

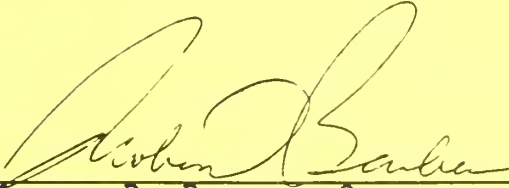


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1987
ANNUAL REPORT
OF THE
SUPERINTENDENT
YELLOWSTONE NATIONAL PARK

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ROBERT D. BARBEE, SUPERINTENDENT 7/3/88
DATE

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ADMINISTRATION

ADP

The park's computer system has been expanded to include IBM-AT compatibles in Administration, Maintenance, and Research. The guidelines, policies, procedures, and support for the Servicewide Maintenance Management System (MMS) was implemented. IBM-AT compatibles were installed at Grant Village, Lake, Canyon, Northeast Entrance, Madison, Old Faithful, and seven in Mammoth.

Telecommunications

Yellowstone's radio system is still serving the park well. Some synthesized mobiles and portables have been added to the equipment inventory. These are considered beneficial since they allow the user to simultaneously monitor all channels and are easily programmed to operate on the frequencies used by cooperating agencies. The balance of the present equipment was purchased in 1982 and is holding up well. Areas not adequately served by the present system are East Entrance and the Northeast Entrance/Beartooth area.

We have continued to place emphasis on planning and managing our telephone services. Through these efforts, we are avoiding significant cost increases and are more efficiently providing the required services. Most of the inside wiring and routine moves and changes are now accomplished by our staff. The data base system developed and implemented over the past several years to track costs and help manage the system is in place and is now serving us well.

The need for data communications continues to grow. The Mammoth data communications system has been expanded this past year (both the Data Switch and the Data Over Voice System) and will require further expansion next year. The need for developing a data communications system to service areas out in the park continues to increase in significance as the park implements and becomes dependent on ADP systems. However, there has not been time to seriously pursue the development of plans for this system.

The Old Faithful Geyser monitor system continues to provide excellent data for the park geologist and others of the scientific community. The use and dependence upon fire and intrusion alarm systems continues to grow as the park places emphasis on structural fire and public safety.

The implementation of computerized fuel pumps was completed at several park interior locations this year including Lake, Grant Village and Old Faithful. Telecommunications support for these systems includes technical maintenance/repair and a data communications system consisting of automatic modems and telephone lines.

The use of an information television channel was implemented this past year to operate on the Mammoth cable system (KNPS - Channel 7). The system consists of a character generator, two modems, two control consoles, and a sophisticated video tape deck as well as weather sensing instruments. In addition to current weather readings, the system carries information of interest to employees and the visiting public such as road reports, weather forecasts, job/training opportunities, ranger-led visitor activities, etc.

Personnel

This year the Personnel Branch undertook efforts to improve service to the park and reduce the burden of paper work associated with the personnel function. The seasonal recruitment process was restructured to provide more candidates for positions and increased lead time for the supervisors in making selections. Changes were made in the Ranger Division to enhance grade levels and career opportunities for park rangers. We are continuing to emphasize our training program and are offering more courses on site this year. We are continuing to explore ways to provide better service through use of computers and other technical approaches.

CONCESSIONS MANAGEMENT

Concessioners

TW Recreational Services, Incorporated (TWRS), reported 703,806 overnight guests during the summer of 1987. Compared to park visitation figures for the same period, 28.5 percent of all park visitors stayed in TWRS lodging facilities. During the same period, 1,611,720 meals were served in TWRS food service facilities. This compares to 672,855 overnight guests and 1,450,974 meals during the same period in 1986.

Hamilton Stores, Incorporated, reported an increase in sales of approximately 9 percent.

Yellowstone Park Service Stations sold 2,666,578 gallons of gasoline in 1987 compared to 2,680,170 in 1986.

West Park Hospital reported treating 2,538 visitor/residents and 2,723 concessions employees. West Park Hospital's staff provided over 103.2 hours of assistance in continuing education programs for park emergency medical technicians and park medics. The National Park Service purchased approximately \$1,556 in equipment, including two cabinet freezers and one refrigerator for West Park Hospital's use in the park.

Winter Operations

During the winter season (December 1986 to March 1987), 15,800 guests stayed at the Mammoth Motor Inn. As expected, operation of the hotel and winter services have become very successful. The Old Faithful Snow Lodge continues to be popular to winter visitors, with 16,537 overnight guests reported.

