

RESOURCE MANAGEMENT PLAN

YELLOWSTONE NATIONAL PARK

APPROVED BY

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YELL N-035 Research and Interpret Ungulate Ecology
YELL N-036 Maintain Pronghorn Herd and Protect Habitat
YELL N-037 Research and Interpret Aspen Ecology

YELL N-038 Improve Invertebrate Database
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YELL N-040 Increase Knowledge of Rare Bird Populations
YELL N-041 Enhance Trumpeter Swan Recovery in GYE
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YELL C-005 Preserve and Restore Fort Yellowstone
YELL C-006 Inventory, Evaluate, and Preserve Backcountry Cabins and Lookouts
YELL C-007 Add Professional Archeologist to Staff
YELL C-008 Establish Museum Technician Position
YELL C-009 Document Structures to HABS/HAER Standards
YELL C-010 Assess Historic Structures Using ICAP Program
YELL C-011 Establish Design Guidelines for Structures
YELL C-012 Add to Archaeologic and Historic Databases
YELL C-013 Increase Cultural Resources Staff
YELL C-014 Implement Archeological Resources Management
YELL C-015 Inventory Prehistoric and Historic Trails and Evaluate
YELL C-016 Establish Historical Architect Position
YELL C-017 Conduct Archeological Research Studies
YELL C-018 Inventory, Evaluate, and Plan for Historic Vehicles
YELL C-019 Prepare Administrative History
YELL C-020 Preserve Ethnographic Resources
YELL C-021 Develop Cultural Resources Bibliography
YELL C-022 Complete Special History Studies
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YELL C-027 Upgrade Management of Museum Collections
YELL C-028 Preserve Historic Photograph Collection
YELL C-029 Preserve Objects in Historic Exhibits
YELL C-030 Inventory, Evaluate, and Plan for Historic Furnishings
YELL C-031 Manage Museum Collections in Outside Repositories
YELL C-032 Conduct a Collection Condition Survey

BIBLIOGRAPHY

EXECUTIVE SUMMARY

Cultural and natural resource management planning in Yellowstone National Park is directly tied to the park's purpose and enabling legislation, current issues, servicewide initiatives, and ongoing needs. To better coordinate long- and short-term planning, Yellowstone has established a Resource Council. This council reviews and prioritizes current resource and development planning projects, and, if necessary, establishes teams to follow through on agreed-upon priority tasks. Where it can, the park approaches resource management planning as an integration of cultural and natural resources needs; this is reflected in the lists of integrated project statements. However, many other projects are more appropriately assigned to the category of natural resources or cultural resources, and they are listed in their own category of project statements. The resource management priority projects listed below reflect the priorities of the Resource Council with additional input from natural and cultural resource management specialists.

For many reasons, there is need to distinguish between **priority issues** and major **unfunded needs**. For example, grizzly bear management is a continuing issue for the park with legal mandates, and it is of major interest to a variety of publics. Grizzly bear management requires the continued commitment of park maintenance employees, rangers, interpreters, resource managers, and interagency scientists. The ongoing grizzly bear management program is supported by base funding and permanent staff and is considered a priority issue for Yellowstone. It will not, however, always be the program for which there is the most critical need for additional staff or funding, although there are funding needs associated with this issue. Consequently, the park annually reviews and outlines **priority issues**, to which continued staff and funds are committed, and defines the highest priority **unfunded needs** for that year. In some years there may be overlap between the two categories, while in others there may not.

Priority Integrated Resource Programs for 1995:

Integrated projects reflect the need for interdisciplinary efforts in support of ecosystem and wilderness management, park planning and compliance concerns related to park roads and developments, and to improve our use of the best available tools for a scientifically-based cultural and natural resources management program.

<u>Project No.</u>	<u>Project Title</u>
I-02	Support Park Priority Planning Efforts: <i>(Road Reconstruction Program, Housing Initiatives, and Winter Visitor Use Management)</i>
I-07	Promote Ecosystem Management through Interagency Cooperation and Coordination
I-03	Upgrade and Maintain Geographic Information System
I-16	Investigate Status of Tribal Hunting Rights
I-04	Manage Visitor Use to Protect Backcountry Resources

Top Unfunded Integrated Resource Management Needs:

<u>Project No.</u>	<u>Project Title</u>
I-02	Support Park Priority Planning Efforts
I-07	Promote Ecosystem Management through Interagency Cooperation and Coordination
I-03	Upgrade and Maintain Geographic Information System
I-01	Build Inventory and Monitoring Program
I-14	Develop Obsidian Cliff Management Plan
I-04	Manage Visitor Use to Protect Backcountry Resources

Priority Natural Resource Issues for 1995:

Significant dollars and/or staff time are required for ongoing efforts to restore extirpated or imperiled species, to mitigate resource damage, to monitor potential effects of external development on park resources, and to research ecosystem processes and help park managers continually reevaluate management actions related to controversial issues.

<u>Project No.</u>	<u>Project Title</u>
N-11	Restore Northern Rocky Mountain Wolf Population
N-34	Plan/Implement Long-Range Bison Management Program
N-13.001	Mitigate Lake Trout Planted in Yellowstone Lake
N-07	Recover and Maintain Wild Grizzly Bear Population
N-01	Inventory, Monitor, and Protect Geothermal Resources: <i>Support passage of Old Faithful Protection Act; address commercial use of <u>Thermus aquaticus</u></i>
N-46	Monitor and Mitigate Mining Activities In/Near YNP

Top Unfunded Natural Resource Needs:

<u>Project No.</u>	<u>Project Title</u>
N-11	Restore Northern Rocky Mountain Wolf Population
N-34	Implement Long-Range Bison Management Program
N-13.001	Mitigate Lake Trout Planted in Yellowstone Lake
N-35	Research and Interpret Ungulate Populations
N-19	Monitor and Control Spread of Exotic Plants
N-23	Reclaim and Revegetate Disturbed Sites

Priority Cultural Resource Programs for 1995:

At this time, none of the top cultural resource priority issues are adequately funded. The top issues all are affected by lack of base funding, insufficient professional staff and the need to expand staff expertise, inadequate facilities for resource collections, inadequate or nonexistent inventories and site-specific management plans for significant areas, and the need to address legal mandates.

<u>Project No.</u>	<u>Project Title</u>
C-07	Add Professional Archeologist to Staff
C-24	Preserve Powerhouse & Adapt Building for Collections
C-01	Stabilize and Maintain Historic Structures
C-26	Upgrade Management of the Archives and Library
C-27	Upgrade Management of Museum Collection
C-11	Establish Design Guidelines for Structures

Top Unfunded Cultural Resource Needs:

<u>Project No.</u>	<u>Project Title</u>
C-07	Add Professional Archeologist to Staff
C-01	Stabilize and Maintain Historic Structures
C-14	Implement Archeological Resource Management Program
C-08	Establish a Museum Technician Position
C-16	Establish a Historical Architect Position
C-20	Preserve Ethnographic Resources
C-02	Protect National Historic Landmark Buildings
C-19	Prepare Administrative History
C-10	Assess Structures Using Inventory and Condition Assessment (ICAP)
C-05	Preserve & Restore Fort Yellowstone

Other Projects and Programs

Project-specific needs for all park project statements are outlined in the integrated, cultural, or natural project statements that follow in this plan. Although many projects will never rank as a "priority" issue for Yellowstone, they are no less needed if the park staff is to understand and protect the resources for which the park is responsible. The park's commitment to accomplishing these projects is reflected in the actions, staffing, and funding listed under each project statement. Where possible, the park used R-MAP funding and FTE figures for the natural and integrated project statement needs.

I. INTRODUCTION

Park Purposes and Values

Yellowstone was established as the world's first national park by Act of Congress on March 1, 1872. This act stated that Yellowstone National Park was "dedicated and set apart as a public park or pleasuring ground for the benefit and enjoyment of the people" and "for the preservation, from injury or spoilation, of all timber, mineral deposits, natural curiosities, or wonders within said park." It represents a hallmark in the history of human attitudes toward the earth, its lands, and its resources.

Today, as people explore their relationships with the environment and their priorities for management of natural and cultural resources in relation to other human needs, they look to parks like Yellowstone for ideas and leadership. More and more, it is realized that even a park of Yellowstone's size cannot be protected in isolation. In order to effectively balance the park's natural and cultural resources with human needs, managers must consider what is happening outside the park's boundaries as well as within.

Yellowstone is at the center of approximately 12 million acres now commonly called the greater Yellowstone ecosystem. These lands are managed by four different federal agencies (the National Park Service [NPS], the Forest Service, the Fish and Wildlife Service, and the Bureau of Land Management), three different states (Idaho, Montana, and Wyoming), and numerous private land holders. Geothermal development, mining, airport expansion, residential subdivision development, restrictions on wildlife movements, and tourism are just a few of the issues occurring within the ecosystem that have ramifications for Yellowstone.

Efforts are currently underway at the federal level, through the Greater Yellowstone Coordinating Committee, to begin managing resource data on an ecosystem basis and to provide a forum for managers to communicate and coordinate in order to make improved management decisions. Existing cooperative working groups bring together managers and researchers on issues of cross-boundary concern, including threatened and endangered species, ungulate herds, and exotic plant control; however, more opportunities to broaden ecosystem management programs should be sought.

Within Yellowstone natural resource management focuses on preserving the components and processes of naturally evolving ecosystems rather than simply on preserving individuals of certain species, except where otherwise mandated by law. And, although most visitors view Yellowstone as a unique and wild natural environment, its cultural resources are also of important consequence. The story of how people have explored, utilized, protected, and managed Yellowstone's natural environment is significant. These resources serve as our windows into the past. Without these resources we would become isolated in our own time.

Purpose of the Resource Management Plan

The *Resource Management Plan* documents the park's needs and programmed actions related to resource management objectives. It identifies and defines the inventorying, monitoring, research, restoration/mitigation, and enforcement activities required to perpetuate the natural and cultural resources of Yellowstone National Park. On a topical basis, it summarizes the state of park resources and our current knowledge about them and describes a reasonable progression of activities designed to advance park management objectives in the near future.

Yellowstone has established a Resource Council to set resource and development planning priorities and to assign appropriate staff expertise to resource teams dealing with those priorities. These priorities and how they guide Yellowstone's resource management strategies are described later.

Park Management Objectives

The fundamental goals of Yellowstone's resource management program, as outlined in this *Resource Management Plan*, are to preserve the natural and cultural resources of Yellowstone and to allow natural processes and interactions between resources to occur with a minimum of human influence. The park's *Master Plan* (1974) and *Statement for Management* (1991) were reviewed and provided guidance in establishing the following objectives for achieving that goal.

- Base all public and administrative use and development decisions on sound resource-management practices and the best available data.
- Establish and maintain an effective program of protection, preservation, management, interpretation, and public use of the park's natural and cultural resources that is based on data obtained through appropriate inventory, monitoring, and research.
- Provide for public use and enjoyment of park resources in ways that will minimize interference with natural and cultural resources and natural processes and will enhance public safety.
- Cooperate with the Greater Yellowstone Coordinating Committee and others in the greater Yellowstone area for the purposes of improving management of cross-boundary ecosystem resources.
- Minimize the visual intrusion of human development on park resources and the visibility of human activities and presence in the backcountry, wherever possible.
- Provide a variety of interpretive activities that promote visitor understanding and appreciation of park cultural and natural resources and enhance public understanding of the

philosophies, policies, and scientific information that are the basis of park resource management.

- Develop effective programs that restore areas of disturbance, reestablish extirpated species, and mitigate any environmental effects of necessary development projects.

II. PRESENT STATUS OF NATURAL AND CULTURAL RESOURCES

Natural Resources

Components of Yellowstone's natural system include the geologic features that initially inspired the establishment of Yellowstone--the geysers, hot springs, mud pots, and fumaroles found in abundance here as nowhere else on earth--and other evidence of Yellowstone's unique geologic past. The resulting landforms and the overlying soils are fundamental to the animals and plants that live on the surface landscape.

About 80 percent of Yellowstone National Park is forested, principally by lodgepole pine. In 1988 the park experienced the largest wildfires in its recorded history; approximately 793,000 acres of the park were burned to varying degrees. The scale of these fires was unexpected, although the fire history of Yellowstone's forests indicates that large-scale, infrequent fires have happened at intervals of several hundred years.

The landscape and vegetation support the animal life inhabiting Yellowstone. Free-ranging populations of bison, elk, moose, mule and white-tailed deer, bighorn sheep, and pronghorn interact with bears, mountain lions, bobcats, and coyotes. Pine marten, beaver, river otter, weasels, red fox, wolverines, marmots, and other small mammals also live here. Many birds find key nesting habitat in the park. The invertebrate, reptile, and amphibian species are less-known and less-appreciated than the often photographed "charismatic megafauna." Five threatened or endangered species are currently listed for Yellowstone: the grizzly bear, bald eagle, peregrine falcon, whooping crane, and the extirpated gray wolf, for which reintroduction is underway.

Yellowstone's waters are considered pristine and support a variety of life, from the microscopic cyanobacteria and algae that thrive in thermal waters to the aquatic insects that feed the trout in fresh waters. Yellowstone Lake supports the largest natural cutthroat trout population in the world, a significant recreational resource as well as one that provides critical food to many other animals, such as pelicans, osprey, and grizzlies. Certain non-native trout species were introduced into park waters at the turn of the century, long before it was recognized what these introductions do to native species populations. However, where appropriate, these exotic species continue to be managed for quality angling experiences.

Crucial to the long-term maintenance of the floral and faunal resources of the park is the conservation of their habitat. As required by the Wilderness Act of 1964, the roadless areas

in Yellowstone National Park were studied for suitability as designated wilderness. Yellowstone's wilderness recommendation (August, 1972) suggested that 2,016,181 acres be designated as wilderness, however, legislation in this regard has never been enacted. National Park Service policy directs that this potential wilderness be managed as wilderness and that no action be taken that would diminish the wilderness suitability of this area.

The park's large expanse of relatively undisturbed land is not only integral for resources protection, but it is also important to the visitor experience. Of Yellowstone's 2.2 million acres, an estimated 98 percent is accessible only by foot or horse trail. While the vast majority of Yellowstone's visitors do not venture far into the backcountry, many value this resource simply because it is there. The absence of noise is also an increasingly valuable resource, and those people who do travel into Yellowstone's backcountry expect that their experience will be relatively quiet with respect to human-generated noise.

Natural Resources Baseline Information

The National Park Service guidelines for Natural Resources Inventory and Monitoring (NPS-75) direct parks to develop park-specific programs to meet resource management goals and objectives. These guidelines call for evaluating available data in order to establish resource inventory needs and priorities. Once databases are available, monitoring programs can be established. These programs should be based on park priorities and sound monitoring protocols.

Certain minimum information, as described in NPS-75, should be available in each park's databases. The following describes the databases currently available for Yellowstone's natural resources and compares those databases to the standards.

- *Historical Database*

The park should minimally have an organized and compiled collection of historic scientific materials. Yellowstone has an extensive collection of materials, both historic and recent, including maps, photographs, manuscripts, and natural resource specimens. Yellowstone actively records unusual or catastrophic events and has basic maps and remote imagery available. The park's curator manages the museum collections, which include more than 20,000 biological, paleontological, and geological specimens, and the photo archive of nearly 90,000 images. Unfortunately, there is a backlog of work for all these staff.

The park should also minimally have an automated bibliography of documents and scientific studies about park natural resources. Yellowstone has a staffed research library containing approximately 8,000 titles, including the majority of past and current park resources documents. The library has the capability of providing park staff with inter-library document searches and inter-library loans.

● *Species Information*

At a minimum the park should have species lists and means of survey for plants, vertebrates, threatened and endangered species, and species of special concern. There should also be species status and distribution information for threatened and endangered species and species of special concern.

The park has numerous inventories, studies, and related databases for its biological resources. Species lists and collections exist for plants, mammals, fish, and birds, although these are not necessarily complete. Recent efforts to improve inventories of reptiles, amphibians, and invertebrates have occurred.

The flora of Yellowstone includes some 1200 known vascular plant species, including approximately 150 non-native species. Most of these plants are documented in the park's herbarium. Collections continue to reveal both new park records and recently arrived exotic species each year. Many rare plants or species of concern are found in Yellowstone, and the park's botanist continues surveys for additional locations and species.

There are 44 mammal species represented in the park's collection; however, additional species for which there is no voucher specimen have been reported. Extensive research has been conducted on a few of the species, particularly the ungulates and grizzly bears. Work on other predators has been rare to non-existent, and comparatively little research has been done on small mammals. In recent years, research emphasis has been on understanding community dynamics and ecosystem level relationships, particularly with regard to plant/herbivore interactions and other components of Yellowstone's northern range.

Since the park's creation, 279 species of birds have been reliably recorded here. Detailed studies and/or monitoring records exist for some of the species such as trumpeter swans, osprey, bald eagles, white pelicans, and peregrine falcons. In the 1980s the park began participating in breeding bird surveys and other bird monitoring programs.

There are six species of reptiles and four species of amphibians present in the park. Recent research efforts are adding information on species health and distribution.

There are 13 native species of fish, and 5 non-native species that were introduced early in the park's history. Long-term cooperation with the U.S. Fish and Wildlife Service, Yellowstone Fisheries Assistance Office, has provided the park with one of its best species inventory and monitoring programs.

At present, there are no listed threatened or endangered plants, reptiles, or amphibians in the park. In 1994 the fluvial form of Arctic grayling was determined "warranted but precluded for listing" at this time. The five mammalian and avian listed species are: the gray wolf (an extirpated species for which a reintroduction program was initiated in 1994), grizzly bear, whooping crane, peregrine falcon, and bald eagle.

In general, baseline species information is fairly complete with regard to presence/absence, however, only those species that have received the focus of the park's attention have better distribution and status information (for example, grizzly bears, elk, bison, peregrine falcons, bald eagles, trumpeter swans, osprey, fisheries, Ross' bentgrass). The status and distribution of species of special concern, such as plant and animal species being considered for listing as either threatened or endangered, are generally unknown.

- *Digital Maps of Vegetation Associations in the Park and Environs*

Yellowstone has an extensive baseline of vegetation and habitat mapping and description. Habitat-type and cover-type vegetative maps were produced within the past decade at the 1:125,000 scale. Due to the extensive wildfires that occurred in 1988, the cover-type maps require some revisions. Burned area and burn-intensity maps have already been produced at the large scale, as well as at an approximate 1:20,000 scale.

- *Digital Cartographic Data*

The U.S. Geologic Survey makes available parkwide maps showing shaded relief, forest cover, and UTM grid coordinates, all at the 1:125,000 scale. They have produced 15-minute quadrangles (1:62,500) covering the entire park and are currently finalizing an entire series of 7.5-minute (1:24,000) topographic maps. A complete set of false-color infrared imagery at the 1:24,000 scale was taken in the autumn of 1988. A complete set of 1:63,630 true-color infrared air photos became available in the early 1990s; landsat air photos are also available (taken in 1988). Older sets (ca. 1971) of color imagery exist along with miscellaneous partial black-and-white air photos.

Yellowstone has a Geographic Information System (GIS). The databases in the park's GIS are extensive, but lack of a qualified operator has led to staff inability to use the system.

- *Digital Soils Maps*

Most of Yellowstone has been studied and mapped with regard to soil type and characteristic. In 1989 staff began fieldwork necessary to complete a parkwide soil survey; the expected result is a parkwide soil map at approximately 1:60,000 scale, to be available in 1995. In the past six years, researchers have studied sediment transport in the Lamar River drainage and have sampled dissolved and suspended sediment and bed load in both the Lamar River and in the Yellowstone River below its confluence with the Lamar.

- *Digital Geology Maps*

Yellowstone has a geologic map at 1:125,000 scale, a series of geological quadrangle maps and base maps, and a number of specialty maps, such as seismic maps of earthquake epicenter areas and bathymetric maps of several park lakes.

- *Water Resources Inventory and Water Chemistry*

At a minimum the park should know the location and description of its water resources and their quality. Water chemistry information for representative waters should include alkalinity, pH, conductivity, dissolved oxygen, rapid bioassessment baseline data, temperature, flow, and nutrient/toxicity information, where necessary.

Watersheds and surface waters have been mapped and are available in Yellowstone's Geographic Information System. Surface water resources include 112,000 acres of water, including approximately 1,000 streams and 220 lakes. Stream discharge data is available from USGS gauging stations located on the Yellowstone, Madison, Firehole, Lamar, Gardner, Gibbon, and Snake rivers which drain all major portions of the park. As a result of long-term monitoring provided by the Fish and Wildlife Service, Yellowstone Fisheries Assistance Office, the park has baseline data on 67 percent of the park's lakes and the majority of streams and rivers. This data typically includes pH and conductivity, temperature, flow, chemical characteristics, nutrient levels, and aquatic invertebrate levels in these waters.

Wetlands are currently being mapped along the road system in the park in response to a parkwide road improvement project. This detail of wetlands information (1" = 100') is not available anywhere else in the park. The Fish and Wildlife Service is preparing a National Wetland Inventory Map of Yellowstone at the 1:24,000 scale. It is expected this inventory map will be available in 1996.

Yellowstone is noted for its geothermal activity. Park geologists have mapped hot springs, geysers, mud pots, and fumaroles, and they annually monitor them. Cold water springs are generally known where they occur in proximity to developed areas.

In general, surface water and subsurface aquifers in Yellowstone exhibit nearly pristine water quality. The park has received the 1994 "Baseline Water Quality Data Inventory and Analysis Report" from the NPS Water Resources Division. This report characterizes baseline water quality in the park by summarizing the water quality data collected in and around the park that has been entered into the Environmental Protection Agency's water quality database.

- *Air Quality*

At a minimum parks should know the location of existing nearby ambient air quality monitoring stations and know their baseline for each air quality standard as well as their visibility baseline.

Yellowstone National Park is designated as a mandatory Class I area under the Clean Air Act, as amended. Baseline standards are known, and a monitoring program is in place to measure each standard. The park's air quality monitoring program consists of acid

precipitation monitoring, gaseous pollutant monitoring for ozone and sulfur dioxide, and fine aerosol particulate monitoring. The acid precipitation station is located at the Tower Ranger Station and monitoring follows the National Atmospheric Deposition Program. The gaseous pollutant and fine particulate monitoring equipment is located next to the Lake Ranger Station.

There are currently no major point sources of air pollution in the vicinity of the park. During prescribed and natural fires, air quality standards may temporarily be exceeded, usually on a local basis. The geothermal resources in the park emit hydrogen sulfide, a noxious gas that is poisonous in high concentrations. Hydrogen sulfide disperses in the air, and it is only in rare circumstances that it would be concentrated. Human-related sources of air pollution in the park include motor vehicles (including snowmobiles), campfires, wood stoves, and oil-fueled boilers for the generation of electricity and steam heat. A batch plant, which produces materials for patching and paving roads, is located at Norris. New air filters have recently been installed, which should significantly reduce the emissions from this facility.

- *Precipitation and Meteorological Data*

At a minimum parks should record precipitation and meteorological data, including relative humidity, wind speed and direction, and daily maximum and minimum temperature.

Yellowstone's meteorological database includes data from manually-operated weather stations established in seven locations throughout the park. These stations record daily minimum and maximum temperatures and precipitation (24-hour and accumulated amounts). In 1987, three automatic weather stations were installed in the Mammoth, Tower, and Old Faithful areas. In 1989-1990, two Remote Automated Weather Station (RAWS) units were installed in the backcountry. These stations record precipitation, temperature, wind direction and speed, relative humidity, and fuel moisture content.

In cooperation with the Soil Conservation Service and the Bureau of Reclamation, the park manually measures ten snow survey courses and also uses 11 automated SNOTEL stations to monitor snowpack; SNOTEL electronically transmits temperature and precipitation data year-round as well.

Natural Resources Status and Major Issues

The act that created Yellowstone National Park predated the establishment of surrounding states and most towns and private land ownership in the region. The park has essentially no private land inholdings and, compared to most other NPS areas, is almost entirely undisturbed by previous land management practices. With one notable exception (the gray wolf), its native flora and fauna are believed to be complete with regard to the species assemblage found here in 1872. Yellowstone's size and relative geographic isolation have, to

a degree, minimized the effects of urbanization, and the park retains essentially a wilderness character in its more than two million acres of backcountry.

Whereas many areas of the National Park system require major programs to restore animal species, plants, or landscapes, Yellowstone's on-going resource management program is largely one of maintenance, protection, and enhancing human understanding of the natural environment. Grazing, hunting, mining, off-road vehicle use, and trapping are not allowed in Yellowstone. Nevertheless, increasing numbers of visitors do influence park resources for longer periods of time and in more seasons, and there is increasing habitat loss and human encroachment on the borders of the park.

It is a continuing struggle to avoid "crisis management" in Yellowstone. The intense interest exhibited by the public and elected officials in specific species or issues often prevents park staff from performing the systematic inventory, monitoring, and research necessary for the understanding and long-term preservation of park resources. Certain high-visibility issues, such as grizzly bear management, the northern range controversy, and wolf reintroduction have dominated research and resource management time and dollars for decades. While this has served to produce volumes of information on these topics, less visible, but no less important, issues remain unfunded and unevaluated. An overview of the major current natural resource issues follows; these issues will be elaborated on in project statements.

- *Ecosystem Management*

Yellowstone has been involved in ecosystem management to varying degrees for several decades, principally with regard to issue-specific planning, management, and research efforts. In 1986 the Congressional Research Service (CRS) issued a report on the greater Yellowstone ecosystem (GYE) that concluded that lack of coordination between federal and state agencies was harmful to the area's fundamental values. While there is no universally accepted map or definition of greater Yellowstone, the area is generally described to include, at a minimum, both Yellowstone and Grand Teton national parks, at least the mountainous portions of six national forests (the Gallatin, Custer, Shoshone, Bridger-Teton, Targhee, and Beaverhead), the Wind River Indian Reservation, and three national wildlife refuges (Red Rocks Lakes, Gray's Lake, and the National Elk Refuge). This area covers three states: Wyoming, Montana, and Idaho. Estimates of the amount of land included in the GYE have ranged from six to eighteen million acres based on the subject matter being discussed. This wide variation in area size has, unfortunately, evoked concern among some constituents about government taking of lands and/or restrictions on land uses.

In response to the CRS report, the Greater Yellowstone Coordinating Committee, consisting of the affected national park superintendents and national forest supervisors, was established. The committee meets semi-annually to discuss topics of mutual interest. This has resulted in increased cooperation between these different land management agencies. Positive results include the co-initiated funding proposal for a Greater Yellowstone Conservation Data Center, in cooperation with the Nature Conservancy's Natural Heritage Database Program,

and the development of a cumulative effects model. This model was initially designed for grizzly bear habitat evaluation, but has utility for a myriad of other applications.

There is also an Interagency Grizzly Bear Study Team, which researches the threatened grizzly throughout the ecosystem. Although the National Park Service has provided the majority of funding for this team since 1974, the other agencies do participate in this cooperative program. Throughout the 1980s various interagency groups have addressed management and research needs for other issues, such as ungulates in both northern and southern portions of the ecosystem, bald eagles, and peregrine falcons. Even before 1988, but especially since, wildland fire managers developed plans to manage fires across jurisdictional boundaries. More recently, cooperative efforts have been initiated to develop cross-boundary management plans for bison and exotic plant infestations and a proposal is being considered to establish a trumpeter swan working group in the ecosystem.

Yellowstone hosts a unit of the Fish and Wildlife Service, which provides expertise and technical assistance for a long-term program of fisheries and aquatic resources management. This Yellowstone Fisheries Assistance Office is currently examining ways to expand their efforts in ecosystem management and broaden their services in the park to other topics, such as imperiled reptiles and amphibians, as part of their agency's redirection.

With all federal agencies seeking to streamline their staffs, budgets, and operations in the 1990s, there will be a growing need to share expertise and information across jurisdictional boundaries. Such cooperative efforts will also likely include other partners outside federal agencies and will likely consider sharing work as well as information.

- *Long-Term Ecological Inventory and Monitoring*

It might be assumed that Yellowstone, being the oldest national park, has had a head start in developing and maintaining programs of resource management and research. However, as in other parks, Yellowstone still lacks much of the baseline information needed on many of its resources (as summarized above) in order for well-coordinated, science-based monitoring and management programs to be established. Nearly all of the research and monitoring activity that has occurred has been accomplished with project-specific funding.

Yellowstone has a permanent staff of more than 250 persons and a summer seasonal staff of some 700. More than 200 cooperative or contract researchers work in the park each year. Such a large staff requires effective organization to prevent unnecessary overlap between various specialists. To enhance the likelihood that monitoring and research results will be productively translated into management application, there must be clearly outlined research and management objectives, programs designed to meet those objectives, and proper feedback in a timely fashion to evaluate the effectiveness of studies and management options implemented through interpretation, enforcement, restoration, or maintenance. The park needs a comprehensive Inventory and Monitoring (I&M) Plan to direct a long-term program of systematic monitoring.

Available technology for information gathering, storage, and retrieval markedly outstrips our ability to use it. Only in the past four years has the park acquired personal computers for its staff, and the vast pool of associated software for research and resource management applications is still minimally available. Storage of data, once collected, and its accessibility also present problems due to limited file, archive, and computer capacity. Plant, mammal, insect, and other collections are incomplete and, at this time, are likely best housed in museums or universities; however, the park needs more complete records of specimens collected here. Valuable research files and data are not sufficiently stored to protect the information from fire, theft, earthquake, or other loss.

Initial purchase and use of a parkwide GIS occurred in 1988, and demand quickly exceeded the operator's ability to supply products. In 1994 the system was virtually unused due to the lack of qualified staff necessary to assist other park staff with their variety of needs. A tremendous backlog of data exists that needs to be incorporated into the GIS. There is also the need to inventory additional resources in order to produce a more complete understanding of the park environment.

Base funding is necessary to develop all components of a sound inventory and monitoring program for Yellowstone.

- *Geothermal Resources*

While Yellowstone's geothermal features are undoubtedly the most unique of its natural resources, they dominate neither research or resource management project funding. This is partly because they are outside the traditional fields of wildlife or vegetation management and because the threats to them are often not as visible as those to plants and animals. The park has one staff geologist and would benefit from additional expertise, such as a hydrologist.

Thermal features are highly variable in their reaction to hydrologic changes and seismicity, as well as to human activities. However, there is not yet a way to accurately map the circulatory systems of thermal basins, nor do scientists fully comprehend the surface and/or subsurface interconnections between features and basins. Periodic external threats to geothermal resources, notably requests to permit geothermal or oil and gas wells, have, in the past, stimulated geothermal monitoring and research. Geothermal test drilling outside the park in 1986 prompted a new round of studies that were completed in 1990. However, long-term databases are necessary to effectively assess potential effects of external drilling on park resources, as well as to assess geologic hazards. Funding has never been provided for such long-term monitoring.

In 1994 attention focused on the use of *Thermus aquaticus*, a microorganism first discovered and collected from the park's geothermal springs, for commercial purposes; technological applications developed from this scientific discovery have reaped millions of dollars for private companies. The appropriateness of the use of park resources for commercial

purposes and the question of whether or not royalties should be paid to the National Park Service remain unresolved at this time.

- *Endangered Wildlife*

Although five species of park wildlife are listed as threatened or endangered under the Endangered Species Act, two dominate public interest, staff time, and funding, sometimes to the detriment of other resource programs.

For two decades, grizzly bear management has been the top wildlife management priority issue in Yellowstone. Despite years of research, the grizzly bear remains on the threatened species list, and its management is ever controversial. The bears of Yellowstone occupy an established place in the American mind. The bear's presence, even if unseen, also holds special meaning for many persons who see the grizzly as synonymous with a wilderness experience. In the past decade, scientists have suggested, first, that the grizzly population was critically short of adult females and, more recently, that signs of population recovery are occurring; both statements could be true. There is continual pressure on researchers to provide more information on bears and on managers to either lessen or tighten management practices related to bears and humans. Even if the grizzly population eventually recovers to the point of delisting, the park's bear management program will continue to be a high priority. It will always be necessary to manage bears and humans in order to prevent bear/human conflicts, which might result in injury to either species.

Yellowstone is one of very few parks that could even consider restoration of a large native predator. The gray wolf is believed to be the only wildlife species missing from those found when early explorers first visited the park in the 1800s. Paleontological evidence and early records of sightings (and removals) clearly indicate that wolves resided in Yellowstone until humans deliberately eradicated them during the early part of the twentieth century. For many years staff time was devoted to preparing Congressionally mandated evaluations of the likely effects wolf recovery would have on prey species, on grizzly bears, and on the livelihoods of park neighbors. Following those evaluations, an environmental impact statement on the proposed reintroduction of the gray wolf was prepared.

The decision to reintroduce the gray wolf to Yellowstone was made by the Secretary of the Interior in June 1994 and resulted in major commitments of staff time and funding to prepare for the scheduled reintroduction in the winter of 1994-1995. Two permanent, fulltime biologists with wolf expertise were hired. Approximately \$200,000 has been spent for construction of reintroduction facilities and for hiring seasonal staff to monitor the project's success. Both research and monitoring will be needed to understand the post-reestablishment environment. These commitments will need to continue until recovery goals are achieved. However, the park has received no additional funding support for wolf restoration.

The endangered bird populations are adequately monitored and managed in keeping with the specific recovery plan goals. However, the list of candidate species is growing; as of August

1994 there were 18 candidate plant or animal species known or thought to exist in Yellowstone. For many of these species the park lacks sufficient inventory information to respond to scientific and public inquiries, to respond to formal petitions for species listing under the Endangered Species Act, or to present management options for conservation of these species.

- *Bison and Elk*

National park policy has changed radically since the 1960s when human control of bison and elk numbers kept herd sizes low. The current management philosophy is based on what is commonly called "natural regulation," where natural factors are allowed to regulate populations in dynamic equilibrium with their environment. This management policy has resulted in bison and elk numbers increasing considerably, punctuated by occasional years of sizeable winter die-off, once the human control of herd size inside the park ceased.

The perceived discrepancy between wildlife management inside and outside park boundaries is widely debated and studied. Despite numerous studies in recent years that concluded grazing by Yellowstone's northern elk herd is not detrimental to grassland productivity, controversy over elk management will doubtlessly continue for the foreseeable future. Predator-prey relationships are persistent topics of interest, especially as they relate to hunter opportunities outside the park and to controversial programs, such as wolf restoration and grizzly bear recovery, inside the park. Ungulate ecology, especially on the northern range, requires continued research, resource management, and interpretive effort. Research on the ecology of riparian zones is especially needed.

Since the mid-1980s, park bison have substantially increased in number, and, at times, they have moved outside park boundaries. Park bison are unfenced; some may carry brucellosis, a disease that the livestock industry has worked hard to eradicate nationwide during the past 50 years. In late 1994, Native Americans from several tribes in the greater Yellowstone area made vocal claims to hunting rights, both inside and outside the park, based on historic treaties. This issue will require more investigation and discussion. An interim bison management plan (being used until a long-range interagency bison management plan and environmental impact statement can be finished) allows bison to be controlled outside the park. The long-term bison management program will likely require the park to undertake more intensive boundary management, which may require substantial funds and staff time, as well as potentially requiring construction of fences and/or other bison management facilities.

- *Exotic Plants*

Approximately 150 species of non-native plants have been collected and identified in Yellowstone National Park. Unfortunately, many of these exotic species are spreading, threatening to disrupt major plant communities on which all forms of wildlife survive. Priority exotic species needing immediate action have been identified in cooperation with the surrounding states. These species include spotted and Russian knapweed, berteroia, Canada

thistle, musk thistle, leafy spurge, St. Johnswort, and field bindweed. Many of these species have already caused significant impact to rangelands outside the park by displacing the biologically diverse and grazable native species with monocultures that are often unpalatable to ungulates. Infestations of exotic plant species in the park will likely increase. While this issue lacks glamour (and associated funding), it is a serious and pervasive problem affecting ecosystem resources. Control efforts are time consuming and require a sustained commitment of funds and monitoring efforts.

- *Wildland Fire*

In 1988 Yellowstone was the stage for wildfires of historic proportions. Despite several decades of public lands managers allowing prescribed and naturally ignited fires to burn, it was evident in 1988 that most of the public still saw fire as fundamentally destructive. The fires' "real" effect on the landscape ecology, tremendous though it was, was outshone by the impact on the worldwide press, their audiences, and, subsequently, on national fire management policy. After the smoke cleared in late 1988, fire management programs nationwide were temporarily suspended for review, and several high-level task forces were assigned to review national fire policy, preparedness, and ecological effects. Although the role of natural fire in maintaining ecosystem health was reaffirmed by these reviews, more stringent conditions for allowing fires to burn were recommended. The effects of fire on biological, physical, and socioeconomic components of the Yellowstone ecosystem need long-term research and monitoring programs to increase scientific understanding of fire's role in ecosystems.

Special Congressional appropriations funded cleanup and immediate recovery programs following the 1988 fires. Despite these efforts, the memories of 1988 will likely long remain in the minds of park visitors, managers, and neighbors. The potential for fires to destroy property inside and outside park boundaries and to visually change the park landscape will continue to make fire management controversial and influence fire management programs.

- *Fisheries*

The history of fisheries management in Yellowstone includes: 1) introductions of non-native fishes into fishless waters (1881-1909); 2) "put, grow, and take" practices for native and non-native species (1920-1955); 3) limitations on fish stocking (1936-1954); 4) increased research on fish ecology and angler catch (1949-1961); and, 5) restoration and preservation of native species, subspecies, and genotypes and major revisions in fisheries regulations and management (post-1955). Despite changes in species composition and distribution, NPS policies have prevented large-scale habitat degradation in the park. Water diversions, water pollution, and other impacts on aquatic ecosystems have rarely occurred here. Thus, Yellowstone contains one of the most significant, near-pristine aquatic ecosystems found in the United States.

Angling is acknowledged as an anomaly in a national park where one of the primary purposes of the park is to preserve natural environments and native species in ways that maintain natural conditions. Yet fishing has been a major visitor activity here for more than 100 years; approximately 17 percent of Yellowstone's 3 million annual visitors are anglers. Years of monitoring the Yellowstone Lake fishery indicate that angler harvest did have a negative impact on the fishery when it reached excessive levels in the 1950s and 1960s. In the 1970s and 1980s, increasingly restrictive regulations helped to restore population numbers and age structure. Angler groups have supported management actions, such as closing fishing from Fishing Bridge in the early 1970s, and have helped fund research on aquatic systems. The park has also progressed toward catch-and-release fishing where it is feasible, especially for native species, thereby, providing recreational opportunities while limiting the human consumption of park resources.

A few park waters are inhabited by Arctic grayling. The fluvial form of this species has been nearly extirpated from the region, and Yellowstone is an active cooperator in attempts to reintroduce the species to appropriate waters.

In 1994, anglers caught several lake trout in Yellowstone Lake. This presented the first tangible evidence that this non-native species had become established--likely from a deliberate, illegal planting--in the heart of the native cutthroat trout's range. Efforts to collect additional data were immediately initiated. Long-term management actions are yet to be determined for what is considered by many fisheries biologists to be a major ecological threat. The potential for the larger, piscivorous lake trout to suppress cutthroat trout populations while not replacing the smaller, more vulnerable native as a food source for fish-eating birds and mammals, including several threatened and endangered species, could have major effects on the food chain throughout the ecosystem.

- *External Threats*

Population growth and economic development continues at a rapid pace in the region surrounding Yellowstone. Encroaching civilization is accompanied by proposals for more land subdivision, more intensive farming operations, and additional large recreational developments, such as ski resorts.

Current boundary development concerns include the proposal for the New World Mine, a large-scale gold, silver, and copper extraction project a few miles from the park's northeast corner near Cooke City, Montana. As with other external activities, the effects on park resources may be largely indirect. However, the changes in traffic levels, road access, and human population are likely to be long-term and difficult to quantify in relation to natural resource changes. The cumulative effects of growth and development in the ecosystem has been an issue of concern to grizzly bear managers and is becoming a concern related to other issues in the greater Yellowstone area. Another concern, potential geothermal development outside the park's northern boundary, has resulted in several attempts by the U.S. Congress to pass an "Old Faithful Protection Act," as yet unsuccessful.

The debate over how external land uses affect park resources is complicated by the varied scientific opinions on potential effects and by conflicting public and agency goals for land use inside and outside parks. Yellowstone continually needs increased data to evaluate external threats to park resources and in need of staff and programs to present this information to the public in an objective and understandable manner.

- *Effects of Human Activity on Natural Resources*

The fundamental balancing act between preserving park resources and allowing human use and enjoyment of the park will continue to present varied management challenges. This issue particularly affects the park's fisheries and backcountry management programs, two of Yellowstone's most popular visitor activities. Habituation and poaching of wildlife, disturbance of nesting birds, influx of exotic plant species, and impacts to air and water quality all relate to types and levels of human-use. Continued human use provides major challenges in terms of waste generation and disposal.

Major park planning efforts related to winter visitor use management, developed areas and roads, and park housing needs all must be assessed in relation to the park's natural resources. Mitigation for loss of resources, such as wetlands and wildlife habitat, requires a sound resource database, a range of management options, and funding to accomplish projects. Restoration of sites disturbed by previous management activity in Yellowstone (of which there are hundreds) is a program which has gained momentum in recent years. These sites include rock quarries, gravel pits, service roads that are no longer used, fish traps, and dry dumps. Substantial time and funding is required to evaluate the sites for cultural significance and/or environmental effects and to determine restoration options and to accomplish the task.

Cultural Resources

Yellowstone National Park is rich in cultural resources. The cultural history dates to 10,000 years ago and extends through the middle of this century. It includes prehistoric and historic use by American Indians and their contemporary descendants. Based upon written evidence, the first Euroamerican who entered what is now known as Yellowstone National Park was John Colter, a fur trapper and a veteran of the Lewis and Clark Expedition who travelled through the area during the winters of 1807 and 1808. The stories he told upon his return led to this area being described as "Colter's Hell." Following Colter's travels, little attention was paid to Yellowstone until after the Civil War when westward expansion and discoveries of gold in the region led to a renewed interest in the area. Expeditions in 1870 and 1871 resulted in the "wonders" of Yellowstone becoming more widely known and contributed to the creation of Yellowstone National Park in 1872.

Administration of the newly created park was first civilian (1872-1886), then military (1886-1916), and finally National Park Service (1916-present). As visitation to the park increased so did associated structures and facilities. The legacy of early park administrations, both

civilian and military, and the history of the development of concessions in national parks are preserved in buildings still in use today. Yellowstone's role in the history of the park preservation movement worldwide and the history of how Americans travel and spend their leisure time is also preserved here.

Cultural Resources Baseline Information

Approximately 2 percent of the park has been inventoried for archeological resources, and more than 550 prehistoric and historic archeological sites have been recorded. Yellowstone has more than 952 historic structures associated with Euroamerican occupation and management of the park, of which five are National Historic Landmarks. The vast majority of these structures are still in use today.

Cultural landscapes have not been formally evaluated for National Register eligibility in Yellowstone. An Ethnographic Overview and Assessment is currently being conducted in the park, and will more thoroughly identify the park's ethnographic resources.

Yellowstone National Park's museum collections include a diverse assemblage of nearly 200,000 natural science specimens and cultural objects. The park archives contain 1000 linear feet of irreplaceable documents, and the research library contains 8,000 reference titles and manuscripts.

Yellowstone has a great diversity of cultural resources, and much remains to be done to locate, identify, evaluate, preserve, manage, and interpret those that are significant. The challenge faced by the staff of Yellowstone National Park is to continue developing a cultural resource program that adequately cares for these non-renewable resources. Additional baseline information to that described below can be found in the documents listed in the Cultural Resource Documentation checklist located in the Appendix.

Cultural Resources Status and Major Issues

- *Archeological Resources*

The earliest documentation of archeological sites in Yellowstone was made by Philetus W. Norris during his superintendency of the park (1877-1882). The first archeological survey was conducted in 1958 and 1959, and 224 sites were recorded. The survey was not systematic; instead it was oriented toward areas where sites were known, mostly along roadways. Since that time approximately 2 percent of Yellowstone's 2.2 million acres has been intensively inventoried and 10 percent has been cursorily inventoried.

Little of the archeological work that has occurred in Yellowstone has been research oriented; the majority of the surveys have been preparatory to park development projects or operational activities. One recent exception to these construction-driven surveys was the survey work associated with studying the effects of the 1988 fires. Vast portions of the park

remain unsurveyed, and, through resource impacts, land use activities, and vandalism, it is suspected that sites that have yet to be recorded are being damaged or destroyed. Most of the known sites are restricted to the surface or near it, therefore, little is known about stratified sites (sites having more than one cultural component) or buried sites.

Archeological information for Yellowstone is recorded on the Cultural Sites Inventory (CSI). The CSI is prepared and updated for Yellowstone by the Midwest Archeological Center (MWAC), and consists of an archeological overview and assessment, chronology of investigations, list of sites and site conditions, and maps showing site locations and areas inventoried. An analysis of the CSI information by MWAC indicates that the park's archeological information is "biased because archeological investigations have only been conducted in areas of high visitor impact and/or construction and may not accurately represent site types and densities found elsewhere in the park."

More than 550 prehistoric and historic Native American and historic Euroamerican archeological sites have been recorded on the CSI. Only 5 percent of these sites have been evaluated for eligibility to the National Register. An exception is the Obsidian Cliff quarry site, which has been entered into the nomination process as a National Historic Landmark.

Approximately 84 percent of the recorded archeological sites are of Native American origin. Site types in Yellowstone include trails, quarries, hearths, game drives, base camps, chipping stations, rock shelters, wickiups, and tepee rings. The majority of these are unevaluated as to cultural affiliation.

A variety of Native American groups have used park resources for the past 10,000 years. Yellowstone is bounded by four culture areas (or subareas): the Great Basin, Northern Plains, Wind River, and Snake-Salmon Drainage. These areas or subareas are included within larger Grand Areas: Eastern Areas and Intermediate and Intermountain Areas. Further archeological investigations are needed to determine how these cultural areas influenced the Native American presence in the park. The archeological evidence indicates that the majority of use occurred seasonally. Historically, the Crow, Shoshone, Bannock, Nez Perce, and Blackfeet are known to have visited the park. Recent ethnographic evidence indicates that one group of Shoshone, known as the Sheepeaters, who were thought to have occupied portions of Yellowstone year-round during the first half of the nineteenth century, may have only used the park on a seasonal basis. Further research may show that other prehistoric and historic Native American tribes occupied the park year-round.

Throughout the 10,000-year history of Native Americans in Yellowstone, resource utilization has varied based on the accessibility and availability of resources and general "liveability" of the area. Other factors were undoubtedly at play as well influencing resource utilization in Yellowstone, such as the arrival of Euroamericans, the dynamic geology of the park, and dramatic climate shifts. As more is learned about Yellowstone's archeology, correlations between environmental factors, cross-cultural interactions, and Native American utilization of the area may be possible.

Yellowstone also has Euroamerican historic archeological sites. The Euroamerican presence is comparatively well-documented through written and photographic records, cultural objects, and structures and buildings. However, if something or someone was not photographed, drawn, painted, written about, or discussed in an oral history, the archeological record becomes the primary record. Euroamerican historic archeology provides a means to test the historic documentation, record previously unknown historic information, and extend the understanding of the Euroamerican presence in Yellowstone.

The majority of the known Euroamerican archeological sites date from the late 1800s to the mid-1940s. Generally, they are associated with park administration under both the U.S. Army and National Park Service, as well as with the development of concessions within the park. Many of these sites have not been recorded; none have been evaluated under National Register criteria. These sites include old trapper and poacher cabins, hotel sites, the Norris Blockhouse (the park's first headquarters), Camp Sheridan, soldier stations, Queen's Laundry Bathhouse, graves, Barronett's Bridge and cabin site, trails, trash deposits/scatter, and dump sites. The only sites that have been recorded are Barronett's Bridge and cabin site, Queen's Laundry Bathhouse, and the Blacktail poacher's cabin.

The Native American and Euroamerican archeological resources are integral to understanding the human experience in Yellowstone. However, the lack of adequate baseline data for prehistoric and historic sites affects the protection, treatment, and interpretation of these resources.

A research design for a comprehensive archeological survey of the park is needed. A plan should be developed that prioritizes surveys for developed areas, trails, and backcountry areas (such as cabins, campsites, lake shores, and fishing areas). Follow-up documentation and evaluation of these cultural resources are necessary to determine resource significance, treatment, and protection. Evaluation of sites should occur when surveys are conducted (most known archeological sites are recorded but unevaluated). Site-specific management plans should be developed for sites with special needs. Areas of the park where vandalism or unauthorized collection is reported need to be surveyed.

The condition of the majority of the prehistoric and historic sites listed on the Cultural Sites Inventory is poor or unknown. There has been little follow-up on surveys done before the Secretary of Interior's *Standards and Guidelines for Archeology and Historic Preservation* were instituted in the early 1980s. Reports documenting surveys and sites are often incomplete or missing from the park. Thematic contexts need to be developed for evaluating the significance of prehistoric and historic sites under National Register criteria.

A plan needs to be developed that will provide guidance for employees in managing archeological sites. NPS employees, concessioners, and contractors need to receive training in cultural resource awareness, site identification, the Archeological Resource Protection Act (ARPA), recording, and prevention and detection of resource violations.

- *Ethnography*

Ethnographic resources are tangible or intangible aspects of a cultural system, past or present, that are identified as significant by a recognized ethnic group. Very little is known about the ethnographic resources of the park. Ethnography encompasses both natural and cultural resources (e.g., traditional uses of obsidian and other minerals, uses of various flora and fauna).

An "Ethnographic Overview and Assessment" is currently underway and is expected to be completed in 1996. It will identify resources, resource data gaps, and consultation needs, and it will provide the framework for an ethnographic resource study, traditional use study, and ethnographic resource inventory. The park's archivist/historian has begun a historic ethnographic study, which will be used in developing the ethnographic overview and assessment. As knowledge is gained about the ethnographic resources in Yellowstone, development of a management/protection plan is needed.

- *Historic Structures*

Yellowstone has 952 historic structures owned by the NPS and/or park concessioners on the List of Classified Structures (LCS). The LCS is an inventory of historic structures that are at least 50 years old, and it provides information regarding the significance, condition, use, and proposed treatment for all structures that may be eligible to the National Register. These structures have construction dates ranging from the 1890s through 1940s and represent significant and various architectural styles. Many park structures represent the development of Yellowstone for recreation and tourism and this context is a significant component of Yellowstone's history.

More types of architectural styles are represented in Yellowstone than in any other park unit within the national park system. However, park rustic architecture is the predominant theme. Within this theme five buildings have been designated as National Historic Landmarks: the Old Faithful Inn, the Northeast Entrance Station, and the Norris, Madison, and Fishing Bridge museums. Other fine examples of rustic architecture include ranger stations; Civilian Conservation Corps-built residences, barns, and fire caches; a network of 40 historic backcountry cabins and lookouts; and five historic districts: Lake Fish Hatchery, Old Faithful, Roosevelt, Fishing Bridge, and Lamar Buffalo Ranch.

The Fort Yellowstone historic district consists of 40 military structures dating from the 1890s and early 1900s when the U.S. Army administered the park. This district is being considered for national significance not only for architectural style, but also for its historical importance to the development of the park and subsequent evolution of the National Park Service.

The preparation of area development concept plans (DCPs) can be useful in identifying historic structures, their needs, and appropriate adaptive uses. Such plans can guide the

future use and treatment of the historic structures. A DCP was written for the Lake and Bridge Bay areas, however, cultural resources need to be addressed in more detail. The Old Faithful and Fishing Bridge areas have DCPs that address cultural resources. Mammoth has not been addressed in a DCP, and this has been identified as a priority need in the park's Outline of Planning Requirements.

The current List of Classified Structures needs to be revised to correct errors, such as buildings inadvertently left off or incorrectly added to the list. Fifty-eight percent of the buildings included on the LCS have been evaluated for eligibility to the National Register; however, most of the buildings were evaluated for exterior significance only, and these evaluations were done before the current contextual and thematic guidelines were approved. All park buildings need to eventually be re-evaluated under the new contexts and guidelines. The re-evaluation is part of the "Historic Resources Study" (HRS), which is a multi-year project. As a result of the re-evaluation, the National Register status of some buildings may change.

Although Yellowstone has a structures database from which to work, it falls short of NPS standards. Building information was often collected on a case-by-case basis for interpretive, construction/ rehabilitation, or compliance purposes. Information is often not available for determining building treatments. The Inventory and Condition Assessment Program (ICAP) would provide needed building information. This new NPS program is the automated system used to determine physical condition, assess preservation needs, estimate costs for treatment, and prescribe preservation maintenance activities for historic and non-historic structures. Preventive maintenance guides already completed for the three National Historic Landmark museums need to be implemented by park staff, as does ICAP.

A Historic Structure Report (HSR) is to be completed whenever there is intervention into the National Register qualities of a building. Battle and Thompson's HSR for Fort Yellowstone (1972) is a useful guide to existing and historical conditions; however, many changes have occurred in 20 years, and the HSR should be revised to reflect these changes. Historic structure reports have been completed for Old Faithful Inn (1993) and Roosevelt Lodge (1994). The draft HSR for Old Faithful Lodge was recently completed.

The condition of structures within Yellowstone varies from very good to very poor. Historic buildings have not received appropriate attention in the past. Neglect, lack of funds, a harsh winter environment, natural deterioration, and minimal preventive maintenance have taken their toll on buildings. The use of untrained or unskilled staff to work on historic buildings has also had an impact to some degree. This is reflected in incompatible alterations and improper treatment of historic fabric.

Nationally significant buildings, as well as many other National Register eligible buildings, were stabilized to varying degrees within the last decade. Many improvements have been made in the Fort Yellowstone Historic District through piecemeal efforts, but much more work is needed to bring district buildings to a maintainable level. Other buildings throughout

the park are so deteriorated that a major replacement of historic fabric is required, and, in some cases, structural failure is imminent. Unfortunately, funding has not existed to perform all the needed work.

Improvements have been made in maintaining and upgrading park and concessioner facilities through identifying and prioritizing needs. The concessioner hotel facilities have fared well under a ten-year Congressional appropriation to bring visitor services up to a maintainable standard. Although there have been dramatic renovations to many of these historic hotels, a few still have expensive needs remaining. Leaking roofs, structural failures, rehabilitation, and meeting health and life safety codes have been, and still are, priorities. In fact, the accommodation of safety needs such as rewiring, installing sprinkler systems and fire-rated materials, and constructing fire exits has left few resources to accomplish other cyclic needs. Hamilton Stores has possessory interest in its buildings and, with park approval, decides how to use its funds for building maintenance. Consideration should be given to base-funding the NPS preservation program.

Management of historic structures needs to be proactive rather than reactive. A computer program needs to be accessible at the park district level that lists all historic structures in the districts; the elements (if any) that contribute to a building being eligible to the National Register; and preservation maintenance prescriptions for each building, such as paint colors, building cautions (asbestos), upcoming programmed actions, and previous actions.

Currently, there is little cultural resource monitoring of day-to-day activities with regard to historic structures, except for projects that undergo review in the park's project clearance process. In recent years, NPS employees have gained skills in preservation maintenance, and the park concessioner, TW Recreational Services, has established a preservation team, but more training is needed for these employees.

- *Cultural Landscapes*

A cultural landscape is a geographic area, including both cultural and natural resources, associated with a historic event, activity, or person, or exhibiting other cultural or aesthetic values. A "Cultural Landscape Study" is needed in Yellowstone to formally identify, evaluate, and make nominations to the National Register. Currently the 370-mile road system with its associated structures and bridges is being nominated as a cultural landscape, and the Lamar Buffalo Ranch is treated as a cultural landscape. The existence of other cultural landscapes, both Native American and Euroamerican, is probable. A plan is needed to manage cultural landscapes that are eligible to the National Register in ways that protect the qualities that have qualified them for the National Register.

- *Museum Collections*

The Yellowstone museum collection consists of nearly 200,000 cultural objects and natural science specimens representing archeology, ethnology, history, archives, biology,

paleontology, and geology. There is no debate concerning the value of the park's collection. Its diversity reflects the unique resources and history of Yellowstone National Park. The collection includes paintings by Thomas Moran, J.H. Renshaw, and J.H. Twachtman; pencil sketches by Moran, William H. Jackson, H.W. Elliot, and W.H. Holmes; photographs by Jackson; historic hotel furnishings; Yellowstone Park Company touring cars and busses; stagecoaches and wagons; prepared birds, insects, mammals, and fish; fossils; geological specimens; and one of the most complete herbarium collections for high altitude environments in the region.

Approximately 55,000 of these objects and specimens have been catalogued. A servicewide appropriation has allowed the park to establish a program for cataloging the backlog of objects and specimens and for accessioning and cataloging historic furnishings and vehicles. During the past three years more than 200 new accessions and approximately 24,000 items have been catalogued. While recent efforts have decreased the backlog, much remains to be done.

The bulk of the museum collection is housed in the Albright Visitor Center basement. Although security for these collections is satisfactory, threats to the collections include inadequate storage space and a lack of environmental controls. These threats were identified in a 1989 Office of the Inspector General audit, "Accountability and Control Over Artwork and Artifacts." A housekeeping plan should be developed and implemented.

While the overall condition of the collection is considered fair to good, inventorying, accessioning, cataloging, and overall management of the collection does not meet NPS standards. Only two condition assessments are current: a survey of works on paper conducted in 1988 and an exhibit artifact survey conducted in 1989. Rare books are considered in good condition due to recent conservation treatment. The historic vehicle collection was recently accessioned and is now being catalogued. However, the condition of many other objects and specimens prone to deterioration is unknown. In 1990, a team visited the park for the purpose of preparing a new "Collection Management Plan." This document is currently in the final draft stage and will provide recommendations and guidance on the management of the collections. Storage, security, environmental controls, integrated pest management, and conservation issues are all addressed in this plan.

While the collection strategy for Yellowstone has been reactive and opportunistic, a better defined scope of collection is imperative to ensure the development and preservation of a museum collection that will meet park needs. For example, architectural elements, fragments, and finishing samples are almost nonexistent in the park's museum collection. Also, the scope of collection for natural science specimens needs to be evaluated based on the existing inventory. Yellowstone needs to develop a collection strategy that is proactive rather than reactive and based on interdivisional and inter-disciplinary cooperation.

The management of historic furnishings falls far short of NPS standards. A systematic accessioning of examples of historic furnishings into the museum collection has been

initiated, but additional significant furnishings need to be identified. TW Recreational Services (TWRS) is assigned the furniture not in the museum collection, and also manage those pieces of furniture that have been accessioned and cataloged into the museum collection, but are still in use in the park for various reasons. TW Recreational Services maintains the furniture through a refinishing operation. Although the restoration work undertaken is good, it is appropriate only for pieces that are not historically significant. The park needs a preservation treatment plan for furnishings that can be adapted to suit both historically significant pieces and less significant pieces that are managed for present-day uses. In addition, a system or protocol should be developed whereby the park curator is notified and consulted prior to TWRS relocating or undertaking any preservation or restoration treatments on furnishings that are part of the museum collection.

The bulk of the historic furnishings that have been accessioned into the museum collection and are no longer in circulation in the park are stored in a dedicated furniture storage room in the TWRS warehouse near Gardiner, Montana. This room was recently equipped with museum-quality shelving and dust covers. More recent additions to the collections are stored in a large adjoining room that is otherwise dedicated storage space for the park's historic vehicles and other large objects. Both the furnishings and vehicles in this area are in critical need of cleaning and must be equipped with dust covers. A housekeeping plan should be developed and implemented for these storage areas.

