nest site habitat is a critical factor.
Damage Assessment Fish/Shellfish	920611234. 1	Herring Embryo Viability Evaluation - Natural and Catastrophic Effects	ADFG	R	4,9,10,	If this were meant to be a restoration idea, then it is not time critical or a lost opportunity.
Damage Assessment Ecosystem	920612235. 1	Cook Inlet Comprehensive Monitoring Program	NOAA	R	9,10,	
Manipulation and Enhancement Coastal Habitat	920612237. 2	Restore Shorelines Damaged By Beach Berm Relocation	ADNR	R	9,10,	EVOS-linked impact unknown. Technical feasibility unknown.
Restoration Monitoring Recreation	920612237. 3	Annual Garbage Cleanup Program for Oil Spill Impacted Beaches		R	8,9,10,11	EVOS-linked impact unknown.
Manipulation and Enhancement Fish/Shellfish	920612243. 1	Paint River Fish Ladder Salmon Stocking Program	ADFG	R	9,10,	EVOS-linked impact unknown. Project technically feasible, but effect of stocking this area (river) is unknown.

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Management Actions Fish/Shellfish	920612244. 1	C-lab-A System For Monitoring Meteorological And Oceanographic Variables That Affect Salmon Growth	NOAA	R	8,9,10,11	EVOS-linked impact unknown.
Technical Support Services	920614300. 1	Build Facilities For Oil Workers Who Work In Karluk Kodiak Area		R	1,	
Manipulation and Enhancement Marine Mammals	920615247. 1	Oiled Wildlife Rehabilitation Center		R	1,	Technically feasible to build center, however, success rate low for past cleaning activities.
Manipulation and Enhancement Fish/Shellfish	920615249. 2	Cutthroat Trout And Dolly Varden Hatchery	ADFG	R	9,10,	
Manipulation and Enhancement Fish/Shellfish	920615249. 3	Shelter Cove, Cordova Restoration Project	ADFG	R	9,10,	EVOS-linked impact unknown.
Management Actions Fish/Shellfish	920615249. 4	Sportfish Biologist For Cordova	ADFG	R	8,9,10,	EVOS-linked impact unknown.
Manipulation and Enhancement Education	920615251. 1	Valdez City Schools		R	1,	

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Technical Support Services	920615252. 1	Tanker Inspection Facility		R	8,9,10,11	EVOS-linked impact unknown.
Technical Support Services	920615253. 1	Oil Spill Response Valdez Cleanup Co-Op		R	8,9,10,11	EVOS-linked impact unknown.
Technical Support Education	920615254. 1	Cold Weather Oil Spill School		R	8,9,10,	EVOS-linked impact unknown.
Technical Support Endowments	920615256. 1	Payoff Debt of Valdez Fisheries Development Association		R	3,	Inappropriate to use civil settlement funds to compensate third party litigation claims.
Damage Assessment Marine Mammals	920615261. 3	Monitoring Of Small Cetaceans In PWS	NOAA	R		EVOS-linked impact unknown. Injury is not apparent.
Restoration Monitoring Fish/Shellfish	920615262. 1 920615273. 32	Distribution Of Prey Species For Apex Predator Species (Murre, Guillemot, Murrelet, Harbor Seal, Etc.)	NOAA	R	9,10,	Reduce focus to design sampling program. Technical feasibility unknown.
Restoration Monitoring Sub-Tidal	920615264. 2	New Field Test of Bioremediation	NOAA	R	9,10,	Consistency w/laws and policies unknown. USDOI - legal. ADOL - this is probably legal but not clear cut; if it addresses current issues it is le

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Category Project Type	Document ID#	Title	Lead Agency	Status	Recommend. Factors	Evaluation Comments
Restoration Monitoring Fish/Shellfish	920615265. 1	PWS Long-Term Monitoring Program-Acute and Chronic Toxicity of Residual Hydrocarbons to Littleneck Clams	NOAA	R	9,10,	EVOS-linked impact unknown.
Manipulation and Enhancement Coastal Habitat	920615266. 1 920615271. 1	Rapid Restoration Of Weathered Crude Contaminated Beach Subsurface Material.	ADEC	R	9,10,	Consistency w/laws and policies unknown; USDOI - legal; ADOL - this project would be legal if it addressed the EVOS, but not if it addressed futur
Manipulation and Enhancement Fish/Shellfish	920615270. 1	Port Graham Salmon Hatchery	ADFG	R	9,10,	EVOS-linked impact unknown.
Restoration Monitoring Terestrial Mammals	920615273. 1	Productivity And Survival Of Brown Bears In Katmai National Park	DOI	R	1,	
Restoration Monitoring Birds	920615273. 3	Determine Status Of Marbled Murrelet Populations In Oiled National Parks	DOI	R	9,10,	
Restoration Monitoring Marine Mammals	920615273. 21	Radio-Telemetry Project To Monitor Recovery Of Sea Otters	DOI	R	9,	
Restoration Monitoring Birds	920615273. 24	Assessment Of Marbled Murrelet Foraging Habitat Requirements During Breeding Season	DOI	R	9,10,	

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Category Project Type	Document ID#	Title	Lead Agency	Status	Recommend. Factors	Evaluation Comments
Restoration Monitoring Birds	920615273. 27	Monitor Population Status Of Seabird Nesting Colonies In The Spill Zone	DOI	R	9,10,	
Habitat Protection and Acquisition Inventory	93052 920615273. 30	Identification And Protection Of Important Bald Eagle Habitats		R	9,10,	Compare with other eagle studies for consistency.
Management Actions Birds	920615273. 31	Development Of Managment Strategies For Enhancing Recovery Rate Of Birds And Sea Otter Populations	DOI	R	9,10,	
Restoration Monitoring Fish/Shellfish	920615273. 33	Hydrocarbons in Mussels From Coastal Gulf of Alaska, Cook Inlet and Shelikof Strait	NOAA	R	9,10,	NOAA has been conducting similar studies since the mid-seventies.
Manipulation and Enhancement Coastal Habitat	920615273. 35	Hydrodynamic Purging of Oil from Contaminated Beaches, PWS.	ADEC	R	10,	Technical feasibilty unknown.
Restoration Monitoring Coastal Habitat	920615273. 36	Fate And Transport Of Subsurface Hydrocarbons In Beach Deposits In PWS	DOI	R	8,9,10,	
Technical Support Services	920615274. 1 920617313. 1	Construction Of Chenega Bay Marine Service Center	ADNR	R	2,9,10,11	Consistency w/laws and policies unknown. USDOI - believes this is legal; ADOL does not since there is no connection to restoring natural resourc

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Management Actions Fish/Shellfish	920615279. 10	Ayakulik River Sockeye Salmon Escapement Evaluation	ADFG	R	9,10,	EVOS-linked impact unknown.
Management Actions Fish/Shellfish	920615279. 11 920601058. 6	Uganik River Fish Weir	ADFG	R	1,	No sockeye overescapement in this system.
Restoration Monitoring Birds	920615279. 16 920601058. 7 920615273. 5 920615273. 28 920615273. 29 920615279. 13	Bald Eagle Nesting Surveys-Alaska Pen. Pacific Coast	DOI	R	9,10,	Technical feasibility unknown.
Manipulation and Enhancement Birds	920615279. 17 920603092. 2 920608200. 1 920615273. 20	Removal Of Introduced Foxes To Restore Breeding Seabirds.	DOI	R	9,10,	
Technical Support Services	920615279. 23	Villages Kitoi Bay Hatchery and Other Site Prevention and Response	ADFG	R	1,	

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Category Project Type	Document ID#	Title	Lead Agency	Status	Recommend. Factors	Evaluation Comments
Manipulation and Enhancement Fish/Shellfish	920615279. 24	Kitoi Bay Hatchery On Afognak Island	ADFG	R	1,	Early Marine Life History studies on Kodiak Island on salmonids showed no injury.
Management Actions Coastal Habitat	920615279. 25	Thirteen Commercial Species Assessment	NOAA	R	8,9,10,	EVOS-linked impact unknown.
Management Actions Archaeology	920615279. 27	Archaeological Outreach-Curator Position.	USDA	R	8,9,10,	
Manipulation and Enhancement Fish/Shellfish	920615279. 29	Enhancement Of The Pacific Herring	ADFG	R	9,10,	EVOS-linked impact unknown. Technical feasibility unknown.
Restoration Monitoring Fish/Shellfish	920615279. 30	Assessment And Quality Assurance Of Shellfish Resources	ADFG	R	9,10,	EVOS-linked impact unknown. Technical feasibility unknown.
Management Actions Education	920615279. 32	Environmental Learning Resource Center	ADNR	R	9,10,11	
Restoration Monitoring Coastal Habitat	920615279. 99	Monitoring Sites - Collector Beaches and Lagoons.	ADFG	R	9,10,	USDOI and ADOL - legal.

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Category Project Type	Document ID#	Title	Lead Agency	Status	Recommend. Factors	Evaluation Comments
Manipulation and Enhancement Air/Water	920615286. 1	Silver Lake Hydropower Project		R	1,	
Manipulation and Enhancement Fish/Shellfish	920615286. 2	Silver Lake Fish Hatchery	ADFG	R	1,	No EVOS-linked impact; technical feasibility unknown. This is tied to Silver Lake Hydro-project. USDOI and ADOL - legal.
Manipulation and Enhancement Air/Water	920615286. 3	Power Creek Hydropower Project	ADNR	R	1,	
Manipulation and Enhancement Air/Water	920615286. 4	Silver Lake to Ellamar to Tatitlek Underwater Intertie	ADNR	R	1,	
Management Actions Sub-Tidal	920615289. 1	Field Study Of Bioremediation Enhancement Treatment Methods	ADEC	R	8,9,10,	
Habitat Protection and Acquisition Inventory	920615291. 1 920615294. 4	Mark 17(b) Easements On Port Graham Land.		R	1,	
Manipulation and Enhancement Archaeology	920615294. 2	Restoration Of Chenega Village Site	ADNR	R	9,10,	EVOS-linked impact unknown. Consistency w/laws and policies unknown. USDOI - legal. ADOL - if they are considered to be archaeologica

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Category Project Type	Document ID#	Title	Lead Agency	Status	Recommend. Factors	Evaluation Comments
Management Actions Archaeology	920615296. 5	Archaeological Restoration-Regional Archaeological Planning	ADNR	R	-08,9,10,	Linkage to recovery of injured resources not demonstrated.
Management Actions Recreation	920615296. 6	Marine Recreation Plan For Spill Area	ADNR	R	9,10,	EVOS-linked impact unknown.
Manipulation and Enhancement Recreation	920615296. 7	Public Use Cabins In State Marine Parks	ADNR	R	9,10,	EVOS-linked impact unknown.
Management Actions Recreation	920615296. 10	Recreation Field Management And Monitoring	ADNR	R	8,9,10,	EVOS-linked impact unknown.
Management Actions Fish/Shellfish	920615297. 1	Restoration Of PWS Rockfish And Lingcod Resources	ADFG	R	9,10,11	EVOS-linked impact unknown.
Damage Assessment Fish/Shellfish	920615297. 2	PWS Herring Egg Loss Survey	ADFG	R	4,	EVOS-linked impact unknown. If this were meant as a restoration idea, then it is not time critical or a lost opportunity.
Management Actions Fish/Shellfish	920615297. 3	PWS Herring Spawn Deposition Survey	ADFG	R	9,10,	EVOS-linked impact unknown.

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Category Project Type	Document ID#	Title	Lead Agency	Status	Recommend. Factors	Evaluation Comments
Restoration Monitoring Fish/Shellfish	920615297. 4 920615297. 5	PWS Herring Tagging Feasibility Study	ADFG	R	9,10,	EVOS-linked impact unknown.
Manipulation and Enhancement Fish/Shellfish	920615297. 9	Lower Cook Inlet Sockeye Salmon Restoration And Enhancement	ADFG	R	9,10,	Technical feasibility unknown.
Technical Support Sub-Tidal	920615297. 11	Develop Protocols For Analysis And Assessment Of Benthic Biological, Physical, And Hydrocarbon Data	ADFG	R	4,	EVOS-linked impact unknown.
Management Actions Terestrial Mammals	920615297. 13	Synthesis Of Information On Ecology And Injury To River Otters In PWS	ADFG	R	4,	EVOS-lined impact unknown.
Technical Support Services	920615297. 16	Development Of Economic Guidelines And Cost Benefit Analysis Of Oilspill Projects For NEPA And TC	USDA	R	9,10,	Duplicative of Walcoff contract and also 1992 funding to Restoration Planning Work Group for analysis.
Restoration Monitoring Coastal Habitat	920615297. 18 920610228. 2	Coastal Habitat Comprehensive Intertidal Monitoring Program	USDA	R	9,10,	A comprehensivwe Natural Recovery Monitoring Project is premature until a final Damage Assessment report is prepared.

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Category Project Type	Document ID#	Title	Lead Agency	Status	Recommend. Factors	Evaluation Comments
Manipulation and Enhancement Fish/Shellfish	920615297. 21	Horse Marine Creek Pink Salmon Restoration	ADFG	R	9,10,11	21 rejected. 297 - 20 and 23 approved.
Manipulation and Enhancement Fish/Shellfish	920615297. 22	Waterfall Creek Pink Salmon Restoration-Fish Improvement	ADFG	R	9,10,	
Restoration Monitoring Fish/Shellfish	920615297. 25	Monitoring For Recruitment Of Littleneck Clams.	ADFG	R	9,10,	
Technical Support Services	920615297. 26	Kitoi Bay Hatchery Oil Spill Equipment Storage	ADFG	R	1,	
Management Actions Fish/Shellfish	920615297. 34	Genetic Stock Identification For Herring In PWS	ADFG	R	9,10,	EVOS-linked impact unknown.
Restoration Monitoring Fish/Shellfish	920615297. 36	Genetic Monitoring of Kodiak Island Sockeye Salmon	ADFG	R	9,10,	Not time critical if other Red Lake projects go through.
Management Actions Fish/Shellfish	920615297. 38	Coded Wire Tagging Of Wild Stock Pink Salmon For Stock Identification	ADFG	R	9,	

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Category Project Type	Document ID#	Title	Lead Agency	Status	Recommend. Factors	Evaluation Comments
Management Actions Fish/Shellfish	920615297. 41 920615297. 42	Adult Tagging To Determine Distribution, Migratory Timing And Rate Of Movement Of Pink Salmon In PWS	ADFG	R	9,	297-42 should be funded by the non-profit fish hatcheries.
Management Actions Fish/Shellfish	920615297. 44 920615297. 46	PWS Spot Shrimp Recovery Management Plan	ADFG	R	9,	EVOS-linked impact unknown.
Restoration Monitoring Fish/Shellfish	920615297. 45	PWS Spot Shrimp Survey	ADFG	R	9,10,	EVOS-linked impact unknown.
Management Actions Fish/Shellfish	920615297. 47	Intertidal/Shallow Subtidal Crustacean (Decapod) Composition	ADFG	R	8,9,10,	EVOS-linked impact unknown. Technical feasibility unknown.
Manipulation and Enhancement Fish/Shellfish	920615297. 71	Fry Rearing To Improve Survival And Restore Wild Pink And Chum Salmon Stocks	ADFG	R	9,10,	
Manipulation and Enhancement Fish/Shellfish	920615297. 73 920615298. 41	Instream Habitat And Stock Restoration Techniques For Anadromous Fish.	ADFG	R	9,10,	

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Management Actions Fish/Shellfish	920615297. 74	Otolith Mass Marking As An Inseason Stock Separation Tool To Reduce Wild Stock Salmon Exploitation	ADFG	R	9,10,	
Manipulation and Enhancement Fish/Shellfish	920615297. 75	Est. An Ecological Basis For Restoring And Enhancing The Mixed-stock Salmon Resources Of PWS.	ADFG	R	9,10,	
Technical Support Services	920615298. 1	Cultural Emergency Response System	USDA	R	8,9,10,	EVOS-linked impact unknown.
Technical Support Services	920615298. 2 920622326. 5 920622326. 11	Multi-agency Library On PWS And Copper River Delta	USDA	R	9,10,	Services already provided by OSPIC.
Technical Support Services	920615298. 3	Oilspill Injured Resources Literature Research And Review	USDA	R	8,9,10,	
Management Actions Recreation	920615298. 10	Protect Resources And Enhance Visitor Enjoyment Through Increased Administrative Presence	USDA	R	8,9,10,	EVOS-linked impact unknown. Technical feasibility unknown.

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Category Project Type	Document ID#	Title	Lead Agency	Status	Recommend. Factors	Evaluation Comments
Management Actions Archaeology	920615298. 17 920601058. 9 920615279. 28 920615298. 21	Nuchek Heritage Interpretive Center	USDA	R	9,10,	EVOS-linked impact unknown.
Management Actions Archaeology	920615298. 19 920615273. 6 920615273. 7 920615279. 31 920615296. 2	PWS Landmarks--Evaluation And Interpretation	USDA	R	9,10,	EVOS-linked impact unknown.
Restoration Monitoring Ecosystem	920615298. 29	Inventory, Monitor, Protect Permanent Monitoring Sites	USDA	R	9,10,	
Restoration Monitoring Birds	920615298. 30	Survey To Determine Abundance Distribution, Habitat And Food Habits Of Staging Shore Birds W Cr Delta	USDA	R	9,10,	Review in context of a monitoring plan.
Restoration Monitoring Birds	920615298. 31	Survey To Determine Distribution, Abundance, Food Habits Of Migratory Waterfowl Staging W. Cr Delta	USDA	R	9,10,	
Restoration Monitoring Birds	920615298. 32	Migratory Shore Birds Staging In Rocky Intertidal Habitats Of PWS	USDA	R	9,10,	

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Category Project Type	Document ID#	Title	Lead Agency	Status	Recommend. Factors	Evaluation Comments
Habitat Protection and Acquisition Inventory	920615298. 36 920615298. 33 920615298. 38 920615298. 43	Stream Channel Type Classification And Fish Habitat Assessment	USDA	R	9,10,	Even though rejected, refer package to HPWG for consideration for habitat identification project. (Rejected by HPWG>)
Technical Support Services	920615298. 49	Oil Spill Restoration Support Service And Facilities	USDA	R	9,10,11	
Management Actions Education	920615298. 50 920601050. 11 920610225. 1 920615298. 23	Environmental Education Center In PWS.	USDA	R	9,10,11	
Habitat Protection and Acquisition Inventory	920615298. 52	Distribution, Abundance, Habitat Use And Phylogeny Of Canada Geese In PWS		R	1,	
Manipulation and Enhancement Recreation	920615298. 55 920601050. 14 920615298. 8 920615298. 14 920615298. 15 920615298. 16 920615298. 24	Low Impact Recreation Development Nellie Juan, College Fiord Wilderness Study Area	USDA	R	9,10,	EVOS-linked impact unknown. These studies are contingent upon the results of the damage assessment recreation proposals for 1993.

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Category Project Type	Document ID#	Title	Lead Agency	Status	Recommend. Factors	Evaluation Comments
Technical Support Services	920616310. 1	Near Island Fisheries Research Center	ADFG	R	9,10,	
Management Actions Education	920617314. 1	Press Release Project On Restoration Program Work	USDA	R	8,9,10,11	
Manipulation and Enhancement Fish/Shellfish	920618316. 1	Mussel Bed Treatment	ADEC	R	2,	ADOL and USDOI - legal.
Technical Support Technical Support	920622326. 2	Full Funding For Oil Spill Recovery Institute	NOAA	R	8,9,10,	
Restoration Monitoring Technical Support	920622326. 3	Full Funding for Cordova Oil Spill Recovery Institute		R	3,	OPA '90 did not authorize permanent facility.
Management Actions Ecosystem	920622326. 4	Testing Of Patch-Response Patch Dependence Hypothesis-Testing of an Ecosystem Model	NOAA	R	1,	
Technical Support GIS	920622326. 6	Experimental Designs and Statistical Procedures for Damage for Oilspill Cleanup and Restoration Projects	ADNR	R	9,10,	Duplicative of on-going studies.

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Category Project Type	Document ID#	Title	Lead Agency	Status	Recommend. Factors	Evaluation Comments
Restoration Monitoring Sub-Tidal	920622326. 7	Characterization Of Near-shore Bottom Habitat	ADFG	R	8,9,10,	
Restoration Monitoring Ecosystem	920622326. 8	Multi-agency University Ecosystem Study Of PWS	USDA	R	8,9,10,	EVOS-linked impact unknown.
Technical Support GIS	920622326. 9	Interactive Public Access to Oil Spill and Related Environmental Data in PWS Science Center GIS	ADNR	R	1,	

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EXXON VALDEZ OIL SPILL

1993 Endowment Table

This table lists the document identification numbers of all ideas suggesting creation of various endowments. The Restoration Team or a subgroup will consider these later and use them to create one or more endowment proposals based on direction from the Trustee Council. For more information, look up ideas by their document identification number in the "Ideas Table, Sorted by Document Identification Number". Lead agencies have not yet been assigned for endowment ideas.

ABBREVIATION KEY:

Status E Forwarded to Endowment Work Group

September 1992

09/11/92

Category	Project Type	Document ID#	Title	Preliminary Lead Agency	STATUS
Technical Support	Endowments	920604101. 1 920601058. 1 920601058. 2 920601058. 4 920601067. 1 920603094. 1 920603094. 2 920615272. 1 920615279. 98 920615287. 1 920615287. 2 920615296. 9 920615298. 13 920615298. 51	Endowment of Sinking Fund		E

EXXON VALDEZ OIL SPILL

1993 Ideas Table, Sorted by Document Identification Number

This table allows users to determine what ideas were considered for inclusion in the 1993 work plan. Similar ideas were combined and considered as a unit. One idea from a group was chosen as the lead idea and all similar ideas were combined with it. Thus, ideas which display a "C" in the status column were combined with another idea. In the "Combined With" field, the document identification number of the idea with which it was combined is noted. Documents which display "P" or "R" are the lead ideas into which other ideas were combined. Ideas with the "P" status were developed as proposals and the project number appears in the same column as the document identification number and above it. Ideas with "R" in the status column were rejected. Endowment ideas ("E" in the status column) will be considered by the Restoration Team or a subgroup thereof at a later date. This table also displays recommendation factors and evaluation comments which were considered before rejecting or passing ideas. In some cases the evaluation comments were more extensive than could be supported by the computer program used to create these tables. For these few, the complete comments are available upon request. In most cases, evaluation factors and comments apply only to "R" and "P" lead ideas (referring to the entire combined group). No entries in these columns for "P" ideas usually indicates good agreement with evaluation criteria.

ABBREVIATION KEY:

FIELD	CODE	EXPLANATION
Preliminary Lead Agency	ADEC	Alaska Dept. of Environmental Conservation
	ADFG	Alaska Dept. of Fish and Game
	ADNR	Alaska Dept. of Natural Resources
	DOI	United States Dept. of the Interior
	NOAA	National Oceanic and Atmospheric Administration
	USDA	United States Dept. of Agriculture
Status	C	Combined with another idea
	D	Duplicate of another idea
	E	Forwarded to Endowment Work Group
	P	Recommend Preparation of Study Plan and Budget
	R	Recommend Rejection

September 1992

Document ID	Category	Project Type	Title	Status	Combined With
920511138. 1	Technical Support	Services Agency:	Oily Bilgewater/Oily Waste Treatment - Several Oil Spill Communities.	R	
920514005. 1	Restoration Monitoring	Marine Mammals Agency: NOAA	Restoration of Killer Whales in PWS, combined with 920615261.2	C	920615261.2
920514006. 1	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Clam Enhancement, combined with 920612242.1	C	920612242.1
920514007. 1	Manipulation and Enhancement	Terestrial Mammals Agency: ADFG	Transplant Project For Deer And Elk	R	
920514012. 1	Manipulation and Enhancement	Agency: ADNR	Trans-Alaska Pipeline Removal Project	R	
920515016. 1	Damage Assessment	Ecosystem Agency: NOAA	Toxicological Profile Of PWS	R	
920526031. 1	Management Actions	Archaeology Agency: ADNR	Study Of Petroleum Hydrocarbon Spectra At Selected Sites.	R	
920526033. 1	Damage Assessment	Marine Mammals Agency: NOAA	Humpback Whale Project	R	
920526039. 1	Damage Assessment	Ecosystem Agency: ADFG	Long-term Monitoring Of Marine Environment Of Resurrection Bay. Combined with 920615262.2	C	920615262.2
920527041. 1	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Bivalve Shellfish Rehabilitation Project	R	
920528045. 1	Manipulation and Enhancement	Coastal Habitat Agency: ADEC	Beach Subsurface Oil Recovery, combined with 920615294.3	C	920615294.3
920601049. 1	Technical Support	Coastal Habitat Agency: ADNR	Coastal Habitat Specimens, University of Alaska Museum	R	
920601049. 2	Technical Support	Birds Agency: ADNR	Bird and Mammal Specimens, University of Alaska Museum, combined with 920601049.1	C	920601049.1
920601049. 3	Technical Support	Archaeology Agency: ADNR	Archaeological Specimens, University of Alaska Museum, combined with 920601049.1	C	920601049.1
920601050. 1	Manipulation and Enhancement	Services Agency:	Oil And Grease Separator/Valdez Harbor	R	
920601050. 2	Manipulation and Enhancement	Services Agency:	Oil and Grease Separator/Fidalgo	R	

Document ID	Category	Project Type	Title	Status	Combined With
920601050. 3	Manipulation and Enhancement	Services Agency:	Oil and Grease Separator/Hazelet	R	
920601050. 4	Manipulation and Enhancement	Services Agency:	Valdez Landfill Upgrade	R	
920601050. 5	Manipulation and Enhancement	Services Agency:	Valdez Recycling	R	
920601050. 6	Manipulation and Enhancement	Services Agency:	Valdez Sewage Treatment Plant Upgrade	R	
920601050. 7	Manipulation and Enhancement	Services Agency:	Valdez Garbage Scow Facilities	R	
920601050. 8	Manipulation and Enhancement	Services Agency:	Valdez/Remediate Existing Landfills	R	
920601050. 9	Manipulation and Enhancement	Services Agency:	Valdez Hazardous Waste Collection	R	
920601050. 10	Manipulation and Enhancement	Services Agency:	Landfill Liner	R	
920601050. 11	Management Actions	Education Agency: ADNR	Maritime Wing Valdez Museum, combined with 920615298.50	C	920615298.50
920601050. 12	Management Actions	Services Agency:	Oil Spill Cooperative/Training Center	R	
920601050. 13	Management Actions	Services Agency:	Valdez Oversight of Oil Industry	R	
920601050. 14	Manipulation and Enhancement	Recreation Agency: USDA	Increased Access PWS, combined with 920615298.55	C	920615298.55
920601050. 15	Management Actions	Recreation Agency: NOAA	Improve Marine Parks	R	
920601050. 16	Manipulation and Enhancement	Services Agency:	Assist Valdez in Handling Waste Oil	R	
920601050. 17	Management Actions	Services Agency:	Train Valdez Personnel for Environmental Incidents	R	
920601050. 18	Manipulation and Enhancement	Services Agency:	Improve Public Health Facilities, PWS	R	
920601051. 1	Habitat Protection and Acquisition	Land Acquisition Agency:	Land Exchange Chuyak Island For Land On Kodiak Island Road System, combined with 920601051.1	P 93058	

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920601051. 2	Habitat Protection and Acquisition	Land Acquisition Agency:	Acquisition Of Recreational Sites On Kodiak Road System, combined with 920601051.1	C	920601051.1
920601051. 3	Management Actions	Archaeology Agency: USDA	Public Education And Interpretation Of Archaeological Resources In State Parks - Train Park Rangers, Combine with 9	C	920615296.3
920601054. 1	Technical Support	Coastal Habitat Agency: ADNR	November 91 Request for Immediate Funding for Coastal Habitat Specimens, combined with 920601049.1	C	920601049.1
920601058. 1	Technical Support	Endowments Agency:	Select Critical Sites for Baseline Data Collection, combined with 920604101.1	C	920604101.1
920601058. 2	Technical Support	Endowments Agency:	Set Up Revolving Fund for Baseline Sampling and Analysis, combined with 920604101.1	C	920604101.1
920601058. 4	Technical Support	Endowments Agency: NOAA	Analyze NRDA Samples Left Un-Analyzed, combined with 920604101.1	C	920604101.1
920601058. 5	Management Actions	Fish/Shellfish Agency: ADFG	Sockeye Salmon Escapement Evaluation - Ayakuluk River	R	
920601058. 6	Management Actions	Fish/Shellfish Agency: DOI	Uganik River Fish Counting Weir, Combined with 920615279.11	C	920615279.11
920601058. 7	Restoration Monitoring	Birds Agency: DOI	Use And Productivity Of Bald Eagle Nest Sites, Kodiak	C	920615279.16
920601058. 8	Restoration Monitoring	Marine Mammals Agency: DOI	Sea Otters In Kodiak Archipelago - Population Status,trends. Combined with 920615273-15	C	920615273.15
920601058. 9	Management Actions	Archaeology Agency: ADNR	Native Museum And Cultural Center, Kodiak, combine with 920615298.17	C	920615298.17
920601058. 10	Habitat Protection and Acquisition	Land Acquisition Agency:	Land Exchange Shuyak For Kodiak Land On Road System, combined with 920601051.1	C	920601051.1
920601058. 11	Habitat Protection and Acquisition	Land Acquisition Agency:	Acquisition Of Recreational Sites On Kodiak Road System, combined with 920601051.1	C	920601051.1
920601058. 12	Management Actions	Archaeology Agency: ADNR	Public Education/interpretation Of Archaeological Resources In State Parks, Combine with 920615296.3	C	920615296.3
920601059. 1	Manipulation and Enhancement	Coastal Habitat Agency: ADEC	Natural Product Natural Life Restoration	R	
920601061. 1	Manipulation and Enhancement	Coastal Habitat Agency: ADEC	Natural Product Natural Life Restoration, combined with 920601059.2.	C	920601059.1
920601062. 1	Manipulation and Enhancement	Coastal Habitat Agency: ADEC	Natural Product Natural Life Restoration, combined with 920601059.1	C	920601059.1

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920601063. 1	Manipulation and Enhancement	Coastal Habitat Agency: ADEC	Shoreline Worm Life Monitoring, combined with 920601059.1	C	920601059.1
920601064. 1	Management Actions	Education Agency: USDA	Cordova Environmental Reporter	R	
920601065. 1	Technical Support	Coastal Habitat Agency: ADNR	Archive Biological and Archaeological Specimens - Revised Proposal, combined with 920601049.1	C	920601049.1
920601067. 1	Technical Support	Endowments Agency:	Alaska Land And Wildlife Conservation Fund, combined with 920604101.1	C	920604101.1
920602084. 1	Damage Assessment	Inventory Agency: ADNR	Damage Assessment Of Economic Damages To Wilderness-based Tourism	C	920615298.28
920603092. 1	Manipulation and Enhancement	Birds Agency:	Habitat Aquisition Evaluation, Evaluate Pacific Seabird Group List, Eliminate Predators, combined with 920603092.1	P 93060	
920603092. 2	Manipulation and Enhancement	Birds Agency: DOI	Removal Of Alien Predators From Bird Colonies, combined with 920615279.17	C	920615279.17
920603093. 1	Restoration Monitoring	Fish/Shellfish Agency: NOAA	Build Research and Monitoring Facilities and Program/Cook Inlet, Kodiak	R	
920603094. 1	Technical Support	Endowments Agency:	Exxon Valdez Oil Spill Marine Sciences Endowment I, combined with 920604101.1	C	920604101.1
920603094. 2	Technical Support	Endowments Agency:	Exxon Valdez Oil Spill Marine Sciences Endowment II, combined with 920604101.1	C	920604101.1
920604101. 1	Technical Support	Endowments Agency:	Endowment of Sinking Fund	E	
920604104. 1	Management Actions	Education Agency: USDA	Develop User Friendly Synopsis Of Oil Spill Information, combine with 920615298.25	C	920615298.25
920604104. 2	Damage Assessment	Terestrial Mammals Agency: ADEC	Long-term Epidemiology Study Of Oil Spill Workers	R	
920604114. 1	Management Actions	Education Agency: ADNR	Map Of Spill Area By Resource, combined with 920615298.25	C	920615298.25
920605137. 1	Management Actions	Education Agency: NOAA	SAAMS - Alaska Sealife Center	R	
920608184. 1	Technical Support	Services Agency: ADFG	Database Integration	P 93053	
920608184. 2	Technical Support	Services Agency: ADFG	Database Management - NRDA FS30, combined with 920608184.1	C	920608184.1