Hamilton Stores, Incorporated - West Thumb Photo

In an agreement between Hamilton Stores, Incorporated, and the National Park Service, approval was granted for the continued operation of the West Thumb Photo Shop through the summer of 1990. In keeping with the 1974 Master Plan for Yellowstone, this facility was scheduled for removal at the end of the 1987 summer season. For the privilege of operating the West Thumb Photo Shop, Hamilton Stores officials agreed to donate the Fishing Bridge Photo Shop to the United States. The National Park Service will be responsible for the removal of this facility.

Hamilton Stores, Incorporated - Franchise Fee Increase

After several meetings throughout the year between Hamilton Stores corporate officials and park and regional staff, a contract amendment was executed raising their franchise fee from 2 1/2 percent to 2 3/4 percent of the previous years' gross receipts.

Yellowstone Park Service Stations - Joint Venture Agreement

Negotiations were successfully completed between Hamilton Stores, TW Recreational Services, and the National Park Service, and a Joint Venture Agreement for Yellowstone Park Service Stations was executed on July 23, 1987.

Yellowstone Park Medical Services - Contract Renewal

The notice of intention to negotiate a concession contract with West Park Hospital was published in the Federal Register on October 2, 1987. As a result of this notice, three responsive proposals, including one from the current concessioner, were submitted to the Regional Office. After panel review and evaluation, West Park Hospital's proposal was considered the overall better proposal. Subsequently, the representatives of the National Park Service began negotiating with West Park Hospital officials for a new 5-year contract, which will expire October 31, 1992.

Year-Round Medical Services at Mammoth

The clinic is now open year round and functions as an outpatient clinic with x-ray and limited daytime holding capabilities. The doctor and the clinic have been well accepted by the Gardiner/Mammoth community and are providing a much needed service. From May 11 through December 31, 1987, 1,516 visitor/residents and concessions employees were treated.

Restoration of Lake Hotel

Since the inception of Package 620 and the Capital Improvement and Maintenance Program, various projects and improvements have been undertaken at the Lake Hotel, including fire/safety improvements, rehabilitation of the kitchen, replacement of boilers and steam lines, foundation work, and renovation of the dining room, gift shop, and lobby area. Restoration and upgrading of the rooms in the east wing of the hotel was completed prior to the June 9, 1987, opening of the the hotel. TW Recreational Services is currently upgrading the center and west wing rooms. This project is scheduled for completion by May 1, 1988. All the rooms in the hotel are being brought up to a level compatible with the previously restored lobby and dining room. Future plans call for the National Park Service to undertake improvements to the exterior of the hotel, landscaping, and improved parking access under Package 620. Our goal is to complete both interior and exterior renovation, thoroughly, by 1989, the 100th anniversary of when construction began.

Capital Improvement and Maintenance Program (CIMP)

Under the Capital Improvement and Maintenance Program, TW Recreational Services is required to commit 22 percent of their previous year's gross revenue toward maintenance and upgrading facilities they operate. In 1987, \$1,562,387 was expended out of CIMP for projects such as: Lake Hotel renovation and asbestos removal, upgrade/remodeling of shower facilities at Roosevelt, installation

of secondary locks in hotels, dorm carpeting and new furniture, carpet and shower replacement in Canyon cabins, exterior painting and interior trim painting of Lake Lodge budget cabins, purchase of saddles and horses, purchase of two boats, garage equipment replacement, and fire safety and sanitation improvements parkwide.

Package 620

From FY 80 through FY 87, approximately \$43 million will have been provided under Package 620 to correct health and life safety code deficiencies and sanitation problems. The program also addressed some of the more "long-term rehabilitation" projects such as renovation of public restrooms, dining room and lobby renovation, room and bath rehabilitation, bath additions, water system improvements, kitchen renovation, and other nonemergency projects. Two major projects that began in FY 86 and were completed in FY 87 were:

1. Mammoth restaurant kitchen renovation (\$1.6 million); and
2. Lake, Old Faithful, and Mammoth asbestos abatement and fire systems project (\$3 million).