The remaining historic furnishings and vehicles not currently in use are stored in another area of the TWRS warehouse. The areas where these artifacts are stored are near capacity and lack environmental controls, a pest-monitoring program, and adequate security. The storage area for the majority of the furniture is a large room with a dirt floor and outside doors with large gaps (giving easy access to pests). Many of the furnishings stored in this area are historically significant and of high monetary value on today's antique market. Examples of most of these pieces have already been added to the museum collection, but the remaining pieces, as well as those pieces that remain to be added to the collection, merit better protection. This area should be upgraded to include, at a minimum, a sealed, concrete floor and better quality, better-fitting doors. The area must also be surveyed on a regular basis for pieces that should be removed from circulation and added to the museum collection.

- *Library and Archives*

The park maintains its own archives through a cooperative agreement with the National Archives and Records Administration; Yellowstone's archives constitute Record Group 79 of the National Archives. One thousand linear feet of irreplaceable historic documents are housed in a room in the basement of the Albright Visitor Center and Museum, and 400 feet remain to be retrieved from the Regional Record Center in Denver. The research library, also in the basement of the museum, consists of approximately 8,000 bound publications, 150 linear feet of vertical files, approximately 2,000 manuscripts, and the rare book collection. Space and environmental controls are inadequate.

The bulk of Yellowstone's historic photograph collection is also considered part of the National Archives. There is high demand for access to this important collection from outside researchers, filmmakers, and park staff. A particular focus in recent years has been the organization, cataloging, storage, and protection of this collection. To improve accountability and facilitate item-level access, photographs are catalogued into the NPS Automated National Catalog System. While the management of this 80,000-image collection has improved, the collection contains a large number of nitrate and diacetate negatives which are in varying stages of deterioration. These primary resources are in need of duplication before their images are lost.

- *Cultural Context/Themes*

1. Archeological Resources

The need to complete the development of contexts and themes for archeological resources has been identified in a project statement. The following are suggested themes; only one has been developed.

- a. **Aboriginal Settlement Patterns:** The distribution of sites across the landscape tell of past settlement patterns. Analysis shows that this distribution is not random but reflects placement of sites relative to resources and topographic features. Important resources and topographic features can include terraces, food sources, ecotonal settings where multiple resources could be reached with a minimum of effort, and resources available only at limited locations.

- b. **Resource Utilization:** Prehistoric and historic Native Americans and historic Euroamericans utilized the biological and geological resources in the park. Resources utilized include plants, animals, and rocks and minerals (e.g., obsidian, ignimbrite, steatite). Information gained from archeological sites regarding the distribution of plant and animal species may be of interest to biologists. Similarly, some biological studies may be significant to archaeologists.

During the early historic era, resource utilization initially focused on furs and peltries. Trapping parties from Native American and Euroamerican communities, as well as parties of mixed groups, came to the Yellowstone area to establish trap lines and to obtain fresh meat provisions. Following the discovery of gold in Montana and the Civil War, Euroamericans came to the region in increasing numbers. Resource utilization in these instances focused on ranching, mining, and the early tourist trade.

- c. **Transportation Systems:** The topography of the land channelled prehistoric and historic travel just as it does today. These prehistoric and historic routes most likely followed existing animal trails. The most famous trail in Yellowstone is the Bannock Indian Trail, which passes through the northern half of the park. The Bannocks used the trail historically, but the trail dates back to the Archaic period. The first recorded use of the trail

by the Bannocks was in 1840, following the extirpation of bison from Idaho. The Bannocks used the trail for at least forty years, and sites along the trail can be associated with the historic period. Other trails connect Yellowstone to what is now Grand Teton National Park.

The development of trails and roads increased dramatically with creation of the park in 1872. Trails and roads were developed to accommodate specific types of conveyances for carrying people, goods, and supplies to various management and concessions facilities. The construction of more substantial roads during the late 19th and early 20th centuries on through today has had an impact on various historic archeological resources.

d. Trade: Obsidian from the Obsidian Cliff quarry site was traded across the country. Obsidian can be "finger-printed," and this evidence indicates that obsidian from Yellowstone has been traded, off and on, for at least 10,000 years. The Obsidian Cliff quarry site has been nominated for National Historic Landmark status. Additionally, the bighorn sheep in the park may have been a source of horn, which was an important material in the trans-plains trade network. Steatite, commonly known as soapstone, was very likely another important trade item.

e. Historic Tourism: Tourism is the only context that has been fully developed. This context developed from the park's legislation, which stated that the park would serve as a "pleasuring ground for the benefit and enjoyment of the people." The park's creation and development is intimately tied to the development of tourism.

Tourism represents the single largest movement of historic human populations outside wartime and, as such, represents a major aspect of culture contact and social change. The short-term demographic changes wrought by this economic activity have exerted tremendous pressures for development as well as change in the compositions and economic orientation of local communities.

This approach to historic archeological sites is particularly valid at Yellowstone where: 1) tourism was and is a major management focus; 2) the economics of tourism have had a tremendous impact upon the overall economy of the region; 3) tourism and its associated development have historically had the greatest impact upon the park's and the area's cultural and natural resources; 4) a significant portion of historical sites relate to tourism in some manner. In the latter case, it is estimated that perhaps 95 percent or more of the historic archeological sites in Yellowstone are related to this economic enterprise in some manner.

2. Historic Resources

The "Historic Resources Study" is a multi-year, phased project. To date, one theme has been prepared, "The Development of the Road System in Yellowstone

National Park, 1872-1972." This study documents Yellowstone's unique 370-mile, figure-eight road system developed by the U.S. Army Corps of Engineers. The design, construction methods, and sensitivity to the landscape with which this road was built became

the model for many other park's roads. The basic configuration of the road has remained the same, but the roads have been modified to adjust to current visitor needs, vehicle size, safety considerations, and to protect geothermal areas. Property types associated with this theme include road sections, bridges, and buildings (e.g., Northeast Entrance Station, Gardiner Arch).

The following topics (themes) have been identified as other Yellowstone National Park historic contexts/studies:

a. The Military Role in Yellowstone National Park, 1886-1916: The U.S. Army played an important role in the history of Yellowstone, the development of the National Park Service, and the evolution of protection policies for large natural parks. The U.S. Cavalry was assigned to administer the park in 1886 after civilian administration proved unsuccessful. The cavalry administered the park until 1916 when the National Park Service was established. During its tenure, the Army constructed many facilities, such as Fort Yellowstone, ranger stations, and backcountry cabins, to facilitate the protection of the park's natural resources. Many of these structures are still in use today. Historic archeological sites, such as the site of the first headquarters, are also related to this theme.

b. The Administration of Yellowstone National Park, 1872-1956: The development of Yellowstone National Park's administration influenced and coincided with the development of the nation's natural resource policies. Various aspects of this wide-ranging topic include: the influence of two world wars; the advent of the automobile; the development of the National Park Service "mission" under the leadership of Horace Albright (the first National Park Service superintendent of Yellowstone and later the director of the National Park Service) and Stephen Mather (the first director of the National Park Service), including their views on development of the park as a "people's playground"; the development of the philosophy of wilderness values and how that affected accommodation of ever-increasing visitation; the management of wildlife resources, such as fisheries and bison, and the facilities built to carry out those programs; and programs such as the Civilian Conservation Corps and the resource protection work they accomplished. Property types associated with this theme include park rustic architecture (museums, ranger stations, cabins, residences, barns, fire caches), the Lake Fish Hatchery and the Lamar Buffalo Ranch historic districts' rustic buildings, post-1930 wood-frame buildings used for road and forestry camps, an extensive trail system, and historic archeological sites.

c. The History of Concessions in Yellowstone National Park, 1872-1956: The park's appearance and use has been greatly influenced by a wide variety of concessioners and entrepreneurs through their promotion of Yellowstone's unique natural features. Large historic hotel and lodge complexes were built that still retain both their architectural and historical significance. Most noteworthy is the 1904 Old Faithful Inn, a National Historic Landmark. Others include Lake Hotel and Lodge, Old Faithful Lodge, Mammoth Hotel, and Roosevelt Lodge. In association with the visitor accommodations are maintenance facilities, stores, service stations, and residences. Other property types include historic archeological

sites, such as bathhouses, auto camps, hotels, and hotel dumps. (See "Archeological Resources, e. Historic Tourism")

III. OVERVIEW OF CURRENT PROGRAMS AND NEEDS

Current Park Staffing and Programs

In 1993 Yellowstone reorganized its science and resources management structure in order to strengthen its natural and cultural resources management programs. The park's research science program was shifted to the newly created National Biological Survey (NBS), and the Yellowstone Center for Resources was created.

Objectives of this reorganization included raising the visibility of natural and cultural resources management in the park and enhancing communication between these two groups. The park's planning and compliance office was also included in the center to allow the staff preparing compliance documents the opportunity to work more closely with the staff resource experts. The new center coordinates all resource-related work and information and, thus, minimizes duplication. This allows park staff to focus on park resource issues and to better coordinate park responses to external resource-related problems and compliance requirements. Removing research from park management was a recommendation of a 1992 internal review of park programs, and the establishment of the NBS offered an appropriate location for park research.

The Center for Resources is comprised of four branches: the Branch of Natural Resources (BNR), the Branch of Cultural Resources (CRM), the Branch of Planning and Compliance, and the Branch of Advance Resources Technology (BART).

The Branch of Natural Resources is responsible for natural resources management, monitoring, and administrative support of specialists involved in those programs. Staff in this branch contribute substantially to park environmental compliance documents by providing expertise in wetland mapping and mitigation, Section 7 Endangered Species Act consultation, and specific wildlife data and analysis for environmental assessments. The staff includes a Branch Chief, 5 permanent full time (PFT) natural resource specialist/management biologists, 2 PFT geologist/physical science technicians, 1 PFT secretary, and 1-8 seasonal biotech/geotech positions. At present, an additional 2 PFT biologists and 1 temporary veterinarian are assigned to a special projects group involved in wolf restoration.

The Branch of Cultural Resources is responsible for cultural resources management, monitoring, and administrative support of specialists involved in those programs. Staff in the branch ensure the identification, evaluation, preservation, conservation and/or documentation, treatment, and protection of cultural resources. There are currently five full-time cultural resources positions: Chief, Branch of Cultural Resources; Cultural Resources Specialist; Supervisory Museum Curator; Botanist (Museum Curation); and a Museum Technician

(acting Archivist/Historian), which is a term appointment. The Historian and half-time Cultural Resources Assistant positions are vacant; additional positions needed include: Archeologist, Historical Architect, Museum Technician, Librarian, and Archivist.

The Branch of Planning and Compliance is responsible for park planning and environmental compliance including the preparation or review of planning documents. Parkwide accessibility improvement is also a responsibility of this branch. The staff includes a Branch Chief, 4 PFT outdoor recreation planners, and 1 PFT planning assistant.

The Branch of Advanced Resources Technology is responsible for completion of parkwide soils survey, maintenance of a geographic information system, and support services related to both. The staff includes a Branch Chief, 1 PFT soils scientist, 1 PFT GIS manager, and 1-3 temporary soils scientists who will complete their project work in FY95.

The YCR also includes program managers and administrative support staff for the branches. The staff includes two PFT natural resource administrators, 2 PFT resource naturalists, 1 PFT writer/editor, 1 visual information specialist, 1 PFT budget analyst, 1 PFT management assistant, 1 PFT secretary, and 1-3 temporary clerks.

All Yellowstone Center for Resource staff have a fundamental "core mission," as defined by their position description and duty assignment. Approximately half a person's work time should be devoted to this core mission, while the other half of the time is devoted to Resource Council priority assignments. However, because of cumulative workload, priority focus has been difficult to maintain.

Natural and cultural resources management in Yellowstone involves not only the Yellowstone Center for Resources staff, but also visitor protection, maintenance, concessions, and interpretive personnel from around the park. Resource management work will continue to be a major or secondary duty for these other park division staff.

Within the Division of Resource Operations and Visitor Protection (ROVP) the majority of park rangers perform a variety of tasks, including resource protection, public safety, EMS, law enforcement, and visitor service functions. Thus, most of these personnel are not available for full-time resource management project work or data collection, though individually or as a group they make substantial contributions to some projects, such as collection of weather and snow survey data. They are primarily responsible for backcountry patrol and management, food security patrols and public contacts related to bear management, and wildlife and fisheries protection.

Within this division, 5 PFT natural resource specialists (a Resource Operations Coordinator at park headquarters and a Resource Management Coordinator in each of 4 park ranger districts) and 8-10 temporary biotechs or park rangers are dedicated to full-time resource management work. The resource management coordinators, with technical assistance from staff specialists at headquarters and elsewhere, coordinate and complete monitoring,

restoration, and management activities in their respective districts with the assistance of available ranger personnel. Also, Yellowstone is a FIREPRO park and fire management is the responsibility of the ROVP division; 4 PFT wildland fire specialists; 1 clerk; and a total of 2.8 FTEs for seasonal fire technicians, resource monitors, and helitack crews are responsible for the park's wildland fire management program. There are 45 PFT or STF park rangers and approximately 150 temporary park rangers who spend a percentage of their time in resource protection or monitoring activities.

In the Division of Maintenance, 4 PFT landscape architects contribute approximately 90 percent of their time to resource management work. These staff are in charge of (or substantially contribute to) construction and development oversight and vegetative restoration and site rehabilitation. Five PFT or STF trails supervisors administer the construction and repair/rehabilitation of backcountry trails, bridges, and other facilities, supervising 20 to 25 seasonal workers. Five PFT workers are involved with boardwalk construction and vegetation management. Special projects crews are assigned work involving the restoration or stabilization of historic buildings and erosion control and site rehabilitation; 15 craftsmen and 6 other workers are involved in these projects. Many other maintenance employees contribute substantially to resource management programs, including collection and removal of garbage and other potential bear attractants, recycling efforts, and water quality monitoring.

The Division of Interpretation includes 12 PFT or STF park rangers and approximately 45 temporary park rangers who provide interpretive and educational services and programs for the public. They work with resource managers and scientists to incorporate accurate information about park resources and related issues into their programs and services. Nearly all resource management projects include an interpretive/educational component.

The Division of Concessions has established a cultural resources coordinator, who gathers information on cultural resources and prepares Section 106 compliance documents for concessioner facilities. The division also administers the Capital Improvement and Cyclic Maintenance Program, which is part of the contractual agreement between NPS and TWRS, one of the park concessioners. Program monies fund preservation activities and preventive maintenance needs of the TWRS historic buildings. TW Recreational Services has formed a preservation maintenance crew and created a preservation maintenance training program.

There are other agencies and groups working in and with Yellowstone on various resource issues. The National Biological Survey retains a group of scientists in Yellowstone continuing studies previously established under the NPS science program. The NBS program will undergo review and modification as national NBS priorities are focussed. The Yellowstone Center for Resources administers a program of cooperative research done by scientists from other agencies and universities and by contractors. The U.S. Fish and Wildlife Service, Yellowstone Fisheries Assistance Office, also retains a presence here. The park and the Nature Conservancy have cooperatively established a Conservation Data Center

(CDC) in Yellowstone. The CDC is working to establish an ecosystem-wide resource database.

Park Strategy for Managing Resource Programs

Yellowstone's natural resource programs, while insufficient to accomplish all priority needs, have been operating for a longer period of time at a higher level of staffing than have cultural resource programs. Because the issues in the public eye have predominantly been related to management of wildlife populations and protection of thermal features, the park is nearly adequately staffed with natural resources management specialists. Thus, the highest priority natural resource needs are not for permanent staff, but for base funding of long-term programs, for operating funds, and for temporary or seasonal FTEs to accomplish research studies, site rehabilitation, resource mitigation, and other projects of limited duration.

In order to build a professional, comprehensive cultural resources management program that effectively serves the priorities and mandates of park management, base funding and the necessary FTEs to hire additional permanent, professional staff is needed, as well as funding to plan and implement cultural resource management operations. The cultural resources staff will also continue its efforts to improve public and managerial understanding of cultural resources issues and compliance needs.

In 1993, Yellowstone established a **Resource Council** to improve communication on park resource management issues and to provide a better system of setting resource and development planning priorities and for following through on them. Resource teams are established by the Council for priority projects, and specific staff with the appropriate expertise are assigned to the teams. The Council consists of the Park Superintendent, Assistant Superintendent, all Division Chiefs, and the Branch Chief for Planning and Compliance. Ad hoc advisors are called in as needed.

As mentioned before, many projects in Yellowstone are externally driven by public and/or Congressional interest. Other project priorities are driven by planning and development project needs. All of these projects relate to resources and, generally, resource management issues. Currently, top priorities of the Council include: a long-range bison management, grizzly bear conservation strategy, wolf reintroduction implementation, parkwide road reconstruction projects (overall, a 20-year project, broken into manageable road segments), Fishing Bridge campsite replacement (and completion of grizzly bear mitigation package), boundary lands area restoration, backcountry management plan, abandoned mine lands reclamation, parkwide design standards, a cultural resources training program, winter visitor use management implementation, an exotic vegetation management plan, and non-native lake trout occurrence in Yellowstone Lake.

Priority Needs

Where it can, the park approaches resource management planning as an integration of cultural and natural resources needs; this is reflected in the lists of integrated project statements. However, many other projects are more appropriately assigned to the category of natural resources or cultural resources, and they are listed in their own category of project statements. The resource management priority projects listed below reflect the priorities of the Resource Council with additional input from natural and cultural resource management specialists.

The staff of Yellowstone National Park has made a conscious decision not to rank all resource project statements in numerical order, believing that this gives a false impression of the importance (or lack thereof) for the lower ranked project statements, when all projects represent a need related to park resources. Instead, only the top 15 projects in each category of project statements (natural, cultural, and integrated) are numbered. These are projects to which the park already commits significant funding and staff or, if unfunded, these are the most urgent needs for staff and funding in order to meet program objectives. All other projects are numbered "16."

For many reasons, there is need to distinguish between **priority issues** and major **unfunded needs**. For example, grizzly bear management is a continuing issue for the park with legal mandates, and it is of major interest to a variety of publics. Grizzly bear management requires continued commitment of park maintenance employees, rangers, interpreters, resource managers, and interagency scientists. The ongoing grizzly bear management program is supported by base funding and permanent staff and is considered a priority issue for Yellowstone. It will not, however, always be the program for which there is the most critical need for additional staff or funding, although there are funding needs associated with this issue. Consequently, the park annually reviews and outlines **priority issues**, to which continued staff and funds are committed, and defines the highest priority **unfunded needs** for that year. In some years there may be overlap between the two categories, while in others there may not.

Priority Integrated Resource Programs for 1995:

These integrated projects reflect the need for interdisciplinary efforts in support of ecosystem and wilderness management, park planning and compliance concerns related to park roads and developments, and to improve our use of the best available tools for a scientifically-based cultural and natural resources management program.

Project No. Project Title

I-02	Support Park Priority Planning Efforts: <i>(Road Reconstruction Program, Housing Initiatives, and Winter Visitor Use Management)</i>
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I-07	Promote Ecosystem Management through Interagency Cooperation and Coordination
I-03	Upgrade and Maintain Geographic Information System
I-16	Investigate Status of Tribal Hunting Rights
I-04	Manage Visitor Use to Protect Backcountry Resources

Top Unfunded Integrated Resource Management Needs:

<u>Project No.</u>	<u>Project Title</u>
I-02	Support Park Priority Planning Efforts
I-07	Promote Ecosystem Management through Interagency Cooperation and Coordination
I-03	Upgrade and Maintain Geographic Information System
I-01	Build Inventory and Monitoring Program
I-14	Develop Obsidian Cliff Management Plan
I-04	Manage Visitor Use to Protect Backcountry Resources

Projects I-01 and I-03 are vital to improve baseline records and to institute programmatic monitoring and management related to most all the other natural and cultural resource project statements.

Priority Natural Resource Issues for 1995:

Significant dollars and/or staff time are required for ongoing efforts to restore extirpated or imperiled species, to mitigate any resource damage from in-park development, to monitor potential effects of external development on park resources, and to research ecosystem processes and help park managers continually reevaluate management actions related to controversial issues. Some of these projects (i.e., N-07) receive significant base funding and/or staff time, although this is not to imply that they are completely funded to fulfill all program needs. Projects N-01 and N-46 require significant investments of staff specialists' time; this mostly involves planning, coordinating, attending interagency and/or public meetings, and writing assessments, plans, or position statements based on the progression of these issues.

<u>Project No.</u>	<u>Project Title</u>
N-11	Restore Northern Rocky Mountain Wolf Population
N-34	Plan/Implement Long-Range Bison Management Program
N-13.001	Mitigate Lake Trout Planted in Yellowstone Lake
N-07	Recover and Maintain Wild Grizzly Bear Population
N-01	Inventory, Monitor, and Protect Geothermal Resources: <i>Support passage of Old Faithful Protection Act; address commercial use of <u>Thermus aquaticus</u></i>
N-46	Monitor and Mitigate Mining Activities In/Near YNP

Top Unfunded Natural Resource Needs:

<u>Project No.</u>	<u>Project Title</u>
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N-11	Restore Northern Rocky Mountain Wolf Population
N-34	Implement Long-Range Bison Management Program
N-13.001	Mitigate Lake Trout Planted in Yellowstone Lake
N-35	Research and Interpret Ungulate Populations
N-19	Monitor and Control Spread of Exotic Plants
N-23	Reclaim and Revegetate Disturbed Sites

Projects N-11, N-13.001, N-19, and N-23 require significant dollars and/or staff time beyond that which is base funded currently to restore missing species or mitigate resource damage done incrementally over the past few decades. These projects cannot reasonably be completed in a few years, but must be addressed in order to restore park lands to a more natural and aesthetic state. Completion of a bison management plan will likely result in additional need for staff and facilities to implement the action called for. N-35 requires funding to contract with NBS or other research providers for a multi-year package of scientific studies.

Priority Cultural Resource Programs for 1995:

At this time, none of the top cultural resource issues are adequately funded. The top issues are all affected by lack of base funding, insufficient professional staff and the need to expand staff expertise, inadequate facilities for resource collections, inadequate or nonexistent inventories and site-specific management plans for significant areas, and the need to address legal mandates.

<u>Project No.</u>	<u>Project Title</u>
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C-07	Add Professional Archeologist to Staff
C-24	Preserve Powerhouse & Adapt Building for Collections
C-01	Stabilize and Maintain Historic Structures
C-26	Upgrade Management of the Archives and Library
C-27	Upgrade Management of Museum Collection
C-11	Establish Design Guidelines for Structures

Top Unfunded Cultural Resource Needs:

<u>Project No.</u>	<u>Project Title</u>
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C-07	Add Professional Archeologist to Staff
C-01	Stabilize and Maintain Historic Structures
C-14	Implement Archeological Resource Management Program

C-08	Establish a Museum Technician Position
C-16	Establish a Historical Architect Position
C-20	Preserve Ethnographic Resources
C-02	Protect National Historic Landmark Buildings
C-19	Prepare Administrative HistoryC-10Assess Structures Using Inventory and Condition Assessment (ICAP)
C-05	Preserve & Restore Fort Yellowstone

Historic structures are in continuous need of preservation maintenance, stabilization and/or rehabilitation. A historic architect is needed to provide guidelines (and designs as needed) for these programs. The historic architect would also assist with Section 106 compliance in relation to historic districts and structures. Staffing for the collections program has evolved, and, until recently, the responsibilities were collateral duties of interpretive staff. In 1989 the curator and historian positions were re-established as permanent full-time positions after a twenty-year lapse; the latter position is currently vacant. Because of the number and diversity of items in the collection, Yellowstone needs both a natural history and a cultural history curator.

Other Projects and Programs

Project-specific needs for all park project statements are outlined in the integrated, cultural, or natural project statements that follow in this plan. Although many projects will never rank as a "priority" issue for Yellowstone, they are no less needed if the park staff is to understand and protect the resources for which the park is responsible. The park's commitment to accomplishing these projects is reflected in the actions, staffing, and funding listed under each project statement. Where possible, the park used R-MAP funding and FTE figures for the natural and integrated project statement needs.

Active Filter: (No filter)

09/05/96
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PERSONNEL TABLE
(current year only)

FY: 1995
Park: YELL
Cluster: RMSO

TYPE OF NPS EMPLOYEE	FTEs OF RESOURCES WORK		
	Natural	Cultural	Total
Research Scientists	1.0	0.0	1.0
Resources Specialists	31.5	5.3	36.8
025 Park Rangers Res Mgmt	12.0	4.7	16.7
025 Park Rangers Res Prot	70.0	10.0	80.0
025 Park Rangers Res Interp	19.5	7.0	26.5
Maintenance Personnel	7.0	3.5	10.5
Total of RES Personnel	141.0	30.5	171.5
TOTAL PARK FTE: 469.0			
PERCENT	30.1%	6.5%	36.6%

End of data

Active Filter: (No filter)

Output Selections:

Funded data only

Initial fiscal year: 1996

Summary Report: Funded \$ by Activity

09/05/96

RMP Summary Report
Funded \$ by Activity

17:24:17

Page: 0001
FY: 1996-1999
Park: YELL
Cluster: RMSO

ACTIVITY	1996	1997	1998	1999	TOTAL
Research	59,500	0	0	0	59,500
Mitigation	2,716,500	2,579,500	2,559,500	0	7,855,500
Monitoring	677,300	663,300	663,300	0	2,003,900
Protection	681,000	681,000	681,000	0	2,043,000
Interpretation	805,000	805,000	805,000	0	2,415,000
Administration	795,400	791,400	797,400	0	2,384,200
-=<<TOTALS>>=-	5,734,700	5,520,200	5,506,200	0	16,761,100

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End of data

Active Filter: (No filter)

Output Selections:

Resource types included: CULTURAL/INTEGRATED/NATURAL
Initial fiscal year: 1996

09/05/96
17:24:54

FUNDED TABLE
CULTURAL/INTEGRATED/NATURAL
FUNDED AMOUNTS

Page: 0001
FY: 1996
Park: YELL

(\$ in thousands - by activity type) Cluster: RMSO

FUNDING SOURCE	TOTAL	RES	MIT	MON	PRO	INT	ADM
NFED	233.20	34.20	173.00	0.00	0.00	0.00	26.00
NOTH	1575.00	0.00	1575.00	0.00	0.00	0.00	0.00
PCR1	90.00	0.00	0.00	0.00	0.00	0.00	90.00
PCR2	29.00	5.00	0.00	0.00	24.00	0.00	0.00
PNR1	2325.60	0.00	603.50	513.70	212.00	805.00	191.40
POF1	488.00	0.00	0.00	0.00	0.00	0.00	488.00
RMCM	25.00	0.00	25.00	0.00	0.00	0.00	0.00
SCRP	110.00	0.00	110.00	0.00	0.00	0.00	0.00
SDEV	230.00	0.00	230.00	0.00	0.00	0.00	0.00
SFIR	445.00	0.00	0.00	0.00	445.00	0.00	0.00
SNAQ	10.60	0.00	0.00	10.60	0.00	0.00	0.00
SNWR	150.00	0.00	0.00	150.00	0.00	0.00	0.00
SOTH	23.30	20.30	0.00	3.00	0.00	0.00	0.00
TOTAL	5734.70	59.50	2716.50	677.30	681.00	805.00	795.40

End of data

Active Filter: (No filter)

Output Selections:

Resource types included: INTEGRATED

Initial fiscal year: 1996

09/05/96

17:22:20

FUNDED TABLE

INTEGRATED

FUNDED AMOUNTS

Page: 0001

FY: 1996

Park: YELL

Cluster: RMSO

(\$ in thousands - by activity type)

FUNDING SOURCE	TOTAL	RES	MIT	MON	PRO	INT	ADM
PCR1	90.00	0.00	0.00	0.00	0.00	0.00	90.00
PNR1	1251.40	0.00	115.00	15.00	125.00	805.00	191.40
POF1	488.00	0.00	0.00	0.00	0.00	0.00	488.00
SDEV	40.00	0.00	40.00	0.00	0.00	0.00	0.00
TOTAL	1869.40	0.00	155.00	15.00	125.00	805.00	769.40

End of data

Active Filter: (No filter)

Output Selections:

Resource types included: NATURAL

Initial fiscal year: 1996

09/05/96

17:24:38

FUNDED TABLE

NATURAL

FUNDED AMOUNTS

(\$ in thousands - by activity type)

Page: 0001

FY: 1996

Park: YELL

Cluster: RMSO

FUNDING SOURCE	TOTAL	RES	MIT	MON	PRO	INT	ADM
NFED	47.20	34.20	13.00	0.00	0.00	0.00	0.00
NOTH	25.00	0.00	25.00	0.00	0.00	0.00	0.00
PNR1	1074.20	0.00	488.50	498.70	87.00	0.00	0.00
RMCM	25.00	0.00	25.00	0.00	0.00	0.00	0.00
SDEV	170.00	0.00	170.00	0.00	0.00	0.00	0.00
SFIR	445.00	0.00	0.00	0.00	445.00	0.00	0.00
SNAQ	10.60	0.00	0.00	10.60	0.00	0.00	0.00
SNWR	150.00	0.00	0.00	150.00	0.00	0.00	0.00
SOTH	23.30	20.30	0.00	3.00	0.00	0.00	0.00
TOTAL	1970.30	54.50	721.50	662.30	532.00	0.00	0.00

End of data

Active Filter: (No filter)

Output Selections:

Resource types included: CULTURAL

Initial fiscal year: 1996

09/05/96

17:21:53

FUNDED TABLE

CULTURAL

FUNDED AMOUNTS

(\$ in thousands - by activity type)

Page: 0001

FY: 1996

Park: YELL

Cluster: RMSO

FUNDING SOURCE	TOTAL	RES	MIT	MON	PRO	INT	ADM
NFED	186.00	0.00	160.00	0.00	0.00	0.00	26.00
NOTH	1550.00	0.00	1550.00	0.00	0.00	0.00	0.00
PCR2	29.00	5.00	0.00	0.00	24.00	0.00	0.00
SCRP	110.00	0.00	110.00	0.00	0.00	0.00	0.00
SDEV	20.00	0.00	20.00	0.00	0.00	0.00	0.00
TOTAL	1895.00	5.00	1840.00	0.00	24.00	0.00	26.00

End of data

INTEGRATED
PROJECT STATEMENTS

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-I-001.000
Priority: 4
Page Num: 0001

Title : BUILD INVENTORY AND MONITORING PROGRAM

Funding Status: Funded: 85.00 Unfunded: 510.00

Servicewide Issues : N20 (BASELINE DATA)
Cultural Resource Type: COMB (Combination)
N-RMAP Program codes : C00 (Collections and Data Management)

10-238 Package Number :

Problem Statement

Traditionally Yellowstone, like many other parks in the system, has followed a protective management strategy for conserving the cultural and natural resources within its boundaries. However, protection alone is not adequate management strategy for national parks. The potential for such things as global warming, shrinking habitats, resource development on the boundaries, and increasing visitation to affect park resources, all make it necessary to better understand the changes that are occurring in the ecosystems under our stewardship. There is also a moral, if not legal responsibility, to understand the ecosystem for its intrinsic value and to pass on that understanding to the public.

A systematic ecosystem-level monitoring program must be constructed and implemented to determine the present baseline status of resources and then to ascertain change to individual components of the system as well as to the ecosystem as a whole. In Yellowstone's 118-year history a wealth of information has been collected. Because the park is a World Heritage Site, Biosphere Reserve, and the core of the GYA, it has an active history of investigations on many topics. The fires of 1988, protection of the grizzly, threats of geothermal development, wolf reintroduction possibilities, and interest in the northern range have all rekindled intense research activity. However, while many research investigations are focused at topical components, no cohesive landscape inventory and monitoring program exists for the park.

A number of parks have begun the process of developing scientifically defensible I&M programs and producing viable monitoring plans. The existence of such plans has likely contributed to other parks' successful competition for servicewide research and monitoring funds. YNP needs likewise to establish an I&M program, built around the data bases that exist for some ecosystem components, and incorporating guidelines from NPS-77.

YNP now has GIS capability, though it is not fully staffed or funded to meet all the park's needs (see I-03.) The GIS system is capable of archiving I&M data sets, building an electronic bibliography of these sets, and overlaying them in an infinite

variety of combinations. In 1992, a cooperative program with the Nature Conservancy established the Greater Yellowstone Conservation Data Center (GYCDC), a Natural Heritage Database program. This database should also help serve interagency I&M program development.

Description of Recommended Project or Activity

Design or select an I&M program, using a task force or interdisciplinary committee assigned by the Resource Council, possibly including advisors from outside Yellowstone.

Survey all known data sets resulting from research around the park that would be appropriate to the selected I&M program. Input appropriate data sets into the archival program.

Identify components of the I&M program that are not now being completed, and institute studies to fill these voids. Establish baseline funds for on-going monitoring schemes to insure timeliness, accuracy, and continuity of needed data bases.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	ADM	Recurring	20.00	0.50
1996:	PKBASE-NR	ADM	Recurring	20.00	0.50
1997:	PKBASE-NR	ADM	Recurring	20.00	0.50
1998:	PKBASE-NR	ADM	Recurring	25.00	0.50
Total:				85.00	2.00
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	One-time	120.00	2.00
		RES	Recurring	35.00	2.00
		Subtotal:		155.00	4.00
Year 2:		MON	One-time	120.00	2.00
		RES	Recurring	35.00	2.00
		Subtotal:		155.00	4.00

Last Update: 04/12/96		Project Statement	YELL-I-001.000
Initial Proposal: 1995			Priority: 4
			Page Num: 0003

Year 3:	MON	Recurring	65.00	1.00
	RES	Recurring	35.00	2.00

		Subtotal:	100.00	3.00
Year 4:	MON	Recurring	65.00	1.00
	RES	Recurring	35.00	2.00

		Subtotal:	100.00	3.00
			=====	
		Total:	510.00	14.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Title : SUPPORT PRIORITY PLANNING EFFORTS

Funding Status: Funded: 833.00 Unfunded: 800.00

Servicewide Issues : N24 (OTHER (NATURAL))
Cultural Resource Type: COMB (Combination)
N-RMAP Program codes : E00 (Environmental Planning and Compliance)

10-238 Package Number :

Problem Statement

A wide variety of staff expertise and involvement is frequently required to complete planning and NEPA, Section 106, other historic, and Endangered Species Act compliance. Planning documents that require significant interdisciplinary effort by park staff in the next five years are as follows:

Development Concept Plans (DCPs). A planning effort to coordinate development needs and layout for a specific developed area. Resource management involvement is anticipated for 10 DCPs at: South Entrance, East Entrance, Northeast Entrance, West Entrance, Madison, Canyon, Norris, Tower Junction- Roosevelt-Lamar, Lake-Bridge Bay, and Mammoth.

Winter Use Plan. An effort to organize and plan winter use activities, development philosophy, and management. Resource management staff have contributed time and effort for development of policy document and analysis of impacts to wildlife and threatened & endangered species. This plan was completed in 1991. An environmental assessment is anticipated for relocation or replacement of Old Faithful Snow Lodge and for completion of this plan. Implementation involves application of new Visitor Use Management (VUM) techniques.

Housing. A planning effort to meet continued housing needs, design, and placements within and/or outside the park. This incorporates much of the planning needs and designs of the DCPs.

Major Road Reconstruction Program. A 20+-year program of reconstruction and upgrading park highways, using Federal Highways Funds. Environmental assessment will consider the impacts of taking road building materials from in or outside the park as well as the impacts of construction and potential realignments. A parkwide EA is complete; planning continues for specific park road segments.

Fishing Bridge Campsite Replacement. An EIS has been prepared to analyze the alternatives and effects of replacing 310 campsites, that existed in the former Fishing Bridge Campground, elsewhere in the park. Public comment and analysis, followed by

incorporation into a final EIS is planned for 1995.

Description of Recommended Project or Activity

Analyze effects to T&E species, wildlife, and vegetation, historical and archaeological resources, and provide expertise in wetlands mapping and Section 7 consultation for major projects, as assigned by Resource Council.

Increase staff to complete on-ground resource assessments and write necessary compliance documents related to park planning initiatives.

Participate in other planning activities as time allows; these include smaller in-park efforts and interagency cooperation with external or cross-boundary initiatives, such as reviewing and commenting on adjacent land-use plans, in-park concession designs, landscaping efforts, etc.

BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-OT CONSTRUCT	ADM MIT	Recurring	172.00	4.00
			One-time	25.00	1.00

			Subtotal:	197.00	5.00
1996:	PKBASE-OT CONSTRUCT	ADM MIT	Recurring	172.00	4.00
			One-time	40.00	1.00

			Subtotal:	212.00	5.00
1997:	PKBASE-OT CONSTRUCT	ADM MIT	Recurring	172.00	4.00
			One-time	40.00	1.00

			Subtotal:	212.00	5.00
1998:	PKBASE-OT CONSTRUCT	ADM MIT	Recurring	172.00	4.00
			One-time	40.00	1.00

			Subtotal:	212.00	5.00
				=====	
			Total:	833.00	20.00

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-I-002.000
Priority: 1
Page Num: 0006

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	One-time	120.00	2.50
	MIT	Recurring	80.00	0.00
		Subtotal:	200.00	2.50
Year 2:	MIT	One-time	120.00	2.50
	MIT	Recurring	80.00	0.00
		Subtotal:	200.00	2.50
Year 3:	MIT	One-time	120.00	2.50
	MIT	Recurring	80.00	0.00
		Subtotal:	200.00	2.50
Year 4:	MIT	One-time	120.00	2.50
	MIT	Recurring	80.00	0.00
		Subtotal:	200.00	2.50
			=====	
Total:			800.00	10.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EA (ENV. ASSESSMENT)
EIS (ENV. IMPACT STATEMENT)

Explanation: WILL BE COMPLETED AS NECESSARY

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-I-003.000
Priority: 3
Page Num: 0007

Title : UPGRADE/MAINTAIN GEOGRAPHIC INFO SYSTEM

Funding Status: Funded: 200.00 Unfunded: 440.00

Servicewide Issues : N20 (BASELINE DATA)
Cultural Resource Type: COMB (Combination)
N-RMAP Program codes : E00 (Environmental Planning and Compliance)

10-238 Package Number :

Problem Statement

Yellowstone is a very complex resource whose needs dictate an organized means of data management, especially pertaining to spatially organized and distributed data. GIS technology offers a valuable tool to resources managers, researchers, interpreters, planners, landscape architects, and others involved in using large amounts of stored data that need to be accessed quickly. The spatial and topical analysis and display capabilities of a GIS can address applications that are large in geographic scope (park or ecosystem-wide) while integrating several different data sources, such as remote sensing imagery, thematic maps, or tabular data.

Ecosystem-wide applications are becoming more critical in order to assess external threats to park resources as YNP participates in cross-boundary issues. The latter generally require interagency cooperation and include cumulative effects models or habitat assessments for wide-ranging threatened or endangered species, for geothermal connections, and analyses and predictive models for wildfires and recreation use. GIS capability allows partitioning of large area coverage into small units based on specific criteria, such as watershed boundaries. It helps scientists and managers identify suitable project sites that contain a combination of specific attributes, for example, an area with particular topographic and vegetative characteristics that lie within a specified distance from roads or trails. As new site parameters are measured and as future inventories are taken, up-to-date information can be incorporated into the GIS and compared with the baseline. Without GIS capabilities, such large-scale ecological relationships could not be examined or summarized as efficiently.

A tremendous backlog of resource information is not as accessible as scientists and managers wish. This is due both to a lack of computerized data and system limitations. Currently available data themes include basic information on slope, elevation, roads, lakes and streams, vegetative cover and habitat types, soils, landforms, parent materials, bedrock geology, precipitation, aspect, drainage basins, 1988 fire perimeters, ranger districts, bear management areas, and some wildlife species' home ranges.

Last Update: 04/12/96
Initial Proposal: 1995

Priority: 3
Page Num: 0008

However, there are many themes which have yet to be digitized or even mapped in order to help park staff make decisions, illustrate management alternatives, and analyze scientific choices or planning options for research, maintenance, planning, and resource management projects.

Due to YNP's immense size, variety of resource data, and dispersed staff, a GIS hookup with outlying offices would have great use for all park divisions. At present, the system is new and demand is well ahead of its hardware, software, and operator's capacity to meet in-park needs. Remote login has been developed to facilitate access by distant locales in the park and ecosystem, such as other agencies and university researchers.

The park hired a fulltime systems administrator in 1989; this level of staffing was almost immediately insufficient to administer the GIS, and the position has been vacant from May 1993-present. In 1995 the park hired a GIS specialist/cartographer to operate the system and to advise users. All equipment was relocated to a larger, more climate-controlled space. System capabilities were improved with the addition of 4 UNIX work stations, Arc/Info 7.0.3, INTERNET connectivity, 6 GB of storage space, and a 4mm backup drive. Maintenance contracts were increased to improve longevity of the hardware investment. The system can accommodate 4 users at any one time; however, demand is twice as high. There is continuing need to educate GIS users and potential users about the operation in order to optimize its value to park staff and other interested persons. The existing investment in hardware, software, and accumulated databases is being undersupported and underused compared to its potential to serve as a usable tool for managers, researchers, staff, and other cooperators.

Description of Recommended Project or Activity

Increase staffing for GIS program. Hire someone to oversee the program and allow the GIS specialist to devote more time to project support. Hire seasonal technical support staff to allow us to take on more projects and make the backlog of resource data more accessible to all users.

Establish a procedure whereby all completed research and resource projects provide the park with computerized disks of their data sets and recommendations for further monitoring (including justifications and suggested methodology).

Add additional data themes to the system, by digitizing existing data bases or thematic maps and by collecting and inputting absent resource data (see I-01).

Increase hardware and software capacity of system.

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-I-003.000
Priority: 3
Page Num: 0009

Expand the use of GIS. Make the technology more accessible to more users, including interior park personnel. Put more emphasis on the spatial analytical capabilities of the system.

Complete a GIS/Spatial Analysis Plan. Initiate a review of GIS activities and needs in the park in order to develop a formal guiding document to guarantee fuller use of the system by all users and to insure continuity in access and products.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	ADM	Recurring	50.00	1.00
1996:	PKBASE-NR	ADM	Recurring	50.00	1.00
1997:	PKBASE-NR	ADM	Recurring	50.00	1.00
1998:	PKBASE-NR	ADM	Recurring	50.00	1.00
Total:				200.00	4.00
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		ADM	Recurring	110.00	2.00
Year 2:		ADM	Recurring	110.00	2.00
Year 3:		ADM	Recurring	110.00	2.00
Year 4:		ADM	Recurring	110.00	2.00
Total:				440.00	8.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-I-004.000
Priority: 5
Page Num: 0010

Title : MANAGE VISITOR USE/PROTECT BACKCOUNTRY RESOURCES

Funding Status: Funded: 390.00 Unfunded: 2348.00

Servicewide Issues : N02 (T&E ANIMAL)
N18 (VIS USE-BCTRY)
Cultural Resource Type: COMB (Combination)
N-RMAP Program codes : N00 (Resource and Visitor Use
Management)
N02 (Backcountry and River Patrol)

10-238 Package Number :

Problem Statement

More than 95% of Yellowstone's 2.2 million acres is backcountry, most of which has never been developed except for a relatively sparse trail system and 38 patrol cabins used administratively. A Wilderness Study was completed (USDI 1971) followed by a recommendation that some 2 million acres be designated as wilderness (USDI 1972). No further action has been taken. At least 5 national forest Wilderness Areas adjoin YNP. The park has 97 trailheads, more than 1200 miles of trails, and approx. 300 designated backcountry campsites. Designated or proposed national trails through YNP include the Continental Divide Scenic Trail, the Nez Perce Trail, the Trail of the Great Bear, and the Lewis and Clark Trail. The park's immense area of dense forests, rugged mountains, unique geologic features, and a tremendous array of wildlife offers excellent opportunities for recreation and solitude.

Backcountry trails and campsites are used by private parties and by commercial outfitters, regulated by limited concession permits and commercial use licenses. Overnight use requires a free permit from one of 12 area backcountry offices. These offices and the headquarters Backcountry Office dispense information about trail and campsite conditions, and special restrictions designed to minimize safety hazards and resource conflicts while providing for high quality visitor experiences.

Backcountry management is integrally related to bear management objectives, which try to balance the use and safety of humans with protection of bears, especially the grizzly bear (see N-07, N-28). Timely reports of bear activity result in increased safety messages, use adjustments such as requiring visitors to travel in parties of 4 or more persons, or temporary trail and campsite closures. As part of the Grizzly Bear Management Plan/EIS (USDI 1983) we instituted a set of Bear Management Areas with seasonal restrictions on use. Additional research should evaluate the effectiveness of these areas, although grizzly bear population trends have improved toward meeting recovery goals since their inception.

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Priority: 5

Initial Proposal: 1995

Page Num: 0011

Use has increased steadily since 1987 and currently exceeds 45,000 average annual visitor use nights. Horse travel accounts for approx. 7000-8000 stock use nights per year. Day use does not require a permit and appears to be less widely distributed than overnight use. Some very popular trails receive high intensity use; most use occurs June to September. Day use was monitored in 1992 and varied considerably depending on trail location, length, and destination. Figures ranged from zero to 109 people per day per trail. Winter backcountry camping is in low demand, but this and winter day use is increasing. Information about winter use effects on resources is particularly scant.

A draft Backcountry Management Plan was completed in 1994 and is awaiting approval. Implementation should improve coordination and consistency among park districts. It is also designed to improve information exchange between park staff and visitors and help provide visitor with a good means of knowing what kind of experience they might expect relative to their trip expectations.

The plan also outlines consistent methods which will be used to evaluate campsite impacts, trail re-routes, and relocation, revegetation, or redesign of campsites. This will require additional work and data management by park staff.

Despite some increase in permanent staff from 1985-90, the backcountry is still a challenge to effectively patrol for resource protection, visitor safety, and trail maintenance. Even-aged forests presented potential hazards and trail-opening difficulties even before 1988. There is a need to remove debris, from remnant communication lines and fences to fire-fighting equipment left behind. Rehabilitation of old roads and administrative sites and heavily used campsites occupies numerous personnel each summer. YNP receives limited assistance in these efforts from the Youth Conservation Corps (YCC) and the Student Conservation Association (SCA).

Hunting and poaching along boundaries threaten wildlife. Search and rescue operations will continue to pose logistical challenges due to YNP's size and isolation, particularly in winter. Generally motorized access is prohibited except in life-threatening emergencies, and requires the approval of the Superintendent. Administrative use of motorized equipment is to be used only if the minimum tool required; such restrictions require more time and human-power to reach and accomplish such tasks as clearing trails; building waterbars, and bog bridges; servicing telecommunications or research monitoring equipment; and restoring backcountry patrol cabins, many of which are historic resources.

Most of the park's 38 backcountry patrol cabins are historic (SEE C-06). These cabins need to be inventoried and evaluated for determination of their historic significance. Many need rehabilitation; a preventive maintenance program could help slow deterioration and save in long-term restoration costs. Other backcountry sites may offer significant evidence of past human

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Initial Proposal: 1995

Priority: 5
Page Num: 0012

activity; archaeologic sites are present although largely unsurveyed in the park's backcountry. Before removing or significantly altering any of these cultural resources, compliance must be undertaken and the value of these resources must be documented for the record. Park staff and visitors need additional information on how to preserve cultural resources in the backcountry; information on significant sites may need to be restricted, but in other cases resources may need to be reported to cultural resources staff.

There is continual need to review and update information to serve visitors in backcountry trip planning. Information on techniques for minimum impact hiking, horse use, and camping is available, as are recommended safety procedures. However, creative and effective information transfer through video format, personal contact, park newspapers or other brochures, and updated trailhead wayside displays are needed, especially once the Backcountry Management Plan is approved.

Significant progress has been made since 1993 in developing a computerized backcountry permit system. A program was written and installed in hardware at the Central BCO in 1993, and remote terminals have been installed at most interior BCOs. They are still needed at South Entrance and Bridge Bay ranger stations; printers are still needed at these areas and at Tower and the West Entrance.

Description of Recommended Project or Activity

Approve and implement Backcountry Management Plan.

Maintain backcountry patrols for resource protection, visitor safety, and trail maintenance. Increase as funding and staff allow.

Implement parkwide campsite and backcountry use monitoring system, using standards outlined in Backcountry Management Plan. Incorporate data into parkwide computer database and analyze on 3 to 5-year basis.

Continue program of rehabilitating and maintaining trails, campsites, and patrol cabins, and restoring disturbed sites; map all disturbances on GIS.

Acquire computer hardware and software systems for field permit issuance and better use of data on visitor use, bear movements, and other resource conditions.

Evaluate vegetative readiness and potential indicator species for improved management of stock use sites.

Perform boundary surveys on cyclic basis, and delineate park

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-I-004.000
Priority: 5
Page Num: 0013

boundary.

Develop research priorities related to backcountry resources and/or visitor use objectives, and seek means and funding to accomplish.

BUDGET AND FTEs:

-----FUNDED-----					
Source	Activity	Fund Type	Budget (\$1000s)	FTEs	
1995: PKBASE-NR MIT		Recurring	95.00	8.50	
1996: PKBASE-NR MIT		Recurring	95.00	8.50	
1997: PKBASE-NR MIT		Recurring	100.00	8.50	
1998: PKBASE-NR MIT		Recurring	100.00	8.50	
Total:			390.00	34.00	

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	Recurring	335.00	10.70
	MIT	Recurring	152.00	4.90
	MIT	Cyclic	100.00	1.00
	Subtotal:		587.00	16.60
Year 2:	MON	Recurring	335.00	10.70
	MIT	Recurring	152.00	4.90
	MIT	Cyclic	100.00	1.00
	Subtotal:		587.00	16.60
Year 3:	MON	Recurring	335.00	10.70
	MIT	Recurring	152.00	4.90
	MIT	Cyclic	100.00	1.00
	Subtotal:		587.00	16.60
Year 4:	MON	Recurring	335.00	10.70
	MIT	Recurring	152.00	4.90
	MIT	Cyclic	100.00	1.00
	Subtotal:		587.00	16.60
			=====	
Total:			2348.00	66.40

Project Statement
Last Update: 04/12/96
Initial Proposal: 1995

YELL-I-004.000
Priority: 5
Page Num: 0014

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : DOC (COVERED BY ANOTHER DOC)
EA (ENV. ASSESSMENT)

Explanation: GRIZZLY BEAR EIS; BACKCOUNTRY PLAN

	Project Statement	YELL-I-005.000
Last Update: 04/12/96		Priority: 15
Initial Proposal: 1995		Page Num: 0015

Title : ADMINISTER CULTURAL/NATURAL RES. PROGRAMS

Funding Status: Funded: 2009.60 Unfunded: 160.00

Servicewide Issues : N24 (OTHER (NATURAL))
C26 (ETHNOHIST)

Cultural Resource Type: COMB (Combination)

N-RMAP Program codes :

10-238 Package Number :

Problem Statement

In 1994, Yellowstone reorganized in an effort to strengthen its natural and cultural resources management programs. The result was establishment of the Yellowstone Center for Resources, with branches of Cultural Resources Management, Natural Resources Management, Advanced Resources Technology, Planning and Compliance, and Publications and Support Services.

Individual project statements reflect priority issues and project work related to numerous topics addressed by specialists in the branches of Natural or Cultural Resources, Planning, and Advanced Resource Technology, or by interdisciplinary work between specialists and others, including protection and interpretive rangers, maintenance professionals, scientists, and others.

This project statement summarizes the administrative functions and FTEs necessary to support the specialists in other branches of the Yellowstone Center for Resources.

Due to space limitations and previous organizational alignments, specialists in both natural and cultural resources branches are currently located in multiple buildings and crowded working conditions which are not conducive to optimum communication between branches of the YCR, nor to improved communication with other divisions. Numerous personnel lack sufficient work space, laboratory or other special work facilities, storage for equipment - some of which requires controlled climate conditions - vehicles, and other forms of support. Conference rooms and meeting facilities, even for small group discussions, are lacking. Housing or support facilities for temporary workers, visiting researchers, and other guests are extremely minimal and limit the staff's ability to accomplish projects or use volunteers and other cooperators. Competition for existing space, vehicles, equipment, and support services such as clerical help, filing space, and computer support is keen.

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-I-005.000
Priority: 15
Page Num: 0016

Description of Recommended Project or Activity

Manage professional program of natural and cultural resource management, planning, and advanced resources technology. Provide support services such as supervision, administrative and budget oversight, clerical work, logistical support, vehicles, office equipment and supplies, in support of professionals in all branches of the Yellowstone Center for Resources (YCR.)

Improve office space and organizational alignment to promote cooperation between branches and specialists within the YCR.

Increase base-funding of supplies and equipment to support professionals in all branches. This would include fund to replace one vehicle per year as part of cyclic vehicle replacement program, provide staff with individual computers, etc.

BUDGET AND FTEs:

			FUNDED		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs	
1995:	PKBASE-NR ADM	Recurring	97.40	2.00	
	PKBASE-CR ADM	Recurring	90.00	2.00	
	PKBASE-OT ADM	Recurring	315.00	9.00	
Subtotal:			502.40	13.00	
1996:	PKBASE-NR ADM	Recurring	97.40	2.00	
	PKBASE-CR ADM	Recurring	90.00	2.00	
	PKBASE-OT ADM	Recurring	315.00	9.00	
Subtotal:			502.40	13.00	
1997:	PKBASE-NR ADM	Recurring	97.40	2.00	
	PKBASE-CR ADM	Recurring	90.00	2.00	
	PKBASE-OT ADM	Recurring	315.00	9.00	
Subtotal:			502.40	13.00	
1998:	PKBASE-NR ADM	Recurring	97.40	2.00	
	PKBASE-CR ADM	Recurring	90.00	2.00	
	PKBASE-OT ADM	Recurring	315.00	9.00	
Subtotal:			502.40	13.00	
Total:			2009.60	52.00	

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-I-005.000
Priority: 15
Page Num: 0017

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	Recurring	40.00	0.00
Year 2:	ADM	Recurring	40.00	0.00
Year 3:	ADM	Recurring	40.00	0.00
Year 4:	ADM	Recurring	40.00	0.00
			=====	
Total:			160.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.3

Project Statement
Last Update: 04/12/96
Initial Proposal: 1995
YELL-I-006.000
Priority: 8
Page Num: 0018

Title : IMPROVE ABILITY TO PROTECT RESOURCES

Funding Status: Funded: 500.00 Unfunded: 4600.00

Servicewide Issues : N02 (T&E ANIMAL)
N03 (T&E PLANTS)
Cultural Resource Type: COMB (Combination)
N-RMAP Program codes : N00 (Resource and Visitor Use
Management)

10-238 Package Number :

Problem Statement

Throughout the history of Yellowstone National Park, resource protection has been a major function of park rangers. Threats to natural and cultural resources come from repeated and increasing human use, internal and external development, illegal hunting, trapping, and collecting (See N-17, N-26), and other human activities. Park rangers enforce laws and regulations designed to protect resources for the future enjoyment of the public.

Yellowstone's park rangers participate in resource management activities addressed in other project statements. We have not attempted to allocate their contribution in time and dollars except when attributable to a specific project or resource specialist. The budgeting figures and needs in this statement cover the salaries and FTEs of generalist park rangers who are or would be assigned to frontcountry trail patrol, open water boat patrol, rock or alpine climbing management, hunting, trapping, and rights-of-way and trespass grazing management, (as opposed to visitor protection), as outlined in the RMAP projections estimated in 1994. (Figures for poaching, backcountry patrol, backcountry permitting, and fishing enforcement are included in project statements N-13, N-27, and I-04).

Description of Recommended Project or Activity

Continue law enforcement activities to protect natural and cultural resources.

Increase base operations to fund optimum number, as outlined in RMAP projections, of park ranger positions needed to protect park resources.

BUDGET AND FTEs:

Source		Activity	FUNDED Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	PRO	Recurring	125.00	4.00
1996:	PKBASE-NR	PRO	Recurring	125.00	4.00
1997:	PKBASE-NR	PRO	Recurring	125.00	4.00
1998:	PKBASE-NR	PRO	Recurring	125.00	4.00
Total:				500.00	16.00

		Activity	UNFUNDED Fund Type	Budget (\$1000s)	FTEs
Year 1:		PRO	Recurring	1150.00	37.00
Year 2:		PRO	Recurring	1150.00	37.00
Year 3:		PRO	Recurring	1150.00	37.00
Year 4:		PRO	Recurring	1150.00	37.00
Total:				4600.00	148.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 7.4 (E2) (D2) (A10)

	Project Statement	YELL-I-007.000
Last Update: 04/12/96		Priority: 2
Initial Proposal: 1995		Page Num: 0020

Title : PROMOTE ECOSYSTEM MGMT VIA INTERAGENCY COOPERATION

Funding Status: Funded: 8.00 Unfunded: 19.00

Servicewide Issues : N24 (OTHER (NATURAL))

Cultural Resource Type:

N-RMAP Program codes :

10-238 Package Number :

Problem Statement

It has long been recognized in many areas that the boundaries of parks or other reserves seldom encompass whole ecosystems; nor do they often include entire nesting habitats, summer or winter ranges, or other critical parameters for native species.

Yellowstone occupies the center 2.2 million acres of a greater area often described as 9-11 million acres (depending on where one outlines the 'ecosystem'). In this, the GYA is managed by 4 federal agencies, 3 states, and private landowners who make land management decisions affecting 6 national forests, 2 national parks, 3 wildlife refuges, Bureau of Land Management lands, and private acreage.

In October, 1985, the House Subcommittees on Public Lands and National Parks and Recreation held a joint hearing on the GYA. Subsequently, the Congressional Research Service issued a report entitled "Greater Yellowstone Ecosystem, An analysis of Data Submitted by Federal and State Agencies" (1986); it stated that there was a relative lack of coordinated information for the entire GYA and that this lack of coordination was harmful to the GYA's fundamental values. The Greater Yellowstone Coordinating Committee (GYCC) was established in 1985 to improve coordination between managers of GYA forests and parks. In 1987 the GYCC published "The Greater Yellowstone Area: An Aggregation of National Park and National Forest Management Plans", to provide an overview of the complex resources and mandates existing in the GYA. The Aggregation displayed the current condition of management activities and illustrated the future condition of the region if plans were implemented through the last part of this century. The GYCC announced its intention to then identify new issues and improve consistency of management direction, policy, standards, and guidelines among the different forests and parks in the area.

The GYCC itself only includes USFS and NPS managers, although the USFWS and BLM have appointed liaisons with the GYCC. As issues arise affecting states, counties, and private landowners the GYCC will work cooperatively to mutually resolve issues. This does not imply any government management of privately owned lands, nor any revocation of valid existing rights held by federal permittees or leaseholders.

Description of Recommended Project or Activity

Park staff will continue to work with the GYCC on to enhance interagency coordination and cooperation including the sharing of databases through a GYCC Database Manager, the Greater Yellowstone Conservation Data Center, and/or other ecosystemwide efforts. As appropriate, the park's Master Plan, Statement for Management, Resource Management Plans, and associated documents will be reviewed for consistency according to the GYCC goals and objectives and, where appropriate, amendments will be incorporated.

Increase budget to travel around ecosystem, attend conferences and scientific meetings, and meet with other agency managers, scientists, and other professionals.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	ADM	Recurring	4.00	0.40
1996:	PKBASE-NR	ADM	Recurring	4.00	0.50
				=====	
Total:				8.00	0.90
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		ADM	Recurring	4.50	0.00
Year 2:		ADM	Recurring	4.50	0.00
Year 3:		ADM	Recurring	5.00	0.00
Year 4:		ADM	Recurring	5.00	0.00
				=====	
Total:				19.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Project Statement

Last Update: 04/12/96
Initial Proposal: 1995

YELL-I-007.000
Priority: 2
Page Num: 0022

Explanation: 516 DM6 APP. 7.4 E(2)

Title : IMPROVE INFORMATION MGMT FOR RESOURCES

Funding Status: Funded: 80.00 Unfunded: 245.00

Servicewide Issues : N24 (OTHER (NATURAL))
Cultural Resource Type:
N-RMAP Program codes : C00 (Collections and Data Management)
C03 (GIS/Data Management)

10-238 Package Number :

Problem Statement

Management of information is important not only for resource management/research efficiency, but also for decision making. Information bases that are not known to researchers and resource managers are the same as no information at all, and lead to duplicate investigations and decisions based on incomplete information. Knowledge must be stored, protected, and placed in formats that lend themselves to easy use.