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920608184. 3	Technical Support	Services Agency: ADFG	Management Of Restoration Database, Sample Archiving, Chemical Interpretation, combined with 920608184.1	C	920608184.1
920608191. 1	Technical Support	GIS Agency: ADNR	Public Access Repository For Oil Spill Geographic Information System, combined with 920608184.1	C 93057	920608191.1
920608200. 1	Manipulation and Enhancement	Birds Agency: DOI	Seabird Colony Restoration, combined with 920615279.17	C	920615279.17
920609217. 1	Habitat Protection and Acquisition	Land Acquisition Agency:	Habitat Acq. Kachemak, combined with 920601051.1	C	920601051.1
920609221. 1	Habitat Protection and Acquisition	Land Acquisition Agency:	Habitat Acq. Kodiak, Kodiak Refuge, combined with 920601051.1	C	920601051.1
920610225. 1	Management Actions	Education Agency: USDA	Fund A PWS Nature Center, combined with 920615298.50	C	920615298.50
920610228. 2	Restoration Monitoring	Coastal Habitat Agency: ADFG	Coastal Habitat Comprehensive Intertidal Monitoring Program	C	920615297.18
920610229. 1	Manipulation and Enhancement	Coastal Habitat Agency: USDA	Fucus Restoration Feasibility Study, combined with 920618316.3	C	920618316.3
920610229. 2	Restoration Monitoring	Coastal Habitat Agency: USDA	Fucus Recovery In Upper Intertidal Zones (continuation Of Study)	C	920618316.3
920610229. 3	Damage Assessment	Coastal Habitat Agency: USDA	Coastal Habitat Injury Assessment - Intertidal Algae	R	
920610229. 4	Restoration Monitoring	Coastal Habitat Agency: USDA	Remote Monitoring Of Intertidal Recovery	R	
920610230. 1	Restoration Monitoring	Sub-Tidal Agency: NOAA	Experimental Evaluation Of Oiled/control Paired Design Used In Assessing Inter/Subtidal Community	P 93037	
920610230. 2	Damage Assessment	Sub-Tidal Agency: ADFG	Experimental Studies Of Interaction Between Subtidal Epifaunal Invertebrates	R	
920611233. 1	Manipulation and Enhancement	Birds Agency: DOI	Restoration Of Murres By Way Of Behavioral Attraction And Habitat Enhancement	P 93022	
920611233. 2	Manipulation and Enhancement	Birds Agency: DOI	Restoration Of Murres By Way Of Transplantation Of Chicks-Feasibility Study	P 93021	
920611233. 3	Management Actions	Birds Agency: DOI	Identification Of Seabird Feeding Areas From Remotely Sensed Data And Impact On Restoration	R	
920611233. 4	Manipulation and Enhancement	Birds Agency: DOI	Marbled Murrelet Vocalizations In Conjunction With Artificial Nests	R	

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920611233. 5	Technical Support	GIS Agency: ADNR	Establishment Of User-friendly GIS And Remote-sensing Demonstration Center For Public-5 Communities, combined with	C	920608191.1
920611233. 6	Habitat Protection and Acquisition	Inventory Agency:	Quantification Of Stream Habitat For Harlequin Ducks From Remotely Sensed Data, combined with 920615297.31	C	920615297.31
920611234. 1	Damage Assessment	Fish/Shellfish Agency: ADFG	Herring Embryo Viability Evaluation - Natural and Catastrophic Effects	R	
920612235. 1	Damage Assessment	Ecosystem Agency: NOAA	Cook Inlet Comprehensive Monitoring Program	R	
920612236. 2	Technical Support	GIS Agency: ADNR	Providing Public Access To Oilspill Gis Databases Using Arcview In PC Windows Environment, combined with 920608184.1	C	920608191.1
920612236. 4	Restoration Monitoring	Sub-Tidal Agency: USDA	Experimental Studies of Interaction Between Subtidal Epifaunal Invertebrates, combined with 920618315.1	C	920618315.1
920612237. 2	Manipulation and Enhancement	Coastal Habitat Agency: ADNR	Restore Shorelines Damaged By Beach Berm Relocation	R	
920612237. 3	Restoration Monitoring	Recreation Agency:	Annual Garbage Cleanup Program for Oil Spill Impacted Beaches	R	
920612237. 5	Management Actions	Terestrial Mammals Agency: ADFG	Watchable Wildlife, combined with 920615298.25	C	920615298.25
920612242. 1	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Seward Shellfish Hatchery	P 93020	
920612243. 1	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Paint River Fish Ladder Salmon Stocking Program	R	
920612244. 1	Management Actions	Fish/Shellfish Agency: NOAA	C-lab-A System For Monitoring Meteorological And Oceanographic Variables That Affect Salmon Growth	R	
920612246. 1	Habitat Protection and Acquisition	Land Acquisition Agency:	Purchase Of Seldovia Native Assoc, Timber Trading Co, Cook Inlet Region, Inholdings Kachemak Bay, combined with 92060105	C	920601051.1
920612250. 1	Habitat Protection and Acquisition	Inventory Agency:	Study Impact Of Clearcut Logging Operations On Bird Populations, Katchemak Bay State Park, combined with 92061527	C	920615273.25
920612348. 4	Management Actions	Education Agency: USDA	Publish And Distribute Brochures On Damaged Species, combined with 920615298.25	C	920615298.25
920614300. 1	Technical Support	Services Agency:	Build Facilities For Oil Workers Who Work In Karluk Kodiak Area	R	
920615247. 1	Manipulation and Enhancement	Marine Mammals Agency:	Oiled Wildlife Rehabilitation Center	R	

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920615249. 2	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Cutthroat Trout And Dolly Varden Hatchery	R	
920615249. 3	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Shelter Cove, Cordova Restoration Project	R	
920615249. 4	Management Actions	Fish/Shellfish Agency: ADFG	Sportfish Biologist For Cordova	R	
920615251. 1	Manipulation and Enhancement	Education Agency:	Valdez City Schools	R	
920615252. 1	Technical Support	Services Agency:	Tanker Inspection Facility	R	
920615253. 1	Technical Support	Services Agency:	Oil Spill Response Valdez Cleanup Co-Op	R	
920615254. 1	Technical Support	Education Agency:	Cold Weather Oil Spill School	R	
920615256. 1	Technical Support	Endowments Agency:	Payoff Debt of Valdez Fisheries Development Association	R	
920615257. 1	Habitat Protection and Acquisition	Land Acquisition Agency:	Acquisition Of Koniag Corp. Inholdings Within The Kodiak National Wildlife Refuge, combined with 920601051.1	C	920601051.1
920615258. 1	Restoration Monitoring	Coastal Habitat Agency: NOAA	Recovery Monitoring Of Intertidal Oiled Mussel Beds In PWS And Gulf Of Alaska	P 93036	
920615258. 2	Technical Support	Services Agency: NOAA	Mgmt. Of Restoration Database,samples, Archiving, And Chemical Interpretation, combined with 920608184.1	C	920608184.1
920615258. 3	Management Actions	Fish/Shellfish Agency: ADFG	Injury to Salmon Eggs and Pre-emergent Fry in PWS, Laboratory Verification	P 93003	
920615259. 1	Restoration Monitoring	Sub-Tidal Agency: NOAA	Recovery Monitoring of Hydrocarbon-Contaminated Subtidal Marine Sediment Resources, combined with 920618315.1	C	920618315.1
920615260. 1	Habitat Protection and Acquisition	Inventory Agency: USDA	Restoration Recovery Monitoring Of Stream-rearing Anadromous Salmonids, combined with 920603092.1	C	920603092.1
920615261. 1	Restoration Monitoring	Marine Mammals Agency: NOAA	Photo-Identification Studies of PWS Killer Whales, combined with 920615261.2	C	920615261.2
920615261. 2	Restoration Monitoring	Marine Mammals Agency: NOAA	Use of Satellite Transmitters to Investigate Killer Whale Ecology in PWS	P 93042	
920615261. 3	Damage Assessment	Marine Mammals Agency: NOAA	Monitoring Of Small Cetaceans In PWS	R	

Document ID	Category	Project Type	Title	Status	Combined With
920615262. 1	Restoration Monitoring	Fish/Shellfish Agency: NOAA	Distribution Of Prey Species For Apex Predator Species (Murre, Guillemot, Murrelet, Harbor Seal, Etc.)	R	
920615262. 2	Restoration Monitoring	Ecosystem Agency: NOAA	Comprehensive Monitoring Program	P 93041	
920615263. 1	Restoration Monitoring	Sub-Tidal Agency: NOAA	Natural Recovery of Subtidal Species in PWS, combined with 920618315.1	C	920618315.1
920615264. 1	Restoration Monitoring	Coastal Habitat Agency: NOAA	Natural Recovery Of Oiled And Treated Shorelines	P 93040	
920615264. 2	Restoration Monitoring	Sub-Tidal Agency: NOAA	New Field Test of Bioremediation	R	
920615265. 1	Restoration Monitoring	Fish/Shellfish Agency: NOAA	PWS Long-Term Monitoring Program-Acute and Chronic Toxicity of Residual Hydrocarbons to Littleneck Clams	R	
920615266. 1	Manipulation and Enhancement	Coastal Habitat Agency: ADEC	Rapid Restoration Of Weathered Crude Contaminated Beach Subsurface Material.	R	
920615270. 1	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Port Graham Salmon Hatchery	R	
920615270. 2	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Village Mariculture Project	P 93019	
920615271. 1	Manipulation and Enhancement	Fish/Shellfish Agency: ADEC	Rapid Restoration Of Weathered Crude Beach Subsurface Material.	C	920615266.1
920615272. 1	Technical Support	Endowments Agency:	Sturgulewski Endowment, combined with 920604101.1	C	920604101.1
920615273. 1	Restoration Monitoring	Terestrial Mammals Agency: DOI	Productivity And Survival Of Brown Bears In Katmai National Park	R	
920615273. 2	Restoration Monitoring	Birds Agency: ADFG	Determine The Extent Of Oil Spill Injuries To Harlequin Ducks In National Parks, combined with 920615297.31	C	920615297.31
920615273. 3	Restoration Monitoring	Birds Agency: DOI	Determine Status Of Marbled Murrelet Populations In Oiled National Parks	R	
920615273. 4	Restoration Monitoring	Coastal Habitat Agency: NOAA	Recovery Monitoring Of Intertidal Oiled Mussel Beds Outside PWS, combined with 920615258.1	C	920615258.1
920615273. 5	Restoration Monitoring	Birds Agency: DOI	Determine The Status Of Bald Eagle Populations In Oiled National Parks, combined with 920615279.16	C	920615279.16
920615273. 6	Management Actions	Archaeology Agency: ADNR	Coastal Archaeological Inventory And Evaluation Of Archaeological, Sites Kenai And Katmai Natl Parks., combined	C	920615298.19

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920615273. 7	Management Actions	Archaeology Agency: ADNR	Coastal Archaeological Inventory And Evaluation Of Archaeological Sites - Interagency, combined with 920615298.1	C	920615298.19
920615273. 8	Management Actions	Archaeology Agency: DOI	Site-specific Archaeological Restoration - Interagency	P 93006	
920615273. 9	Management Actions	Archaeology Agency: DOI	Site-specific Archaeological Restoration In Kenai And Katmai National Parks, Combine with 920615273.8	C	920615273.8
920615273. 10	Management Actions	Archaeology Agency: USDA	Archaeological Site Protection-public Education-interagency, Combine with 920615296.3	C	920615296.3
920615273. 11	Management Actions	Archaeology Agency: USDA	Archaeological Site Protection-public Education-national Park Service, Combine with 920615296.3	C	920615296.3
920615273. 12	Restoration Monitoring	Archaeology Agency: DOI	Archaeological Site Protection-Site Patrol Monitoring-Interagency	P 93008	
920615273. 13	Restoration Monitoring	Archaeology Agency: DOI	Archaeological Site Protection-site Patrol And Monitoring-national Park Service, Combine with 920615273.12	C	920615273.12
920615273. 14	Management Actions	Archaeology Agency: ADNR	Archaeological Site Stewardship Program, Combine with 920615298.20	C	920615298.20
920615273. 15	Restoration Monitoring	Marine Mammals Agency: DOI	Monitoring Of Sea Otter Population Abundance, Distribution, Reproduction, And Mortality.	P 93043	
920615273. 16	Habitat Protection and Acquisition	Inventory Agency: DOI	Habitat Utilization By Sea Otters And Designation Of Protected Areas	P 93044	
920615273. 17	Restoration Monitoring	Birds Agency: DOI	Feeding Ecology And Reproductive Success Of Black Oystercatchers In PWS	P 93035	
920615273. 18	Restoration Monitoring	Birds Agency: DOI	Monitoring Rate Of Recovery Of Murres In Breeding Colonies Downstream From Oil Spill. Same As 920615279.19	P 93049	
920615273. 19	Management Actions	Agency: DOI	Reduce Disturbance Near Murre Colonies Damaged By The Oil Spill	P 93010	
920615273. 20	Manipulation and Enhancement	Birds Agency: DOI	Removal Of Introduced Foxes To Restore Breeding Seabirds. Same As 920615279-17, combined with 920615279.17	C	920615279.17
920615273. 21	Restoration Monitoring	Marine Mammals Agency: DOI	Radio-Telemetry Project To Monitor Recovery Of Sea Otters	R	
920615273. 22	Restoration Monitoring	Marine Mammals Agency: DOI	Surveys To Monitor Marine Bird And Sea-otter Populations	P 93045	
920615273. 23	Restoration Monitoring	Birds Agency: DOI	Pigeon Guillemot Recovery Enhancement And Monitoring	P 93034	

Document ID	Category	Project Type	Title	Status	Combined With
920615273. 24	Restoration Monitoring	Birds Agency: DOI	Assessment Of Marbled Murrelet Foraging Habitat Requirements During Breeding Season	R	
920615273. 25	Habitat Protection and Acquisition	Inventory Agency:	Identification Of Nesting Habitat Criteria And Reproductive Success For Marbled Murrelet, combined with 920615273.25	P 93051	
920615273. 26	Habitat Protection and Acquisition	Inventory Agency:	Survey To Id Upland Use By Murrelets, combined with 920615273.25	C	920615273.25
920615273. 27	Restoration Monitoring	Birds Agency: DOI	Monitor Population Status Of Seabird Nesting Colonies In The Spill Zone	R	
920615273. 28	Restoration Monitoring	Birds Agency: DOI	Monitor Productivity Of Bald Eagles In PWS Kodiak And Alaska Pen. Pacific Coast, combined with 920615279.16	C	920615279.16
920615273. 29	Restoration Monitoring	Birds Agency: DOI	Long-term Population Monitoring For Bald Eagles, combined with 920615279.16	C	920615279.16
920615273. 30	Habitat Protection and Acquisition	Inventory Agency:	Identification And Protection Of Important Bald Eagle Habitats	R 93052	
920615273. 31	Management Actions	Birds Agency: DOI	Development Of Managment Strategies For Enhancing Recovery Rate Of Birds And Sea Otter Populations	R	
920615273. 32	Restoration Monitoring	Fish/Shellfish Agency: NOAA	Abundance And Distribution Of Forage Fish And Their Influence On Recovery Of Seabirds Impacted By EVOS, combined	C	920615262.1
920615273. 33	Restoration Monitoring	Fish/Shellfish Agency: NOAA	Hydrocarbons in Mussels From Coastal Gulf of Alaska, Cook Inlet and Shelikof Strait	R	
920615273. 34	Technical Support	GIS Agency: DOI	CD-ROM Publication Of Digital Spatial Data From Exxon Valdez Oil Spill Mapping Activities, combined with 920608184.1	C	920608191.1
920615273. 35	Manipulation and Enhancement	Coastal Habitat Agency: ADEC	Hydrodynamic Purging of Oil from Contaminated Beaches, PWS.	R	
920615273. 36	Restoration Monitoring	Coastal Habitat Agency: DOI	Fate And Transport Of Subsurface Hydrocarbons In Beach Deposits In PWS	R	
920615273. 37	Management Actions	Fish/Shellfish Agency: ADFG	Survey Of EVOS Impacted Native Communities-Subsistence	P 93017	
920615274. 1	Technical Support	Services Agency: ADNR	Construction Of Chenega Bay Marine Service Center	R	
920615279. 8	Habitat Protection and Acquisition	Land Acquisition Agency:	Habitat Acq., North Afognak Island, combined with 920601051.1	C	920601051.1
920615279. 9	Habitat Protection and Acquisition	Land Acquisition Agency:	Kodiak Bear Refuge Stream Mouth Inholdings Acq., combined with 920601051.1	C	920601051.1

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920615279. 10	Management Actions	Fish/Shellfish Agency: ADFG	Ayakulik River Sockeye Salmon Escapement Evaluation	R	
920615279. 11	Management Actions	Fish/Shellfish Agency: ADFG	Uganik River Fish Weir	R	
920615279. 12	Habitat Protection and Acquisition	Land Acquisition Agency:	Habitat Acq., Kodiak Island, combined with 920601051.1	C	920601051.1
920615279. 13	Restoration Monitoring	Birds Agency: DOI	Bald Eagle Productivity Survey And Catalog, combined with 920615279.16	C	920615279.16
920615279. 14	Restoration Monitoring	Marine Mammals Agency: DOI	Sea Otter Population Survey And Trends, combined with 920615273.15	C	920615273.15
920615279. 15	Restoration Monitoring	Birds Agency: ADFG	Breeding Population Status Of Harlequin Ducks On Areas Of The Kodiak Island Group W. And S. Sides, combined with 920615	C	920615297.31
920615279. 16	Restoration Monitoring	Birds Agency: DOI	Bald Eagle Nesting Surveys-Alaska Pen. Pacific Coast	R	
920615279. 17	Manipulation and Enhancement	Birds Agency: DOI	Removal Of Introduced Foxes To Restore Breeding Seabirds.	R	
920615279. 18	Restoration Monitoring	Birds Agency: DOI	Reduce Disturbance Near Murre Colonies Damaged By Oil Spill, combined with 920615273.19	C	920615273.19
920615279. 19	Restoration Monitoring	Birds Agency: DOI	Monitoring The Rate Of Recovery Of Murres In Breeding Colonies In Or Downstream From Oil Spill. Combined with 92061	C	920615273.18
920615279. 20	Habitat Protection and Acquisition	Land Acquisition Agency:	Acquisition Of Inholdings In Shuyak Island State Park, combined with 920601051.1	C	920601051.1
920615279. 21	Habitat Protection and Acquisition	Land Acquisition Agency:	Sites For Recreation Along Kodiak Road System, combined with 920601051.1	C	920601051.1
920615279. 23	Technical Support	Services Agency: ADFG	Villages Kitoi Bay Hatchery and Other Site Prevention and Response	R	
920615279. 24	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Kitoi Bay Hatchery On Afognak Island	R	
920615279. 25	Management Actions	Coastal Habitat Agency: NOAA	Thirteen Commercial Species Assessment	R	
920615279. 27	Management Actions	Archaeology Agency: USDA	Archaeological Outreach-Curator Position.	R	
920615279. 28	Management Actions	Archaeology Agency: ADNR	Alutiiq Museum And Culture Center-phase I Construction, combined with 920615298.17	C	920615298.17

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920615279. 29	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Enhancement Of The Pacific Herring	R	
920615279. 30	Restoration Monitoring	Fish/Shellfish Agency: ADFG	Assessment And Quality Assurance Of Shellfish Resources	R	
920615279. 31	Management Actions	Archaeology Agency: ADNR	Archaeological Site Inventory And Assessment, combined with 920615298.19	C	920615298.19
920615279. 32	Management Actions	Education Agency: ADNR	Environmental Learning Resource Center	R	
920615279. 98	Technical Support	Endowments Agency:	Kodiak Island Borough Endowment Fund to Support Restoration Activities, combined with 920604101.1	C	920604101.1
920615279. 99	Restoration Monitoring	Coastal Habitat Agency: ADFG	Monitoring Sites - Collector Beaches and Lagoons.	R	
920615286. 1	Manipulation and Enhancement	Air/Water Agency:	Silver Lake Hydropower Project	R	
920615286. 2	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Silver Lake Fish Hatchery	R	
920615286. 3	Manipulation and Enhancement	Air/Water Agency: ADNR	Power Creek Hydropower Project	R	
920615286. 4	Manipulation and Enhancement	Air/Water Agency: ADNR	Silver Lake to Ellamar to Tatitlek Underwater Intertie	R	
920615287. 1	Technical Support	Endowments Agency:	Endowment Proposal I, combined with 920604101.1	C	920604101.1
920615287. 2	Technical Support	Endowments Agency:	Endowment Proposal II, combined with 920604101.1	C	920604101.1
920615288. 1	Habitat Protection and Acquisition	Land Acquisition Agency:	Kodiak Wildlife Habitat Conservation And Acquisition Project, combined with 920601051.1	C	920601051.1
920615289. 1	Management Actions	Sub-Tidal Agency: ADEC	Field Study Of Bioremediation Enhancement Treatment Methods	R	
920615290. 1	Restoration Monitoring	Coastal Habitat Agency: ADEC	Shoreline Assessment	P 93038	
920615290. 2	Technical Support	Services Agency: ADEC	Electronic Archiving Of Exxon Valdez Response Records, combined with 920608184.1	C	920608184.1
920615291. 1	Habitat Protection and Acquisition	Inventory Agency:	Mark 17(b) Easements On Port Graham Land.	R	

Document ID	Category	Project Type	Title	Status	Combined With
920615291. 2	Manipulation and Enhancement	Fish/Shellfish Agency: ADEC	Restoration Of Windy Bay Mussel Beds.	P 93023	
920615293. 1	Habitat Protection and Acquisition	Land Acquisition Agency:	Land Acq. PWS, Kodiak, combined with 920601051.1	C	920601051.1
920615294. 1	Manipulation and Enhancement	Fish/Shellfish Agency: ADEC	Restoration Of Mussel Beds, combined with 920615291.2.	C	920615291.2
920615294. 2	Manipulation and Enhancement	Archaeology Agency: ADNR	Restoration Of Chenega Village Site	R	
920615294. 3	Manipulation and Enhancement	Coastal Habitat Agency: ADEC	Chenega Bay Subsistence Restoration Project (Remove Oil)	P 93027	
920615294. 4	Habitat Protection and Acquisition	Education Agency:	17(b) Easement Identification, combined with 920615294.1	C	920615294.1
920615294. 5	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Chenega Chinook And Silver Salmon Release Program	P 93016	
920615294. 6	Management Actions	Fish/Shellfish Agency: USDA	Chenega Bay Replacement Subsistence Resource Project	C	920615273.37
920615295. 1	Habitat Protection and Acquisition	Land Acquisition Agency:	Habitat Acq., Afognak, combined with 920601051.1	C	920601051.1
920615296. 1	Habitat Protection and Acquisition	Land Acquisition Agency:	Archaeological Restoration Site Acquisition, combined with 920601051.1	C	920601051.1
920615296. 2	Manipulation and Enhancement	Archaeology Agency: ADNR	Heritage Information Replacement, combined with 920615298.19	C	920615298.19
920615296. 3	Management Actions	Archaeology Agency: USDA	Public Education In Spill Area Archaeology	P 93005	
920615296. 4	Management Actions	Archaeology Agency: DOI	Archaeological Site Stewardship - Homer and Kodiak, Combined with 920615298.20	C	920615298.20
920615296. 5	Management Actions	Archaeology Agency: ADNR	Archaeological Restoration-Regional Archaeological Planning	R	
920615296. 6	Management Actions	Recreation Agency: ADNR	Marine Recreation Plan For Spill Area	R	
920615296. 7	Manipulation and Enhancement	Recreation Agency: ADNR	Public Use Cabins In State Marine Parks	R	
920615296. 8	Habitat Protection and Acquisition	Land Acquisition Agency:	Acquisition Of Important Recreation Lands, combined with 920601051.1	C	920601051.1

Document ID	Category	Project Type	Title	Status	Combined With
920615296. 9	Technical Support	Endowments Agency: USDA	Endowment, combined with 920604101.1	C	920604101.1
920615296. 10	Management Actions	Recreation Agency: ADNR	Recreation Field Management And Monitoring	R	
920615297. 1	Management Actions	Fish/Shellfish Agency: ADFG	Restoration Of PWS Rockfish And Lingcod Resources	R	
920615297. 2	Damage Assessment	Fish/Shellfish Agency: ADFG	PWS Herring Egg Loss Survey	R	
920615297. 3	Management Actions	Fish/Shellfish Agency: ADFG	PWS Herring Spawn Deposition Survey	R	
920615297. 4	Restoration Monitoring	Fish/Shellfish Agency: ADFG	PWS Herring Tagging Feasibility Study	R	
920615297. 5	Restoration Monitoring	Fish/Shellfish Agency: ADFG	Larval Herring Age and Growth in PWS Using Otoliths	C	920615297.4
920615297. 6	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Replacement Of Oiled Mussels With Commercially Produced Mussels, combined with 920615291.2	C	920615291.2
920615297. 7	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Mariculture Technical Center, Combined with 920612242.1	C	920612242.1
920615297. 9	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Lower Cook Inlet Sockeye Salmon Restoration And Enhancement	R	
920615297. 10	Restoration Monitoring	Fish/Shellfish Agency: ADFG	Subsistence Food Safety Testing, Combined with 920615273.37	C	920615273.37
920615297. 11	Technical Support	Sub-Tidal Agency: ADFG	Develop Protocols For Analysis And Assessment Of Benthic Biological, Physical, And Hydrocarbon Data	R	
920615297. 12	Restoration Monitoring	Sub-Tidal Agency: ADFG	Injury and Recovery of Deep-Benthic Macrofaunal Communities, combined with 920618315.1	C	920618315.1
920615297. 13	Management Actions	Terestrial Mammals Agency: ADFG	Synthesis Of Information On Ecology And Injury To River Otters In PWS	R	
920615297. 14	Restoration Monitoring	Marine Mammals Agency: ADFG	Habitat Use And Behavior Of Harbor Seals In PWS	P 93046	
920615297. 15	Restoration Monitoring	Marine Mammals Agency: ADFG	Monitoring Trends In Abundance Of Harbor Seals In PWS 1993-1994, combined with 920615297.14	C	920615297.14
920615297. 16	Technical Support	Services Agency: USDA	Development Of Economic Guidelines And Cost Benefit Analysis Of Oilspill Projects For NEPA And TC	R	

Document ID	Category	Project Type	Title	Status	Combined With
920615297. 17	Management Actions	Fish/Shellfish Agency: ADFG	Quality Assurance For PWS Coded Wire Tagging And Fish Production Records For Improved Mgmt. Ability	P 93014	
920615297. 18	Restoration Monitoring	Coastal Habitat Agency: USDA	Coastal Habitat Comprehensive Intertidal Monitoring Program	R	
920615297. 19	Restoration Monitoring	Coastal Habitat Agency: ADFG	Herring Bay Experimental And Monitoring Studies	C	920618316.3
920615297. 20	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Cold Creek Pink Salmon Restoration	P 93032	
920615297. 21	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Horse Marine Creek Pink Salmon Restoration	R	
920615297. 22	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Waterfall Creek Pink Salmon Restoration-Fish Improvement	R	
920615297. 23	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Pink Creek Pink Salmon Restoration, combined with 920615297.20	C	920615297.20
920615297. 24	Restoration Monitoring	Sub-Tidal Agency: ADFG	Natural Recovery Monitoring of Subtidal Eelgrass Communities in PWS, combined with 920618315.1	C	920618315.1
920615297. 25	Restoration Monitoring	Fish/Shellfish Agency: ADFG	Monitoring For Recruitment Of Littleneck Clams.	R	
920615297. 26	Technical Support	Services Agency: ADFG	Kitoi Bay Hatchery Oil Spill Equipment Storage	R	
920615297. 27	Habitat Protection and Acquisition	Inventory Agency:	Stream Habitat Assessment (R47), combined with 920615273.25	C	920615273.25
920615297. 28	Management Actions	Fish/Shellfish Agency: ADFG	Enhanced Management For Cutthroat Trout And Dolly Varden In PWS. Same As 920615249.1	P 93018	
920615297. 29	Habitat Protection and Acquisition	Inventory Agency:	Identification Of Critical Upland Wildlife Habitat in PWS, combined with 920603092.1	C	920603092.1
920615297. 30	Management Actions	Birds Agency: ADFG	Develop Harvest Guidelines To Aid Restoration Of Injured Terrestrial Mammals And Seaducks	P 93011	
920615297. 31	Restoration Monitoring	Birds Agency: ADFG	Harlequin Duck Restoration And Monitoring Study	P 93033	
920615297. 32	Damage Assessment	Fish/Shellfish Agency: ADFG	Sockeye Salmon Overescapement	P 93002	
920615297. 33	Management Actions	Fish/Shellfish Agency: ADFG	Genetic Risk Assessment Of Injured Salmonids	P 93004	

Document ID	Category	Project Type	Title	Status	Combined With
920615297. 34	Management Actions	Fish/Shellfish Agency: ADFG	Genetic Stock Identification For Herring In PWS	R	
920615297. 35	Management Actions	Fish/Shellfish Agency: ADFG	Genetic Stock Identification Of Kenai River Sockeye For Protection In Mixed Harvest Areas	P 93012	
920615297. 36	Restoration Monitoring	Fish/Shellfish Agency: ADFG	Genetic Monitoring of Kodiak Island Sockeye Salmon	R	
920615297. 37	Restoration Monitoring	Fish/Shellfish Agency: ADFG	Pink Salmon Egg to Pre-Emergent Fry Survival in PWS, combined with 920615258.3	C	920615258.3
920615297. 38	Management Actions	Fish/Shellfish Agency: ADFG	Coded Wire Tagging Of Wild Stock Pink Salmon For Stock Identification	R	
920615297. 39	Management Actions	Fish/Shellfish Agency: ADFG	Inventory And Effects Of Straying Hatchery Pink Salmon On Wild Pink Salmon Populations In PWS	P 93013	
920615297. 40	Management Actions	Fish/Shellfish Agency: ADFG	Pink Salmon Escapement Enumeration, combined with 920615297.39	C	920615297.39
920615297. 41	Management Actions	Fish/Shellfish Agency: ADFG	Adult Tagging To Determine Distribution, Migratory Timing And Rate Of Movement Of Pink Salmon In PWS	R	
920615297. 42	Management Actions	Fish/Shellfish Agency: ADFG	Coded Wire Tag Recoveries From Commercial Catches In PWS Salmon Fisheries, Combined with 920615297.41	C	920615297.41
920615297. 43	Management Actions	Fish/Shellfish Agency: ADFG	Kenai River Sockeye Salmon Restoration	P 93015	
920615297. 44	Management Actions	Fish/Shellfish Agency: ADFG	PWS Spot Shrimp Recovery Management Plan	R	
920615297. 45	Restoration Monitoring	Fish/Shellfish Agency: ADFG	PWS Spot Shrimp Survey	R	
920615297. 46	Management Actions	Fish/Shellfish Agency: ADFG	Juvenile Spot Shrimp Habitat, Combined with 920615297.44	C	920615297.44
920615297. 47	Management Actions	Fish/Shellfish Agency: ADFG	Intertidal/Shallow Subtidal Crustacean (Decapod) Composition	R	
920615297. 48	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Fort Richardson Pipeline.	P 93026	
920615297. 68	Habitat Protection and Acquisition	Land Acquisition Agency:	Weir And Conservation Land Acquisition, combined with 920601051.1	C	920601051.1
920615297. 69	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Red Lake Salmon Restoration	P 93030	