During FY 87, construction began on a new employee dorm at Lake (current contract amount \$1.3 million) which will be on line for the 1988 summer season. Another major project is the rehabilitation of the Old Faithful Inn. This project includes historic renovation work in the lobby as well as electrical upgrade in the "Old House" and east wing, addition of an elevator in the west wing, stone masonry veneer fireplace and chimney, and considerable changes to ventilation and lighting in the gift shop. Work began in October 1987 and is scheduled for completion in late April 1988 (\$1,058,804 current contract amount).

RESOURCE MANAGEMENT AND VISITOR PROTECTION

Introduction

The staff increased from 181 status employees in 1986 to 226 persons in 1987. Several positions were reclassified, and the incumbents upgraded one to two grades with several additional positions to be increased in 1988.

Resource Management operations were greatly enhanced with the addition of the new Resource Management Specialist, Management Biologist, and District Resource Management Coordinators. Division personnel worked on their own or with various research groups by assisting with and monitoring bear, bison, sheep, mountain lion, and elk. Raptor, waterfowl, swan, colonial bird, and endangered specie activities and monitoring increased. Work continues on noxious and exotic weed and plants, revegetation, trail repair and restoration, and water and air quality control and monitoring.

Visitation was within 1 percent of the 1978 record year with 2,618,429 persons visiting the park; 213,366 more than last year. Total fees collected increased by 172 percent over last fiscal year with \$1,562,252 collected at the gates and \$977,834 collected in the campgrounds.

During August, September, and October, 100 park employees were dispatched to forest fires in Wyoming, Montana, Idaho, Oregon, Washington, and Tennessee. Twenty-nine lightning-caused fires burned 965 acres inside the park with the Polecat Creek fire accounting for 948 acres.

Reported criminal activity and incidents were generally down compared to last year with the exception of increases in service incidents, traffic accidents, personal injuries, car clouts, firearms violations, alcohol related offenses, and snowmobile violations. The decrease in other incidents is directly attributed to many of the seasonal rangers working on fires away from the park in August and September. Fatal incidents decreased from 9 to 5, but property losses from all sources increased from \$576,416 in 1986 to \$816,781. Tort claims reached an all-time high of 65; up from 50 last year.

Bear activity was relatively light, with 12 bears relocated and only one grizzly administratively removed from the ecosystem.

Personnel

Three permanent employees transferred to other parks and areas, eight new employees moved in, and six division employees changed jobs.

Transferred out:

Steve Martin - from North District Ranger to Chief Ranger, Voyageurs

Dan Moses - Old Faithful Subdistrict Ranger to District Ranger, Dinosaur

Ken Czarnowski - Resource Management Specialist to Chief, Water Resources
Division, Ft. Collins, Colorado

Transferred in and around:

Jon Dick - Park Ranger, Glen Canyon, to Fire Inspector, West District

Debbie Bird - Park Ranger, Glen Canyon, to Old Faithful Subdistrict Ranger

Stu Coleman - Chief, Resource Management, Great Smoky Mountains, to
Resource Management Specialist

Sue Consolo - Resource Management Specialist, Badlands, to Management
Biologist

Cheryl Matthews - Dispatcher

Mary Murphy - Visitor Services Office to Management Assistant

Judi Kunc1 - Management Assistant to Assistant Mammoth Subdistrict Ranger

Mike Pflaum - Park Ranger, North District, to Visitor Services Office

Dennis Sutherland - Fire Chief, Ellsworth AFB, to Park Fire Chief

Dick Bahr - Fire Cache Supervisor, Everglades, to Helitack Foreman

Steve Frye - West District Ranger to North District Ranger

Andy Fisher - Dispatcher to Park Ranger, North District

Joe Evans - Park Ranger, Hawaii Volcanoes, to West District Ranger

Jim Sweaney - Forester to 1/2 Forester and 1/2 West District Resource
Management Coordinator

Forty-one permanent and 76 seasonal rangers maintained law enforcement commissions. Additional certifications include: Park medic - 8; EMT-A - 17; advanced first aid - 19; first responder - 8; Deputy U.S. Game Warden - 18; County Deputy Sheriff - 15; Deputy U.S. Marshal - 2; SCUBA certified - 6; and firearms rangemaster - 12.