Computers have made the storage and retrieval of vast amounts of information relatively easy. YNP was until the early 1990s still partly dependent on main computer support from the Data Point system, once the standard for the NPS' Rocky Mountain Region, though the system was inflexible and not networked with outlying stations. The NPS adopted the IBM standard and many resource management programs are in that format. However, conversion to new hardware and software has been very costly, particularly to place computers in isolated field stations. This is compounded by an overworked phone network, though some networking of compatible computers has been effected.

Shared data bases between the park divisions and between other agencies in the GYA or other NPS units can be increased. Management programs such as fire planning, backcountry permits, and wildlife observation reporting need to catch up with available technology to better serve visitors and park operational needs.

As with many parks, files and records management often falls behind, due to the volumes and unpopularity of paperwork management. Much information is essentially inaccessible because it is not easily found in park filing systems. A significant problem occurs with the long-term storage and protection of what could or has become historically valuable information. Yellowstone lacks for sufficient space, fire and other damage-proof equipment, and personnel to archive records of current or potential value.

Description of Recommended Project or Activity

Provide GIS services to all park divisions within existing capability of system. The GIS manager would be the archivist for all data bases, user-friendly formats, integration of data sets into GIS as appropriate, and the general protection of the information and system access. Improve records management and long-term storage of databases on resources and resource management issues.

Integrate computerized wildlife observation sightings, including T&E and Special Concern species, with the park GIS system.

Coordinate in-park information management with external partners, such as with Greater Yellowstone Coordinating Committee members (surrounding National Forests and Parks) and states.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	ADM	Recurring	20.00	0.60
1996:	PKBASE-NR	ADM	Recurring	20.00	0.60
1997:	PKBASE-NR	ADM	Recurring	20.00	0.60
1998:	PKBASE-NR	ADM	Recurring	20.00	0.60
				=====	
Total:				80.00	2.40
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		ADM	Recurring	60.00	1.00
Year 2:		ADM	Recurring	60.00	1.00
Year 3:		ADM	Recurring	60.00	1.00
Year 4:		ADM	Recurring	65.00	1.00
				=====	
Total:				245.00	4.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Project Statement
Last Update: 04/12/96
Initial Proposal: 1995

YELL-I-008.000
Priority: 16
Page Num: 0025

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-I-009.000
Priority: 11
Page Num: 0026

Title : STRENGTHEN RESOURCE INTERP/EDUCATION PROGRAMS

Funding Status: Funded: 3220.00 Unfunded: 2000.00

Servicewide Issues : N20 (BASELINE DATA)
Cultural Resource Type:
N-RMAP Program codes : I00 (Interp. of Natural Resource Issues)
10-238 Package Number :

Problem Statement

A vital part of any resource management project is its interpretive component. Research, monitoring, and other resource management actions are of interest to park staff and the public, and must be shared in a timely manner with those audiences. Comments among park staff often address the difficulty in transmitting appropriate information to all the interested parties in quick, accurate form. Yellowstone desires to continually endeavor to formalize the flow of resource information in the several ways. There is a desire to improve communications, especially of research results, to staff and the public.

For example, little information is available to the public on the park's prehistory. Also, although Yellowstone is historically important as the birthplace of the national park idea and for the development of management policies for natural areas, many visitors are unaware of the significance of the park's historic resources. Although interpretation through exhibits, publications, and other programs communicates the value of resources to the public, few park exhibits focus on cultural resources.

Natural resource programs such as wolf restoration, grizzly bear recovery, bison and elk management, and wilderness preservation all rely strongly on communication with and support of the public to help accomplish goals and objectives.

This funding chart for this project statement includes all the FTEs for the administration and interpretive operations program in the park, rather than attempting to break out a percentage of interpretive work that could be attributed to individual project statements.

Description of Recommended Project or Activity

Produce quarterly park newspaper, "Yellowstone Today", for handout at park entrance stations and visitor center. Include

Project Statement

YELL-I-009.000

Last Update: 04/12/96

Priority: 11

Initial Proposal: 1995

Page Num: 0027

pertinent information about resource management issues general visitor audience. Supplement with special topic brochures and/or other media.

Produce resource management newsletters, "The Buffalo Chip" and (new since late 1994) "The Wolf Tracker", primarily for distribution to park staff. Information included relates to research and management actions on cultural and natural issues in and around YNP.

Use staff for in-park and traveling interpretive programs. The research interpreter transmits up-to-date research information on highly visible issues to interested audiences. Field interpreters present a wide variety of activities and education programs to visitors concerning natural history and cultural resource preservations. Other formalized efforts include the Orientation Committee, who present 6 sessions each summer to all seasonal NPS employees with a major update on resource issues, and a park ranger interpreter on the Concessions Division staff who presents orientation to all incoming concession employees each summer.

Produce "Yellowstone Science" quarterly, to publicize research results for public, park staff, and scientific community.

Use ecological information available from recent studies and assimilated by the Greater Yellowstone Conservation Data Center (Natural Heritage Program) and other sources to increase accuracy of interpretive and educational programs.

Develop a series of site bulletins or other interpretive brochures on the park's cultural resources. Develop temporary or permanent museum exhibits on cultural resources.

BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	INT	Recurring	805.00	24.00
1996:	PKBASE-NR	INT	Recurring	805.00	24.00
1997:	PKBASE-NR	INT	Recurring	805.00	24.00
1998:	PKBASE-NR	INT	Recurring	805.00	24.00
Total:				=====	
				3220.00	96.00

	Project Statement	YELL-I-009.000
Last Update: 04/12/96		Priority: 11
Initial Proposal: 1995		Page Num: 0028

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	INT	Recurring	500.00	16.00
Year 2:	INT	Recurring	500.00	16.00
Year 3:	INT	Recurring	500.00	16.00
Year 4:	INT	Recurring	500.00	16.00
			=====	
	Total:		2000.00	64.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 D(4)

Project Statement
Last Update: 04/12/96
Initial Proposal: 1995

YELL-I-010.000
Priority: 14
Page Num: 0029

Title : EVALUATE CULTURAL LANDSCAPES

Funding Status: Funded: 0.00 Unfunded: 151.00

Servicewide Issues : C11 (REPORT)
Cultural Resource Type: CULL (Cultural Landscape)
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

Identification of the park's potential cultural landscapes (historic scenes, historic sites, historic designed landscapes, and historic vernacular landscapes) will be accomplished through the Historic Resource Study, now in progress. Once the potential cultural landscapes are identified, they will need to be evaluated for eligibility to the National Register. A Cultural Landscape Report (CLR) will then need to be prepared to determine management options for preservation.

Each of the park's 13 Historic Districts (including roads) should be evaluated for cultural landscapes. The evaluation would identify historic conditions, evaluate the significance of the resource as a cultural landscape, and present alternatives for preservation and interpretation.

Fort Yellowstone Historic District requires particular attention, as the integrity of the landscape is in question due to the many changes that have occurred over the years. Other considerations in the Mammoth area include the continued evolution of the working community and residence area, interpretive potential of the historic district, and current vegetation management practices (i.e. native plant species versus exotic species, the effect of exotic plants on native birds, the role of nonhistoric plantings, hazard tree removals, the significance and replacement of Officer's Row plantings, and treatment of the parade ground) in conjunction with Maintenance's program to replace historic plantings in Mammoth, which has been ongoing since 1986.

Description of Recommended Project or Activity

Identify potential cultural landscapes in Yellowstone National Park and prepare Cultural Landscape Reports for those that appear eligible to the National Register.

Coordinate with district and staff natural resources personnel on interdisciplinary monitoring and management activities necessary for protection of cultural landscapes in park.

BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995: PKBASE-CR	MON	Recurring	0.00	0.10
PKBASE-NR	PRO	Recurring	0.00	0.10
Subtotal:			0.00	0.20
Total:			0.00	0.20
		-----UNFUNDED-----		
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	Cyclic	75.00	1.50
	RES	One-time	25.00	0.50
Subtotal:			100.00	2.00
Year 2:	MIT	Cyclic	25.00	0.50
Year 3:	MIT	Cyclic	13.00	0.30
Year 4:	MIT	Cyclic	13.00	0.30
Total:			151.00	3.10

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(10)

	Project Statement	YELL-I-011.000
Last Update: 04/12/96		Priority: 13
Initial Proposal: 1995		Page Num: 0031

Title : ADDRESS OPAL TERRACE EFFECTS ON EXEC. HOUSE

Funding Status: Funded: 0.00 Unfunded: 0.00

Servicewide Issues : C10 (INVENTORY)

Cultural Resource Type: STRC (Structure)

N-RMAP Program codes :

10-238 Package Number :

Problem Statement

The Executive house, also known as the Old Child's residence (HS-2030), is a National Register of Historic Places property. It was designed in the Wright prairie style by Robert Reamer in 1907, and it is located in the Fort Yellowstone-Mammoth Hot Springs Historic District adjacent to Opal Terrace, an active thermal feature.

Preliminary monitoring of Opal Terrace shows that the terrace is growing toward the west and south sides of the Executive House. Underground activity in the area is unknown.

According to the 1872 Yellowstone Act, natural features are not to be tampered with or their natural growth prevented. However, past attempts have been made to sandbag the thermal feature and prevent expansion onto the property.

A study is needed to determine what affect the growth of Opal Terrace will have on the Executive House. A plan that outlines alternatives for protecting the structure should be prepared and approved. The plan should address the feasibility of relocating the building to an alternate site, as well as the alternative of preventing Opal Terrace from expanding onto the residence. A protection plan would prevent a reaction to an emergency situation from occurring that could possibly harm both the structure and the thermal feature.

Description of Recommended Project or Activity

Continue to monitor the growth of Opal Terrace and determine effects to the Executive House. Prepare a protection plan for the Executive House.

BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	0.00	0.10
	PKBASE-CR	MIT	Recurring	0.00	0.10
			Subtotal:	0.00	0.20
1996:	PKBASE-NR	MON	Recurring	0.00	0.10
	PKBASE-CR	MIT	Recurring	0.00	0.10
			Subtotal:	0.00	0.20
Total:				0.00	0.40
		-----UNFUNDED-----			
		Activity	Fund Type	Budget (\$1000s)	FTEs
Total:				0.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)
EA (ENV. ASSESSMENT)

Explanation:

Project Statement

YELL-I-012.000

Last Update: 04/12/96
Initial Proposal: 1995

Priority: 12
Page Num: 0033

Title : USE IPM TO CONTROL INSECTS/OTHER PESTS

Funding Status: Funded: 140.00 Unfunded: 33.60

Servicewide Issues : N16 (NEAR-PARK DEV)
N24 (OTHER (NATURAL))

Cultural Resource Type:
N-RMAP Program codes : H00 (Pest and Hazard Management)

10-238 Package Number :

Problem Statement

The habits of various plants and animals often inconvenience and sometimes threaten human activities, structures, and other objects. Native plants and animals can cause aesthetic or health concerns, whereas exotic taxa can disrupt the integrity of native communities. Such groups are often referred to as "pests", and management intervention is often desired to mitigate for undesirable effects or consequences.

The park has experienced previous pest problems: rodents, bats, and swallows, which host a number of biting insects and diseases and occasionally invade structures; exotic vegetation has invaded and established in certain areas of the park; isolated infestations of ants, flies, and other insects have been reported; native insects like the wood borer have invaded structures; pack rats and other pests may threaten and infest museum objects on display or in storage.

Mountain pine beetle and spruce budworm have affected large expanses of old-growth forest. Although such native "pests" may pose a threat to economic timber resources outside park boundaries, their role in shaping forest communities is recognized inside YNP. Native pest outbreaks will be allowed to proceed with minimal human influence, except where certain historic or high-value vegetation is identified in a cultural resource project statement as being in need of preservation.

Because exotic pests have no natural enemies, they pose a different problem. Early detection and quick, aggressive action is vital for eradication while minimizing the potential impact to park resources. An integrated approach would use mass sampling, biological and chemical control, or even quarantine. Park management is currently cooperating with the USFS Pest Management Group in surveying and delimitation trapping for the exotic Gypsy Moth. Major infestations of this pest could potentially devastate deciduous trees and shrubs.

Potential pests need to be analyzed as to the threat they cause other natural or cultural resources. The NPS uses a programmatic, integrated approach (IPM) to identifying and

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-I-012.000
Priority: 12
Page Num: 0034

managing "pests", with emphasis on solving the root of the problem whenever possible. For example, when "garbage bears" proved to be a source of danger to both humans and themselves, the source - the human food attractant - was removed. IPM may call for using physical, biological, chemical, and/or sociological treatments to manage pests. Pesticide use is restricted and requires approval at the WASO levels; however, this can be an appropriate part of an IPM program.

IPM plans have been developed for swallows and bats in park housing and administrative buildings. The birds are protected under the Migratory Bird Treaty Act, but host insects that sometimes pose a health hazard to staff and visitors. Resource management staff have experimented with methods to keep swallows from nesting in proximity to doorways and windows where they are a nuisance or health hazard. Bats, rodents, and small mammals occasionally nest or invade buildings, especially the older log structures. Each site should be inspected in order to control the access point if possible; animals are most often trapped and relocated outside the developed area.

Facilities used to store or exhibit museum objects and specimens have pest problems, ranging from insects and mice in the main collections storage area, to squirrels who have taken up residence in the Museum of the National Park Ranger at the historic Norris Soldier Station. These pests cause serious damage by chewing or feeding on irreplaceable museum collections and using them for nesting materials. These pests must be identified, monitored, and controlled in all park buildings that house or exhibit museum collections. There is currently no IPM program in place for the museum collection.

Description of Recommended Project or Activity

Use the Integrated Pest Management (IPM) approach to identify and mitigate for pest problems. Recognize "natural" vs. "exotic" pests, and manage accordingly.

Increase cooperative efforts with local, state, and interagency specialists for employee training in pest identification, effective mitigation and/or control measures, and optimal equipment standards and operation.

Expand employee training in IPM, including federal certification for pesticide application. All permanent resource staff should be certified in IPM and pesticide application.

Develop and implement an IPM program for park facilities containing museum collections.

BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	20.00	0.30
	PKBASE-NR	MIT	Recurring	15.00	0.30
			Subtotal:	35.00	0.60
1996:	PKBASE-NR	MON	Recurring	15.00	0.30
	PKBASE-NR	MIT	Recurring	20.00	0.40
			Subtotal:	35.00	0.70
1997:	PKBASE-NR	MON	Recurring	15.00	0.30
	PKBASE-NR	MIT	Recurring	20.00	0.40
			Subtotal:	35.00	0.70
1998:	PKBASE-NR	MON	Recurring	15.00	0.30
	PKBASE-NR	MIT	Recurring	20.00	0.40
			Subtotal:	35.00	0.70
				=====	
Total:				140.00	2.70
			-----UNFUNDED-----		
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MIT	Recurring	2.50	0.00
		MIT	Recurring	13.00	0.50
			Subtotal:	15.50	0.50
Year 2:		MIT	Recurring	2.50	0.00
		MIT	Recurring	5.20	0.20
			Subtotal:	7.70	0.20
Year 3:		MIT	Recurring	5.20	0.20
Year 4:		MIT	Recurring	5.20	0.20
				=====	
Total:				33.60	1.10

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Last Update: 04/12/96 Project Statement YELL-I-012.000
Initial Proposal: 1995 Priority: 12
Page Num: 0036

Compliance codes : EXCL (CATEGORICAL EXCLUSION)
EA (ENV. ASSESSMENT)

Explanation: 516 DM6 APP. 7.4 E(6)

	Project Statement	YELL-I-013.000
Last Update: 04/12/96		Priority: 9
Initial Proposal: 1995		Page Num: 0037

Title : MANAGE MUSEUM COLLECTIONS: NAT. RESOURCE SPECIMENS

Funding Status: Funded: 0.00 Unfunded: 160.00

Servicewide Issues : C03 (SITE DOC)
C16 (VEG SURVEY)
Cultural Resource Type: OBJC (Object)
N-RMAP Program codes : C00 (Collections and Data Management)

10-238 Package Number :

Problem Statement

The park approves approximately 300 research permits annually. The Code of Federal Regulations requires all specimens collected within park boundaries and placed in displays or collections to be cataloged into the National Park Service National Catalog (36 CFR, Section 2.5). Compliance with this regulation involves a tremendous increase in the curatorial workload. Each specimen collected for inclusion in a collection is checked for proper identification, labelled, cataloged, stored, and monitored for conservation and maintenance needs by the curator once the collection is accessioned into the museums.

Yellowstone does not have the storage cabinets needed to preserve collected specimens nor the storage space to accommodate the cabinets. The natural history collections are stored in two locations: the NBS research offices and the museum collection storage room. Neither area has space for the anticipated growth of the collection associated with compliance of this regulation. The research office does not have adequate security, and neither area is environmentally controlled to the museum standards that are essential to preserve these important collections.

Description of Recommended Project or Activity

Establish curatorial technician position to track collection permits, complete catalog worksheets, enter data into the National Catalog, and store, monitor, and inventory cataloged specimens.

Provide additional storage space for natural science collections. The facility would need to be secure, environmentally controlled, and protected against fire. Procure additional specimen storage cases and curatorial supplies.

BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
Total:			0.00	0.00
		-----UNFUNDED-----		
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	PRO	One-time	20.00	0.50
	PRO	One-time	20.00	0.50
Subtotal:			40.00	1.00
Year 2:	PRO	One-time	20.00	0.50
	PRO	One-time	20.00	0.50
Subtotal:			40.00	1.00
Year 3:	PRO	One-time	20.00	0.50
	PRO	One-time	20.00	0.50
Subtotal:			40.00	1.00
Year 4:	PRO	One-time	20.00	0.50
	PRO	One-time	20.00	0.50
Subtotal:			40.00	1.00
Total:			160.00	4.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(2)

Project Statement
YELL-I-014.000
Last Update: 04/12/96
Priority: 7
Initial Proposal: 1995
Page Num: 0039

Title : DEVELOP OBSIDIAN CLIFF MANAGEMENT PLAN

Funding Status: Funded: 0.00 Unfunded: 150.00

Service-wide Issues : C01 (OVERVIEW)
C20 (PRGM DEV)

Cultural Resource Type: SITE (Archeological Site)

N-RMAP Program codes : E00 (Environmental Planning and Compliance)

10-238 Package Number :

Problem Statement

The Obsidian Cliff Quarry and associated sites are threatened by erosion, traffic and work activities on the main road, visitor access, and unauthorized collecting. In 1990 a study was conducted to inventory, record, evaluate, and nominate the Obsidian Cliff Quarry and associated sites as a National Historic Landmark (NHL). There is an interpretive kiosk located in the Obsidian Cliff pullout that explains the importance of obsidian to American Indians. The kiosk is listed on the National Register.

A management plan needs to be developed that will provide recommendations for additional archeological inventory, evaluation, research and provide guidelines for resource protection, interpretation, and visitor safety. The plan should address interpretation of the area, visitation at the site, visitor safety, the implementation of a monitoring program to determine effects on the cliff quarry site from natural and human-caused action, and mitigation of effects threatening the integrity of the site.

Description of Recommended Project or Activity

Prepare a management plan that addresses protection, archeological inventory, evaluation, research, and interpretation of the Obsidian Cliff Quarry and associated sites.

Prepare and implement a monitoring plan to document impacts (including Archeological Resource Protection Act violations) on the quarry and associated sites.

Provide additional patrol of the area by law enforcement officers who are trained on the Archeological Resource Protection Act.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
		Total:	0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	One-time	100.00	0.20
Year 2:	ADM	One-time	50.00	0.10
			=====	
		Total:	150.00	0.30

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : ARPA (ARCH. RES. PROT. ACT.)
EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(10)

Project Statement
Last Update: 04/12/96
Initial Proposal: 1995
YELL-I-015.000
Priority: 10
Page Num: 0041

Title : IMPROVE CULTURAL/NATURAL RES. TRAINING PROGRA

Funding Status: Funded: 2.00 Unfunded: 24.00

Servicewide Issues : C25 (CULT. AFFIL)
Cultural Resource Type: COMB (Combination)
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

Most park employees have some contact with natural and cultural resources during the performance of their duties; some employees have considerable responsibility for protection, monitoring, interpretation, and/or researching these resources. An integrated cultural/natural resources management training program is needed to educate Yellowstone employees about the quantity and diversity of the park's resources, and about how they may be affected by visitor use, park projects (construction, preservation maintenance, ground-disturbing, or planning efforts), and external threats.

Since the mid-1908s, the park has sponsored a 2 to 5-day resource management training for its personnel on an annual basis. Themes have varied, but the topics have included a variety of natural and cultural resource projects and issues, discussed by various in-park or external guest speakers. In general, funding has been \$5000 or less for this training, which is open to all interested staff. Informally, other on-the-job orientation to resource issues occurs, and occasional seminars are held on topical issues; staff whose duties are peripheral to or collateral in resources management are usually limited in their ability to take advantage of such opportunities. Also, supervisory support for non-specialist personnel to take such training varies widely.

Recommended cultural resources training topics include: cultural resource management philosophy, policy and implementation; compliance; the Secretary's Standards for Preservation Planning and Guidelines for Historic Preservation and Archeology; preventive maintenance; preservation techniques (hands-on experience, eg., painting, masonry, log stabilization), evaluating historic buildings and recommending a preservation treatment, archeological resource identification and recording training, and Archeological Resource Protection Act training (ARPA). Training sessions would last from one to four days and involve preservation specialists, historic architects, historians, conservators, archeologists, and law enforcement personnel.

Recommended natural resources training topics include: NEPA compliance and park project clearance; inventory and monitoring

techniques for specific resources; exotic plant recognition and control methods; IPM methods and field applications; geothermal monitoring; fish and wildlife identification and population monitoring techniques; bird and wildlife handling techniques; reptile and amphibian recognition and monitoring techniques; hazardous waste management; and revegetation techniques.

An improved integrated cultural and natural resources management training program would result in a better understanding of resources management concerns and guidelines and improve the preservation of the park's resources. This program would facilitate the Section 106 and NEPA compliance processes (by permitting programmatic agreements) and reduce delays for project schedules. It would add to individual employees' ability to understand, interpret, and manage park resources appropriately and safely, and it would potentially add to employee development and satisfaction.

Description of Recommended Project or Activity

Increase cultural and natural resources training opportunities for park employees, using regional or park specialists as instructors, as well as cooperators or guests from outside the NPS as appropriate.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-OT	ADM	Recurring	1.00	0.00
1996:	PKBASE-OT	ADM	Recurring	1.00	0.00
Total:				2.00	0.00
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		ADM	One-time	3.00	0.20
		ADM	One-time	3.00	0.00
		Subtotal:		6.00	0.20
Year 2:		ADM	One-time	3.00	0.20
		ADM	One-time	3.00	0.00
		Subtotal:		6.00	0.20

		Project Statement	YELL-I-015.000	
Last Update: 04/12/96			Priority: 10	
Initial Proposal: 1995			Page Num: 0043	

Year 3:	ADM	One-time	3.00	0.20
	ADM	One-time	3.00	0.00

		Subtotal:	6.00	0.20
Year 4:	ADM	One-time	3.00	0.20
	ADM	One-time	3.00	0.00

		Subtotal:	6.00	0.20
			=====	
		Total:	24.00	0.80

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Title : INVESTIGATE STATUS OF TRIBAL HUNTING RIGHTS

Funding Status: Funded: 0.00 Unfunded: 5.00

Servicewide Issues : C23 (REAP)
N19 (CONSUMPT USE)

Cultural Resource Type:
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

The Shoshone-Bannock and Crow tribes have recently expressed a potential interest in invoking what they believe to be tribal hunting rights inside the existing boundaries of Yellowstone National Park, based on language in 19th century treaties. This has potential effects on management of ungulate populations in and around the park, especially bison and elk (see N-35 and 36), and is an issue of interest to other wildlife management agencies and with interested publics.

The regional anthropologist has recommended that a legal history of tribal claims to park natural resources be prepared; currently, little background information is available, as the issue has only surfaced in the latter part of 1994.

Description of Recommended Project or Activity

Research legal history of the tribal hunting rights claims and recommend action to managers.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	One-time	5.00	0.00
Total:			5.00	0.00

	Project Statement	YELL-I-016.000
Last Update: 04/12/96		Priority: 6
Initial Proposal: 1995		Page Num: 0045

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.4

NATURAL RESOURCES
PROJECT STATEMENTS

Project Statement
Last Update: 04/12/96
Initial Proposal: 1995
YELL-N-001.000
Priority: 6
Page Num: 0001

Title : INVENTORY/MONITOR/PROTECT GEOTHERMAL RESOURCES

Funding Status: Funded: 364.00 Unfunded: 2492.80

Servicewide Issues : N10 (MINRL/GEOTHERM)
N20 (BASELINE DATA)

Cultural Resource Type:

N-RMAP Program codes : G00 (Geologic Resources Management)
G03 (Geothermal Resources Management)

10-238 Package Number :

Problem Statement

Nowhere else in the world can we find the array or number of geysers, hot springs, mud pots, and fumaroles found in Yellowstone. More than 75% of the world's geysers, including the world's largest, are here in 7 major basins: Steamboat, Giantess, Grand, Great Fountain, Beehive, and of course, Old Faithful Geyser.

The park's thermal features lie in the only essentially undisturbed geyser basins left worldwide. In Iceland and New Zealand, geothermal drill holes and wells 2.5 - 6.2 miles distant have reduced geyser activity and hot spring discharge. Despite the proximity of roads and trails to the largest basins, few park features have ever been diverted for human use (such as bathing pools or energy). YNP offers visitors and scientists an opportunity to appreciate thermal features in their natural, changing state. For example, research on thermophilic bacteria, algae mats, predators, and their environments is applied elsewhere to energy fuel production and extraction, bio-mining, control and removal of toxic wastes, development of new surfactants and fermentation processes, and other fields.

Park features have always been subject to some human vandalism. In the park's early years it was common for visitors to use thermal features as "wishing wells"; this practice continues to some degree today. Coins, rocks, trash, logs or stumps, and other paraphernalia are found in the narrow vents of geysers and hot springs. Features have been plugged up, and little can be done to repair the damage. Radical attempts to siphon surface water and induce eruptions have occasionally been tried on famous features such as Morning Glory Pool, with varying degrees of success. Damage also occurs when people leave walkways and climb on features, or break pieces of sinter or travertine off for souvenirs (Marler 1973).

Features can also be affected by nearby ground-disturbing activities. The presence of utility systems adjacent to thermal areas has likely affected features in the past. Major maintenance and construction activities must be carefully

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-N-001.000
Priority: 6
Page Num: 0002

designed and monitored so as not to alter thermal features.

The major threat comes from periodic proposals for geothermal lease applications in Known Geothermal Resource Areas (KGRAs) outside the park. Applications in the Island Park KGRA west of the park numbered over 200 in the late 1970s and were addressed in an EIS (USDA Forest Service 1980). Park thermal areas lie as close as 1.7 miles from sites for which applications were filed. The preferred action was to defer leasing along Yellowstone's boundary and to reject existing and future applications until "adequate safeguards for protection of surface resources may exist as a result of developing technology." This restriction affects only federal lands, however. A rapid change in energy economics could increase pressure to open non-federal lands to leasing and drilling activity. Thus, research is needed to determine the extent to which YNP's geothermal systems connect with areas of lease application west and north of the boundary.

In 1983 the USGS conducted magnetotelluric soundings in the west boundary area. They detected a conductive zone at relatively shallow depth, aligned with thermal areas in the upper Boundary Creek area and crossing the park boundary along the projected trend of the Madison fault. Corroborative evidence is needed to help confirm the existence of an aquifer in this area.

The Yellowstone KGRA is not currently threatened by any proposed development, but the Corwin Springs KGRA north of YNP contains historic and potential development near LaDuke Hot Springs. In 1984 the Royal Teton Ranch drilled a test well on private land and proposed developing their water rights for ranchland use. This proposal led to amendments to the Geothermal Steam Act of 1970, which put any action on hold pending results of a study by the USGS/NPS to assess affects on park thermal resources. Mercury, thermal, and radon anomaly surveys have helped define aquifers (Hamilton et al. 1990) and develop models explaining the connections in the boundary area (Sorey et al. 1991).

The USGS/NPS studies were completed in 1990-91; however, there was not agreement between the two agencies on a recommended course of action. The NPS report concluded that there was sufficient probability of connection between geothermal systems in YNP and those in the Corwin Springs KGRA to warrant extreme concern, and recommended no development of subsurface geothermal resources be permitted in the KGRA. The USGS report (USGS 1991) stopped short of this recommendation; it concluded that "substantial" drawdown of natural reservoirs in the LaDuke or Bear Creek areas could affect Mammoth Hot Springs, and that restricting geothermal well production to areas where thermal water currently discharges and to rates less than the total natural rate of outflow could eliminate the chances of adverse effects to thermal springs in the Mammoth area.

In January 1994, the NPS and the State of Montana signed an agreement whereby new development of hydrothermal waters within a controlled groundwater area is prohibited and cold water

development would be monitored. Montana approved a geothermal well on Royal Teton Ranch land approx. 1.6 miles north of YNP's boundary, and owners may pump at a rate of 33.5 gpm between March 31 and October 31. The NPS supported the Old Faithful Protection Act of 1993, proposed in the U.S. Congress, which would have prohibited all geothermal development around the park. This bill did not pass, but the issue remains of interest to private landowners, congressional representatives from the 3 states around the park, and various constituents. Additional research and monitoring is necessary to address this long-term threat to park resources.

No comprehensive inventory of the park's 121 known geothermal areas has been completed. Only 37% have been thoroughly inventoried (descriptions, measurements, photographs, chemical analyses, etc.), 27% are partially inventoried, and 40% have not been inventoried at all. More systematic monitoring of thermal resources is needed, with data incorporated into the park's GIS. Instrumental monitoring supplemented by visual data is necessary to recognize and interpret changes in the behavior of geothermal features as they relate to natural or human-caused events. Such data is thus critical to protect these resources from internal and external threats such as geothermal and oil and gas drilling. Water drilling in or near the park also poses a threat to the integrity of geothermal systems.

Volcanic and seismic processes are very active in the park. The USGS and the University of Utah maintain a network of seismic monitoring stations to help understand overall seismicity in the region and gauge the magnitude of earth tremors. Thermal features and basins respond violently to volcanic/seismic activity, which creates both a serious hazard to humans and an opportunity to study and possibly predict major geologic hazards. Thus, maintenance of a long-term geothermal data base also helps us manage visitor use to increase public safety in a naturally hazardous environment.

In 1994, the NPS became aware that a microscopic organism, *Thermus aquaticus*, which had been collected as part of approved research permits from Yellowstone hot springs, had significant applications. These include a patented process to complete DNA fingerprinting, a technique with increasingly high scientific and commercial value. The NPS receives no royalties from such commercial enterprises, and debate has ensued over the propriety of national park resources being used for commercial value, with or without compensation to the U.S. government and/or the public.

Description of Recommended Project or Activity

Continue protection and interpretation of geothermal resources, by regular patrol, visual monitoring, and informal and formal education programs.

Project Statement

Last Update: 04/12/96
Initial Proposal: 1995

YELL-N-001.000
Priority: 6
Page Num: 0004

Incorporate inventory data for all Yellowstone thermal areas into the park's GIS for permanent archival and access.

Monitor external geothermal, oil and gas, and water exploration and development.

Establish and maintain instrumented monitoring of discharge of selected thermal basins, such as Norris Geyser Basin and the Hot Springs Basin Group. A weir set up at Norris lacks operating funds. No equipment is currently available for the other remote locales.

Perform regular thermal cleanup of all vandalized thermal springs and geysers, specifically Morning Glory Pool, with efficient tools and equipment.

Investigate options for protection of *Thermus aquaticus*, examine potential conflicts with such commercial use, and outline possibilities for remuneration to the citizens/ government. Support passage of Old Faithful Protection Act or similar measure(s) to insure that external groundwater or other development does not impair park thermal features. Provide data and interpretations as requested to answer public and congressional inquiries on geothermal resources.

Seek funding and expertise to research and monitor hydrothermal features and influences on them within Controlled Groundwater Area addressed in Montana Water Rights Compact, approved in January 1994. Proposed studies include:

- Geochemical monitoring using chloride flux as a proxy for heat flux; existing databases include 7 years from both Mammoth Hot Springs and the Boundary Creek areas and should be continued. Additional monitoring of other major thermal basins should be added. Cost estimate: \$65,000/year.
- Instrumentation of major geysers to monitor continuous activity and stable isotope analysis of selected sites; currently only Old Faithful is continuously monitored. Cost estimate: \$200,000 for 2 years.
- Conduct detailed infrared aerial survey of park every 2-3 years, and conduct smaller-scale site-specific infrared scans to document rapid heat flux changes to potentially correlate with seismic activity and tectonic events. Cost estimate: \$200,000 per flight series; \$100,000 for one-time purchase of portable infrared scanner.
- Survey helium content of soil gas in selected areas to aid in geologic mapping and identification of permeable soil zones and hidden faults. Cost estimate: \$40,000/yr.
- Measure cold water recharge and acquire chemical and isotopic data from selected existing wells in Montana. Consider drilling monitoring wells in selected sites in or adjacent to YNP to

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-N-001.000
Priority: 6
Page Num: 0005

assess disturbances to park hydrothermal systems. Cost estimate:
\$100,000/new well.

BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	65.00	1.30
	PKBASE-NR	PRO	Recurring	31.00	1.00
Subtotal:				96.00	2.30
1996:	PKBASE-NR	MON	Recurring	65.00	1.30
	PKBASE-NR	PRO	Recurring	31.00	1.00
Subtotal:				96.00	2.30
1997:	PKBASE-NR	MON	Recurring	55.00	1.00
	PKBASE-NR	PRO	Recurring	31.00	1.00
Subtotal:				86.00	2.00
1998:	PKBASE-NR	MON	Recurring	55.00	1.00
	PKBASE-NR	PRO	Recurring	31.00	1.00
Subtotal:				86.00	2.00
Total:				364.00	8.60

			-----UNFUNDED-----		
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		RES	One-time	240.00	1.00
		PRO	Recurring	178.20	5.70
		MON	Recurring	105.00	0.80
Subtotal:				523.20	7.50
Year 2:		PRO	Recurring	178.20	5.70
		RES	One-time	240.00	1.00
		MON	Recurring	105.00	0.80
Subtotal:				523.20	7.50
Year 3:		PRO	Recurring	178.20	5.70
		RES	One-time	300.00	0.00
		RES	One-time	240.00	1.00
		MON	Recurring	105.00	0.80
Subtotal:				823.20	7.50

Last Update: 04/12/96		Project Statement	YELL-N-001.000
Initial Proposal: 1995			Priority: 6
			Page Num: 0006

Year 4:	PRO	Recurring	178.20	5.70
	RES	One-time	100.00	0.00
	RES	One-time	240.00	1.00
	MON	Recurring	105.00	0.80

		Subtotal:	623.20	7.50
			=====	
		Total:	2492.80	30.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Title : IDENTIFY VOLCANO & EARTHQUAKE HAZARDS

Funding Status: Funded: 20.00 Unfunded: 262.00

Servicewide Issues : N20 (BASELINE DATA)
Cultural Resource Type:
N-RMAP Program codes : G00 (Geologic Resources Management)
G04 (Volcanic Resources Management)

10-238 Package Number :

Problem Statement

Yellowstone has by far one of the largest currently-active calderas in the world (Newhall and Dzurisin 1988). It episodically produces lavas of high silica content, and the last climactic eruption expelled more than 1,000 cubic kilometers of lava in the form of rhyolite flows and explosively ejected tuffs.

Volcanic activity continued here until 70,000 years before present (b.p.), and volcano-associated hydrothermal explosions occurred as recently as ca. 3,500 b.p. A phreatic (steam) explosion near Mary Bay about 12,000 b.p. may have triggered an eruption of shallow magma (Hamilton and Bailey 1991) 1/3 the size of the 1980 Mt. St. Helens eruption. Another, 8500 years b.p. produced a tsunami with a wave height of about 10 meters. Clearly, the Yellowstone caldera must be seriously considered as a significant volcano hazard.

The USGS supports an annual leveling program to document current unrest. Uplift totaling ca. 1 m since 1923 ended in 1984; since then the caldera has subsided several cm each year. To measure real-time deformation in hopes of detecting potentially hazardous, rapid landscape changes, the NPS installed automated lake level gauges at Yellowstone Lake in 1983. At present the joint network consists of 6 gauging stations. The operating budget is effectively zero.

A seismograph network produces data of great importance on locations of active and potentially dangerous faults (see N01). Volcanic unrest will probably be signalled by local seismic swarm activity and hydrothermal changes. Scientists periodically conduct gravity surveys and satellite Global Positioning System (GPS) measurements to extend the deformation data into the surrounding region, and to assess crustal density changes associated with deformation. The park makes some logistical contribution, but lacks base funding for this monitoring.

Since 1983 the park and M.S.U. have conducted investigations at Yellowstone Lake aimed at understanding the history of caldera unrest since deglaciation and documenting the deformation history (Meyer and Locke 1986; Hamilton and Bailey 1991). MSU received some National Science Foundation support for their work, but the

current support there and in-house is essentially zero.

Highest priorities are for continuing research and monitoring that will offer insight regarding the most likely hazardous events. Further work is needed to better understand the timing and triggering mechanisms of rapid deformation events and phreatic eruptions. A base-funded interactive program helps USGS justify their continued funding of volcano hazard studies here. The resulting information increases our understanding of volcanic hazards, and enhances interpretation of Yellowstone's unique geology.

Description of Recommended Project or Activity

Support seismic network, Global Positioning System, and deformation research and monitoring.

Complete surveys/studies and continue monitoring at Norris Geyser Basin, an area of hydrothermal explosion activity and dangerous potential, and at Heart Lake and caldera-centerline lakes.

Investigate Indian Pond, Turbid, Duck, and Fern Lake explosion craters to assess impacts, determine timing, association with deformation, evidence for magmatic involvement.

Reconstruct deformation history in the Shoshone and Lewis Lake areas to assess unrest on the south flank of the caldera.

Use radiometer to conduct thermography of road corridors and to monitor and study geological hazards associated with volcanic and seismic unrest.

BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	5.00	0.10
1996:	PKBASE-NR	MON	Recurring	5.00	0.10
1997:	PKBASE-NR	MON	Recurring	5.00	0.10
1998:	PKBASE-NR	MON	Recurring	5.00	0.10
				=====	
			Total:	20.00	0.40

	Project Statement	YELL-N-002.000
Last Update: 04/12/96		Priority: 16
Initial Proposal: 1995		Page Num: 0009

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	65.50	0.00
Year 2:	RES	One-time	65.50	0.00
Year 3:	RES	One-time	65.50	0.00
Year 4:	RES	One-time	65.50	0.00
			=====	
Total:			262.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Project Statement
Last Update: 04/12/96
Initial Proposal: 1995
YELL-N-003.000
Priority: 14
Page Num: 0010

Title : COMPLETE PARKWIDE SOIL SURVEY

Funding Status: Funded: 352.00 Unfunded: 0.00

Servicewide Issues : N20 (BASELINE DATA)
N01 (NAT ANML OVPOP)

Cultural Resource Type:
N-RMAP Program codes : D00 (Disturbed Area Rehabilitation)

10-238 Package Number :

Problem Statement

Soils information is one of the most basic and useful types of baseline resource data. A soil survey can help assess fire effects, erosion potential of natural landscapes or building sites, wildlife grazing impacts, or whitebark pine productivity. It can be used to increase our understanding of riparian systems, and improve plans to rehabilitate disturbed areas, such as old campgrounds, roadbeds, or dumping sites. A good soils data base is fundamental to an ecologically founded research program. It also is critical for use in development concept plans and siting specific facilities, and for interpreting geothermal phenomena and landscape evolution. For both visitors and park staff, soils information helps understand landslides, erosion, vegetation patterns, and vegetation productivity, which is tied to how wildlife use their habitat.

The park lacks a comprehensive, ground-truthed soils survey. Some localized soils data exist, collected in relation to construction projects or specific research investigations. For example, some information exists on hydrothermally altered soils. Also, as part of the long-term controversy over ungulate grazing on the park's northern range, studies were initiated in 1987 to determine major erosive lands and sources of sediment in the upper Yellowstone River Basin (Shovic et al. 1988.) Survey and mapping of 11,500 acres, including the Boundary Line Area of old farmlands acquired by the park in 1932 (see N-36) was initiated in 1988. After the record wildfire season of 1988, park and USFS staff initiated a "Burned Area Survey"; this effort included mapping acreage burned and categorizing burned areas based on the degree of soil heating (GYCC 1989.) Only a fraction of 1% of burned acreage was categorized as high or severe, as indicated by deep soil char or recrystallization of soil materials. This data has been incorporated into the park's GIS database.

In 1988 YNP and the Gallatin National Forest entered into a cooperative agreement to share a full-time soil scientist, whose duties include completing a soils survey for the park and providing project services related to applied geomorphology and soils on cross-boundary projects. The park has made considerable progress in improving its soils database and established one

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-N-003.000
Priority: 14
Page Num: 0011

fulltime soils scientist position, who is helping complete the park's soils survey. This project has been project-funded, and is due to be completed by the end of FY95.

Description of Recommended Project or Activity

Complete a soil survey for Yellowstone, in cooperation with the SCS and USFS. The anticipated product will be basic resource information in map format accessible through the park's GIS.

Provide project services and information for site-specific needs and interpretation, such as planning and development projects, road construction projects, etc.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	52.00	1.00
	NRPP	RES	One-time	144.00	2.00
			Subtotal:	196.00	3.00
1996:	PKBASE-NR	MON	Recurring	52.00	1.00
1997:	PKBASE-NR	MON	Recurring	52.00	1.00
1998:	PKBASE-NR	MON	Recurring	52.00	1.00
			Total:	352.00	6.00
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
			Total:	0.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

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Title : MONITOR WEATHER & GLOBAL CLIMATE CHANGES

Funding Status: Funded: 46.00 Unfunded: 158.00

Servicewide Issues : N20 (BASELINE DATA)
Cultural Resource Type:
N-RMAP Program codes : A00 (Air Resources Management)
A03 (Meteorological Monitoring)

10-238 Package Number :

Problem Statement

Yellowstone is isolated from major cities or facilities that maintain records on weather related parameters. Across the park's immense acreage and variable topography, precipitation, temperature, and wind speed vary considerably. Since the park contains the headwaters of the Snake River, and major tributaries to the Missouri basin (the Yellowstone, Madison, and Gallatin Rivers), information about snowpack is used by the Soil Conservation Service (SCS) to predict water availability, flooding, fire danger, etc. in Yellowstone and downstream from the park. Researchers use climate data in the course of their biological or physical science studies. Monitoring of these basic parameters relates to national issues, such as the concern over global warming, as well as park-specific concerns such as the ungulate grazing controversy and fire management planning. Establishing base funding for this program is critical.

Available historic and current data is not as complete as researchers or managers would like. Isolated parts of the park such as the Mirror Plateau and the Bechler region are insufficiently monitored for weather parameters. Existing data varies greatly in quality and quantity from site to site. Continuous meteorological records began at Mammoth Hot Springs in 1887. Scattered observations and measurements were taken at several locations during the Army's administration of Yellowstone; the first U.S. Weather Bureau station ran from 1903-1941. There is continual need to update these records and incorporate them into existing databases and the park's GIS.

Only some of these records are accessible in SCS and National Weather Service (NWS) computer databases. The SCS should be able to update precipitation maps and develop climatic maps from data in their Computerized Forecasting System (CFS). This includes average monthly and annual temperatures, precipitation, and snowfall; average monthly depth of snow on the ground; average annual runoff; and 25-year peak flows for various ungauged drainages in and flowing into Yellowstone.

Park rangers collect daily minimum and maximum temperatures and precipitation totals and accumulations at Mammoth, Snake River,

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Lake, Tower, Old Faithful, West Yellowstone, Lamar, Bechler (summer only), and East Entrance Ranger Stations (the latter 2 are not officially affiliated with the National Weather Service).

Most of these stations started in 1948; some also recorded snowfall and snow depth. The Lamar and East Entrance stations were reactivated in 1989-90 after some years' lapse. Historical records exist for some stations no longer in existence. In 1987, automatic weather stations were installed at Mammoth, Tower, and Old Faithful. In 1989 and 1990, Remote Automated Weather Station (RAWS) units were installed at Thorofare and the Gallatin Range. RAWS records precipitation, temperature, wind direction and speed, relative humidity, and fuel moisture.

Rangers ski manual snow courses monthly from approximately January to June at 7 stations (Northeast Entrance, Lupine, Norris, Lake Camp, Twenty-one Mile, West Yellowstone, and Old Faithful). Snow courses are run by the Bureau of Reclamation at Lewis Divide, Aster Creek, and Thumb Divide. Automated data is recorded from snow pillows on 11 SNOTEL sites (Northeast Entrance, Parker Peak, Canyon, Sylvan Lake, Sylvan Road, Two Ocean Plateau, Thumb Divide, Lewis Lake Divide, Coulter Creek, Snake River, and West Yellowstone). Park staff manually ground-truth SNOTEL readings at least once each winter at the Parker Peak, Canyon, Sylvan Lake, Sylvan Road, and Two Ocean sites. Although the SCS is working towards having automated data transfer at all snow measuring locations, they anticipate needing continued manual snow readings at all existing courses in Yellowstone for the foreseeable future.

The park and the USGS monitor stream flows through stream gauges on various rivers. This program was until recent years funded by USGS; however, funding was withdrawn from some sites in the early 1980s and is not guaranteed to continue for remaining sites, despite a long-term database that exists. This information is used by researchers and managers involved in aquatic resource studies and issues. It also makes up portions of the CFS, which is used to forecast drought indexes, flooding, fire danger, and increased sedimentation. SCS has developed hydrologic models, and should be able to develop sediment and water quality models. Long-term stream gauge records exist for the Yellowstone River at Lake Outlet and at Corwin Springs (outside the park). Shorter records exist for the Lamar and Gardner Rivers, related to research done this decade in the park, Tower Creek near Tower Falls, the Madison River near West Yellowstone, and the Firehole and Gibbon Rivers near Madison Junction.

Description of Recommended Project or Activity

Continued manual and automated monitoring of existing NWS, SNOTEL, snow course, and RAWS sites.

Locate additional RAWS sites in the park's backcountry to

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help fill information gaps for fire management and research purposes. (SEE N-20.)

Consolidate NWS, Fire Weather, and other historic climatological records for easier access by numerous users.

Seek funding for continued operation of stream gauging sites.

Establish a program to monitor groundwater levels and reactivate monitoring of soil temperatures, relative to increased concern for global warming.

BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	10.00	0.30
	FED-OTHER	MON	One-time	6.00	0.00
			Subtotal:	16.00	0.30
1996:	PKBASE-NR	MON	Recurring	10.00	0.30
1997:	PKBASE-NR	MON	Recurring	10.00	0.30
1998:	PKBASE-NR	MON	Recurring	10.00	0.30
			Total:	46.00	1.20
		-----UNFUNDED-----			
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Recurring	21.00	0.60
		MON	One-time	35.00	0.00
			Subtotal:	56.00	0.60
Year 2:		MON	Recurring	20.00	0.60
		MON	One-time	21.00	0.00
			Subtotal:	41.00	0.60
Year 3:		MON	Recurring	20.00	0.60
		MON	One-time	21.00	0.00
			Subtotal:	41.00	0.60
Year 4:		MON	Recurring	20.00	0.60
			Total:	158.00	2.40

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(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

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Initial Proposal: 1995

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Title : MONITOR AND PRESERVE AIR QUALITY

Funding Status: Funded: 42.40 Unfunded: 28.00

Servicewide Issues : N14 (AIR POLLUTION)
Cultural Resource Type:
N-RMAP Program codes : A00 (Air Resources Management)
A02 (Air Quality Monitoring)

10-238 Package Number :

Problem Statement

Yellowstone is designated a class I airshed under the Clean Air Act. Class I airsheds are supposed to be the purest in the United States. Continuous monitoring of air quality is required by law to avert violations of national air quality standards, to preserve views and visibility, and to prevent health and safety risks to residents and visitors. In addition to limiting in-park sources of pollution, the park must be alert for external threats and use its influence to limit degradation of air resources in the ecosystem. Airborne particulates affect air quality and visibility hundreds of miles from the source pollutants; even Yellowstone's geographic isolation from major industrial or population centers does not prevent its air quality from being degraded. Yellowstone's air quality related values are of major importance to visitors, as evidenced by the amount of concern expressed over poor visibility and airborne particulates experienced during the 1988 wildfires.

Baseline air quality monitoring has occurred since at least 1979, when a particulate monitor was established at Tower. Beginning in 1981, visibility was monitored by telephotometer and photography, and a study was completed on sensitivity of soils and waters to acid deposition. In 1980 the park was added to the network for the National Atmospheric Deposition Program (NADP). A precipitation and dry-fall collector, Ph and conductivity meters, and weighing balance are located at the Tower Ranger Station. These have been run by various personnel over the years with varying consistency in data collection. The wet-side bucket and a rain gauge strip chart require servicing once every week by the district Resource Coordinator, who also completes the lab work to measure pH and conductivity. In off-seasons, the small number of personnel available strains the park's ability to regularly service the NADP site.

In 1986, the WASO Air Quality Division (AQD) installed a semi-automated station at Lake to monitor criteria pollutants against National Ambient Air Quality Standards (NAAQS). This includes an IMPROVE network sampler for the criteria pollutants (fine particulates, sulfates, nitrates, organic and inorganic carbon, and heavy metals); a Dasibi ozone analyser and calibrator; and

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Initial Proposal: 1995

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meteorological equipment that measures wind direction, linear and scalar wind speed, dew point, temperature, solar radiation, and precipitation. RM&VP personnel operate the site with approx. \$10,000 annual support from AQD. From 1988-1994 a transmissometer operated in the Mammoth area as part of the visibility monitoring program; this program was discontinued at the direction of the AQD. In 1989 a camera was relocated in the Yellowstone Lake area to help monitor trends in visible air quality. During 1988 with the cooperation of the AQD, the Montana Air Quality Bureau, and the EPA, particulate monitors were installed during the fires and data used to inform the public about potential safety hazards from fire smoke.

Generally, the results of all these monitoring efforts indicate that ambient air quality and visibility are of high quality. However, staff and neighbors are relatively ignorant of air quality monitoring that exist. Efforts need to be made to educate staff and others on baseline data and its applications for management programs, including interpretation, research, and fire management. An annual WASO AQD report summarizing the park's baseline air quality, incorporating data from the air quality monitoring sites, needs to be made available to park staff and interested publics.

The park must maintain staff and funding support to continue monitoring, which is difficult as increasing demands are made on staff time, and air quality is not perceived as a severe threat. The park needs to identify potential sources of in-park pollution, such as asphalt batch plants and staging sites associated with road construction projects. The best available control technology must be used to minimize pollutants from such sources. For example, the West Yellowstone area is known for inversions that occur as a result of topography. The park is concerned that auto and snowmobile emissions are affecting the air quality. Park employees also have expressed concern about effects on human health and safety, especially when working at the West Entrance adjacent to the town of West Yellowstone, Montana. Traffic backs up for 1/2-mile or more at times. Baseline information on snowmobile exhaust and its effects was called for in the park's 1990 Winter Use Plan, in order to develop future management alternatives to deal with air quality and health and safety issues.

Description of Recommended Project or Activity

Continue long-term monitoring of ambient air quality by using technology recommended and installed by the WASO Air Quality Division. Monitor external and internal threats to air quality, participate in planning efforts to prevent or mitigate such threats, and consult WASO Air Quality specialists for assistance as necessary. Monitor emissions and air quality in the West Entrance area.

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Initial Proposal: 1995

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BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	AIR-QUAL	MON	Recurring	10.60	0.50
1996:	AIR-QUAL	MON	Recurring	10.60	0.50
1997:	AIR-QUAL	MON	Recurring	10.60	0.50
1998:	AIR-QUAL	MON	Recurring	10.60	0.50
Total:				42.40	2.00
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Recurring	14.00	0.50
Year 2:		MON	Recurring	14.00	0.00
Total:				28.00	0.50

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Title : INVENTORY AND PROTECT CAVE RESOURCES

Funding Status: Funded: 16.00 Unfunded: 66.00

Servicewide Issues : N21 (CAVE RESOURCES)
Cultural Resource Type:
N-RMAP Program codes : G00 (Geologic Resources Management)
G01 (Cave Management)

10-238 Package Number :

Problem Statement

There are uncountable caves and caverns throughout Yellowstone. Most are associated with thermal activity, thus filled with thermal water or the products thereof, gases and steam. We know of few caves that are appropriate for visitor access and exploration. In the park's early history, visitors toured several small caves in the Mammoth Hot Springs area, and some of these are interpreted yet today. Several of these and other sinkholes are fenced off for safety reasons.

At least one cave in the park is significant in that it presents a rare paleontologic research opportunity, and is currently under study. This natural cave presents evidence of the historic faunal record, which can be used to compare with the faunal record of today. To date, there is no indication of archaeologic remains at the site. The Federal Cave Resources Protection Act of 1988 requires the identification, protection, and maintenance to the extent practical of significant caves on Department of Interior lands. Caves, like other natural resources in the National Park System, are afforded protection regardless of their status under the Cave Protection Act.

Yellowstone lacks a formal system of cave mapping and evaluation for significance. With so many other unique resources for the public to enjoy, caves have not been an item of high interest to either management or the public. However, an inventory and map of cave resources is needed to integrate into planning and decision-making, and this information can be used to prevent vandalism and disturbance of significant caves.

Description of Recommended Project or Activity

Continue to protect cave resources, and assess potential safety and resource protection concerns for known caves such as Anthony's Entrance, the Devil's Kitchen, and others.

Research natural and human influences on underground thermal

activities in and around the park (see N-01.)

Develop a cave inventory to determine the number and significance of caves within the boundary. No major exploration for caves is planned by the park; interested public or private caving organizations may be used to help complete the inventory and mapping.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	PRO	Recurring	4.00	0.10
1996:	PKBASE-NR	PRO	Recurring	4.00	0.10
1997:	PKBASE-NR	PRO	Recurring	4.00	0.10
1998:	PKBASE-NR	PRO	Recurring	4.00	0.10
Total:				16.00	0.40
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		RES	One-time	18.00	0.00
		MON	Recurring	10.00	0.30
		Subtotal:		28.00	0.30
Year 2:		RES	One-time	18.00	0.00
		MON	Recurring	10.00	0.30
		Subtotal:		28.00	0.30
Year 3:		MON	Recurring	10.00	0.30
Total:				66.00	0.90

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Project Statement

Last Update: 04/12/96
Initial Proposal: 1995

YELL-N-006.000
Priority: 16
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Explanation: 516 DM6 APP. 7.4 E(2)

Title : RECOVER/MAINTAIN WILD GRIZZLY BEAR POPULATION

Funding Status: Funded: 401.00 Unfunded: 1980.00

Servicewide Issues : N02 (T&E ANIMAL)
Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W03 (Threatened & Endangered Animal
Management)

10-238 Package Number :

Problem Statement

Yellowstone and the surrounding area contains one of the last wild populations of grizzly bears (*Ursus arctos horribilis*) in the lower 48 states. The grizzly is listed as threatened under the Endangered Species Act; its protection and recovery is of the highest priority. From the early days of the park's development up through the 1960s, visitors came to associate Yellowstone with bears, both grizzly and black (*Ursus americanus*.) In those days, visitors saw bears engaged in less-than-wild behaviors such as roadside begging and nightly feeding at park garbage dumps. Pioneering research done from 1959-71 (Craighead and Craighead 1972) indicated that human activities and presence affected bear behavior and distribution, causing bear habituation to human presence. A significant number of bears centered their activities near the dumps; during this period it also appeared that bears lost the skills or need to prey on live ungulates, fish, and other natural foods.

As a result of evolving NPS policy and research recommendations, Yellowstone's dumps were closed between 1968-1971. An intensive bear management program was begun in 1970, 5 years before the bear was officially listed as threatened. The aim was to restore truly wild populations of grizzly and black bears within the park, increasing public safety as well. Primary management steps then and now include monitoring of bear movements, behavior, and habitat use; managing human use in backcountry areas relative to bears; increased public awareness of bear problems and needs; better sanitation in both developed and backcountry areas; intensified law enforcement to reduce poaching; and management of nuisance bears when necessary. The emphasis is on prevention of bear-human conflicts, which benefit neither species. This program, which receives significant amounts of base and soft funding, continues to require considerable resources in staff time and dollars.

In the 1980s, efforts to study and manage the Yellowstone grizzly population continued with increased cooperation between the land managing agencies outside the park. Specific goals for population recovery in each of 6 areas are cited in the Grizzly

Bear Recovery Plan (USFWS 1993). Management is guided by the Interagency Grizzly Bear Guidelines (IGBC 1986) adopted by the Interagency Grizzly Bear Committee, which consists of the regional directors of the National Park Service, U.S. Forest Service (Regions 1, 2, and 4), and the Fish and Wildlife Service, and one representative of each of the states of Wyoming, Montana, and Idaho. Yellowstone Park's bear management program is also detailed in the final EIS for the Grizzly Bear Management Program (USDI 1983).

Research is done by or under the auspices of the Interagency Grizzly Bear Study Team (IGBST), which has since 1974 maintained studies of grizzly bear food, habits, population parameters, and trends. The park needs to periodically review its research needs and submit them for consideration by the IGBST or other research cooperators. A joint initiative between YNP and Glacier NP to investigate changes in whitebark pine (*Pinus albicaulis*) populations and their relationship to grizzlies was submitted for NRPP funding in 1992; funding appeared to be forthcoming in 1993, but was withheld with no guarantee of this study being funded in the near future. Other research funding sources are not base-funded.

As of 1994, indications were that the grizzly population in the ecosystem had met the biological goals outlined in the Recovery Plan. An interagency effort, involving park staff, was initiated to prepare a Conservation Strategy for long-term management of a viable bear population in the ecosystem. In 1995, high numbers of bear mortalities and lower production resulted in the population targets not being met. Nevertheless, the Conservation Strategy needs to be prepared and work on that continues with the park's participation. There is need to update the park's Grizzly Bear Management Plan using the considerable information gained from research and management activities undertaken since 1980.

Description of Recommended Project or Activity

Continue implementation of the approved Grizzly Bear Management Program, including preparation of an annual Bear Management Plan. Basic elements are:

1. Continue public and staff education on bear behavior, biology, and recovery, and enforcement of regulations regarding food storage, feeding of wildlife, and human use of closed or restricted areas.
2. A vigorous program of solid waste handling. Requires continual maintenance and replacement of bear-resistant trash containers; cleanup or elimination of unnatural bear attractants (such as petroleum spills); fencing of sewage treatment lagoons, grease traps, and garbage transfer stations; and monitoring or restricting activity of staff and contract employees.