Document ID	Category	Project Type	Title	Status	Combined With
920615297. 70	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Red Lake Mitigation.	P 93031	
920615297. 71	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Fry Rearing To Improve Survival And Restore Wild Pink And Chum Salmon Stocks	R	
920615297. 72	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Restoration Of The Coghill Lake Sockeye Salmon Stock.	P 93024	
920615297. 73	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Instream Habitat And Stock Restoration Techniques For Anadromous Fish.	R	
920615297. 74	Management Actions	Fish/Shellfish Agency: ADFG	Otolith Mass Marking As An Inseason Stock Separation Tool To Reduce Wild Stock Salmon Exploitation	R	
920615297. 75	Manipulation and Enhancement	Fish/Shellfish Agency: ADFG	Est. An Ecological Basis For Restoring And Enhancing The Mixed-stock Salmon Resources Of PWS.	R	
920615298. 1	Technical Support	Services Agency: USDA	Cultural Emergency Response System	R	
920615298. 2	Technical Support	Services Agency: USDA	Multi-agency Library On PWS And Copper River Delta	R	
920615298. 3	Technical Support	Services Agency: USDA	Oilspill Injured Resources Literature Research And Review	R	
920615298. 4	Management Actions	Education Agency: USDA	PWS Large Format Photographic Book, combined with 920615298.25	C	920615298.25
920615298. 5	Management Actions	Education Agency: USDA	PWS Family Of Brochures, combined with 920615298.25	C	920615298.25
920615298. 6	Management Actions	Education Agency: USDA	PWS Family Of Video Programs, combined with 920615298.25	C	920615298.25
920615298. 7	Management Actions	Education Agency: USDA	PBS Program On PWS, combined with 920615298.25	C	920615298.25
920615298. 8	Manipulation and Enhancement	Recreation Agency: USDA	PWS Kayak Trail, combined with 920615298.55	C	920615298.55
920615298. 9	Management Actions	Education Agency: USDA	PWS Implementation Of Interpretive Plan, combined with 920615298.25	C	920615298.25
920615298. 10	Management Actions	Recreation Agency: USDA	Protect Resources And Enhance Visitor Enjoyment Through Increased Administrative Presence	R	
920615298. 11	Management Actions	Education Agency: USDA	PWS Scenic Byway-- Nomination And Interpretive Plan, combined with 920615298.25	C	920615298.25

Document ID	Category	Project Type	Title	Status	Combined With
920615298. 12	Damage Assessment	Recreation Agency: USDA	Sustainable Tourism In PWS, Combine with 920615298.28	C	920615298.28
920615298. 13	Technical Support	Endowments Agency: USDA	Endowment, combined with 920604101.1	C	920604101.1
920615298. 14	Manipulation and Enhancement	Recreation Agency: USDA	Prince William Sound Campground, combined with 920615298.55	C	920615298.55
920615298. 15	Manipulation and Enhancement	Recreation Agency: USDA	PWS Recreation Facilities, combined with 920615298.55	C	920615298.55
920615298. 16	Manipulation and Enhancement	Recreation Agency: USDA	Enhanced Trail Opportunities, Including Columbia And Blackstone Glacier Trails, combined with 920615298.55	C	920615298.55
920615298. 17	Management Actions	Archaeology Agency: USDA	Nuchek Heritage Interpretive Center	R	
920615298. 18	Management Actions	Archaeology Agency: USDA	Vandalized Cultural Resources--inventory, Evaluation, Interpretation, Combine with 920615296.3	C	920615296.3
920615298. 19	Management Actions	Archaeology Agency: USDA	PWS Landmarks--Evaluation And Interpretation	R	
920615298. 20	Management Actions	Archaeology Agency: DOI	PWS Site Stewardship Program	P 93007	
920615298. 21	Management Actions	Archaeology Agency: USDA	Chugach Natural Forest Heritage Interpretive Centers, combined with 920615298.17	C	920615298.17
920615298. 22	Management Actions	Archaeology Agency: DOI	Passports In Time--Cultural Resource Patterns In PWS, Combine with 920615296.3	C	920615296.3
920615298. 23	Management Actions	Education Agency: USDA	Valdez Visitors Center, combined with 920615298.50	C	920615298.50
920615298. 24	Manipulation and Enhancement	Recreation Agency: USDA	Green Island Cabin Replacement, combined with 920615298.55	C	920615298.55
920615298. 25	Management Actions	Education Agency: USDA	Public Information and Education	P 93009	
920615298. 26	Management Actions	Recreation Agency: USDA	Interpretation Of PWS, combined with 920615298.26	C	920615298.25
920615298. 27	Management Actions	Education Agency: USDA	Cordova Environmental Education Center, combined with 920615273.25	C	920615273.25
920615298. 28	Damage Assessment	Recreation Agency: USDA	Post-Oilspill Recreation-based User Survey For PWS	P 93001	

Document ID	Category	Project Type	Title	Status	Combined With
920615298. 29	Restoration Monitoring	Ecosystem Agency: USDA	Inventory, Monitor, Protect Permanent Monitoring Sites	R	
920615298. 30	Restoration Monitoring	Birds Agency: USDA	Survey To Determine Abundance Distribution, Habitat And Food Habits Of Staging Shore Birds W Cr Delta	R	
920615298. 31	Restoration Monitoring	Birds Agency: USDA	Survey To Determine Distribution, Abundance, Food Habits Of Migratory Waterfowl Staging W. Cr Delta	R	
920615298. 32	Restoration Monitoring	Birds Agency: USDA	Migratory Shore Birds Staging In Rocky Intertidal Habitats Of PWS	R	
920615298. 33	Habitat Protection and Acquisition	Inventory Agency: USDA	Fish Limiting Factors Analysis, combined with 920615298.36	C	920615298.36
920615298. 34	Management Actions	Fish/Shellfish Agency: USDA	Wild Fish Stock Information Assessment, combined with 920615297.28	C	920615297.28
920615298. 35	Manipulation and Enhancement	Birds Agency: USDA	Restoration And Mitigation Of Essential Wetland Habitats For PWS Fish And Wildlife	P 93028	
920615298. 36	Habitat Protection and Acquisition	Inventory Agency: USDA	Stream Channel Type Classification And Fish Habitat Assessment	R	
920615298. 37	Manipulation and Enhancement	Fish/Shellfish Agency: USDA	Montague Island Chum Salmon Restoration	P 93025	
920615298. 38	Habitat Protection and Acquisition	Inventory Agency: USDA	Anadromous Cutthroat And Dolly Varden Char Habitat Inventory, Evaluation, And Restoration, combined with 9206152	C	920615298.36
920615298. 39	Management Actions	Education Agency: USDA	Eyes On Wildlife-injured Resources And Their Restoration, combined with 920615298.25	C	920615298.25
920615298. 40	Habitat Protection and Acquisition	Inventory Agency: USDA	Migratory Waterfowl And Shorebird Monitoring, combined with 920603092.1	C	920603092.1
920615298. 41	Manipulation and Enhancement	Fish/Shellfish Agency: USDA	Feasibility Of Fish Passes As Oilspill Restoration, combined with 920615297.73	C	920615297.73
920615298. 42	Management Actions	Fish/Shellfish Agency: ADFG	PWS Salmon Stock Genetics. Combine with 920615297.33	C	920615297.33
920615298. 43	Habitat Protection and Acquisition	Inventory Agency: USDA	Stream Channel Capability Modeling, combined with 920615298.36	C	920615298.36
920615298. 44	Habitat Protection and Acquisition	Inventory Agency:	Characterization And Identification Of Habitats Important To Upland Species (Harlequin, Murrelet, etc), combined with 9206	C	920615273.25
920615298. 45	Habitat Protection and Acquisition	Inventory Agency:	Vegetation And Stream Classification And Mapping Of Western PWS, combined with 920615273.25	C	920615273.25

Document ID	Category	Project Type	Title	Status	Combined With
920615298. 46	Habitat Protection and Acquisition	Inventory Agency:	Wetland Habitat Classification, Mapping And Assessment, combined with 920603092.1	C	920603092.1
920615298. 47	Technical Support	GIS Agency: ADNR	Geographic Information System Mapping Of Natural Resources In Western PWS, combined with 920608184.1	C	920608191.1
920615298. 48	Technical Support	Services Agency: USDA	Communication System for Oil Spill Program	P 93048	
920615298. 49	Technical Support	Services Agency: USDA	Oil Spill Restoration Support Service And Facilities	R	
920615298. 50	Management Actions	Education Agency: USDA	Environmental Education Center In PWS.	R	
920615298. 51	Technical Support	Endowments Agency: USDA	Endowment, combined with 920604101.1	C	920604101.1
920615298. 52	Habitat Protection and Acquisition	Inventory Agency:	Distribution, Abundance, Habitat Use And Phylogeny Of Canada Geese In PWS	R	
920615298. 53	Habitat Protection and Acquisition	Inventory Agency:	Inland Survey Of Marbled Murrelet Habitat Use In PWS, combined with 920615273.25	C	920615273.25
920615298. 54	Manipulation and Enhancement	Coastal Habitat Agency: USDA	Restoration Of Second Growth Habitat For Wildlife In PWS	P 93029	
920615298. 55	Manipulation and Enhancement	Recreation Agency: USDA	Low Impact Recreation Development Nellie Juan, College Fiord Wilderness Study Area	R	
920616307. 1	Manipulation and Enhancement	Coastal Habitat Agency: USDA	Restoration of High-Intertidal Fucus Following EVOS, combined with 920618316.3	C	920618316.3
920616310. 1	Technical Support	Services Agency: ADFG	Near Island Fisheries Research Center	R	
920617313. 1	Technical Support	Services Agency: ADNR	Construction Of Chenega Marine Service Center, combined with 920615274.1	C	920615274.1
920617314. 1	Management Actions	Education Agency: USDA	Press Release Project On Restoration Program Work	R	
920618315. 1	Restoration Monitoring	Fish/Shellfish Agency: NOAA	Monitoring Injury to Rockfish in PWS	P 93047	
920618316. 1	Manipulation and Enhancement	Fish/Shellfish Agency: ADEC	Mussel Bed Treatment	R	
920618316. 2	Manipulation and Enhancement	Fish/Shellfish Agency: ADEC	Mussel Bed Treatment, combined with 920615291.2	C	920615291.2

Document ID	Category	Project Type	Title	Status	Combined With
920618316. 3	Manipulation and Enhancement	Sub-Tidal Agency: ADFG	Kelp Regeneration In The Upper Intertidal	P 93039	
920618318. 1	Habitat Protection and Acquisition	Land Acquisition Agency:	Acquisition Of Koniag Corp Inholdings Within The Kodiak State Park, combined with 920601051.1	C	920601051.1
920619321. 1	Habitat Protection and Acquisition	Land Acquisition Agency:	Acquire Olsen Bay Watershed, 920601051.1	C	920601051.1
920619323. 1	Habitat Protection and Acquisition	Land Acquisition Agency:	Habitat Acq. Of Koniag Corp. Inholdings, Kodiak National Wildlife Refuge, 920601051.1	C	920601051.1
920622324. 1	Habitat Protection and Acquisition	Land Acquisition Agency:	Acquisition Of Habitat, Afognak Island., combined with 920601051.1	C	920601051.1
920622326. 1	Habitat Protection and Acquisition	Inventory Agency:	Workshop To Identify Critical Habitats In PWS Temporate Rain Forest, combined with 920622326.1	P 93059	
920622326. 2	Technical Support	Technical Support Agency: NOAA	Full Funding For Oil Spill Recovery Institute	R	
920622326. 3	Restoration Monitoring	Technical Support Agency:	Full Funding for Cordova Oil Spill Recovery Institute	R	
920622326. 4	Management Actions	Ecosystem Agency: NOAA	Testing Of Patch-Response Patch Dependence Hypothesis-Testing of an Ecosystem Model	R	
920622326. 5	Technical Support	Technical Support Agency: USDA	Develop Video Library Of Intertidal Habitat And Biota To Assess Impact And Determine Recovery, combined with 920615298	C	920615298.2
920622326. 6	Technical Support	GIS Agency: ADNR	Experimental Designs and Statistical Procedures for Damage for Oilspill Cleanup and Restoration Projects	R	
920622326. 7	Restoration Monitoring	Sub-Tidal Agency: ADFG	Characterization Of Near-shore Bottom Habitat	R	
920622326. 8	Restoration Monitoring	Ecosystem Agency: USDA	Multi-agency University Ecosystem Study Of PWS	R	
920622326. 9	Technical Support	GIS Agency: ADNR	Interactive Public Access to Oil Spill and Related Environmental Data in PWS Science Center GIS	R	
920622326. 10	Habitat Protection and Acquisition	Inventory Agency:	Mapping Streams And Salmon Spawning In PWS, combined with 920615273.25	C	920615273.25
920622326. 11	Technical Support	Technical Support Agency: USDA	Establish Natural Resource Library And Computer Support Technical Service In Cordova, combined with 920615298.2	C	920615298.2
920622326. 12	Management Actions	Education Agency: USDA	Cordova Mini-imaginarium, combine with 920615298.25	C	920615298.25

Document ID	Category	Project Type	Title	Status	Combined With
920622326. 13	Management Actions	Education Agency: USDA	Science Of The Sound- Education Program, combined with 920615298.25	C	920615298.25
920622326. 14	Management Actions	Education Agency: USDA	Alaska Oil Spill Curriculum Rewrite And Reprint, combine with 920615298.25	C	920615298.25

PlanQA - Sort by Document ID#

EXXON VALDEZ OIL SPILL

1993 Ideas Table, Sorted by Idea Title

This table allows users to determine what ideas were considered for inclusion in the 1993 work plan. Similar ideas were combined and considered as a unit. One idea from a group was chosen as the lead idea and all similar ideas were combined with it. Thus, ideas which display a "C" in the status column were combined with another idea. In the title field, the document identification number of the idea with which it was combined is noted following the title. **For ideas with a "C" status, it is usually easier to find the lead project with which the "C" idea was combined by proceeding to the "Ideas Table, Sorted by Document Identification Number".** Documents which display "P" or "R" are the lead ideas into which other ideas were combined. Ideas with the "P" status were developed as proposals and the project number appears in the same column as the document identification number and above it. Ideas with "R" in the status column were rejected. Endowment ideas ("E" in the status column) will be considered by the Restoration Team or a subgroup thereof at a later date. This table also displays recommendation factors and evaluation comments which were considered before rejecting or passing ideas. In some cases the evaluation comments were more extensive than the field size allows. For these few, the complete comments are available upon request. In most cases, evaluation factors and comments apply only to "R" and "P" lead ideas (referring to the entire combined group). No entries in these columns for "P" ideas usually indicates good agreement with evaluation criteria.

ABBREVIATION KEY:

FIELD	CODE	EXPLANATION
Preliminary Lead Agency	ADEC	Alaska Dept. of Environmental Conservation
	ADFG	Alaska Dept. of Fish and Game
	ADNR	Alaska Dept. of Natural Resources
	DOI	United States Dept. of the Interior
	NOAA	National Oceanic and Atmospheric Administration
	USDA	United States Dept. of Agriculture
Status	C	Combined with another idea
	D	Duplicate of another idea
	E	Forwarded to Endowment Work Group
	P	Recommend Preparation of Study Plan and Budget
	R	Recommend Rejection

Title Document Author	Project Num. Document ID#	Category Project Type	Lead Agency	Status	Recommend. Factors	Evaluation Comments
17(b) Easement Identification, combined with 920615294.1	920615294. 4	Habitat Protection and Acquisition Education		C	1,	Combined with 291-01. Normal agency responsibility.
Abundance And Distribution Of Forage Fish And Their Influence On Recovery Of Seabirds Impacted By EVOS, combi	920615273. 32	Restoration Monitoring Fish/Shellfish	NOAA	C		
Acquire Olsen Bay Watershed, 920601051.1 Helle, John. None	920619321. 1	Habitat Protection and Acquisition Land Acquisition		C		
Acquisition Of Habitat, Afognak Island., combined with 920601051.1 Carmichael, James. President Afognak Native Corporation	920622324. 1	Habitat Protection and Acquisition Land Acquisition		C		
Acquisition Of Important Recreation Lands, combined with 920601051.1 Johannsen, Neil. ADNR	920615296. 8	Habitat Protection and Acquisition Land Acquisition		C		
Acquisition Of Inholdings In Shuyak Island State Park, combined with 920601051.1 Selby, Jerome. Mayor, Kodiak Borough Borough Mayor, Kodiak Island Borough	920615279. 20	Habitat Protection and Acquisition Land Acquisition		C		
Acquisition Of Koniag Corp Inholdings Within The Kodiak State Park, combined with 920601051.1 Pagano, Frank. President Koniag, Inc.	920618318. 1	Habitat Protection and Acquisition Land Acquisition		C		
Acquisition Of Koniag Corp. Inholdings Within The Kodiak National Wildlife Refuge, combined with 920601051.1 Pagano, Frank. President Koniag, Inc.	920615257. 1	Habitat Protection and Acquisition Land Acquisition		C		

KEY TO RECOMMENDATION FACTORS

1 = No linkage to Exxon Valdez Oil Spill, 2 = Not technically feasible, 3 = Inconsistent with laws or policies, 4 = Project previously funded for close-out, 5 = 1993 Close-out project, 6 = New Project where injury is apparent, 7 = Damage assessment continuation, 8 = No restoration endpoint, 9 = Not time critical 10 = No lost opportunity if not conducted in 1993, 11 = Involves long-term commitment.

Title Document Author	Project Num. Document ID#	Category Project Type	Lead Agency	Status	Recommend. Factors	Evaluation Comments
Acquisition Of Recreational Sites On Kodiak Road System, combined with 920601051.1 Blackett, Roger. Chairman Kodiak St. Prks Citizen's Advisory Board	920601051. 2	Habitat Protection and Acquisition Land Acquisition		C		
Acquisition Of Recreational Sites On Kodiak Road System, combined with 920601051.1 Selby, Jerome. Mayor, Kodiak Borough Borough Mayor, Kodiak Island Borough	920601058. 11	Habitat Protection and Acquisition Land Acquisition		C		
Adult Tagging To Determine Distribution, Migratory Timing And Rate Of Movement Of Pink Salmon In PWS Sharr, Sam. ADF&G	920615297. 41	Management Actions Fish/Shellfish	ADFG	R	9,	297-42 should be funded by the non-profit fish hatcheries.
Alaska Land And Wildlife Conservation Fund, combined with 920604101.1 Cline, Dave. Vice-President National Audubon Society	920601067. 1	Technical Support Endowments		C		
Alaska Oil Spill Curriculum Rewrite And Reprint, combine with 920615298.25 Thomas, G.L.. Director PWS Science Center	920622326. 14	Management Actions Education	USDA	C		
Alutiiq Museum And Culture Center-phase I Construction, combined with 920615298.17 Selby, Jerome. Mayor, Kodiak Borough Borough Mayor, Kodiak Island Borough	920615279. 28	Management Actions Archaeology	ADNR	C		
Anadromous Cutthroat And Dolly Varden Char Habitat Inventory, Evaluation, And Restoration, combined with 920 Schmid, Dave. USFS-Cordova Ranger District	920615298. 38	Habitat Protection and Acquisition Inventory	USDA	C		
Analyze NRDA Samples Left Un-Analyzed, combined with 920604101.1	920601058. 4	Technical Support Endowments	NOAA	C		

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Title Document Author	Project Num. Document ID#	Category Project Type	Lead Agency	Status	Recommend. Factors	Evaluation Comments
Annual Garbage Cleanup Program for Oil Spill Impacted Beaches	920612237. 3	Restoration Monitoring Recreation		R	8,9,10,11	EVOS-linked impact unknown.
Archaeological Outreach-Curator Position. Selby, Jerome. Mayor, Kodiak Borough Borough Mayor, Kodiak Island Borough	920615279. 27	Management Actions Archaeology	USDA	R	8,9,10,	
Archaeological Restoration Site Acquisition, combined with 920601051.1 Bittner, Judith. Office of History/Acheaol ADNR	920615296. 1	Habitat Protection and Acquisition Land Acquisition		C		
Archaeological Restoration-Regional Archaeological Planning Bittner, Judith. Office of History/Acheaol ADNR	920615296. 5	Management Actions Archaeology	ADNR	R	-08,9,10,	Linkage to recovery of injured resources not demonstrated.
Archaeological Site Inventory And Assessment, combined with 920615298.19 Selby, Jerome. Mayor, Kodiak Borough Borough Mayor, Kodiak Island Borough	920615279. 31	Management Actions Archaeology	ADNR	C		
Archaeological Site Protection-public Education-interagency, Combine With 920615296.3 Hamson, Dan. Chief Coastal Programs National Park Service	920615273. 10	Management Actions Archaeology	USDA	C		
Archaeological Site Protection-public Education-national Park Service, Combine With 920615296.3 Hamson, Dan. Chief Coastal Programs National Park Service	920615273. 11	Management Actions Archaeology	USDA	C		
Archaeological Site Protection-site Patrol And Monitoring-national Park Service, Combine With 920615273. Hamson, Dan. Chief Coastal Programs National Park Service	920615273. 13	Restoration Monitoring Archaeology	DOI	C		

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Archaeological Site Protection-Site Patrol Monitoring-Interagency Hamson, Dan. Chief Coastal Programs National Park Service	93008 920615273. 12	Restoration Monitoring Archaeology	DOI	P		DOI-USFWS
Archaeological Site Stewardship - Homer and Kodiak, Combined with 920615298.20	920615296. 4	Management Actions Archaeology	DOI	C		
Archaeological Site Stewardship Program, Combine with 920615298.20 Diters, Charles. Regional Arceaologist US Fish and Wildlife Service	920615273. 14	Management Actions Archaeology	ADNR	C		
Archaeological Specimens, University of Alaska Museum, combined with 920601049.1 Redman, Wendy. Vice President University of Alaska Statewide System	920601049. 3	Technical Support Archaeology	ADNR	C		
Archive Biological and Archaeological Specimens - Revised Proposal, combined with 920601049.1 Steffan, Wallace. University of Alaska Statewide Systems	920601065. 1	Technical Support Coastal Habitat	ADNR	C		
Assessment And Quality Assurance Of Shellfish Resources Donohue, Marke. Kodiak Area Native Association	920615279. 30	Restoration Monitoring Fish/Shellfish	ADFG	R	9,10,	EVOS-linked impact unknown. Technical feasibility unknown.
Assessment Of Marbled Murrelet Foraging Habitat Requirements During Breeding Season McVee, Curtis. Department of the Interior	920615273. 24	Restoration Monitoring Birds	DOI	R	9,10,	
Assist Valdez in Handling Waste Oil Griffin, Doug. City Manager City of Valdez	920601050. 16	Manipulation and Enhancement Services		R	8,9,10,	EVOS-linked impact unknown.

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Ayakulik River Sockeye Salmon Escapement Evaluation Bellinger, Jay. Kodiak National Wildlife Refuge	920615279. 10	Management Actions Fish/Shellfish	ADFG	R	9,10,	EVOS-linked impact unknown.
Bald Eagle Nesting Surveys-Alaska Pen. Pacific Coast Selby, Jerome. Mayor, Kodiak Borough Borough Mayor, Kodiak Island Borough	920615279. 16	Restoration Monitoring Birds	DOI	R	9,10,	Technical feasibility unknown.
Bald Eagle Productivity Survey And Catalog, combined with 920615279.16 Selby, Jerome. Mayor, Kodiak Borough Borough Mayor, Kodiak Island Borough	920615279. 13	Restoration Monitoring Birds	DOI	C		
Beach Subsurface Oil Recovery, combined with 920615294.3 Carlisle, Kelly. Mayor City of Whittier Mayor City of Whittier	920528045. 1	Manipulation and Enhancement Coastal Habitat	ADEC	C		
Bird and Mammal Specimens, University of Alaska Museum, combined with 920601049.1 Redman, Wendy. Vice President University of Alaska Statewide System	920601049. 2	Technical Support Birds	ADNR	C		
Bivalve Shellfish Rehabilitation Project Moyer, Mike. None	920527041. 1	Manipulation and Enhancement Fish/Shellfish	ADFG	R	9,10,	Technical feasibility unknown, at best.
Breeding Population Status Of Harlequin Ducks On Areas Of The Kodiak Island Group W. And S. Sides, combined with Bellinger, Jay. Kodiak National Wildlife Refuge	920615279. 15	Restoration Monitoring Birds	ADFG	C		
Build Facilities For Oil Workers Who Work In Karluk Kodiak Area Derenoff, Margie. Kodiak Area Native Association	920614300. 1	Technical Support Services		R	1,	

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Title Document Author	Project Num. Document ID#	Category Project Type	Lead Agency	Status	Recommend. Factors	Evaluation Comments
uild Research and Monitoring Facilities and rogram/Cook Inlet, Kodiak roll, Henry. None	920603093. 1	Restoration Monitoring Fish/Shellfish	NOAA	R	9,10,	EVOS-linked impact unknown.
-lab-A System For Monitoring Meteorological And ceanographic Variables That Affect Salmon Growth ooney, Robert. Institute of Marine Sciences	920612244. 1	Management Actions Fish/Shellfish	NOAA	R	8,9,10,11	EVOS-linked impact unknown.
D-ROM Publication Of Digital Spatial Data From Exxon aldez Oil Spill Mapping Activities, combined with 920608 hasby, Mark B.. Chief USGS EROS AK Office USGS EROS laska Field Office	920615273. 34	Technical Support GIS	DOI	C		
haracterization And Identification Of Habitats Important To Upland Species (Harlequin, Murrelet, etc), c an Zee, Bruce. USDA-Forest Service	920615298. 44	Habitat Protection and Acquisition Inventory		C		
Characterization Of Near-shore Bottom Habitat Thomas, G.L.. Director PWS Science Center	920622326. 7	Restoration Monitoring Sub-Tidal	ADFG	R	8,9,10,	
Chenega Bay Replacement Subsistence Resource Project Totemoff, Charles. President	920615294. 6	Management Actions Fish/Shellfish	USDA	C	10,	Consistency w/laws and policies unknown. ADOL believes that it is consistent w/ the MOA; USDOI is uncertain. Combine w/920615273.37 (930
Chenega Bay Subsistence Restoration Project (Remove Oil) Totemoff, Charles. President	93027 920615294. 3	Manipulation and Enhancement Coastal Habitat	ADEC	P	11	Budget estimate seems very low. Type A manual pick-up believed to be not appropriate. Machine clean-up needed, so also conisder.
Chenega Chinook And Silver Salmon Release Program Totemoff, Charles. President	93016 920615294. 5	Manipulation and Enhancement Fish/Shellfish	ADFG	P	9,	EVOS-linked impact unknown. Technical feasibility unknown. Needs to be run through Regional Planning Team and obtain licensing,etc. Not time critical

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Chugach Natural Forest Heritage Interpretive Centers, combined with 920615298.17 Van Zee, Bruce. USDA-Forest Service	920615298. 21	Management Actions Archaeology	USDA	C		
Clam Enhancement, combined with 920612242.1 Hetrick, Jeff. Alaska AquaFarm	920514006. 1	Manipulation and Enhancement Fish/Shellfish	ADFG	C		
Coastal Archaeological Inventory And Evaluation Of Archaeological Sites - Interagency, combined with 9206152 Hamson, Dan. Chief Coastal Programs National Park Service	920615273. 7	Management Actions Archaeology	ADNR	C		
Coastal Archaeological Inventory And Evaluation Of Archaeological, Sites Kenai And Katmai Natl Parks., combi Hamson, Dan. Chief Coastal Programs National Park Service	920615273. 6	Management Actions Archaeology	ADNR	C		
Coastal Habitat Comprehensive Intertidal Monitoring Program Highsmith, Ray. UAA, Institute of Marine Science	920610228. 2	Restoration Monitoring Coastal Habitat	ADFG	C		
Coastal Habitat Comprehensive Intertidal Monitoring Program Highsmith, Ray. Institute of Marine Science	920615297. 18	Restoration Monitoring Coastal Habitat	USDA	R	9,10,	A comprehensivwe Natural Recovery Monitoring Project is premature until a final Damage Assessment report is prepared.
Coastal Habitat Injury Assessment - Intertidal Algae Stekoll, Michael. UAA, School of Fisheries & Ocean Science	920610229. 3	Damage Assessment Coastal Habitat	USDA	R	4,	
Coastal Habitat Specimens, University of Alaska Museum Redman, Wendy. Vice President University of Alaska Statewide System	920601049. 1	Technical Support Coastal Habitat	ADNR	R	8,9,11	No need on TS-1. Has carry over money to dispose of. Crchival is rejected. RT will deal with this the week of 7/20. Consider damage assessment by TC

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Coded Wire Tag Recoveries From Commercial Catches In PWS Salmon Fisheries, Combined with 920615297.41 Sharr, Sam. ADF&G	920615297. 42	Management Actions Fish/Shellfish	ADFG	C		
Coded Wire Tagging Of Wild Stock Pink Salmon For Stock Identification Sharr, Sam. ADF&G	920615297. 38	Management Actions Fish/Shellfish	ADFG	R	9,	
Cold Creek Pink Salmon Restoration Honnold, Steve. Fred Division ADF&G	93032 920615297. 20	Manipulation and Enhancement Fish/Shellfish	ADFG	P	9,10,11	Long term commitment is based upon associated bioenhancement of habitat above the stream. Approved for 20 and 23. Rejected for 21 (duplicate form).
Cold Weather Oil Spill School Walker, William. City of Valdez	920615254. 1	Technical Support Education		R	8,9,10,	EVOS-linked impact unknown.
Communication System for Oil Spill Program Van Zee, Bruce. USDA-Forest Service	93048 920615298. 48	Technical Support Services	USDA	P	10,	Lead agency FS with ADEC cooperating. Tailor proposal to maintain existing FM system while gathering information on converting to a cellular system.
Comprehensive Monitoring Program	93041 920615262. 2	Restoration Monitoring Ecosystem	NOAA	P		Delete implementation portion.
Construction Of Chenega Bay Marine Service Center Totemoff, Philip. Chenega Bay I.R.A. Council	920615274. 1	Technical Support Services	ADNR	R	2,9,10,11	Consistency w/laws and policies unknown. USDOI - believes this is legal; ADOL does not since there is no connection to restoring natural resourc
Construction Of Chenega Marine Service Center, combined with 920615274.1 Totemoff, Philip. Chenega Bay I.R.A. Council	920617313. 1	Technical Support Services	ADNR	C		

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Cook Inlet Comprehensive Monitoring Program Parker, Lisa. Regional Citizens Advisory Council	920612235. 1	Damage Assessment Ecosystem	NOAA	R	9,10,	
Cordova Environmental Education Center, combined with 920615273.25 Van Zee, Bruce. USDA-Forest Service	920615298. 27	Management Actions Education	USDA	C	9,10,11	
Cordova Environmental Reporter Winchester, James. KCHU Radio	920601064. 1	Management Actions Education	USDA	R	10,11	Not most cost effective because of Admin. Public Relations personnel and the PAG is coming on-line along with the general media.
Cordova Mini-imaginarium, combine with 920615298.25 Thomas, G.L.. Director PWS Science Center	920622326. 12	Management Actions Education	USDA	C		
Cultural Emergency Response System	920615298. 1	Technical Support Services	USDA	R	8,9,10,	EVOS-linked impact unknown.
Cutthroat Trout And Dolly Varden Hatchery Arruda, David. Cordova Fly-Fishers	920615249. 2	Manipulation and Enhancement Fish/Shellfish	ADFG	R	9,10,	
Damage Assessment Of Economic Damages To Wilderness-based Tourism Lethcoe, Nancy. Ak Wilderness Recreation & Tourism Assoc	920602084. 1	Damage Assessment Inventory	ADNR	C		EVOS-linked impact unknown. ADOL - only do this in order to estimate loss of services and to determine how to restore sevices to the baseline levels.
Database Integration Simonson, Bruce. ADF&G	93053 920608184. 1	Technical Support Services	ADFG	P		Develop for both state and federal documentation. Forwarded to the GIS Working Group.

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Database Management - NRDA FS30, combined with 920608184.1 Simonson, Bruce. ADF&G	920608184. 2	Technical Support Services	ADFG	C		
Determine Status Of Marbled Murrelet Populations In Oiled National Parks Hamson, Dan. Chief Coastal Programs National Park Service	920615273. 3	Restoration Monitoring Birds	DOI	R	9,10,	
Determine The Extent Of Oil Spill Injuries To Harlequin Ducks In National Parks, combined with 920615297.31 Hamson, Dan. Chief Coastal Programs National Park Service	920615273. 2	Restoration Monitoring Birds	ADFG	C		
Determine The Status Of Bald Eagle Populations In Oiled National Parks, combined with 920615279.16 Hamson, Dan. Chief Coastal Programs National Park Service	920615273. 5	Restoration Monitoring Birds	DOI	C		
Develop Harvest Guidelines To Aid Restoration Of Injured Terrestrial Mammals And Seaducks Nowlin, Roy. ADF&G	93011 920615297. 30	Management Actions Birds	ADFG	P		
Develop Protocols For Analysis And Assessment Of Benthic Biological, Physical, And Hydrocarbon Data Feder, Howard. UAF	920615297. 11	Technical Support Sub-Tidal	ADFG	R	4,	EVOS-linked impact unknown.
Develop User Friendly Synopsis Of Oil Spill Information, combine with 920615298.25 Ott, Riki. Oil Reform Alliance	920604104. 1	Management Actions Education	USDA	C		
Develop Video Library Of Intertidal Habitat And Biota To Assess Impact And Determine Recovery, combined with 92061 Thomas, G.L.. Director PWS Science Center	920622326. 5	Technical Support Technical Support	USDA	C		

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evelopment Of Economic Guidelines And Cost Benefit nalysis Of Oilspill Projects For NEPA And TC lartman, Jeff. Fred Division ADF&G	920615297. 16	Technical Support Services	USDA	R	9,10,	Duplicative of Walcoff contract and also 1992 funding to Restoration Planning Work Group for analysis.
evelopment Of Managment Strategies For Enhancing ecovery Rate Of Birds And Sea Otter Populations lcVee, Curtis. Department of the Interior	920615273. 31	Management Actions Birds	DOI	R	9,10,	
istribution Of Prey Species For Apex Predator Species (Murre, Guillemot, Murrelet, Harbor Seal, Etc.) lone, None. NOAA-NMFS, OSDA&RO	920615262. 1	Restoration Monitoring Fish/Shellfish	NOAA	R	9,10,	Reduce focus to design sampling program. Technical feasibility unknown.
istribution, Abundance, Habitat Use And Phylogeny Of anada Geese In PWS ogan, Dan. Wildlife Biologist USFS	920615298. 52	Habitat Protection and Acquisition Inventory		R	1,	
lectronic Archiving Of Exxon Valdez Response Records, ombined with 920608184.1 Bruce, David. Restoration Specialist ADEC-EVOS Project	920615290. 2	Technical Support Services	ADEC	C		
ndowment of Sinking Fund Komisar, Jerome. President University of Alaska	920604101. 1	Technical Support Endowments		E		Refer to Endowment Working Group.
Endowment Proposal I, combined with 920604101.1 Kehrer, Peg. Project Assistant ADF&G	920615287. 1	Technical Support Endowments		C		
Endowment Proposal II, combined with 920604101.1 Kehrer, Peg. Project Assistant ADF&G	920615287. 2	Technical Support Endowments		C		

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ndowment, combined with 920604101.1	920615296. 9	Technical Support Endowments	USDA	C		
:ndowment, combined with 920604101.1	920615298. 13	Technical Support Endowments	USDA	C		
:ndowment, combined with 920604101.1	920615298. 51	Technical Support Endowments	USDA	C		
:nhanced Management For Cutthroat Trout And Dolly Varden n PWS. Same As 920615249.1 lcCarron, Suzanne. Fishery Biologist ADF&G	93018 920615297. 28	Management Actions Fish/Shellfish	ADFG	P		Reduce to 2 years; address some technical concerns. Coordinate with Ken Holbrook on technical concerns.
:nhanced Trail Opportunities, Including Columbia And Blackstone Glacier Trails, combined with 920615298.55 /an Zee, Bruce. USDA-Forest Service	920615298. 16	Manipulation and Enhancement Recreation	USDA	C		
:nhancement Of The Pacific Herring Kodiak Area Native Association	920615279. 29	Manipulation and Enhancement Fish/Shellfish	ADFG	R	9,10,	EVOS-linked impact unknown. Technical feasibility unknown.
:nvironmental Education Center In PWS. /an Zee, Bruce. USDA-Forest Service	920615298. 50	Management Actions Education	USDA	R	9,10,11	
Environmental Learning Resource Center Selby, Jerome. Mayor, Kodiak Borough Borough Mayor, Kodiak Island Borough	920615279. 32	Management Actions Education	ADNR	R	9,10,11	

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Est. An Ecological Basis For Restoring And Enhancing The Mixed-stock Salmon Resources Of PWS. Cooney, Ted. UAF	920615297. 75	Manipulation and Enhancement Fish/Shellfish	ADFG	R	9,10,	
Establish Natural Resource Library And Computer Support Technical Service In Cordova, combined with 920615298.2 Thomas, G.L.. Director PWS Science Center	920622326. 11	Technical Support Technical Support	USDA	C		
Establishment Of User-friendly GIS And Remote-sensing Demonstration Center For Public-5 Communities, combined w Podolsky, Richard. None	920611233. 5	Technical Support GIS	ADNR	C		
Experimental Designs and Statistical Procedures for Damage for Oilspill Cleanup and Restoration Projects Thomas, G.L.. Director PWS Science Center	920622326. 6	Technical Support GIS	ADNR	R	9,10,	Duplicative of on-going studies.
Experimental Evaluation Of Oiled/control Paired Design Used In Assessing Inter/Subtidal Community Dean, Thomas. Coastal Resources Associates	93037 920610230. 1	Restoration Monitoring Sub-Tidal	NOAA	P		Careful attention to what is an oiled area and what is a control area in the technical approach (Treatment History).
Experimental Studies Of Interaction Between Subtidal Epifaunal Invertebrates Dean, Thomas. Coastal Resources Associates	920610230. 2	Damage Assessment Sub-Tidal	ADFG	R	9,10,	
Experimental Studies of Interaction Between Subtidal Epifaunal Invertebrates, combined with 920618315.1	920612236. 4	Restoration Monitoring Sub-Tidal	USDA	C		
Exxon Valdez Oil Spill Marine Sciences Endowment I, combined with 920604101.1 Sturgulewski, Arliss. Alaska State Legislature	920603094. 1	Technical Support Endowments		C		

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Exxon Valdez Oil Spill Marine Sciences Endowment II, combined with 920604101.1 Sturgulewski, Arliss. Alaska State Legislature	920603094. 2	Technical Support Endowments		C		
Eyes On Wildlife-injured Resources And Their Restoration, combined with 920615298.25 Sterne, Charla. Wildlife Biologist USFS	920615298. 39	Management Actions Education	USDA	C		
Fate And Transport Of Subsurface Hydrocarbons In Beach Deposits In PWS Carpenter, Phillip. District Chief USGS	920615273. 36	Restoration Monitoring Coastal Habitat	DOI	R	8,9,10,	
Feasibility Of Fish Passes As Oilspill Restoration, combined with 920615297.73 Wedemeyer, Kate. Fisheries Biologist USFS--Glacier Ranger Station	920615298. 41	Manipulation and Enhancement Fish/Shellfish	USDA	C		
Feeding Ecology And Reproductive Success Of Black Oystercatchers In PWS McVee, Curtis. Department of the Interior	93035 920615273. 17	Restoration Monitoring Birds	DOI	P		Answer to criteria about restoration end-point, 1993 work critical and opportunity lost are all "yes" if tied to mussel beds.
Field Study Of Bioremediation Enhancement Treatment Methods Viteri, Alex. ADEC	920615289. 1	Management Actions Sub-Tidal	ADEC	R	8,9,10,	
Fish Limiting Factors Analysis, combined with 920615298.36 Van Zee, Bruce. USDA-Forest Service	920615298. 33	Habitat Protection and Acquisition Inventory	USDA	C		
Fort Richardson Pipeline. Fallon, Michael.	93026 920615297. 48	Manipulation and Enhancement Fish/Shellfish	ADFG	P	11	Is a replacement action for lost services. Is also an exception to long-term commitment criteria.

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ry Rearing To Improve Survival And Restore Wild Pink nd Chum Salmon Stocks Millette, Mark. Fishery Biologist ADF&G	920615297. 71	Manipulation and Enhancement Fish/Shellfish	ADFG	R	9,10,	
ucus Recovery In Upper Intertidal Zones (continuation)f Study) Stekoll, Michael. UAA, School of Fisheries & Ocean Science	920610229. 2	Restoration Monitoring Coastal Habitat	USDA	C		Combined with 920618316-3 and 297-19. "Recovery Monitoring and Restoration of the Upper Intertidal Aone". This project should address the recovery of
ucus Restoration Feasibility Study, combined with 920618316.3 Stekoll, Michael. UAA, School of Fisheries & Ocean Science	920610229. 1	Manipulation and Enhancement Coastal Habitat	USDA	C		
ull Funding for Cordova Oil Spill Recovery Institute	920622326. 3	Restoration Monitoring Technical Support		R	3,	OPA '90 did not authorize permanent facility.
ull Funding For Oil Spill Recovery Institute Thomas, G.L.. Director PWS Science Center	920622326. 2	Technical Support Technical Support	NOAA	R	8,9,10,	
und A PWS Nature Center, combined with 920615298.50 Graham, Marnie. Volunteer Volunteer PWS Conservation Alliance	920610225. 1	Management Actions Education	USDA	C		
Genetic Monitoring of Kodiak Island Sockeye Salmon Seeb, Jim. ADF&G	920615297. 36	Restoration Monitoring Fish/Shellfish	ADFG	R	9,10,	Not time critical if other Red Lake projects go through.
Genetic Risk Assessment Of Injured Salmonids Seeb, Jim. ADF&G	93004 920615297. 33	Management Actions Fish/Shellfish	ADFG	P		Move from Damage Assessment to Management Action. Target pink salmon only - one year study.

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Title Document Author	Project Num. Document ID#	Category Project Type	Lead Agency	Status	Recommend. Factors	Evaluation Comments
Genetic Stock Identification For Herring In PWS Seeb, Jim. ADF&G	920615297. 34	Management Actions Fish/Shellfish	ADFG	R	9,10,	EVOS-linked impact unknown.
Genetic Stock Identification Of Kenai River Sockeye For Protection In Mixed Harvest Areas Seeb, Jim. ADF&G	93012 920615297. 35	Management Actions Fish/Shellfish	ADFG	P	11	
Geographic Information System Mapping Of Natural Resources In Western PWS, combined with 920608184.1 Sterne, Charla. Wildlife Biologist USFS	920615298. 47	Technical Support GIS	ADNR	C		
Green Island Cabin Replacement, combined with 920615298.55 Baker, Cal. District Ranger Cordova Ranger District	920615298. 24	Manipulation and Enhancement Recreation	USDA	C		
Habitat Acq. Kachemak, combined with 920601051.1 Elvsaas, Fred. Seldovia Native Association, Inc.	920609217. 1	Habitat Protection and Acquisition Land Acquisition		C		
Habitat Acq. Kodiak, Kodiak Refuge, combined with 920601051.1 Barry, Donald. Vice President World Wildlife Fund	920609221. 1	Habitat Protection and Acquisition Land Acquisition		C		
Habitat Acq. Of Koniag Corp. Inholdings, Kodiak National Wildlife Refuge, 920601051.1 Pagano, Frank. President Koniag, Inc.	920619323. 1	Habitat Protection and Acquisition Land Acquisition		C		
Habitat Acq., Afognak, combined with 920601051.1 Carmichael, James. Afognak Native Corporation	920615295. 1	Habitat Protection and Acquisition Land Acquisition		C		

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Habitat Acq., Kodiak Island, combined with 920601051.1 Selby, Jerome. Mayor, Kodiak Borough Borough Mayor, Kodiak Island Borough	920615279. 12	Habitat Protection and Acquisition Land Acquisition		C		
Habitat Acq., North Afognak Island, combined with 920601051.1 Selby, Jerome. Mayor, Kodiak Borough Borough Mayor, Kodiak Island Borough	920615279. 8	Habitat Protection and Acquisition Land Acquisition		C		
Habitat Aquisition Evaluation, Evaluate Pacific Seabird Group List, Eliminate Predators, combined with 920603092. Harrison, Craig. Vice Chairman Conserv. Pacific Seabird Group	93060 920603092. 1	Manipulation and Enhancement Birds		P		
Habitat Use And Behavior Of Harbor Seals In PWS Frost, Kathryn. Wildlife Biologist ADF&G	93046 920615297. 14	Restoration Monitoring Marine Mammals	ADFG	P		
Habitat Utilization By Sea Otters And Designation Of Protected Areas McVee, Curtis. Department of the Interior	93044 920615273. 16	Habitat Protection and Acquisition Inventory	DOI	P		Only for 1993, not for 1994. Copy to Habitat Protection for information. HPWG should track results.
Harlequin Duck Restoration And Monitoring Study Patten, Samuel. Wildlife Biologist ADF&G	93033 920615297. 31	Restoration Monitoring Birds	ADFG	P		No workshop and to be covered by peer review synthesis. Limit to oiled areas, but consider looking outside oiled areas if critical. Study to also
Heritage Information Replacement, combined with 920615298.19 Bittner, Judith. Office of History/Acheaol ADNR	920615296. 2	Manipulation and Enhancement Archaeology	ADNR	C		
Herring Bay Experimental And Monitoring Studies Highsmith, Ray. Institute of Marine Science	920615297. 19	Restoration Monitoring Coastal Habitat	ADFG	C		

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Title Document Author	Project Num. Document ID#	Category Project Type	Lead Agency	Status	Recommend. Factors	Evaluation Comments
erring Embryo Viability Evaluation - Natural and atastrophic Effects ocan, Richard. Univ. of Washington	920611234. 1	Damage Assessment Fish/Shellfish	ADFG	R	4,9,10,	If this were meant to be a restoration idea, then it is not time critical or a lost opportunity.
orse Marine Creek Pink Salmon Restoration onnold, Steve. Fred Division ADF&G	920615297. 21	Manipulation and Enhancement Fish/Shellfish	ADFG	R	9,10,11	21 rejected. 297 - 20 and 23 approved.
umpback Whale Project atkin, Olga and Craig. The North Gulf Oceanic Society	920526033. 1	Damage Assessment Marine Mammals	NOAA	R	1,	
ydrocarbons in Mussels From Coastal Gulf of Alaska, ook Inlet and Shelikof Strait lcVee, Curtis. Minerals Management Service	920615273. 33	Restoration Monitoring Fish/Shellfish	NOAA	R	9,10,	NOAA has been conducting similar studies since the mid-seventies.
ydrodynamic Purging of Oil from Contaminated Beaches, WS. arpenter, Phillip. District Chief USGS	920615273. 35	Manipulation and Enhancement Coastal Habitat	ADEC	R	10,	Technical feasibilty unknown.
dentification And Protection Of Important Bald Eagle labitats	93052 920615273. 30	Habitat Protection and Acquisition Inventory		R	9,10,	Compare with other eagle studies for consistency.
dentification Of Critical Upland Wildlife Habitat in WS, combined with 920603092.1 lowlin, Roy. ADF&G	920615297. 29	Habitat Protection and Acquisition Inventory		C		Recommend development of proposal-concentrate information collection on wildlife injured by EVOS. Remove work on brown bears. Par
dentification Of Nesting Habitat Criteria And eproductive Success For Marbled Murrelet, combined with	93051 920615273. 25	Habitat Protection and Acquisition Inventory		P		

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Identification Of Seabird Feeding Areas From Remotely Sensed Data And Impact On Restoration Podolsky, Richard. None	920611233. 3	Management Actions Birds	DOI	R	8,9,10,	Technical feasibility unknown.
Improve Marine Parks	920601050. 15	Management Actions Recreation	NOAA	R	9,10,11	EVOS-linked impact unknown.
Improve Public Health Facilities, PWS Griffin, Doug. City Manager City of Valdez	920601050. 18	Manipulation and Enhancement Services		R	1,	
Increased Access PWS, combined with 920615298.55 Griffin, Doug. Mayor Mayor City of Valdez	920601050. 14	Manipulation and Enhancement Recreation	USDA	C		
Injury and Recovery of Deep-Benthic Macrofaunal Communities, combined with 920618315.1 Feder, Howard. UAF	920615297. 12	Restoration Monitoring Sub-Tidal	ADFG	C		
Injury to Salmon Eggs and Pre-emergent Fry in PWS, Laboratory Verification Rice, Stanley. NOAA/NMFS Auke Bay Fisheries Lab	93003 920615258. 3	Management Actions Fish/Shellfish	ADFG	P		Moved from damage assessment to management action. Valuable information will be gained on a yearly basis.
Inland Survey Of Marbled Murrelet Habitat Use In PWS, combined with 920615273.25 Logan, Dan. Wildlife Biologist USFS	920615298. 53	Habitat Protection and Acquisition Inventory		C		
Instream Habitat And Stock Restoration Techniques For Anadromous Fish. Kuwada, Mark. PI ADF&G	920615297. 73	Manipulation and Enhancement Fish/Shellfish	ADFG	R	9,10,	

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nteractive Public Access to Oil Spill and Related nvironmental Data in PWS Science Center GIS homas, G.L.. Director PWS Science Center	920622326. 9	Technical Support GIS	ADNR	R	1,	
nterpretation Of PWS, combined with 920615298.26 'an Zee, Bruce. USDA-Forest Service	920615298. 26	Management Actions Recreation	USDA	C		
ntertidal/Shallow Subtidal Crustacean (Decapod) :omposition 'ining, Ivan. Biometrician ADF&G	920615297. 47	Management Actions Fish/Shellfish	ADFG	R	8,9,10,	EVOS-linked impact unknown. Technical feasibility unknown.
nventory And Effects Of Straying Hatchery Pink Salmon)n Wild Pink Salmon Populations In PWS ;harr, Sam. Fishery Biologist ADF&G	93013 920615297. 39	Management Actions Fish/Shellfish	ADFG	P		
:nventory, Monitor, Protect Permanent Monitoring Sites)ishop, Mary Anne. Acting Manager Copper River Delta Institute	920615298. 29	Restoration Monitoring Ecosystem	USDA	R	9,10,	
Juvenile Spot Shrimp Habitat, Combined with 920615297.44 Vining, Ivan. Biometrician ADF&G	920615297. 46	Management Actions Fish/Shellfish	ADFG	C		
Kelp Regeneration In The Upper Intertidal Lawley, Gary. Martech USA, Inc.	93039 920618316. 3	Manipulation and Enhancement Sub-Tidal	ADFG	P	9,10,	Approved and combined with 6307, 229-01. Lead Agency ADF&G, cooperate with NOAA. Macrocystis will not survive in upper intertidal; therefore
Kenai River Sockeye Salmon Restoration Tarbox, Kenneth. Fishery Biologist ADF&G	93015 920615297. 43	Management Actions Fish/Shellfish	ADFG	P	11	

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itoi Bay Hatchery Oil Spill Equipment Storage oyce, Timothy. Kitoi Bay	920615297. 26	Technical Support Services	ADFG	R	1,	
itoi Bay Hatchery On Afognak Island lalloy, Larry. Kodiak Regional Aquaculture Association	920615279. 24	Manipulation and Enhancement Fish/Shellfish	ADFG	R	1,	Early Marine Life History studies on Kodiak Island on salmonids showed no injury.
odiak Bear Refuge Stream Mouth Inholdings Acq., ombined with 920601051.1 elby, Jerome. Mayor, Kodiak Borough Borough Mayor, odiak Island Borough	920615279. 9	Habitat Protection and Acquisition Land Acquisition		C		
odiak Island Borough Endowment Fund to Support estoration Activities, combined with 920604101.1	920615279. 98	Technical Support Endowments		C		
odiak Wildlife Habitat Conservation And Acquisition roject, combined with 920601051.1 hristiansen, Emil. Old Harbor Native Corp.	920615288. 1	Habitat Protection and Acquisition Land Acquisition		C		
and Acq. PWS, Kodiak, combined with 920601051.1 hipps, Alan. Ak Center for the Environment	920615293. 1	Habitat Protection and Acquisition Land Acquisition		C		
Land Exchange Chuyak Island For Land On Kodiak Island Road System, combined with 920601051.1 Blackett, Roger. Chairman Kodiak St. Prks Citizen's Advisory Board	93058 920601051. 1	Habitat Protection and Acquisition Land Acquisition		P		
Land Exchange Shuyak For Kodiak Land On Road System, combined with 920601051.1 Selby, Jerome. Mayor, Kodiak Borough Borough Mayor, Kodiak Island Borough	920601058. 10	Habitat Protection and Acquisition Land Acquisition		C		

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.andfill Liner iriffin, Doug. City Manager City of Valdez	920601050. 10	Manipulation and Enhancement Services		R	1,	
.arval Herring Age and Growth in PWS Using Otoliths lonnold, Steve. Fred Division ADF&G	920615297. 5	Restoration Monitoring Fish/Shellfish	ADFG	C		
.ong-term Epidemiology Study Of Oil Spill Workers)tt, Riki. Oil Reform Alliance	920604104. 2	Damage Assessment Terestrial Mammals	ADEC	R	1,	Technical feasibility unknown. Consistency w/state and federal laws unknown. USDOI - legal. ADOL - illegal, nothing to do with natural res
Long-term Monitoring Of Marine Environment Of Resurrection Bay. Combined with 920615262.2 Royer, Thomas. Professor of Marine Sci. University of Alaska, Fairbanks	920526039. 1	Damage Assessment Ecosystem	ADFG	C	8,9,10,11	
Long-term Population Monitoring For Bald Eagles, combined with 920615279.16 McVee, Curtis. Department of the Interior	920615273. 29	Restoration Monitoring Birds	DOI	C		
Low Impact Recreation Development Nellie Juan, College Fiord Wilderness Study Area Van Zee, Bruce. USDA-Forest Service	920615298. 55	Manipulation and Enhancement Recreation	USDA	R	9,10,	EVOS-linked impact unknown. These studies are contingent upon the results of the damage assessment recreation proposals for 1993.
Lower Cook Inlet Sockeye Salmon Restoration And Enhancement Dudiak, Nick. ADF&G	920615297. 9	Manipulation and Enhancement Fish/Shellfish	ADFG	R	9,10,	Technical feasibility unknown.
Management Of Restoration Database, Sample Archiving, Chemical Interpretation, combined with 920608184.1 Rice, Stanley. NOAA	920608184. 3	Technical Support Services	ADFG	C		

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ap Of Spill Area By Resource, combined with 920615298.25 leston, Jules. None	920604114. 1	Management Actions Education	ADNR	C		
apping Streams And Salmon Spawning In PWS, combined ith 920615273.25	920622326. 10	Habitat Protection and Acquisition Inventory		C		
arbled Murrelet Vocalizations In Conjunction With tificial Nests odolsky, Richard. None	920611233. 4	Manipulation and Enhancement Birds	DOI	R	8,	Technical feasibility unknown. We don't believe that nest site habitat is a critical factor.
ariculture Technical Center, Combined with 920612242.1 ochran, Jim. Mariculture Coordinator ADF&G	920615297. 7	Manipulation and Enhancement Fish/Shellfish	ADFG	C		
arine Recreation Plan For Spill Area ohannsen, Neil. ADNR	920615296. 6	Management Actions Recreation	ADNR	R	9,10,	EVOS-linked impact unknown.
aritime Wing Valdez Museum, combined with 920615298.50 riffin, Doug. Mayor Mayor City of Valdez	920601050. 11	Management Actions Education	ADNR	C		
ark 17(b) Easements On Port Graham Land. orman, Patrick. Port Graham Corporation	920615291. 1	Habitat Protection and Acquisition Inventory		R	1,	
gmt. Of Restoration Database,samples, Archiving, And hemical Interpretation, combined with 920608184.1	920615258. 2	Technical Support Services	NOAA	C		

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Title Document Author	Project Num. Document ID#	Category Project Type	Lead Agency	Status	Recommend. Factors	Evaluation Comments
igratory Shore Birds Staging In Rocky Intertidal abitats Of PWS ishop, Mary Anne. Acting Manager Copper River Delta nstitute	920615298. 32	Restoration Monitoring Birds	USDA	R	9,10,	
igratory Waterfowl And Shorebird Monitoring, combined ith 920603092.1 terne, Charla. Wildlife Biologist USFS	920615298. 40	Habitat Protection and Acquisition Inventory	USDA	C	9,10,	Include as component of Habitat Protection data collection. * Appropriate parts were included in 920615298-46.
onitor Population Status Of Seabird Nesting Colonies In he Spill Zone cVee, Curtis. Department of the Interior	920615273. 27	Restoration Monitoring Birds	DOI	R	9,10,	
onitor Productivity Of Bald Eagles In PWS Kodiak And laska Pen. Pacific Coast, combined with 920615279.16 cVee, Curtis. Department of the Interior	920615273. 28	Restoration Monitoring Birds	DOI	C		
onitoring For Recruitment Of Littleneck Clams. ohnson, J.D.. Fishery Biologist ADF&G	920615297. 25	Restoration Monitoring Fish/Shellfish	ADFG	R	9,10,	
lonitoring Injury to Rockfish in PWS lcCarron, Suzanne. ADF&G	93047 920618315. 1	Restoration Monitoring Fish/Shellfish	NOAA	P		Applied Marime Science to write one 3-pager for subtidal.
lonitoring Of Sea Otter Population Abundance, listribution, Reproduction, And Mortality. lcVee, Curtis. Department of the Interior	93043 920615273. 15	Restoration Monitoring Marine Mammals	DOI	P		Approved. Combine with 279-14, 058-08
lonitoring Of Small Cetaceans In PWS	920615261. 3	Damage Assessment Marine Mammals	NOAA	R		EVOS-linked impact unknown. Injury is not apparent.

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Title Document Author	Project Num. Document ID#	Category Project Type	Lead Agency	Status	Recommend. Factors	Evaluation Comments
onitoring Rate Of Recovery Of Murres In Breeding olonies Downstream From Oil Spill. Same As 920615279.19 cVee, Curtis. Department of the Interior	93049 920615273. 18	Restoration Monitoring Birds	DOI	P		Go to 3-pager and set estimated duration of project at one year only.
onitoring Sites - Collector Beaches and Lagoons. hite, Lonnie. Area Biologist ADF&G	920615279. 99	Restoration Monitoring Coastal Habitat	ADFG	R	9,10,	USDOI and ADOL - legal.
onitoring The Rate Of Recovery Of Murres In Breeding olonies In Or Downstream From Oil Spill. Combined with 9 elby, Jerome. Mayor, Kodiak Borough Borough Mayor, odiak Island Borough	920615279. 19	Restoration Monitoring Birds	DOI	C		
lonitoring Trends In Abundance Of Harbor Seals In PWS 993-1994, combined with 920615297.14 rost, Kathryn. Wildlife Biologist ADF&G	920615297. 15	Restoration Monitoring Marine Mammals	ADFG	C		
lontague Island Chum Salmon Restoration chmid, Dave. USFS-Cordova Ranger District	93025 920615298. 37	Manipulation and Enhancement Fish/Shellfish	USDA	P		
lulti-agency Library On PWS And Copper River Delta Bishop, Mary Anne. Acting Manager Copper River Delta Institute	920615298. 2	Technical Support Services	USDA	R	9,10,	Services already provided by OSPIC.
Multi-agency University Ecosystem Study Of PWS Thomas, G.L.. Director PWS Science Center	920622326. 8	Restoration Monitoring Ecosystem	USDA	R	8,9,10,	EVOS-linked impact unknown.
Mussel Bed Treatment None, None. Martech USA, Inc.	920618316. 1	Manipulation and Enhancement Fish/Shellfish	ADEC	R	2,	ADOL and USDOI - legal.

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ussel Bed Treatment, combined with 920615291.2	920618316. 2	Manipulation and Enhancement Fish/Shellfish	ADEC	C		
ative Museum And Cultural Center, Kodiak, combine with 20615298.17	920601058. 9	Management Actions Archaeology	ADNR	C	9,10,11	EVOS-linked impact unknown.
atural Product Natural Life Restoration usher, Jerry. Rusher's Services	920601059. 1	Manipulation and Enhancement Coastal Habitat	ADEC	R	9,10,	Technical feasibility unknown, at best. Birds do not feed on oligochaetes. Diatomaceous is not a fertilizer. Consistency w/laws and poli
latural Product Natural Life Restoration, combined with 20601059.1 usher, Jerry. Rusher's Services	920601062. 1	Manipulation and Enhancement Coastal Habitat	ADEC	c		
latural Product Natural Life Restoration, combined with 20601059.2. usher, Jerry. Rusher's Services	920601061. 1	Manipulation and Enhancement Coastal Habitat	ADEC	C		
latural Recovery Monitoring of Subtidal Eelgrass Communities in PWS, combined with 920618315.1 Jewett, Stephen. UAF	920615297. 24	Restoration Monitoring Sub-Tidal	ADFG	C		
Natural Recovery Of Oiled And Treated Shorelines Mearns, Alan. NOAA-HMRAD	93040 920615264. 1	Restoration Monitoring Coastal Habitat	NOAA	P		Technical feasibility unknown. ADOL and USDOI believe this is legal.
Natural Recovery of Subtidal Species in PWS, combined with 920618315.1 Varanasi, Collier, Usha, Tracy. NOAA-NMFS, N.W. Fisheries Science Center	920615263. 1	Restoration Monitoring Sub-Tidal	NOAA	C		

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Near Island Fisheries Research Center French, John. UOA-Fishery Industrial Technology Center	920616310. 1	Technical Support Services	ADFG	R	9,10,	
New Field Test of Bioremediation Mearns, Alan. NOAA-HMRAD	920615264. 2	Restoration Monitoring Sub-Tidal	NOAA	R	9,10,	Consistency w/laws and policies unknown. USDOI - legal. ADOL - this is probably legal but not clear cut; if it addresses current issues it is le
November 91 Request for Immediate Funding for Coastal Habitat Specimens, combined with 920601049.1 Jarrel, Gordon. University of Alaska Museum	920601054. 1	Technical Support Coastal Habitat	ADNR	C		
Nuchek Heritage Interpretive Center Van Zee, Bruce. USDA-Forest Service	920615298. 17	Management Actions Archaeology	USDA	R	9,10,	EVOS-linked impact unknown.
Oil and Grease Separator/Fidalgo Griffin, Doug. City Manager City of Valdez	920601050. 2	Manipulation and Enhancement Services		R	8,9,10,	Linkage to recovery of resources not demonstrated.
Oil and Grease Separator/Hazelet Griffin, Doug. City Manager City of Valdez	920601050. 3	Manipulation and Enhancement Services		R	8,9,10,	Linkage to recovery of resources not demonstrated.
Oil And Grease Separator/Valdez Harbor Griffin, Doug. City Manager City of Valdez	920601050. 1	Manipulation and Enhancement Services		R	8,9,10,	Linkage of recovery of resources not demonstrated.
Oil Spill Cooperative/Training Center Griffin, Doug. City Manager City of Valdez	920601050. 12	Management Actions Services		R	8,9,10,	EVOS-linked impact unknown.