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3. Patrol and cleanup of frontcountry and backcountry food attractants.
4. Cooperation with adjacent landowners and gateway communities on cleanup of attractants, such as refuse containers in Gardiner and Cooke City.
5. Maintain and reevaluate Bear Management Areas to incorporate data from 1980s-present. These significant blocks of habitat have seasonal closures or human use restrictions such as no off-trail travel or party size limits. Other areas may be restricted temporarily for specific emergency situations.
6. Control of individual problem bears. Bears which persist in entering and using developed areas (including roadsides) in spite of efforts to eliminate unnatural food attractants will be promptly removed to other areas of the ecosystem or from the park, in accordance with the Plan for Determining Grizzly Bear Nuisance Status and for Controlling Nuisance Grizzly Bears (IGBC 1986). Habituated bears using natural food sources in or near roadside or developed areas will be evaluated for potential action on a case-by-case basis. Such decisions and documentation will be made by the park's Bear Management Committee; recommendations for removal of a bear from the ecosystem will be made by the Superintendent pursuant to 50 CFR 17.40b(i) C and in consultation with the U.S. Fish and Wildlife Service Grizzly Bear Recovery Coordinator.
7. Maintain statistics and monitoring of bear observations and movements, confrontations/human injuries, property damage, natural and human-caused bear mortalities, and management actions related to preceding items. Compile annual report of bear-human conflicts ecosystemwide, for Yellowstone Ecosystem Managers' Subcommittee of IGBC.
8. Maintain a cooperative (IGBST) program of research on bears and their habitat, to gauge population status relative to recovery goals and to improve management and education programs. Provide researchers list of needed studies related to bear movements and food habits and human influences on bears and their habitat.
9. Continue development and refinement of the Cumulative Effects Model to assess the influence of human activities on bear habitat and mortality; incorporate existing data into a GIS accessible on an interagency basis. Instruct staff biologists, planners, and others in use and interpretation of CEM results.
10. Increase efforts to incorporate grizzly bear recovery into other programs in and outside park boundaries, through planning efforts and review/input into project clearance/review process.
11. Maintain equipment used for trapping and handling bears (rehabilitated bear traps, telemetry gear).

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12. Continue park efforts to rehabilitate disturbed areas: i.e., Fishing Bridge Campground, Turbid Lake road, Otter Creek service road, and Little Thumb quarry and road, as specified in conservation measures outlined in the Fishing Bridge DCP/EIS and Lake/Bridge Bay DCP/EA. Seek additional funding sources to pursue other rehab projects.

13. Revise/update Yellowstone Park's programmatic Grizzly Bear Management Plan and accompanying NEPA document(s), to reflect new data and be in accordance with the 1993 revised Grizzly Bear Recovery Plan. Participate in the ongoing effort to prepare a long-term Conservation Strategy for grizzlies in the greater Yellowstone area.

BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MIT	Recurring	75.00	1.80
	FED-OTHER	MIT	Recurring	8.00	0.30
	PKBASE-NR	PRO	Recurring	20.00	0.50
Subtotal:				103.00	2.60
1996:	PKBASE-NR	MIT	Recurring	75.00	1.80
	FED-OTHER	MIT	Recurring	8.00	0.30
	PKBASE-NR	PRO	Recurring	20.00	0.50
Subtotal:				103.00	2.60
1997:	PKBASE-NR	PRO	Recurring	20.00	0.50
	PKBASE-NR	MIT	Recurring	75.00	1.80
Subtotal:				95.00	2.30
1998:	PKBASE-NR	PRO	Recurring	20.00	0.50
	PKBASE-NR	MIT	Recurring	80.00	2.00
Subtotal:				100.00	2.50
Total:				401.00	10.00

			-----UNFUNDED-----		
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES		Recurring	85.00	0.60
	MON		Recurring	75.00	2.00
	MIT		Cyclic	125.00	0.50
	PRO		Recurring	30.00	0.90
Subtotal:				315.00	4.00

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Year 2:	RES	Recurring	325.00	6.50
	MON	Recurring	75.00	2.00
	MIT	Cyclic	125.00	0.50
	PRO	Recurring	30.00	0.90

		Subtotal:	555.00	9.90
Year 3:	RES	Recurring	325.00	6.50
	MON	Recurring	75.00	2.00
	MIT	Cyclic	125.00	0.50
	PRO	Recurring	30.00	0.90

		Subtotal:	555.00	9.90
Year 4:	RES	Recurring	325.00	6.50
	MON	Recurring	75.00	2.00
	MIT	Cyclic	125.00	0.50
	PRO	Recurring	30.00	0.90

		Subtotal:	555.00	9.90
			=====	
		Total:	1980.00	33.70

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : DOC (COVERED BY ANOTHER DOC)
ESA (ENDANGERED SPECIES ACT)

Explanation: YNP(1983), IGBC (1986), USFWS(1991)

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

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Priority: 16
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Title : RECOVER/MAINTAIN BALD EAGLE POPULATION

Funding Status: Funded: 44.00 Unfunded: 108.00

Servicewide Issues : N02 (T&E ANIMAL)
Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W03 (Threatened & Endangered Animal
Management)

10-238 Package Number :

Problem Statement

The bald eagle (*Haliaeetus leucocephalus*), national symbol of the U.S., is a species in which people take great interest and pride. It is endemic to North America and resides in Yellowstone throughout the year. Bald eagles begin nesting here in March/April exclusively in large, mature trees close to water. Because of severe winter weather, not all eagles reside in their territories year round. Pairs that leave their territories do so only for short periods of time in winter to take up temporary residence at lower elevations where food is more abundant. On these communal wintering areas, resident eagles are joined by migrant bald and golden eagles.

The bald eagle is a threatened species; it was downlisted in Yellowstone's region in 1995. National use of chlorinated hydrocarbons such as DDT, coupled with an overharvested fish population through the 1960s, led to the decline of bald eagles in Yellowstone. The ban on DDT in 1973 and major changes in Yellowstone's fisheries management designed to greatly reduce human harvest contributed significantly to the bald eagle population rebounding and expanding its range.

Efforts to recover the bald eagle are well underway. An GYE Bald Eagle Working Group was formed in 1981 to help coordinate recovery efforts among 8 agencies in the ecosystem. In 1983 the agencies prepared and signed a Bald Eagle Management Plan for the GYE, which augments the Recovery Plan. The overall objective for the GYE bald eagle population is to achieve and maintain 62 breeding pairs with a territorial occupancy rate of 85% annually. Each occupied territory should produce 1 young per year for a running 5-year average of 53 young per year. As of 1989, recovery objectives had been reached in the Greater Yellowstone ecosystem as well as in the Pacific Northwest Region. Approximately 15 pairs nest in the park.

Other objectives include maintaining nesting habitat for bald eagles and prey species within eagle home ranges, and preventing human disturbance in nesting areas. In addition to population parameters, Yellowstone regularly monitors eagle habitat, reviews

and comments on proposed construction or development plans, and monitors or restricts human activities in nesting areas. Natural events, such as the 1988 wildfires, and their effects on wildlife are studied as well as human activities.

The USFWS is reviewing the status of the bald eagle in preparation of a proposal to either reclassify (to "threatened") or delist the species. Even if the species is delisted, eagles and their habitat will continue to be closely monitored and protected in Yellowstone Park.

Description of Recommended Project or Activity

Continue monitoring population parameters to detect population changes and provide data to address recovery goals. Monitor known nesting territories, eagle occupancy and productivity even after endangered species recovery goals are met.

Continue participation in and coordination with GYE Bald Eagle Working Group to achieve management objectives and population recovery goals.

Monitor bald eagle movements and activities in nesting territories in relationship to other park plans and development proposals.

Protect bald eagles and their habitat from poaching and other human disturbance. This includes signing and monitoring eagle nests and roost sites, as necessary.

Survey entire park to identify communal bald eagle winter roost sites.

BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	11.00	0.40
1996:	PKBASE-NR	MON	Recurring	11.00	0.40
1997:	PKBASE-NR	MON	Recurring	11.00	0.40
1998:	PKBASE-NR	MON	Recurring	11.00	0.40
				=====	
Total:				44.00	1.60

Last Update: 04/12/96
Initial Proposal: 1995

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-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	One-time	16.00	0.50
	PRO	Recurring	11.00	0.30
		Subtotal:	27.00	0.80
Year 2:	MON	One-time	16.00	0.50
	PRO	Recurring	11.00	0.30
		Subtotal:	27.00	0.80
Year 3:	MON	One-time	16.00	0.50
	PRO	Recurring	11.00	0.30
		Subtotal:	27.00	0.80
Year 4:	MON	One-time	16.00	0.50
	PRO	Recurring	11.00	0.30
		Subtotal:	27.00	0.80
			=====	
Total:			108.00	3.20

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : ESA (ENDANGERED SPECIES ACT)

Explanation: USFWS BALD EAGLE PLAN FOR GYA

Project Statement
Last Update: 04/12/96
Initial Proposal: 1995

YELL-N-009.000
Priority: 15
Page Num: 0030

Title : RECOVER/MAINTAIN PEREGRINE FALCON POPULATION

Funding Status: Funded: 40.00 Unfunded: 108.00

Servicewide Issues : N02 (T&E ANIMAL)
Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W03 (Threatened & Endangered Animal
Management)

10-238 Package Number :

Problem Statement

The peregrine falcon (*Falco peregrinus*), an endangered species, resides in Yellowstone from April through October, nesting on large cliffs that overlook rivers or valleys where prey is abundant. Peregrines feed mostly on passerine birds or waterfowl and migrate hundreds, even thousands, of miles to follow migrating prey. The birds move to and from summering areas like Yellowstone to western Mexico, where the birds winter.

Widespread use of pesticides such as DDT contributed most significantly to a dramatic decline in peregrine populations, especially from the 1950s to the 1970s. The peregrine is a barometer for the overall quality of the environment, since it is high on the food chain and pesticides increase in concentration as predators consume lower trophic-level prey.

Efforts to recover the peregrine falcon are well underway in the U.S. An interagency Greater Yellowstone Ecosystem Peregrine Falcon Working Group cooperates to implement the Recovery Plan (Rocky Mountain Southwest Populations) (USDI 1984). This plan called for determining and maintaining suitable habitat, monitoring and maintaining productivity of wild pairs, and restoring breeding populations where necessary. Yellowstone had at least 4-5 historic peregrine nesting sites in the park. That plan called for preliminary surveys for the birds and suitable habitat to be done in 1982, and hacking (peregrine reintroduction) to be done from 1983-87. These actions were undertaken, and peregrines were hacked in the park starting in 1984. Beginning in 1987 surveys and monitoring of reintroduced birds revealed that suitable sites were being naturally reoccupied in the park. Thus, hacking ceased after 1988 because the habitat was thought to be saturated.

Monitoring and protecting peregrines and their habitat will continue to be a high priority in Yellowstone, but is especially critical until recovery goals are met. Opportunities to learn more about peregrines and their reaction to natural events, such as the 1988 wildfires, also require research and/or monitoring of this species. This requires censusing remote areas which are

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

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Priority: 15
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difficult and time-consuming to access. A 3-year plan to census the park was begun in 1989. Systematic monitoring ground and aerial reconnaissance surveys of likely peregrine habitat are completed by trained observers, who record evidence of peregrine presence. Known peregrine eyries in the park have increased from 1 in 1984 to 11 in 1995.

Description of Recommended Project or Activity

Continued monitoring of known and potential peregrine nesting territories, occupancy, and productivity. Produce annual reports on results for coordination with ecosystemwide recovery effort.

Continue participation in and cooperation with Peregrine Falcon Working Group to meet management objectives and population recovery goals.

Protect peregrines and their habitat from human disturbance. This requires on-going vigilance by park rangers, as falconers highly prize peregrines although their possession or sale is illegal. Also, it requires other park staff to be discreet in giving out information about peregrines and their location.

Document history of peregrine falcon and its management in Yellowstone by organizing and synthesizing available data on peregrine observations. Produce a summary paper on Yellowstone peregrines when recovery goals are met.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	10.00	0.30
1996:	PKBASE-NR	MON	Recurring	10.00	0.30
1997:	PKBASE-NR	MON	Recurring	10.00	0.30
1998:	PKBASE-NR	MON	Recurring	10.00	0.30
Total:				40.00	1.20
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Recurring	16.00	0.50
		PRO	Recurring	11.00	0.40

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		Subtotal:	27.00	0.90
Year 2:	MON	Recurring	16.00	0.50
	PRO	Recurring	11.00	0.40

		Subtotal:	27.00	0.90
Year 3:	MON	Recurring	16.00	0.50
	PRO	Recurring	11.00	0.40

		Subtotal:	27.00	0.90
Year 4:	MON	Recurring	16.00	0.50
	PRO	Recurring	11.00	0.40

		Subtotal:	27.00	0.90
			=====	
		Total:	108.00	3.60

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : ESA (ENDANGERED SPECIES ACT)

Explanation: USFWS PEREGRINE RECOVERY PLAN

Title : SUPPORT RECOVERY OF WHOOPING CRANES

Funding Status: Funded: 12.00 Unfunded: 12.00

Servicewide Issues : N02 (T&E ANIMAL)
Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W03 (Threatened & Endangered Animal
Management)

10-238 Package Number :

Problem Statement

The whooping crane (*Grus americana*) is one of the most endangered wildlife species in North America. Found only in North America, their historic range during the past 250 years extended from the Arctic coast south to central Mexico, and from the Rocky Mountain region (Utah) eastward to the Atlantic coast. Incidental historical records show whooping cranes present in western Wyoming including the GYE (Drewien 1989.) Historical evidence of whooping cranes nesting in Yellowstone does exist, but the nesting information is sketchy and does not constitute a legitimate nesting record. At present the whooping crane population in the park is extremely low and rarely if ever exceeds 2 individuals.

There are currently 2 wild whooping crane populations in North America. The only wild nesting population in existence is located in northern Alberta and southern Northwest Territories, Canada (mainly Wood Buffalo National Park). These cranes migrate across the Great Plains between Canada and the Texas coast, and winter near Corpus Christi at Aransas NWR.

The second whooping crane population is located in the GYE, centered around Gray's Lake NWR in Idaho. This population is the result of a cross-fostering experiment initiated at Gray's Lake in 1975, in an effort to start a second wild, self-sustaining flock of whooping cranes. Eggs from a captive flock in Patuxent Wildlife Research Center, MD, were placed in active sandhill crane nests at Gray's Lake. The sandhill crane adults in turn became foster parents to the whooping crane chicks. These cranes summer in Yellowstone NP, Grand Teton NP, Gray's Lake NWR, Island Park and Teton Basin in Idaho, Upper Green River, Wyoming, and the Centennial Valley, Montana. They migrate through the San Luis Valley in Colorado and winter in the Rio Grande Valley. The Gray's Lake cross-fostering experiment had limited results. Problems such as excessive mortality of adults, very limited numbers of females, and possible problems with imprinting severely hindered pair-formation. As a result, this experiment was terminated. Yellowstone did not actively participate in cross-fostering, but has and will continue to protect any

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

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Priority: 16
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whooping cranes in the park and their habitat.

Description of Recommended Project or Activity

Continue protection of whooping cranes and their habitat. Continue monitoring of whooping cranes in Yellowstone, and coordinate sightings with USFWS; participate as requested in actions proposed by the recovery team. Develop complete data base for whooping crane records, past and present. Interpret whooping crane ecology and presence in greater Yellowstone ecosystem.

BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	3.00	0.10
1996:	PKBASE-NR	MON	Recurring	3.00	0.10
1997:	PKBASE-NR	MON	Recurring	3.00	0.10
1998:	PKBASE-NR	MON	Recurring	3.00	0.10
				=====	
Total:				12.00	0.40
			-----UNFUNDED-----		
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Recurring	3.00	0.00
Year 2:		MON	Recurring	3.00	0.00
Year 3:		MON	Recurring	3.00	0.00
Year 4:		MON	Recurring	3.00	0.00
				=====	
Total:				12.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

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Priority: 16
Page Num: 0035

Compliance codes : ESA (ENDANGERED SPECIES ACT)
EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Title : RESTORE NORTHERN ROCKY MTN WOLF POPULATION

Funding Status: Funded: 646.00 Unfunded: 956.00

Servicewide Issues : N02 (T&E ANIMAL)
N17 (BIODIVERSITY)
Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W04 (Reintroduction of Extirpated
Animals)

10-238 Package Number :

Problem Statement

Of the native species found in Yellowstone at the time of its establishment as a park, the only one known to lack a viable population is the Northern Rocky Mountain wolf, a subspecies of gray wolf (*Canis lupus*). Wolves occurred in unknown but seemingly low densities in Yellowstone during the latter 1800s, although this could simply reflect a lack of records (Weaver 1978). In the early decades of the park's history, predator eradication was a common facet of wildlife management. Documented poisoning of wolves and other predators occurred at least as early as 1877 and intensified in 1914, when it appeared wolves were increasing at least in northern Yellowstone. Between 1914 and 1926, at least 136 wolves were killed in the park, including about 80 pups (ibid.) Resident wolf packs were essentially gone by the 1940s. In 1975 the NPS contracted an independent survey of the status of wolves in the park. During 12 months of intensive ground surveys, aerial flights, taped and human-initiated howls designed to elicit response, and time-lapse photo-monitoring at bait stations, no evidence was found of a viable wolf population in the park (ibid.)

The gray wolf is listed as endangered throughout the lower 48 states, except Minnesota. Under provisions of the Endangered Species Act, all federal agencies are to carry out programs to conserve listed species; NPS management policy (USDI 1988) calls for restoring native species to parks when the following criteria can be met:

1. Adequate habitat exists to support a self-perpetuating population;
2. The species can be managed so as not to pose a serious threat to persons, resources, or property outside park boundaries;
3. The restored subspecies most nearly approximates the extirpated subspecies; and

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Initial Proposal: 1995

Project Statement

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Priority: 1
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4. The species' extirpation was a result of human activities.

The USFWS updated the Northern Rocky Mountain Wolf Recovery Plan in 1987. The primary objective for recovery is to secure and maintain a minimum of 10 breeding pairs in each of 3 recovery areas, one of which is the Greater Yellowstone area. The plan stated that natural recolonization of wolves into the Yellowstone area is unlikely; thus the plan called for initiating NEPA compliance (an EIS) for reintroducing wolves as an "experimental population" under special regulations allowed by the ESA.

The potential for wolf recovery is perennially controversial. However, in 1988 Congress appropriated funds to study the likely effects of wolf reintroduction on prey species, big game hunting opportunities and on the threatened grizzly bear population, as well as to explore management zones for the area. Findings were summarized in "Wolves for Yellowstone? A Report to the United States Congress" (USDI 1990 and 1992). In FY91, Congress directed formation of a committee to produce a wolf reintroduction and management plan for YNP and the Central Idaho Wilderness Area. Subsequent to production of the report, which met with considerable controversy and a potential lawsuit, Congress directed the USFWS and the NPS to prepare an Environmental Impact Statement to assess the potential restoration of wolves to Yellowstone National Park and central Idaho. This document was completed in 1994 and approved by the Secretary of Interior (USDI 1994.)

In the latter half of 1994, special regulations were promulgated under which wolves would be managed as "nonessential experimental" in central Idaho and Yellowstone NP, and plans commenced to trap wolves in Canada and begin restoration in late 1994 and early 1995. Two new staff biologist positions were added to YNP, and an interdisciplinary team was assigned tasks to accomplish the wolf reintroduction operation, interpretation and education, media management, and long-term monitoring and management of the animals as necessary to assess the success of the effort. In January 1995, 14 wolves from Canada were transported to Yellowstone, where they were held in acclimation pens at 3 sites. The wolves were released into the wild in late March and early April of 1995. Two litters of a total of 9 pups were produced in 1995, and 2 wolves were killed during the calendar year. In January 1996, another shipment of 17 Canadian wolves were brought to Yellowstone and held in 4 acclimation sites for approx. 10 weeks. These wolves were released in April 1996. An additional 3 wolves were killed in the ecosystem between January and March 1996. Some reproduction was expected in spring of 1996.

Additional information about potential prey species is needed to help interpret the role of the wolf in Yellowstone. While the database on park elk populations is substantial, quantitative information is lacking on mule deer and moose populations as well as other species with whom wolves would likely interact. Funding sources for wolf-related research are not apparent at this time.

Project Statement
 Last Update: 04/12/96
 Initial Proposal: 1995

YELL-N-011.000
 Priority: 1
 Page Num: 0038

Description of Recommended Project or Activity

Promote public understanding of wolves and their role, by continuing interpretive and environmental education efforts inside and outside the park, and by providing accurate information to interested individuals, organizations, and media representatives.

Restore wolves to Yellowstone, in cooperation with USFWS, using adaptive techniques outlined in 1994 EIS. Monitor short and long-term success of efforts, and modify techniques as necessary to accomplish population restoration. Time frame: 1994-2005; project is only 1/3 base funded.

Seek funding and scientists to study effects of wolves on ungulate prey base (i.e., elk, moose, mule deer) and on other potentially affected resources.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	NRPP	MIT	One-time	188.00	2.50
	PKBASE-NR	MIT	Recurring	104.00	2.00
	NRPP	PRO	One-time	42.00	2.80
			Subtotal:	334.00	7.30
1996:	PKBASE-NR	MIT	Recurring	104.00	2.00
1997:	PKBASE-NR	MIT	Recurring	104.00	2.00
1998:	PKBASE-NR	MIT	Recurring	104.00	2.00
			Total:	646.00	13.30
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Recurring	30.00	0.50
		PRO	Recurring	35.00	0.70
			Subtotal:	65.00	1.20
Year 2:		MON	Recurring	220.00	3.00
		PRO	Recurring	77.00	3.50
			Subtotal:	297.00	6.50

		Project Statement	YELL-N-011.000
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Year 3:	MON	Recurring	220.00	3.00
	PRO	Recurring	77.00	3.50

		Subtotal:	297.00	6.50
Year 4:	MON	Recurring	220.00	3.00
	PRO	Recurring	77.00	3.50

		Subtotal:	297.00	6.50
			=====	
		Total:	956.00	20.70

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EIS (ENV. IMPACT STATEMENT)
 : ESA (ENDANGERED SPECIES ACT)

Explanation: EIS COMPLETED 1994

Project Statement
Last Update: 04/10/96
Initial Proposal: 1995
YELL-N-012.000
Priority: 16
Page Num: 0040

Title : DESIGNATE/MANAGE SPECIES OF SPECIAL CONCERN

Funding Status: Funded: 20.00 Unfunded: 1764.00

Servicewide Issues : N02 (T&E ANIMAL)
N03 (T&E PLANTS)

Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W03 (Threatened & Endangered Animal
Management)

10-238 Package Number :

Problem Statement

Under NPS policy, natural processes are to be protected and individual species are not generally singled out for management unless directed under the Endangered Species Act (ESA) or other specific legislation. Even then, recovery plans and programs often incorporate where possible the ecosystem concept to protect listed species within national park boundaries. Yellowstone currently has 5 present or potentially existing listed species within its jurisdiction (see N-07,08,09,10,11).

A number of other species are categorized by USFWS as candidate species: category 1, 2, or 3 for which information is either insufficient or sufficient to support listing, or which have been considered but are not currently listed due to the species' apparent extinction or abundance. In addition, the surrounding states of Idaho, Montana, and Wyoming and the Forest Service regions that manage land in the GYE also maintain lists of species each considers 'special concern' or 'sensitive' (Clark et al. 1989).

NPS policy calls for parks to identify plant and animal species considered to be rare or unique to a park and to map their distribution within the park. Management actions for their protection and perpetuation shall be incorporated into the natural resource management plan (USDI NPS 1988). Although the criteria and guidelines are well established for officially listed biota, this is not the case for other rare and/or unique species. These 'species of special concern' may be so for a variety of reasons. Currently no formalized procedure exists by which to evaluate and list additional individual species as sensitive. Yellowstone has not formally identified any species of special concern, though various specialists refer to particular plant and animal species as deserving this status and associated added management attention. Some consideration criteria have been discussed and include:

1. any unique or special concern species listed by the surrounding states of Montana, Idaho, and Wyoming with population

distributions in Yellowstone;

2. low population numbers either inside the park or low total population numbers in the GYE;

3. disjunct, genetically isolated populations, or endemic populations;

4. species with low reproduction or rearing/nesting success rates;

5. species intolerant of human disturbances especially during reproduction and/or rearing stages of their life cycles;

6. any species restricted spatially or temporally to more marginal habitat because of external or unnatural threats;

7. any species that is a candidate species for listing by the USFWS; and

8. any park species where incomplete biological information exists on its viability.

9. species listed in Migratory Non-Game Birds of Management Concern in the U.S., published by the USFWS.

Description of Recommended Project or Activity

Formalize a procedure and criteria for determining 'species of special concern to the park. Identify information gaps on distributions and ecology of T&E and Special Concern species. Track T & E and Special Concern species, in cooperation with the Natural Heritage Program of the Nature Conservancy, and incorporate data into park's GIS. Interpret T&E and special concern species as appropriate; share information with other cooperators and managers.

BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	5.00	0.10
1996:	PKBASE-NR	MON	Recurring	5.00	0.10
1997:	PKBASE-NR	MON	Recurring	5.00	0.10
1998:	PKBASE-NR	MON	Recurring	5.00	0.10

Project Statement
 Last Update: 04/10/96
 Initial Proposal: 1995

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		Total:	20.00	0.40
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	Cyclic	350.00	1.00
	MON	Recurring	75.00	2.00
	PRO	Recurring	16.00	0.50
		Subtotal:	441.00	3.50
Year 2:	RES	Cyclic	350.00	1.00
	MON	Recurring	75.00	2.00
	PRO	Recurring	16.00	0.50
		Subtotal:	441.00	3.50
Year 3:	RES	Cyclic	350.00	1.00
	MON	Recurring	75.00	2.00
	PRO	Recurring	16.00	0.50
		Subtotal:	441.00	3.50
Year 4:	RES	Cyclic	350.00	1.00
	MON	Recurring	75.00	2.00
	PRO	Recurring	16.00	0.50
		Subtotal:	441.00	3.50
		Total:	1764.00	14.00

(Optional) Alternative Actions/Solutions and Impacts
 (No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6, 7.4 (E2) (B4)

Title : MANAGE FISHERIES & RECREATIONAL ANGLING

Funding Status: Funded: 715.00 Unfunded: 280.00

Servicewide Issues : N02 (T&E ANIMAL)
N19 (CONSUMPT USE)
Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W02 (Native Aquatic Animal Management & Monitoring)

10-238 Package Number :

Problem Statement

More than 150 lakes in YNP comprise approximately 107,000 surface acres - 94% of which can be attributed to Yellowstone, Shoshone, Lewis, and Heart Lakes. Hundreds of streams make up over 2,650 miles or 5,000 acres of running water. When explorers first visited Yellowstone, about 17 lakes contained endemic fish populations and 135 were barren. Early in the park's history fish were transplanted into new locations, intensively managed at hatcheries, and non-native species introduced. Between 1881 and 1980, over 310 million fish were stocked in Yellowstone. Today about 40 lakes have fish populations; the remainder were either not planted or have restored themselves to an original barren condition (Jones 1981). The history of fisheries management in YNP includes: 1) introductions of non-natives into fishless waters (1881-1909); 2) "put, grow, and take" practices for native and non-native species (1920-1955); 3) limitation on fish planting (1936-1954); 4) increased research on fish ecology and angler catch (1949-1961); 5) restoration and preservation of native species, subspecies, and genotypes, and major revisions in fisheries regulations and management (post 1955).

Despite changes in species composition and distribution, NPS policies have prevented large-scale habitat degradation. Water diversions, water pollution, and other such impacts on aquatic ecosystems have rarely occurred here. Thus, Yellowstone contains one of the most significant, near-pristine aquatic ecosystems found in the United States. Predators on fish include threatened grizzly bears, endangered bald eagles, black bears, otters, mink, ospreys, pelicans, loons, grebes, mergansers, diving ducks, terns, gulls, kingfishers, and herons.

Native to park waters are 13 species of fish: Arctic grayling, westslope and Yellowstone cutthroat trout, 4 suckers (Utah, longnose, mountain, and June sucker), 4 minnows, the redbside shiner, and the mottled sculpin. Their ranges and densities have been substantially altered during the past century due to exploitation, introduction of exotic species, and natural factors. Non-native species are the rainbow trout, brown trout,

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Initial Proposal: 1995

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brook trout, lake trout, and lake chub. All but the latter resulted from stocking programs, but non-native trout have become very important to the angler experience.

As a carryover from the long history of fish stocking and transplanting, the park historically hosted a resident unit of the USFWS, which has a long history of cooperating with the NPS on fisheries monitoring and management. The Fisheries Assistance Office (FAO) recommended management based on their data on fisheries populations and angler use patterns. A Volunteer Angler Report (VAR) system attached to a mandatory, free park fishing permit has provided data on angler use, exploitation levels, and the effectiveness of and compliance with park fishing regulations. Rangers modified and enforced fishing regulations, and interpret the fisheries program to the public. In 1994, Yellowstone was permitted to begin charging a fee for park fishing permits, with the revenues being used for administration of the permits and other fisheries management activities, such as monitoring and enforcement.

Of the more than 2.5 million annual visitors to Yellowstone, approx. 17% are anglers. Although about 100 waters are commonly fished, 96% of the angling is concentrated on 9 waters. Angling is an anomaly in a park where the primary purpose is to preserve natural environments and native species in ways that maintain natural conditions. As in many other parks, it is often pointed out that consumptive use of the fishery resource contradicts policies that prevent harvest of other animals, trees, or minerals. Yet fishing has been a major visitor activity here for over 100 years. Fly fishing is a major industry in the GYE; park anglers are estimated to spend millions of dollars annually. Angler groups have supported management actions such as closing fishing from Fishing Bridge in the early 1970s, and have helped fund research on aquatic systems.

Years of monitoring and research on Yellowstone Lake indicate that angler harvest had a negative impact on the fishery as it reached excessive levels (Gresswell and Varley 1988). In the 1970s and 80s, increasingly restrictive regulations helped to restore population numbers and age structure. Special regulations include limits on number and size of fish taken, and limits on gear used (barbed hooks, flies only, etc.). The park has also progressed toward catch-and-release fishing where feasible, to provide recreational opportunities while limiting the human consumption of park resources.

The objectives of fisheries management in the park are to:

1. Manage aquatic resources as an important part of the park ecosystem.
2. Preserve and restore native fishes and their habitats.
3. Provide anglers with the opportunity to fish for wild fish in a natural setting.

In addition to monitoring angling levels, non-consumptive use of aquatic resources was sampled for 11 consecutive years at Fishing Bridge and LeHardy Rapids. Total visitors at LeHardy, where spawning cutthroat can be observed jumping the rapids, were estimated to be 133,487. Visitors at Fishing Bridge, where fish can be seen in the waters below, reached a record 288,928 in 1988 (USFWS 1989). Observing fish in their natural habitat is obviously a popular activity even for non-anglers.

The USFWS FAO regularly monitored fish habitats and populations. Major program components have included 1) a long-term program to understand the ecology of Yellowstone Lake and its associated cutthroat trout population; 2) backcountry stream and lake surveys for baseline chemical, physical, and biological characteristics, preparation of watershed-level hydrographic maps, and evaluation of the habitats' ability to support fish; and 3) participation in sediment studies, stream classification, watershed inventory and mapping done throughout the 1980s. Other recent projects include: 4) spawning trout surveys related to fish production and grizzly bear use of this food source; 5) monitoring effects of fire activity and suppression (fire retardants) in 1988 on fish populations and aquatic habitat association; 6) restoration and monitoring of Arnica Creek, a tributary to Yellowstone Lake after an illegal transplant of non-native brook trout discovered in 1985; 7) cooperation in the collection of Yellowstone cutthroat trout brood stock in the Yellowstone River, for use in restoring native trout elsewhere in Wyoming; 8) supporting to the degree possible visiting researchers doing a variety of aquatic resource-related research; and 9) collection of eggs and sperm from Lewis Lake lake trout for in efforts to restore these trout to their native waters in Lake Michigan, where hatchery-raised fish have failed to thrive. Ironically, a non-native species planted 100 years ago may be restored elsewhere because it was preserved in Yellowstone.

In 1994, non-native lake trout were discovered in Yellowstone Lake, the stronghold of the native cutthroat trout. An experimental control and information efforts was initiated in 1994-96 (see N-13.001).

The fluvial form of arctic grayling and the westslope cutthroat trout are the rarest fish in Yellowstone. The former was proposed for listing as an endangered species and, in 1994, based on an ongoing management and restoration effort in YNP and southern Montana, the USFWS determined listing to be "warranted but precluded at this time." Both of these species are of high interest ecosystemwide, and require additional attention be paid in inventory, monitoring, and possibly restoration efforts.

USFWS staff have also collected baseline data on water quality and water levels related to other resource concerns, such as water rights and pollution levels. They have provided logistical, administrative, and informational assistance to independent cooperative researchers working on aquatic-related studies, and publish an annual report.

Project Statement

YELL-N-013.000

Last Update: 04/12/96

Priority: 12

Initial Proposal: 1995

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The cooperative effort at fisheries management between the NPS and the USFWS expired in 1995. Due to a shift in USFWS priorities and program emphasis, the USFWS-FAO in YELL will be closed at the end of FY 1996. Historically, the USFWS FAO completed all technical fisheries monitoring and management activities, while the NPS was responsible for establishing, interpreting, and enforcing fishing regulations. Beginning in FY 1997, the NPS must assume responsibility for routine monitoring and management activities. YNP has been preparing to replace this fisheries management staff and funding.

Description of Recommended Project or Activity

Continue the fisheries management program, replacing the staff formerly provided by the the USFWS under a cooperative agreement with NPS funding and staff expertise, on or before the USFWS vacates YELL at the end of FY 1996.

Maintain priority monitoring program for Yellowstone Lake and River, including operation of Clear Creek, use of the VAR, and fall gillnetting to sample cutthroat trout. Maintain other long-term monitoring efforts as time and staff ability allow.

Restore fluvial arctic grayling to park streams as appropriate, in cooperation with State of Montana and USFWS. Evaluate potential for stocking grayling into the upper Firehole and upper Gibbon rivers and Canyon Creek by completing plan and EA in 1996 for potential field work in 1997.

Assess use of VAR to monitoring human use of park fisheries and determine appropriateness to continue; the VAR needs periodic calibration with manual creel censuses. Review backcountry stream and lake survey program (approx. 70% done) and determine whether additional inventory or monitoring work is appropriate.

Model the population dynamics of Yellowstone cutthroat trout, Yellowstone Lake hydroclimatology, and watershed dynamics.

Seek base funding for monitoring of water levels by stream gauging stations and water quality.

Continue public education concerning fisheries management and protection. Maintain enforcement of fishing regulations through boat and road patrol contacts.

Evaluate options to restore westslope cutthroat trout in park streams, in cooperation with USFWS and surrounding states.

Continue cooperative program with State of Wyoming to collect cutthroat brood stock from Yellowstone River for restoration efforts in other native cutthroat streams.

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-N-013.000
Priority: 12
Page Num: 0047

BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	FEE-REV	INT	Recurring	45.00	1.50
	PKBASE-NR	MIT	Recurring	90.00	0.30
	FEE-REV	PRO	Recurring	200.00	4.50
	FEE-REV	ADM	Recurring	110.00	0.00
Subtotal:				445.00	6.30
1996:	PKBASE-NR	MIT	Recurring	90.00	0.30
1997:	PKBASE-NR	MIT	Recurring	90.00	0.30
1998:	PKBASE-NR	MIT	Recurring	90.00	0.30
Total:				715.00	7.20
			-----UNFUNDED-----		
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Recurring	50.00	1.00
		PRO	Recurring	20.00	1.00
Subtotal:				70.00	2.00
Year 2:		MON	Recurring	50.00	1.00
		PRO	Recurring	20.00	1.00
Subtotal:				70.00	2.00
Year 3:		MON	Recurring	50.00	1.00
		PRO	Recurring	20.00	1.00
Subtotal:				70.00	2.00
Year 4:		MON	Recurring	50.00	1.00
		PRO	Recurring	20.00	1.00
Subtotal:				70.00	2.00
Total:				280.00	8.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Project Statement
Last Update: 04/12/96
Initial Proposal: 1995

YELL-N-013.000
Priority: 12
Page Num: 0048

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Project Statement

YELL-N-013.001

Last Update: 04/12/96
Initial Proposal: 1995

Priority: 3
Page Num: 0049

Title : MITIGATE LAKE TROUT PLANTED IN YELLOWSTONE LAKE
Sub-title:

Funding Status: Funded: 83.00 Unfunded: 620.00

Servicewide Issues : N04 (NON-NAT ANIMAL)
N17 (BIODIVERSITY)

Cultural Resource Type:

N-RMAP Program codes : W00 (Wildlife Management)
W05 (Exotic Animal Management)

10-238 Package Number :

Problem Statement

On July 30, 1994, a park visitor caught a 1-pound lake trout (*Salvelinus namaycush*) in Yellowstone Lake. Subsequent investigations during the summer and fall of 1994 resulted in catching fish of at least 3 age classes, confirming the presence of a lake trout population in the park's largest lake. The lake trout is non native to Yellowstone, and poses a significant threat to the lake's native Yellowstone cutthroat trout (*Onchorynchus clarki bouveri*) and to the food chain associated with the native fish. Grizzly bears and bald eagles, protected under the Endangered Species Act, as well as ospreys, pelicans, otters, black bears, and numerous other waterfowl prey or scavenge on the native trout, which spawns in small, shallow tributary streams and frequents the surface waters of the deep lake. The non-native lake trout lives and spawns in deep waters, making it generally unavailable to many of the piscivores. Lake trout are also carnivorous, and may grow to a size of 30-40 pounds. Early in Yellowstone's history lake trout were planted into several historically fishless lakes as well as Heart Lake, where they compete with and prey upon the native cutthroat trout.

The fishery in Yellowstone Lake underwent a considerable amount of manipulation earlier in this century; however, most of those efforts involved using the native trout for transplant into other regional waters. The Yellowstone cutthroat was, until this discovery, thought to be the only trout in the lake, and was thought to be well on the way to recovery from decades of manipulation and angler overharvest.

Considerable effort was expended in 1994 and 1995 to assess the extent of the lake trout presence in Yellowstone Lake. The preliminary data clearly suggests presence of a breeding population, and potential lake trout spawning habitat, although not yet determined, is thought to be extensive. In February of 1995, the park invited fisheries experts from the U.S. and Canada to convene to discuss this issue. After reaffirming the threat to the ecosystem, the experts then went on to discuss information needs and management options to mitigate the threat. Initial

Project Statement

YELL-N-013.001

Last Update: 04/12/96
Initial Proposal: 1995

Priority: 3
Page Num: 0050

projections are that the park must prepare for significant changes in its fisheries management program for Yellowstone Lake, in order to minimize the effects of non-native lake trout; elimination of the non-native was not thought to be a reasonable outcome. The park incorporated recommendations for maintaining and enhancing the existing Yellowstone Lake monitoring program, and for initiating an experimental lake trout control program into special funding requests and long-term program plans.

Description of Recommended Project or Activity

Educate park and area staff and visitors about the threat posed by the introduction of non-native fish into Yellowstone Lake and its implications for numerous other native species, including two threatened predators (grizzly bears and bald eagles). Enforce park fishing regulations to require anglers to remove and request reporting of lake trout in Yellowstone Lake.

Investigate extent of lake trout population and their spawning habitat in Yellowstone Lake. Determine origin of lake trout found in Yellowstone Lake, through laboratory analysis (DNA sampling, scale sampling, and other means if appropriate).

Experiment with control methods and locations recommended by McIntyre Committee. Methods rely primarily on deepwater gillnetting using different mesh sizes at different depths and selected "choke points" on Yellowstone Lake. The efficacy of catch techniques at locations and times and the by-catch of native cutthroat trout must be evaluated prior to determining long-term control programs.

Prepare plan of remedial actions, incorporating recommendations that result from #3 above, anticipated at the end of the field season in 1996.

BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	FEE-REV	MON	Recurring	60.00	1.30
	PKBASE-NR	MIT	Recurring	23.00	0.20
			Subtotal:	83.00	1.50
			Total:	83.00	1.50

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

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Priority: 3
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-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	Recurring	100.00	1.50
	MON	Recurring	70.00	1.00
	MIT	One-time	20.00	0.00
		Subtotal:	190.00	2.50
Year 2:	MIT	Recurring	100.00	1.50
	MON	Recurring	70.00	1.00
	MIT	One-time	20.00	0.00
		Subtotal:	190.00	2.50
Year 3:	MIT	Recurring	70.00	1.00
	MON	Recurring	50.00	1.00
		Subtotal:	120.00	2.00
Year 4:	MIT	Recurring	70.00	1.00
	MIT	Recurring	50.00	1.00
		Subtotal:	120.00	2.00
			=====	
Total:			620.00	9.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Title : RESEARCH & PROTECT RIPARIAN & WETLAND RESOURCES

Funding Status: Funded: 90.00 Unfunded: 774.00

Servicewide Issues : N17 (BIODIVERSITY)
N18 (VIS USE-BCTRY)

Cultural Resource Type:
N-RMAP Program codes : Q00 (Water Resources Management)

10-238 Package Number :

Problem Statement

Scientists and park user groups are increasingly interested in the state of YNP's riparian resources. In the early 1980s the Montana DFWP and local chapters of Trout Unlimited voiced concern that erosion and stream sedimentation from the park was affecting fishing in the Yellowstone River north of the park. They contributed funds for a sediment study done by NPS and USFWS staff. Results indicated that large point sources, rather than overland flow from alleged overgrazed areas, were responsible for the major portion of sediment in the Yellowstone and its major tributaries. Subsequently, a potential erosion mapping project was done to more accurately identify point sources on the northern range (Shovic et al. 1988). This was done concurrently with comparisons of erosion on grazed and ungrazed upland winter range sites (Lane 1990).

Riparian research and monitoring is of major concern, especially as relates to the northern range controversy (see N-35). Recent projects include a survey of beaver distribution in YNP (Consolo and Hansen 1993; Consolo-Murphy and Tatum 1995); willow distribution, utilization, and response to fire; classification of wetland communities of the northern range (Chadde, Hansen, and Pfister 1988); stream classification and interpretation on the northern range; a study of moose ecology, food habits and preferences (Tyers pers. commun.); bird distribution in willow communities; and effects of fire on stream riparian ecosystems. A Riparian Review Committee was established in 1989 to assess integrated research and management needs for riparian resources. The group, primarily non-NPS professionals with expertise in riparian resources, formulated 3 system-level hypotheses to serve to focus individual research projects. Major progress on this topic requires significant additional funding.

The legal responsibility to protect wetlands is strong; the U.S. government restricts actions in wetlands, requires permits for such actions as dredging or filling them, and has a policy of no net loss of wetlands to which the park must contribute. Thus, projects such as park road reconstruction require identification of wetlands, assessment of impacts to those habitats, and avoidance or mitigation of loss of wetlands. The park lacks a

Last Update: 04/10/96
Initial Proposal: 1995

Project Statement

YELL-N-014.000
Priority: 9
Page Num: 0053

comprehensive wetlands map database of sufficient scale to use in determining impacts and mitigation needed for construction and development projects.

Protection of riparian zones occurs in the form of visitor use restrictions, primarily on fishing and boating activities. Yellowstone has at present no designated wilderness nor wild and scenic rivers; its resources would qualify for designation if it were proposed. A wilderness study and recommendation were prepared in the early 1970s but were never acted upon (see I-04). In 1988 at a national rivers conference, NPS and USFS representatives indicated that they should participate in assessing rivers on their lands for eligibility under wild or scenic designation. An initial determining of eligibility for park rivers has been prepared, but no detailed surveys or proposals are scheduled as a priority action.

Park rivers were closed to boating in 1950 to limit affects on fish and other users. Boating groups approached the park and questioned this use restriction. In 1985-86 park staff analyzed and ranked park rivers and the likely effects boating would have on endangered and other birds and mammals, vegetation, thermal features, sanitation, other users, and risk to boaters. Public comment on the issue strongly favored continuing the restriction on boating park rivers; this was approved in 1988. Motorized and non-motorized boating are allowed in the park, motors on Yellowstone and Lewis Lakes and non-motorized craft on all but a few closed waters listed in 36 CFR 7.13.

There is a well-established system of fisheries management in the park, (see N-13). However, in recent years there has been concern over the impacts of users along stream banks and on the disturbance of birds and wildlife around water. A few areas are restricted to minimize user conflicts and protect riparian zones; 6 miles of the Yellowstone River through Hayden Valley are closed to fishing in order to minimize wildlife disturbance and protect views along the wide open valley. Several islands in Yellowstone Lake are restricted in boat approach or landing in order to protect nesting birds. However, due to the dispersed nature of recreation in riparian zones, it is very difficult to control streamside access and impacts. In 1990, a 4-year study of user impacts on the Lewis River Channel was initiated. Results from this and other such projects could result in management activities designed to further protect riparian resources.

Description of Recommended Project or Activity

Seek funding or cooperative opportunities to pursue an integrated riparian research program and develop long-term monitoring regimes

Identify and map wetland habitats, assess impacts to wetlands

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Initial Proposal: 1995

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Priority: 9
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from in-park developments and other uses, and mitigate adverse effects through avoidance, project design, restoration, or other appropriate means.

Maintain historic photo series to document changes in riparian zones.

Continue parkwide sampling survey of beaver distribution (completed in 1989 and 1994) on 5-year cycle; produce summary report and add to long-term database in computer and/or GIS format.

Manage boating on park lakes, where permitted, and on the Lewis Channel, and protect riparian zones through careful planning and design of trail reroutes, backcountry campsites, and/or other facilities.

Complete appropriate suitability studies or compliance documents, if funded, for designating park rivers as Wild or Scenic.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	RES	One-time	65.00	0.00
	SVC-OTHER	MON	Recurring	25.00	0.00
			Subtotal:	90.00	0.00
			Total:	90.00	0.00
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		PRO	Recurring	16.00	0.50
		RES	One-time	165.00	0.50
			Subtotal:	181.00	1.00
Year 2:		MON	Recurring	15.00	0.30
		PRO	Recurring	16.00	0.50
		RES	One-time	165.00	0.50
			Subtotal:	196.00	1.30
Year 3:		PRO	Recurring	16.00	0.50
		RES	One-time	165.00	0.50
		MON	Recurring	15.00	0.30
			Subtotal:	196.00	1.30

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Initial Proposal: 1995

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Priority: 9
Page Num: 0055

Year 4:	PRO	Recurring	16.00	0.50
	RES	One-time	165.00	0.50
	MON	Recurring	20.00	0.60

		Subtotal:	201.00	1.60
			=====	
		Total:	774.00	5.20

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Project Statement
Last Update: 04/10/96
Initial Proposal: 1995
YELL-N-015.000
Priority: 13
Page Num: 0056

Title : MONITOR/PROTECT WATER QUALITY & QUANTITY

Funding Status: Funded: 188.00 Unfunded: 200.00

Servicewide Issues : N11 (WATER QUAL-EXT)
N10 (MINRL/GEOTHERM)
Cultural Resource Type:
N-RMAP Program codes : Q00 (Water Resources Management)
Q01 (Water Resources Management)

10-238 Package Number :

Problem Statement

The park's water resources as a whole are in excellent condition. However, external and internal threats could affect its near-pristine waters and interrelated geothermal, wildlife, and fishery resources; thus baseline data is critical for protecting water resource values.

Approximately 16% of YNP's watershed is located outside park boundaries. Large areas are presently protected by wilderness designation; however, about 5% remains unprotected. Potential threats come from mining, oil and gas exploration, logging, and other developments. The most serious external impact comes from mine tailings leaching into Soda Butte Creek upstream from YNP (see N-46). Potential also exists for depletion of groundwater resources associated with oil and gas or geothermal drilling (N-01), and for groundwater pollution from proposed external mine operations. Internal impacts include involuntary discharge of untreated wastewater; sporadic hazardous materials spills, primarily petroleum products along roadways; occasional leaking of underground petroleum storage tanks; increased sediment loading from road construction and maintenance operations; and pollution from boat operations. Other concerns are leaching from abandoned dumps; polluted run-off from roadways and parking areas; pollution from pesticide use; giardia and other organisms transmitted by inadequate human sanitation; and developments in historic floodplains.

Stream discharge data is available from USGS gauging station records for the Yellowstone, Madison, Snake, Gibbon, Firehole, Lamar, and Gardner Rivers; some stations represent a 60-year record. A lake level monitoring station exists on Yellowstone Lake. The park has lost funding for operation of gauging stations on some rivers. Stream flow data was incorporated into the USGS WATSTORE database.

The USFWS has collected chemical and biological data on over 600 streams and 100 lakes; 200 streams and 40 lakes are scheduled for future baseline surveys. The park's 5 major lakes and 10 major rivers are sampled semi-annually for water chemistry with

additional sampling of aquatic invertebrates at varying intervals. Additional monitoring sites were established after the fires in 1988. Funding for baseline monitoring fluctuates, jeopardizing its continuance. USFWS water chemistry data was incorporated into the EPA's STORET data base. A stream classification survey initiated in 1988 provides information on stream profiles and other characteristics. For long-term monitoring information it must increase in scope.

Maintenance staff monitor 27 water and 26 wastewater treatment systems (4 major water treatment plants and 5 major wastewater treatment systems) via 50 test wells to evaluate surface and groundwater quality according to EPA requirements. Most of the systems are over 20 years old with out-dated technology and equipment, and operational problems occur. Park use and seasonal demands on water and sewer systems have increased. Monitoring has identified the need for back-up electrical power due to frequent power failures, additional treatment and storage, and ongoing facility operator training and equipment support.

Other water resource data periodically obtained by the USGS, EPA, and other studies have been difficult to retrieve and used varying methods, recorded and unrecorded, thus have been of limited value. Backcountry waters have never been surveyed for giardia; however, safety information is made available to visitors and park staff. Thermal waters likely host other organisms that pose health problems to users; in the 1980s staff monitored thermal waters for *Naegleria fowleri*, which can cause amoebic meningitis. The organism has not been reliably identified in YNP, but safety warnings have been posted at regularly-used sites where associated species have been found. Additional information needs include more on contaminants that do or may exist, and how these substances affect the park's natural resources.

The park lacks a comprehensive strategy for inventory, monitoring, research, and management of water resources. In October 1994, the park received a Baseline Water Quality Data Inventory and Analysis Report, documenting results of surface water quality data from 5 EPA databases. The report provides: a complete inventory of all retrieved water quality parameter data, water quality monitoring stations, and the entities who have collected data in and around the park; descriptive statistics and graphical plots of data characterizing period-of-record, annual, and seasonal tendencies and trends; a comparison of water quality data to EPA and WRD screening criteria; and an analysis of what servicewide I&M program water quality parameters have been measured. Park staff need to review this report and incorporate its analyses into recommended actions for additional inventory and monitoring programs.

Last Update: 04/10/96
Initial Proposal: 1995

Project Statement

YELL-N-015.000
Priority: 13
Page Num: 0058

Description of Recommended Project or Activity

Review Water Quality Data Inventory and Analysis Report and determine additional inventory, monitoring, and/or management needs based on this summary. Incorporate into Natural Resources Damage Assessment and design program to insure that baseline data is available by which to assess impacts to water resources if/when accidents or natural changes appear to occur.

Continue monitoring and upgrading water and sewage treatment facility operations to meet increased demands. Provide ongoing facility operator training and equipment support.

Develop and implement operational guidelines to minimize stream sedimentation associated with road maintenance and construction projects. Identify and use disposal areas for soil and rock removed from roadways during routine and emergency road maintenance operations.

Participate in other planning efforts to minimize impacts from oil and gas development, mining, geothermal development, wastewater treatment, logging, and acid rain.

Solicit technical assistance from the Water Resources Division to prepare a Water Resource Management Plan Scoping Study. The scoping report would summarize available water resources information and contacts, identify water resources-related management issues and information gaps, assess the need for a comprehensive Water Resources Management Plan (WRMP), and identify a mechanism for completing a WRMP.

Review USGS reports on groundwater resources and determine appropriate monitoring efforts that should be undertaken. Update the water resource data base, using STORET or other computerized system recommended by RMR/WRD. Incorporate existing data into the GIS where feasible.

Seek funding to expand chemical and biological surveys in streams and lakes, particularly in heavily-used backcountry areas, lakes with motor boat operations and popular "hot-pots".

Monitor existing and proposed water uses within and adjacent to the park for potential injury to park resource values and water rights (See N-16).

BUDGET AND FTEs:

	Source	Activity	FUND Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	47.00	1.50
1996:	PKBASE-NR	MON	Recurring	47.00	1.50

Last Update: 04/10/96
Initial Proposal: 1995

Project Statement

YELL-N-015.000
Priority: 13
Page Num: 0059

1997:	PKBASE-NR MON	Recurring	47.00	1.50
1998:	PKBASE-NR MON	Recurring	47.00	1.50
Total:			188.00	6.00

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	Recurring	50.00	1.50
Year 2:	MON	Recurring	50.00	1.50
Year 3:	MON	Recurring	50.00	1.50
Year 4:	MON	Recurring	50.00	1.50
Total:			200.00	6.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(4)

Project Statement

YELL-N-016.000

Last Update: 04/10/96
Initial Proposal: 1995

Priority: 16
Page Num: 0060

Title : PRESERVE FEDERAL WATER RIGHTS

Funding Status: Funded: 660.00 Unfunded: 115.50

Servicewide Issues : N12 (WATER FLOW)
N13 (WATER RIGHTS)

Cultural Resource Type:

N-RMAP Program codes : Q00 (Water Resources Management)
Q02 (Water Rights Management)

10-238 Package Number :

Problem Statement

In the 1980s and early 1990s the park, with the assistance of the WASO Water Resources Division, has worked extensively on three water rights issues : 1) defining Federal reserved water rights for YNP, 2) negotiating appropriative water rights on lands acquired in a 1926 boundary extension, and 3) monitoring and preventing potential injury to YNP water rights or resource values by water use in or outside the park.

In 1979, the U.S. was joined in the adjudication of the Big Horn River System in Wyoming. The Big Horn Basin includes the Middle Creek drainage on the east side of YNP. The District Court awarded the U.S. the natural flow of Middle Creek and its tributaries and the natural water levels in two unnamed lakes in the drainage. The Decree stated that no further quantification of these rights shall be required. The U.S. also claimed the amount of ground water required to maintain YNP in its natural condition. The Court found that such a water right could not be adequately described and quantified and did not include such a right in its Decree. However, the Court provided that nothing in the Decree shall be deemed to bar the U.S. from bringing action in the future to protect YNP from ground water withdrawals detrimental to the natural condition of YNP.

The headwaters of all major park rivers except the Yellowstone lie inside the Wyoming portion of YNP upstream from all other users. No additional Wyoming adjudications are expected in the near future.

In 1987, the U.S. was joined in the adjudication of rights to use water in the Snake River Basin of Idaho. The Dept. of Justice has been negotiating federal water right claims with the State of Idaho. A claim for reserved water rights in the Idaho portion of YNP was entered as part of these negotiations. A negotiated agreement between the State of Idaho and the U.S. has been signed and submitted to State District Court. This agreement grants the U.S. all natural instream flows and natural lake levels, and allowed a total of 1 acre-foot of consumptive use within the Idaho portion of YNP.

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Initial Proposal: 1995

Priority: 16
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The U.S. was joined in the Montana statewide adjudication in 1978, and the NPS filed claims for YNP with the Water Court in 1982. The State of Montana established a Federal Reserved Water Compact Commission with responsibility for negotiating Federal reserved rights with Federal agencies, and claims filed by the NPS for reserved water rights were referred by the Water Court to the Commission.

Appropriative water rights were processed through the Water Courts for basins in and adjacent to YNP. In the Upper Yellowstone Basin, the NPS filed numerous objections to nonfederal water claims on 14 Yellowstone River tributaries that currently or potentially affect stream flow in the park. The NPS basis for objections included non-existence, abandonment, actual use being substantially less than that claimed, or unquantified right. Agreement on water allocation was been reached with claimants on Bear, Crevice, Slough, and Soda Butte Creeks and their tributaries.

YNP claimed water rights for land acquired in 1926 on lower Reese Creek along the northern park boundary. Reese Creek has been over-appropriated and only during extremely wet years is there enough water to meet the needs of all claimants. Since 1980, private parties adjoining YNP diverted water at the expense of park resource values. Reese Creek downstream from the diversions had reduced streamflows for several years, and in some years is de-watered by mid-summer. Even without NPS claims, the lower 1/2-mile of the creek would be dry more than half the year due to overallocation. This significantly affects aquatic invertebrates and the fishery in this cutthroat trout spawning tributary of the Yellowstone River. YNP has monitored stream flow on Reese Creek since 1985. An agreement on Reese Creek allocations signed by the 3 private claimants, the NPS, and Montana FWP allows for minimum flows of water to be maintained in the stream bed sufficient to sustain macro- invertebrate populations and spawning opportunities. This went into effect in 1991 when YNP installed 3 headgates and associated monitoring devices in the creek. Monitoring must continue in order to insure that water is not being overused or allocated.

A groundwater monitoring system was also called for as a result of the Montana/NPS Water Rights Compact which was signed in January 1994. The park needs assistance from the WRD in designing this long-term monitoring program, and needs to secure funding and staff to implement this program. Additional research has recently been proposed by the NPS as follow-up to the Water Rights Compact as relates to understanding and protecting geothermal features (see N-01).

Last Update: 04/10/96
Initial Proposal: 1995

Project Statement

YELL-N-016.000
Priority: 16
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Description of Recommended Project or Activity

Complete adjudication of Federal Reserved Water Rights. Collect and maintain copies of water rights documents, in YNP files. Continue implementation of water rights compact between NPS and State of Montana. Monitor flow rates and maintain headgates on Reese Creek.

Develop hydrothermal groundwater monitoring system as recommended in NPS/Montana Water Compact.

BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	15.00	0.50
	WATER-RES	MON	Recurring	150.00	0.00
			Subtotal:	165.00	0.50
1996:	PKBASE-NR	MON	Recurring	15.00	0.50
	WATER-RES	MON	Recurring	150.00	0.00
			Subtotal:	165.00	0.50
1997:	PKBASE-NR	MON	Recurring	15.00	0.50
	WATER-RES	MON	Recurring	150.00	0.00
			Subtotal:	165.00	0.50
1998:	PKBASE-NR	MON	Recurring	15.00	0.50
	WATER-RES	MON	Recurring	150.00	0.00
			Subtotal:	165.00	0.50
			Total:	660.00	2.00

			-----UNFUNDED-----		
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Recurring	30.00	0.40
		MON	Recurring	12.00	0.40
			Subtotal:	42.00	0.80
Year 2:		MON	Recurring	12.50	0.40
		MON	Recurring	12.00	0.40
			Subtotal:	24.50	0.80

Last Update: 04/10/96
Initial Proposal: 1995

Project Statement

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Priority: 16
Page Num: 0063

Year 3:	MON	Recurring	12.50	0.40
	MON	Recurring	12.00	0.40

		Subtotal:	24.50	0.80
Year 4:	MON	Recurring	12.00	0.40
	MON	Recurring	12.50	0.40

		Subtotal:	24.50	0.80
			=====	
		Total:	115.50	3.20

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)
OTHER ()

Explanation: 516 DM6, 7.4; 404 PERMIT NEEDED

Title : INVENTORY/PROTECT PALEONTOLOGICAL RESOURCES

Funding Status: Funded: 10.00 Unfunded: 84.00

Servicewide Issues : N18 (VIS USE-BCTRY)
N23 (PALEONTOLOGY)

Cultural Resource Type:
N-RMAP Program codes : P00 (Paleontological Resources
Management)

10-238 Package Number :

Problem Statement

Yellowstone's fossil forests are some of the most extensive and the best examples of standing petrified trees in the world (Dorf 1964). The primary threat to fossil resources comes from collectors of petrified wood; most of this resource is scattered widely in the backcountry. Two trees accessible by road have been fenced for decades, to prevent people from breaking off pieces of wood from the remaining trunks. Protection of this highly dispersed resource is very difficult.

In the 1980s, additional fossilized species were found inside YNP; these include a sea dwelling mammal and turtle shell fragments previously unknown here (Jack Horner pers. commun.) Little has been done beyond an initial search and stabilization of several fossil remains. There is a general lack of expertise to lend to exploration here, compared to other areas of known fossil finds in the region; also, excavation, preparation, and storage of fossils is costly and space and time-consuming.