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)il Spill Response Valdez Cleanup Co-Op /alker, William. City of Valdez	920615253. 1	Technical Support Services		R	8,9,10,11	EVOS-linked impact unknown.
)il Spill Restoration Support Service And Facilities /an Zee, Bruce. USDA-Forest Service	920615298. 49	Technical Support Services	USDA	R	9,10,11	
)iled Wildlife Rehabilitation Center)avis, Randall. Internationa Wildlife Research	920615247. 1	Manipulation and Enhancement Marine Mammals		R	1,	Technically feasible to build center, however, success rate low for past cleaning activities.
)ilspill Injured Resources Literature Research And Review ;terne, Charla. Wildlife Biologist USFS	920615298. 3	Technical Support Services	USDA	R	8,9,10,	
)ily Bilgewater/Oily Waste Treatment - Several Oil Spill Communities. Kitagawa, Judy. None	920511138. 1	Technical Support Services		R	9,10,	Linkage to recovery of resources not demonstrated.
Otolith Mass Marking As An Inseason Stock Separation Tool To Reduce Wild Stock Salmon Exploitation Willette, Mark. Fishery Biologist ADF&G	920615297. 74	Management Actions Fish/Shellfish	ADFG	R	9,10,	
Paint River Fish Ladder Salmon Stocking Program Chisholm, Brad. None	920612243. 1	Manipulation and Enhancement Fish/Shellfish	ADFG	R	9,10,	EVOS-linked impact unknown. Project technically feasible, but effect of stocking this area (river) is unknown.
Passports In Time--Cultural Resource Patterns In PWS, Combine with 920615296.3 Van Zee, Bruce. USDA-Forest Service	920615298. 22	Management Actions Archaeology	DOI	C		

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'ayoff Debt of Valdez Fisheries Development Association Ialker, William. City Attorney - City of Valdez	920615256. 1	Technical Support Endowments		R	3,	Inappropriate to use civil settlement funds to compensate third party litigation claims.
'BS Program On PWS, combined with 920615298.25 /an Zee, Bruce. USDA-Forest Service	920615298. 7	Management Actions Education	USDA	C		
'hoto-Identification Studies of PWS Killer Whales, :ombined with 920615261.2)ahlheim, Loughlin, Marilyn, Thomas. NMFS-NMML	920615261. 1	Restoration Monitoring Marine Mammals	NOAA	C		
'igeon Guillemot Recovery Enhancement And Monitoring 1cVee, Curtis. Department of the Interior	93034 920615273. 23	Restoration Monitoring Birds	DOI	P		Restoration endpoint better defined in 3 pager.
'ink Creek Pink Salmon Restoration, combined with 920615297.20 Honnold, Steve. Fred Division ADF&G	920615297. 23	Manipulation and Enhancement Fish/Shellfish	ADFG	C		
Pink Salmon Egg to Pre-Emergent Fry Survival in PWS, combined with 920615258.3	920615297. 37	Restoration Monitoring Fish/Shellfish	ADFG	C		
Pink Salmon Escapement Enumeration, combined with 920615297.39 Sharr, Sam. ADF&G	920615297. 40	Management Actions Fish/Shellfish	ADFG	C		
Port Graham Salmon Hatchery Chmielewski, Tasha. Chugach Regional Resources Commission	920615270. 1	Manipulation and Enhancement Fish/Shellfish	ADFG	R	9,10,	EVOS-linked impact unknown.

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Title Document Author	Project Num. Document ID#	Category Project Type	Lead Agency	Status	Recommend. Factors	Evaluation Comments
ost-Oilspill Recreation-based User Survey For PWS aker, Cal. District Ranger Cordova Ranger District	93001 920615298. 28	Damage Assessment Recreation	USDA	P	6,	EVOS-linked impact unknown. Tailor study to determine whether injury has occurred to recreational services.
ower Creek Hydropower Project	920615286. 3	Manipulation and Enhancement Air/Water	ADNR	R	1,	
ress Release Project On Restoration Program Work uehling, Eric. None	920617314. 1	Management Actions Education	USDA	R	8,9,10,11	
rince William Sound Campground, combined with 20615298.55 an Zee, Bruce. USDA-Forest Service	920615298. 14	Manipulation and Enhancement Recreation	USDA	C		
roductivity And Survival Of Brown Bears In Katmai lational Park lamson, Dan. Chief Coastal Programs National Park Service	920615273. 1	Restoration Monitoring Terestrial Mammals	DOI	R	1,	
rotect Resources And Enhance Visitor Enjoyment Through ncreased Administrative Presence an Zee, Bruce. USDA-Forest Service	920615298. 10	Management Actions Recreation	USDA	R	8,9,10,	EVOS-linked impact unknown. Technical feasibility unknown.
roviding Public Access To Oilspill Gis Databases Using rcview In PC Windows Environment, combined with 92060818 eysher, Larry. Coastal Resources Associates	920612236. 2	Technical Support GIS	ADNR	C		
ublic Access Repository For Oil Spill Geographic Information System, combined with 920608184.1 agenstein, Randall. Prince William Sound Science Center	93057 920608191. 1	Technical Support GIS	ADNR	C		

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ublic Education And Interpretation Of Archaeological esources In State Parks - Train Park Rangers, Combine wi lackett, Roger. Chairman Kodiak St. Prks Citizen's dvisory Board	920601051. 3	Management Actions Archaeology	USDA	C		
ublic Education In Spill Area Archaeology ittner, Judith. Office of History/Acheaol ADNR	93005 920615296. 3	Management Actions Archaeology	USDA	P		Develop brief 3 page description for public education.
ublic Education/interpretation Of Archaeological esources In State Parks, Combine with 920615296.3 elby, Jerome. Mayor, Kodiak Borough Borough Mayor, odiak Island Borough	920601058. 12	Management Actions Archaeology	ADNR	C		
ublic Information and Education an Zee, Bruce. USDA-Forest Service	93009 920615298. 25	Management Actions Education	USDA	P		USDA is lead - cooperate with others. Should have wide range of activities, but no construction.
ublic Use Cabins In State Marine Parks ohannsen, Neil. ADNR	920615296. 7	Manipulation and Enhancement Recreation	ADNR	R	9,10,	EVOS-linked impact unknown.
ublish And Distribute Brochures On Damaged Species, ombined with 920615298.25	920612348. 4	Management Actions Education	USDA	C		
urchase Of Seldovia Native Assoc, Timber Trading Co, ook Inlet Region, Inholdings Kachemak Bay, combined with eiland, Anne. Kachemak Bay Citizens Coalition	920612246. 1	Habitat Protection and Acquisition Land Acquisition		C		
WS Family Of Brochures, combined with 920615298.25 an Zee, Bruce. USDA-Forest Service	920615298. 5	Management Actions Education	USDA	C		

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PWS Family Of Video Programs, combined with 920615298.25 Van Zee, Bruce. USDA-Forest Service	920615298. 6	Management Actions Education	USDA	C		
PWS Herring Egg Loss Survey Biggs, Evelyn. Fishery Biologist ADF&G	920615297. 2	Damage Assessment Fish/Shellfish	ADFG	R	4,	EVOS-linked impact unknown. If this were meant as a restoration idea, then it is not time critical or a lost opportunity.
PWS Herring Spawn Deposition Survey Seeb, Lisa. ADF&G	920615297. 3	Management Actions Fish/Shellfish	ADFG	R	9,10,	EVOS-linked impact unknown.
PWS Herring Tagging Feasibility Study Biggs, Evelyn. Fishery Biologist ADF&G	920615297. 4	Restoration Monitoring Fish/Shellfish	ADFG	R	9,10,	EVOS-linked impact unknown.
PWS Implementation Of Interpretive Plan, combined with 920615298.25 Van Zee, Bruce. USDA-Forest Service	920615298. 9	Management Actions Education	USDA	C		
PWS Kayak Trail, combined with 920615298.55 Van Zee, Bruce. USDA-Forest Service	920615298. 8	Manipulation and Enhancement Recreation	USDA	C		
PWS Landmarks--Evaluation And Interpretation Van Zee, Bruce. USDA-Forest Service	920615298. 19	Management Actions Archaeology	USDA	R	9,10,	EVOS-linked impact unknown.
PWS Large Format Photographic Book, combined with 920615298.25 Van Zee, Bruce. USDA-Forest Service	920615298. 4	Management Actions Education	USDA	C		

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WS Long-Term Monitoring Program-Acute and Chronic oxicity of Residual Hydrocarbons to Littleneck Clams higenaka, Gary. NOAA-HMRAD	920615265. 1	Restoration Monitoring Fish/Shellfish	NOAA	R	9,10,	EVOS-linked impact unknown.
WS Recreation Facilities, combined with 920615298.55 an Zee, Bruce. USDA-Forest Service	920615298. 15	Manipulation and Enhancement Recreation	USDA	C		
WS Salmon Stock Genetics. Combine with 920615297.33 ledemeyer, Kate. Fisheries Biologist USFS--Glacier anger Station	920615298. 42	Management Actions Fish/Shellfish	ADFG	C		
WS Scenic Byway-- Nomination And Interpretive Plan, combined with 920615298.25 an Zee, Bruce. USDA-Forest Service	920615298. 11	Management Actions Education	USDA	C		
WS Site Stewardship Program an Zee, Bruce. USDA-Forest Service	93007 920615298. 20	Management Actions Archaeology	DOI	P		
WS Spot Shrimp Recovery Management Plan rowbridge, Charlie. Fishery Biologist ADF&G	920615297. 44	Management Actions Fish/Shellfish	ADFG	R	9,	EVOS-linked impact unknown.
WS Spot Shrimp Survey rowbridge, Charlie. Fishery Biologist ADF&G	920615297. 45	Restoration Monitoring Fish/Shellfish	ADFG	R	9,10,	EVOS-linked impact unknown.
Quality Assurance For PWS Coded Wire Tagging And Fish Production Records For Improved Mgmt. Ability Hauser, William. ADF&G	93014 920615297. 17	Management Actions Fish/Shellfish	ADFG	P		

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uantification Of Stream Habitat For Harlequin Ducks rom Remotely Sensed Data, combined with 920615297.31 odolsky, Richard. None	920611233. 6	Habitat Protection and Acquisition Inventory		C		
adio-Telemetry Project To Monitor Recovery Of Sea Otters IcVee, Curtis. Department of the Interior	920615273. 21	Restoration Monitoring Marine Mammals	DOI	R	9,	
apid Restoration Of Weathered Crude Beach Subsurface aterial. age, Clayton. SBP Technologies, Inc.	920615271. 1	Manipulation and Enhancement Fish/Shellfish	ADEC	C		
apid Restoration Of Weathered Crude Contaminated Beach ubsurface Material. age, Clayton. SBP Technologies, Inc.	920615266. 1	Manipulation and Enhancement Coastal Habitat	ADEC	R	9,10,	Consistency w/laws and policies unknown; USDOI - legal; ADOL - this project would be legal if it addressed the EVOS, but not if it addressed futur
ecovery Monitoring of Hydrocarbon-Contaminated Subtidal arine Sediment Resources, combined with 920618315.1 'Clair, Charles. Auke Bay Biological Laboratory	920615259. 1	Restoration Monitoring Sub-Tidal	NOAA	C		
Recovery Monitoring Of Intertidal Oiled Mussel Beds In PWS And Gulf Of Alaska Rice, Stanley. NOAA/NMFS Auke Bay Fisheries Lab	93036 920615258. 1	Restoration Monitoring Coastal Habitat	NOAA	P		Focus work on known sites that have previous records (documentation). Tailor new surveys focusing on newly discovered site located by other indivi
Recovery Monitoring Of Intertidal Oiled Mussel Beds Outside PWS, combined with 920615258.1 Hamson, Dan. Chief Coastal Programs National Park Service	920615273. 4	Restoration Monitoring Coastal Habitat	NOAA	C		
Recreation Field Management And Monitoring	920615296. 10	Management Actions Recreation	ADNR	R	8,9,10,	EVOS-linked impact unknown.

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ed Lake Mitigation. hite, Lorne. Fred Division ADF&G	93031 920615297. 70	Manipulation and Enhancement Fish/Shellfish	ADFG	P		ADOL - this would be legal since it would restore services. USDOI - also legal.
ed Lake Salmon Restoration hite, Lorne. Fred Division ADF&G	93030 920615297. 69	Manipulation and Enhancement Fish/Shellfish	ADFG	P	9,10,	Continuation of R113.
educe Disturbance Near Murre Colonies Damaged By Oil pill, combined with 920615273.19 elby, Jerome. Mayor, Kodiak Borough Borough Mayor, odiak Island Borough	920615279. 18	Restoration Monitoring Birds	DOI	C		
educe Disturbance Near Murre Colonies Damaged By The il Spill	93010 920615273. 19	Management Actions	DOI	P		
emote Monitoring Of Intertidal Recovery tekoll, Michael. UAA, School of Fisheries & Ocean cience	920610229. 4	Restoration Monitoring Coastal Habitat	USDA	R	9,10,	Technical feasibility unknown.
emoval Of Alien Predators From Bird Colonies, combined ith 920615279.17 arrison, Craig. Vice Chairman Conserv. Pacific Seabird roup	920603092. 2	Manipulation and Enhancement Birds	DOI	C	9,10,	Out of spill area replacement action.
Removal Of Introduced Foxes To Restore Breeding Seabirds.	920615279. 17	Manipulation and Enhancement Birds	DOI	R	9,10,	
Removal Of Introduced Foxes To Restore Breeding Seabirds. Same As 920615279-17, combined with 920615279.1 McVee, Curtis. Department of the Interior	920615273. 20	Manipulation and Enhancement Birds	DOI	C		

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eplacement Of Oiled Mussels With Commercially Produced ussels, combined with 920615291.2 ochran, Jim. Mariculture Coordinator ADF&G	920615297. 6	Manipulation and Enhancement Fish/Shellfish	ADFG	C		
estoration And Mitigation Of Essential Wetland Habitats or PWS Fish And Wildlife an Zee, Bruce. USDA-Forest Service	93028 920615298. 35	Manipulation and Enhancement Birds	USDA	P	9,10,	EVOS-linked impact unknown. But consider for limited implementation project.
estoration Of Chenega Village Site otemoff, Charles. President	920615294. 2	Manipulation and Enhancement Archaeology	ADNR	R	9,10,	EVOS-linked impact unknown. Consistency w/laws and policies unknown. USDOI - legal. ADOL - if they are considered to be archaeologica
estoration of High-Intertidal Fucus Following EVOS, ombined with 920618316.3 eVogelaere, Foster, Andrew, Michael. Moss Landing arine Laboratories	920616307. 1	Manipulation and Enhancement Coastal Habitat	USDA	C		
estoration of Killer Whales in PWS, combined with 20615261.2 atkin, Craig. None	920514005. 1	Restoration Monitoring Marine Mammals	NOAA	C		
estoration Of Murres By Way Of Behavioral Attraction nd Habitat Enhancement odolsky, Richard. None	93022 920611233. 1	Manipulation and Enhancement Birds	DOI	P		Technical feasibility unknown.
estoration Of Murres By Way Of Transplantation Of hicks-Feasibility Study odolsky, Richard. None	93021 920611233. 2	Manipulation and Enhancement Birds	DOI	P		Technical feasibility unknown.
estoration Of Mussel Beds, combined with 920615291.2. vanoff, Gail. Chenega Corporation	920615294. 1	Manipulation and Enhancement Fish/Shellfish	ADEC	C		

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estoration Of PWS Rockfish And Lingcod Resources ining, Ivan. Biometrician ADF&G	920615297. 1	Management Actions Fish/Shellfish	ADFG	R	9,10,11	EVOS-linked impact unknown.
estoration Of Second Growth Habitat For Wildlife In PWS ogan, Dan. Wildlife Biologist USFS	93029 920615298. 54	Manipulation and Enhancement Coastal Habitat	USDA	P	9,10,	Revisit as limited implementation project.
estoration Of The Coghill Lake Sockeye Salmon Stock. illette, Mark. Fishery Biologist ADF&G	93024 920615297. 72	Manipulation and Enhancement Fish/Shellfish	ADFG	P		Drop from 93 budget Forest Service portion of cost, as it is already paid for. (A portion of FS budget to be dropped. Work with F.S. biologist. KH)
estoration Of Windy Bay Mussel Beds.	93023 920615291. 2	Manipulation and Enhancement Fish/Shellfish	ADEC	P		Funding contingent upon feasibility study results.
estoration Recovery Monitoring Of Stream-rearing nadromous Salmonids, combined with 920603092.1 oski, K.V.. NMFS Auke Bay Laboratory	920615260. 1	Habitat Protection and Acquisition Inventory	USDA	C		
estore Shorelines Damaged By Beach Berm Relocation ethcoe, Nancy. Alaska Wilderness Recreation & Tourism	920612237. 2	Manipulation and Enhancement Coastal Habitat	ADNR	R	9,10,	EVOS-linked impact unknown. Technical feasibility unknown.
SAAMS - Alaska Sealife Center unham, Willard. Seward Marine Center	920605137. 1	Management Actions Education	NOAA	R	9,10,11	Legislature funded initial studies.
Science Of The Sound- Education Program, combined with 920615298.25 Thomas, G.L.. Director PWS Science Center	920622326. 13	Management Actions Education	USDA	C		

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Sea Otter Population Survey And Trends, combined with 920615273.15 Selby, Jerome. Mayor, Kodiak Borough Borough Mayor, Kodiak Island Borough	920615279. 14	Restoration Monitoring Marine Mammals	DOI	C		
Sea Otters In Kodiak Archipelago - Population Status,trends. Combined with 920615273-15 Selby, Jerome. Mayor, Kodiak Borough Borough Mayor, Kodiak Island Borough	920601058. 8	Restoration Monitoring Marine Mammals	DOI	C		
Seabird Colony Restoration, combined with 920615279.17 Harrison, Craig. Pacific Seabird Group	920608200. 1	Manipulation and Enhancement Birds	DOI	C		
Select Critical Sites for Baseline Data Collection, combined with 920604101.1	920601058. 1	Technical Support Endowments		C		
Set Up Revolving Fund for Baseline Sampling and Analysis, combined with 920604101.1	920601058. 2	Technical Support Endowments		C		
Seward Shellfish Hatchery Rolland, Richard. Chugachmiut	93020 920612242. 1	Manipulation and Enhancement Fish/Shellfish	ADFG	P	9,10,	Approved - for feasibility study for bivalves.
Shelter Cove, Cordova Restoration Project Arruda, David. Cordova Fly-Fishers	920615249. 3	Manipulation and Enhancement Fish/Shellfish	ADFG	R	9,10,	EVOS-linked impact unknown.
Shoreline Assessment Bruce, David. Restoration Specialist ADEC-EVOS Project	93038 920615290. 1	Restoration Monitoring Coastal Habitat	ADEC	P		

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horeline Worm Life Monitoring, combined with 920601059.1 usher, Jerry. Rusher's Services	920601063. 1	Manipulation and Enhancement Coastal Habitat	ADEC	C		
ilver Lake Fish Hatchery ischer, Thom. Whitewater Engineering Corp.	920615286. 2	Manipulation and Enhancement Fish/Shellfish	ADFG	R	1,	No EVOS-linked impact; technical feasibility unknown. This is tied to Silver Lake Hydro-project. USDOI and ADOL - legal.
ilver Lake Hydropower Project ischer, Thom. Whitewater Engineering Corp.	920615286. 1	Manipulation and Enhancement Air/Water		R	1,	
ilver Lake to Ellamar to Tatitlek Underwater Intertie	920615286. 4	Manipulation and Enhancement Air/Water	ADNR	R	1,	
ite-specific Archaeological Restoration - Interagency amson, Dan. Chief Coastal Programs National Park Service	93006 920615273. 8	Management Actions Archaeology	DOI	P		Ensure prioritization of most important sites.
ite-specific Archaeological Restoration In Kenai And atmai National Parks, Combine with 920615273.8 amson, Dan. Chief Coastal Programs National Park Service	920615273. 9	Management Actions Archaeology	DOI	C		Pattern after 273-08. Objective: do not do assessment 1, do only assessment 2 using Mark McAllister report. Ensure prioritation of most im
ites For Recreation Along Kodiak Road System, combined with 920601051.1	920615279. 21	Habitat Protection and Acquisition Land Acquisition		C		
Sockeye Salmon Escapement Evaluation - Ayakuluk River 487-2600, Jay. Kodiak National Wildlife Refuge	920601058. 5	Management Actions Fish/Shellfish	ADFG	R	9,10,	EVOS-linked impact unknown.

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ockeye Salmon Overescapement chmidt, Dana. ADF&G	93002 920615297. 32	Damage Assessment Fish/Shellfish	ADFG	P	7,	
portfish Biologist For Cordova rruda, David. Cordova Fly-Fishers	920615249. 4	Management Actions Fish/Shellfish	ADFG	R	8,9,10,	EVOS-linked impact unknown.
tream Channel Capability Modeling, combined with 920615298.36 edemeyer, Kate. Fisheries Biologist USFS--Glacier anger Station	920615298. 43	Habitat Protection and Acquisition Inventory	USDA	C		
tream Channel Type Classification And Fish Habitat ssessment chmid, Dave. USFS-Cordova Ranger District	920615298. 36	Habitat Protection and Acquisition Inventory	USDA	R	9,10,	Even though rejected, refer package to HPWG for consideration for habitat identification project. (Rejected by HPWG>)
tream Habitat Assessment (R47), combined with 920615273.25 uwada, Mark. PI ADF&G	920615297. 27	Habitat Protection and Acquisition Inventory		C		
tudy Impact Of Clearcut Logging Operations On Bird opulations, Katchemak Bay State Park, combined with 9206 est, George. None	920612250. 1	Habitat Protection and Acquisition Inventory		C		
Study Of Petroleum Hydrocarbon Spectra At Selected Sites. Dekin, Albert. State University of New York	920526031. 1	Management Actions Archaeology	ADNR	R	8,9,10,	EVOS-linked impact unknown. Thousands of samples taken through NRDA.
Sturgulewski Endowment, combined with 920604101.1 Sturgulewski, Arliss. Alaska State Legislature-Senate	920615272. 1	Technical Support Endowments		C		

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Subsistence Food Safety Testing, Combined with 920615273.37 Fall, Jim. Subsistence ADF&G	920615297. 10	Restoration Monitoring Fish/Shellfish	ADFG	C		
Survey Of EVOS Impacted Native Communities-Subsistence Rosier, Carl. Commissioner ADF&G	93017 920615273. 37	Management Actions Fish/Shellfish	ADFG	P		To coordinate with other MMS studies and Interior and with Health Task Force. Focus on involving local communities and on "believeability".
Survey To Determine Abundance Distribution, Habitat And Food Habits Of Staging Shore Birds W Cr Delta Bishop, Mary Anne. Acting Manager Copper River Delta Institute	920615298. 30	Restoration Monitoring Birds	USDA	R	9,10,	Review in context of a monitoring plan.
Survey To Determine Distribution, Abundance, Food Habits Of Migratory Waterfowl Staging W. Cr Delta Bishop, Mary Anne. Acting Manager Copper River Delta Institute	920615298. 31	Restoration Monitoring Birds	USDA	R	9,10,	
Survey To Id Upland Use By Murrelets, combined with 920615273.25	920615273. 26	Habitat Protection and Acquisition Inventory		C		
Surveys To Monitor Marine Bird And Sea-otter Populations McVee, Curtis. Department of the Interior	93045 920615273. 22	Restoration Monitoring Marine Mammals	DOI	P		Objective A only. Only PWS boat surveys.
Sustainable Tourism In PWS, Combine with 920615298.28 Van Zee, Bruce. USDA-Forest Service	920615298. 12	Damage Assessment Recreation	USDA	C		
Synthesis Of Information On Ecology And Injury To River Otters In PWS Fraker, Mark. ADF&G	920615297. 13	Management Actions Terestrial Mammals	ADFG	R	4,	EVOS-lined impact unknown.

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Tanker Inspection Facility Walker, William. City of Valdez	920615252. 1	Technical Support Services		R	8,9,10,11	EVOS-linked impact unknown.
Testing Of Patch-Response Patch Dependence Hypothesis-Testing of an Ecosystem Model Thomas, G.L.. Director PWS Science Center	920622326. 4	Management Actions Ecosystem	NOAA	R	1,	
Thirteen Commercial Species Assessment Selby, Jerome. Mayor, Kodiak Borough Borough Mayor, Kodiak Island Borough	920615279. 25	Management Actions Coastal Habitat	NOAA	R	8,9,10,	EVOS-linked impact unknown.
Toxicological Profile Of PWS Jackson, Paul. Environmental Specialist The North Pacific Rim	920515016. 1	Damage Assessment Ecosystem	NOAA	R		EVOS-linked impact unknown. Technical feasibility unknown.
Train Valdez Personnel for Environmental Incidents Griffin, Doug. City Manager City of Valdez	920601050. 17	Management Actions Services		R	1,	
Trans-Alaska Pipeline Removal Project None, None. Friends of the Earth Northwest Office	920514012. 1	Manipulation and Enhancement	ADNR	R	3,	Outside TC authority. Consistency w/laws and policies is unknown.
Transplant Project For Deer And Elk West, William. None	920514007. 1	Manipulation and Enhancement Terestrial Mammals	ADFG	R	1,2,	
Uganik River Fish Counting Weir, Combined with 920615279.11 Selby, Jerome. Mayor, Kodiak Borough Borough Mayor, Kodiak Island Borough	920601058. 6	Management Actions Fish/Shellfish	DOI	C		

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Title Document Author	Project Num. Document ID#	Category Project Type	Lead Agency	Status	Recommend. Factors	Evaluation Comments
Uganik River Fish Weir Bellinger, Jay. Kodiak National Wildlife Refuge	920615279. 11	Management Actions Fish/Shellfish	ADFG	R	1,	No sockeye overescapement in this system.
Use And Productivity Of Bald Eagle Nest Sites, Kodiak Selby, Jerome. Mayor, Kodiak Borough Borough Mayor, Kodiak Island Borough	920601058. 7	Restoration Monitoring Birds	DOI	C		
Use of Satellite Transmitters to Investigate Killer Whale Ecology in PWS Dahlheim, Loughlin, Marilyn, Thomas. NMFS-NMML	93042 920615261. 2	Restoration Monitoring Marine Mammals	NOAA	P		EVOS-linked impact unknown. Combined with 261-01, 005-01 and approved.
Valdez City Schools Rodgers, Harry. Valdez City Schools	920615251. 1	Manipulation and Enhancement Education		R	1,	
Valdez Garbage Scow Facilities Griffin, Doug. City Manager City of Valdez	920601050. 7	Manipulation and Enhancement Services		R	1,	
Valdez Hazardous Waste Collection Griffin, Doug. City Manager City of Valdez	920601050. 9	Manipulation and Enhancement Services		R	8,9,10,	EVOS-linked impact unknown.
Valdez Landfill Upgrade Griffin, Doug. City Manager City of Valdez	920601050. 4	Manipulation and Enhancement Services		R	1,	
Valdez Oversight of Oil Industry Griffin, Doug. City Manager City of Valdez	920601050. 13	Management Actions Services		R	9,10,	Consistency w/laws and policies unknown. ADOL believes that only items #6 and #7 are linked to restoration of EVOS damaged natural res

KEY TO RECOMMENDATION FACTORS

1 = No linkage to Exxon Valdez Oil Spill, 2 = Not technically feasible, 3 = Inconsistent with laws or policies, 4 = Project previously funded for close-out, 5 = 1993 Close-out project, 6 = New Project where injury is apparent, 7 = Damage assessment continuation, 8 = No restoration endpoint, 9 = Not time critical 10 = No lost opportunity if not conducted in 1993, 11 = Involves long-term commitment.

Title Document Author	Project Num. Document ID#	Category Project Type	Lead Agency	Status	Recommend. Factors	Evaluation Comments
Valdez Recycling Griffin, Doug. City Manager City of Valdez	920601050. 5	Manipulation and Enhancement Services		R	1,	
Valdez Sewage Treatment Plant Upgrade Griffin, Doug. City Manager City of Valdez	920601050. 6	Manipulation and Enhancement Services		R	1,	
Valdez Visitors Center, combined with 920615298.50 Collins, V.E. (Rick). President Valdez Chamber of Commerce	920615298. 23	Management Actions Education	USDA	C		
Valdez/Remediate Existing Landfills Griffin, Doug. City Manager City of Valdez	920601050. 8	Manipulation and Enhancement Services		R	1,	
Vandalized Cultural Resources--inventory, Evaluation, Interpretation, Combine with 920615296.3 Van Zee, Bruce. USDA-Forest Service	920615298. 18	Management Actions Archaeology	USDA	C		
Vegetation And Stream Classification And Mapping Of Western PWS, combined with 920615273.25 Sterne, Charla. Wildlife Biologist USFS	920615298. 45	Habitat Protection and Acquisition Inventory		C		
Village Mariculture Project Chmielewski, Tasha. Chugach Regional Resources Commission	93019 920615270. 2	Manipulation and Enhancement Fish/Shellfish	ADFG	P	9,10,	Consistency w/laws and policies unknown. Approved for economic and feasibility studies only. Feasibility is not long-term commitment. Concentra
Villages Kitoi Bay Hatchery and Other Site Prevention and Response Selby, Jerome. Mayor, Kodiak Borough Borough Mayor, Kodiak Island Borough	920615279. 23	Technical Support Services	ADFG	R	1,	

KEY TO RECOMMENDATION FACTORS

1 = No linkage to Exxon Valdez Oil Spill, 2 = Not technically feasible, 3 = Inconsistent with laws or policies, 4 = Project previously funded for close-out, 5 = 1993 Close-out project, 6 = New Project where injury is apparent, 7 = Damage assessment continuation, 8 = No restoration endpoint, 9 = Not time critical 10 = No lost opportunity if not conducted in 1993, 11 = Involves long-term commitment.

Title Document Author	Project Num. Document ID#	Category Project Type	Lead Agency	Status	Recommend. Factors	Evaluation Comments
atchable Wildlife, combined with 920615298.25 ethcoe, Nancy. President Alaska Wilderness Recreation & ourism	920612237. 5	Management Actions Terestrial Mammals	ADFG	C		
laterfall Creek Pink Salmon Restoration-Fish Improvement lonnold, Steve. Fred Division ADF&G	920615297. 22	Manipulation and Enhancement Fish/Shellfish	ADFG	R	9,10,	
Weir And Conservation Land Acquisition, combined with 920601051.1	920615297. 68	Habitat Protection and Acquisition Land Acquisition		C		
Wetland Habitat Classification, Mapping And Assessment, combined with 920603092.1 Sterne, Charla. Wildlife Biologist USFS	920615298. 46	Habitat Protection and Acquisition Inventory		C		
Wild Fish Stock Information Assessment, combined with 920615297.28 Van Zee, Bruce. USDA-Forest Service	920615298. 34	Management Actions Fish/Shellfish	USDA	C		
Workshop To Identify Critical Habitats In PWS Temporate Rain Forest, combined with 920622326.1 Thomas, G.L.. Director PWS Science Center	93059 920622326. 1	Habitat Protection and Acquisition Inventory		P		

KEY TO RECOMMENDATION FACTORS

1 = No linkage to Exxon Valdez Oil Spill, 2 = Not technically feasible, 3 = Inconsistent with laws or policies, 4 = Project previously funded for close-out, 5 = 1993 Close-out project, 6 = New Project where injury is apparent, 7 = Damage assessment continuation, 8 = No restoration endpoint, 9 = Not time critical 10 = No lost opportunity if not conducted in 1993, 11 = Involves long-term commitment.

EXXON VALDEZ OIL SPILL

1993 Correspondence Table, Sorted by Submitter's Name

This table allows users to look up their last name and determine the fate of the ideas they submitted. Use the chart which precedes this table to locate key items in the entries. Find the submitter's name, then the title of interest. Find the status field. If a "C" (combined with) or "D" (duplicate) appears in this field, find the document identification number which is noted at the end in the title field (preceded by "Same as..." or "...combined with..."). Find this number in the "Ideas Table, Sorted by Document Identification Number". If a "P", "R", or "E" appears in the status field, find the document identification number and look it up in the "Proposals Table", "Rejected Table" or "Endowment Table" respectively for more information.

ABBREVIATION KEY:

FIELD	CODE	EXPLANATION
Category	DA	Damage Assessment
	MA	Management Action
	ME	Manipulation Enhancement
	OT	Other
	PA	Habitat Protection and Acquisition
	RM	Restoration Monitoring
	TS	Technical Support
Preliminary Lead Agency	ADEC	Alaska Dept. of Environmental Conservation
	ADFG	Alaska Dept. of Fish and Game
	ADNR	Alaska Dept. of Natural Resources
	DOI	United States Dept. of the Interior
	NOAA	National Oceanic and Atmospheric Administration
	USDA	United States Dept. of Agriculture
Status	C	Combined with another idea
	D	Duplicate of another idea
	E	Forwarded to Endowment Work Group
	P	Recommend Preparation of Study Plan and Budget
	R	Recommend Rejection

1993 Correspondence Table - Format

The following is a description of the format for the correspondence table report. This report consists of a printout showing the author's name, position/title, company or agency name (if applicable), and address. Following the author's information is data identifying the idea proposed by the author. This information includes the document ID# (assigned by the Exxon Valdez Restoration Office), the idea title, a code for the project type, project category, current status, lead agency, and project number assigned (if any).

Bruce	David	Restoration Specialist	ADEC-EVOS Project 410 Willoughby Ave., Suite 105	Juneau	AK	
920615290. 1 Shoreline Assessment		RM	Coastal Habitat	P	ADEC	93038
920615290. 2 Electronic Archiving Of Exxon Valdez Response Records, combined with 920608184.1						
		TS	Service	C	ADEC	

Last Name	First Name

Arruda David Cordova Fly-Fishers

P.O. Box 1768 Cordova AK

920615249. 1 Enhanced Management For Cutthroat Trout And Dolly Varden In PWS. Same As 920615297.28
MA Fish and Shellfish D ADFG

920615249. 2 Cutthroat Trout And Dolly Varden Hatchery
ME Fish and Shellfish R ADFG

920615249. 3 Shelter Cove, Cordova Restoration Project
ME Fish and Shellfish R ADFG

920615249. 4 Sportfish Biologist For Cordova
MA Fish and Shellfish R ADFG

920615249. 4 Sportfish Biologist For Cordova
MA Fish and Shellfish R ADFG

Bailey-Garcia D.

10024 When Lane Eagle River AK

920615297.63 Fort Richardson Pipeline. Same as 920615297.48
ME Fish and Shellfish D

Baker Cal District Ranger Cordova Ranger District

BOX 280 Cordova AK

920615298.24 Green Island Cabin Replacement, combined with 920615298.55
ME Recreation C USDA

920615298.28 Post-Oilspill Recreation-based User Survey For PWS
DA Recreation P USDA 93001

Barber Edward

1317 W. Northern Lights Blvd. Anchorage AK

Last Name	First Name			
920615297.65 Fort Richardson Pipeline. Same as 920615297.48				
ME	Fish and Shellfish	D		
Barber	Susan			
1317 W. Northern Lights Blvd.	Anchorage	AK		
920615297.50 Fort Richardson Pipeline. Same as 920615297.48				
ME	Fish and Shellfish	D		
Barry	Donald	Vice President	World Wildlife Fund	
1250 Twenty-Fourth St., NW	Washington	DC		
920609221. 1 Habitat Acq. Kodiak, Kodiak Refuge, combined with 920601051.1				
PA	Land Acquisition	C		
Bechtol	Bill	Fishery Biologist	ADF&G	
3298 Douglas Street	Homer	AK		
920615297. 1 Restoration Of PWS Rockfish And Lingcod Resources				
MA	Fish and Shellfish	R	ADFG	
Bellinger	Jay		Kodiak National Wildlife Refuge	
1390 Buskin River Road	Kodiak	AK		
920601058. 5 Sockeye Salmon Escapement Evaluation - Ayakuluk River				
MA	Fish and Shellfish	R	ADFG	
920615279.10 Ayakulik River Sockeye Salmon Escapement Evaluation				
MA	Fish and Shellfish	R	ADFG	
920615279.10 Ayakulik River Sockeye Salmon Escapement Evaluation				
MA	Fish and Shellfish	R	ADFG	
920615279.11 Uganik River Fish Weir				
MA	Fish and Shellfish	R	ADFG	
920615279.15 Breeding Population Status Of Harlequin Ducks On Areas Of The Kodiak Island Group W. And S. Sides, combined wit				
RM	Birds	C	ADFG	
920615297.11 Develop Protocols For Analysis And Assessment Of Benthic Biological, Physical, And Hydrocarbon Data				
TS	Sub-Tidal	R	ADFG	
Biggs	Evelyn		ADF&G	
Box 669	Cordova	AK		

Last Name	First Name

920610231. 1 PWS Herring Spawn Deposition Survey. Same As 920615297-3
MA Fish and Shellfish D ADFG

920610231. 2 PWS Herring Egg Loss Survey. Same As 920615297-2
DA Fish and Shellfish D ADFG

920610231. 3 Genetic Stock Identification For Herring In PWS. Same As 920615297-34
RM Fish and Shellfish D ADFG

920610231. 4 PWS Herring Tagging Feasibility Study. Same As 920615297-4
RM Fish and Shellfish D ADFG

920610231. 5 Larval Herring Age And Growth In PWS Using Otoliths. Same As 920615299-5
RM Fish and Shellfish D ADFG

920615279. 5 Horse Marine Creek Pink Salmon Restoration, Same As 920615297.21
ME Fish and Shellfish D ADFG

920615297. 2 PWS Herring Egg Loss Survey
DA Fish and Shellfish R ADFG

920615297. 4 PWS Herring Tagging Feasibility Study
RM Fish and Shellfish R ADFG

Bishop Mary Anne Acting Manager Copper River Delta Institute

BOX 1460 Cordova AK

920615298. 2 Multi-agency Library On PWS And Copper River Delta
TS Service R USDA

920615298.29 Inventory, Monitor, Protect Permanent Monitoring Sites
RM Ecosystem R USDA

920615298.30 Survey To Determine Abundance Distribution, Habitat And Food Habits Of Staging Shore Birds W Cr Delta
RM Birds R USDA

920615298.31 Survey To Determine Distribution, Abundance, Food Habits Of Migratory Waterfowl Staging W. Cr Delta
RM Birds R USDA

920615298.32 Migratory Shore Birds Staging In Rocky Intertidal Habitats Of PWS
RM Birds R USDA

Bittner Judith Office of History/Acheaol ADNR

P.O. Box 107001 Anchorage AK

Last Name	First Name

920615296. 1 Archaeological Restoration Site Acquisition, combined with 920601051.1
PA Land Acquisition C

920615296. 2 Heritage Information Replacement, combined with 920615298.19
ME Archeology C ADNR

920615296. 3 Public Education In Spill Area Archaeology
MA Archeology P USDA 93005

920615296. 5 Archaeological Restoration-Regional Archaeological Planning
MA Archeology R ADNR

Blackett Roger Chairman Kodiak St. Prks Citizen's Advisory Board

S.R. 3800 Kodiak AK

920601051. 1 Land Exchange Chuyak Island For Land On Kodiak Island Road System, combined with 920601051.1
PA Land Acquisition P 93058

920601051. 2 Acquisition Of Recreational Sites On Kodiak Road System, combined with 920601051.1
PA Land Acquisition C

920601051. 3 Public Education And Interpretation Of Archaeological Resources In State Parks - Train Park Rangers, Combine wi
MA Archeology C USDA

Blevins Terron

110 E 11th, Apt. 15 Anchorage AK

920615297.49 Fort Richardson Pipeline. Same as 920615297.48
ME Fish and Shellfish D

Bowron Jim

P.O. Box 221954 Anchorage AK

920615297.59 Fort Richardson Pipeline. Same as 920615297.48
ME Fish and Shellfish D

920615297.59 Fort Richardson Pipeline. Same as 920615297.48
ME Fish and Shellfish D

Brock Irvin None

P.O. Box 5267 Ft. Richardson AK

Last Name	First Name

920605134. 1 Fort Richardson Pipeline. Same as 920615297.48
ME Fish and Shellfish D

Bruce David Restoration Specialist ADEC-EVOS Project
410 Willoughby Ave., Suite 105 Juneau AK

920615290. 1 Shoreline Assessment
RM Coastal Habitat P ADEC 93038

920615290. 2 Electronic Archiving Of Exxon Valdez Response Records, combined with 920608184.1
TS Service C ADEC

Carlisle Kelly Mayor City of Whittier Mayor City of Whittier
P.O. Box 731 Whittier AK

920528045. 1 Beach Subsurface Oil Recovery, combined with 920615294.3
ME Coastal Habitat C ADEC

Carmichael James Afognak Native Corporation
214 W. Rezanof Kodiak AK

920615295. 1 Habitat Acq., Afognak, combined with 920601051.1
PA Land Acquisition C

920622324. 1 Acquisition Of Habitat, Afognak Island., combined with 920601051.1
PA Land Acquisition C

Carpenter Phillip District Chief USGS
4230 University Dr. Suite 201 Anchorage AK

920615273.35 Hydrodynamic Purging of Oil from Contaminated Beaches, PWS.
ME Coastal Habitat R ADEC

920615273.36 Fate And Transport Of Subsurface Hydrocarbons In Beach Deposits In PWS
RM Coastal Habitat R DOI

Chisholm Brad None
Box 1585 Homer AK

920612243. 1 Paint River Fish Ladder Salmon Stocking Program
ME Fish and Shellfish R ADFG

Last Name	First Name		
Chmielewski	Tasha		Chugach Regional Resources Commission
3300 C Street	Anchorage	AK	

920615270. 1 Port Graham Salmon Hatchery
ME Fish and Shellfish R ADFG

920615270. 2 Village Mariculture Project
ME Fish and Shellfish P ADFG 93019

Christiansen	Emil		Old Harbor Native Corp.
P.O. Box 71	Old Harbor	AK	

920615288. 1 Kodiak Wildlife Habitat Conservation And Acquisition Project, combined with 920601051.1
PA Land Acquisition C

Cline	Dave	Vice-President	National Audubon Society
308 G Street, Suite 219	Anchorage	AK	

920601067. 1 Alaska Land And Wildlife Conservation Fund, combined with 920604101.1
TS Endowment C

Cochran	Jim	Mariculture Coordinator	ADF&G
P. O. Box 25526	Juneau	AK	

920615297. 6 Replacement Of Oiled Mussels With Commercially Produced Mussels, combined with 920615291.2
ME Fish and Shellfish C ADFG

920615297. 7 Mariculture Technical Center, Combined with 920612242.1
ME Fish and Shellfish C ADFG

Collins	V.E. (Rick)	President	Valdez Chamber of Commerce
BOX 512	Valdez	AK	

920615298.23 Valdez Visitors Center, combined with 920615298.50
MA Education C USDA

920617312. 1 Valdez Visitors Center
MA Education D USDA

Cooney	R. Ted		Institute of Marine Science UAF
University of Alaska Fairbanks	Fairbanks	AK	

Last Name	First Name	

920514004. 1 C-lab; A System For Monitoring
ME Fish and Shellfish D NOAA

Cooney Robert Institute of Marine Sciences
University of Alaska Fairbanks Fairbanks AK

920612244. 1 C-lab-A System For Monitoring Meteorological And Oceanographic Variables That Affect Salmon Growth
MA Fish and Shellfish R NOAA

Cooney Ted UAF
Institute of Marine Science Fairbanks AK

920615297.75 Est. An Ecological Basis For Restoring And Enhancing The Mixed-stock Salmon Resources Of PWS.
ME Fish and Shellfish R ADFG

Dahlheim, Loughlin Marilyn, Thomas NMFS-NMML
7600 Sand Point Way N. E. Seattle WA

920615261. 1 Photo-Identification Studies of PWS Killer Whales, combined with 920615261.2
RM Marine Mammals C NOAA

920615261. 2 Use of Satellite Transmitters to Investigate Killer Whale Ecology in PWS
RM Marine Mammals P NOAA 93042

Darling Iris Downtown Merchants Assoc.
None Seward AK

920622325. 1 Same As 920605137
MA Education D NOAA

Davis Randall Internationa Wildlife Research
Texas A&M University Galveston TX

920615247. 1 Oiled Wildlife Rehabilitation Center
ME Marine Mammals R

Dean Thomas Coastal Resources Associates
2270 Camino Vida Roble, Suite L Carlsbad CA

920610230. 1 Experimental Evaluation Of Oiled/control Paired Design Used In Assessing Inter/Subtidal Community
RM Sub-Tidal P NOAA 93037

Last Name	First Name

920610230. 2 Experimental Studies Of Interaction Between Subtidal Epifaunal Invertebrates
DA Sub-Tidal R ADFG

920615297.77 Experimental Studies Of Interactions Between Subtidal Epifaunal Invertebrates. Same As 920610230-2
RM Sub-Tidal D ADFG

920615297.77 Experimental Studies Of Interactions Between Subtidal Epifaunal Invertebrates. Same As 920610230-2
RM Sub-Tidal D ADFG

920615297.77 Experimental Studies Of Interactions Between Subtidal Epifaunal Invertebrates. Same As 920610230-2
RM Sub-Tidal D ADFG

Dekin Albert State University of New York

P. O. Box 6000 Binghamton NY

920526031. 1 Study Of Petroleum Hydrocarbon Spectra At Selected Sites.
MA Archeology R ADNR

Derenoff Margie Kodiak Area Native Association

402 Center Avenue Kodiak AK

920614300. 1 Build Facilities For Oil Workers Who Work In Karluk Kodiak Area
TS Service R

DeVogelaere, Foster Andrew, Michael Moss Landing Marine Laboratories

P.O. Box 450 Moss Landing CA

920616307. 1 Restoration of High-Intertidal Fucus Following EVOS, combined with 920618316.3
ME Coastal Habitat C USDA

Deysher Larry Coastal Resources Associates

2270-1 Camino Vida Roble Carlsbad CA

920612236. 1 Quantification Of Intertidal Algal Recovery Using Multispectral Digital Remote Sensing
RM Sub-Tidal USDA

920612236. 2 Providing Public Access To Oilspill Gis Databases Using Arcview In PC Windows Environment, combined with 920608
TS GIS C ADNR

920615297.76 Quantification Of Intertidal Algal Recovery Using Multispectral Digital Remote Sensing. Same As 920612236-1
RM Sub-Tidal D ADFG

Last Name	First Name			
DiConstanzo	Carmine			ADF&G
PO Box 25526	Juneau		AK	
920615297. 8 Database Integration. Same As 920608184.1				
TS	Service	D		
Dieckgraeff	Barbara			None
HCR 64 Box 300	Seward		AK	
920616304. 1 Alaska Sealife Center In Seward (saams). Same As 920605137				
MA	Education	D	NOAA	
Dieckgraeff	Frank			None
HCR64 Box 300	Seward		AK	
920615283. 1 Alaska Sealife Center In Seward (saams). Same As 920605137				
MA	Education	D	NOAA	
Dieckgraeff	Tammy			Nnoe
7917 Cranberry St. Apt B	Anchorage		AK	
920616309. 1 Alaska Sealife Center In Seward (saams). Same As 920605137				
MA	Education	D	NOAA	
Diters	Charles	Regional Arceaologist		US Fish and Wildlife Service
1011 East Tudor Rd.	Anchorage		AK	
920615273.14 Archaeological Site Stewardship Program, Combine with 920615298.20				
MA	Archeology	C	ADNR	
Donald	Doreen			
4010 Kingston Drive	Anchorage		AK	
920615297.60 Fort Richardson Pipeline. Same as 920615297.48				
ME	Fish and Shellfish	D		
Donohue	Marke			Kodiak Area Native Association
402 Center Avenue	Kodiak		AK	

Last Name	First Name		

920615279.30 Assessment And Quality Assurance Of Shellfish Resources
RM Fish and Shellfish R ADFG

Dreckgraeff Tammy None

7917 Cranberry, Apt, B Anchorage AK

920616309. 1 Alaska Sealife Center In Seward (saams). Same As 920605137
MA Education D NOAA

Dudiak Nick ADF&G

3298 Douglas Street Homer AK

920615297. 9 Lower Cook Inlet Sockeye Salmon Restoration And Enhancement
ME Fish and Shellfish R ADFG

Dunham Beverly None

P.O. Box 27 Seward AK

920615276. 1 Same As 920605137
MA Education D NOAA

Dunham Meggin None

P.O. Box 1595 Seward AK

920615277. 1 Alaska Sealife Center In Seward (saams). Same As 920605137
MA Education D NOAA

Dunham Willard Seward Marine Center

P.O. Box 730 Seward AK

920605137. 1 SAAMS - Alaska Sealife Center
MA Education R NOAA

Ehret Jim None

6311 DeBarr Road, #403 Anchorage AK

920605124. 1 Fort Richardson Pipeline. Same as 920615297.48
ME Fish and Shellfish D ADFG

Last Name	First Name				
Ehret	Patricia				
P. O. Box 5-378	Ft. Richardson		AK		
920615297.52 Fort Richardson Pipeline. Same as 920615297.48					
ME	Fish and Shellfish	D			
920615297.52 Fort Richardson Pipeline. Same as 920615297.48					
ME	Fish and Shellfish	D			
Elvsaas	Fred			Seldovia Native Association, Inc.	
P.O. Drawer L	Seldovia		AK		
920609217. 1 Habitat Acq. Kachemak, combined with 920601051.1					
PA	Land Acquisition	C			
Evanoff	Gail			Chenega Corporation	
P.O. Box 8060	Chenega Bay		AK		
920615294. 1 Restoration Of Mussel Beds, combined with 920615291.2.					
ME	Fish and Shellfish	C	ADEC		
Fall	Jim	Subsistence		ADF&G	
333 Raspberry Rd	Anchorage		AK		
920615297.10 Subsistence Food Safety Testing, Combined with 920615273.37					
RM	Fish and Shellfish	C	ADFG		
Fallon	Michael				
9820 Saaya Circle	Eagle River		AK		
920615297.48 Fort Richardson Pipeline.					
ME	Fish and Shellfish	P	ADFG		93026
Feder	Howard			UAF	
Institute of Marine Science	Fairbanks		AK		
920615297.11 Develop Protocols For Analysis And Assessment Of Benthic Biological, Physical, And Hydrocarbon Data					
TS	Sub-Tidal	R	ADFG		
920615297.12 Injury and Recovery of Deep-Benthic Macrofaunal Communities, combined with 920618315.1					
RM	Sub-Tidal	C	ADFG		

Last Name	First Name				
Fischer	Thom				Whitewater Engineering Corp.
1050 Larrabee Ave, Suite 104-707	Bellingham		WA		
920615286. 1 Silver Lake Hydropower Project					
ME	Air and Water	R			
920615286. 2 Silver Lake Fish Hatchery					
ME	Fish and Shellfish	R	ADFG		
Fraker	Mark				ADF&G
645 G Street	Anchorage		AK		
920615297.13 Synthesis Of Information On Ecology And Injury To River Otters In PWS					
MA	Terrestrial Mammals	R	ADFG		
French	John				UOA-Fishery Industrial Technology Center
900 Trident Way	Kodiak		AK		
920616310. 1 Near Island Fisheries Research Center					
TS	Service	R	ADFG		
Frost	Kathryn	Wildlife Biologist			ADF&G
1300 College Rosd	Fairbanks		AK		
920615297.14 Habitat Use And Behavior Of Harbor Seals In PWS					
RM	Marine Mammals	P	ADFG		93046
920615297.15 Monitoring Trends In Abundance Of Harbor Seals In PWS 1993-1994, combined with 920615297.14					
RM	Marine Mammals	C	ADFG		
Gates	Christopher				City of Seward
P.O. Box 167	Seward		AK		
920615292. 1 Alaska Sea Life Center In Seward (saams). Same As 920605137					
MA	Education	D	NOAA		
Gates	George				
3637 W. 100	Anchorage		AK		
920615297.62 Fort Richardson Pipeline. Same as 920615297.48					
ME	Fish and Shellfish	D			

Last Name	First Name

Gorup Madge

P.O. Box 878397 Wasilla AK

920615297.56 Fort Richardson Pipeline. Same as 920615297.48
ME Fish and Shellfish D

Graham Marnie Volunteer Volunteer PWS Conservation Alliance

P.O. Box 3224 Valdez AK

920610225. 1 Fund A PWS Nature Center, combined with 920615298.50
MA Education C USDA

Griesy Cheryl

7505 Glen Highway, #116 Anchorage AK

920615297.53 Fort Richardson Pipeline. Same as 920615297.48
ME Fish and Shellfish D

Griffin Doug City Manager City of Valdez

P.O. Box 307 Valdez AK

920601050. 1 Oil And Grease Separator/Valdez Harbor
ME Service R

920601050. 2 Oil and Grease Separator/Fidalgo
ME Service R

920601050. 3 Oil and Grease Separator/Hazelet
ME Service R

920601050. 4 Valdez Landfill Upgrade
ME Service R

920601050. 5 Valdez Recycling
ME Service R

920601050. 6 Valdez Sewage Treatment Plant Upgrade
ME Service R

920601050. 7 Valdez Garbage Scow Facilities
ME Service R

Last Name	First Name

920601050. 8 Valdez/Remediate Existing Landfills
ME Service R

920601050. 9 Valdez Hazardous Waste Collection
ME Service R

920601050.10 Landfill Liner
ME Service R

920601050.11 Maritime Wing Valdez Museum, combined with 920615298.50
MA Education C ADNR

920601050.12 Oil Spill Cooperative/Training Center
MA Service R

920601050.13 Valdez Oversight of Oil Industry
MA Service R

920601050.14 Increased Access PWS, combined with 920615298.55
ME Recreation C USDA

920601050.16 Assist Valdez in Handling Waste Oil
ME Service R

920601050.17 Train Valdez Personnel for Environmental Incidents
MA Service R

920601050.18 Improve Public Health Facilities, PWS
ME Service R

Grimes Deanna None

P.O. Box 2351 Seward AK

920615282. 1 Alasa Sealife Center In Seward (saams). Same As 920605137
MA Education D NOAA

Hagenstein Randall Prince William Sound Science Center

P.O. Box 100358 Anchorage AK

920608191. 1 Public Access Repository For Oil Spill Geographic Information System, combined with 920608184.1
TS GIS C ADNR 93057

Hamson Dan Chief Coastal Programs National Park Service

2525 Gambell St. Anchorage AK

Last Name	First Name

920615273. 1 Productivity And Survival Of Brown Bears In Katmai National Park
RM Terrestrial Mammals R DOI

920615273. 2 Determine The Extent Of Oil Spill Injuries To Harlequin Ducks In National Parks, combined with 920615297.31
RM Birds C ADFG

920615273. 3 Determine Status Of Marbled Murrelet Populations In Oiled National Parks
RM Birds R DOI

920615273. 4 Recovery Monitoring Of Intertidal Oiled Mussel Beds Outside PWS, combined with 920615258.1
RM Coastal Habitat C NOAA

920615273. 5 Determine The Status Of Bald Eagle Populations In Oiled National Parks, combined with 920615279.16
RM Birds C DOI

920615273. 6 Coastal Archaeological Inventory And Evaluation Of Archaeological, Sites Kenai And Katmai Natl Parks., combined
MA Archeology C ADNR

920615273. 7 Coastal Archaeological Inventory And Evaluation Of Archaeological Sites - Interagency, combined with 920615298.
MA Archeology C ADNR

920615273. 8 Site-specific Archaeological Restoration - Interagency
MA Archeology P DOI 93006

920615273. 9 Site-specific Archaeological Restoration In Kenai And Katmai National Parks, Combine with 920615273.8
MA Archeology C DOI

920615273.10 Archaeological Site Protection-public Education-interagency, Combine with 920615296.3
MA Archeology C USDA

920615273.11 Archaeological Site Protection-public Education-national Park Service, Combine with 920615296.3
MA Archeology C USDA

920615273.12 Archaeological Site Protection-Site Patrol Monitoring-Interagency
RM Archeology P DOI 93008

920615273.13 Archaeological Site Protection-site Patrol And Monitoring-national Park Service, Combine with 920615273.12
RM Archeology C DOI

Harrison Craig Vice Chairman Conserv. Pacific Seabird Group
4001 N. 9th Street #1801 Arlington VA

920603092. 1 Habitat Aquisition Evaluation, Evaluate Pacific Seabird Group List, Eliminate Predators, combined with 9206030
ME Birds P 93060

Last Name	First Name

920603092. 2 Removal Of Alien Predators From Bird Colonies, combined with 920615279.17
ME Birds C DOI

920608200. 1 Seabird Colony Restoration, combined with 920615279.17
ME Birds C DOI

Hartman Jeff Fred Division ADF&G

BOX 3-2000 Juneau AK

920615297.16 Development Of Economic Guidelines And Cost Benefit Analysis Of Oilspill Projects For NEPA And TC
TS Service R USDA

Hauser Bill ADF&G

333 Raspberry Road Anchorage AK

920615294. 5 Chenega Chinook And Silver Salmon Release Program
ME Fish and Shellfish P ADFG 93016

Hauser William ADF&G

333 Raspberry Road Anchorage AK

920615297.17 Quality Assurance For PWS Coded Wire Tagging And Fish Production Records For Improved Mgmt. Ability
MA Fish and Shellfish P ADFG 93014

Helle John None

2427 O'Day Drive Juneau AK

920619321. 1 Acquire Olsen Bay Watershed, 920601051.1
PA Land Acquisition C

Hetrick Jeff Alaska AquaFarm

P.O. Box 7 Moose Pass AK

920514006. 1 Clam Enhancement, combined with 920612242.1
ME Fish and Shellfish C ADFG

Hiffentiaga Bonnie

6224 Eastwood Ct. Anchorage AK

920615297.51 Fort Richardson Pipeline. Same as 920615297.48
ME Fish and Shellfish D

Last Name	First Name

Highsmith **Ray** **UAA, Institute of Marine Science**

None **Fairbanks** **AK**

920610228. 1 Herring Bay Experimental And Monitoring Studies. Same As 920615297-19
RM Coastal Habitat D USDA

920610228. 2 Coastal Habitat Comprehensive Intertidal Monitoring Program
RM Coastal Habitat C ADFG

920615297.18 Coastal Habitat Comprehensive Intertidal Monitoring Program
RM Coastal Habitat R USDA

920615297.19 Herring Bay Experimental And Monitoring Studies
RM Coastal Habitat C ADFG

Honnold **Steve** **ADF&G**

211 Mission Road **Kodiak** **AK**

920615279. 2 Red Lake Mitigation. Same as 920615297.70
ME Fish and Shellfish D ADFG

920615279. 4 Cold Creek Pink Salmon Restoration. Same As 920615297.20
ME Fish and Shellfish D ADFG

920615279. 4 Cold Creek Pink Salmon Restoration. Same As 920615297.20
ME Fish and Shellfish D ADFG

920615297. 5 Larval Herring Age and Growth in PWS Using Otoliths
RM Fish and Shellfish C ADFG

920615297.20 Cold Creek Pink Salmon Restoration
ME Fish and Shellfish P ADFG 93032

920615297.20 Cold Creek Pink Salmon Restoration
ME Fish and Shellfish P ADFG 93032

920615297.21 Horse Marine Creek Pink Salmon Restoration
ME Fish and Shellfish R ADFG

920615297.22 Waterfall Creek Pink Salmon Restoration-Fish Improvement
ME Fish and Shellfish R ADFG

920615297.23 Pink Creek Pink Salmon Restoration, combined with 920615297.20
ME Fish and Shellfish C ADFG

Last Name	First Name		

920615297.23 Pink Creek Pink Salmon Restoration, combined with 920615297.20
ME Fish and Shellfish C ADFG

Jackson Paul Environmental Specialist The North Pacific Rim
3300 C Street Anchorage AK

920515016. 1 Toxicological Profile Of PWS
DA Ecosystem R NOAA

Jarrel Gordon University of Alaska Museum
907 Yukon drive Fairbanks AK

920601054. 1 November 91 Request for Immediate Funding for Coastal Habitat Specimens, combined with 920601049.1
TS Coastal Habitat C ADNR

Jewett Stephen UAF
Institute of Marine Science Fairbanks AK

920615297.24 Natural Recovery Monitoring of Subtidal Eelgrass Communities in PWS, combined with 920618315.1
RM Sub-Tidal C ADFG

Johannsen Neil ADNR
P.O. Box 107001 Anchorage AK

920615296. 6 Marine Recreation Plan For Spill Area
MA Recreation R ADNR

920615296. 7 Public Use Cabins In State Marine Parks
ME Recreation R ADNR

920615296. 8 Acquisition Of Important Recreation Lands, combined with 920601051.1
PA Land Acquisition C

Johnson J.D. Fishery Biologist ADF&G
Box 669 Cordova AK

920610231. 6 Monitoring For Recruitment Of Littleneck Clams.
RM D ADFG

920615297.25 Monitoring For Recruitment Of Littleneck Clams.
RM Fish and Shellfish R ADFG

Last Name	First Name		
Joyce	Timothy		None
P.O. Box KKB, Kitoi Bay	Kodiak		AK
920604115. 1 Kitoi Bay Hatchery Oil Spill (clean-up) Equipment Storage, same as 920615297.26			
TS	Service	D	ADFG
920615297.26 Kitoi Bay Hatchery Oil Spill Equipment Storage			
TS	Service	R	ADFG
Kehrer	Peg	Project Assistant	ADF&G
P.O. Box 3-2000	Juneau		AK
920615287. 1 Endowment Proposal I, combined with 920604101.1			
TS	Endowment	C	
920615287. 2 Endowment Proposal II, combined with 920604101.1			
TS	Endowment	C	
Kitagawa	Judy		None
P.O. Box 1451	Valdez		AK
920511138. 1 Oily Bilgewater/Oily Waste Treatment - Several Oil Spill Communities.			
TS	Service	R	
Knepshield	Carol		
17911 Meadow Circle	Eagle River		AK
920615297.67 Fort Richardson Pipeline. Same as 920615297.48			
ME	Fish and Shellfish	D	
Knepshield	Ronald		
17911 Meadow Circle	Eagle River		AK
920615297.55 Fort Richardson Pipeline. Same as 920615297.48			
ME	Fish and Shellfish	D	
Kocan	Richard		Univ. of Washington
None	Seattle		WA
920611234. 1 Herring Embryo Viability Evaluation - Natural and Catastrophic Effects			
DA	Fish and Shellfish	R	ADFG

Last Name	First Name		

Komisar | Jerome | President | University of Alaska
202 Butrovich Bldg. | Fairbanks | AK

920604101. 1 Endowment of Sinking Fund
TS | Endowment | E

Koski | K.V. | NMFS Auke Bay Laboratory
11305 Glacier Highway | Juneau | AK

920615260. 1 Restoration Recovery Monitoring Of Stream-rearing Anadromous Salmonids, combined with 920603092.1
PA | Fish and Shellfish | C | USDA

Kroll | Henry | None
P.O. Box 181 | Seldovia | AK

920603093. 1 Build Research and Monitoring Facilities and Program/Cook Inlet, Kodiak
RM | Fish and Shellfish | R | NOAA