An on-going research project is investigating the paleontologic record for species present through time in an undisturbed cave in YNP (see N-06). The results provide a valuable comparison with the list of species present today, and provide evidence of long-term occupation by elk, wolves, and other controversial species.

During construction of the East Entrance road in 1994, fossils were discovered in the road cut. The project was temporarily halted while experts were consulted and the fossil-bearing rocks were removed from danger. The fossils were identified as Eocene deposits from the Absaroka Volcanic Langford Formation, and represented genera not represented in the park's flora today. A majority were an extinct genus of sycamores. Leaf size was impressive; some were as large as platters (16 inches/40 cm in diameter.) As a result, staff were alerted to monitor more closely for such potential discoveries in future road reconstruction projects, and some Federal Highways funding was allocated to address this concern.

Last Update: 04/10/96
Initial Proposal: 1995

Project Statement

YELL-N-017.000
Priority: 16
Page Num: 0065

Continued protection and investigation of this resource is vital.

Description of Recommended Project or Activity

Continue to identify, monitor, and protect fossil resources. Add locations to GIS to educate staff. Record and store specimens or information about fossil resources as appropriate using museum cataloguing guidelines.

Continue research into paleontologic resources, and make results available for resource management, interpretive, and scientific purposes.

BUDGET AND FTEs:

Source		Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	FED-OTHER	MIT	One-time	5.00	0.00
1996:	FED-OTHER	MIT	One-time	5.00	0.00
Total:				10.00	0.00

Activity		Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	32.00	0.00
Year 2:	RES	One-time	32.00	0.00
Year 3:	RES	One-time	20.00	0.00
Total:			84.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)
OTHER ()

Explanation: 516 DM6 APP. 7.4 E(1)

Title : MANAGE RECREATIONAL USES USING V.U.M.

Funding Status: Funded: 4.00 Unfunded: 130.00

Servicewide Issues : N16 (NEAR-PARK DEV)
N18 (VIS USE-BCTRY)

Cultural Resource Type:

N-RMAP Program codes : N00 (Resource and Visitor Use
Management)

10-238 Package Number :

Problem Statement

Traditional recreation activities popular with visitors include picnicking, walking or hiking on park trails, fishing, driving, wildlife watching, horseback riding, boating, camping, skiing, and snowmobiling. These activities are all regulated to some degree for reasons of human safety, resource conservation, and minimizing user conflicts. Less common activities include road biking, climbing, and caving. The park receives occasional inquiries from advocates of non-permitted activities, such as whitewater boating and trail biking.

In 1986 the park reviewed the historic restriction on boating park rivers (with the exception of the Lewis River channel.) An assessment of boating/no boating and the likely effects on 20 river segments was prepared and made available for public comment. Response strongly favored continuation of the restriction to preserve riparian resources, which was the recommended action. The plan was approved in 1988. Both motorized and non-motorized boating are permitted in the park. It has been suggested that the impacts of motorized boats on wildlife be further studied at Yellowstone Lake.

Increasing numbers of visitors inquire about where in the park they can mountain bike. Roads open to motorized vehicles are all open to bikes; however, park roadways are comparatively narrow with little shoulder and the volumes of traffic and wide recreational vehicles present a hazard to bikers. Many prefer to have riding opportunities separate from main park roads. In 1988, resource management staff assessed possibilities for bike riding on service roads and utility corridors; 36 CFR prohibits biking on trails unless specifically allowed. A list of trails and service roads open to bikes is printed in the park's annual Compendium to 36 CFR. An informational pamphlet on biking in Yellowstone was revised in 1990.

Increased winter use in Yellowstone has been a concern of managers and scientists, which resulted in preparation of a joint Winter Use Plan with Grand Teton National Park in 1990. This plan outlined standards and projections for use which were

surprisingly reached much sooner than expected. As a result, the parks initiated a Visitor Use Management (VUM) planning process following an NPS version of limits of acceptable change philosophy. An interdisciplinary planning team was established in 1994 to design how VUM would be applied to recreation activities in Yellowstone (see I-02).

Other requests for permitting non-traditional or newer forms of recreational activity can be expected, and should be assessed for safety hazards and resource protection concerns. Overall development of frontcountry facilities for human use is worthy of additional research and management effort.

Description of Recommended Project or Activity

Design and implement Visitor Use Management system, beginning with how it relates to winter use in Yellowstone.

Manage permitted activities in accordance with NPS Management Policies, 36 CFR, and other appropriate guidelines and laws. Consider requests for new activities as received, developing plans and/or assessments as to their effects on park resources, safety, and other park users as appropriate.

Research effects of recreational activities on park resources, beginning with those related to winter use.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	PRO	Recurring	1.00	0.00
1996:	PKBASE-NR	PRO	Recurring	1.00	0.00
1997:	PKBASE-NR	PRO	Recurring	1.00	0.00
1998:	PKBASE-NR	PRO	Recurring	1.00	0.00
				=====	
			Total:	4.00	0.00
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		RES	Recurring	30.00	0.00
Year 2:		RES	Recurring	30.00	0.00

Last Update: 04/10/96		Project Statement	YELL-N-018.000	
Initial Proposal: 1995			Priority:	16
			Page Num:	0068

Year 3:	RES	Recurring	35.00	0.00
Year 4:	RES	Recurring	35.00	0.00
			=====	
Total:			130.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EA (ENV. ASSESSMENT)
EXCL (CATEGORICAL EXCLUSION)

Explanation: WINTER USE PLAN, 516DM6, 7.4 (D2)

Last Update: 04/10/96
Initial Proposal: 1995

Project Statement

YELL-N-019.000
Priority: 7
Page Num: 0069

Title : MONITOR/CONTROL SPREAD OF EXOTIC PLANTS

Funding Status: Funded: 380.00 Unfunded: 778.00

Servicewide Issues : N05 (NON-NAT PLANTS)
Cultural Resource Type:
N-RMAP Program codes : V00 (Vegetation Management)
V04 (Exotic Plant Management)

10-238 Package Number :

Problem Statement

Approximately 150 species of non-native plants are known to inhabit YNP. This includes species considered noxious by the states of Idaho, Montana, and Wyoming. Most exotic species in the park are found in disturbed frontcountry areas such as developments, road corridors, and thermal basins. Heightened awareness for backcountry infestations has resulted in the detection and/or treatment of a few isolated areas, but the full extent of the exotic plant situation is not fully surveyed at this time.

Among the most significant exotic plant species of concern are spotted and Russian knapweeds (*Centaurea maculosa* and *C. repens*), leafy spurge (*Euphorbia esula*), Canada thistle (*Cirsium arvense*), ox-eye daisy (*Leucanthemum vulgare*), woolly mullein (*Verbascum thapsus*), Dalmatian toadflax (*Linaria dalmatica*), and houndstongue (*Cynoglossum officinale*). Many other recorded exotics have the potential for widespread displacement of native plant communities as do these and other priority species of concern.

Dalmatian toadflax was first seen in Yellowstone in 1947, and has since spread throughout the cold desert area of the northern winter range, and threatens to migrate into the park interior. Spotted knapweed, along with Russian knapweed, is a more recent invader of YNP. These are very aggressive species that, once established, can result in a virtual monoculture and threaten to displace native grasses on the ungulate winter/summer range, having a major impact on park wildlife. Control efforts during the past decade have specifically targeted spotted knapweed along road corridors. Aggressive efforts will be required to keep the spread of knapweeds to a minimum.

Concern was expressed regarding the response of Canada thistle to the fires of 1988. Flowering stalks sprouting from parent root material were evident throughout burned areas in 1989, and the potential exists for large scale seedling establishment in burned forests.

Ox-eye daisy, berteroa, mullein, St. Johnswort, leafy spurge,

houndstongue, and other species of priority are outlined in a 1986 Exotic Vegetation Management Plan, which identified monitoring, control, and education efforts. Species were categorized by the seriousness of their threat and the likelihood that control could be effective. Since that time, we have made some progress in sensitizing park staff to this problem, and have increased monitoring, mapping, and control of high priority target species, using an IPM approach to managing exotic plant species. District resource management and operations personnel have increased their monitoring and control efforts, using such methods as assigning weed patches to patrol rangers for the course of the summer season. An effort to update this plan to incorporate new information about exotic species and control methods has been underway since 1994.

The staff and funding commitment is not commensurate with the level of resource threat presented by the expansion of non-native plant species. Increased site disturbance provides an enhanced seedbed for exotic plants, such as is caused by construction projects. Some project funding, such as from Federal Highways reconstruction projects, has been received to address monitoring and mitigation associated with this development.

Adjacent state and county Weed Control Boards are increasingly aware of the exotic plant situation in Yellowstone, and are concerned that without effective control measures, the park can serve as refugia for noxious weed seed sources. Efforts have been made to encourage more cooperative working relationships with adjacent agencies to foster information and technology exchange.

Description of Recommended Project or Activity

Continue an IPM approach in managing exotic vegetation, incorporating "Guidelines for Coordinated Management of Noxious Weeds in the GYA" (1990), and the Exotic Vegetation Mgmt. Plan. The threat posed by the exotic species will be weighed with the effect of control efforts on the environment. Use a computerized GIS database to record infestations, treatments, and the results of post-treatment monitoring.

Continue cooperative efforts with adjacent weed control agencies. Increase education/information programs for employees and the visiting public. All NPS field employees should receive minimal training in exotic plant identification.

Update the Exotic Plant Management Plan for the park, using current data and recommended control techniques.

Project Statement

YELL-N-019.000

Last Update: 04/10/96
Initial Proposal: 1995

Priority: 7
Page Num: 0071

BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MIT	Recurring	60.00	1.50
	PKBASE-NR	MON	Recurring	35.00	0.90
Subtotal:				95.00	2.40
1996:	PKBASE-NR	MIT	Recurring	60.00	1.50
	PKBASE-NR	MON	Recurring	35.00	0.90
Subtotal:				95.00	2.40
1997:	PKBASE-NR	MIT	Recurring	60.00	1.50
	PKBASE-NR	MON	Recurring	35.00	0.90
Subtotal:				95.00	2.40
1998:	PKBASE-NR	MIT	Recurring	60.00	1.50
	PKBASE-NR	MON	Recurring	35.00	0.90
Subtotal:				95.00	2.40
Total:				380.00	9.60
			=====		
			-----UNFUNDED-----		
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MIT	Recurring	220.00	7.00
		MON	Recurring	24.00	0.60
Subtotal:				244.00	7.60
Year 2:		MIT	Recurring	220.00	7.00
		MON	Recurring	24.00	0.60
Subtotal:				244.00	7.60
Year 3:		MIT	Recurring	22.00	7.00
		MON	Recurring	24.00	0.60
Subtotal:				46.00	7.60
Year 4:		MIT	Recurring	220.00	7.00
		MON	Recurring	24.00	0.60
Subtotal:				244.00	7.60
Total:				778.00	30.40

Last Update: 04/10/96
Initial Proposal: 1995

Project Statement

YELL-N-019.000
Priority: 7
Page Num: 0072

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EA (ENV. ASSESSMENT)
EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(6)

Last Update: 04/10/96
Initial Proposal: 1995

Project Statement

YELL-N-020.000
Priority: 10
Page Num: 0073

Title : MANAGE WILDLAND FIRE

Funding Status: Funded: 1985.00 Unfunded: 660.00

Servicewide Issues : N07 (NAT FIRE REGM)
Cultural Resource Type:
N-RMAP Program codes : F00 (Prescribed Fire Management)
F03 (Wildfire Level Long-Term Effects
Monitoring)

10-238 Package Number :

Problem Statement

Yellowstone is managed to conserve, perpetuate, and portray as a composite whole the indigenous aquatic and terrestrial wildlife, plants, the geology, and the scenic landscape. The intent is to maintain the park in as natural a condition as is possible; that is, to hold human influence over the natural components of the ecosystem to a minimum.

Scientific evidence indicates that natural fires have been a part of Yellowstone's environment for thousands of years prior to the arrival of modern humans (Romme and Despain 1989.) Fire has played a role in the formation of soil and vegetation and wildlife patterns here, as elsewhere. Large fires have burned at average intervals of 25-60 years on the low elevation grasslands of the northern range (Houston 1982), at intervals of 250-400 years in the conifer forests (Romme 1982), and less frequently in the alpine areas. Periodic fire is a necessary part of Yellowstone's ecosystem, as various plant and animal communities have adapted to the burning cycles. Lodgepole pine, a fire-dependent species, reproduces far more abundantly after fire, and certain birds, flowers, insects, and mammals thrive in recently burned areas.

The fire management policy for the first 100 years was one of total fire suppression, based on the prevailing notion of preservation. The 1963 'Leopold Report' urged that natural areas of the National Park System be administered as "vignettes of primitive America", and specifically mentioned the importance of fire in the ecological history of such areas. The NPS and Yellowstone responded with major policy changes, including YNP's first natural fire management plan in 1972. This plan designated 2 backcountry areas totalling 340,784 acres as natural fire zones. The success of the program in its first 3 years led to expanding natural fire zones to the entire park with the exclusion of developed areas, common boundaries with national forests, and areas where human safety was not as easily managed. The goals of the Fire Management Plan were to allow fire to play its natural role and thus perpetuate the natural ecosystem. Each fire was assessed within national guidelines and a management

Project Statement

Last Update: 04/10/96
Initial Proposal: 1995

YELL-N-020.000
Priority: 10
Page Num: 0074

decision made as to allowing the fire to run its natural course without interference.

Yellowstone's Wildland Fire Management Plan was suspended in 1988 as a result of the record fires that occurred in the GYA. A Fire Management Policy Review Team was appointed by the Secretaries of Interior and Agriculture in September 1988. This team issued a final report in May 1989 reaffirming that prescribed natural fire programs (including fires of planned and unplanned ignition) in national parks and wildernesses were sound; however, they made 15 recommendations to improve federal fire management programs. These recommendations were approved by the Secretaries and adopted as NPS policy. No prescribed natural fires were to be allowed to burn until fire management plans were revised incorporating the recommendations.

Yellowstone's Wildland Fire Management Plan was revised to meet these objectives in 1992. Research has been conducted to understand the effects of the 1988 fires on numerous components of the ecosystem. Using refined fire management techniques and incorporating up to date research findings, Yellowstone will continue to allow natural fire to play its natural role, in balance with concerns for protecting life and property in and outside the park.

Description of Recommended Project or Activity

Manage prescribed natural fire in Yellowstone under prescriptions outlined in the park's revised Fire Management Plan (1992) as revised based on annual program reviews. When fire suppression is called for, fight fires with aggressive initial attack efforts, using standard fire suppression tactics while being sensitive to causing minimal impacts to park resources.

Correlate data from completed fuels monitoring program with fire weather readings, and use in ongoing program to determine fire danger on site.

Accomplish hazard fuel reduction by mechanical tree thinning at park developed areas. Consider using prescribed burning as feasible to reduce hazardous fuels around development and near park boundaries, to reduce the threat of wildfires burning into jurisdictions with different fire management objectives.

Cooperate with and support research into prescribed burning techniques and other related topics that will help improve wildland fire management planning and operations. Incorporate fire management plans and data into the park's GIS.

Installing an additional Remote Automated Weather Station (RAWS) in the backcountry (2 are in place at Gallatin and Thorofare; a 3rd is purchased).

Project Statement

YELL-N-020.000

Last Update: 04/10/96
Initial Proposal: 1995

Priority: 10
Page Num: 0075

Increase training of personnel in fire suppression and monitoring techniques.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	FIRE-\$ PKBASE-NR	PRO MON	Recurring	270.00	7.40
			Recurring	95.00	3.00
			Subtotal:	365.00	10.40
1996:	FIRE-\$ PKBASE-NR	PRO MON	Recurring	445.00	10.20
			Recurring	95.00	2.00
			Subtotal:	540.00	12.20
1997:	FIRE-\$ PKBASE-NR	PRO MON	Recurring	445.00	10.20
			Recurring	95.00	2.00
			Subtotal:	540.00	12.20
1998:	FIRE-\$ PKBASE-NR	PRO MON	Recurring	445.00	10.20
			Recurring	95.00	2.00
			Subtotal:	540.00	12.20
				=====	
Total:				1985.00	47.00
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON MIT	Recurring	90.00	3.20
			Recurring	75.00	2.60
			Subtotal:	165.00	5.80
Year 2:		MON MIT	Recurring	90.00	3.20
			Recurring	75.00	2.60
			Subtotal:	165.00	5.80
Year 3:		MON MIT	Recurring	90.00	3.20
			Recurring	75.00	2.60
			Subtotal:	165.00	5.80
Year 4:		MON MIT	Recurring	90.00	3.20
			Recurring	75.00	2.60
			Subtotal:	165.00	5.80

	Project Statement	YELL-N-020.000
Last Update: 04/10/96		Priority: 10
Initial Proposal: 1995		Page Num: 0076

	=====	
Total:	660.00	23.20

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EA (ENV. ASSESSMENT)

Explanation: FIRE MGMT. PLAN COMPLETED 1992

Last Update: 04/10/96
Initial Proposal: 1995

Project Statement

YELL-N-021.000
Priority: 16
Page Num: 0077

Title : MANAGE VEGETATION AND HAZARD TREES

Funding Status: Funded: 144.00 Unfunded: 880.00

Servicewide Issues : N06 (LAND USE PRAC)
Cultural Resource Type:
N-RMAP Program codes : H00 (Pest and Hazard Management)
H03 (Tree Hazard Management)

10-238 Package Number :

Problem Statement

Development in forested ecosystems necessitates hazard tree management to provide a reasonable degree of safety for park residents and visitors. Tree failures result from insects, disease, windfall, old age, and from mechanical damage, soil compaction, and prior tree removal in conjunction with construction activities. Property damage from tree failures has been a recurring yearly event in YNP. The problem has been compounded as a result of the widespread wildfires of 1988.

A program to manage hazard trees in campgrounds, developed areas, and along roads was discontinued in 1981 due to lack of funds. Since then, hazard trees have been removed incidentally by maintenance, resource management, and fire crews. Two contracts were also awarded to private bidders. Only the most serious hazards are currently being removed. In 1989, maintenance staff undertook a roadside hazard tree removal project in burned areas. Fuels reduction funding helped remove standing dead trees along unburned roadsides and in developed areas. Historic problems and recent survey work suggest increased hazard tree removal is needed to protect human life and property.

Most problems in campgrounds relate to the sites being occupied by old-growth lodgepole pine forests. Campgrounds should exist in immature stands of uneven-aged, mixed species. Such forests are resistant to insect and disease epidemics, provide good screening between campsites, are less subject to windthrow, and cause less damage when trees do fall. Of 12 campgrounds in YNP, only Indian Creek, Bridge Bay, and to a lesser extent Canyon closely approximate this condition. Many standing, live, and potentially hazardous trees exist in all other campgrounds. Property damage from tree failures is reported regularly.

Fortunately, no serious injuries or fatalities have occurred since 1969. A clear cut at Bridge Bay Campground (1983) left a campground with less than optimal esthetics. A major blowdown occurred in Norris Campground in 1992, endangering campers, hampering travel in the area, and posing aesthetic problems.

Some confusion and duplication of effort occurs between staff

Project Statement

YELL-N-021.000

Last Update: 04/10/96
Initial Proposal: 1995

Priority: 16
Page Num: 0078

divisions. The landscape architects in the 1980s developed a program of planting trees at disturbed sites, and for collecting and establishing a native seed bank and nursery stock seedlings/saplings for revegetation purposes. This excellent program needs to be continued, as does coordination between all staff who are involved in devegetation and revegetation activities, in order to assure common objectives are met. A parkwide Vegetation Management Plan would help establish goals and assign responsibilities.

Description of Recommended Project or Activity

Establish a Resource Team and prepare a Vegetation Management Plan and implement plant monitoring regimes for YNP.

Adopt an overstory management approach for campgrounds. Removal should take place in increments by treating small patches or by removing 15% of the overstory every year over a 7 year period, focusing on the priority hazards each year. Wood disposal, stump flushing, and re-planting should occur simultaneously. Remove priority hazards in campgrounds for and establish a timetable for project work. Educate the public on need and rationale for overstory management, using interpretive displays. Systematically survey and remove hazard trees from roadways and developed areas.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MIT	Recurring	16.00	0.40
	PKBASE-NR	MON	Recurring	20.00	0.60
		Subtotal:		36.00	1.00
1996:	PKBASE-NR	MIT	Recurring	16.00	0.40
	PKBASE-NR	MON	Recurring	20.00	0.60
		Subtotal:		36.00	1.00
1997:	PKBASE-NR	MIT	Recurring	16.00	0.40
	PKBASE-NR	MON	Recurring	20.00	0.60
		Subtotal:		36.00	1.00
1998:	PKBASE-NR	MIT	Recurring	16.00	0.40
	PKBASE-NR	MON	Recurring	20.00	0.60
		Subtotal:		36.00	1.00

		Total:	=====	144.00	4.00
-----UNFUNDED-----					
	Activity	Fund Type	Budget (\$1000s)	FTEs	
Year 1:	MIT	Recurring	70.00	1.50	
	MON	Recurring	150.00	4.80	
	Subtotal:		220.00	6.30	
Year 2:	MIT	Recurring	70.00	1.50	
	MON	Recurring	150.00	4.80	
	Subtotal:		220.00	6.30	
Year 3:	MIT	Recurring	70.00	1.50	
	MON	Recurring	150.00	4.80	
	Subtotal:		220.00	6.30	
Year 4:	MIT	Recurring	70.00	1.50	
	MON	Recurring	150.00	4.80	
	Subtotal:		220.00	6.30	
		Total:	=====	880.00	25.20

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EA (ENV. ASSESSMENT)

Explanation: WILL BE PREPARED AS NECESSARY

	Project Statement	YELL-N-022.000
Last Update: 04/10/96		Priority: 16
Initial Proposal: 1995		Page Num: 0080

Title : MINIMIZE DISTURBANCE FROM DEVEL./CONSTRUCTION

Funding Status: Funded: 200.00 Unfunded: 540.00

Service-wide Issues : N05 (NON-NAT PLANTS)
 N16 (NEAR-PARK DEV)
Cultural Resource Type:
N-RMAP Program codes : D00 (Disturbed Area Rehabilitation)

10-238 Package Number :

Problem Statement

Yellowstone's major developed areas, roadways, administrative areas (such as sand and gravel extraction sites) and utility corridors require planning and/or landscaping following construction activities. Yellowstone employs a staff of landscape architects to help minimize the effects of development and construction disturbance on native habitats and on the visitor experience. For example, after the 1988 fires the park was left with 37 miles of bulldozer-constructed fireline and approx. 1000 miles of handline. All of these required landscaping to minimize erosion and the spread of exotic species. The park uses indigenous native plants for landscaping and revegetation projects.

In 1985-86, park personnel began to work with the Soil Conservation Service's Native Plant Materials Center in Montana to propagate native seed stock. Park crews collected seed from native grasses and experimented with planting various species; a similar project was done in the Boundary Line Area using different treatments. The Plant Materials Center has taken seed to grow in their nursery to build up a seed bank that can be used for future revegetation projects in the park. In the meantime, live plants from the park are salvaged and transplanted to construction areas in roadsides and housing and developed areas for landscaping purposes. Park personnel worked with the Forest Service, who did some aerial re-seeding post-fire, to prevent wind-blown invasions of non-native plants into YNP; the NPS did not seed any exotic species. However, some exotic perennial grasses have been identified in the park.

Landscape architects work with park biologists in advising construction crews cutting hazard trees and performing landscaping work. Non-native trees and flowers are not planted in the park.

In general, funding for monitoring and mitigating disturbance comes from development project funds, such as road construction, concession facility development funds, or other sources.

Last Update: 04/10/96
Initial Proposal: 1995

Project Statement

YELL-N-022.000
Priority: 16
Page Num: 0081

Description of Recommended Project or Activity

Continue native seed collection and propagation of seed stock for use as needed in landscaping and revegetation projects, especially road reconstruction projects. Educate other park personnel in revegetation techniques. Monitor long-term results of revegetation efforts on construction projects to assess success and refine techniques. Insure that non-native plant material is not distributed in the park during construction, revegetation, road maintenance, landscaping, or other projects, by on-site inspection, pre-construction meetings with contractors, pre-determined site selection for gravel and other building materials, and construction specifications.

Use Project Clearance Forms and other appropriate compliance to gather interdisciplinary input on development and construction projects, to minimize disturbance, effects on park esthetics, and other resources.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	CONSTRUCT MIT	Cyclic	50.00	1.50
1996:	CONSTRUCT MIT	Cyclic	50.00	1.50
1997:	CONSTRUCT MIT	Cyclic	50.00	1.50
1998:	CONSTRUCT MIT	Cyclic	50.00	1.50
Total:			200.00	6.00

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	Cyclic	135.00	3.30
Year 2:	MIT	Cyclic	135.00	3.30
Year 3:	MIT	Cyclic	135.00	3.30
Year 4:	MIT	Cyclic	135.00	3.30
Total:			540.00	13.20

(Optional) Alternative Actions/Solutions and Impacts

Project Statement
Last Update: 04/10/96
Initial Proposal: 1995

YELL-N-022.000
Priority: 16
Page Num: 0082

(No information provided)

Compliance codes : EA (ENV. ASSESSMENT)
EXCL (CATEGORICAL EXCLUSION)

Explanation: PROJECT EAS;516 DM6,7.4 (C9,11-19)

Project Statement
Last Update: 04/10/96
Initial Proposal: 1995
YELL-N-023.000
Priority: 11
Page Num: 0083

Title : RECLAIM AND REVEGETATE DISTURBED SITES

Funding Status: Funded: 700.00 Unfunded: 1880.00

Servicewide Issues : N06 (LAND USE PRAC)
N16 (NEAR-PARK DEV)

Cultural Resource Type:
N-RMAP Program codes : D00 (Disturbed Area Rehabilitation)

10-238 Package Number :

Problem Statement

Past and present developmental activities have resulted in the disturbance or displacement of native vegetation and alteration of the natural topography.

A major portion of the northern winter range, known as the Boundary Lands Area (BLA), prior to its being acquired in the 1920s and 1930s, was overgrazed and seeded with non-native plant species. This, coupled with some naturally poor soil conditions, has resulted in a long-term loss in quality natural winter range for ungulate species (see N-35, 36). Major NRPP funding was obtained beginning in FY 94 to address restoration of the BLA; however, a significant portion of that funding was reprogrammed to more current priorities.

Road cuts along roadways have in some locations resulted in slope erosion from slumping, water, and wind action. Rerouting park roadways has left numerous miles of abandoned roads. Impacts are caused by illegal or careless off-road travel and parking. Some road bridges and culverts prevent the passage of fish into natural spawning courses; others freely allow passage of streams and associated riparian species. Telephone and power lines are both overhead and underground, some of which are abandoned. They often require servicing by some form of motorized access, which maintains numerous visual, physical, and biologically affected corridors.

Among the numerous abandoned sites in the park are garbage and debris dumps; gravel pits and quarries; decked log piles; fish traps; roads, trails, bridges, and construction camps; old visitor use facilities (campgrounds, lodge/cabin sites, remnant structures); water diversions, and sewer systems. Some of these sites may possess historic value or character and need to be evaluated prior to any cleanup or removal. Many sites are visually unaesthetic, and pose health and safety concerns to visitors and wildlife. Some abandoned dumps may contain hazardous substances such as PCBs which could affect surface and ground water sources and aquatic life. Old road camps and vintage hotel dumps have material exposed on the surface, such as broken pottery and glass, rusty cans, barbed wire, parts of

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Initial Proposal: 1995

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machinery, or sheet metal.

Erosion from gravel pits and quarries results in sedimentation of adjacent creeks. The high headwalls of these mining operations are a danger to visitors and wildlife should they fall. Silted or debris-clogged fish traps, small dams, and water diversion structures impede stream flow and fisheries.

Into the 1970s, asphalt roads, structural foundations, and utilities were not often removed when visitor facilities were closed and relocated. Many areas were left to revegetate naturally, with limited success. The vegetation is stunted or sparse because of soil compaction or poor growing conditions. Non-native vegetation has replaced some of native plant species. Many locations are unsightly and even today would benefit from site treatment to help natural regrowth.

Backcountry impacts result in some areas from poorly maintained and designed trails, stock use, visitors short-cutting between trails, and use levels at popular overnight campsites. The effects include grazing by stock, soil compaction, protruding root systems, rutted trails, poor drainage, erosion, and vegetative trampling. Management objectives include the elimination of trash and structural debris from the backcountry and minimization of visual intrusions on park resources. They also provide for the identification, evaluation, and protection of cultural resources. Significant cultural sites may require stabilization, other mitigation measures, or complete rehabilitation and removal. Where desirable and feasible, we strive to restore natural resources where previously altered by human activities. Such restoration will be aimed at presenting as close an approximation of natural successional conditions as is possible.

Description of Recommended Project or Activity

Develop a complete inventory and computerized GIS database of known disturbed sites. Develop and implement a comprehensive reclamation and monitoring plan, outlining criteria for determining priorities for reclaiming disturbed sites (see N-46 for abandoned mine reclamation activities). Until that is done, complete restoration of disturbed sites opportunistically using project funds, SCAs, YCC, National Guard, or other cooperators as available. Interpret and record culturally significant sites as appropriate for visitor enjoyment and long-term historic study.

Develop cooperative efforts with other GYA managers in reclamation and revegetation techniques, to foster information and technology exchange.

Proceed with rehabilitation of Boundary Line Area, using native grass, shrub, and forb species used by pronghorn and removing old

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fence sections.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MIT	Recurring	15.00	0.60
	CONSTRUCT	MIT	Cyclic	120.00	3.00
	PKBASE-NR	MON	Recurring	40.00	1.00

			Subtotal:	175.00	4.60
1996:	PKBASE-NR	MIT	Recurring	15.00	0.60
	CONSTRUCT	MIT	Cyclic	120.00	3.00
	PKBASE-NR	MON	Recurring	40.00	1.00

			Subtotal:	175.00	4.60
1997:	PKBASE-NR	MIT	Recurring	15.00	0.60
	CONSTRUCT	MIT	Cyclic	120.00	3.00
	PKBASE-NR	MON	Recurring	40.00	1.00

			Subtotal:	175.00	4.60
1998:	PKBASE-NR	MIT	Recurring	15.00	0.60
	CONSTRUCT	MIT	Cyclic	120.00	1.00
	PKBASE-NR	MON	Recurring	40.00	1.00

			Subtotal:	175.00	2.60
				=====	
			Total:	700.00	16.40

-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MIT	Recurring	150.00	3.00
		MIT	Recurring	320.00	8.50

			Subtotal:	470.00	11.50
Year 2:		MIT	Recurring	150.00	3.00
		MIT	Recurring	320.00	8.50

			Subtotal:	470.00	11.50
Year 3:		MIT	Recurring	150.00	3.00
		MIT	Recurring	320.00	8.50

			Subtotal:	470.00	11.50

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Year 4:	MIT	Recurring	150.00	3.00
	MIT	Recurring	320.00	8.50

		Subtotal:	470.00	11.50
			=====	
		Total:	1880.00	46.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)
EA (ENV. ASSESSMENT)

Explanation: 516 DM6 APP. 7.4 E(2)

Last Update: 04/10/96
Initial Proposal: 1995

Project Statement

YELL-N-024.000
Priority: 16
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Title : MONITOR/PROTECT RARE & SENSITIVE PLANTS

Funding Status: Funded: 50.00 Unfunded: 120.00

Servicewide Issues : N02 (T&E ANIMAL)
N20 (BASELINE DATA)

Cultural Resource Type:
N-RMAP Program codes : V00 (Vegetation Management)
V03 (Threatened & Endangered Plant
Management)

10-238 Package Number :

Problem Statement

The plants of Yellowstone are rather poorly known, even though botanists have been visiting and studying the park for well over a century. Since a large portion of the park is covered with extensive stands of lodgepole pine, it has been perceived that there are relatively few unique habitats likely to have unusual plant species. Since only 2% of the park is affected by development, there has been little concern to document rare and/or sensitive vascular plant species since the protection for these taxa was considered adequate under NPS policies.

The truly unique habitat in the park is that surrounding the thermal areas, where the endemic plant species, *Agrostis rossiae* (Ross' bentgrass), is found. In the early 1980s the USFWS proposed listing *Agrostis rossiae* as an endangered species. This led to the location of additional populations of Ross' bentgrass in the thermal areas along the Firehole River. Currently, there is a dated Memorandum of Understanding between the USFWS and the NPS which specifies that the park continue actively monitoring and protecting *Agrostis rossiae* in lieu of federal listing. One additional endemic plant, Tweedy's sand verbenia (*Abronia ammophila*) occurs along the shores of Yellowstone Lake.

No other plant species have been formally identified as sensitive for inventory or monitoring efforts within the park. In contrast, the inventories of plant species of special concern produced respectively by the Natural Heritage Programs of Wyoming, Montana, and Idaho do contain approx. 100 species known to occur in YNP. The park's botanist/herbarium curator has attempted to identify, and locate these taxa in the park, but there is insufficient time or funding to survey and monitor these more than opportunistically. Information on the presence and status of rare plants is increasingly required by park management prior to construction projects and environmental assessments within the park and on adjacent lands. Also, outside agencies and organizations expect this information to be available and used during discussions and decisions that could conceivably affect these plants. Current levels of knowledge on vascular plants

species of special concern are clearly inadequate.

Description of Recommended Project or Activity

Continue annual monitoring of *Agrostis rossiae* and *Abronia ammophila* in known locations, and increase surveys to peripheral areas and outlying areas for additional populations.

Initiate a systematic inventory and monitoring program of other known and possible endangered, rare, and sensitive plant species using the park's synthesized list of Wyoming, Montana, and Idaho species of special concern.

Survey potential construction and other disturbed areas for plant species of special concern as requested during project planning and clearance processes (see I-02).

Compile information from plant survey(s) into a GIS data base on the distribution of vascular plant species, including sensitive species.

Produce an updated annotated checklist of the vascular plant flora of Yellowstone.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	12.50	0.40
1996:	PKBASE-NR	MON	Recurring	12.50	0.40
1997:	PKBASE-NR	MON	Recurring	12.50	0.40
1998:	PKBASE-NR	MON	Recurring	12.50	0.40
Total:				50.00	1.60
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES		One-time	21.00	0.00
	MON		Recurring	9.00	0.30
	Subtotal:			30.00	0.30

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Year 2:	RES	One-time	21.00	0.00
	MON	Recurring	9.00	0.30
		Subtotal:	30.00	0.30
Year 3:	RES	One-time	21.00	0.00
	MON	Recurring	9.00	0.30
		Subtotal:	30.00	0.30
Year 4:	RES	One-time	21.00	0.00
	MON	Recurring	9.00	0.30
		Subtotal:	30.00	0.30
		Total:	120.00	1.20

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Title : MONITOR AND PROTECT BIGHORN SHEEP HERDS

Funding Status: Funded: 2.00 Unfunded: 62.40

Servicewide Issues : N18 (VIS USE-BCTRY)
Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W01 (Native Terrestrial Animal
Management & Monitoring)

10-238 Package Number :

Problem Statement

The bighorn sheep is one of 7 species of native ungulates found in GYE. Summering bands are found in the Gallatin and Washburn Ranges, the Absarokas, and occasionally the Red Mountains. Most of the park's sheep winter in pockets of habitat across the northern range from the park's northeast corner along the Yellowstone River to Mt. Everts and Reese Creek. Nearby wintering areas include Cinnabar Basin, Cinnabar Mountain, and Tom Miner Basin along the northwest corner of the park, and the Absaroka-Beartooth Mountains along the northeast boundary.

Bighorns were believed to have been more abundant in the park region prior to the late 1800s, before hunting, poaching, diseases, and competition from domestic livestock outside the park apparently reduced sheep numbers. Fire suppression and vegetative succession on sheep range may also have influenced sheep populations. Differing interpretations of and explanations for sheep numbers are presented by Barmore (1981), Houston (1982), and Keating (1982); suggested reasons include visitor use in sheep wintering areas, influences of domestic sheep on shared winter ranges, and competition with other ungulates such as elk. In the winter of 1981-82, an outbreak of keratoconjunctivitis (pinkeye) caused by the bacteria Chlamydia occurred among bighorn sheep in the Mt. Everts area. Park biologists believed the epizootic was a natural occurrence, and no direct action was taken. Some sheep were blinded and/or killed on the adjacent park road or by falling from cliffs. Mortality was about 60% of the estimated 500 sheep in the northern range population. After the spring of 1982 no evidence of the disease was seen. Aerial surveys in 1982-85 suggested a population of about 200 bighorns remained on the northern range. A population recovery began in 1986 and continued to 1988 (Meagher 1992).

However, the population appears to be slow in recovering from that decline; perhaps this is related to winter range disturbance by human recreation. Concerns about this herd have prompted visitor use restrictions on the primary sheep rutting ground at McMinn Bench. This area remains popular especially with photographers, and park managers need additional information on

the effects of human disturbance on sheep and on the effectiveness of use restrictions. Throughout the Rocky Mountain region, studies have been proposed on possible effects of genetic isolation on bighorn sheep. This as yet unexplored factor may also affect some park herds, but seems unlikely here, as an estimated 400-800 sheep seasonally move across Yellowstone Park boundaries; about 4000 bighorns inhabit areas adjacent to the park.

In cooperation with the Gallatin NF, Montana FWP, and Montana State University, an annual ground count is conducted on the winter range; aerial surveys on the northern range have also been completed in most years, although funding has limited the consistency of these surveys. Outside the northern range, other park bands of bighorns have not been studied or regularly monitored. Some questions have been posed about the effects of the 1988 fires and potential effects of mountain goats, wolf reintroduction, and other predators on bighorns. Also, poaching remains a problem of unknown magnitude but one that requires on-going vigilance. On Dunraven Pass, a section of the Grand Loop Road in the park, a band of ewes and lambs has been somewhat habituated to traffic since 1967. These sheep cause numerous traffic jams and are sometimes fed (illegally) by visitors, posing a traffic hazard and a danger to sheep. Major road reconstruction programs in the park may pose some threat to bighorn herds when roads are situated between bighorns' cover and water. Occasionally, the animals succumb to roadkill as well.

There is considerable scientific and public interest in bighorn population status and dynamics in YNP. A study of bighorn habitat use and movements was initiated outside the park on the northern boundary in 1994; some of these sheep likely summer inside Yellowstone Park. The park is cooperating with adjacent agencies (the Gallatin NF and Montana Dept. of Fish, Wildlife and Parks) and with the MSU graduate student doing this study. Recommendations for changes in monitoring and/or management activities could result from this study.

Description of Recommended Project or Activity

Continue basic population monitoring and cooperative research studies on northern range bighorn sheep, as part of the Northern Range Wildlife Cooperative Working Group. Maintain funding for the park's share of annual flights and ground surveys. Coordinate with state wildlife management agencies for population monitoring on a parkwide basis.

Maintain anti-poaching patrols and investigations. Monitor sheep activity near road on Dunraven Pass; control unwanted visitor-sheep interactions by signs, interpretive/ educational efforts, and visitor contacts.

Project Statement

YELL-N-025.000

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Cooperate with researcher(s) doing study of northern range sheep herd primarily in Tom Miner Basin area; this herd's summer range may be inside YNP. Provide early input about sheep and their habitat use to planners and others, to avoid disturbance of critical habitats.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	0.50	0.10
1996:	PKBASE-NR	MON	Recurring	0.50	0.10
1997:	PKBASE-NR	MON	Recurring	0.50	0.10
1998:	PKBASE-NR	MON	Recurring	0.50	0.10
Total:				2.00	0.40
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Recurring	3.60	0.20
		RES	One-time	16.00	0.20
		Subtotal:		19.60	0.40
Year 2:		MON	Recurring	3.60	0.20
		RES	One-time	16.00	0.20
		Subtotal:		19.60	0.40
Year 3:		MON	Recurring	3.60	0.20
		RES	One-time	16.00	0.20
		Subtotal:		19.60	0.40
Year 4:		MON	Recurring	3.60	0.20
		Total:		62.40	1.40

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Project Statement
Last Update: 04/10/96
Initial Proposal: 1995

YELL-N-025.000
Priority: 16
Page Num: 0093

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Last Update: 04/10/96
Initial Proposal: 1995

Project Statement

YELL-N-026.000
Priority: 16
Page Num: 0094

Title : PREVENT WILDLIFE POACHING

Funding Status: Funded: 124.00 Unfunded: 363.00

Servicewide Issues : N02 (T&E ANIMAL)
N18 (VIS USE-BCTRY)
Cultural Resource Type:
N-RMAP Program codes : N00 (Resource and Visitor Use
Management)
N01 (Control of Poaching and Theft of
Natural Resources)

10-238 Package Number :

Problem Statement

Yellowstone traditionally suffers some illegal taking of large mammals. Trophy class animals and the presence of other rare or endangered birds and mammals combined with a relatively small chance of apprehension attracts numerous poachers. The increase in commercial value of wildlife has caused what we suspect to be an acceleration of wildlife depredation in recent years. Wildlife resources allow the commercial operator to engage in trade on a year-round basis. Commercial operations include collecting dropped antlers in the spring, guiding big game hunts in the fall, and poaching bighorn sheep and eagles in winter. Illegal taking of wildlife or wildlife parts includes deliberate acts of wildlife destruction, such as killing elk in summer to remove velvet antlers, and cases where animals are shot inside YNP during legal hunting seasons in the adjacent states; the latter may or may not involve intentional ignorance of boundary lines. No legal hunting or trapping is allowed in YNP, nor is pursuit of animals shot legally outside the park that subsequently cross into YNP.

Of particular concern is the poaching of threatened grizzly bears for the value of claws and hides. Fledgling raptors, including endangered peregrine falcons, consistently maintain a high market value. Fur bearers such as bobcats, marten, and coyotes offer lucrative opportunities for the market hunter and trapper. The park documented 2 cases where cyanide guns were used to take coyotes during the past 5 years. Elk, moose, and bighorn rams are especially popular targets due to their trophy value.

Between 1989-93, Yellowstone documented 79 poaching cases. There were 152 cases of firearms violations, most of which were hunters possessing guns within YNP. There were 261 additional cases of destruction or possession of natural features, many of which involve the commercial removal of wildlife parts (YNP LEO files).

Because of the clandestine nature of poaching and the large, remote area in which poachers operate, detection and documentation of incidents appears to be low (Baker 1983). Some

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law enforcement officers estimate that for every documented case of poaching, 30 incidents go unreported. Recent criminal cases initiated by the NPS and the USFWS have produced much evidence of the degree to which poaching has flourished. The covert "Operation Trophy Kill" in 1984-85 was particularly enlightening as to the extent of commercial operations in the Yellowstone area (Wilkinson 1989).

Documented poachings are most common along park roads where detection is likely. The Mammoth-Northeast Entrance road and the Gallatin Highway, U.S. 191, have a high number of incidents due to being open year-round. Some incidents are recorded on other park roads. Backcountry poachings have a lower likelihood of discovery and documented incidents doubtless represent a small percent of the problem. Boundary areas that receive heavy hunter use record most of these poaching incidents due to hunter presence and more intensive patrols, resulting in higher rates of detection.

Efforts to protect wildlife intensified during "Operation Trophy Kill". Since that time lack of funding has affected the availability of staff for front and backcountry patrols. Intelligence networks and expertise vary with personnel transfers and turnover. Several convictions resulted from "Trophy Kill", but most of the individuals sentenced to jail have since been released and are expected to resume their activities.

We expect illegal taking of wildlife to continue as the market prices for pelts, horns and antlers, bear claws, etc. remain stable or increase. Without continued or increased law enforcement response, there is no deterrent to persons involved in destroying or removing Yellowstone's world class wildlife resources.

Description of Recommended Project or Activity

Continue front and backcountry patrols to prevent and detect poaching activities. Continue to develop intelligence networks and maintain cooperative working relationships with other local, state, and federal agencies to enhance the likelihood of prevention and detection. Use USFWS Wildlife Forensics Laboratory to assist staff in detecting and collecting evidence for wildlife poaching cases. Publicize enforcement of wildlife poaching cases, to deter potential criminal activity resources.

Improve technological resources to prevent and detect poaching activities, through securing additional resource protection equipment. Increase training for personnel in preventing and detecting poaching activities, and build a computer network for electronic information transfer between law enforcement agencies. Maintain boundary patrols and anti-poaching enforcement efforts during regular and late hunting

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seasons.

BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	PRO	Recurring	31.00	1.30
1996:	PKBASE-NR	PRO	Recurring	31.00	1.30
1997:	PKBASE-NR	PRO	Recurring	31.00	1.30
1998:	PKBASE-NR	PRO	Recurring	31.00	1.30
Total:				124.00	5.20

		-----UNFUNDED-----			
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MIT	One-time	10.00	0.00
		PRO	Recurring	87.00	3.00
		Subtotal:		97.00	3.00
Year 2:		MIT	One-time	5.00	0.00
		PRO	Recurring	87.00	3.00
		Subtotal:		92.00	3.00
Year 3:		PRO	Recurring	87.00	3.00
Year 4:		PRO	Recurring	87.00	3.00
Total:				363.00	12.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Title : ASSESS EFFECTS OF ALIEN MOUNTAIN GOATS ON PARK

Funding Status: Funded: 2.00 Unfunded: 70.00

Servicewide Issues : N04 (NON-NAT ANIMAL)
Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W05 (Exotic Animal Management)

10-238 Package Number :

Problem Statement

No evidence exists that the mountain goat (*Oreamnos americanus*) predated man's arrival into a post-Pleistocene GYE (Laundre 1990). It was not observed in the early decades of the park's history, and no paleontological evidence exists of its habitation from sites in and around YNP, including one in the Lamar Valley (Hadly 1989). Earlier this century wildlife managers in the adjacent states transplanted mountain goats into the Absaroka-Beartooth Mountains north and east of the park, the Hilgaard-Madison range to the west-northwest, and the Teton Range to the southwest. Native populations farther to the west along the Idaho-Montana border pose some potential for natural colonization.

Wildlife observation records and a survey done in 1988 (Laundre 1990) indicate that goats have been seen in small numbers inside YNP since the late 1950s. The majority of the sightings are near the northeast and northwest corners of the park. Laundre concluded that a maximum of 12 individuals were living in the Wolverine Creek drainage spending some significant portions of time in the park. Other sightings are quite ephemeral, but have appeared farther into the park at such locations as Mt. Holmes and Gibbon Canyon since 1987. Area rangers believe they are seeing increased presence of goats; there are noticeable wallows present inside the northeast corner.

Laundre suggested 3 management alternatives: no action, selective control of goats to preselected densities, and preventing establishment of goats. These were in addition to continued monitoring of goats numbers and affects on vegetation and other species. In 1992 a graduate student undertook a study of mountain goats in Yellowstone compared to several other occupied sites. Results should help the park choose a management option for goats.

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Description of Recommended Project or Activity

Evaluate management alternatives and select course of action, based on best available research and monitoring results. Consider inviting outside panel of experts to review known information and recommend options for park management.

Establish regular monitoring effort for goat populations and (potential) impacts on other plant and animal species.

BUDGET AND FTEs:

Source		Activity	FUND Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	RES	One-time	2.00	0.20
Total:				2.00	0.20

Activity		FUND Type	Budget (\$1000s)	FTEs
Year 1:	MON	Recurring	10.00	0.40
Year 2:	RES	One-time	15.00	0.00
	MON	Recurring	10.00	0.40
Subtotal:			25.00	0.40
Year 3:	RES	One-time	15.00	0.00
	MON	Recurring	10.00	0.40
Subtotal:			25.00	0.40
Year 4:	MON	Recurring	10.00	0.40
Total:			70.00	1.60

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)
EA (ENV. ASSESSMENT)

Explanation: 516 DM6 APP. 7.4 E(6)

Last Update: 04/10/96
Initial Proposal: 1995

Project Statement

YELL-N-028.000
Priority: 16
Page Num: 0099

Title : PROTECT AND STUDY BLACK BEAR POPULATION

Funding Status: Funded: 50.00 Unfunded: 310.00

Servicewide Issues : N18 (VIS USE-BCTRY)
Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W01 (Native Terrestrial Animal
Management & Monitoring)

10-238 Package Number :

Problem Statement

In addition to a threatened population of grizzly bears, YNP is home to a population of black bears (*Ursus americanus*). In the park's early days and continuing up through the 1960s, the public came to associate YNP with its roadside bears, particularly the black bears. After the park undertook a major effort to eliminate unnatural foods from in-park dumps and roadside garbage cans, bears eventually learned to depend on natural foods and returned to more "wild" behavior patterns. This no longer brings many bears in proximity to roadsides, and as a result only a small percent of today's visitors see a bear during their visit.

The park's annual Bear Management Plan, which focusses on education and enforcement to reduce bear-human conflicts, pertains to both species of bears (see N-07). The park monitors bear sightings and movements, as can be opportunistically obtained. However, because the emphasis on research and management has focussed on grizzly bears for several decades, there has been little information deliberately collected on black bears. Good population estimates do not exist and would be fairly difficult to obtain 1) due to the general difficulty in counting or estimating hard-to-see animals, and 2) because trapping non-target grizzlies would likely occur if we undertook studies that required trapping and handling black bears. The latter has been in conflict with grizzly bear protection goals. The fact that comparatively few black bears are sighted in recent years, compared to the Yellowstone that many persons remember, gives the impression that the population has declined commensurate with bear observations. However, the park lacks sufficient data on the population to refute these criticisms, and to accurately assess the health of the population.

Description of Recommended Project or Activity

Continue implementing the approved bear management program, basic elements of which are:

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1. Public and staff education on bear behavior, biology, and management, and enforcement of regulations regarding food storage, feeding of wildlife, and human use of closed or restricted areas.
2. Reduction of unnatural human-bear conflicts. This includes a vigorous program of solid waste handling, use of bear-resistant trash containers, overall elimination of bear attractants, patrol and cleanup of backcountry campsites, and cooperation with adjacent landowners and gateway communities.
3. Control of individual problem bears. Bears which persist in entering and using developed areas in spite of efforts to eliminate unnatural food attractants will be promptly removed to other areas of the park, ecosystem, or from the park.
4. Maintain statistics and monitoring of bear observations and movements, confrontations/human injuries, property damage, natural and human-caused bear mortalities, and management actions related to preceding items.
5. Prepare a research plan and funding request to investigate basic population history, parameters, and distribution.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MIT	Recurring	12.00	0.20
1996:	PKBASE-NR	MIT	Recurring	12.00	0.20
1997:	PKBASE-NR	MIT	Recurring	13.00	0.20
1998:	PKBASE-NR	MIT	Recurring	13.00	0.20
Total:				50.00	0.80
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		RES	One-time	75.00	1.00
Year 2:		RES	One-time	75.00	1.00
Year 3:		RES	One-time	80.00	1.00
Year 4:		RES	One-time	80.00	1.00
Total:				310.00	4.00

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Initial Proposal: 1995

YELL-N-028.000
Priority: 16
Page Num: 0101

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)
OTHER ()

Explanation: 516 DM6 7.4 (E2);G.BEAR EIS

Title : STUDY/INTERPRET SMALL MAMMAL COMMUNITIES

Funding Status: Funded: 0.00 Unfunded: 76.00

Servicewide Issues : N20 (BASELINE DATA)
Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W01 (Native Terrestrial Animal
Management & Monitoring)

10-238 Package Number :

Problem Statement

Small mammals are an often overlooked component of dynamic ecosystems, yet they are significant as both prey species and as herbivorous and insectivorous consumers. They are also important in soil genesis and nutrient cycling. In YNP, wildlife research and management has generally focused on more conspicuous species such as grizzly bears, elk, and bison. The overall small mammal database for the park is depauperate; limited studies have been done in the last 2 decades. Studies addressed food habits and small mammal abundance after fires (Wood 1981; Alley and Moore 1989). Limited additional sampling efforts were initiated after the 1988 wildfires, from which some information may be forthcoming. Youmans (1979) studied life history and population characteristics of pocket gophers in Pelican Valley. Another study of pocket gophers and their influence on montane vegetation is in progress.

Significantly less effort has been directed at obtaining inventory and monitoring data on the taxonomy and distribution of small mammals. Streubel (1984) sampled 11 sites throughout the park for taxonomy, distribution, and abundance of small mammal species. A parkwide beaver survey was initiated in 1988 (Consolo and Hanson 1993) to determine presence and distribution. Hadly (1989) is investigating holocene vertebrate communities based on fauna from Lamar Cave in the park, and would like to compare present day small mammal communities with her paleontological record. A survey was initiated in 1990 in sites on the northern range in relation to coyote research (Harter and Crabtree 1993). The park's museum collection has 32 species of small mammals represented, from shrews and bats to red fox and mustelids. (Bears, cats, and Canid spp. are not included in that number.) Most specimens were collected prior to 1960 and are not numerous enough to give an indication of parkwide distribution. Mammal checklists and popular references cite a number of other species that are not represented in the collection; some of these are certainly present (lagomorphs, additional shrews, bats), and some species are unconfirmed as residents (skunks, raccoons, and others.) Increased collecting would likely result in finding new taxa, at least at the sub-species level.

Improved baseline data is needed on presence, abundance, and distribution of small mammal species, to meet NPS inventory and monitoring standards, and to provide valuable information to researchers studying other aspects of the ecosystem. Crabtree and Hornocker (1989) are studying Yellowstone's coyote population, and seek enumeration of prey species diversity and abundance. The pine marten has been listed as an indicator species by the adjacent national forests, but their association with old growth forests has not been sufficiently investigated to assess their value as an indicator of change. Also, the desire to understand and potentially model the basic mechanisms and energy pathways influencing the northern range and other parts of the ecosystem requires additional knowledge about small mammals.

Small mammals occasionally require management action (see N-31). Some periodically invade park buildings and must be handled in an IPM manner (see I-12). Small mammals, particularly ground squirrels and chipmunks, are commonly fed at park picnic areas and campgrounds, presenting a safety and education problem. While sylvatic plague, periodically found in some rodent populations, has not been identified here recently, the potential exists for it or simple "finger-nipping" to pose a visitor safety hazard.

Description of Recommended Project or Activity

Improve species collection using on-going research projects. Require cooperative researchers to submit either reference list or specimens to park museum collection, as determined by the park curator. An updated species list should be prepared for scientists, interpreters, and resource managers to use, coordinated with the park's GIS.

Continue to evaluate low-impact monitoring for uncommonly seen small to mid-sized carnivores, and seek valid means of improving on observation records.

Manage small mammal "pests" in IPM manner, through staff and public education, removing food sources and structural deficiencies that contribute to problem. Animals will occasionally be transplanted or removed from problem sites for human health and safety reasons.

Determine abundance and distribution of small mammals in selected habitats on northern range and elsewhere. Due to logistical and funding constraints, it is likely that this will have to be done in several separate projects, grouping rodents, lagomorphs, and carnivores separately. The first project began in 1992 and results are being written up in the winter of 1994-95.

Develop inventory and monitoring system to track small mammal populations over time. This will be an expected product

of sampling and research done for other topics, such as in item #1 and #2.

BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
		-----UNFUNDED-----		
	Activity	Fund Type	Budget (\$1000s)	FTEs

Year 1:	RES	One-time	12.00	0.80
	MON	Recurring	10.00	0.50
Subtotal:			22.00	1.30

Year 2:	RES	One-time	12.00	0.80
	MON	Recurring	10.00	0.50
Subtotal:			22.00	1.30

Year 3:	RES	One-time	12.00	0.80
	MON	Recurring	10.00	0.50
Subtotal:			22.00	1.30

Year 4:	MON	Recurring	10.00	0.50
Total:			76.00	4.40
			=====	=====

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Title : SAMPLE WILDLIFE DISEASES/BUILD DATABASE

Funding Status: Funded: 6.00 Unfunded: 0.00

Servicewide Issues : N20 (BASELINE DATA)
Cultural Resource Type:
N-RMAP Program codes : C00 (Collections and Data Management)
C03 (GIS/Data Management)

10-238 Package Number :

Problem Statement

In 1992, a WASO veterinarian initiated a wildlife health monitoring program, and asked Yellowstone to be a test park to help develop a field program and protocol that can eventually be used in other parks. The intent of the program was to begin or build upon the existing collection of information about wildlife diseases in parks. Concerns related to wildlife diseases include human health hazards, threats to the survival of wild animal populations, and transmission of diseases to domestic pets or livestock in and around parks.

The program was intended to be primarily opportunistic, with collection of live or dead wildlife samples done by field personnel in parks. Cooperative agreements were established with the Wyoming Veterinary Lab and the Caine Veterinary School in Boise, Idaho to perform some lab tests and store blood sera, respectively. Researchers with their own funding and an approved study plan may obtain samples from such facilities. Reports on the health of sampled animals were sent to the park and to WASO, who was to incorporate the data into a GIS database. However, the WASO veterinarian left a temporary position in 1993 and has not been replaced.

The park received some training and equipment, provided by WASO or other contractors, and developed guidelines for how a wildlife health sampling program might work in other parks with various sized staffs and varied wildlife species. These were forwarded to the Rocky Mountain Region; however, no action was taken to send the protocol on to other parks. The park continues to opportunistically collect samples and send them to the Wyoming Veterinary Laboratory or the Montana Fish, Wildlife and Parks Lab; these facilities cooperate with the occasional sampling and report on unusual results received from park wildlife. Results are recorded in the resource management office.

Project Statement
Last Update: 04/10/96
Initial Proposal: 1995

YELL-N-030.000
Priority: 16
Page Num: 0106

Description of Recommended Project or Activity

Opportunistically collect samples from live or dead animals, according to the park's written guidelines, for inclusion in the wildlife health sampling program. Apply park and WASO-developed protocol to continued monitoring of wildlife health in Yellowstone. Provide information as requested to researchers and public as to wildlife health in the park.

BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	SVC-OTHER	MON	One-time	3.00	0.00
1996:	SVC-OTHER	MON	One-time	3.00	0.00
Total:				6.00	0.00

		-----UNFUNDED-----			
	Activity	Fund Type	Budget (\$1000s)	FTEs	
Total:				0.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Project Statement

YELL-N-031.000

Last Update: 04/10/96

Priority: 16

Initial Proposal: 1995

Page Num: 0107

Title : MANAGE WILDLIFE CONFLICTS IN ROADSIDE/DEVEL. AREAS

Funding Status: Funded: 20.00 Unfunded: 50.00

Servicewide Issues : N04 (NON-NAT ANIMAL)
N16 (NEAR-PARK DEV)

Cultural Resource Type:

N-RMAP Program codes : H00 (Pest and Hazard Management)
H01 (Integrated Pest Management)

10-238 Package Number :

Problem Statement

It is common to see wildlife along park roads and in developed areas in YNP. The park has 8 major locations that provide visitor services and staff housing, and 5 additional administrative areas adjacent to park entrances. Conflicts can arise when wildlife frequent developed areas and potentially endanger residents or visitors. Pets, although required to be leashed or physically restrained, sometimes get loose and conflict with park wildlife. Landscaping, watering, and/or mowing in some areas enhances their attractiveness to wildlife.

Since 1981, bison have posed the biggest danger and have injured more than 2 dozen people and gored several stock. In 1987 the Lake District experimented with highly trained stock dogs to herd bison out of campgrounds and developed areas. One attempt failed; the other appeared to displace bison quite temporarily. Elk can also be dangerous, particularly bulls during the rut and cows during calving season. In 1988 a bull elk was moved 30 miles after chasing park residents and charging vehicles in a housing area. Animals may be attracted to developed areas even if food is not deliberately presented. Rodents, pine martens, birds, and other animals sometimes find their way into visitor service, administrative, or housing facilities, causing amusement, frustration, occasional safety or sanitation problems. Many people feed these "cute little beggars", which can result in a bitten hand. Food conditioning of animals may result in a decline in the animal's health or ability to fend for itself when visitors - and related food - is unavailable. Although not presently known here, other park areas have experienced outbreaks of plague in rodent populations, or other diseases in wild animals (see N-30).