Kuwada | Mark | PI | ADF&G
333 Raspberry Rd | Anchorage | AK

920615297.27 Stream Habitat Assessment (R47), combined with 920615273.25
PA | Land Acquisition Identifi | C

920615297.73 Instream Habitat And Stock Restoration Techniques For Anadromous Fish.
ME | Fish and Shellfish | R | ADFG

Lawley | Gary | Martech USA, Inc.
300 E. 54th Ave. | Anchorage | AK

920618316. 3 Kelp Regeneration In The Upper Intertidal
ME | Sub-Tidal | P | ADFG | 93039

Lethcoe | Nancy | Ak Wilderness Recreation & Tourism Assoc
P.O. Box 1353 | Valdez | AK

920602084. 1 Damage Assessment Of Economic Damages To Wilderness-based Tourism
DA | Land Acquisition Identifi | C | ADNR

920612237. 2 Restore Shorelines Damaged By Beach Berm Relocation
ME | Coastal Habitat | R | ADNR

Last Name	First Name		

920612237. 5 Watchable Wildlife, combined with 920615298.25
MA Terrestrial Mammals C ADFG

Logan Dan Wildlife Biologist USFS

BOX 280 Cordova AK

920615298.52 Distribution, Abundance, Habitat Use And Phylogeny Of Canada Geese In PWS
PA Land Acquisition Identifi R

920615298.53 Inland Survey Of Marbled Murrelet Habitat Use In PWS, combined with 920615273.25
PA Land Acquisition Identifi C

920615298.54 Restoration Of Second Growth Habitat For Wildlife In PWS
ME Coastal Habitat P USDA 93029

Lusco Robert Ft. Richardson Hatchery

P.O. Box 5156 Ft. Richardson AK

920608204. 1 Fort Richardson Pipeline. Same as 920615297.48
ME Fish and Shellfish D

Malloy Larry Kodiak Regional Aquaculture Association

P.O. Box 3407 Kodiak AK

920615279.24 Kitoi Bay Hatchery On Afognak Island
ME Fish and Shellfish R ADFG

Matkin Craig None

P.O. Box 15244 Homer Ak

920514005. 1 Restoration of Killer Whales in PWS, combined with 920615261.2
RM Marine Mammals C NOAA

Matkin Olga and Craig The North Gulf Oceanic Society

P. O. Box 15244 Homer AK

920526033. 1 Humpback Whale Project
DA Marine Mammals R NOAA

McCarron Suzanne Fishery Biologist ADF&G

333 Raspberry Rd Anchorage AK

Last Name	First Name

920615297.28 Enhanced Management For Cutthroat Trout And Dolly Varden In PWS. Same As 920615249.1
MA Fish and Shellfish P ADFG 93018

920615297.28 Enhanced Management For Cutthroat Trout And Dolly Varden In PWS. Same As 920615249.1
MA Fish and Shellfish P ADFG 93018

920618315. 1 Monitoring Injury to Rockfish in PWS
RM Fish and Shellfish P NOAA 93047

McConnell Gab

10421 Constitution Anchorage AK

920615297.66 Fort Richardson Pipeline. Same as 920615297.48
ME Fish and Shellfish D

McVee Curtis Department of the Interior

1689 C Street, Suite 100 Anchorage AK

920615273.15 Monitoring Of Sea Otter Population Abundance, Distribution, Reproduction, And Mortality.
RM Marine Mammals P DOI 93043

920615273.15 Monitoring Of Sea Otter Population Abundance, Distribution, Reproduction, And Mortality.
RM Marine Mammals P DOI 93043

920615273.16 Habitat Utilization By Sea Otters And Designation Of Protected Areas
PA Marine Mammals P DOI 93044

920615273.17 Feeding Ecology And Reproductive Success Of Black Oystercatchers In PWS
RM Birds P DOI 93035

920615273.18 Monitoring Rate Of Recovery Of Murres In Breeding Colonies Downstream From Oil Spill. Same As 920615279.19
RM Birds P DOI 93049

920615273.20 Removal Of Introduced Foxes To Restore Breeding Seabirds. Same As 920615279-17, combined with 920615279.17
ME Birds C DOI

920615273.21 Radio-Telemetry Project To Monitor Recovery Of Sea Otters
RM Marine Mammals R DOI

920615273.22 Surveys To Monitor Marine Bird And Sea-otter Populations
RM Marine Mammals P DOI 93045

920615273.23 Pigeon Guillemot Recovery Enhancement And Monitoring
RM Birds P DOI 93034

Last Name	First Name

920615273.24 Assessment Of Marbled Murrelet Foraging Habitat Requirements During Breeding Season
RM Birds R DOI

920615273.27 Monitor Population Status Of Seabird Nesting Colonies In The Spill Zone
RM Birds R DOI

920615273.28 Monitor Productivity Of Bald Eagles In PWS Kodiak And Alaska Pen. Pacific Coast, combined with 920615279.16
RM Birds C DOI

920615273.29 Long-term Population Monitoring For Bald Eagles, combined with 920615279.16
RM Birds C DOI

920615273.31 Development Of Managment Strategies For Enhancing Recovery Rate Of Birds And Sea Otter Populations
MA Birds R DOI

920615273.33 Hydrocarbons in Mussels From Coastal Gulf of Alaska, Cook Inlet and Shelikof Strait
RM Fish and Shellfish R NOAA

Mearns Alan NOAA-HMRAD

7600 Sand Point Way N.E. Seattle WA

920615264. 1 Natural Recovery Of Oiled And Treated Shorelines
RM Coastal Habitat P NOAA 93040

920615264. 2 New Field Test of Bioremediation
RM Sub-Tidal R NOAA

Mooney Hope

7401 East 16th #7 Anchorage AK

920615297.57 Fort Richardson Pipeline. Same as 920615297.48
ME Fish and Shellfish D

Moyer Mike None

5178 Shoreline Drive Ketchikan AK

920527041. 1 Bivalve Shellfish Rehabilitation Project
ME Fish and Shellfish R ADFG

Muehling Eric None

801 Barnette Street Fairbanks AK

Last Name	First Name		
920617314. 1 Press Release Project On Restoration Program Work			
MA	Education	R	USDA
Murphy	Joyce		None
12531 Old Seward Highway	Anchorage	AK	
920605123. 1 Same As 920605137			
MA	Education	D	
Murphy	Linda		None
Box 843	Seward	AK	
920612241. 1 Same As 920605137			
MA	Education	D	NOAA
Naulty	Sandra		
P.O. Box 1363	Palmer	AK	
920615297.54 Fort Richardson Pipeline. Same as 920615297.48			
ME	Fish and Shellfish	D	
None	None		Friends of the Earth Northwest Office
4512 University Way NE	Seattle	WA	
920514012. 1 Trans-Alaska Pipeline Removal Project			
ME	none	R	ADNR
920615262. 1 Distribution Of Prey Species For Apex Predator Species (Murre, Guillemot, Murrelet, Harbor Seal, Etc.)			
RM	Fish and Shellfish	R	NOAA
920618316. 1 Mussel Bed Treatment			
ME	Fish and Shellfish	R	ADEC
Norman	Patrick		Port Graham Corporation
P.O. Box P.G.M.	Port Graham	AK	
920615291. 1 Mark 17(b) Easements On Port Graham Land.			
PA	Land Acquisition Identifi	R	
Nowlin	Roy		ADF&G
Division of Wildlife Conservation	Cordova	AK	

Last Name	First Name

920615297.29 Identification Of Critical Upland Wildlife Habitat in PWS, combined with 920603092.1
PA Land Acquisition Identifi C

920615297.30 Develop Harvest Guidelines To Aid Restoration Of Injured Terrestrial Mammals And Seaducks
MA Birds P ADFG 93011

O'Clair Charles Auke Bay Biological Laboratory

11305 Glacier Highway Juneau AK

920615259. 1 Recovery Monitoring of Hydrocarbon-Contaminated Subtidal Marine Sediment Resources, combined with 920618315.1
RM Sub-Tidal C NOAA

Ohlinger Philip None

17928 Meadow Creek Drive Eagle River AK

920605131. 1 Fort Richardson Pipeline. Same as 920615297.48
ME Fish and Shellfish D

Olito Carmen None

P.O. Box 111486 Anchorage AK

920608202. 1 Fort Richardson Pipeline. Same as 920615297.48
ME Fish and Shellfish D

Ott Riki Oil Reform Alliance

211 4th Street, Suite 112 Juneau AK

920604104. 1 Develop User Friendly Synopsis Of Oil Spill Information, combine with 920615298.25
MA Education C USDA

920604104. 2 Long-term Epidemiology Study Of Oil Spill Workers
DA Terrestrial Mammals R ADEC

Pagano Frank President Koniag, Inc.

4300 B Street, Suite 407 Anchorage AK

920615257. 1 Acquisition Of Koniag Corp. Inholdings Within The Kodiak National Wildlife Refuge, combined with 920601051.1
PA Land Acquisition C

920618318. 1 Acquisition Of Koniag Corp Inholdings Within The Kodiak State Park, combined with 920601051.1
PA Land Acquisition C

Last Name	First Name

920619323. 1 Habitat Acq. Of Koniag Corp. Inholdings, Kodiak National Wildlife Refuge, 920601051.1
PA Land Acquisition C

Page Clayton SBP Technologies, Inc.

2155-D West Park Court Stone Mountain GA

920615266. 1 Rapid Restoration Of Weathered Crude Contaminated Beach Subsurface Material.
ME Coastal Habitat R ADEC

920615271. 1 Rapid Restoration Of Weathered Crude Beach Subsurface Material.
ME Fish and Shellfish C ADEC

Parker Lisa Regional Citizens Advisory Council

11355 Frontage Road, Suite 228 Kenai AK

920612235. 1 Cook Inlet Comprehensive Monitoring Program
DA Ecosystem R NOAA

920615275. 1 Cook Inlet Comprehensive Environmental Monitoring Program, same as 920612235.1
RM Coastal Habitat D NOAA

Patten Samuel Wildlife Biologist ADF&G

333 Raspberry Rd Anchorage AK

920615297.31 Harlequin Duck Restoration And Monitoring Study
RM Birds P ADFG 93033

Paul A.J. Associate Professor University of Alaska, Fairbanks

P.O. Box 730 Fairbanks AK

920527042. 1 Same As 920605137
MA Education D NOAA

Phipps Alan Ak Center for the Environment

519 W. 8th Ave. #201 Anchorage AK

920615293. 1 Land Acq. PWS, Kodiak, combined with 920601051.1
PA Land Acquisition C

Podolsky Richard None

234 West 56th Street #20N New York NY

Last Name	First Name

920611233. 1 Restoration Of Murres By Way Of Behavioral Attraction And Habitat Enhancement
ME Birds P DOI 93022

920611233. 2 Restoration Of Murres By Way Of Transplantation Of Chicks-Feasibility Study
ME Birds P DOI 93021

920611233. 3 Identification Of Seabird Feeding Areas From Remotely Sensed Data And Impact On Restoration
MA Birds R DOI

920611233. 4 Marbled Murrelet Vocalizations In Conjunction With Artificial Nests
ME Birds R DOI

920611233. 5 Establishment Of User-friendly GIS And Remote-sensing Demonstration Center For Public-5 Communities, combined w
TS GIS C ADNR

920611233. 6 Quantification Of Stream Habitat For Harlequin Ducks From Remotely Sensed Data, combined with 920615297.31
PA Land Acquisition Identifi C

Redman Wendy Vice President University of Alaska Statewide System

None Fairbanks AK

920601049. 1 Coastal Habitat Specimens, University of Alaska Museum
TS Coastal Habitat R ADNR

920601049. 2 Bird and Mammal Specimens, University of Alaska Museum, combined with 920601049.1
TS Birds C ADNR

920601049. 3 Archaeological Specimens, University of Alaska Museum, combined with 920601049.1
TS Archeology C ADNR

Rice Stanley NOAA

11305 Glacier Highway Juneau AK

920608184. 3 Management Of Restoration Database, Sample Archiving, Chemical Interpretation, combined with 920608184.1
TS Service C ADFG

920615258. 1 Recovery Monitoring Of Intertidal Oiled Mussel Beds In PWS And Gulf Of Alaska
RM Coastal Habitat P NOAA 93036

920615258. 3 Injury to Salmon Eggs and Pre-emergent Fry in PWS, Laboratory Verification
MA Fish and Shellfish P ADFG 93003

Rodgers Harry Valdez City Schools

P.O. Box 398 Valdez AK

Last Name	First Name		

920615251. 1 Valdez City Schools
ME Education R

Rolland | Richard | | Chugachmiut

3300 C Street | Anchorage | AK

920612242. 1 Seward Shellfish Hatchery
ME Fish and Shellfish P ADFG 93020

Rosier | Carl | Commissioner | ADF&G

P.O. Box 3-2000 | Juneau | AK

920615273.37 Survey Of EVOS Impacted Native Communities-Subsistence
MA Fish and Shellfish P ADFG 93017

Royer | Thomas | Professor of Marine Sci. | University of Alaska, Fairbanks

None | Fairbanks | AK

920526039. 1 Long-term Monitoring Of Marine Environment Of Resurrection Bay. Combined with 920615262.2
DA Ecosystem C ADFG

Rusher | Jerry | Rusher's Services

hC 33 box 2866 | Wasilla | AK

920601059. 1 Natural Product Natural Life Restoration
ME Coastal Habitat R ADEC

920601061. 1 Natural Product Natural Life Restoration, combined with 920601059.2.
ME Coastal Habitat C ADEC

920601062. 1 Natural Product Natural Life Restoration, combined with 920601059.1
ME Coastal Habitat c ADEC

920601063. 1 Shoreline Worm Life Monitoring, combined with 920601059.1
ME Coastal Habitat C ADEC

Russo | Fred

1505 W. 35th Ave. | Anchorage | AK

920615297.58 Fort Richardson Pipeline. Same as 920615297.48
ME Fish and Shellfish D

Last Name	First Name

Schmid Dave USFS-Cordova Ranger District

BOX 280 Cordova AK

920615298.36 Stream Channel Type Classification And Fish Habitat Assessment
PA Fish and Shellfish R USDA

920615298.37 Montague Island Chum Salmon Restoration
ME Fish and Shellfish P USDA 93025

920615298.38 Anadromous Cutthroat And Dolly Varden Char Habitat Inventory, Evaluation, And Restoration, combined with 920615
PA Fish and Shellfish C USDA

Schmidt Dana Fred Div., ADF&G

34828 Kalifornsky Beach Rd., Suite B Soldotna AK

920605128. 1 Sockeye Salmon Overescapement Studies
DA Fish and Shellfish D ADFG

920615297.32 Sockeye Salmon Overescapement
DA Fish and Shellfish P ADFG 93002

Seeb Jim ADF&G

333 Raspberry Rd Anchorage AK

920615297.33 Genetic Risk Assessment Of Injured Salmonids
MA Fish and Shellfish P ADFG 93004

920615297.34 Genetic Stock Identification For Herring In PWS
MA Fish and Shellfish R ADFG

920615297.35 Genetic Stock Identification Of Kenai River Sockeye For Protection In Mixed Harvest Areas
MA Fish and Shellfish P ADFG 93012

920615297.36 Genetic Monitoring of Kodiak Island Sockeye Salmon
RM Fish and Shellfish R ADFG

920615297.36 Genetic Monitoring of Kodiak Island Sockeye Salmon
RM Fish and Shellfish R ADFG

Seeb Lisa ADF&G

333 Raspberry Rd Anchorage AK

Last Name	First Name

920615297. 3 PWS Herring Spawn Deposition Survey
MA Fish and Shellfish R ADFG

Selby Jerome Mayor, Kodiak Borough Borough Mayor, Kodiak Island Borough
710 Mill Bay Road Kodiak AK

920601058. 6 Uganik River Fish Counting Weir, Combined with 920615279.11
MA Fish and Shellfish C DOI

920601058. 7 Use And Productivity Of Bald Eagle Nest Sites, Kodiak
RM Birds C DOI

920601058. 8 Sea Otters In Kodiak Archipelago - Population Status,trends. Combined with 920615273-15
RM Marine Mammals C DOI

920601058.10 Land Exchange Shuyak For Kodiak Land On Road System, combined with 920601051.1
PA Land Acquisition C

920601058.11 Acquisition Of Recreational Sites On Kodiak Road System, combined with 920601051.1
PA Land Acquisition C

920601058.12 Public Education/interpretation Of Archaeological Resources In State Parks, Combine with 920615296.3
MA Archeology C ADNR

920615279. 8 Habitat Acq., North Afognak Island, combined with 920601051.1
PA Land Acquisition C

920615279. 9 Kodiak Bear Refuge Stream Mouth Inholdings Acq., combined with 920601051.1
PA Land Acquisition C

920615279.12 Habitat Acq., Kodiak Island, combined with 920601051.1
PA Land Acquisition C

920615279.13 Bald Eagle Productivity Survey And Catalog, combined with 920615279.16
RM Birds C DOI

920615279.14 Sea Otter Population Survey And Trends, combined with 920615273.15
RM Marine Mammals C DOI

920615279.16 Bald Eagle Nesting Surveys-Alaska Pen. Pacific Coast
RM Birds R DOI

920615279.18 Reduce Disturbance Near Murre Colonies Damaged By Oil Spill, combined with 920615273.19
RM Birds C DOI

Last Name	First Name

920615279.19 Monitoring The Rate Of Recovery Of Murres In Breeding Colonies In Or Downstream From Oil Spill. Combined with 9
RM Birds C DOI

920615279.20 Acquisition Of Inholdings In Shuyak Island State Park, combined with 920601051.1
PA Land Acquisition C

920615279.20 Acquisition Of Inholdings In Shuyak Island State Park, combined with 920601051.1
PA Land Acquisition C

920615279.23 Villages Kitoi Bay Hatchery and Other Site Prevention and Response
TS Service R ADFG

920615279.25 Thirteen Commercial Species Assessment
MA Coastal Habitat R NOAA

920615279.27 Archaeological Outreach-Curator Position.
MA Archeology R USDA

920615279.28 Alutiiq Museum And Culture Center-phase I Construction, combined with 920615298.17
MA Archeology C ADNR

920615279.31 Archaeological Site Inventory And Assessment, combined with 920615298.19
MA Archeology C ADNR

920615279.32 Environmental Learning Resource Center
MA Education R ADNR

Sharr Sam ADF&G

Division of Wildlife Conservation Cordova AK

920615297.38 Coded Wire Tagging Of Wild Stock Pink Salmon For Stock Identification
MA Fish and Shellfish R ADFG

920615297.38 Coded Wire Tagging Of Wild Stock Pink Salmon For Stock Identification
MA Fish and Shellfish R ADFG

920615297.38 Coded Wire Tagging Of Wild Stock Pink Salmon For Stock Identification
MA Fish and Shellfish R ADFG

920615297.39 Inventory And Effects Of Straying Hatchery Pink Salmon On Wild Pink Salmon Populations In PWS
MA Fish and Shellfish P ADFG 93013

920615297.40 Pink Salmon Escapement Enumeration, combined with 920615297.39
MA Fish and Shellfish C ADFG

Last Name	First Name

920615297.41 Adult Tagging To Determine Distribution, Migratory Timing And Rate Of Movement Of Pink Salmon In PWS
MA Fish and Shellfish R ADFG

920615297.41 Adult Tagging To Determine Distribution, Migratory Timing And Rate Of Movement Of Pink Salmon In PWS
MA Fish and Shellfish R ADFG

920615297.42 Coded Wire Tag Recoveries From Commercial Catches In PWS Salmon Fisheries, Combined with 920615297.41
MA Fish and Shellfish C ADFG

Shasby Mark B. Chief USGS EROS AK Office USGS EROS Alaska Field Office
4230 University Dr. Anchorage AK

920615273.34 CD-ROM Publication Of Digital Spatial Data From Exxon Valdez Oil Spill Mapping Activities, combined with 92060
TS GIS C DOI

Shigenaka Gary NOAA-HMRAD
7600 Sand Point Way N. E Seattle WA

920615265. 1 PWS Long-Term Monitoring Program-Acute and Chronic Toxicity of Residual Hydrocarbons to Littleneck Clams
RM Fish and Shellfish R NOAA

Simonson Bruce ADF&G
P.O. Box 25526 Juneau AK

920608184. 1 Database Integration
TS Service P ADFG 93053

920608184. 2 Database Management - NRDA FS30, combined with 920608184.1
TS Service C ADFG

Smith Thomas None
PO BOX 2484 Seward AK

920609219. 1 Same As 920605137
MA Education D

Steffan Wallace University of Alaska Statewide Systems
910 Yukon Drive Fairbanks AK

920601065. 1 Archive Biological and Archaeological Specimens - Revised Proposal, combined with 920601049.1
TS Coastal Habitat C ADNR

Last Name	First Name

Stekoll Michael UAA, School of Fisheries & Ocean Science

11120 Glacier Highway Juneau AK

920610229. 1 Fucus Restoration Feasibility Study, combined with 920618316.3
ME Coastal Habitat C USDA

920610229. 2 Fucus Recovery In Upper Intertidal Zones (continuation Of Study)
RM Coastal Habitat C USDA

920610229. 3 Coastal Habitat Injury Assessment - Intertidal Algae
DA Coastal Habitat R USDA

920610229. 4 Remote Monitoring Of Intertidal Recovery
RM Coastal Habitat R USDA

Sterne Charla Wildlife Biologist USFS

BOX 129 Girdwood AK

920615298. 3 Oilspill Injured Resources Literature Research And Review
TS Service R USDA

920615298.39 Eyes On Wildlife-injured Resources And Their Restoration, combined with 920615298.25
MA Education C USDA

920615298.40 Migratory Waterfowl And Shorebird Monitoring, combined with 920603092.1
PA Birds C USDA

920615298.45 Vegetation And Stream Classification And Mapping Of Western PWS, combined with 920615273.25
PA Land Acquisition Identifi C

920615298.46 Wetland Habitat Classification, Mapping And Assessment, combined with 920603092.1
PA Land Acquisition Identifi C

920615298.47 Geographic Information System Mapping Of Natural Resources In Western PWS, combined with 920608184.1
TS GIS C ADNR

Sturgulewski Arliss Alaska State Legislature

3111 C Street, #550 Anchorage AK

920603094. 1 Exxon Valdez Oil Spill Marine Sciences Endowment I, combined with 920604101.1
TS Endowment C

920603094. 2 Exxon Valdez Oil Spill Marine Sciences Endowment II, combined with 920604101.1
TS Endowment C

Last Name	First Name

920615272. 1 Sturgulewski Endowment, combined with 920604101.1
TS Endowment C

Swartz Karen, Robert None

P.O. Box 172 Seward AK

920615281. 1 Alaska Sealife Center In Seward (saams). Same As 920605137
MA Education D NOAA

Tarbox Jeanne None

19744 Meadow Creek Drive Eagle River AK

920616305. 1 Fort Richardson Pipeline.
ME Fish and Shellfish D ADFG

Tarbox Kenneth ADF&G

34828 Kalifornsky Beach Road, Suite B Soldotna AK

920608185. 1 Kenai River Sockeye Salmon Restoration (#53). Same As 920615297-43
MA Fish and Shellfish D ADFG

920615297.43 Kenai River Sockeye Salmon Restoration
MA Fish and Shellfish P ADFG 93015

Thomas G.L. Director PWS Science Center

P.O. Box 705 Cordova AK

920622326. 1 Workshop To Identify Critical Habitats In PWS Temporate Rain Forest, combined with 920622326.1
PA Land Acquisition Identifi P 93059

920622326. 2 Full Funding For Oil Spill Recovery Institute
TS Technical Support R NOAA

920622326. 4 Testing Of Patch-Response Patch Dependence Hypothesis-Testing of an Ecosystem Model
MA Ecosystem R NOAA

920622326. 5 Develop Video Library Of Intertidal Habitat And Biota To Assess Impact And Determine Recovery, combined with 92
TS Technical Support C USDA

920622326. 6 Experimental Designs and Statistical Procedures for Damage for Oilspill Cleanup and Restoration Projects
TS GIS R ADNR

Last Name	First Name

920622326. 7 Characterization Of Near-shore Bottom Habitat
RM Sub-Tidal R ADFG

920622326. 8 Multi-agency University Ecosystem Study Of PWS
RM Ecosystem R USDA

920622326. 9 Interactive Public Access to Oil Spill and Related Environmental Data in PWS Science Center GIS
TS GIS R ADNR

920622326.11 Establish Natural Resource Library And Computer Support Technical Service In Cordova, combined with 920615298.2
TS Technical Support C USDA

920622326.12 Cordova Mini-imaginarium, combine with 920615298.25
MA Education C USDA

920622326.13 Science Of The Sound- Education Program, combined with 920615298.25
MA Education C USDA

920622326.14 Alaska Oil Spill Curriculum Rewrite And Reprint, combine with 920615298.25
MA Education C USDA

Thomas Loren None

HC03 Box 8364-Y Palmer AK

920605135. 1 Fort Richardson Pipeline. Same as 920615297.48
ME Fish and Shellfish D

Tileston Jules None

4780 Cambridge Way Anchorage AK

920604114. 1 Map Of Spill Area By Resource, combined with 920615298.25
MA Education C ADNR

Totemoff Charles President

PO Box 60 Chenega Bay AK

920615294. 2 Restoration Of Chenega Village Site
ME Archeology R ADNR

920615294. 3 Chenega Bay Subsistence Restoration Project (Remove Oil)
ME Coastal Habitat P ADEC 93027

920615294. 5 Chenega Chinook And Silver Salmon Release Program
ME Fish and Shellfish P ADFG 93016

Last Name	First Name

920615298. 8 PWS Kayak Trail, combined with 920615298.55
ME Recreation C USDA

920615298. 9 PWS Implementation Of Interpretive Plan, combined with 920615298.25
MA Education C USDA

920615298.10 Protect Resources And Enhance Visitor Enjoyment Through Increased Administrative Presence
MA Recreation R USDA

920615298.11 PWS Scenic Byway-- Nomination And Interpretive Plan, combined with 920615298.25
MA Education C USDA

920615298.12 Sustainable Tourism In PWS, Combine with 920615298.28
DA Recreation C USDA

920615298.14 Prince William Sound Campground, combined with 920615298.55
ME Recreation C USDA

920615298.15 PWS Recreation Facilities, combined with 920615298.55
ME Recreation C USDA

920615298.16 Enhanced Trail Opportunities, Including Columbia And Blackstone Glacier Trails, combined with 920615298.55
ME Recreation C USDA

920615298.17 Nuchek Heritage Interpretive Center
MA Archeology R USDA

920615298.18 Vandalized Cultural Resources--inventory, Evaluation, Interpretation, Combine with 920615296.3
MA Archeology C USDA

920615298.19 PWS Landmarks--Evaluation And Interpretation
MA Archeology R USDA

920615298.20 PWS Site Stewardship Program
MA Archeology P DOI 93007

920615298.21 Chugach Natural Forest Heritage Interpretive Centers, combined with 920615298.17
MA Archeology C USDA

920615298.22 Passports In Time--Cultural Resource Patterns In PWS, Combine with 920615296.3
MA Archeology C DOI

920615298.25 Public Information and Education
MA Education P USDA 93009

920615298.26 Interpretation Of PWS, combined with 920615298.26
MA Recreation C USDA

Last Name	First Name

920615298.27 Cordova Environmental Education Center, combined with 920615273.25
MA Education C USDA

920615298.33 Fish Limiting Factors Analysis, combined with 920615298.36
PA Fish and Shellfish C USDA

920615298.34 Wild Fish Stock Information Assessment, combined with 920615297.28
MA Fish and Shellfish C USDA

920615298.35 Restoration And Mitigation Of Essential Wetland Habitats For PWS Fish And Wildlife
ME Birds P USDA 93028

920615298.44 Characterization And Identification Of Habitats Important To Upland Species (Harlequin, Murrelet, etc), combine
PA Land Acquisition Identifi C

920615298.48 Communication System for Oil Spill Program
TS Service P USDA 93048

920615298.49 Oil Spill Restoration Support Service And Facilities
TS Service R USDA

920615298.50 Environmental Education Center In PWS.
MA Education R USDA

920615298.55 Low Impact Recreation Development Nellie Juan, College Fiord Wilderness Study Area
ME Recreation R USDA

Varanasi, Collier Usha, Tracy NOAA-NMFS, N.W. Fisheries Science Center
2725 Montlake Blvd. E. Seattle WA

920615263. 1 Natural Recovery of Subtidal Species in PWS, combined with 920618315.1
RM Sub-Tidal C NOAA

Vining Ivan ADF&G, Commercial Fisheries
333 Raspberry Road Anchorage AK

920610223. 1 Intertidal/shallow Subtidal Crustacean (decapod) Composition. Same As 920615297-47
RM Fish and Shellfish D ADFG

920610224. 1 Juvenile Spot Shrimp Habitat. Same As 920615297-46
RM Fish and Shellfish D ADFG

920615297. 1 Restoration Of PWS Rockfish And Lingcod Resources
MA Fish and Shellfish R ADFG

Last Name	First Name

920615297.46 Juvenile Spot Shrimp Habitat, Combined with 920615297.44
MA Fish and Shellfish C ADFG

920615297.47 Intertidal/Shallow Subtidal Crustacean (Decapod) Composition
MA Fish and Shellfish R ADFG

Viteri Alex ADEC

410 Willoughby Ave. Juneau AK

920615289. 1 Field Study Of Bioremediation Enhancement Treatment Methods
MA Sub-Tidal R ADEC

Walker William City of Valdez

P.O. Box 307 Valdez AK

920615252. 1 Tanker Inspection Facility
TS Service R

920615253. 1 Oil Spill Response Valdez Cleanup Co-Op
TS Service R

920615254. 1 Cold Weather Oil Spill School
TS Education R

920615256. 1 Payoff Debt of Valdez Fisheries Development Association
TS Endowment R

Wedemeyer Kate Fisheries Biologist USFS--Glacier Ranger Station

BOX 129 Girdwood AK

920615298.41 Feasibility Of Fish Passes As Oilspill Restoration, combined with 920615297.73
ME Fish and Shellfish C USDA

920615298.42 PWS Salmon Stock Genetics. Combine with 920615297.33
MA Fish and Shellfish C ADFG

920615298.43 Stream Channel Capability Modeling, combined with 920615298.36
PA Fish and Shellfish C USDA

Weiland Anne Kachemak Bay Citizens Coalition

Box 1395 Homer AK

Last Name	First Name

920612246. 1 Purchase Of Seldovia Native Assoc, Timber Trading Co, Cook Inlet Region, Inholdings Kachemak Bay, combined with
PA Land Acquisition C

West George None

P.O. Box 841 Homer AK

920612250. 1 Study Impact Of Clearcut Logging Operations On Bird Populations, Katchemak Bay State Park, combined with 920615
PA Land Acquisition Identifi C

West William None

138 West Marydale Drive Soldotna AK

920514007. 1 Transplant Project For Deer And Elk
ME Terrestrial Mammals R ADFG

White Lonnie Area Biologist ADF&G

211 Mission Road Kodiak AK

920615279.99 Monitoring Sites - Collector Beaches and Lagoons.
RM Coastal Habitat R ADFG

White Lorne ADF&G

211 Mission Road Kodiak AK

920615279. 1 Red Lake Salmon Restoration. Same As 920615297.69
ME Fish and Shellfish D ADFG

920615297.69 Red Lake Salmon Restoration
ME Fish and Shellfish P ADFG 93030

920615297.70 Red Lake Mitigation.
ME Fish and Shellfish P ADFG 93031

Whitmore Katy None

14932 East Lake Ridge Eagle River AK

920605133. 1 Fort Richardson Pipeline. Same as 920615297.48
ME Fish and Shellfish D

Wickstrom Gordon None

P.O. Box 1795 Seward AK

Last Name	First Name

920514013. 1 Same As 920605137
MA Education D NOAA

Wiley Mike & Arlene Seward Waterfront Lodging

550 Railway Seward AK

920514009. 1 Same As 920605137
MA Education D NOAA

Willette Mark Fishery Biologist ADF&G

P.O. Box 669 Cordova AK

920615297.11 Develop Protocols For Analysis And Assessment Of Benthic Biological, Physical, And Hydrocarbon Data
TS Sub-Tidal R ADFG

920615297.71 Fry Rearing To Improve Survival And Restore Wild Pink And Chum Salmon Stocks
ME Fish and Shellfish R ADFG

920615297.71 Fry Rearing To Improve Survival And Restore Wild Pink And Chum Salmon Stocks
ME Fish and Shellfish R ADFG

920615297.72 Restoration Of The Coghill Lake Sockeye Salmon Stock.
ME Fish and Shellfish P ADFG 93024

920615297.74 Otolith Mass Marking As An Inseason Stock Separation Tool To Reduce Wild Stock Salmon Exploitation
MA Fish and Shellfish R ADFG

Winchester James KCHU Radio

P.O. Box 467 Valdez AK

920601064. 1 Cordova Environmental Reporter
MA Education R USDA

Kodiak Area Native Association

Kodiak AK

920615279.29 Enhancement Of The Pacific Herring
ME Fish and Shellfish R ADFG

MASTER 11/25/92

PROJECT NUMBER 93001

1993 PROJECT EVALUATION FACTORS

Damage Assessment

These factors will be considered when applying best professional judgement to evaluate these projects. The purpose is to simply rank the project into categories of "high", "medium" and "low" priority.

1. The effects of any other actual or planned restoration actions.*
2. Potential to improve the rate or degree of recovery.*
3. Potential adverse effects on human health and safety.*
4. Relationship of expected costs of the proposed actions to the expected benefits.*
5. Cost effectiveness.*
6. Potential for additional injury resulting from proposed actions, including long-term and indirect impacts.*
7. Importance of starting the project within the next year.*
8. There is reason to believe that there is continuing injury to the resource and/or service, but the extent and/or mechanism is not understood.**

RANK: X HIGH (5-6 votes) __ MEDIUM (4 votes) __ LOW (≤ 3 votes)

___ Recommended for inclusion in 1993 Work Plan.

_X_ Not recommended for inclusion in 1993 Work Plan.

Comments:

Fry: Retroactive damage determination very difficult or impossible to get.
- Idea: focus on what injury is still occurring with some past injury.
* Do recreational restoration under enhancement heading and do not do a damage assessment study.
- Approach TC to spend $ to do recreation activities directly & not do study - have no proposals in hand because we will not have a restoration plan.
- Information indicates damage to recreational services. If not comfortable to make this, we have proposals on table.

Voting Record: **TOTAL YES VOTES 0**

NOAA	ADNR	USDI	ADEC	USDA	ADFG
N	N	N	N	N	N

* Restoration Framework, 1992, pp 43-44.
** The 1991 State/Federal Natural Resources Damage Assessment and Restoration Plan for the Exxon Valdez Oil Spill, 1991, vol. 1, p.1 (paraphrased).

Restoration Team Discussion 8/28 - 9/2/92

Recreational Resources (93-001) - Ken stated that this project was supported if there is insufficient evidence through the federal government economic study #5 or any state study dealing with recreational resources. Ken stated that this project was contingent upon any economic studies which are available. Funds are being targeted toward direct activity and not a study. This project does not come forward with any actual projects. Ken suggested as an example using the education project as a marketing project to show what has happened to the environment. Pam stated that building cabins was suggested before. Pam stated that this study should be done in some form if the TC does not accept that there was injury to recreation. Ken stated the vote was "yes" contingent upon the TC saying we don't have sufficient evidence. Dave stated it is a "no" vote as this project is written and it was decided not to do more studies. **Con: The Restoration Team believes that there was sufficient information from damage assessment studies to conclude that recreational resources and services were injured and that if the Trustee Council disagreed, then we would move ahead with a study similar to the one proposed. This project will need to be reviewed and refined. If the study moves forward, an RFP will be recommended.** Only if the TC wanted something along these lines, would we go back. Pam suggested that this project might need a cover sheet for explanation of the recommendation. The vote was "yes" unless with -0- budget. Jerome suggested voting again because of concerns expressed by Byron. Dave recommended keeping the "yes" vote and documenting the decision. Pam stated it would be more clear to say "no" with no dollar amount. It should be highlighted as a unique case. Marty stated that we should be consistent with how it appears on the first list. This project is included in the package but will not be recommended to go forward. The intent is not to do this study, which is contingent upon the Trustee Council's decision. Byron stated that to be consistent, it should be changed to "no". It was agreed to change the vote to "no" and keep the above justification statement.

Note: The agreed upon justification statements are highlighted.

1993 PROJECT EVALUATION FACTORS

Damage Assessment

These factors will be considered when applying best professional judgement to evaluate these projects. The purpose is to simply rank the project into categories of "high", "medium" and "low" priority.

1. The effects of any other actual or planned restoration actions.*
2. Potential to improve the rate or degree of recovery.*
3. Potential adverse effects on human health and safety.*
4. Relationship of expected costs of the proposed actions to the expected benefits.*
5. Cost effectiveness.*
6. Potential for additional injury resulting from proposed actions, including long-term and indirect impacts.*
7. Importance of starting the project within the next year.*
8. There is reason to believe that there is continuing injury to the resource and/or service, but the extent and/or mechanism is not understood.**

RANK: X HIGH (5-6 votes) __ MEDIUM (4 votes) __ LOW (≤ 3 votes)

___ Recommended for inclusion in 1993 Work Plan.

___ Not recommended for inclusion in 1993 Work Plan.

Comments:

- Continuation of FS-27.
- 300,000 smolts out of Kenai River in 1992 (in 1991 2.5 million smolt).
- Trustee Council in June meeting added additional funds to this project.
-Cook Inlet sockeye expenditures per year by ADF&G is about $5 million (Montague).

Voting Record: **TOTAL YES VOTES 5**

NOAA	ADNR	USDI	ADEC	USDA	ADFG
Y	Y	N	Y	Y	Y

* Restoration Framework, 1992, pp 43-44.

** The 1991 State/Federal Natural Resources Damage Assessment and Restoration Plan for the Exxon Valdez Oil Spill. 1991, vol. 1, p.1 (paraphrased).

Restoration Team Discussion 8/28 - 9/2/92

Sockeye Overescapement (93-002) - Pro: The damage assessment information from this year still indicates worsening damages consistent with the hypothesis of overescapement. This project is time critical. If nothing is done this year, we will not have a feel for the severity of the problem. Vote was 5 to 1 "yes"; DOI voted "no".

Note: The agreed upon justification statements are highlighted.

1993 PROJECT EVALUATION FACTORS

Damage Assessment

These factors will be considered when applying best professional judgement to evaluate these projects. The purpose is to simply rank the project into categories of "high", "medium" and "low" priority.

1. The effects of any other actual or planned restoration actions.*
2. Potential to improve the rate or degree of recovery.*
3. Potential adverse effects on human health and safety.*
4. Relationship of expected costs of the proposed actions to the expected benefits.*
5. Cost effectiveness.*
6. Potential for additional injury resulting from proposed actions, including long-term and indirect impacts.*
7. Importance of starting the project within the next year.*
8. There is reason to believe that there is continuing injury to the resource and/or service, but the extent and/or mechanism is not understood.**

RANK: X HIGH (5-6 votes) __ MEDIUM (4 votes) __ LOW (≤ 3 votes)

___ Recommended for inclusion in 1993 Work Plan.

___ Not recommended for inclusion in 1993 Work Plan.

Comments:

-Objective:

- Experiment to test if oil caused sterility in pinks or is it due to some other cause.

- This project is strongest of all the proposed 1993 pink salmon work (Spies)

Voting Record: **TOTAL YES VOTES 6**

NOAA	ADNR	USDI	ADEC	USDA	ADFG
Y	Y	Y	Y	Y	Y

* Restoration Framework, 1992, pp 43-44.

** The 1991 State/Federal Natural Resources Damage Assessment and Restoration Plan for the Exxon Valdez Oil Spill. 1991, vol. 1, p.1 (paraphrased).

Restoration Team Discussion 8/28 - 9/2/92

Pink Salmon (93-003) - Form 3B should be expanded. The vote was 6 to 0 "yes". **Pro: The 1991 and 1992 information indicates continued increase in injury. Determining the cause of the injury is critical. There is reason to believe that the injury to pink salmon is continuing, but the rate, and extent, and/or mechanisms are not yet understood.**

Note: The agreed upon justification statements are highlighted.

1993 PROJECT EVALUATION FACTORS

Restoration Monitoring

These factors will be considered when applying best professional judgement to evaluate these projects. The purpose is to simply rank the project into categories of "high", "medium" and "low" priority.

1. The effects of any other actual or planned restoration actions.*
2. Potential to improve the rate or degree of recovery.*
3. Potential adverse effects on human health and safety.*
4. Relationship of expected costs of the proposed actions to the expected benefits.*
5. Cost effectiveness.*
6. Potential for additional injury resulting from proposed actions, including long-term and indirect impacts.*
7. Importance of starting the project within the next year.*
8. There is reason to believe that the injury to the resource and/or service is not restored, but the rate, and extent, and/or mechanisms are not yet understood.**

RANK: __ HIGH (5-6 votes) X MEDIUM (4 votes) __ LOW (≤ 3 votes)

___ Recommended for inclusion in 1993 Work Plan.

___ Not recommended for inclusion in 1993 Work Plan.

Comments:
Objectives for 93004 & 93013:
- Objective #1 - do work on reduced number of streams if defensible (straying & in-season management).
- Objective #2 - Contingent upon past results (break out costs).
- Objective #3 - Do if no cost.
- Objective #4 - Reduced number of samples (see objective #6).
- Objective #5 - Otoliths for streams from subset of stream in objective # 1 (funding contingent upon findings from past work).
- Objective #6 - Reduced level of project #13 (perhaps 100 fish/stream and 2 hatcheries and 10 streams. Do disparate parts of PWS to provide maximum change to detect differences.

Sent back for new budget.

Voting Record: **TOTAL YES VOTES 4**

NOAA	ADNR	USDI	ADEC	USDA	ADFG
N	Y	N	Y	Y	Y

* Restoration Framework, 1992, pp 43-44.
** The 1991 State/Federal Natural Resources Damage Assessment and Restoration Plan for the Exxon Valdez Oil Spill. 1991, vol. 1, p.1 (paraphrased).

1993 PROJECT EVALUATION FACTORS

Restoration Monitoring

These factors will be considered when applying best professional judgement to evaluate these projects. The purpose is to simply rank the project into categories of "high", "medium" and "low" priority.

1. The effects of any other actual or planned restoration actions.*
2. Potential to improve the rate or degree of recovery.*
3. Potential adverse effects on human health and safety.*
4. Relationship of expected costs of the proposed actions to the expected benefits.*
5. Cost effectiveness.*
6. Potential for additional injury resulting from proposed actions, including long-term and indirect impacts.*
7. Importance of starting the project within the next year.*
8. There is reason to believe that the injury to the resource and/or service is not restored, but the rate, and extent, and/or mechanisms are not yet understood.**

RANK: __ HIGH (5-6 votes) __ MEDIUM (4 votes) __ LOW (≤ 3 votes)

___ Recommended for inclusion in 1993 Work Plan.

___ Not recommended for inclusion in 1993 Work Plan.

Comments:
- Make it a scoping project not full fledge analysis of genetics (Fry).
- genetic studies already conducted on pink salmon in Southeast Alaska and Alaska Peninsula.
- Tony Garret (Auke Creek) found genetic differences in same run based upon location in stream (Hilborn).
- Hatchery straying tends to be higher than wild fish straying.
- If project 13 does not go forward, the number of samples taking this project is reduced.
- 100 fish/stream and reduced number of streams.
- Incorporate small component of genetic study #4 into study #13 (do disparate parts of PWS to get maximum chance for finding genetic differences).

Voting Record: **TOTAL YES VOTES * No vote, incorporated into 93013**

NOAA	ADNR	USDI	ADEC	USDA	ADFG

* Restoration Framework, 1992, pp 43-44.

** The 1991 State/Federal Natural Resources Damage Assessment and Restoration Plan for the Exxon Valdez Oil Spill. 1991, vol. 1, p.1 (paraphrased).

1993 PROJECT EVALUATION FACTORS

Restoration Monitoring

These factors will be considered when applying best professional judgement to evaluate these projects. The purpose is to simply rank the project into categories of "high", "medium" and "low" priority.

1. The effects of any other actual or planned restoration actions.*
2. Potential to improve the rate or degree of recovery.*
3. Potential adverse effects on human health and safety.*
4. Relationship of expected costs of the proposed actions to the expected benefits.*
5. Cost effectiveness.*
6. Potential for additional injury resulting from proposed actions, including long-term and indirect impacts.*
7. Importance of starting the project within the next year.*
8. There is reason to believe that the injury to the resource and/or service is not restored, but the rate, and extent, and/or mechanisms are not yet understood.**

RANK: __ HIGH (5-6 votes) __ MEDIUM (4 votes) X LOW (≤ 3 votes)

___ Recommended for inclusion in 1993 Work Plan.

___ Not recommended for inclusion in 1993 Work Plan.

Comments:
- Using method suggested, thee has been no demonstrated population effects (Spies) Objective #2 - Results % of past work not completed to our knowledge.
- Objectives (Ray Hilborn)
  - #1 - Good objective (adds accuracy to aerial surveys).
  - #2 - Contingent on results of past work before funding.

Voted on project as is with objective #2 funding dependent upon results from past work.

Voting Record: **TOTAL YES VOTES 3**

NOAA	ADNR	USDI	ADEC	USDA	ADFG
N	Y	N	Y	N	Y

* Restoration Framework, 1992, pp 43-44.

** The 1991 State/Federal Natural Resources Damage Assessment and Restoration Plan for the Exxon Valdez Oil Spill. 1991, vol. 1, p.1 (paraphrased).

Restoration Team Discussion 8/28 - 9/2/92

Pink Salmon Documentation (93-004)(93-013) - These were combined and include work on a reduced number of streams. The combined budget is reduced by $300,000. The genetic sampling component is reduced in those sites which indicate considerable straying into the wild streams. The vote is 5-1 "yes"; DOI voted "no". **Pro: The ability to impose stock-specific management on the commercial fishery and reduce fishery exploitation on oil-impacted stocks is vital to their restoration. It will help determine if it is possible to maintain genetic integrity of the wild stock. There is reason to believe that there is continuing injury to the wild stocks or pink salmon, but the extent and/or mechanism is not understood. This project provides important information that would contribute to their restoration. Con: On the 28th Bob Spies stated that the project addresses a hatchery-related problem which existed prior to the spill and is difficult to support. Differentiation of wild stocks from hatchery stocks is a management issue which existed prior to the spill and continues. We are unsure if the genetic portion of the study will give us any results. There is a fair level of uncertainty that we will get some definitive answers. The evidence for population-level effect on pink salmon is inconclusive.**

Note: The agreed upon justification statements are highlighted.

Bob provided comment on the following projects:

93-004 and 93-013 - These address problems that are mainly hatchery-related conflicts which existed prior to the spill and he would have a hard time supporting these. These should be funded from some other source.

To: Dave Gibbons
Acting Administrative Director

Date: Sept.8, 1992

From: Marty Rutherford
Restoration Team Member/ DNR

Subject: EVOS 1993 Proposed Projects

Upon returning to work following my leave of 8/31 - 9/04 I reviewed the voting record of my alternate on the Restoration Team, Mr. Art Weiner. I am satisfied with his approach on all but four projects. In each of these instances he had some specific concerns that led him to vote no, resulting in their not being included in the Restoration Teams' recommended package.

Following further conversations with the Chief Scientist and either the specific projects' program manager or other staff from the applicable agency involved in the project, I feel that the misgivings Art had concerning the technical merits of the projects and/or a desire to see an agency involved in cost sharing these projects can be addressed adequately during the development and review of the detailed study plans. Additionally, concerning project #93-034 (Pigeon Guillemont colony survey), there is recent clarification that there is a greater opportunity for habitat protection than was previously understood.

Therefore, because these projects are in my opinion important elements of the 1993 Restoration package, I am changing DNR's vote on the following projects so they can go forward as part of the Restoration Teams' recommended package to the Trustee Council:

93-004/93-013 Pink Salmon documentation, enumeration, preservation of genetically discrete wild populations in PWS;

93-012 Kenai River sockeye: genetic stock identification

93-015 Kenai River sockeye: salmon restoration;

93-034 Pigeon Guillemont colony survey.

Your assistance is appreciated.

1993 PROJECT EVALUATION FACTORS

Restoration Management Actions

These factors will be considered when applying best professional judgement to evaluate these projects. The purpose is to simply rank the project into categories of "high", "medium" and "low" priority.

1. The effects of any other actual or planned restoration actions.*
2. Potential to improve the rate or degree of recovery.*
3. Potential adverse effects on human health and safety.*
4. Relationship of expected costs of the proposed actions to the expected benefits.*
5. Cost effectiveness.*
6. Potential for additional injury resulting from proposed actions, including long-term and indirect impacts.*
7. Importance of starting the project within the next year.*
8. Degree to which the proposed action enhances the resource or service.*
9. Degree to which the proposed action benefits more than one resource or service.*

RANK: X HIGH (5-6 votes) __ MEDIUM (4 votes) __ LOW (≤ 3 votes)

___ Recommended for inclusion in 1993 Work Plan.

___ Not recommended for inclusion in 1993 Work Plan.

Comments:

- "Passport in Time" (Pit) portion is not cost effective and intent is covered by site stewardship (07) proposal (Dummond).
- Remove ARPA training for Park Rangers ($10,000).

MOTION

- Postpone "Pit" portion for 1993 and do remaining portion of public education as proposed.
- Pit too costly and not cost effective at $549,000.
- Look at combining with 009 later.

Voting Record: **TOTAL YES VOTES 5**

NOAA	ADNR	USDI	ADEC	USDA	ADFG
Y	Y	Y	Y	Y	N

* Restoration Framework, 1992, pp 43-44.

Restoration Team Discussion 8/28 - 9/2/92

Archaeology (93-005) - Jerome questioned if this is one of the major five injuries and if there appears to be an imbalance of archaeology projects. Pam stated that only a small amount of money has been spent to study injured archaeological resources since 1989 compared to the other resources. The program has distinct components which fit together into a logical goal to accomplish something. Vote was 6-0 "yes". **Pro: This project is time critical to ensure that additional injury does not occur. There is potential for additional injury to cultural resources by not initiating some programs. Cultural resources are non-renewable. Due to the increased number of people in the area during clean-up activities, increased knowledge of site locations occurred, leading to a higher rate of vandalism. It is possible to decrease this increased rate of vandalism through public education.** Fix budget and increase detail on contractual.

Note: The agreed upon justification statements are highlighted.

1993 PROJECT EVALUATION FACTORS

Restoration Management Actions

These factors will be considered when applying best professional judgement to evaluate these projects. The purpose is to simply rank the project into categories of "high", "medium" and "low" priority.

1. The effects of any other actual or planned restoration actions.*
2. Potential to improve the rate or degree of recovery.*
3. Potential adverse effects on human health and safety.*
4. Relationship of expected costs of the proposed actions to the expected benefits.*
5. Cost effectiveness.*
6. Potential for additional injury resulting from proposed actions, including long-term and indirect impacts.*
7. Importance of starting the project within the next year.*
8. Degree to which the proposed action enhances the resource or service.*
9. Degree to which the proposed action benefits more than one resource or service.*

RANK: X HIGH (5-6 votes) __ MEDIUM (4 votes) __ LOW (≤ 3 votes)

___ Recommended for inclusion in 1993 Work Plan.

___ Not recommended for inclusion in 1993 Work Plan.

Comments:
*- Limit to 24 sites and of these that are repairable. Work pending.
- Independent review of McAlister report.
- Duplication of sites with SUNY-B Damage Assessment Study (Archaeology).
- SUNY-B sites out of intertidal area were not injured.
- If sites are fixable, then do it but many are intertidal and are questionable for restoration (Dummond).
- Previously injured sites role of agency - what level of increased vandalism.
- Curation costs limited to sampling processing labeling, etc. but not long-term storage.
- Need McAlister report to verify injury (due 9/92).
- Take out internment costs.
- General Administrative cost improperly determined (only 7% of contracts not 7% of line 300).

Voting Record: **TOTAL YES VOTES 6**

NOAA	ADNR	USDI	ADEC	USDA	ADFG
Y	Y	Y	Y	Y	Y

* Restoration Framework, 1992, pp 43-44.

Restoration Team Discussion 8/28 - 9/2/92

Site Specific Archeological Restoration (93-006) - This project takes appropriate restoration actions contingent upon peer review. The costs have not been removed for human remains which need to be repatriated. DNR's costs are twice as much, and Marty may need to explain this. The focus is on known sites. The vote is 6-0 "yes". **Pro: This is direct restoration of known injured sites. It is time critical to protect those injured sites from further injury. Monitoring injured sites is one component of this project and is an appropriate restoration tool for cultural resource sites.**

Note: The agreed upon justification statements are highlighted.

1993 PROJECT EVALUATION FACTORS

Restoration Management Actions

These factors will be considered when applying best professional judgement to evaluate these projects. The purpose is to simply rank the project into categories of "high", "medium" and "low" priority.

1. The effects of any other actual or planned restoration actions.*
2. Potential to improve the rate or degree of recovery.*
3. Potential adverse effects on human health and safety.*
4. Relationship of expected costs of the proposed actions to the expected benefits.*
5. Cost effectiveness.*
6. Potential for additional injury resulting from proposed actions, including long-term and indirect impacts.*
7. Importance of starting the project within the next year.*
8. Degree to which the proposed action enhances the resource or service.*
9. Degree to which the proposed action benefits more than one resource or service.*

RANK: X HIGH (5-6 votes) __ MEDIUM (4 votes) __ LOW (≤ 3 votes)

___ Recommended for inclusion in 1993 Work Plan.

___ Not recommended for inclusion in 1993 Work Plan.

Comments:
- Duplication of 1992 work, "eliminate duplication" (i.e., development of training materials, printing, etc).

Voting Record: **TOTAL YES VOTE 6**

NOAA	ADNR	USDI	ADEC	USDA	ADFG
Y	Y	Y	Y	Y	Y

* Restoration Framework, 1992, pp 43-44.

Restoration Team Discussion 8/28 - 9/2/92

Archeological Site Stewardship (93-007) - This is a continuation of the study developing materials for use by local village residents to enlist their aid in protecting cultural resources in their area. DNR is the lead agency. Ken stated this is a lot of money to keep the program going. Byron questioned the budget for printing training materials and the fact there is no 1992 approved budget. Pam stated all the budgets need a lot more work. These budgets represent an upper limit and will need a more detailed look later. The vote is 6-0 "yes". Site stewardship builds local education and awareness. Funding a program for a limited area and expansion of that program will be done on a case-by-case basis and will not be locked in long-term. **Pro: This project continues work that was begun in 1992. The 1992 work prepared materials for the site stewardship program, and 1993 work will include recruiting and training of site stewards. This is time critical to protect injured sites from further injury.**

Note: The agreed upon justification statements are highlighted.

1993 PROJECT EVALUATION FACTORS

Restoration Management Actions

These factors will be considered when applying best professional judgement to evaluate these projects. The purpose is to simply rank the project into categories of "high", "medium" and "low" priority.

1. The effects of any other actual or planned restoration actions.*
2. Potential to improve the rate or degree of recovery.*
3. Potential adverse effects on human health and safety.*
4. Relationship of expected costs of the proposed actions to the expected benefits.*
5. Cost effectiveness.*
6. Potential for additional injury resulting from proposed actions, including long-term and indirect impacts.*
7. Importance of starting the project within the next year.*
8. Degree to which the proposed action enhances the resource or service.*
9. Degree to which the proposed action benefits more than one resource or service.*

RANK: X HIGH (5-6 votes) __ MEDIUM (4 votes) __ LOW (≤ 3 votes)

___ Recommended for inclusion in 1993 Work Plan.

___ Not recommended for inclusion in 1993 Work Plan.

Comments:
- What is existing level of agency efforts vs. oil spill funding.
- Will help public awareness.
- Be coordinated with site-stewardship.
- People (public) realize somebody cares.
- More agency coordination needed - appears more is needed & possibility reduce budget by elimination of duplication.

Voting Record: **TOTAL YES VOTES 6**

NOAA	ADNR	USDI	ADEC	USDA	ADFG
Y	Y	Y	Y	Y	Y

* Restoration Framework, 1992, pp 43-44.

Restoration Team Discussion 8/28 - 9/2/92

Archaeological Site Patrol Monitoring (93-008) - The vote was 6-0 "yes". Site stewardship and site monitoring are complimentary projects. Ken stated he would like a report of how many people were contacted. If you can make an example of a couple of people, you can make a big impression. You also show the public that someone cares. **Pro: Increased awareness and presence of agencies is important to deter vandalism.** We need to scrutinize this project closer next year.

Note: The agreed upon justification statements are highlighted.

BOB SPIES REVIEW

Bob gave the following comments on 6-0 and 5-1 Restoration Team votes:

93-008 - Bob wanted to be assured this project was not too top-heavy in administration. The balance between administrative training types and field personnel actually involved in doing the work was questioned. This can be revisited at a later date.

1993 PROJECT EVALUATION FACTORS

Restoration Management Actions

These factors will be considered when applying best professional judgement to evaluate these projects. The purpose is to simply rank the project into categories of "high", "medium" and "low" priority.

1. The effects of any other actual or planned restoration actions.*
2. Potential to improve the rate or degree of recovery.*
3. Potential adverse effects on human health and safety.*
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7. Importance of starting the project within the next year.*
8. Degree to which the proposed action enhances the resource or service.*
9. Degree to which the proposed action benefits more than one resource or service.*

RANK: __ HIGH (5-6 votes) __ MEDIUM (4 votes) X LOW (≤ 3 votes)

___ Recommended for inclusion in 1993 Work Plan.

___ Not recommended for inclusion in 1993 Work Plan.

Comments:
- Focus products to specific user groups/restoration of resources.
- Very ambitious, scale back and focus on restoration end-point.
- Cruise ship training material only, not bodies for boats.
- High Quality products.
- Price tag too high - reduce to $450,000
- Objectives

  #3 scale back to training only
  - 1 video (look)
  - 3 brochures (look)
  - school curriculum
  - cruise ship training
  - printing

Voting Record: **TOTAL YES VOTES 3**

NOAA	ADNR	USDI	ADEC	USDA	ADFG
Y	N	Y	N	Y	N

* Restoration Framework, 1992, pp 43-44.

Restoration Team Discussion 8/28 - 9/2/92

Public Information (93-009A) - Pam would like to give NPS and FWS an opportunity to do some pieces of this project. Jerome stated ADF&G was suppose to do the Watchable Wildlife Program component. Pam would like a commitment from Ken that some way to split funding will be explored. Art questioned the sense of immediacy on this project for this year. Ken stated there is a component which deals with recreation resources, and the recommendation is to fund some projects which deal with recreation resources. The vote is 5-1 "yes"; DEC voted "no". **Pro: We are responding to public comment and a desire for accurate information, which will heighten the level of awareness to minimize injury to resources. Getting accurate information out to the public is long overdue.**

Note: The agreed upon justification statements are highlighted.

1993 PROJECT EVALUATION FACTORS

Restoration Management Actions

These factors will be considered when applying best professional judgement to evaluate these projects. The purpose is to simply rank the project into categories of "high", "medium" and "low" priority.

1. The effects of any other actual or planned restoration actions.*
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7. Importance of starting the project within the next year.*
8. Degree to which the proposed action enhances the resource or service.*
9. Degree to which the proposed action benefits more than one resource or service.*

RANK: X HIGH (5-6 votes) __ MEDIUM (4 votes) __ LOW (≤ 3 votes)

___ Recommended for inclusion in 1993 Work Plan.

___ Not recommended for inclusion of in 1993 Work Plan.

Comments:

- Ranger for 8 months or RT suggest several Rangers in critical time period.
- Concentrate on party boat (charter boat) captains before season.
- Change emphasis "all colonial nesting birds, not just murres."
- What part is normal agency responsibility
- Connection with Federal law against harassment of wildlife; add law enforcement component but keep to a minimum.

Voting Record: **TOTAL YES VOTES 6**

NOAA	ADNR	USDI	ADEC	USDA	ADFG
Y	Y	Y	Y	Y	Y

* Restoration Framework, 1992, pp 43-44.

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PARTICIPANT SIGN-IN LOG

Meeting: Exxon Valdez Oil Spill Public Advisory Group

Date: 10/29

Location: Simpson Building

NAME	ORGANIZATION	CHECK HERE IF YOU WISH TO PRESENT ORAL OR WRITTEN COMMENTS
Chuck Totemoff	Chenega Corp.	
Eric Yould	Ebasco Env.	
Vern McCorkle	Public at Large	
Rep Don Young	U.S Rep.	
[illegible]	U.S.S. [illegible]	
C. Meacham	ADFG	
Deborah French	Applied Science Assoc. Narragansett, RI	
Jim Cloud	Public at Large	
Natalie Phillips	Anchorage Daily News	
Pamela Brodie	Sierra Club	
John Strand	NOAA/NMFS	
[illegible]	State [illegible]	
Charles E. McKee	People-King	yes
Yereth Rosen	Reuters	

EXXON VALDEZ OIL SPILL SETTLEMENT ACCOUNT
RESTORATION JOINT TRUST FUND

Date	Item	Amount (Millions)	Account Balance[1]
12/09/91	Exxon Payment	90.0	
12/09/91	Partial reimbursement directly to Governments for expenses.[2]	(53.5)	
12/09/91	Remaining amount deposited in Joint Trust Fund.	36.5	36.5
05/21/91	1992 Work Plan authorized by Trustee Council and released by the Court for 03/01/92 through 09/30/92.	(12.9)	23.6
12/01/91	Exxon payment.[3]	110.1	
12/01/91	Partial reimbursement to Governments for expenses. The amount of money taken for reimbursement in any given year will be limited by the amount of money needed for restoration in that year.	(53.5)	

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[1]The account earns interest. The dollar amounts shown do not include that interest.

[2]REIMBURSEMENT - The governments are reimbursing themselves under the terms of the settlement agreement. The specific language states: "The aggregate amount allocated for United States past response and clean-up costs and damage costs ... shall not exceed $67 million, and the aggregate amount allocated for State past response and clean-up costs, damage assessment costs, and Litigation Costs incurred on or before March 12, 1991 ... shall not exceed $75 million." "Additionally ... to reimburse or pay costs incurred by the United States or the State or both after March 12, 1991 to access injury resulting from the oil spill and to plan, implement, and monitor the restoration, rehabilitation, or replacement of natural resources, natural resource services, or archaeological sites and artifacts injured, lost or destroyed as a result of the oil spill, or the acquisition of equivalent resources or services."

[3]Paragraph 8(b) of the Decree requires Exxon to pay by December 1, 1992, an amount equal to $150 million minus Exxon expenditures for Exxon Valdez oil spill clean-up activities in accordance with directions of the Federal On-Scene Coordinator. The Coast Guard approved a total distribution of $39.9 million, making the total Exxon payment $110.1 million.

12/01/92	Remaining amount deposited in Joint Trust Fund.	56.6	80.2
	1993 Work Plan (10/01/92 - 09/30/92).	(44.1)	36.1
	Approved by Trustee Council pending petition to Court.	6.5	
	Pending review and approval by Trustee Council - proposals submitted for public review.[4]	37.6	

[4]Some portion of this amount will be approved. Final action has not been taken by the Trustee Council pending Public Advisory Group recommendations and Trustee Council deliberations scheduled for 12/11/92.