The primary challenge is to keep people and wildlife safely apart. People have a high expectation of safety in developed areas (compared to the backcountry, where more "wildness" and associated risk is likely expected or desired). A general perception exists that animals in developed areas are tame. There appears to be an increase in injuries and cases of visitors being chased/butted/gored, particularly while taking pictures.

Unintended or deliberate wildlife stress or harassment is also a management concern.

Beginning in 1989, the park compendium to 36 CFR included the following provision: "Approaching on foot within 100 yards of bears or within 25 yards of any wildlife and nesting birds or within any distance which disturbs or displaces wildlife and nesting birds is prohibited. Protected animals include, but are not limited to: Grizzly bear, black bear, bison, elk, bighorn sheep, moose, mule deer, white-tail deer, coyote, wolf, river otter, loons, falcons, eagles, swans, terns, pelicans, gulls, Harlequin ducks, and cranes. Park personnel involved in approved management or research activities are excepted. This rule does not apply to inadvertent or casual encounters with wildlife in developed areas where normal foot traffic is required or essential."

Description of Recommended Project or Activity

Increase human knowledge of habituated and food conditioned wildlife. Signing, interpretive programs, park brochures, and newspapers are currently used to warn and teach the public about maintaining a safe distance from wildlife. These efforts should continue and be expanded if possible using other media.

Minimize food availability and wildlife attractants. Keeping human foods from wildlife is already a major component of our bear management program. There is need for increased enforcement of regulations that prohibit feeding wildlife, even of small mammals, and of employee and visitor pet policies.

Approach site-specific problems with an IPM approach. Integrated Pest Management techniques should be applied to human-wildlife conflicts whenever possible. Rather than treating or removing a "problem animal", consider treating the root of the problem (i.e.,. if small mammals or rodents get into buildings, can the structure be modified to prevent entry? Can bison be prevented from accessing horse corrals?) Remove problem individuals if need be; on occasion it may be necessary to translocate or remove nuisance animals from a roadside or developed area. If this is done, park staff will follow capture and immobilization guidelines and document any handling of wildlife on a Wildlife Capture Record.

Project Statement
 Last Update: 04/10/96
 Initial Proposal: 1995

YELL-N-031.000
 Priority: 16
 Page Num: 0109

BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MIT	Recurring	5.00	0.10
1996:	PKBASE-NR	MIT	Recurring	5.00	0.10
1997:	PKBASE-NR	MIT	Recurring	5.00	0.10
1998:	PKBASE-NR	MIT	Recurring	5.00	0.10
Total:				=====	=====
				20.00	0.40

			-----UNFUNDED-----		
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MIT	Recurring	12.50	0.50
Year 2:		MIT	Recurring	12.50	0.50
Year 3:		MIT	Recurring	12.50	0.50
Year 4:		MIT	Recurring	12.50	0.50
Total:				=====	=====
				50.00	2.00

(Optional) Alternative Actions/Solutions and Impacts
 (No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(7)

Last Update: 04/10/96
Initial Proposal: 1995

Project Statement

YELL-N-032.000
Priority: 16
Page Num: 0110

Title : MANAGE HABITUATED COYOTES

Funding Status: Funded: 1.00 Unfunded: 20.00

Servicewide Issues : N04 (NON-NAT ANIMAL)
N16 (NEAR-PARK DEV)

Cultural Resource Type:

N-RMAP Program codes : H00 (Pest and Hazard Management)
H01 (Integrated Pest Management)

10-238 Package Number :

Problem Statement

The coyote (*Canis latrans*) is a common species and has been since the park's inception (Murie 1940) despite an early period of predator control. Coyotes occasionally lose their wariness of humans and frequent roadsides or developed areas. The animals may become conditioned to human food by receiving handouts, picking up food scraps left in visitor-use areas, and/or developing begging behavior. This increases the likelihood of coyotes being hit by vehicles; it also poses a safety threat to park visitors and employees. Coyotes have been reported to cause minor injury to park visitors (Murie 1940; Yell NP LEO files) including a 1990 attack on a skier in the Old Faithful area.

In 1989 research was initiated to investigate the basic ecological role of coyotes in YNP related to the absence (and potential reestablishment) of native wolves and to the environmental conditions resulting after the fires of 1988. However, little attention has been focussed in or out of the park on behavioral modification of coyotes that have become habituated to human activity. Beginning in 1988, park staff increased its monitoring of coyotes frequenting roadsides and began discussing options for dealing with these individual animals, including but not limited to removal of habituated or "beggar" coyotes.

Description of Recommended Project or Activity

Education of staff and public concerning habituated coyotes by one or more of these methods:

- 1) placing signs about not feeding animals at visitor use locations frequented by coyotes;
- 2) placing signs and/or more detailed information at visitor centers, warming huts, and visitor contact stations;
- 3) increased visitor contacts by interpretive and RM & VP staff concerning habituated wildlife and the dangers to both coyotes and humans;

- 4) media contacts highlighting this problem and the need for public cooperation;
- 5) special programs on coyote behavior, for staff and/or public;
- 6) additional written information on habituated coyotes, distributed through park newspapers, entrance station handouts, etc.; and
- 7) increased enforcement of regulations regarding feeding wildlife and littering.

Behavioral modification of unwary coyotes in developed areas and along roadsides, if attempted, is recommended to be repeated for a minimum of 3 attempts of the following in step-up fashion, with responses to each technique carefully observed and documented:

- 1) scaring individuals away from roadside/developed areas by noise-makers, cracker rounds, bear repellent spray, playing wolf calls, etc., and 2) aversive conditioning with Ropel, other distasteful substances/emetics, or other negative stimuli.

Attempted translocation of individual habituated coyotes to other areas of the park, if attempted, should be monitored by marking via eartag and/or lip tattoo at a minimum, transport to another location at least 15 miles distant, and monitoring for return to a roadside or developed area.

Obviously aggressive individuals may be removed with the approval of the Chief Ranger. These are coyotes who a) have been subjected to one or more of the aforementioned experiments with unsuccessful results or b) are unmarked individuals, but which in either case are observed by park rangers at close range to exhibit threatening posture, noises, or aggressive approach behavior around humans and pose an immediate threat to human safety. Removal may be accomplished by trapping and/or shooting (but ideally, not in the head), depending on the immediacy of danger to humans and the likeliest method of success. These animals will be tested for rabies and/or canine distemper. Carcasses, if not needed for additional research purposes, should be disposed of in the wild.

Potentially habituated coyotes in developed areas and along roadsides will be monitored by repeated observation and recording of coyotes and tracks or other signs of regular presence in visitor-use areas; use photographs and/or paint marking to try and identify individual animals frequenting these areas; and document by station logs and/or Case Incident Reports frequent sightings of coyotes in visitor-use areas. Staff may increase knowledge about coyotes in specific locales by noting responses to coyote vocalization tapes, track or other surveys, and/or radio-monitoring of selected individuals.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MIT	Recurring	1.00	0.10
				=====	
			Total:	1.00	0.10
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MIT	Recurring	5.00	0.30
Year 2:		MIT	Recurring	5.00	0.30
Year 3:		MIT	Recurring	5.00	0.30
Year 4:		MIT	Recurring	5.00	0.30
				=====	
			Total:	20.00	1.20

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(7)

Project Statement

Last Update: 04/10/96
Initial Proposal: 1995

YELL-N-033.000
Priority: 16
Page Num: 0113

Title : INCREASE CARNIVORE RESEARCH/MONITORING

Funding Status: Funded: 2.00 Unfunded: 336.00

Servicewide Issues : N20 (BASELINE DATA)
N02 (T&E ANIMAL)

Cultural Resource Type:

N-RMAP Program codes : W00 (Wildlife Management)
W01 (Native Terrestrial Animal
Management & Monitoring)

10-238 Package Number :

Problem Statement

It is often mistakenly said of YNP that because the gray wolf was extirpated earlier this century, there are no natural predators at work on prey species. In addition to grizzly and black bears, for which increased predation is being documented since the days when dumps existed in the park, other carnivorous mammals do reside in YNP and interact with prey populations. We call these mid-sized carnivores, though they range substantially in size, and include the mountain lion, bobcat, wolverine, coyote, and red fox.

Mountain lions were subjected to predator control programs in the early decades of the park, as were wolves. No research was ever done on big cats until a mountain lion ecology study began in 1987 (Hornocker, Murphy, and Tischendorf 1988). A resident population is present and their effects on prey species such as elk and deer are being documented. Bobcats, wolverines, and red foxes are also present but have not been studied; their distribution and effects on prey populations are unknown. Coyotes are widespread and abundant, and were the subject of study in the late 1930s (Murie 1940.) YNP provides one of very few places where an unexploited population of this predator could be studied.

The effects of widespread fires and of potential recolonization by wolves on coyotes prompted initiation of a coyote study in 1989 (Crabtree and Hornocker 1989). With the exception of the occasional nuisance animal, none of these predators is subject to an active management program in YNP; all are subject to hunting or trapping outside the park and to some poaching.

Lynx are usually listed among the native species; though the park's mammal collection lacks a lynx, there have been periodic sighting reports over the years and Yellowstone is usually considered within its range (Clark and Stromberg 1987; McCord and Cardoza 1982). Fisher are generally not listed as historically present here, though some alleged sightings are reported and some authors indicate records from the periphery of the park (Clark and Stromberg 1987.) Pine marten are common in the park and have been recently used by the USFS as an indicator species for old

Project Statement

Last Update: 04/10/96
Initial Proposal: 1995

YELL-N-033.000
Priority: 16
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growth forests. They are the subject of collateral research projects begun in 1989 in and outside the park. Badger, weasels (ermine and long-tailed), river otter, and mink are represented in the park's collection. Raccoons are not, but sightings, tracks, and photographs indicate their presence may be on the increase in recent years.

This entire group of species is probably in no imminent threat from activities in or adjacent to YNP. No information is available on whether these animals are illegally taken from the park in any number. However, baseline information on them - until the recently initiated studies of coyotes, cougars, and marten - is scarce. In the late 1980s the park began to experiment with inexpensive methods to increase presence data on these rarely seen species by sampling for snow tracks and guard hairs. Scent stations and an infrared camera system on a bait station were tested in the winters of 1990-93; potential exists for more of this type of monitoring system to work here. The cost of increasing baseline information for these species tends to be relatively high compared to monitoring ungulates, fish, some bird species, or other easily observable wildlife. Yet in the long term, additional baseline data is needed to evaluate changes in the status of these species. In recent years, a Western Forest Carnivore Committee has been formed by interagency and non-governmental participants to increase information sharing and develop monitoring techniques for these rarely seasonals. The park sent a representative to this group for the first time in 1995, and hopes to continue participation in this group for information exchange.

Description of Recommended Project or Activity

Review results of mountain lion, coyote, and pine marten ecology studies, and incorporate subsequent monitoring or management recommendations as appropriate.

Record observations of mid-sized carnivores opportunistically. Collate historic and present records and overlay with habitat maps to assist future investigators.

Continue low-cost, low-impact methods of monitoring rarely seen carnivores, until research funds become available for additional studies on carnivore populations.

Increase participation in Western Forest Carnivore Committee, through attendance at annual meetings and database development and sharing.

Conduct research on additional predator species, beginning with wolverine, lynx, and bobcats.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	0.50	0.10
1996:	PKBASE-NR	MON	Recurring	0.50	0.10
1997:	PKBASE-NR	MON	Recurring	0.50	0.10
1998:	PKBASE-NR	MON	Recurring	0.50	0.10
Total:				2.00	0.40
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Recurring	8.00	0.10
Year 2:	RES		Recurring	100.00	0.30
	MON		Recurring	8.00	0.10
Subtotal:				108.00	0.40
Year 3:	RES		Recurring	100.00	0.30
	MON		Recurring	10.00	0.10
Subtotal:				110.00	0.40
Year 4:	RES		Recurring	100.00	0.30
	MON		Recurring	10.00	0.10
Subtotal:				110.00	0.40
Total:				336.00	1.30

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Title : PLAN/IMPLEMENT LONG-RANGE BISON MGMT PROGRAM

Funding Status: Funded: 60.00 Unfunded: 1249.00

Servicewide Issues : N01 (NAT ANML OVPOP)
N16 (NEAR-PARK DEV)

Cultural Resource Type:

N-RMAP Program codes : W00 (Wildlife Management)
W01 (Native Terrestrial Animal
Management & Monitoring)

10-238 Package Number :

Problem Statement

In recent years significant numbers of bison (*Bison bison*) have migrated out of YNP onto Forest Service and private lands where they are not wanted. The NPS does not have jurisdiction over all the historic bison winter range.

From 1902 to about 1915, protection from poaching allowed the native bison herd to gradually increase from less than 100 animals. Augmentation from introduced plains bison in 1902 further increased bison numbers. Prior to 1930, bison management in the park was of a ranching philosophy. Policy began to shift in the 1930s toward that of preserving bison in a natural state, and artificial management practices were gradually eliminated. In 1966, management policy was further refined toward a philosophy of natural regulation. All bison ranching and artificial control ceased and the park's population of bison has continued to increase over the course of the past three decades.

Since the winter of 1975-76 the number of bison emigrating in mixed herds (cows and calves) has increased, primarily on the northern boundary. During the severe winter of 1975-76, approximately 80 bison moved north down the Yellowstone River. In the winters of 1985-86 and 1986-87, about 250 bison foraged in the boundary area near Gardiner, Montana at least part of the winter. The movement peaked in the winter of 1988-89 with most of the known 900 bison in the Northern herd either leaving the park or foraging near Gardiner; increasing numbers of bison also move out the west boundary in winter.

In 1968 a boundary control program was initiated, which consisted of shooting bison that approached specified areas. Approval to shoot bison was rescinded by the Dept. of Interior in 1978. As early as the winter of 1975-76, numerous control measures have been attempted to discourage bison from leaving the park. Hazing, herding, physical barriers, and scare devices met with only limited success. Once the animals became accustomed to the control measures, they no longer responded. These efforts were tried again during the 1980s, with similar lack of results.

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Initial Proposal: 1995

Priority: 2
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The factors stimulating the emigration movement to "bison vacant" lands outside appear to be acquired knowledge of vacant range, the bison's natural gregariousness, increased herd size, weather conditions, and human activity. Whereas in the past, snow depths in the park interior likely restricted bison movements into many areas, the winter grooming of snow roads for oversnow travel has facilitated bison movement into previously unoccupied areas in and outside the park. This is particularly true on the west side of YNP. Bison will continue to attempt to move outside the park where they are in conflict with management directives on both private and public lands.

The State of Montana and some property owners feel the emigrating bison present problems of possible damage to private property (damage to fences occurred in the 1988-89 movement) and the potential transmission of *Brucella abortus* to cattle. *Brucella abortus* is the causative organism of a contagious disease called brucellosis, which can cause domestic cattle to abort their calves. Tests indicate some Yellowstone elk and bison are infected with the brucella organism. 54% of the bison killed outside the park in 1989 tested positive for having been exposed to the brucella organism. There is some scientific evidence that exposure to the organism does not equate with the bison's being infectious. No domestic cattle in the GYS have contracted the brucella organism to date. However, the NPS participates in a Greater Yellowstone Interagency Bison Council, to discuss long-range brucellosis elimination while preserving wild ungulates in the ecosystem.

In 1984, MDFWP personnel removed 88 bison outside the northern boundary. In 1985, the Montana Legislature added the bison to the state list of big game and instituted special regulations for a hunting season on bison in the state. Between 1985 and 1989, a total of 688 bison outside park boundaries were removed by warden-supervised public hunters.

State and federal agencies, each having separate and defined mandates, come into conflict in attempting to resolve their management problems. MDFWP was charged with managing the bison as a big game animal; the State Dept. of Livestock was given responsibility for bison control outside the park in 1995. The Animal, Plant, and Health Inspection Service (APHIS) is charged with elimination of diseases such as brucellosis, while the NPS is mandated to protect native species and their natural behaviors on park lands. The USFS manages wildlife habitat, but does not manage wildlife on lands under its jurisdiction. These agencies are involved in an effort to prepare a long-term, interagency Bison Management Plan to address the many concerns related to bison management in the GYA. The State of Montana threatened suit against the federal government in 1995, due to the length of time it was taking to prepare a long-range bison management programs. A draft Interim Bison Management Operations Plan and EA was prepared and distributed for public comment in November, 1995. The long-range plan/EIS is due for public release in November 1996, with a final decision expected in early summer

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Initial Proposal: 1995

Priority: 2
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1997, according to a settlement agreement with the State of Montana. Implementation will require a commitment of park staff and fiscal resources.

Meagher (1993) documented increasing concern that effects of winter road grooming, in combination with high population levels, were changing the distribution of bison on their winter ranges and having a ripple effect on summer range use and distribution. Winter counts in 1995 supported estimates of 3,500-4,000 bison. The challenges of bison management continue to concern researchers, planners, and managers.

Bison management generates intense public interest. There is a typical public perspective that bison are an endangered species (they have never been listed), though they number more than 80,000 in North America. However, Yellowstone retains one of few free-ranging herds that are unfenced and free from regular roundup and culling activities. Bison ecology has been studied by a staff biologist for nearly 3 decades, and research and monitoring of bison movements in relation to human activities continues. Additional aspects of bison ecology, response to human activities, and potential disease transmission, will be further studied as needed and funded.

Description of Recommended Project or Activity

Continue aerial monitoring of bison herds by at least four flights per year. Continue ground monitoring of bison movements near park boundaries, report to cooperators on such movements, and participate in necessary management actions (i.e., hazing, herding, individual animal removal) as called for in interim bison management plan and when requested by the State.

Cooperate with the State of Montana and others to gather information on bison movements and mortality, reliable numbers, sex and age data, and brucella organism presence on animals removed outside the park.

Prepare cooperative long-range management plan for controlling bison problems, such as reducing the possibility of brucella organism transmission to cattle and reducing human conflicts and property damage outside YNP, while ensuring opportunities to view free-ranging bison and maintaining a self-perpetuating bison population in Yellowstone. Implement long-range management plan as called for in final EIS.

Continue participation in Greater Yellowstone Interagency Bison Council (GYIBC) to discuss technical issues, share information, and work toward mutual goals and objectives. Cooperate with research efforts on bison population dynamics, relationship of the brucella organism to bison, elk, and cattle; evaluating means of eradication or control of the brucella organism; and other

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Initial Proposal: 1995

Project Statement

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topics.

BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	10.00	0.30
	PKBASE-NR	ADM	One-time	40.00	0.90
	PKBASE-NR	MIT	One-time	10.00	0.20
			Subtotal:	60.00	1.40
			Total:	60.00	1.40
			-----UNFUNDED-----		
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		RES	One-time	60.00	0.00
		MIT	Recurring	63.00	1.00
		MON	Recurring	30.00	0.20
		MIT	Recurring	50.00	0.00
			Subtotal:	203.00	1.20
Year 2:		MIT	Recurring	63.00	1.00
		MON	Recurring	30.00	0.20
		RES	One-time	60.00	0.00
		MIT	Cyclic	250.00	0.00
			Subtotal:	403.00	1.20
Year 3:		MIT	Cyclic	250.00	0.00
		MIT	Recurring	35.00	1.00
		MON	Recurring	6.50	0.20
		RES	One-time	60.00	0.00
			Subtotal:	351.50	1.20
Year 4:		MIT	Cyclic	250.00	0.00
		MIT	Recurring	35.00	1.00
		MON	Recurring	6.50	0.20
			Subtotal:	291.50	1.20
			Total:	1249.00	4.80

(Optional) Alternative Actions/Solutions and Impacts

Project Statement
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Initial Proposal: 1995

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(No information provided)

Compliance codes : EIS (ENV. IMPACT STATEMENT)

Explanation: IS BEING PREPARED

Project Statement
Last Update: 04/10/96
Initial Proposal: 1995
YELL-N-035.000
Priority: 5
Page Num: 0121

Title : RESEARCH AND INTERPRET UNGULATE ECOLOGY

Funding Status: Funded: 83.80 Unfunded: 482.00

Servicewide Issues : N01 (NAT ANML OVPOP)
N20 (BASELINE DATA)

Cultural Resource Type:

N-RMAP Program codes : W00 (Wildlife Management)
W01 (Native Terrestrial Animal
Management & Monitoring)

10-238 Package Number :

Problem Statement

Management of Yellowstone's ungulate populations, especially on the northern range, has been controversial for more than half a century. YNP contains approx. 83% of the northern winter range for one of the world's largest elk herds, which averaged 17,000 between 1980-90. As early as 1919 and again in the drought years of the 1930s, park managers expressed concern about a possible overabundance of elk. To correct what was thought to be overuse and deterioration of winter range, NPS conducted a massive elk reduction program from 1935-1968, when 26,241 elk were live-trapped and translocated or shot (Lemke and Singer 1989). During this same period, pronghorn and bison populations were also occasionally controlled.

In 1962 the Secretary of Interior established a Committee on Wildlife Management in the National Parks, spurred largely by controversy over elk control in YNP. This group's findings in 1963 came to be known as the "Leopold Report." The debate during and after publication of this report led to a complete revision of national park management policy, away from intensive manipulation of resources and toward a philosophy of natural regulation. Parks began to restore natural fire and ceased favoring ungulates over predators. The Leopold Report affirmed that management should be based on current and continuing research.

In 1967, due largely to public controversy, YNP halted its elk reductions. In 1970, YNP began a long-term research program to evaluate relationships between ungulates, plants, and fire (or the absence thereof) on the northern range. The research was synopsized in The Northern Yellowstone Elk: Ecology and Management (Houston 1982). Houston concluded that "photos and other work did not support interpretations of widespread erosion resulting from foraging activities of free-ranging elk", and that sampling in the grasslands mostly measured fluctuations in plant communities related to short-term climatic conditions rather than long-term directional changes. Geology and fire suppression activities were also indicated as having stronger influence on

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Initial Proposal: 1995

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vegetative communities than ungulate grazing.

Dr. Houston's work did not lay to rest the controversy; critics still maintain that large numbers of bison and elk have compromised pronghorn and mule deer populations, caused increased soil erosion, and resulted in declining numbers of aspen, willow, and beaver. In 1986 Congress directed the NPS to determine whether bison or elk were overgrazing the northern range. NRPP funding paid for a new series of research projects designed to address the on-going issue. Some 40 studies undertaken by NPS staff and contract researchers relate to ungulates, predators, vegetation, and their interrelationships. The latest studies are in various stages of completion. Conclusions and distribution of these studies is of interest to various audiences in and outside the NPS; the results and implications of Houston's work and that of other researchers are still not widely known. This work was almost entirely limited to effects of ungulate grazing on grasslands, and many researchers in and outside the NPS have subsequently called for additional studies to investigate the ecological relationships between ungulates and riparian resources.

The northern range controversy will likely continue. Views on overgrazing continue to vary depending on the management goals and the professional backgrounds of the observers. Debate is steeped in decades of history, changing park and wildlife management philosophy, volumes of information and misinformation, continuing criticism of NPS policy and objectives, and a wide spectrum of values and goals for Yellowstone held by scientists and the general public.

Need exists for additional clarification of this historical and present dilemma and the park's resultant management response(s). The amount of research already done provides the foundation for increased understanding of ecosystem components and relationships at a scale unrivaled in most parks. There is a need to insure regular transfer of information between research and management, to continue sound resource monitoring and management programs. YNP sponsored its first Science Conference on Plants and Their Environments in September 1991 and hopes to continue offering a forum for research results on a biennial basis. The report to Congress on the question of whether or not the Northern Yellowstone Range is overgrazed underwent scientific peer-review for several years, and is overdue for printing and distribution. Many of the included papers have been published in other scientific journals.

Park staff participate, along with the Gallatin NF and MDFWP, in a Northern Yellowstone Working Group, to discuss management and research related to elk, moose, deer, and other species. The working group also coordinates and shares funding of ungulate population censuses and some research projects.

Management inside YNP currently continues under the concept of natural regulation; i.e., few if any actions are taken to

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directly influence the wildlife or its habitat. This policy is not unanimously accepted inside or outside of the NPS. Efforts are made to reduce human influences such as poaching, fire suppression outside developed areas, and spread of non-native plants. Outside the park, hunting influences elk, deer, moose, and bison (to a less predictable degree). Acceptance of the once-controversial Gardiner late elk hunt has grown, and Montana increasingly desires to accept and manage elk outside the park. Some controversy centered around the large elk emigration in the winter of 1988-89, which was followed by a winterkill of approx. 25% of the herd. Recent interagency efforts have focussed on acquisition of winter range north of the park, involving the 3 agencies, private individuals, and the Rocky Mountain Elk Foundation. A NRPP project to restore historic winter range on acquired park lands in the Gardiner Addition in the Boundary Land Area was funded beginning in FY 1994, but funds have been reprogrammed, causing uncertainty as to whether revegetation will begin. Concern remains that aspen and sagebrush communities are being adversely affected by high levels of ungulate grazing.

Despite the extensive history of elk research and management in the park, there is no base-funded long-term monitoring program to insure maintenance of elk and vegetation surveys. And relatively little research and monitoring has occurred of mule deer, moose, pronghorn, and bighorn herds which also occupy the northern range and other areas of the park. Due to the extremely high visibility of these species to the public and park neighbors, and to the ever-present controversy about northern range ecology and park management policies, it is imperative that the park have a solid, continuing monitoring program for these species, and a strong program of objectively interpreting the many viewpoints that exist concerning this controversial topic.

Description of Recommended Project or Activity

Continue participation in Northern Yellowstone Elk Working Group, for regular monitoring and information sharing related to research and management of elk, deer, moose, bighorn sheep, and pronghorn and their habitat on the northern range. Maintain population and classification counts consistently, as recommended by Northern Range Working Group and other scientists. In a 1994 review, the priority for ungulate surveys on the Northern Range was as follows:

Survey		Type
1. N. Yell Elk Count	SuperCub	12/15-1/15
2. N. Yell Mule Deer Count	Helicopter	4/15-5/20
3. Bighorn Sheep Count/Class.	Helicopter	4/15-5/20
4. Pronghorn Count	Supercub	3/15-4/
5. Winter Mule Deer Class.	Helicopter	12/1-1/10
6. Elk Classification	Helicopter	1/1-3/15
7. Madison-Firehole Elk Count	Supercub	needs review

Project Statement

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Initial Proposal: 1995

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Northern herd counts are to be shared 3 or 4 ways with members of working group.

Maintain monitoring of vegetation (exclosures), and discuss broader long-term monitoring regime to address other concerns (i.e., for aspen communities, riparian zones, etc.) Seek funding to institute needed research and monitoring.

Promote staff and public education concerning this complex issue.

Research and monitoring project results need to be regularly and deliberately shared with park interpreters, visitors, and critics. Publications should be targeted for the scientific community, the lay reader, and for environmental education audiences.

Continue cooperative mule deer ecology study begun in 1993. Seek funding and means to accomplish other research on northern range ungulate species and their environment, to meet the needs posed by scientists and managers, such as evaluation of impacts related to wolf recovery.

Participate in constructive debate concerning management of ungulates and affected resources, particularly on the northern range. Provide information to interested scientific review groups (i.e., sponsored by The Wildlife Society or the Society for Range Management).

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	NRPP	MON	One-time	7.00	0.00
	PKBASE-NR	MON	Recurring	19.20	0.50
			Subtotal:	26.20	0.50
1996:	PKBASE-NR	MON	Recurring	19.20	0.50
1997:	PKBASE-NR	MON	Recurring	19.20	0.50
1998:	PKBASE-NR	MON	Recurring	19.20	0.50
			Total:	83.80	2.00
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Recurring	50.00	1.00
Year 2:		MON	Recurring	50.00	1.00

Last Update: 04/10/96
Initial Proposal: 1995

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Year 3:	MON	Recurring	50.00	1.00
	RES	One-time	141.00	1.70
			-----	-----
		Subtotal:	191.00	2.70
Year 4:	MON	Recurring	50.00	1.00
	RES	One-time	141.00	1.70
			-----	-----
		Subtotal:	191.00	2.70
			=====	=====
		Total:	482.00	7.40

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Title : MAINTAIN PRONGHORN HERD AND RESTORE HABITAT

Funding Status: Funded: 2.00 Unfunded: 20.00

Servicewide Issues : N06 (LAND USE PRAC)
N17 (BIODIVERSITY)

Cultural Resource Type:

N-RMAP Program codes : W00 (Wildlife Management)
W01 (Native Terrestrial Animal
Management & Monitoring)

10-238 Package Number :

Problem Statement

YNP includes among its native species the pronghorn (*Antilocapra americana*), which reside primarily along the northern edge of the park in sagebrush steppe and subalpine meadows. While occasional summer sightings place pronghorn in the Firehole, Madison, and Hayden Valleys in the park interior, the only year-round herd survives partly on winter range outside the park boundary north of Gardiner, Montana. Some of these lands are in private ownership, and some are managed by the USFS.

Historically, pronghorns were reported to be numerous in parts of the Yellowstone River Valley. Paleontological evidence indicates this species has occupied lands fifty miles downriver north of the park for at least the last 6300 years, and recent research has found pronghorn bones in the park's Lamar Valley dated to approx. 960 years before present (Hadly 1989.) The park's previous RMP indicated that pronghorns, historically subjected to hunting and habitat alteration outside the park and reduction programs inside the park, have fluctuated greatly and require continual monitoring. It is possible that this herd is a remnant of a once larger population that ranged from northern YNP down the Yellowstone River through Yankee Jim Canyon into Paradise Valley toward Livingston, MT; however, in recent decades pronghorns are rarely seen between Livingston and the park.

In the past, the pronghorn have been influenced by crop production on lands near the town of Gardiner, herd reductions inside the park, extensive feeding of hay, and fences. In 1987, due primarily to the increased movement of bison across the park boundary, the Royal Teton Ranch, owner of the largest private ranch adjacent to YNP's northern border, built a fence along the boundary. The wooden jack-leg fence was built to protect their fields and gardens from park wildlife, and to discourage bison from crossing out of the park onto Ranch lands. A publication on the effects of the jack-leg fence on pronghorn movements was published in 1992.

In 1988, park researchers began a detailed investigation into the

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Initial Proposal: 1995

Priority: 16
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accuracy of historic pronghorn counts in the park. Counts have been as low as 100 to 150 in the 1970s, and as high as 800 in the late 1930s and early 1940s. Counts indicated an increase in the 1980s, from below 150 in 1982 to approx. 600 in 1990-91. This may have been a result of a series of mild winters, as elk and mule deer counts all increased during this time, or a result of other natural factors, such as the levels of coyote predation. In 1992 and 1993, spring counts indicated a population of approximately 400-500 pronghorn. However, the 1995 and 1996 spring counts indicate a decline (1995 count was 238; 1996 was 229). Discussion of the causes and potential management response will be undertaken in 1996 by researchers, managers, and cooperators on the Northern Wildlife Working Group.

The park's largest adjacent private landowner on the north, the Royal Teton Ranch, requested a depredation hunt of pronghorns each fall from 1985-1988. Montana FWP is required to respond to landowners' depredation requests, and did so, granting an increased number of permits from 1985-88. Some scientists expressed concern that this pronghorn population might be isolated from all other herds and prone to genetic inbreeding. Researchers suggested the hunt be held in late summer, when small numbers of pronghorn were using harvestable ranch crops, rather than after the growing seasons from October through December; scientists believed that a late hunt removed migratory animals that did not contribute to taking summer crops. Winter mortality and hunter take in 1988-89 reduced pronghorn numbers to around 375. In 1991 the state, in consultation with park biologists, established a special regular hunt with a maximum of 25 permits given between September 1 and October 15 to try and meet the concerns of both agencies and private landowners. The Northern Range group reviews the results of depredation counts each year.

A major portion of pronghorn winter range is part of the "Boundary Lands Area", acquired in 1932. This land has a history of cultivation, seeding of non-native plant species such as crested wheatgrass (*Agropyron cristatum*), and may have been heavily grazed by domestic livestock. This, coupled with some naturally poor soil conditions, has resulted in a long-term loss in quality winter range for ungulate species in the park. An NRPP proposal was submitted in 1987 for revegetation and rehabilitation of between 4000 and 12,000 acres in this "Boundary Lands Area". In 1989, preliminary soil and plant surveys were begun on-site; test seedling plots were established to determine the most likely species to use in revegetation; some seed was collected and stored in anticipation of the park's receiving NRPP funding for restoration beginning in 1994. However, major restoration efforts were derailed due to reprogramming of BLA NRPP funding to other priorities in FY 1994-96.

The park participates in a Northern Range Wildlife Working Group, along with representatives from the Gallatin NF and MTFWP, to share concerns and research/monitoring efforts and results where feasible. In 1989, based on input from an in-house researcher and a 4-person panel of outside experts, park staff expressed

concern for the long-term survival of its pronghorn herd. While pronghorns are common elsewhere throughout the west, particularly in Montana and Wyoming, the potential loss of another native species from YNP is a matter of considerable public and scientific interest. An in-house research project initiated was initiated to provide some useful information to contribute to development of a long-term management strategy for pronghorn on the park's northern range. However, limited results are available from this study, which was been terminated. In the winter of 1994-95, a VIP wildlife biologist reviewed the files and records left after termination of the project, and compiled a summary of the usable results into a notebook available in the Yellowstone Center for Resources. Considerable gaps in valuable information still remain about Yellowstone's pronghorn herd.

Description of Recommended Project or Activity

Cooperate with Montana to gather population information, through annual total population counts and classification flights (for schedule and budget, see N-35). Work with Montana to monitor and evaluate success and effects of depredation hunts, and modify permit number if necessary.

Evaluate research needs for the pronghorn herd, and seek means to fill information gaps. In 1996, model the population's long-term viability, and discuss action(s) needed, if any, in response to recent decline in numbers seen in spring counts.

Support restoration of ungulate winter range in the Boundary Lands area near Stephens Creek along the park's north boundary (see N-23). Rehabilitation and revegetation of this historically disturbed ranchland addition to the park was proposed in the early 1980s and due to receive NRPP funding of approx. \$330,000/year from 1994-96. Some research had begun in the late 1980s to experiment with potential revegetation techniques, and to complete soil investigations to provide information on site potential for restoration. However, in 1994 the majority of the funds were reprogrammed to other more current priorities.

BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	1.00	0.10
1996:	PKBASE-NR	MON	Recurring	1.00	0.10
Total:				2.00	0.20

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-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	Recurring	5.00	0.20
Year 2:	MON	Recurring	5.00	0.20
Year 3:	MON	Recurring	5.00	0.20
Year 4:	MON	Recurring	5.00	0.20
			=====	
	Total:		20.00	0.80

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(4)

Title : RESEARCH AND INTERPRET ASPEN ECOLOGY

Funding Status: Funded: 109.00 Unfunded: 140.00

Servicewide Issues : N07 (NAT FIRE REGM)
N17 (BIODIVERSITY)
Cultural Resource Type:
N-RMAP Program codes : V00 (Vegetation Management)
V01 (Native Terrestrial Plant Management
and Monitoring)

10-238 Package Number :

Problem Statement

For decades scientists, managers, and the public have expressed concern that aspen appear to be disappearing. While aspen still provide special autumn color in an otherwise coniferous forest, there has been a decline in aspen on the northern winter range (Houston 1982). The popular range management interpretation has been applied, suggesting that aspen are overgrazed because there appears to be little regeneration over 2m in height in northern range aspen stands. This has been attributed to long-term climatic change, the natural tendency of aspen to vegetatively regenerate as opposed to spreading by seed dispersal, and to the alleged overbrowsing by elk, combined with a century of fire suppression (Chase 1986). This issue relates closely to the long-standing controversy about management of the northern range (see N-35). Thus, added information about the true nature of aspen regeneration, its relationship with fire, ungulates, and climate is a vital component in understanding the northern range ecosystem.

A study was initiated in 1986 to ascertain the contributions of fire and ungulate grazing on aspen ecology. Prior to 1988, 6 sites on the northern range were experimentally burned in spring or fall. Additional manipulation by tree-felling, root trenching, fencing, and clipping was done to explore regeneration and secondary metabolite production related to root biomass and carbohydrate storage levels. This study should conclude in 1996, and results will be produced and submitted for publication.

In 1988, approximately 38% of the park's acreage was burned to some degree. A number of aspen stands were affected by fire, offering additional opportunities to investigate the influences of wildfire on aspen. After the fires 2 additional exclosures were incorporated into the aspen research design. Monitoring has also begun on aspen seedling reproduction in the post-fire environment. At present, the park does not manage for aspen except to fence off or protect the trunks of individual trees in park developed areas, particularly around the historic Fort Yellowstone in Mammoth.

A recent M.S. thesis from the University of Montana (St. John 1995) indicates that ungulate grazing suppressed aspen reproduction in the study area on the Gardiner Ranger District of the northern range. Aspen reproduction will continue to be a subject of discussion among wildlife and habitat managers.

Description of Recommended Project or Activity

Continue research on the influence of fire and ungulate browsing on aspen regeneration in northern Yellowstone, begun in 1986 and extended given the widespread fires that occurred in 1988. Data analysis is due to be completed in 1996-97 with a publication anticipated.

Continue long-term monitoring of post-fire aspen seedling germination parkwide through 1998, after which analysis and write-up of these results is planned.

Establish long-term monitoring program using pre-and post-burn comparative photo series of aspen stands for understanding aspen ecology. Photos were collected in 1986-87 and re-photographed in 1988-89 following the historic wildfire season. After publishing results of an experimental study, this should be undertaken in 1998-99.

Pursue interested investigator to research chemical and physical soil properties of selected open aspen stands, based on root carbohydrate and biomass estimates, to better understand what makes a good aspen growing site.

Seek funds to complete study of secondary metabolite concentration in aspen bark, to better understand how aspen regenerate and defend themselves against ungulate herbivory.

BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	FED-OTHER RES		One-time	34.20	0.50
	SVC-OTHER RES		One-time	20.30	0.60
		Subtotal:		54.50	1.10
1996:	FED-OTHER RES		One-time	34.20	0.50
	SVC-OTHER RES		One-time	20.30	0.60
		Subtotal:		54.50	1.10
=====					

	Project Statement	YELL-N-037.000
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Total:	109.00	2.20
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-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	Recurring	35.00	1.00
Year 2:	MON	Recurring	35.00	1.00
Year 3:	MON	Recurring	35.00	1.00
Year 4:	MON	Recurring	35.00	1.00
Total:			=====	=====
			140.00	4.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Title : IMPROVE INVERTEBRATE DATABASE

Funding Status: Funded: 5.00 Unfunded: 93.00

Servicewide Issues : N20 (BASELINE DATA)
Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W01 (Native Terrestrial Animal
Management & Monitoring)

10-238 Package Number :

Problem Statement

Invertebrates have been understudied in YNP relative to other topics. Past studies have concentrated on the taxonomy and distribution of selected invertebrates, and few have examined community interactions. Since the 1950s, projects related to thermal environments have been the most comprehensive of those done in the park. Other studies have escribed taxonomic details on particular groups of species or on the distributions of several invertebrate orders.

Management activities have been confined to those dealing with insect pests. Until the 1960s, aerial spraying for forest insect infestations was not uncommon. However, in the 1960s NPS policy changes resulted in more acceptance of natural events. Today, occasional insect control is done to protect individual trees in developed areas, and some monitoring has been done to assess tree pests such as gypsy moths. Aquatic invertebrates are presently the only group of invertebrates regularly monitored; this is done by the USFWS in conjunction with the fisheries management program. Funding and continuation of this program is insecure after 1995.

To understand ecosystem responses to perturbations or management actions, research and monitoring must include invertebrates, especially community processes. Invertebrates are competitors, predators, and prey of vertebrates, and thus relate to management issues such as the controversy over ungulates on the northern range. The grasshopper biomass on the northern range is suggested to surpass ungulate biomass, but this and other invertebrate relationships have been seldom explored here. In conjunction with ungulate grazing pressure, population cycles of grasshoppers can contribute to changes in plant species diversity. Insects like leaf miners can affect foliage and tree growth, compounding ungulate grazing effect on aspens and conifers. Invertebrate populations also are an important component in understanding environmental response to the widespread 1988 wildfires.

Invertebrates can be indexed as a measure of community health and

stability. Species diversity, population densities, and species distributions are 3 elements that help define the long-term stability of an ecosystem. We need to improve 1) the knowledge base on invertebrate communities, 2) the curation of invertebrate collections, and 3) the sharing of information about invertebrates and their relevance to other park resources and issues.

Description of Recommended Project or Activity

Continue monitoring and management of insect pest species as needed for human health and safety and cultural resource objectives (see I-12). Continue monitoring of aquatic invertebrates in cooperation with aquatic resource management program. Support research on invertebrates as possible.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	NON-NPS-O	MON	One-time	5.00	0.10
Total:				5.00	0.10
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Recurring	31.00	0.00
Year 2:		MON	Recurring	31.00	0.00
Year 3:		MON	Recurring	31.00	0.00
Total:				93.00	0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Project Statement
Last Update: 04/10/96
Initial Proposal: 1995
YELL-N-039.000
Priority: 16
Page Num: 0135

Title : CONTINUE POSTFIRE RESEARCH AND RECOVERY

Funding Status: Funded: 0.00 Unfunded: 1400.00

Servicewide Issues : N07 (NAT FIRE REGM)
N24 (OTHER (NATURAL))
Cultural Resource Type:
N-RMAP Program codes : S00 (Science Consultation and Oversight)
10-238 Package Number :

Problem Statement

In 1988 wildfires of previously unseen size and duration swept the Yellowstone ecosystem, occupying park managers, field staff, and the public from June through September. Media coverage of the historic fire season was intense, and evoked widespread international emotion and concern. Some 793,880 acres in YNP and an estimated 1.4 million acres in the GYA had been burned by 249 fires of both natural and human ignition. Effects of the fires on birds, mammals, wildlife habitat, vegetation, aquatic systems, soil, commercial timber, socioeconomics, flooding, even invertebrates were initially assessed (GYCC 1989; Christensen et al. 1989) and are topics of further study in varying degrees.

In the park, 18 employee and guest cabins, 1 backcountry patrol cabin, and other miscellaneous structures were destroyed by fire. Thirty-seven miles of bulldozer line and 1000 miles of hand line were built in YNP, and fire suppression efforts caused physical and biological impacts at some 100 helispots, and 50 backcountry spike camps. Directional and interpretive signs were damaged or destroyed; utility lines and administrative sites such as snow courses were damaged. Countless picnic tables and trail bridges needed replacing. Hazard trees along park roadways and developed areas required massive removal and cleanup efforts.

After the fires had succumbed to the controlling effects of wintry weather, Congress appropriated supplemental funds to help research, rebuild, and interpret the post-fire environment in YNP (and several other parks that burned in 1988). Additional funds were donated from organizations, businesses, and individuals who contributed to the GYA Recovery Fund. The park contributed funds to increase marketing of the Yellowstone area after the fires. A special team of interpreters spent considerable time in regional communities addressing questions and concerns about fire effects and future fire management in the park. A newly designed interpretive exhibit was prepared and installed in the Grant Village Visitor Center by June 1989, and a series of new wayside exhibits placed in roadside pullouts.

Research topics were identified and prioritized, with a number of studies beginning shortly after the fires. A substantial amount

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of recovery work was completed by park staff, contractors, Student Conservation Association (SCA), and Youth Conservation Corps (YCC) workers in 1989 and 1990. As the fires fade from the front pages, replaced by other natural or human-caused events affecting national parks and other natural resources, the funding for post-fire recovery also declines. Major components of the program that need longer-term funding and staff effort include hazard tree removal, backcountry trail rehabilitation, and substantial long-term research, monitoring, and interpretation of the fire events and subsequent ecological effects.

In 1994, the National Biological Survey (NBS) completed a review of post-fire research projects done by in-house staff. A number of projects were near completion, but some projects needed varying amounts of continued funding and staff work for 1-5 additional years.

Description of Recommended Project or Activity

Consider rehabilitation of visitor use areas, including screening historic and other developed areas, such as campgrounds, and removing roadside and trailhead snags, as time and funding allows, mostly in conjunction with regular operations and site-specific development projects.

Continue interpretation of post-fire environment in Yellowstone, through use of published research, interpretive film and road and trail guides.

Support continued monitoring and research on ecological effects of fire in Yellowstone, although the park does not have special funds to continue these projects.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	Cyclic	225.00	3.50
	MIT	Cyclic	75.00	1.50
	MON	Recurring	50.00	1.00

Subtotal:			350.00	6.00

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Year 2:	RES	Cyclic	225.00	3.50
	MIT	Cyclic	75.00	1.50
	MON	Recurring	50.00	1.00

		Subtotal:	350.00	6.00
Year 3:	RES	Cyclic	225.00	3.50
	MIT	Cyclic	75.00	1.50
	MON	Recurring	50.00	1.00

		Subtotal:	350.00	6.00
Year 4:	RES	Cyclic	225.00	3.50
	MON	Cyclic	50.00	1.00
	MIT	Recurring	75.00	1.50

		Subtotal:	350.00	6.00
			=====	
		Total:	1400.00	24.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Project Statement
Last Update: 04/10/96
Initial Proposal: 1995
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Priority: 16
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Title : INCREASE KNOWLEDGE OF RARE BIRD POPULATIONS

Funding Status: Funded: 38.50 Unfunded: 84.00

Servicewide Issues : N20 (BASELINE DATA)
Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W01 (Native Terrestrial Animal
Management & Monitoring)

10-238 Package Number :

Problem Statement

In addition to threatened and endangered birds, 287 other bird species have been reliably recorded in YNP. The knowledge base on each species varies considerably as does the need for detailed information. At present, a number of species are classified by other federal and state agencies or private groups, such as the Nature Conservancy in their Natural Heritage Program, as species of special concern. The USFWS published a list of Migratory Non-Game Birds of Management Concern in the U.S. and 27 of the 123 species listed have been reported to occur in Yellowstone. Some species are of considerable interest to wildlife observers throughout the GYE. In order to better understand the effects of human-caused and natural perturbations of the environment on the bird life of the park, we need additional baseline data on numerous species and their distributions. For example, the effects of large-scale fires in 1988 on bird communities are of great interest.

Nationwide there is growing interest in inventory and monitoring of neotropical birds. Programs such as MAPS (Monitoring Avian Productivity and Survivorship) and others have been initiated in order to improve information about bird populations and trends. Yellowstone would like to participate increasingly in these efforts to expand its knowledge base on neotropical bird species.

Description of Recommended Project or Activity

Continue annual monitoring of other species such as the Sandhill crane, American White Pelican, Caspian Tern, and Great Blue Heron to assess population trends. Colonial nesting birds will be important to monitor in the future, due to concerns for trout in Yellowstone Lake.

Continue parkwide inventory on population status, distribution, and habitat use of the following species of special concern and continue monitoring and maintaining data base on a 5-year cyclic

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schedule:

Species	Completion Date
Common Loon	1994
Harlequin Duck	1997
Great Gray Owl	1997
Boreal Owl	1997

Support research on other birds, such as long-term effects of 1988 wildfires on small bird populations and other appropriate topics. Of particular interest are black-backed and three-toed woodpeckers, thought to be associated with burned forests.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	SVC-OTHER RES		One-time	6.50	0.20
	PKBASE-NR MON		Recurring	8.00	0.10
			Subtotal:	14.50	0.30
1996:	PKBASE-NR MON		Recurring	8.00	0.10
1997:	PKBASE-NR MON		Recurring	8.00	0.10
1998:	PKBASE-NR MON		Recurring	8.00	0.10
			Total:	38.50	0.60

-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		RES	One-time	5.00	0.00
		MON	Recurring	9.00	0.20
			Subtotal:	14.00	0.20
Year 2:		RES	One-time	5.00	0.00
		MON	Recurring	9.00	0.20
			Subtotal:	14.00	0.20
Year 3:		RES	One-time	5.00	0.00
		MON	Recurring	23.00	5.00
			Subtotal:	28.00	5.00
Year 4:		RES	One-time	5.00	0.00
		MON	Recurring	23.00	0.50

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Initial Proposal: 1995

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Subtotal: 28.00 0.50

Total: =====
84.00 5.90

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

	Project Statement	YELL-N-041.000
Last Update: 04/10/96		Priority: 16
Initial Proposal: 1995		Page Num: 0141

Title : ENHANCE TRUMPETER SWAN RECOVERY IN GYE

Funding Status: Funded: 18.00 Unfunded: 35.00

Servicewide Issues : N02 (T&E ANIMAL)
Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W01 (Native Terrestrial Animal
Management & Monitoring)

10-238 Package Number :

Problem Statement

The trumpeter swan (*Cygnus buccinator*), while not currently listed as either threatened or endangered, is a species of special concern in the tri-state area of Montana, Idaho, and Wyoming. During the 1800s and early 1900s, commercial swan skin trade and habitat destruction reduced trumpeter swan populations to a mere fraction of historic levels. The species neared extinction, and isolated areas of protected habitat such as YNP were critical to the survival of wild trumpeters. The discovery of swans in the Centennial Valley in the early 1900s, on the western edge of the GYE, led to the eventual establishment of Red Rocks Lakes NWR. Management efforts at the refuge, as well as in a few other areas such as YNP, have helped maintain trumpeter swan numbers in recent decades.

The GYE trumpeter swan population has fluctuated dramatically in recent years. Areas in and outside the park provide habitat for both resident and migratory trumpeters. In YNP, the summer nesting population is extremely low and rarely exceeds 45 swans. In the winter, due to an influx of migrant trumpeter swans from the northern latitudes and elsewhere in the GYE, the population can vary from 60 to several hundred individuals.

Park staff participate in a GYE Trumpeter Swan Working Group, which shares management concerns and programs in the region. Regular monitoring activities include a spring nesting survey flight and a late summer productivity flight, and participation in a winter Tri-State swan survey, which records migrant and resident trumpeter swans. Other management actions that have occurred during the 1980s and 1990s include minimizing human disturbance around swan nests and removing any feral (mute) swans found inside or near park boundaries. Currently the swan population in the ecosystem has exhibited declining productivity, and efforts to expand the range of the swan to insulate the species against a singular natural or unnatural catastrophic event have been controversial and of limited success. Additional research or management efforts may be needed to bolster swan production or survival in the ecosystem.

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In 1985, due to concern expressed about low swan productivity, YNP began experimenting with trumpeter swan nesting platforms. Upon advice from the USFWS at Red Rocks Lakes NWR, the park established 6 swan nesting platforms at known but unsuccessful or historic swan nesting sites; the platforms (made of PVC pipe and wire mesh covered with native vegetation) reportedly stimulate swan nesting activity. Only two of the 6 experimental sites appeared to respond favorably to this technique; these sites are also in close proximity to the main park roadway and are thus prone to more human disturbance and potential nest failure.

Other problems occasionally arise when visitors approach swans closely. Highly visible pairs are popular subjects for photographers, and also have been fed by some visitors. Begging behavior in a pair of swans on the Madison River was observed in 1988-89. This kind of activity can lead to swans becoming habituated to humans, which may make them more prone to predation or roadkills. At 2 sites with nesting platforms and other locations where swans were very accessible, the park increased patrol, signing, and enforcement to reduce disturbance.

Beginning in 1989, the park contacted a private landowner north of YNP who owned several dozen mute swans, and expressed concern about the mute swans' potential to outcompete the native trumpeters. The landowners liked having swans on their ponds but did not know that mutes were exotic nor that they could be detrimental to recovery of native trumpeter swans. Landowners have been very cooperative in working with the park to remove the exotic swans and replace them with captive-raised trumpeter swans. Six pairs of trumpeters, purchased with donated funds, were restored to this private habitat in hopes they will breed; their offspring will be free to establish themselves in whatever habitat is suitable. This type of cooperative effort will help restore swans throughout the GYE.

Description of Recommended Project or Activity

Continue monitoring population parameters to detect population changes and design and meet recovery goals. Close monitoring of individual nesting territories for nest occupancy and productivity is the highest priority.

Participate in interagency GYE Trumpeter Swan Working Group to meet interagency research and develop a plan with management goals and objectives.

Continue establishment of trumpeter swans at the Call of the Wild Ranch. To date the project has resulted in 4 nesting attempts and 13 young swans being fledged. The project is paid for largely by donated funds.

Maintain floating nest platforms in 2 highly visible areas where

potential disturbance of nesting swans is continued likely and nesting pairs are present (Sevenmile Bridge and Beach Springs Lagoon).

Maintain public education and resource protection activities to protect swans from human disturbance.

BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	4.00	0.20
	PKBASE-NR	MIT	Recurring	0.50	0.00
			Subtotal:	4.50	0.20
1996:	PKBASE-NR	MON	Recurring	4.00	0.20
	PKBASE-NR	MIT	Recurring	0.50	0.00
			Subtotal:	4.50	0.20
1997:	PKBASE-NR	MON	Recurring	4.00	0.20
	PKBASE-NR	MIT	Recurring	0.50	0.00
			Subtotal:	4.50	0.20
1998:	PKBASE-NR	MON	Recurring	4.00	0.20
	PKBASE-NR	MIT	Recurring	0.50	0.00
			Subtotal:	4.50	0.20
			Total:	18.00	0.80

			-----UNFUNDED-----		
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Recurring	5.00	0.00
Year 2:		MON	Recurring	5.00	0.00
		MIT	Recurring	5.00	0.00
			Subtotal:	10.00	0.00
Year 3:		MON	Recurring	5.00	0.00
		MIT	Recurring	5.00	0.00
			Subtotal:	10.00	0.00
Year 4:		MIT	Recurring	5.00	0.00
		MON	Recurring	5.00	0.00

Last Update: 04/10/96
Initial Proposal: 1995

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Subtotal: 10.00 0.00

=====
Total: 35.00 0.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Title : IDENTIFY/MONITOR REPTILES & AMPHIBIANS

Funding Status: Funded: 4.00 Unfunded: 30.00

Servicewide Issues : N20 (BASELINE DATA)
N02 (T&E ANIMAL)
Cultural Resource Type:
N-RMAP Program codes : W00 (Wildlife Management)
W01 (Native Terrestrial Animal
Management & Monitoring)

10-238 Package Number :

Problem Statement

Relatively little is known about the reptiles and amphibians that reside in YNP. Present knowledge of the diversity, distribution, and abundance of reptiles and amphibians comes from 4 sources of data: specimen records from museum collections, YNP surveys and records, personal field observations, and research literature (Koch and Peterson 1989.)

Four species of amphibians and 6 species of reptiles are known to occur in YNP. This number is relatively low in comparison to other areas of the U.S. Cool, dry conditions are likely responsible for this low representation. Five other species of reptiles and amphibians are known to exist in the GYE, but their existence in YNP has yet to be detected. All 10 of the species present in the park occur throughout the west, and a few tentative generalizations can be made from the literature.

Tiger salamanders (*Ambystoma tigrinum melanostictum*), boreal toads (*Bufo boreas*), chorus frogs (*Pseudacris triseriata maculata*), spotted frogs (*Rana pretiosa*), and wandering garter snakes (*Thamnophis elegans vagrans*) appear to be widely distributed throughout YNP. Future sampling of Rubber boas (*Charina bottae*) should show this species to be fairly widespread also. Sagebrush lizards (*Sceloporus graciosus*) are limited, mainly to thermal areas. Bull snakes (*Pituophis melanoleucus*) and prairie rattlesnakes (*Crotalus viridis*) are shown to exist at lower elevations in the extreme northern portions of the park, and the common garter snake (*Thamnophis sirtalis*) has recently been located in the Bechler River region.

Studies (Corn and Fogleman 1984, Baxter and Stone 1985) indicate that several species of toads and frogs have been declining recently in the western U.S. The magnitude of this problem is unknown; however, comparisons of information on past and current distributions and abundances in a wide variety of locations may be revealing, particularly in YNP. The relatively undisturbed nature of the park and the available baseline data may prove useful in testing hypotheses concerning the causes of declines in

specific species. Reptile and amphibian population declines may be attributed, but not limited to, pollution, drought, disease, and/or predation.

Although there are no Yellowstone reptile and amphibian species currently listed as threatened or endangered, several - including the spotted frog - are shown to be declining in the west. Increased information and awareness of this resource is desirable. In 1991 park staff began cooperating with researchers from Idaho State University to sample additional park habitats for reptiles and amphibians. This has lead to establishment of several long-term monitoring sites in YNP. Given the global concern for the decline in these species, more effort in long-term monitoring may be called for.

Description of Recommended Project or Activity

1. Develop a field guide for use by park employees, researchers, and visitors. incorporate data into the park's GIS. Time frame: Unfunded. Responsibility: Yellowstone Center for Resources.
2. Cooperate with researchers in building long-term I&M database on reptiles and amphibians by monitoring representative habitats. Time frame: 1995-99. Responsibility: Branch Chief for Natural Resources, Resource Management Coordinators.
3. Increase the systematic reptile and amphibian monitoring program, with a greater number, diversity, and range of localities. Begin with tiger salamander, for which the largest data base is available. Sampling efforts should be concentrated in backcountry areas, where the 6 major rivers exit the park, thermal areas, high elevations, and burned/unburned sites. Document new species in the museum collection. Time frame: 1995-97. Responsibility: Branch Chief, Natural Resources.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	RG-NS-RES	RES	One-time	4.00	0.00
Total:				=====	
				4.00	0.00
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Recurring	10.00	0.00

Last Update: 04/10/96		Project Statement		YELL-N-042.000	
Initial Proposal: 1995				Priority: 16	
				Page Num: 0147	
Year 2:	MON	Recurring	10.00	0.00	
Year 3:	MON	Recurring	10.00	0.00	
			=====		
Total:			30.00	0.00	

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Project Statement

YELL-N-043.000

Last Update: 04/10/96
Initial Proposal: 1995

Priority: 16
Page Num: 0148

Title : REDUCE AND RECYCLE SOLID WASTE MATERIALS

Funding Status: Funded: 100.00 Unfunded: 200.00

Servicewide Issues : N24 (OTHER (NATURAL))
N17 (BIODIVERSITY)

Cultural Resource Type:

N-RMAP Program codes : N00 (Resource and Visitor Use
Management)

10-238 Package Number :

Problem Statement

Waste disposal space is running out across the U.S. with critical conditions prevailing in certain areas. Laws and regulations address this crisis in various ways generally focussing on a hierarchy of waste disposal options. These options, in order of preference, are source reduction, recycling, and waste combustion and landfilling. Federal and local regulations combine the above options with hazardous waste guidelines, removing such wastes as used oil and batteries from domestic solid waste streams. YNP is subject to many of these same concerns and regulations, and has begun to participate in solid waste reduction/recycling programs.

YNP generates approx. 2225 tons of solid waste each year with over half of this amount contributed by park concessioners. All solid waste is transported 50-100 miles to disposal facilities outside YNP at Livingston and Logan, Montana. The Livingston facility, which takes about 1900 tons annually, is a municipal incinerator while Logan, which takes about 700 tons of our waste, is a landfill served through the West Yellowstone transfer station. The NPS provides solid waste services for park generators, billing for these services based on the tonnage of solid waste collected. Park-wide production of solid waste is distributed as follows:

Source generator	Annual Quantity (Tons)	Percent of Total
National Park Service	930	37%
TW Services	1130	45%
Cooke City	300	12%
Hamilton Stores	145	6%
Yell. Park Service Stations	5	<1%
U.S. Forest Service	10	<1%
all other users	5	<1%

NPS policy encourages use of community waste disposal facilities to the extent possible. YNP's supply of solid waste provides a significant portion of that incinerated or dumped in nearby community facilities; the park also contributes funding to those operations. In addition, YNP provides solid waste services for

the town of Cooke City and associated USFS campgrounds located outside the park's northeast entrance.

Until the late 1960s and early 1970s, solid waste was dumped inside the park in landfills. Aside from the aesthetic objections to having dumps inside a national park, this practice was deliberately discontinued because grizzly and black bears relied heavily on those dumps as food sources. The accessibility of easy, abundant garbage caused bear behaviors and distribution to differ from what would be expected of a population less human-influenced. Since 1972, YNP has undertaken vigorous efforts to wean bears away from human food sources. Any recycling efforts must dovetail with the bear management program.

All waste products that are possible bear attractants must be secured in "bear-proof" dumpsters, trash cans, and/or behind locked fences, increasing the expense.

At various times, the park has investigated or been involved in small-scale recycling programs. Major recyclable materials include waste paper, cardboard, glass, plastic, and metal containers. Storage and transportation of waste, whether recycled or not, presents logistical and funding difficulties. Distance to recycling markets and processing plants is on the order of 1000 miles, thus only aluminum is expected to show a consistent positive return in the near future. Paper, cardboard, and glass periodically show negative economic returns.

Coordination with other park generators of waste could help solve some of these difficulties. In 1990 park concessioners began transporting recyclable paper, aluminum, glass, and cardboard - including that provided by the NPS - to recycling centers. Bear-proof trash cans labelled for glass and aluminum were experimentally placed in the Mammoth Campground and housing area. In 1992, Conoco, Inc. cooperated with the park in doing a survey of recycling options for the park. Results will be incorporated into additional efforts as much as feasible. By 1993, more than 410 tons, mainly cardboard and glass, was being recycled each year. Between 25 and 50 tons of glass is going in to "glassphalt" and used for paving projects in the park. In late 1994, the park received a grant from Conoco to help support the increased recycling efforts and use of glassphalt.

Description of Recommended Project or Activity

Recycle natural, non-hazardous wastes. Investigate significant solid waste sources that may benefit from waste reduction options. Insure that scrap metals, lead-acid batteries, "white goods", tires, and other large recyclable materials continue to be included in the scrap waste stockpile auctioned off each year.

Coordinate with other park solid waste generators and with outside recycling activities. Various outside groups or contractors express interest in recycling or waste reduction

programs and may be influential.

Improve source reduction of wastes from park maintenance and construction programs. Investigate other ways to "green" Yellowstone.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	RG-REG-MT	MIT	Cyclic	25.00	1.00
1996:	RG-REG-MT	MIT	Cyclic	25.00	1.00
1997:	RG-REG-MT	MIT	Cyclic	25.00	1.00
1998:	RG-REG-MT	MIT	Cyclic	25.00	1.00
Total:				100.00	4.00

-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MIT	Cyclic	50.00	1.00
Year 2:		MIT	Cyclic	50.00	1.00
Year 3:		MIT	Cyclic	50.00	1.00
Year 4:		MIT	Cyclic	50.00	1.00
Total:				200.00	4.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Title : MANAGE EMERGENCY SPILLS & HAZARDOUS WASTES

Funding Status: Funded: 400.00 Unfunded: 600.00

Servicewide Issues : N02 (T&E ANIMAL)
N03 (T&E PLANTS)

Cultural Resource Type:

N-RMAP Program codes : E00 (Environmental Planning and Compliance)

10-238 Package Number :

Problem Statement

Chemical byproducts are an inevitable result of every living creature. Nature generally creates chemicals that will eventually be used as a material for continued growth and development. Humans have also developed the knowledge to create chemicals that do not exist in nature in any significant quantity. Chemical products are used in all aspects of everyday life. In fact, nature is being sacrificed to maintain an ever-increasing supply of chemicals and chemical products. A major environmental concern associated with chemical use is the storage and disposal of such products and their waste. Another is the damage that can result from accidental spills of chemical products or other hard-to-cleanup fluids such as petroleum products.

YNP uses thousands of tons of petroleum products, plastics, paints, solvents, and a wide variety of specialty chemicals and products in daily operation of park facilities. Storage and proper use of such products is a significant safety and resource concern. Many of these move throughout the park in tank trucks and 55-gallon barrels, presenting the potential for accidental spills during loading, unloading, and transport operations. Tracking and control of these products is essential to account for waste material produced, for collecting and accumulating waste at specific locations, and for arranging transport to disposal sites outside the park. Hazardous waste management procedures are well documented in CFR 29, 40, and 49 based on a number of laws passed over the last two decades. Annual hazardous waste quantities in the park are uncertain - estimated to range from 500-2500 lbs, and are primarily solvents and waste paint products.

The park must safely manage the storage, disposal, and prompt response to emergency spills of hazardous materials. In accordance with the Emergency Operations Plan, the priority actions in response to any accidental spill will be to:

1. Secure the area for safety purposes.
2. Contain the hazardous material if possible.

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Initial Proposal: 1995

Project Statement

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Priority: 16
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3. Neutralize and/or clean up the hazardous material. The party responsible for the spill shall participate in cleanup and disposal of materials, however, additional help may be required. Park emergency planners have contacts with private companies that do containment and recovery work and are on immediate call for such emergencies. Using the Incident Command System, the I.C. shall promptly contact such contractors if necessary to assist in response.

The following resources are available in the park for use in responding to such emergencies:

1. Petroleum booms for isolating, containing, and cleaning up petroleum distillate spills.
2. Hazardous materials spill response suits.
3. Training for emergency response personnel.

Description of Recommended Project or Activity

Determine applicable regulations and available disposal services. Maintain a current library of federal and state regulations related to hazardous wastes. Designate key park staff for hazardous waste activities (in Maintenance and Resource Management divisions) and stay current with applicable rules, deadlines, and notifications. Develop list a hazardous waste firms that can respond to park problems in a timely manner. Coordinate with park concessioners and outside interests for effective response.

Respond to emergency spills as they occur. Park personnel need to be trained in the most recent advances in hazardous material response, and be aware of sources of help and information. Additional equipment to improve response and cleanup needs to be acquired.

Develop a hazardous materials storage, handling, transport, and clean-up protocol, following NFPA 471 guidelines. Train and equip staff to mitigate resource damage associated with accidental spills or leaks. Continue upgrading underground fuel storage tanks and tank monitoring efforts.

Conduct a waste audit for park and concessions operations to determine their generator status (i.e., large or small quantity generator, conditionally exempt small quantity or episodic generator.)

Locate and isolate hazardous wastes throughout park at likely hazardous waste locations. Test unknown substances in containers and barrels and proceed accordingly, and drill test dry dumps for contaminants in ground, beginning with Mammoth. Ensure adequate handling to prevent environmental contamination and safety problems. Construct accumulation sites protected

from leaks and spills, abiding by RCRA time and quantity limits. Develop procedures for segregating and handling hazardous wastes. Dispose of hazardous waste outside YNP. Develop list of certified firms qualified to handle, transport, and dispose of hazardous wastes. (YNP remains responsible for all park hazardous wastes even off premises.) For wastes able to be neutralized on-site, ensure environmentally safe practices and procedures.

BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MIT	Recurring	100.00	0.40
1996:	PKBASE-NR	MIT	Recurring	100.00	0.40
1997:	PKBASE-NR	MIT	Recurring	100.00	0.40
1998:	PKBASE-NR	MIT	Recurring	100.00	0.40
Total:				=====	
				400.00	1.60
			-----UNFUNDED-----		
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MIT	Recurring	150.00	0.10
Year 2:		MIT	Recurring	150.00	0.10
Year 3:		MIT	Recurring	150.00	0.10
Year 4:		MIT	Recurring	150.00	0.10
Total:				=====	
				600.00	0.40

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.5

Title : MONITOR/MITIGATE ADJACENT LANDUSE CONFLICTS

Funding Status: Funded: 44.00 Unfunded: 116.00

Servicewide Issues : N16 (NEAR-PARK DEV)
N12 (WATER FLOW)

Cultural Resource Type:
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

A number of use conflicts with adjacent landowners have occurred over the 118-year history of YNP. Activities on land outside the park may conflict with park goals and objectives. Proposals for timber cutting, mining, changes in hunting and trapping seasons and limits, and other developmental activities are brought to the park's attention. It behooves the park to keep abreast of external activities and to comment when appropriate in the public planning process involved with these proposals.

The Royal Teton Ranch (RTR), headquarters of the Church Universal and Triumphant, occupies 33,000 acres along the northern boundary in Montana. In a region with a relative lack of state and county land use planning regulations, unknown and virtually unchecked development occurred in the mid-1980s, in or near primary wildlife winter range. Citizen and agency concerns culminated in the State of Montana ordering an EIS to assess the developmental activities on this large tract of private land, relative to granted permits for public water and sewer systems, under the Montana Environmental Policy Act (MEPA).

Around July 1989, RTR began to excavate ground and to install fallout bomb shelters in the upper Mol Heron Creek drainage north of YNP. At least 35 underground storage tanks were installed containing 650,000 gallons of diesel and gasoline, 500,000 gallons of propane and an unknown amount of kerosene and antifreeze. None of the bomb shelter developments were addressed in the final EIS. In mid-April 1990, several filled tanks ruptured and released approximately 31,000 gallons of diesel and gasoline fuels, some finding their way into Mol Heron creek, an important cutthroat spawning tributary to the Yellowstone River downstream from YNP. This incident as well as the non-compliance in assessing these developments prompted the state to ask for a "cease further development order" from the courts until the EIS could be amended.

Specific to this landowner, the park has concerns in three major areas: water rights (see N-16); geothermal connections (see N-01); and wildlife (see N-35, 36). The increase in traffic and human activities related to this adjacent land development deters

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wildlife; for example, the Mol Heron drainage has been reduced in value as habitat for bear use because of construction, destruction of vegetation, and the human activity around the shelters.

Other adjacent land uses sometimes conflict with park management objectives. Trespass stock are occasionally chased out of the park. Despite disapproval by the MTFWP, some landowners persist in feeding ungulates during winter outside both north and west boundaries. In 1988 when the area experienced its first significant winterkill, large numbers of elk and bison left the park. Feeding has been most substantial outside West Yellowstone, and in 1989-90 researchers suspected that the presence of this feed significantly altered the movements and feeding pattern of the Madison-Firehole elk herd, causing them to congregate near the west park boundary even though other winter range was available and unoccupied.

Proposed developments on land on or near park boundaries, such as proposed timber sales, mining developments, and growth of towns is monitored by the park for effects on park resources and opportunities to give input during planning processes.

Description of Recommended Project or Activity

Keep informed about external activities and plans, and take opportunities to express park perspectives on land use issues that could affect park resources. This includes informal and formal comments on plans, EIS/EAs, state and local regulations, etc. The planning office will circulate plans or proposals with a due-date and name assigned to prepare park response.

Alert adjacent land owners and managers to park resource concerns, and suggest ways to minimize or eliminate conflicts.

Work through the GYCC to express cross-boundary concerns (see I-07). Manage with sensitivity for resource concerns on both sides of boundary lines.

Seek funding or means to analyze value of public/private lands adjacent to YNP.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MIT	Recurring	11.00	0.40
1996:	PKBASE-NR	MIT	Recurring	11.00	0.40

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Initial Proposal: 1995

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1997:	PKBASE-NR MIT	Recurring	11.00	0.40
1998:	PKBASE-NR MIT	Recurring	11.00	0.40
Total:			44.00	1.60

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	Recurring	20.00	0.50
	RES	One-time	12.00	0.20
	Subtotal:		32.00	0.70
Year 2:	MON	Recurring	20.00	0.50
	RES	One-time	12.00	0.20
	Subtotal:		32.00	0.70
Year 3:	MON	Recurring	20.00	0.50
	RES	One-time	12.00	0.20
	Subtotal:		32.00	0.70
Year 4:	MON	Recurring	20.00	0.50
	Total:		116.00	2.60

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)
EA (ENV. ASSESSMENT)

Explanation: 516 DM6 APP. 7.4 B(2)

Last Update: 04/10/96
Initial Proposal: 1995

Project Statement

YELL-N-046.000
Priority: 8
Page Num: 0157

Title : MONITOR AND MITIGATE MINING ACTIVITIES IN/NEAR YNP

Funding Status: Funded: 210.00 Unfunded: 360.00

Servicewide Issues : N10 (MINRL/GEOTHERM)
Cultural Resource Type:
N-RMAP Program codes : G00 (Geologic Resources Management)
G02 (Mining and Minerals Management)

10-238 Package Number :

Problem Statement

Mining, drilling, milling, or exploration for minerals exists within and adjacent to park boundaries. Internal activities include sand, gravel, and rock excavation for road construction projects, and some historic mines, such as for coal, that operated during the World Wars. Some remnant tailings and adits exist within YNP that need reclamation. In 1991-92 the park began working with the states of Wyoming and Montana to potentially tap state mining reclamation funds to rehabilitate old coal and gravel mine sites within YNP. One small coal mine was rehabilitated in 1993. Planning and compliance has been completed for restoration of several in-park gravel pits, and funding has been requested from the State of Wyoming. Additional projects need planning and assessment; if funding comes forth, some park staff will be needed to assist in project supervision and revegetation.

The Mineral Hill Mine (TVX Mine Inc, formerly the Jardine Joint Venture) started commercial gold mining operations in the summer of 1989. The 1000-deep underground mine and associated plant are designed to process and treat 450 tons of ore/day and yield 42,000 ounces of gold/year. The mine operates 2 shifts/day, 5 days/week; the mill operates 7 days/week, 24 hours/day. Milling equipment includes a semi-autogenous grinding mill, ball mill, two thickeners, a pre-aeration tank and four leaching tanks, a clarifier and filtering equipment. After crushing and grinding the gold is leached from the ore using a cyanide solution. Gold is precipitated from the solution by addition of zinc dust and collected in drum filters and then refined in a bullion furnace. The project was designed to operate initially on an 8-year plan, however, exploration continues on some 19 square miles of land surrounding the ore body. As of 1994, the company announced plans to explore and develop new gold deposits, which extend from the original mining area toward YNP, and which will extend mining activity for a longer time period. Additional anticipated underground mining activity will occur closer to the park boundary.

Indications are that an economically minable ore reserve of copper, gold, and silver is present at the New World Project,

Project Statement

Last Update: 04/10/96
Initial Proposal: 1995

YELL-N-046.000
Priority: 8
Page Num: 0158

approx. 2 miles east of the park's northeast corner, near Daisy Pass, MT. More than 7 square miles includes patented lode mining claims and mill site claims controlled by mining companies, and unpatented claims on lands administered by the USFS. Proposed development includes an underground mine, a mill, tailings pond, waste rock dump, and associated facilities. Ore production, based on present knowledge of reserves, would be 1500-1800 tons daily with mineral production of copper-gold concentrate of 25-30 tons/day. On-site gold bullion production is expected. Milling and underground mining is anticipated 7 days/week, 350 days/year; open pit mining is proposed 7 days/week, 6-8 months/year. Staff is expected to be 100-150 persons. This would mean a tripling of the resident population of Cooke City and Silver Gate just outside the Northeast Entrance. It would also mean plowing and year-round access on what is currently only a seasonal road accessing YNP. Crown Butte Mines, Inc. and Noranda Minerals Corp. made application for an operating permit in November 1990. An EIS is being prepared and is expected to be released for public comment in 1996.

The McLaren Mine Tailings encompass approx. 10 acres on the Soda Butte Creek valley floor about 5 miles upstream from the Northeast Entrance. The site occupies both national forest and private properties. Ore tailings were processed for gold and silver extraction using a cyanide leaching process from the 1870s until 1967. Approximately 150,000 cubic yards of waste tailings were deposited on site. During the late 1960s, Bear Creek Mining Company leveled the tailings and capped them with approximately 1.5-3' of soil material which re-routed Soda Butte Creek around the north edge of the tailings. These tailings contain heavy metals (arsenic, copper, iron, lead, and zinc) which can be toxic to aquatic life. Downstream aquatic invertebrate levels in Soda Butte Creek have been much lower than normal for decades following the leaching of these wastes. In 1988, EPA concluded that the tailings did not pose a significant threat to human health because major routes (air, direct contact, surface water, and groundwater consumption) for potential human exposure to toxic quantities of contaminants do not exist. The EPA concluded the major threat is the significant adverse impact to the ecosystem of Soda Butte Creek caused by the continuing release of acidic, heavy metal- contaminated water from the tailings.

The tailings and the seeps violate State water standards and compromise water quality in YNP. Failure of the tailings dam would result in a substantial release of contaminated material into Soda Butte Creek, which has adequate freeboard to carry both flood flows and tailings sediment. The environmental effects of such a release would be significant downstream in the park. The EPA initiated stabilization and testing of the tailings, using Superfund monies, and has billed claim owners, who have indicated they might be willing to remove the tailings. They have also indicated that they may reprocess and properly stabilize the tailings in place. YNP have provided considerable resource data and coordination to the EPA.

Project Statement

Last Update: 04/10/96
Initial Proposal: 1995

YELL-N-046.000
Priority: 8
Page Num: 0159

Oil or gas exploration and/or leasing proposals near YNP include the Ruby Exploratory oil/gas well on the Line Creek Plateau south of Red Lodge, MT, 33 miles east of YNP, and EIS's to address forestwide leasing on the adjacent Shoshone and Custer National Forests. Park staff and personnel from the NPS Mining, and Minerals Branch (MMB) have reviewed these draft plans and offered comments concerning air pollution impacts to Class I areas, grizzly bear habitat, and other resources.

Development of geothermal resources poses a potential threat to the hot spring basins (see N-01). In 1986, landowners sought permission to extract 400 gallons/min. of hot water from a geothermal well near Corwin Springs north of the park. Public law 100-443 (1988) prohibited development from this well and the Corwin Springs KGRA until completion of a study by the USGS and the NPS to determine if cross-boundary connections exist. The study resulted in a difference of opinion between the two agencies as to whether any level of development threatened park resources. Currently, geothermal drilling on all other private or state lands is not impeded or regulated by federal or state laws except in the Island Park KGRA and adjacent public lands. It will be available for leasing only after the Secretary of the Interior determines that 1) an exploitable geothermal resource exists, 2) development of geothermal resource will not adversely affect unique thermal features in YNP, 3) development will not adversely affect habitat of T&E species, and 4) pollution from noxious gases can be controlled and not adversely affect soil, water, vegetation, or air quality in areas of human habitation.

With the increased potential for large-scale mining operations adjacent to the park, staff must attend public and task force scoping meetings and review proposed plans of operation and environmental assessments. External mining activity and mining activity inside the park (such as for road reconstruction efforts), requires nearly a full-time position to monitor and analyze environmental consequences of mining. This position is also responsible for working with maintenance and district personnel on reclamation of abandoned roads, quarries, dumps, and other administrative sites in the park, which number in the hundreds.

Description of Recommended Project or Activity

Continue monitoring Mineral Hill mining production, development, and exploration activities as best as possible with existing staff. Voice concerns and mitigate through participation in the Citizens Advisory Committee.

Monitor and mitigate New World Project permitting and NEPA compliance process.

Promote and assist EPA SuperFund efforts to encapsulate or remove

Project Statement

YELL-N-046.000

Last Update: 04/10/96
Initial Proposal: 1995

Priority: 8
Page Num: 0160

Mclaren Mine Tailings.

Monitor and participate in surrounding oil, gas, and geothermal drilling proposals and permit processes; comment during NEPA compliance.

Assess existing and potential mining operations adjacent to YNP for resource concerns, reclamation, NEPA compliance, and alternatives.

Work with state of Wyoming to use mining reclamation funds to restore unused gravel mine sites inside YNP. A list of priority projects (Little Thumb Creek, Dry Creek, and Ice Lake pits) has already been prepared with interdisciplinary input, and may be revised in cooperation with the State as funding becomes available and environmental analysis is completed.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR	MON	Recurring	40.00	0.90
1996:	PKBASE-NR	MON	Recurring	40.00	0.90
	NON-NPS-O	MIT	One-time	25.00	0.00
			Subtotal:	65.00	0.90
1997:	NON-NPS-O	MIT	One-time	25.00	0.00
	PKBASE-NR	MON	Recurring	40.00	0.90
			Subtotal:	65.00	0.90
1998:	PKBASE-NR	MON	Recurring	40.00	0.90
			Total:	210.00	3.60

-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Recurring	15.00	0.50
		MIT	One-time	50.00	1.10
			Subtotal:	65.00	1.60
Year 2:		MON	Recurring	15.00	0.50
		MIT	One-time	50.00	1.10
			Subtotal:	65.00	1.60

Last Update: 04/10/96
Initial Proposal: 1995

Project Statement

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Priority: 8
Page Num: 0161

Year 3:	MON	Recurring	15.00	0.50
	MIT	One-time	50.00	1.10
	MIT	One-time	50.00	0.00

		Subtotal:	115.00	1.60
Year 4:	MON	Recurring	15.00	0.50
	MIT	One-time	50.00	0.00
	MIT	One-time	50.00	1.10

		Subtotal:	115.00	1.60
			=====	
		Total:	360.00	6.40

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

CULTURAL RESOURCES
PROJECT STATEMENTS

	Project Statement	YELL-C-001.000
Last Update: 04/12/96		Priority: 7
Initial Proposal: 1995		Page Num: 0001

Title : STABILIZE/MAINTAIN HISTORIC STRUCTURES

Funding Status: Funded: 0.00 Unfunded: 5000.00

Servicewide Issues : C55 (MAINTENANCE)
C52 (HSR)

Cultural Resource Type: STRC (Structure)

N-RMAP Program codes :

10-238 Package Number :

Problem Statement

Yellowstone National Park has many fine examples of rustic log or wood frame buildings with historical and/or architectural significance that are eligible to and/or listed on the National Register of Historic Places. These buildings date back to the 1890s. Many of the buildings retain their historical function, while others are used adaptively.

Stabilization work is required on many historic buildings, including the Fishing Bridge Ranger Station, West Thumb Ranger Station and comfort station, Lake Fish Hatchery buildings, Lamar residence and bunkhouse, Norris Ranger Station and residence, West Entrance Ranger Station and residence, Bechler Ranger Station, and parkwide fire caches and barns built by the CCC. The Fishing Bridge Ranger Station is in critical condition.

These buildings are in need of extensive exterior preservation treatment to prevent structural damage which could affect the integrity of the buildings. Stabilization work includes: repair or replacement of deteriorated wood-shingled roofs, foundations, masonry, rafters, purlins, crown ends, sill logs, chinking, windows, doors, and associated woodwork. Some buildings also have drainage problems that need to be corrected. The stabilization work may require specialized log preservation skills.

As a component of stabilizing and maintaining historic structures, the adaptive use issue is important. If historic structures are not used, it can be more difficult to obtain funding and personnel for stabilization and maintenance. Adaptive use of historic structures needs to be emphasized. Each developed area should have an inventory of all historic structures, including a description of what the structure is being used for. Prior to constructing new buildings, adaptive use of historic structures needs to be considered.

Description of Recommended Project or Activity

Prioritize historic buildings requiring stabilization work.

Stabilize historic buildings utilizing maintenance personnel, contracted labor, and preservation specialists.

Prepare Preventive Maintenance Guides once stabilization work has occurred and the buildings are in maintainable condition.

Prepare historic structure lists for each area, which include information on structure use and condition.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	750.00	5.00
	MIT	Cyclic	750.00	5.00
Subtotal:			1500.00	10.00
Year 2:	MIT	Cyclic	750.00	5.00
	MIT	Cyclic	750.00	5.00
Subtotal:			1500.00	10.00
Year 3:	MIT	Cyclic	750.00	5.00
	MON	Recurring	750.00	5.00
Subtotal:			1500.00	10.00
Year 4:	MON	Recurring	500.00	5.00
Total:			5000.00	35.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Project Statement
Last Update: 04/12/96
Initial Proposal: 1995

YELL-C-001.000
Priority: 7
Page Num: 0003

EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 C(4)

Project Statement

Last Update: 04/12/96
Initial Proposal: 1995

YELL-C-002.000
Priority: 8
Page Num: 0004

Title : PROTECT NATL. HISTORIC LANDMARK BUILDINGS

Funding Status: Funded: 0.00 Unfunded: 1750.00

Servicewide Issues : C55 (MAINTENANCE)
Cultural Resource Type: STRC (Structure)
N-RMAP Program codes :

10-238 Package Number : 836

Problem Statement

Five buildings in Yellowstone National Park are designated as National Historic Landmarks under the theme of park rustic architecture. These buildings are: the Old Faithful Inn, the Northeast Entrance Station, and the Madison, Norris, and Fishing Bridge Museums.

Due to its complexity, the Old Faithful Inn is addressed in a separate project statement. The Northeast Entrance Station, built in 1935, is the best example of rustic log entrance stations in the National Park Service. It symbolizes a wilderness approach to the park. The museums, built between 1929 and 1931, are classic examples of park rustic architecture, where native materials were used to blend with the natural environment.

In accordance with protective legislation, these buildings need to be afforded the highest level of protection and preservation treatment. Although stabilization work has been completed at each of the buildings, additional funds are needed to maintain the buildings and prevent further deterioration.

The buildings are in need of preventive maintenance treatment such as cleaning roofs, staining, painting, repairing windows, replacing shingles, etc. Preventive Maintenance Guides were prepared for the museums to direct this type of work; however, they cannot be fully implemented without additional funding.

There are additional needs other than preservation maintenance. For example, the museums require a new method for window winterization. Presently, window-board covers are nailed into original sills, causing them to split and deteriorate. An original "Trailside Museum" wrought-iron sign that once hung from the Madison museum is missing. The landscape around Madison Museum has drainage "problems" that are affecting the museum.

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-C-002.000
Priority: 8
Page Num: 0005

Description of Recommended Project or Activity

Provide stable base funding for preventive maintenance activities. Inspect buildings and provide appropriate preservation treatment. Ensure appropriate preservation techniques are used and that historic colors are matched.

Pursue funding for capital improvements such as accessibility, renovation, rewiring, and site work.

BUDGET AND FTEs:

Source		Activity	FUND Type	Budget (\$1000s)	FTEs
			Total:	0.00	0.00
		Activity	FUND Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time		500.00	5.00
Year 2:	MIT	Cyclic		500.00	5.00
Year 3:	MIT	Recurring		250.00	2.50
	PRO	Recurring		250.00	2.50
			Subtotal:	500.00	5.00
Year 4:	MIT	Recurring		250.00	2.00
			Total:	1750.00	17.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)
EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 C(4)

Project Statement

YELL-C-003.000

Last Update: 04/12/96
Initial Proposal: 1995

Priority: 16
Page Num: 0006

Title : REHAB/PRESERVE HISTORIC CONCESSION FACILITIES

Funding Status: Funded: 4120.00 Unfunded: 4120.00

Servicewide Issues : C55 (MAINTENANCE)
C12 (ICAP)

Cultural Resource Type: STRC (Structure)

N-RMAP Program codes :

10-238 Package Number : 694

Problem Statement

The Act of November 10, 1979, 6 USC 601, authorized the Secretary of the Interior to acquire and upgrade Yellowstone Park Company's facilities (the largest concessions operation in Yellowstone; these facilities are now owned by the National Park Service and operated by TW Recreational Services [TWRS]). A special congressional appropriation authorized several million dollars for renovation of these facilities through Package 620.

The initial program funded projects for correcting sanitation and life/safety code deficiencies. The program addressed some long-term rehabilitation projects such as renovation of kitchens, public restrooms, dining rooms, lobbies, and guest rooms. It included historic preservation, dormitory construction, and Canyon cabin replacement.

Many projects have been accomplished under the initial 620 Package and through revenue generated from the TWRS contract. However, many projects remain. In 1979, it was estimated that \$80 million was needed to bring these facilities up to a satisfactory level.

In 1981, TWRS was required to invest 22% of their gross revenue into capital improvements and cyclic maintenance on government-owned facilities assigned to them. This contract was renewed in 1991 and required TWRS to invest \$8 million in 1991-93 for major renovation and construction projects. In addition, TWRS is required to invest 10% of their annual gross receipts to into capital improvements and 10% into a Cyclic Maintenance Program on government-owned facilities and equipment.

Although much has been accomplished, adequate funds are not available or sufficient to finance the numerous projects. The continued rehabilitation of historic structures will protect them, allow for their continued use, and provide an acceptable standard of visitor accommodations.

Historic Structures Reports have been completed for the Old Faithful Inn, Roosevelt Lodge, Mammoth Hotel, and the Old Faithful Lodge.

1. Mammoth:

Renovate the 98 hotel guest rooms, including bathrooms and corridors. Replace furnishings, carpeting, fixtures, and equipment. Restore to a period decor with the use of historic or modern furnishings and provide continuity throughout the interior spaces. Replace or modify the electrical, heating, and plumbing systems. Rehabilitate the 112 guest cabins and provide exterior preservation work.

2. Roosevelt Lodge:

Interior and exterior has been accomplished on the lodge building. Additional renovation is needed and the 80 historic guest cabins and public rest rooms need to be upgraded. Additional employee housing is needed and existing housing needs to be upgraded. Several historic cabins are used for employee housing and need significant interior and exterior rehabilitation.

3. Gardiner:

Several of the support services buildings (paint shops, laundry, warehouses, garage, personnel offices) in this historic district need interior and exterior rehabilitation, including health and life/safety code deficiencies. The Gardiner Bunkhouse (employee housing) needs complete rehabilitation.

4. Lake Area:

Renovate the 186 guest cabins at the Lake Lodge and the 102 guest cabins at the Lake Hotel. Lake Hotel needs exterior paint.

5. Old Faithful:

The Old Faithful Lodge needs a significant amount of historic preservation, including window replacement, masonry work, and log work. The majority of the 202 guest cabins need significant exterior and interior rehab.

6. Miscellaneous Buildings:

Many of the buildings associated with TWRS operations are eligible for, or listed on, the National Register of Historic Places. They are in need of exterior preservation work (roofing, painting, and repair of deteriorating woodwork and masonry) and interior rehabilitation to meet health and life/safety codes.

Due to its National Historic Landmark status, the Old Faithful Inn is addressed in a separate project statement.

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-C-003.000
Priority: 16
Page Num: 0008

Description of Recommended Project or Activity

Pursue funding to continue major rehabilitation and historic preservation projects for these facilities.

Prepare Historic Structures Reports for the Lake Lodge and Lake Hotel.

In addition to pursuing funding, utilize available funds from the TWRS Capitol Improvement and Cyclinc Maintenance Program to accomplish priority projects.

BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	NON-NPS-O	MIT	Cyclic	1000.00	0.00
	TEMP\$-CR	PRO	Cyclic	15.00	0.50
	FED-OTHER	MIT	Cyclic	15.00	0.50
			Subtotal:	1030.00	1.00
1996:	NON-NPS-O	MIT	Cyclic	1000.00	0.00
	TEMP\$-CR	PRO	Cyclic	15.00	0.50
	FED-OTHER	MIT	Cyclic	15.00	0.50
			Subtotal:	1030.00	1.00
1997:	NON-NPS-O	MIT	Cyclic	1000.00	0.00
	TEMP\$-CR	PRO	Cyclic	15.00	0.50
	FED-OTHER	MIT	Cyclic	15.00	0.50
			Subtotal:	1030.00	1.00
1998:	NON-NPS-O	MIT	Cyclic	1000.00	0.00
	TEMP\$-CR	PRO	Cyclic	15.00	0.50
	FED-OTHER	MIT	Cyclic	15.00	0.50
			Subtotal:	1030.00	1.00
			Total:	4120.00	4.00

			-----UNFUNDED-----		
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		PRO	Recurring	30.00	1.00
		MIT	Recurring	1000.00	0.00
			Subtotal:	1030.00	1.00

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Initial Proposal: 1995			Priority: 16
			Page Num: 0009

Year 2:	PRO	Recurring	30.00	1.00
	MIT	Recurring	1000.00	0.00

		Subtotal:	1030.00	1.00
Year 3:	PRO	Recurring	30.00	1.00
	MIT	Recurring	1000.00	0.00

		Subtotal:	1030.00	1.00
Year 4:	PRO	Recurring	30.00	1.00
	MIT	Recurring	1000.00	0.00

		Subtotal:	1030.00	1.00
			=====	
		Total:	4120.00	4.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)
EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 C(4)

Title : PROTECT OLD FAITHFUL INN NATL. LANDMARK

Funding Status: Funded: 2296.00 Unfunded: 3196.00

Servicewide Issues : C55 (MAINTENANCE)
C53 (ICAP)

Cultural Resource Type: STRC (Structure)

N-RMAP Program codes :

10-238 Package Number :

Problem Statement

The Old Faithful Inn has long been a symbol of outstanding rustic architecture in the National Park Service. Built in 1904, it influenced subsequent park buildings in its design, using native materials to harmonize with the environment. From 1981-83, work on the Inn included replacing the kitchen, remodeling restrooms, installing a fire detection system, repairing electrical and mechanical systems, meeting safety codes, reroofing, replacing wall shingles, and stabilizing deteriorated logwork. In 1987, the public lobby and dining room/lounge were restored, a service elevator was installed, and a handicapped accessible entrance was added. The Inn was designated a National Historic Landmark in 1987. In 1992-93, east and west wing guest rooms were remodeled and four rooms were made accessible. Although the Inn has had numerous rehabilitation projects in the past decade, much more work is needed to ensure a maintainable level and protect the historic integrity of the building.

A cultural resources training (CRTI) course was co-sponsored by TWRS, RMRO, USFS, and others at Old Faithful Inn in 1995.

Preservation maintenance activities occurred in 1995; however, these are the priorities that remain:

1. Exterior preservation and miscellaneous interior repairs:

The Widow's Walk landing and roof components under the walk need repair work to eliminate a major source of leaking rain and melting snow melt. Windows need to be winterized to protect the building when it is closed for winter (November through April). Repairs are needed on deteriorated millwork; preservation and in-kind replacement is needed on wood and log work, cribbing, and staircases; and floors need refinished in the gift shop and on the mezzanine.

2. Interior rehabilitation work:

Major rehabilitation projects are needed to upgrade antiquated heating, plumbing, and electrical systems in the Old House. 111 Old House guest rooms need to be completely

renovated to correct life/safety deficiencies, refinish floors, and replace or refinish antique Inn furnishings. Old House public showers and restrooms need to be remodeled. Old House hallway floors need to be refinished and recarpeted. 90 west wing guest rooms need to be renovated including lighting, flooring, bathrooms, walls, and ceilings.

3. Prepare a Preservation Maintenance Guide:

A Preservation Maintenance Guide would provide a systematic method of carrying out preventive maintenance activities, including inspections, housekeeping, and cyclic maintenance. It would direct maintenance employees to appropriate preservation techniques and help prevent indiscriminate or incompatible repairs to historic fabric that may require compliance or the skills of preservation specialists. Because of the size, complexity, and significance of the Inn, it warrants the development of a Preservation Maintenance Guide more than any other structure in the park.

4. Preventive maintenance and monitoring day-to-day activities:

Maintenance of the Inn is the responsibility of the concessioner. Projects are reviewed by park staff and submitted for compliance. There is need to more closely monitor day-to-day activities to ensure that routine actions do not have an adverse effect on the Inn. Maintenance employees may not be aware of compliance guidelines when performing routine activities and may make seemingly minor, incompatible, or irreversible repairs to historic fabric. A training session on inspections and preventive maintenance activities is needed and could be conducted by the park Cultural Resources Specialist and the regional Historical Architect.

Description of Recommended Project or Activity

Actively pursue and secure funds to complete exterior and interior rehabilitation of the Old Faithful Inn.

- a. Type 82 preservation funding for exterior logwork.
- b. Special line-item/construction funding for major rehabilitation work.

2. Fund the preparation of an ICAP by contracted services. Consider the option of using TWRS CIP and CMP funds for this project. The ICAP should also generate preventive maintenance guides to direct preventive and cyclic maintenance activities.

3. Review and monitor daily maintenance activities to ensure compliance with preventive maintenance guides.

Project Statement

YELL-C-004.000

Last Update: 04/12/96
Initial Proposal: 1995

Priority: 12
Page Num: 0012

4. Prepare and conduct yearly training sessions for Old Faithful Inn maintenance employees on preventive/cyclic maintenance and compliance.

BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	NON-NPS-O MIT	Cyclic	550.00	0.00
	TEMP\$-CR PRO	Cyclic	9.00	0.20
	FED-OTHER MIT	Cyclic	15.00	0.50
Subtotal:			574.00	0.70
1996:	NON-NPS-O MIT	Cyclic	550.00	0.00
	TEMP\$-CR PRO	Cyclic	9.00	0.20
	FED-OTHER MIT	Cyclic	15.00	0.50
Subtotal:			574.00	0.70
1997:	NON-NPS-O MIT	Cyclic	550.00	0.00
	TEMP\$-CR PRO	Cyclic	9.00	0.20
	FED-OTHER MIT	Cyclic	15.00	0.50
Subtotal:			574.00	0.70
1998:	NON-NPS-O MIT	Cyclic	550.00	0.00
	TEMP\$-CR PRO	Cyclic	9.00	0.20
	FED-OTHER MIT	Cyclic	15.00	0.50
Subtotal:			574.00	0.70
Total:			2296.00	2.80

		-----UNFUNDED-----		
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	One-time	1540.00	0.00
	PRO	Cyclic	9.00	0.20
Subtotal:			1549.00	0.20
Year 2:	MIT	One-time	1540.00	0.00
	PRO	Recurring	9.00	0.20
Subtotal:			1549.00	0.20
Year 3:	MIT	Recurring	40.00	0.00
	PRO	Recurring	9.00	0.20
Subtotal:			49.00	0.20

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-C-004.000
Priority: 12
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Year 4:	MIT	Recurring	40.00	0.00
	PRO	Recurring	9.00	0.20
			-----	-----
		Subtotal:	49.00	0.20
			=====	=====
		Total:	3196.00	0.80

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)
EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 C(4)

Title : PRESERVE AND RESTORE FORT YELLOWSTONE

Funding Status: Funded: 0.00 Unfunded: 10100.00

Servicewide Issues : C55 (MAINTENANCE)
C11 (REPORT)

Cultural Resource Type: STRC (Structure)
N-RMAP Program codes :

10-238 Package Number : 361

Problem Statement

Fort Yellowstone was the headquarters for the military administration of Yellowstone National Park. The military administration played an important role in the development of the National Park Service and the evolution of natural resource policies. Fort Yellowstone is included in the Fort Yellowstone-Mammoth Hot Springs Historic District. It will be evaluated for National Historic Landmark eligibility as part of the Historic Resource Study/Multiple Resource National Register nomination, which is in process. Many of the buildings in Fort Yellowstone are adaptively used by the National Park Service.

The predominant architectural styles of the Fort Yellowstone buildings include masonry with red clay tile roofs, wood frame with red metal shingle roofs, and masonry with slate roofs. Age, harsh winters, and deferred maintenance have taken their toll on these buildings, leaving some building components in poor condition. Roofs, chimneys, foundations, woodwork, porches, doors, windows, and interior electrical and mechanical systems are in need of repair or replacement. Many buildings need painting. Maintenance on the buildings is occurring, but lack of funds has inhibited the work.

The Fort Yellowstone Historic Structure Report (HSR), completed by Battle and Thompson in 1972, recommended restoration work for both interiors and exteriors of Fort Yellowstone buildings. This report needs to be reviewed and updated. The question of restoration versus rehabilitation and preservation maintenance needs to be evaluated. Determinations of Eligibility to the National Register need to be prepared for all historic buildings previously not evaluated for National Register eligibility (interior and exterior). Preservation maintenance guides need to be prepared for the buildings based on the revised HSR.

A comprehensive adaptive use plan needs to be developed for the Fort Yellowstone buildings. The plan would detail the current use of each building, building condition, and potential adaptive uses for each building. Prior to any new construction, the plan would be consulted. Adaptive use of historic buildings would be encouraged.

Fort Yellowstone is part of a cultural landscape and part of a historic district. It serves as an administration area, a residential area, and as a visitor services area. All of these issues need to be considered in the preservation and maintenance of Fort Yellowstone. A comprehensive management plan for Fort Yellowstone needs to be developed which would integrate these issues with the Historic Resource Study and Adaptive Use Plan. When determining the ultimate use and representation of Fort Yellowstone, consideration should be given to the historic scene, landscaping, and residential needs.

Description of Recommended Project or Activity

1. Continue preventive maintenance activities and rehabilitation of interiors and exteriors where proposed work will not adversely affect the integrity of the historic district. This includes cyclic maintenance activities such as painting, reroofing, replacing deteriorated wood, structural repairs, replacing mechanical systems, and rehabilitating interiors to meet safety codes. Interior architectural elements such as window trim, doors, stairways, fireplaces, and moldings should be preserved.
2. Program funding for a revised Historic Structure Report.
3. Program funding for completion of the Historic Resource Study. The study will identify the historically significant components of the historic district and help to direct the preservation maintenance and rehabilitation of the historic structures.
4. Program funding for a Fort Yellowstone comprehensive management plan that would identify historic district issues, cultural landscapes, and adaptive use.
5. Solicit funds for 10-238 Package No. 361. This package calls for preservation, rehabilitation, and restoration of Fort Yellowstone as a whole. A comprehensive inspection of interior and exterior components, historic fabric, and original conditions, would be required.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
Total:			0.00	0.00

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	Cyclic	1500.00	7.00
	MIT	Cyclic	1500.00	8.00
	RES	One-time	50.00	0.50

		Subtotal:	3050.00	15.50
Year 2:	MIT	Cyclic	1500.00	7.00
	MIT	Cyclic	1500.00	8.00
	RES	One-time	50.00	0.50

		Subtotal:	3050.00	15.50
Year 3:	MIT	Cyclic	1500.00	7.00
	MIT	Cyclic	1500.00	8.00

		Subtotal:	3000.00	15.00
Year 4:	MIT	Cyclic	500.00	0.50
	PRO	One-time	500.00	0.50

		Subtotal:	1000.00	1.00
			=====	
		Total:	10100.00	47.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)
EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 C(4)

Title : INVEN, EVAL, & PRESERVE HISTORIC STRUCTURES

Funding Status: Funded: 110.00 Unfunded: 4015.00

Servicewide Issues : C55 (MAINTENANCE)
C72 (PROTECTION)

Cultural Resource Type: STRC (Structure)

N-RMAP Program codes :

10-238 Package Number :

Problem Statement

The park has more than 959 historic structures that need to be thoroughly inventoried and evaluated for National Register Eligibility. This will result in the identification of eligible structures and contributing features that need to be preserved and possibly formally nominated to the National Register. The Historic Resource Studies (HRS) on the history of park concessions and the history of park administration need to be completed. These studies will provide the necessary contextual information by which the structures can be evaluated. Also, the park's List of Classified Structures (LCS) needs to be updated.

The historic structure inventory list is incomplete. Many buildings have never been recorded. Of the 959 structures on the LCS, about half have their exteriors evaluated for National Register eligibility. The condition of the structures varies from poor to excellent. Most of the interiors were not evaluated. Other structures have not been inventoried or recorded at all.

An often-overlooked group of historic structures are some 40 backcountry cabins and fire lookouts. These structures date back to 1913 and represent the military and park ranger role in protecting the park's resources. This is included in the HRS for park administration. As with other historic structures, the condition of cabins and lookout varies from poor to excellent.

Twelve cabins received a historic fabric and condition assessment by a preservation specialist during 1983. The specialist recommended minimum/maximum treatment and developed a preventive maintenance checklist for each cabin. Six of these cabins have received stabilization work by park maintenance in recent years. Many other cabins and lookouts remain in a serious state of deterioration, with rotted rafters, shingles, crown ends, and sill logs.

Incompatible alterations, such as additions and door and window changes, have occurred over the years. Some inappropriate maintenance techniques have been used, such as the inexperienced use of epoxy, log replacement when another method would have sufficed, and removal of interior components that contribute to

the overall character of the building.

The continued maintenance and preservation of backcountry cabins and fire lookouts is essential to backcountry management. Backcountry cabins are frequently used for shelter and as patrol bases throughout the year. Two of the fire lookouts are staffed throughout the summer season. Yellowstone's extensive backcountry and frequent inclement weather make the preservation of cabins and lookouts a necessity.

Description of Recommended Project or Activity

Hire a qualified person (by contract or NPS detail) to conduct an inventory and evaluation of all backcountry cabins and lookouts that meet the age criteria. They must also follow the contextual framework established for the Historic Resources Study/multiple-resource National Register nomination. RM/VP personnel might need to assist with access and other logistics. Nominate those structures eligible to the National Register and add them to the LCS.

2. Continue preservation maintenance activities on all structures until determinations of eligibility are made and, where necessary, institute preventive maintenance duties into the backcountry rangers schedule. Reactivate existing inspection checklists for the 12 inventoried cabins. Stabilization work is the responsibility of maintenance and preservation maintenance is the responsibility of maintenance and RM/VP personnel but these activities should only be undertaken by those skilled in preservation techniques.

3. Develop and implement maintenance guides for the structures as a unit with preventive maintenance activities tailored to individual needs.

4. Maintain the best examples (according to design, construction techniques, and integrity) as a representative sample. Calfee Creek cabin is one example that should be saved as is. The future use of each cabin and lookout must be determined and then we must decide whether or not to preserve, rehabilitate, remove, or let molder in relation to its significance, need, and cost to maintain.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1996:	CRPP	MIT	One-time	110.00	2.20

		Total:	=====	110.00	2.20
-----UNFUNDED-----					
	Activity	Fund Type	Budget (\$1000s)	FTEs	
Year 1:	MIT	One-time	1000.00	10.00	
Year 2:	MIT	Recurring	500.00	5.00	
	MIT	Cyclic	500.00	5.00	
		Subtotal:	-----	1000.00	10.00
Year 3:	MIT	Recurring	500.00	5.00	
	MIT	Cyclic	500.00	5.00	
	RES	One-time	7.50	1.00	
	RES	One-time	7.50	1.00	
		Subtotal:	-----	1015.00	12.00
Year 4:	MIT	Recurring	500.00	5.00	
	PRO	Recurring	500.00	5.00	
		Subtotal:	-----	1000.00	10.00
		Total:	=====	4015.00	42.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)
EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(9)

	Project Statement	YELL-C-007.000
Last Update: 04/12/96		Priority: 11
Initial Proposal: 1995		Page Num: 0020

Title : ADD PROFESSIONAL ARCHEOLOGIST TO STAFF

Funding Status: Funded: 106.00 Unfunded: 166.00

Servicewide Issues : C80 (ARCHEOLOGY)
Cultural Resource Type: SITE (Archeological Site)
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

Approximately 2 percent of Yellowstone National Park's 2.2 million acres has been systematically inventoried, and less than 10 percent has had a reconnaissance inventory. The park's Cultural Sites Inventory (CSI) lists over 550 archeological sites, but documentation regarding the location and condition of many of these sites is inadequate or missing. Very few archeological sites have been evaluated for eligibility to the National Register of Historic Places, and prehistoric and historic contexts need to be developed under which to evaluate these sites.

Continual ground-disturbing activities in the park require inventory, monitoring, and evaluation of archeological sites for compliance purposes. Research is needed to determine the past human activity in the park. There are reports of archeological site vandalism in front and backcountry areas of the park. An archeological site monitoring program needs to be established, vandalism reports followed up on, and known but unrecorded sites recorded and evaluated for National Register eligibility.

A professional archeologist would develop contexts, conduct inventories, record and evaluate sites for eligibility to the National Register, revise and update the CSI, review projects for compliance, conduct research, develop and implement an archeological site monitoring program, follow up on site vandalism reports, and add to the interpretation of the park's prehistory and history.

Description of Recommended Project or Activity

Use professional archeologist now duty-stationed in Yellowstone as effectively as possible to manage the park's archeological resources and increase knowledge about them.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	FED-OTHER	ADM	Cyclic	25.00	0.40
1996:	FED-OTHER	ADM	Cyclic	26.00	0.40
1997:	FED-OTHER	ADM	Cyclic	27.00	0.40
1998:	FED-OTHER	ADM	Cyclic	28.00	0.40
Total:				106.00	1.60

-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		ADM	Recurring	40.00	0.60
Year 2:		ADM	Recurring	41.00	0.60
Year 3:		ADM	Recurring	42.00	0.60
Year 4:		ADM	Recurring	43.00	0.60
Total:				166.00	2.40

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.1

Project Statement

YELL-C-008.000

Last Update: 04/12/96
Initial Proposal: 1995

Priority: 16
Page Num: 0022

Title : ESTABLISH MUSEUM TECHNICIAN POSITION

Funding Status: Funded: 0.00 Unfunded: 122.00

Servicewide Issues : C81 (COLLECTIONS)
Cultural Resource Type: OBJC (Object)
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

Yellowstone National Park's museum collection of more than 200,000 objects and specimens, including approximately 80,000 historic photographs, must be protected, preserved, and made available for appropriate use according to Department of Interior (DOI), National Park Service (NPS), and professional museum standards. Standards include: DOI Departmental Manual, Part 411, "Museum Property Management;" NPS Special Directive 80-1, with its associated "Checklist for Preservation, Protection, and Documentation of Museum Property;" the NPS Handbook, Parts I and II; and NPS-28, Cultural Resources Management Guideline.

Current staffing and funding levels, and types of funding are inadequate to accomplish the ongoing work necessary to efficiently and effectively manage the museum collection and meet the enormous and growing demand for access to it by researchers. A substantial and growing backlog of uncataloged objects and specimens, ongoing preservation and maintenance needs, the absence of an Integrated Pest Management (IPM) program, irregular monitoring of environmental conditions, irregular compliance with annual inventory requirements, and a 1988 OIG audit identifying deficiencies in Yellowstone's museum environment all point to the need for the full-time technical support that could be provided by a museum technician.

Individuals working seasonally or under term appointments under various titles carry out some of the responsibilities of museum technicians at Yellowstone, but are funded by regional or WASO accounts that set strict limitations on the types of work which may be performed, such as backlog cataloging. The result of this arrangement has been the neglect of many of the collection's critical needs, and a lack of funding to address immediate needs, such as researcher demand.

Description of Recommended Project or Activity

Establish a full-time Museum Technician position at the GS-7 level to bring museum collections management up to DOI and NPS

Project Statement
 Last Update: 04/12/96
 Initial Proposal: 1995

YELL-C-008.000
 Priority: 16
 Page Num: 0023

standards, and to serve researchers.

BUDGET AND FTEs:

Source		Activity	FUND Type	Budget (\$1000s)	FTEs
-----FUNDED-----					
				0.00	0.00
Total:					
-----UNFUNDED-----					
		Activity	FUND Type	Budget (\$1000s)	FTEs
Year 1:	ADM	Recurring		26.00	1.00
Year 2:	ADM	Recurring		32.00	1.00
Year 3:	ADM	Recurring		32.00	1.00
Year 4:	ADM	Recurring		32.00	1.00
				122.00	4.00
Total:					

(Optional) Alternative Actions/Solutions and Impacts
 (No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.1

Project Statement

YELL-C-009.000

Last Update: 04/12/96
Initial Proposal: 1995

Priority: 16
Page Num: 0024

Title : DOCUMENT STRUCTURES TO HABS/HAER STANDARDS

Funding Status: Funded: 0.00 Unfunded: 20.00

Servicewide Issues : C52 (HSR)
Cultural Resource Type: STRC (Structure)
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

Approximately 95 buildings in Yellowstone National Park need to be documented by Historic American Buildings Survey (HABS)/Historic American Engineering Record (HAER) standards.

Documenting National Register properties to Historic American Building Survey (HABS) or Historic American Engineering Record (HAER) standards provides a means to secure the historic record and document changes that occur through the years. It is also a good preservation method to safeguard a property from unforeseen threats. It is a legal requirement to HABS/HAER document any action that will have an adverse effect on a National Register property.

Documentation requires the services of a HABS/HAER proficient photographer with a medium or large format camera and, in some cases, a newly tested photogrammetric camera. Standard architectural drawings may also be required for some of the buildings. The negatives and prints of all HABS/HAER documentation are then sent to the Library of Congress for storage.

HABS/HAER projects that have been undertaken in the park include 340 HABS photographs of National Register buildings proposed for removal or extensive rehabilitation, a complete set of photographs of the road system scheduled for federal highway rehabilitation, and photogrammetry of the interior of the Old Faithful Inn National Historic Landmark and the three National Historic Landmark museums: Norris, Madison, and Fishing Bridge.

As part of the Historic Resource Study (HRS) and Multiple Resource National Register nomination, the park's 340 HABS photographs will be submitted, with the appropriate report, to the HABS office in Washington. It is then intended that the HABS office will transmit them to the Library of Congress. The HRS may identify the need for additional HABS recordation.

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-C-009.000
Priority: 16
Page Num: 0025

Description of Recommended Project or Activity

Secure funding to document selected National Register properties using the National Park Service's HABS/HAER photographer, photogrammetric photographer, and, where appropriate, student architects to prepare drawings. The Historic Resources Study/Multiple Resource National Register nomination should be completed prior to undertaking this project so that ineligible buildings are not documented and significance can be considered when determining the level of documentation. The amount of time required to complete this project would vary depending on the number of buildings and to what degree they are recorded.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	One-time	10.00	0.20
Year 2:	ADM	One-time	10.00	0.20
Total:			20.00	0.40

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

	Project Statement	YELL-C-010.000
Last Update: 04/12/96		Priority: 14
Initial Proposal: 1995		Page Num: 0026

Title : ASSESS HISTORIC STRUCTURES USING ICAP PROGRAM

Funding Status: Funded: 0.00 Unfunded: 440.00

Servicewide Issues : C53 (ICAP)
Cultural Resource Type: STRC (Structure)
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

Yellowstone National Park has 959 buildings on its List of Classified Structures (LCS). National Park Service (NPS) standards require that sufficient information be gathered about historic structures to support planning decisions and direct management actions. The Inventory and Condition Assessment Program (ICAP) is the National Park Services's automated system used to determine physical condition, assess preservation needs, estimate costs for treatment, and prescribe preservation maintenance activities for historic and non-historic structures. The data received from inspections will be integrated into the park's Maintenance Management System. This information will allow managers to evaluate needs, determine costs, and plan historic structure contracts to prevent adverse effects to the integrity of the historic structures.

The information from the ICAP inventories will also be used to generate preventive maintenance guides for inventoried buildings.

Ideally, every National Register building should have an individual preventive maintenance guide; however, this may be unreasonable in Yellowstone where, currently, 553 properties are determined eligible to the National Register. Specific guides should be prepared for the more significant or complicated structures, and general guides should be prepared for the remaining structures.

The priority needs for preventive maintenance guides are: Old Faithful Inn (also addressed in a separate project statement), Fort Yellowstone, Lake Hotel, Mammoth Hot Springs Hotel, Lake Lodge, Old Faithful Lodge, Roosevelt Lodge, and Lake Ranger Station. The existing maintenance guides for the three landmark museums (Madison, Norris, and Fishing Bridge), Northeast Entrance Station, and Lamar Buffalo Ranch should be reviewed, revised, if necessary, and reactivated.

The park's preventive maintenance program should also include an inspection checklist identifying what, and when, routine and cyclic maintenance tasks are to be performed. These tasks should be performed utilizing a preventive maintenance guide. Simple tasks such as clearing vegetation from around buildings, cleaning organic material from gutters and roofs, and correcting drainage

problems are important to prolonging the life of historic structures. These tasks, through the use of a preventive maintenance guide, could be incorporated into district maintenance schedules. The preventive maintenance guides would also provide field personnel with such information as what paint color/mixture to use, etc.

An ongoing preventive maintenance program would reduce the need for major repairs and, in turn, protect the integrity of historic structures by preserving historic fabric. Implementation of a comprehensive preventive maintenance program could also facilitate the Section 106 compliance process. A Programmatic Agreement could be developed which would eliminate the need to submit Assessment of Effect forms for preventive maintenance activities identified in the preventive maintenance guides.

In order to properly implement a comprehensive maintenance program, all park personnel involved in preventive maintenance activities need to receive appropriate training.

Description of Recommended Project or Activity

Provide funding to complete field surveys and record data onto Inventory Condition Assessment Program inventory sheets. This program would also generate preventive maintenance guides for inventoried structures. Designate funds from the Capitol Improvements and Maintenance Program to prepare preventive maintenance guides for concession buildings.

Integrate the preventive maintenance program with the Maintenance Management System.

Increase maintenance ONPS funding to accommodate the increased labor costs for conducting building inspections and performing preventive maintenance tasks.

Provide funding to train park employees involved in preventive maintenance activities on the proper use of preventive maintenance guides.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
		Total:	0.00	0.00

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-C-010.000
Priority: 14
Page Num: 0028

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	Recurring	50.00	5.00
	RES	One-time	20.00	1.00
	RES	One-time	20.00	1.00
	RES	One-time	20.00	1.00
		Subtotal:	110.00	8.00
Year 2:	MIT	Recurring	50.00	5.00
	RES	One-time	20.00	1.00
	RES	One-time	20.00	1.00
	RES	One-time	20.00	1.00
		Subtotal:	110.00	8.00
Year 3:	MIT	Recurring	50.00	5.00
	RES	One-time	30.00	1.50
	RES	One-time	30.00	1.50
		Subtotal:	110.00	8.00
Year 4:	MIT	Recurring	50.00	5.00
	RES	One-time	30.00	1.50
	RES	One-time	30.00	1.50
		Subtotal:	110.00	8.00
		Total:	440.00	32.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)
EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(4)

Project Statement
Last Update: 04/12/96
Initial Proposal: 1995
YELL-C-011.000
Priority: 16
Page Num: 0029

Title : ESTABLISH DESIGN GUIDELINES FOR STRUCTURES

Funding Status: Funded: 40.00 Unfunded: 20.00

Servicewide Issues : C56 (REHAB, ETC.)
Cultural Resource Type: STRC (Structure)
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

Design guidelines based on an analysis of character-defining National Register qualities/features of historic structures, districts, and cultural landscapes are needed to prevent negative impacts and loss of integrity these historic resources and their settings. Contemporary designs should harmonize with both the natural elements and existing historic structures.

Due to the variety of natural settings and elements, historic structures and districts, and cultural landscapes that are found in park developed areas, design guidelines will need to be area-specific. Draft design guidelines were developed in association with Yellowstone's Housing Unit Design Assistance Team (HUDAT). These designs may be applicable to establishing formal guidelines.

The National Historic Preservation Act, through the Section 106 process, mandates the review of any proposed alterations to historic buildings and new construction within historic districts as well as any action within view of National Register properties. In Yellowstone, this review occurs on a case-by-case basis. Preparing design guidelines would provide design continuity and compatibility and facilitate the Section 106 implementation. The design guidelines would need to go through the Section 106 process.

Description of Recommended Project or Activity

Prepare design guidelines for the park's resources to govern future design work. Initiate Section 106 Consultation with SHPO and ACHP on design guidelines.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	CONSTRUCT	MIT	Cyclic	20.00	0.30
1996:	CONSTRUCT	MIT	Cyclic	20.00	0.30
Total:				40.00	0.60
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		ADM	One-time	5.00	0.30
		ADM	One-time	3.00	0.20
		Subtotal:		8.00	0.50
Year 2:		ADM	One-time	5.00	0.30
		ADM	One-time	3.00	0.20
		Subtotal:		8.00	0.50
Year 3:		ADM	One-time	3.00	0.10
		ADM	One-time	1.00	0.10
		Subtotal:		4.00	0.20
Total:				20.00	1.20

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)
EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(9)

	Project Statement	YELL-C-012.000
Last Update: / /		Priority: 15
Initial Proposal: 1995		Page Num: 0031

Title : ADD TO ARCHEOLOGIC & HISTORIC GIS DATABASE

Funding Status: Funded: 0.00 Unfunded: 300.00

Servicewide Issues : C04 (DATA RECOV)
 Cultural Resource Type: COMB (Combination)
 N-RMAP Program codes :

10-238 Package Number :

Problem Statement

The GIS is invaluable to park managers in identifying the locations of cultural resources and interrelationships with other resources. This information can be incorporated into many aspects of park planning (cultural resources management, fire management, interpretation, construction activities, trail management, etc.). This information can also be invaluable to researchers in the development of research designs. The GIS database for cultural resources needs to be expanded.

A GIS database has been developed for archeological sites within Yellowstone National Park. The archeological sites listed on the Cultural Sites Inventory (CSI) have been entered into GIS. As archeological sites are entered onto the CSI, they should also be entered into GIS.

Prehistoric and historic trails, historic roads, historic structures, and historic districts still need to be entered into GIS. As cultural landscapes and ethnographic resources are identified, they should be entered into GIS, unless there are ethnographic reasons to not do so.

Description of Recommended Project or Activity

Continue the development of the cultural resource GIS database, using Yellowstone's GIS. The GIS manager may be able to assist in the implementation of this project.

BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
	Total:		0.00	0.00

	Project Statement	YELL-C-012.000
Last Update: / /		Priority: 15
Initial Proposal: 1995		Page Num: 0032

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	One-time	100.00	0.20
Year 2:	ADM	One-time	100.00	0.10
Year 3:	ADM	One-time	50.00	0.10
Year 4:	ADM	One-time	50.00	0.00
			=====	
	Total:		300.00	0.40

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Project Statement

YELL-C-013.000

Last Update: 04/12/96
Initial Proposal: 1995

Priority: 16
Page Num: 0033

Title : INCREASE CULTURAL RESOURCES STAFF

Funding Status: Funded: 20.00 Unfunded: 956.00

Servicewide Issues : C83 (GEN CR MNGT)
Cultural Resource Type: COMB (Combination)
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

In 1994, the Branch of Cultural Resource's staff consisted of a Branch Chief, Cultural Resources Specialist, Supervisory Curator, Museum Technician (acting Archivist/Historian) and a Botanist (Natural History Curator). The Historian position is currently vacant. In 1995, an archaeologist was duty-stationed in Yellowstone to be shared with the Rocky Mountain SSO.

The Branch Chief directs the cultural resources planning and management programs, which includes more than 1,000 structures, an almost completely unsurveyed archeological resource of more than two million acres, the library, archives and museum collections, and frequent compliance, preservation, and other management issues relating to these resources.

The Cultural Resources Specialist is responsible for cultural resources compliance through archeological surveys, project evaluations, consultation for projects affecting historic resources, preparation of Section 106 compliance documentation, and preparation or review of environmental assessments.

The Supervisory Curator is responsible for managing a diverse collection of nearly 200,000 natural science specimens and cultural objects. This collection has a backlog of records which need to be updated and entered into the Automated National Catalog System and a backlog of approximately items which need to be cataloged into the collection and properly stored.

The Botanist (Natural History Curator) has primary responsibility for management of the park herbarium and identification and cataloging of plant specimens. The Botanist is also the park's rare plants specialist, and represents the park at numerous regional and national meetings.

The Museum Technician (Acting Archivist/Historian) manages the National Archives Records Administration repository at the park, responds to approximately 300 research and information requests a year, and oversees the operation of the research library.

The Archaeologist works approx. 40% of time for Yellowstone, and at present is nearly fully occupied completing archaeologic

compliance work for federal highways road reconstruction projects.

The library staff consists of two part-time, non-professional employees funded by the Yellowstone Association. The library has a collection of rare books, manuscripts, and vertical files that need to be professionally organized and managed. The collections are irreplaceable and are the primary source of information on Yellowstone National Park for the park's staff, historians, writers, and the general public. In recent years, a lack of full-time attention and the research demands on these collections have limited the park's ability to maintain satisfactory levels of professional management and preservation.

Additional staff is required to meet the needs and demands that these resources. Increased staff would allow preservation issues to be addressed and a more proactive cultural resources management program to be established.

Description of Recommended Project or Activity

Establish the following full-time positions and pursue associated funding: Historical Architect (GS-11), Museum Technician (GS-5/7), Librarian (GS-9), and Archives Technician (GS-5/7). The park Historian position (GS-11) also needs to be filled. This additional staffing would provide the required professional attention to the archeological and historical resources, historic structures, library, archives and museum collections.

BUDGET AND FTEs:

-----FUNDED-----						
	Source	Activity	Fund Type	Budget	(\$1000s)	FTEs
1995:	FED-OTHER	MIT	Cyclic		5.00	0.00
1996:	FED-OTHER	MIT	Cyclic		5.00	0.00
1997:	FED-OTHER	MIT	Cyclic		5.00	0.00
1998:	FED-OTHER	MIT	Cyclic		5.00	0.00
Total:				=====		
					20.00	0.00
-----UNFUNDED-----						
	Activity		Fund Type	Budget	(\$1000s)	FTEs

		Project Statement	YELL-C-013.000	
Last Update: 04/12/96			Priority: 16	
Initial Proposal: 1995			Page Num: 0035	

Year 1:	ADM	Recurring	195.00	4.00
	ADM	One-time	26.00	1.00
			-----	-----
		Subtotal:	221.00	5.00
Year 2:	ADM	Recurring	205.00	4.00
	ADM	One-time	32.00	1.00
			-----	-----
		Subtotal:	237.00	5.00
Year 3:	ADM	Recurring	246.00	5.00
Year 4:	ADM	Recurring	252.00	5.00
			=====	=====
		Total:	956.00	20.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.1

Title : IMPLEMENT ARCHEOLOGICAL RESOURCES MGMT

Funding Status: Funded: 480.00 Unfunded: 670.00

Servicewide Issues : C02 (ID & EVAL)
Cultural Resource Type: SITE (Archeological Site)
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

The Yellowstone Cultural Sites Inventory (CSI) lists over 550 archeological sites of Native American and Euroamerican origin. An unknown number of these sites, as well as currently unrecorded sites, are in danger through erosion, land use activities, unauthorized collecting, and the desire to "clean up" the natural landscape by removing historic "trash." Archeological sites need to be identified and recorded, evaluated for eligibility to the National Register of Historic Places, nominated to the National Register if they are eligible, and integrated into an archeological resources management plan. This information will be entered into the CSI and will provide comprehensive site information (site location, description, significance, threats, and management requirements). The CSI can then be loaded into the GIS system (SEE YELL-C-12). A comprehensive CSI will provide the information necessary for effective archeological resources management plans and decisions and will aide in compliance with legal requirements.

Approximately 2 percent of the park's 2.2 million acres has been intensively inventoried for archeological resources. Less than 10 percent of the park has had a reconnaissance inventory, and inventories done prior to the early 1980's do not meet current standards and guidelines. An intensive inventory of Yellowstone is needed, with priorities based upon development and maintenance programs, land use activities, fire management plan, reports of illegal collecting or vandalism, and environmental conditions that may adversely affect sites.

Archeological contexts need to be developed. The contexts will provide a framework for evaluating archeological sites for eligibility to the National Register. The prehistoric and historic archeological sites encompass a wide range of site types. Few sites have been evaluated for eligibility to the National Register. As sites are identified, they need to be recorded through completion of an IMACS form and a site condition assessment. The site also needs to be evaluated for National Register eligibility.

Using federal highways funds, portions of the Grand Loop Road were intensively inventoried for archaeologic resources in 1995.

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-C-014.000
Priority: 4
Page Num: 0037

Additional information will be gathered in future years as road planning and construction continues.

An archeological resources management plan is needed that will define how Yellowstone will manage archeological resources. The plan will include procedures for inventory, evaluation, condition assessment, documentation, monitoring, and the Archeological Resource Protection Act (ARPA). Some sites, such as Obsidian Cliff, warrant specialized plans.

If Yellowstone's archeological resources are to be appropriately managed, park employees need to be trained in archeological resource awareness; site identification, recording, and reporting; and site protection. Orientation to archeology courses need to be offered in the park, an archeological resources protocol needs to be developed and distributed to employees, archeological resources management needs to be integrated into park plans, and ARPA training needs to be encouraged for law enforcement and resource management personnel. (Archeological research is addressed under project statement YELL-C-017).

Description of Recommended Project or Activity

Inventory Yellowstone National Park according to established priorities. Required elements of each inventory will be the completion of IMACS forms and condition assessments for all identified archeological sites and evaluation of all sites for eligibility to the National Register.

As areas are inventoried, prepare Programmatic Agreements (PA) for ground disturbing projects in consultation with the State Historic Preservation Offices and Advisory Council on Historic Preservation.

Develop archeological contexts for Yellowstone's Native American and Euroamerican archeological resources.

Prepare archeological resources management plan and employee protocol guide. Develop archaeological monitoring program; identify sites and set up monitoring protocols.

Develop archeological training for Yellowstone employees. Facilitate Archeological Resource Protection Act (ARPA) training.

Project Statement

YELL-C-014.000

Last Update: 04/12/96
Initial Proposal: 1995

Priority: 4
Page Num: 0038

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995: FED-OTHER MIT		Cyclic	120.00	0.00
1996: FED-OTHER MIT		Cyclic	120.00	0.00
1997: FED-OTHER MIT		Cyclic	120.00	0.00
1998: FED-OTHER MIT		Cyclic	120.00	0.00
Total:			480.00	0.00

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	One-time	220.00	4.50
Year 2:	ADM	One-time	150.00	3.00
Year 3:	ADM	One-time	150.00	3.00
Year 4:	ADM	One-time	150.00	3.00
Total:			670.00	13.50

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)
ARPA (ARCH. RES. PROT. ACT.)

Explanation: 516 DM2 APP. 2, 1.6

Title : INVENTORY PREHISTORIC/HISTORIC TRAILS AND EVALUATE

Funding Status: Funded: 0.00 Unfunded: 60.00

Servicewide Issues : C03 (SITE DOC)
Cultural Resource Type: SITE (Archeological Site)
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

The roads in Yellowstone National Park are a fairly new advent to the area. For millennia, prehistoric and historic people traversed Yellowstone following well-established trails, creating new trails or spur trails as necessary. These trails have the potential to lead us toward untapped knowledge of the past. Identifying trails is vital to our understanding of how people utilized the environment, what resources were important to their culture, and possibly who these people were. Over the years, backcountry rangers, visitors, and trail crews have identified numerous archeological sites along these ancient routes. It is inevitable that as trails are more thoroughly identified, additional archeological sites and artifacts in association with the trails will be identified.

Yellowstone has 1,200 miles of backcountry trails utilized by visitors and staff. Many of these trails are located on or adjacent to prehistoric and historic trails. Several of the prehistoric and historic trails in Yellowstone are identified in literature, and routes are described. While we can identify the historic route or use of some trails, such as the Bannock, Nez Perce, and Miners Trail, they, as well as the majority of other trails, have not been inventoried. In addition to day use, we have over 42,000 overnight uses of backcountry sites per year. It is imperative that the trails of Yellowstone be inventoried and evaluated for their prehistoric and historic significance before the archeological sites are vandalized or these nonrenewable resources disappear through natural or unnatural causes. Accomplishment of this task will result in our ability to nominate trails for the National Register, improve our ability to protect the fragile cultural sites located along these trails, and enhance the overall management of Yellowstone's backcountry.

Description of Recommended Project or Activity

Conduct a survey to locate, inventory, and evaluate for National Register eligibility the portion of the Nez Perce Historic Trail within Yellowstone National Park. Identify and survey other

prehistoric and historic trails. Evaluate archeological resources associated with trails for eligibility to the National Register of Historic Places. Develop management guidelines or plans for the trails that will integrate with current backcountry use.

BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
Total:			0.00	0.00
		-----UNFUNDED-----		
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	One-time	25.00	0.70
	RES	One-time	10.00	0.20
	Subtotal:		35.00	0.90
Year 2:	ADM	One-time	25.00	0.70
	Total:		60.00	1.60

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)
EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(4)

	Project Statement	YELL-C-016.000
Last Update: 04/12/96		Priority: 16
Initial Proposal: 1995		Page Num: 0041

Title : ESTABLISH HISTORICAL ARCHITECT POSITION

Funding Status: Funded: 0.00 Unfunded: 208.00

Servicewide Issues : C85 (STRUCTURES)
Cultural Resource Type: STRC (Structure)
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

Yellowstone National Park has 959 structures on its List of Classified Structures; 553 of these structures have been determined eligible to, or listed on the National Register of Historic Places (National Register). Additional structures will be nominated to the National Register as part of the parkwide Multiple Resource National Register nomination. There are currently 13 historic districts, five buildings which are designated as National Historic Landmarks, and Fort Yellowstone which consists of 40 buildings and is being considered for National Historic Landmark status. The scope of the historic preservation work that needs to be identified, monitored, and completed in Yellowstone National Park requires the technical skills of a Historical Architect.

The National Park Service is responsible for ensuring the preservation of Yellowstone National Park's historic structures. Structures are continually being rehabilitated, stabilized, restored, remodeled, and otherwise altered. The current emphasis is on rehabilitating the structures to meet residential and visitor service needs, safety codes, and handicapped accessibility mandates. The park staff does not have the architectural expertise to design alterations, monitor new construction, or to review major rehabilitation plans. Technical assistance is obtained from the Regional Historical Architect, but he does not have time to design projects.

Specific guidelines need to be developed for preservation of historic structures; Preventive Maintenance Guides and Historic Structure Reports need to be prepared. Problems that require repair and maintenance need to be identified, and preservation activities should be monitored to ensure compliance with The Secretary's Standards for Historic Preservation. Drawings and specifications for rehabilitation, construction, and stabilization projects need to be prepared and reviewed. Technical advice on products and methods of preservation treatment is required. Historic preservation training for park personnel needs to be provided.

Description of Recommended Project or Activity

Establish a permanent professional Historical Architect position at the GS-11 level.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	Recurring	50.00	1.00
Year 2:	ADM	Recurring	51.00	1.00
Year 3:	ADM	Recurring	53.00	1.00
Year 4:	ADM	Recurring	54.00	1.00
Total:			=====	=====
			208.00	4.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.1

Title : CONDUCT ARCHEOLOGICAL RESEARCH STUDIES

Funding Status: Funded: 20.00 Unfunded: 900.00

Servicewide Issues : C02 (ID & EVAL)
Cultural Resource Type: SITE (Archeological Site)
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

Research efforts relating to the investigation of the park's archeological resources are needed. The information gathered would add to the park's prehistoric and historic database, interpretation of the park's archeological resources, and resource data for planning of development projects. Increased knowledge of the park's prehistory would also aid in management decisions on current natural resource issues. There are reports that archeological site vandalism is occurring in the park. Archeological research can help in the documentation of these non-renewable resources.

Archeological research does not exist in a vacuum; an interdisciplinary approach is critical to every research question. Cultural manifestations exist within an environmental framework; ignoring environmental factors could result in an incomplete cultural analysis. The inclusion of the analysis of cultural factors such as sociological, economic, and ethnographic, as applicable, can also be integral to a good research design.

1. Study of Obsidian Cliff as a major industrial site:

Obsidian Cliff is a nationally significant resource that was utilized from 10,000 years BP into the historic period. It was the location of a major source of obsidian that was utilized for tool manufacturing. Obsidian and manufactured tools from this site were traded and used across the country. In 1989 a study was done to record the cliff area and associated sites and to nominate the resource as a National Historic Landmark. Research questions regarding the use of obsidian remain unanswered. Further research would add to the archeological record and interpretation of this region's prehistory. One study that has been initiated is the "fingerprinting" of samples from various obsidian flows in the area. Each obsidian flow has a characteristic fingerprint which can be used to identify its source location. Such information can contribute to the knowledge regarding settlement patterns and resource utilization (i.e., which quarries were used and by whom). This is an ongoing study.

The long-range program to continue to chemically characterize

Last Update: 04/12/96
Initial Proposal: 1995

Priority: 16
Page Num: 0044

the different obsidians in the greater Yellowstone area. A new, light grey obsidian from sites along the north shore of Yellowstone Lake may be from a Huckleberry Ridge tuff outcrop in the Pelican Valley.

2. Archeological investigation of prehistoric predation on the northern range:

A scientific controversy exists revolving around the seasonal distribution of wildlife on the northern range and the use of that wildlife by prehistoric people. Increased knowledge of prehistoric ecological relationships could support the present management of the northern range. A survey of the northern range should be conducted to investigate areas with respect to the interrelations of the environment and archeology.

Primarily through Fed. Hwy compliance inventories, 7300 acres were intensively inventoried parkwide in 1995, and 133 sites were recorded. Seven sites were tested for National Register eligibility and one site received extensive excavation.

3. Survey for cultural resources along the Yellowstone Lake shoreline.

The lake basin is tipping south, due to an uplift at the outlet in the north. This results in flooding and flooding potential for archeological sites. Archeological sites have been recorded in the vicinity of the lake; however, archeological surveys along the lake's shoreline are incomplete. An archeological survey that incorporates geological influences on the lake's water level is needed to locate and record sites, evaluate sites for eligibility to the National Register of Historic Places (National Register), and identify sites in danger of inundation. Mitigation measures would need to be developed for sites that are eligible to the National Register and in danger of inundation. A survey of this nature would also add to the understanding of American Indian use of Yellowstone Lake resources.

4. The role of the Shoshone Indians and other pre-European groups in Yellowstone National Park:

The Shoshone Indians are believed to have occupied the park year-round. Their theoretical influence on prey species, existence before Euroamerican influence on the region, and effects of the Euroamerican influence should be explored. There is a historical database from which to draw. The possibility of other pre-European, resident groups should also be studied. Additional information about these people and how they interacted with the ecology of the park would add to the knowledge of the prehistoric and historic use of the park. Information about the Shoshones may come out of the Ethnography Overview and Assessment.

5. The relationship of Yellowstone National Park's archeology to the greater Yellowstone ecosystem:

The prehistory of Yellowstone National Park needs to be studied in the broad context of how it relates to the surrounding ecosystem. For example, it is known that obsidian was brought into the park from surrounding areas. The contexts and existing data of surrounding areas needs to be incorporated into Yellowstone's database. This would aid in the understanding of Yellowstone's prehistoric peoples and their interactions with surrounding peoples and areas.

6. Study of human occupation during glacial recession:

The majority of archeological resources identified in Yellowstone National Park revolve around human occupation after the disappearance of glaciers (10,000 years BP). A study should be conducted that would include an archeological survey of high altitude ridges, above 8,000 feet, in the Gallatin and Absaroka ranges to discern evidence of glacial-recession occupation. There is evidence in high altitude areas north of the park that indicates prehistoric hunting and gathering occurred on high altitude ridges while recessional glaciers occupied the valleys. The current controversy about Yellowstone National Park's historic ecological patterns reveals the importance of reconstructing the paleoenvironment.

Description of Recommended Project or Activity

Pursue funding from outside sources (i.e., university projects' cultural funds, research and natural resource funds) for these research studies. Develop research relationships with outside sources. Use the professional archeologist to conduct or coordinate research studies and serve as a liaison with researchers.

BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	FED-OTHER	MIT	Cyclic	5.00	0.00
1996:	FED-OTHER	MIT	Cyclic	5.00	0.00
1997:	FED-OTHER	MIT	Cyclic	5.00	0.00
1998:	FED-OTHER	MIT	Cyclic	5.00	0.00
Total:				20.00	0.00

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	Recurring	200.00	1.00
	RES	One-time	200.00	1.00
		Subtotal:	400.00	2.00
Year 2:	RES	Recurring	110.00	1.00
	RES	One-time	110.00	1.00
		Subtotal:	220.00	2.00
Year 3:	RES	Recurring	80.00	1.00
	RES	One-time	80.00	1.00
		Subtotal:	160.00	2.00
Year 4:	RES	Recurring	60.00	1.00
	RES	One-time	60.00	1.00
		Subtotal:	120.00	2.00
			=====	
Total:			900.00	8.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(1)

Title : INV/EVAL & PLAN FOR HISTORIC VEHICLES

Funding Status: Funded: 0.00 Unfunded: 275.00

Servicewide Issues : C43 (CONDIT SVY)
C48 (TREATMENT)

Cultural Resource Type: OBJC (Object)

N-RMAP Program codes :

10-238 Package Number : 832

Problem Statement

The National Park Service owns a number of historic vehicles (motor vehicles, wagons, and stagecoaches) that represent an important part of Yellowstone National Park's concessions and tourism history.

These vehicles have been inventoried, but must be researched and evaluated for specific historic significance, and cataloged into the museum collection. A plan should be developed to guide storage and potential use of these vehicles. Pest and environmental monitoring programs must be established for their storage area, and a more stable, climate-controlled storage facility sought.

Exhibiting these vehicles in a transportation or other history museum would serve to illustrate the development of transportation and tourism in Yellowstone National Park. A museum setting would also provide a quality environment in which to house the vehicles. The Old Faithful area has been proposed as a possible site for this museum. Adaptively revising a historic structure would serve the dual purpose of preserving the building and exhibiting the vehicles. The Old Faithful Recreation Hall and the historic service stations are examples of buildings that might be adapted for this use.

Description of Recommended Project or Activity

A historical vehicle expert/conservator should be contracted to evaluate and prepare a preservation maintenance plan for the vehicle collection. Significant vehicles should be preserved by contracting for conservation treatment and for establishing pest and environmental monitoring programs. Move vehicles into climate-controlled storage.

Identify a historic structure in the Old Faithful area or elsewhere that could adaptively be used as a museum that would include a display of historic vehicles. Utilize funds from

10-238 Package No. 851 or funds from corporate sources to renovate structure to house this museum. Pursue funding for display development.

BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
		-----UNFUNDED-----		
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	One-time	50.00	1.00
	MIT	One-time	100.00	0.00
	Subtotal:		150.00	1.00
Year 2:	ADM	One-time	25.00	0.50
	MIT	One-time	100.00	0.00
	Subtotal:		125.00	0.50
			=====	=====
Total:			275.00	1.50

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(2)

Project Statement
Last Update: 04/12/96
Initial Proposal: 1995

YELL-C-019.000
Priority: 13
Page Num: 0049

Title : PREPARE ADMINISTRATIVE HISTORY

Funding Status: Funded: 0.00 Unfunded: 56.00

Servicewide Issues : C37 (ADMIN HIS)
Cultural Resource Type: COMB (Combination)
N-RMAP Program codes :

10-238 Package Number : 842

Problem Statement

Congress created Yellowstone National Park on March 1, 1872. Since that time Yellowstone has served as the "flagship" for the national park idea, a mirror of our society's changing attitudes toward nature, and a testing ground for new scientific ideas and management concepts. Resource managers throughout America and the world look to the Yellowstone experience as a model. Unfortunately, no detailed study of the park administrative history is available for those who wish to understand the changing processes of management in this critically important park. A comprehensive, detailed administrative history of Yellowstone will provide an invaluable source of historic data on natural and cultural resource management to policymakers, scholars, and administrators.

A comprehensive Historic Resource Study and Multiple Resource National Register nominations would be components of the administrative history. In addition, these efforts would facilitate the documentation of National Register properties to Historic American Building Survey (HABS) or Historic American Engineering Record (HAER) standards. Fulfilling this element of the project will facilitate legal requirements pertaining to preservation, restoration, or adjustment to historic properties.

Description of Recommended Project or Activity

Complete an Administrative History, in accordance with National Park Service standards, by utilizing park and regional historians, as well as historians available through Yellowstone's cooperative agreement with the Department of History and Philosophy at Montana State University.

Execute an Historic Resources Study and complete Multiple Resource National Register nominations.

Document selected National Register properties using the National Park Services's HABS/HAER photographer, photogrammetric photographer, and student architects, where

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-C-019.000
Priority: 13
Page Num: 0050

appropriate.

BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
		Total:	0.00	0.00
		-----UNFUNDED-----		
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	7.00	0.30
	RES	One-time	7.00	0.30
		Subtotal:	14.00	0.60
Year 2:	RES	One-time	7.00	0.30
	RES	One-time	7.00	0.30
		Subtotal:	14.00	0.60
Year 3:	RES	One-time	7.00	0.30
	RES	One-time	7.00	0.30
		Subtotal:	14.00	0.60
Year 4:	RES	One-time	7.00	0.30
	RES	One-time	7.00	0.30
		Subtotal:	14.00	0.60
		Total:	56.00	2.40

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Project Statement

Last Update: 04/12/96
Initial Proposal: 1995

YELL-C-020.000
Priority: 9
Page Num: 0051

Title : PRESERVE ETHNOGRAPHIC RESOURCES

Funding Status: Funded: 10.00 Unfunded: 320.00

Servicewide Issues : C21 (OVERVIEW)
Cultural Resource Type: ETHN (Ethnographic Resources)
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

The American Indian Religions Freedom Act of 1978, the Native American Graves Protection and Repatriation Act, and National Park Service policy mandate parks to manage resources in a manner that expresses knowledge of and respect for Native American groups. Very little is known about the traditional American Indian uses of park resources in Yellowstone National Park or the value of these resources to contemporary groups.

Prior to the creation of Yellowstone National Park, the park was a homeland for the Sheepeaters, a small band of Shoshone. Other Shoshone, as well as Crow, Blackfeet, and Bannock, utilized the park on an intermittent or seasonal basis. The 1852 treaty with the Blackfeet and Crow established treaty lands in what is today Yellowstone National Park. The west side of the Yellowstone River was Blackfeet reservation and the east side was Crow. The treaty of 1868 reduced the Blackfeet lands to areas far beyond the boundaries of the park, while the Crow lands were reduced to the Forty-fifth parallel. In 1882, Congress ratified a treaty which realigned the boundaries of the Crow reservation beyond the park boundaries and prohibited Crow, Bannock, and Shoshone from entering the park. Despite this prohibition, the historic record indicates that neighboring Indians continued to hunt within the park into the late 1880's.

Evidence of the continued American Indian relationship with Yellowstone is demonstrated through the existence of extensive trail networks and numerous archeological sites throughout the park. Specific events in American Indian history, such as the Nez Perce flight from U.S. troops in 1877, and numerous other accounts reflect this relationship.

While the physical evidence and historic record reflect a protracted relationship, the park lacks sufficient ethnographic knowledge to insure the protection of culturally significant places, objects, and resources. The following activities would be instrumental in establishing the necessary ethnographic knowledge.

- 1) Determine relationships with American Indians historically and currently dependent on park resources:

Develop an ethnohistoric and ethnographic database documenting traditional and present day uses of park resources, settlement localities, sacred sites, sacred objects, migration patterns, etc. Examine the frequency of use of Yellowstone's natural and cultural resources by people traditionally associated with park resources.

2) Identify, record, and evaluate ethnographic resources:

Document the location, condition and significance of sites, natural features, events, objects, etc., which have subsistence or religious value to American Indian groups associated with Yellowstone National Park.

3) Prepare annotated bibliography:

Compile a comprehensive, annotated bibliography of all existing surveys, studies, research and other information gathered to date on park-associated American Indians.

4) Monitor traditional use activities:

Develop a system to track requests for access to sites or resources with traditional, ceremonial, or religious significance.

5) Develop appropriate resource management activities:

Monitor natural and human impacts on ethnographic resources and develop appropriate methods for protection.

6) Develop working relationships with American Indians:

Continue plans to establish an Advisory Committee on American Indian Concerns. This will provide a forum for resolving issues, provide an opportunity for Native Americans to participate in management of ethnographic resources, and enrich the interpretive program at Yellowstone.

Description of Recommended Project or Activity

Complete the Ethnographic Overview and Assessment, which is currently under contract with a target date of 1996. This document will result in a comprehensive synthesis of ethnographic information, identification of associated American Indian groups and uses, a list of resources considered for inclusion on the Ethnographic Sites Inventory (ESI), and recommendations for further studies.

Actively pursue and secure funds to conduct an ESI. This would involve interdisciplinary research including archeological investigations and historical research.

Project Statement

YELL-C-020.000

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Develop a comprehensive resource management program that involves monitoring and protection of ethnographic resources and developing a working relationship with American Indian communities. The existing program will be enhanced once the ESI and Ethnographic Overview and Assessment are completed.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	TEMP\$-CR	RES	One-time	5.00	0.00
1996:	TEMP\$-CR	RES	One-time	5.00	0.00
Total:				10.00	0.00
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MIT	Recurring	40.00	1.00
		RES	One-time	40.00	1.00
			Subtotal:	80.00	2.00
Year 2:		MIT	Recurring	40.00	1.00
		RES	One-time	40.00	1.00
			Subtotal:	80.00	2.00
Year 3:		MIT	Recurring	40.00	1.00
		RES	One-time	40.00	1.00
			Subtotal:	80.00	2.00
Year 4:		MIT	Recurring	40.00	1.00
		RES	One-time	40.00	1.00
			Subtotal:	80.00	2.00
Total:				320.00	8.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Project Statement
Last Update: 04/12/96
Initial Proposal: 1995

YELL-C-020.000
Priority: 9
Page Num: 0054

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Project Statement

YELL-C-021.000

Last Update: 04/12/96
Initial Proposal: 1995

Priority: 16
Page Num: 0055

Title : DEVELOP CULTURAL RESOURCES BIBLIOGRAPHY

Funding Status: Funded: 0.00 Unfunded: 60.00

Servicewide Issues : C60 (CRBIB)
Cultural Resource Type: COMB (Combination)
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

The Cultural Resources Bibliography (CRBIB) developed between 1975 and 1977 is an inventory of historical, architectural, archeological, and miscellaneous research reports that address service-wide cultural resources. It includes reports from Washington, region, and park offices; service centers; and archeological centers. The computerized CRBIB database allows the retrieval of information on a variety of levels: geographic location (park, region, servicewide), alphabetical order (author, title, date), and study type or area (history, architecture, archeology, anthropology, or curatorial services).

Yellowstone National Park's CRBIB is incomplete and requires a significant amount of research, compilation, and recording for completion. Existing data must be assessed and an inventory of repositories, collections, and files needs to be compiled and analyzed for relevant information.

The CRBIB demonstrates the current status of planning, action, and research documents and is vital in determining deficiencies or duplications in the documentation of park management actions. When complete, the CRBIB is an irreplaceable tool for determining appropriate management of park resources.

Description of Recommended Project or Activity

Assess the current status of Yellowstone's CRBIB and identify the deficiencies. Contract a bibliographer to develop and compile a CRBIB for all documents relating to cultural resources in Yellowstone National Park in accordance with the established database format.

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

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Priority: 16
Page Num: 0056

BUDGET AND FTEs:

Source		Activity	FUND Type	Budget (\$1000s)	FTEs
			Total:	0.00	0.00
		Activity	FUND Type	Budget (\$1000s)	FTEs
Year 1:	ADM	One-time		15.00	0.50
	ADM	One-time		15.00	0.50
			Subtotal:	30.00	1.00
Year 2:	ADM	One-time		15.00	0.50
	ADM	One-time		15.00	0.50
			Subtotal:	30.00	1.00
			Total:	60.00	2.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-C-022.000
Priority: 16
Page Num: 0057

Title : COMPLETE SPECIAL HISTORY STUDIES

Funding Status: Funded: 0.00 Unfunded: 132.00

Servicewide Issues : C38 (SPEC STUDY)
Cultural Resource Type: COMB (Combination)
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

Research on the cultural history of Yellowstone National Park has been neglected due to the strong emphasis placed on the natural resource aspects of the park. To compensate for this shortage of information concerning Yellowstone's cultural history, numerous research topics need to be addressed. Research in these areas would provide valuable information for future management and interpretation of the park's natural and cultural resources. Although the park staff does not have the time to complete this research, many of these topics would be appropriate for graduate student projects or the cooperative agreement internship program Yellowstone has with Montana State University. The scope of these topics will not be duplicated in the Historic Resources Study, nor will components of that study be addressed in this project statement. Following is a representative list of suggested topics:

1. The history and interpretation of all existing historic vehicles, including wagons and motorcoaches.
2. The history and interpretation of historic hotel furnishings and other objects.
3. The interpretation of historic Yellowstone National Park photographs, including the location, description, and evaluation of significant collections.
4. The interpretation of works of art (paintings, prints, etc., excluding photographs) in which Yellowstone National Park is a subject.
5. A bibliography of reports, maps, etc., concerning Yellowstone National Park's boundaries, including a history of work done to locate and mark the park's boundaries.
6. The history of the evolution of the geologic interpretation and understanding of thermal systems and other aspects of Yellowstone National Park's geology.
7. A case study on the history of science (exploration and explanation of Yellowstone National Park's "fossil

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forests").

8. The history of photographers in Yellowstone National Park, excluding F.J. and Frank Haynes.
9. The history of bear-human interactions in Yellowstone National Park during the period when they were common.
10. The history of fire and forest management in Yellowstone National Park, including insect control, and the changing views of the forest as part of what the park protects.
11. The history of the evolution of outfitting in the park.
12. The history of poaching in Yellowstone National Park.
13. The history of Yellowstone National Park's superintendency (autonomy versus central control), the functioning of bureaucracy, and the interactions between central offices and the local managers and decision-makers.
14. The history of the evolution of the park ranger in Yellowstone National Park, centering on oral histories.
15. The history of park maintenance, including development of its organization, role, and prominence in park management.
16. The history of cartography in Yellowstone National Park, including an annotated catalog of maps.
17. The legislative history of the park (Eighty-third Congress through the present Congress).
18. The development and philosophy behind the park's Master Plans, beginning in 1931.
19. The role and philosophy of the Mission 66 program in the development of Yellowstone National Park.
20. The study of the conscientious objector camps of World War II.

Description of Recommended Project or Activity

Direct the preparation of reports on these history topics as time and funding permits using interpreters or graduate students, when possible.

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Initial Proposal: 1995

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BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	90.00	1.50
Year 2:	RES	One-time	7.00	0.30
	RES	One-time	7.00	0.30
Subtotal:			14.00	0.60
Year 3:	RES	One-time	7.00	0.30
	RES	One-time	7.00	0.30
Subtotal:			14.00	0.60
Year 4:	RES	One-time	7.00	0.30
	RES	One-time	7.00	0.30
Subtotal:			14.00	0.60
Total:			132.00	3.30

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

	Project Statement	YELL-C-023.000
Last Update: 04/12/96		Priority: 16
Initial Proposal: 1995		Page Num: 0060

Title : DEVELOP ORAL HISTORY PROGRAM

Funding Status: Funded: 0.00 Unfunded: 280.00

Servicewide Issues : C38 (SPEC STUDY)
 Cultural Resource Type: ETHN (Ethnographic Resources)
 N-RMAP Program codes :

10-238 Package Number :

Problem Statement

Much of Yellowstone National Park's recent history is preserved in the memories of its employees, visitors, and neighbors. Oral history has been recognized as an effective means of collecting historic data. However, there are less than fifty interviews in the park's collection. There is a need for a coordinated oral history program to collect and preserve personal narratives about the events, policies, perceptions, customs, and lifeways that have influenced the management of the park, the visitor experience, and the park resource. The recorded interviews collected under this program will need to be summarized, transcribed, and archived. This program will be aimed at no less than 200 individuals from the National Park Service, previous employees of the park and concessions, and surrounding neighbors.

Description of Recommended Project or Activity

Develop an aggressive oral history program by actively pursuing individuals whose experiences would contribute to our knowledge of the park, park operations, and park experience.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
				=====	
			Total:	0.00	0.00
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES		One-time	35.00	1.00
	RES		Recurring	35.00	1.00

			Subtotal:	70.00	2.00

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Year 2:	RES	One-time	35.00	1.00
	RES	Recurring	35.00	1.00
		Subtotal:	70.00	2.00

Year 3:	RES	One-time	35.00	1.00
	RES	Recurring	35.00	1.00
		Subtotal:	70.00	2.00

Year 4:	RES	One-time	35.00	1.00
	RES	Recurring	35.00	1.00
		Subtotal:	70.00	2.00

		Total:	280.00	8.00
			=====	

(Optional) Alternative Actions/Solutions and Impacts
 (No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

	Project Statement	YELL-C-024.000
Last Update: 04/12/96		Priority: 2
Initial Proposal: 1995		Page Num: 0062

Title : PRESERVE/ADAPT POWERHOUSE FOR COLLECTNS

Funding Status: Funded: 40.00 Unfunded: 1110.00

Servicewide Issues : C49 (ENVIRONMNT)

Cultural Resource Type: OBJC (Object)

N-RMAP Program codes :

10-238 Package Number :

Problem Statement

The park's museum collection, archives, and library are presently housed in the basement of the Albright Visitor Center; the herbarium is housed among offices in the park headquarters building. The museum collection consists of nearly 200,000 objects and specimens reflecting the natural and cultural history of the park. An additional backlog of approximately 119,000 items including historic photographs, rare books, brochures, and natural history specimens remains to be cataloged and properly stored in the collection. The archives is an official satellite branch of the National Archives and presently houses 1,000 linear feet of administrative record, documenting the administration of Yellowstone National Park from 1872 to the present. The library consists of approximately 10,000 bound volumes, 75 linear feet of vertical file reference materials, and 2,000 original manuscripts.

These resources have outgrown the present space and the facility does not have appropriate or adequate environmental controls or fire protection. A 1989 OIG audit identified deficiencies in Yellowstone's museum environment, and the park is required to take corrective action and/or submit monthly reports to OIG until corrective action has been taken. Deficiencies in security of the herbarium have been noted in the park Collections Management Plan and Special Directive 80-1 checklist.

To correct the current storage problems of the park's collections, either a new or renovated facility is needed. Options for such a facility were evaluated in 1992, and the Powerhouse was selected as the most promising structure. However, before a final decision is made, other potential structures should be identified and evaluated.

The Powerhouse was built by the military in 1911 to supply Fort Yellowstone with electrical power. It is a contributing structure to the Fort Yellowstone Historic District and is listed on the National Register. It is visible to visitors traveling the Grand Loop Road. The building is structurally sound and maintains its historic integrity but is in need of major repairs: windows are broken, roof tiles are broken or missing, wall surfaces are cracked, and the chimneys are severely deteriorated.

Rehabilitation and adaptive use of the building would meet several needs: preservation of the building and suitable space for some of the collections, archives, and library. Stabilization work should be performed on the exterior of the building to retard additional deterioration and preserve the historic integrity of the building. The interior of the building should be adaptively remodeled to accommodate the space needs of the museum, archives, and library collections and should contain storage equipment, staff work space, environmental controls, a security system, and fire detection and suppression equipment that meet professional museum standards.

Description of Recommended Project or Activity

Seek funds to produce a Feasibility Study to determine whether the Powerhouse will be appropriate for the needs of the museum, archives and library collections, and to identify and evaluate other potential structures. The study will be written after an interdisciplinary team conducts an onsite survey.

Seek funds to undertake Sections 106 compliance, stabilize the exterior, rehabilitate the interior, and adaptively use the building. Design the interior to accommodate the storage and spatial needs of the museum, archives, and library collections. Install environmental controls, security and fire detection and suppression systems, and storage equipment which meets professional museum standards. Relocate present collections into the restored facility.

BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	REP-REHAB	MIT	One-time	40.00	0.00
Total:				40.00	0.00
		-----UNFUNDED-----			
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 2:		MIT	One-time	250.00	2.00
		MIT	One-time	250.00	2.00
Subtotal:				500.00	4.00
Year 3:		MIT	One-time	250.00	2.00
		MIT	One-time	250.00	2.00

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		Subtotal:	500.00	4.00
Year 4:	PRO	One-time	50.00	1.00
	MIT	One-time	30.00	0.50
	PRO	Recurring	30.00	0.50

		Subtotal:	110.00	2.00
			=====	
		Total:	1110.00	10.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)
EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(2)

	Project Statement	YELL-C-025.000
Last Update: 04/12/96		Priority: 16
Initial Proposal: 1995		Page Num: 0065

Title : PRESERVE RARE BOOKS, JOURNALS, DIARIES, MANUSC

Funding Status: Funded: 0.00 Unfunded: 60.00

Servicewide Issues : C42 (CSP)
Cultural Resource Type: OBJC (Object)
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

The park library has a valuable collection of rare books, pamphlets, and manuscripts detailing Yellowstone National Park's cultural and natural history, as well as letters, journals, diaries, and privately printed accounts of pioneers' and visitors' early experiences in the park. This is the most complete and valuable collection on Yellowstone National Park in existence.

Preservation of this collection would be enhanced by reducing continual handling of fragile works on paper; encapsulating individual items in polyester (Mylar); storing items in archivally-safe storage boxes; and indexing, cross-referencing, and cataloging the collection on computer for improved management and accountability. Rare and one-of-a-kind items should be cataloged into the museum collection

Increased storage space, environmental controls, security, and fire protection are addressed in separate project statements.

Description of Recommended Project or Activity

Determine conservation needs and employ appropriate preservation measures. Conduct an inventory of the collection. Index and cross-reference the collection. Catalog the collection to improve accountability and access. Properly store items in individual containers to ensure long-term preservation. Microfiche rare and fragile documents to eliminate deterioration through handling.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	One-time	30.00	0.50
	ADM	One-time	30.00	0.50
	Subtotal:		60.00	1.00
	Total:		60.00	1.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(2)

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-C-026.000
Priority: 3
Page Num: 0067

Title : UPGRADE MGMT OF ARCHIVES AND LIBRARY

Funding Status: Funded: 15.00 Unfunded: 59.00

Servicewide Issues : C41 (CMP)
Cultural Resource Type: OBJC (Object)
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

Yellowstone National Park's archives is a branch of the National Archives and is managed by park personnel through a cooperative agreement with the National Archives. This collection of over 1,000 linear feet of irreplaceable historical documents provides valuable primary source information for the park staff and researchers. The library consists of approximately 15,000 reference titles and a collection of rare books and manuscripts. To upgrade the management of the archives and library, a number of issues need to be addressed (environmental controls, fire protection, and a new facility are addressed in separate project statements).

The park's library and archives are reaching their capacity to shelve additional materials. In recent years, it has been the practice of the library to cull books from its collection to accommodate new titles. The luxury of culling is not an option for the archives. The objectives of the research library and archives are thus strongly compromised when even conservative accession is not possible. This ultimately affects our ability to serve the researcher and public.

Much of the 115 feet of vertical files are fragile documents representing a diversity of newspaper, magazine, and professional journal articles, as well as original manuscripts concerning Yellowstone National Park. They are improperly stored in standard metal and wooden file cabinets. Fire-proof cabinets are needed to protect these documents.

Computer technology now allows us to scan original documents and store these documents in a WORM (Write once read many) Drive. In order to provide access to the historic document and insure the preservation of the document by reducing the need to handle it, the documents should be electronically scanned and stored.

Traditionally, researchers have maintained research records in their individual offices, making access for other researchers and resource managers difficult and also increasing the risk of loss by fire or accidental discard. A systematic method for copying these records and placing the originals in the library or archives is essential to their preservation.

Record keeping for the park's library and archives is currently manual. These record keeping systems should be computerized to more efficiently meet the demands of new acquisitions and to provide timely and accurate information for the public and research.

Description of Recommended Project or Activity

Install electronic stack shelving in both the archives and library to permit continued expansion of resources. Fifteen, four-drawer, fire-proof cabinets should be purchased to protect archival documents from the potential effects of fire.

Purchase a computer and computer program to automate the library and archives to improve access for researchers. Develop a systematic program for securing and copying historically valuable research records for both the archives and the library. Purchase a microfilm copier that would provide an expected level of service to researchers.

BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	CRPP	RES	One-time	15.00	0.00
				=====	
			Total:	15.00	0.00
			-----UNFUNDED-----		
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 2:		RES	One-time	15.00	1.00
Year 3:		MIT	One-time	22.00	1.00
Year 4:		MIT	One-time	22.00	1.00
				=====	
			Total:	59.00	3.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Project Statement
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Initial Proposal: 1995

YELL-C-026.000
Priority: 3
Page Num: 0069

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(2)

Project Statement

YELL-C-027.000

Last Update: 04/12/96
Initial Proposal: 1995

Priority: 5
Page Num: 0070

Title : UPGRADE MGMT OF MUSEUM COLLECTIONS

Funding Status: Funded: 0.00 Unfunded: 137.00

Servicewide Issues : C46 (ACCOUNTBLY)
Cultural Resource Type: OBJC (Object)
N-RMAP Program codes :

10-238 Package Number : 835

Problem Statement

Yellowstone National Park's museum collection is a diverse assemblage of more than 200,000 objects and specimens. It includes such valuable items as paintings by Thomas Moran, J.H. Renshaw, and J.J. Twacktman; pencil sketches by Thomas Moran, W.H. Jackson, H.W. Elliot, and W.H. Holmes; photographs by William H. Jackson; a sizeable collection of Native American artifacts; archeological materials from the park's rich obsidian sites; a comprehensive herbarium collection; and an extensive historic photograph collection documenting park management from the 1890s-1960s.

Through most of the park's history, recordkeeping for most objects in the collection has been inadequate or inaccurate. Accession files need to be reviewed to ensure that proper documentation is on file. Records for the 22,000 objects cataloged prior to the introduction of the Automated National Catalog System need to be revised, and the data automated. Automation of this information would enhance the interpretive and research value of the collection and would improve accountability of museum objects. Records in need of automation include those representing portions of the photograph collection; historic vehicles; furnishings and other objects associated with the history of concessions in Yellowstone National Park; rare books; manuscripts; pamphlets; journals; diaries; and natural science specimens.

There is currently virtually no visual inventory of park museum collections. Objects should be photographed for identification and security purposes.

Storage facilities, historic furnishings and vehicles, the photograph collection, rare books, and natural resource specimens have been further addressed in separate project statements.

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-C-027.000
Priority: 5
Page Num: 0071

Description of Recommended Project or Activity

Review accession files to ensure that records document NPS ownership of the objects and specimens in the collection and in all respects meet National Park Service standards.

Verify and computerize catalog data for the 22,000 objects cataloged prior to the introduction of the Automated National Catalog System. Photograph museum objects as they are cataloged, and photograph all previously cataloged materials.

Identify objects owned by the National Park Service that are under the property management of concessioners and are within the Scope of collections Statement for the museum collection. Remove these items from continued use (when feasible) and accession and catalog them into the museum collection.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	PRO	One-time	8.00	0.30
	ADM	One-time	10.00	0.30
	ADM	One-time	10.00	0.30
	ADM	One-time	10.00	0.30
Subtotal:			38.00	1.20
Year 2:	PRO	One-time	3.00	0.10
	ADM	One-time	10.00	0.30
	ADM	One-time	10.00	0.30
	ADM	One-time	10.00	0.30
Subtotal:			33.00	1.00
Year 3:	PRO	One-time	3.00	0.10
	ADM	One-time	10.00	0.30
	ADM	One-time	10.00	0.30
	ADM	One-time	10.00	3.00
Subtotal:			33.00	3.70
Year 4:	PRO	One-time	3.00	0.10
	ADM	One-time	10.00	0.30
	ADM	One-time	10.00	0.30
	ADM	One-time	10.00	0.30

	Project Statement	YELL-C-027.000
Last Update: 04/12/96		Priority: 5
Initial Proposal: 1995		Page Num: 0072

Subtotal:	33.00	1.00
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Total:	137.00	6.90

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(2)

Title : PRESERVE HISTORIC PHOTOGRAPH COLLECTION

Funding Status: Funded: 0.00 Unfunded: 150.00

Servicewide Issues : C46 (ACCOUNTBLY)

Cultural Resource Type: OBJC (Object)

N-RMAP Program codes :

10-238 Package Number : 688

Problem Statement

Yellowstone National Park has a collection of nearly 90,000 historic photographic negatives and prints. This collection documents important activities and eras in the park's history and provides vital visual information to the park's staff and outside researchers.

Preservation of the photographic collection could be enhanced through the completion of preventive conservation activities, including: storing negatives in archival quality storage envelopes; transferring images on nitrate and other volatile negatives to safety films and storing volatile film properly; making contact prints of all negatives to reduce handling of original images; and cataloging images into the Automated National Catalog System (ANCS) to facilitate information retrieval.

The collection would also benefit from storage in a controlled environment with fire detection and suppression systems.

Description of Recommended Project or Activity

Continue to upgrade storage of historic prints and negatives utilizing acid-free envelopes and containers.

Contract with a photo lab to make contact prints for the collection to be used as a visual reference.

Contract with a professional agency to duplicate glass, nitrate, and other volatile and fragile negatives according to standards set forth by the NPS and National Archives. Integrate the negative copies into the park's photographic collection.

Provide appropriate storage for nitrate negatives.

Continue cataloging photographs into ANCS.

Continue to identify and acquire historic images and catalog

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 Initial Proposal: 1995

YELL-C-028.000
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them into the museum collection.

Provide controlled storage environment for photo collection with fire detection and suppression systems.

BUDGET AND FTEs:

-----FUNDED-----					
Source	Activity	Fund Type	Budget (\$1000s)	FTEs	
			=====		
Total:			0.00	0.00	
-----UNFUNDED-----					
	Activity	Fund Type	Budget (\$1000s)	FTEs	
Year 1:	ADM	Recurring	30.00	0.50	
	ADM	One-time	30.00	0.50	
	Subtotal:		60.00	1.00	
Year 2:	ADM	Recurring	15.00	0.50	
	ADM	One-time	15.00	0.50	
	Subtotal:		30.00	1.00	
Year 3:	ADM	Recurring	15.00	0.50	
	ADM	One-time	15.00	0.50	
	Subtotal:		30.00	1.00	
Year 4:	ADM	Recurring	15.00	0.50	
	ADM	One-time	15.00	0.50	
	Subtotal:		30.00	1.00	
			=====		
Total:			150.00	4.00	

(Optional) Alternative Actions/Solutions and Impacts
 (No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Last Update: 04/12/96
Initial Proposal: 1995

Project Statement

YELL-C-029.000
Priority: 16
Page Num: 0075

Title : PRESERVE OBJECTS IN HISTORIC EXHIBITS

Funding Status: Funded: 0.00 Unfunded: 325.00

Servicewide Issues : C45 (HOUSKP PLN)
C49 (ENVIRONMNT)

Cultural Resource Type: OBJC (Object)

N-RMAP Program codes :

10-238 Package Number :

Problem Statement

Yellowstone National Park has three major museums exhibiting cataloged historic objects that would benefit from improved maintenance, environmental controls, security, and fire protection.

The Albright Visitor Center was remodeled in 1978; however, many conservation problems exist. The display cases were designed to utilize interior spot lights to illuminate exhibited items. This type of lighting excessively elevates temperatures inside display cases and directs too much light at sensitive museum objects. Consequently, only exterior spot lights are currently being utilized to illuminate the exhibits, but complaints are received due to low light levels and reflections associated with the exterior spot lights. In 1995, compact fluorescent bulbs with UV filters were installed, mitigating earlier problems with elevated light levels in certain areas.

Access into the display cases is very difficult due to poorly designed entry doors. In addition, the exhibits are so overcrowded that routine maintenance of individual artifacts cannot be accomplished without removing all items from the display case. The majority of the environmentally sensitive objects have not been rotated out of the exhibit since installation in 1978. Some objects are deteriorating: leather has become stiff and contorted, watercolors have faded, the edges of pencil sketches have curled, and the bindings on rare books have been damaged beyond repair.

The Fishing Bridge Museum is a National Historic Landmark. Fire protection, security, and environmental controls need improvement in order to meet museum standards.

The electrical wiring is antiquated and presents a safety concern. The breaker box is not switch-rated, thus power cannot be controlled by individual light switches.

Eight handmade glass exhibit cases display water and land bird mounts. These exhibit cases and displays were designed and built by Carl Russell in the 1930s. These glass cases are poorly

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Project Statement

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supported, and they are not assembled with safety glass. Exhibit case lighting and seals do not meet museum standards.

The Museum of the National Park Ranger Museum in the Norris Soldier Station presents unique problems due to its remote and isolated location. The issues of structural fire, vandalism, theft, and pest management need to be addressed.

Description of Recommended Project or Activity

Redesign exhibit cases in the Albright Visitor Center.

Improve object preservation at all visitor centers and museums.

Upgrade electrical system and improve safety of exhibit cases at Fishing Bridge Museum.

Improve lighting in Albright Visitor Center.

Design and install improved fire protection, environmental controls, and security systems.

BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
		Total:	0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	One-time	75.00	3.00
Year 2:	MIT	One-time	50.00	0.50
	MIT	One-time	50.00	0.50
		Subtotal:	100.00	1.00
Year 3:	MIT	One-time	50.00	0.50
	MIT	One-time	50.00	0.50
		Subtotal:	100.00	1.00
Year 4:	PRO	One-time	50.00	0.50
			=====	
Total:			325.00	5.50

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(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Project Statement

Last Update: 04/12/96
Initial Proposal: 1995

YELL-C-030.000
Priority: 16
Page Num: 0078

Title : INV/EVAL & PLAN FOR HISTORIC FURNISHINGS

Funding Status: Funded: 0.00 Unfunded: 45.00

Servicewide Issues : C44 (HIS FURN)
Cultural Resource Type: OBJC (Object)
N-RMAP Program codes :

10-238 Package Number : 832

Problem Statement

The furnishings of the park's hotels and lodges were among the assets purchased from the Yellowstone Park Company in 1979. Some of these furnishings are original pieces used at the turn-of-the-century in the lodge interiors, including Limbert and McClellan Arts and Crafts oak furniture, VonBriesen reed furniture, and Old Hickory furniture. Much of this furniture is very valuable and represents an important era in furniture style in the National Parks.

Some of these historic furnishings are stored in a concessioner warehouse. This storage area would benefit from proper environmental controls and security. However, the majority of the exceptional and rare pieces are still in use in concessioner facilities.

An inventory of the thousands of pieces of historic furniture assigned to the concessioner needs to be completed. All furnishings with a monetary value of more than one hundred dollars should be identified and inscribed with National Park Service property numbers and an annual inventory should be conducted to provide accountability.

Conservation and preservation maintenance of the furniture is the responsibility of the concessioner. However, a preservation maintenance plan that would ensure proper methods of conservation and preservation maintenance are utilized needs to be prepared.

The park's museum collection contains a small sampling of furniture historically used in the park's concession facilities. Further research would facilitate additional collection. The Curator has started to identify a type collection, but this process is time consuming and would benefit from consultation with a historic furnishings expert.

Capitol Improvement and Maintenance Program funds could be used to accomplish projects needed to ensure protection of the park's historic furnishings. This would enable the National Park Service to provide an appropriate level of protection in accordance with NPS-28.

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Initial Proposal: 1995

Project Statement

YELL-C-030.000
Priority: 16
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Description of Recommended Project or Activity

1. Seek funding for Historic Furnishings Report to accomplish the following:

Contract a historical furniture expert to identify and appraise valuable styles, and train park personnel to identify individual pieces of historic importance; and

Conduct an inventory of historic furnishings. Inscribe furnishings that have a value of more than one hundred dollars with NPS property numbers. The most efficient and effective way to accomplish this would be to utilize bar code identification labels.

2. Prepare restoration and refinishing guidelines and conduct training for individuals involved in this work. Provide concession personnel with a preservation plan for use in day-to-day maintenance of historic furnishings.

3. Identify representative examples of historic furniture and catalog them into the museum collection.

4. Improve environmental controls, security, and fire protection in furniture storage area.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	One-time	22.50	0.50
	ADM	One-time	22.50	0.50
Subtotal:			45.00	1.00
Total:			45.00	1.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Project Statement
Last Update: 04/12/96
Initial Proposal: 1995

YELL-C-030.000
Priority: 16
Page Num: 0080

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(2)

	Project Statement	YELL-C-031.000
Last Update: 04/12/96		Priority: 10
Initial Proposal: 1995		Page Num: 0081

Title : MANAGE MUSEUM COLLECTIONS IN OUTSIDE REPOSITORIES

Funding Status: Funded: 0.00 Unfunded: 60.00

Servicewide Issues : C46 (ACCOUNTBLY)

Cultural Resource Type: OBJC (Object)

N-RMAP Program codes :

10-238 Package Number :

Problem Statement

Thousands of specimens have been collected in Yellowstone National Park in its 122 year history under a variety of circumstances and collecting permits. The majority of these specimens reside in outside repositories throughout the United States and, in some cases, abroad.

There is generally little documentation, much less catalog records or databases, to afford park staff and outside researchers access to the information gained by the collectors of these specimens. Furthermore, collections made under permits issued after April 30, 1984 remain federal property, and must be accounted for and held to the same Department of Interior (DOI) and National Park Service (NPS) museum property management standards as collections that reside in Yellowstone. There is currently inadequate documentation in Yellowstone's museum accession files to prove NPS ownership of these collections.

Consequently, Yellowstone collections are being managed by myriad unknown and, undoubtedly, uneven preservation standards, and the data associated with them are not readily accessible to park staff and cannot currently be used to serve park management needs. Furthermore, unnecessary duplications in types of collections made and types of research performed have doubtless occurred, due to the inaccessibility of information on past collections and research projects.

Description of Recommended Project or Activity

Perform research in the park archives and elsewhere to determine the size, types and locations of collections in outside repositories.

Establish files on all known collections and contact repositories to determine status of collections.

Through partnerships with these repositories and/or by using backlog cataloging funds, interns or other means, inventory,

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Initial Proposal: 1995

Project Statement

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accession and catalog collections and copies of their associated records according to NPS standards into the Automated National Catalog System (ANCS).

Assess storage conditions of collections and work with the repository to improve them as needed, through purchase and installation of needed supplies and equipment, including storage, environmental monitoring and control, security, and disaster prevention and mitigation equipment.

Secure copies of final reports, dissertations and other publications based on these collections for the park library.

BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
		-----UNFUNDED-----		
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	One-time	7.50	0.50
	MIT	One-time	7.50	0.50
	PRO	One-time	7.50	0.50
	RES	One-time	7.50	0.50
Subtotal:			30.00	2.00
Year 2:	ADM	One-time	7.50	0.50
	MIT	One-time	7.50	0.50
	PRO	One-time	7.50	0.50
	RES	One-time	7.50	0.50
Subtotal:			30.00	2.00
Total:			60.00	4.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

Project Statement
Last Update: 04/12/96
Initial Proposal: 1995

YELL-C-032.000
Priority: 16
Page Num: 0083

Title : CONDUCT A COLLECTION CONDITION SURVEY

Funding Status: Funded: 0.00 Unfunded: 24.00

Servicewide Issues : C43 (CONDIT SVY)
Cultural Resource Type: OBJC (Object)
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

The Yellowstone National Park museum collection contains nearly 200,000 objects and specimens composed of a wide variety of organic and inorganic materials. Variable storage conditions, such as those which exist at Yellowstone for museum objects, as well as the "inherent vice" of certain objects (such as acidic documents) cause continuous deterioration. While some deterioration, such as rust, is obvious, much is not. Professional conservators specializing in the types of materials of which Yellowstone's collections consist are needed to survey the physical condition of the park museum collections. Conservators advise museums on the best means of preserving and displaying objects, and propose and perform treatments to stabilize objects or prepare them for exhibit, with the goal of preserving as much of the original material of which the objects are composed, and as much evidence of the way they were made and used, as possible.

A survey of the collection's works on paper was conducted in 1988 and identified conservation treatment needed for certain art work, rare books, diaries and manuscripts. A Collection Condition Survey (CCS) for the remainder of the museum collection would identify additional items in need of immediate treatment or simply better storage. The CCS will result in a narrative report detailing general needed improvements, object condition reports with proposals, cost estimates, and priorities for treatment. The survey can also provide information on methods to slow the rate of deterioration by changes in storage techniques and conditions. The long-term program for conservation treatment of objects and specimens in the museum collection should be based on a CCS, as called for in the NPS Museum Handbook.

The CCS should be conducted prior to the relocation of the museum collection to a new storage facility, in order to take advantage of conservators' recommendations for improved storage, and establishment of microenvironments and other specialized storage conditions.

Description of Recommended Project or Activity

Program funding and priorities to request that a CCS for Yellowstone be initiated at the Regional Office or Washington Office level.

Arrange for NPS conservators from Harpers Ferry Center and elsewhere to complete a CCS, following instructions in the Museum Handbook, Part I. Assist with site visit of conservators.

Follow through on action plan based upon survey findings and recommendations. Request and schedule needed treatments from professional conservators based upon recommendations in the CCS.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	One-time	4.00	0.00
Year 2:	MIT	One-time	10.00	0.50
Year 3:	MIT	One-time	10.00	0.50
			=====	
Total:			24.00	1.00

(Optional) Alternative Actions/Solutions and Impacts
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

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