Communication Center

1986/87 Records Summary

	<u>1986</u>	<u>1987</u>	<u>% Change</u>
Employee Motor Vehicle Registration	3,823	3,897	+1.9
Permanent: 208			
Seasonal: 2,915			
Cooke City: 74			
Fatalities	9	5	-44.4
Emergency Incidents	299	283	-5.4
Wrecker Requests	602	690	+1.5
Teletype Messages Sent	1,490	1,320	-11.4
Case Incident Reports	4,203	4,167	-0.9
Motor Vehicle Accidents	397	476	+19.9
Violation Notices Issues	2,322	1,755	-24.4*
Law Enforcement Checks	43,460	39,983	-7.0
Criminal History Checks	1,164	1,212	-12.0
NCIC Inquiries	16,609	14,118	-15.0
All Points Bulletins	20	29	+45.0
Attempts To Locate	13	28	+115.4
Information Packets Mailed	31,977	27,954	-12.6
Information Calls	38,538	36,228	-6.0
Incoming Switchboard Calls	189,468	164,509	-13.2

*About 25 rangers were away from the park on forest fires for four weeks during heavy visitation in August and September.

Law Enforcement Office

Part I offenses - 161. These included robbery, assault, burglary, larceny theft, and motor vehicle theft.

Part II offenses - 2,265. These included vandalism, stolen property, weapons, sex offenses, narcotic and drug laws, liquor laws, drunkenness, disorderly conduct, vagrancy, driving under the influence, and resource management violations.

1987 Traffic Law Enforcement Summary

	<u>Wheeled-Vehicles</u>	<u>Snowmobiles</u>	<u>Total</u>
Vehicle Accidents	422	51	478
Hit and Run Accidents	22	3	25
Vehicle/Pedestrian	2	3	5
Alcohol/Drug Related	7	0	7
Number of Persons Injured	126	17	143
Number of Persons Killed	1	0	1

1987 Traffic Law Enforcement Summary

	<u>Wheeled Vehicles</u>	<u>Snowmobiles</u>	<u>Total</u>
Property Damage	\$717,600	\$30,000	\$747,600
Accidents Investigated by Rangers	436	40	476
Violation Notices Issued	1,172	244	1,416
Persons Arrested	156	0	156

Resource Violations

	<u>1986</u>	<u>1987</u>
Camping	355	169
Closed Areas	306	157
Firearms Violations	11	21
Fishing Violations	162	91
Preservation	16	13
Swimming and Bathing	95	44
Wildlife/Hunting	15	8
Snowmobile Violations	166	234

Other Statistics

	<u>1986</u>	<u>1987</u>
Service Incidents*	1,868	2,903
Court Cases (heard in YNP)	260	222
Case Incident Reports	4,205	4,167
Personal Injuries	564	745
Fatalities	9	5
Car Clouts	63	66
Search and Rescue	46	41
Tort Claims	50	65
Alcohol Related Offenses	57	164

*Service Incidents include abandoned vehicles, animals and wildlife, assistance to citizens, assistance to other departments, bob cases, deaths, disasters/major incidents, unsecured installations, damage to government property, fires, hazardous conditions, park maintenance needed, personnel, visitor complaints, search and rescue, property (not stolen), sick and injured, suicides, special patrols, training.

Corral Operations

The Corral/Packer Foreman was responsible for 57 horses and 14 mules. Seven animals were surveyed or died, and 12 new animals were purchased. The current stock inventory includes: 3 registered Morgans; 1 half Morgan; 1 Montana Traveler; 1 Racker; 11 Fox Trotters; 2 Fox Trotter/Quarter Horse crosses; with the remainder being either Quarter Horse or Appaloosa types.

Fire Management and Employee Operations

The contract helicopter was an Aerospatiale Lama, SA-315B. The flight rate was \$452 per hour plus \$600 per day with a minimum standby cost for the season of \$64,800. The contract was to run from June 15 to September 31, but because of the active fire season was extended to November 3.

The craft was flown a total of 312 hours with fire management operations for the National Park Service and the U.S. Forest Service accounting for 67 percent of the total time. The remainder involved search and rescue operations (9 percent) and administrative use (24 percent). One mission was flown moving a bear sow and two cubs. Four other companies flew an additional 69 hours inside the park for various activities.

Seventeen Yellowstone rangers and five U.S. Forest Service smokejumpers were involved in 238 rappells. Yellowstone rangers rappelled in to assist an injured hiker in the backcountry and to remove an injured motorist from a canyon.

One hundred park employees were assigned to forest fires in Wyoming, Montana, California, Oregon, Idaho, and Tennessee. Twenty-nine lightning-caused and six man-caused fires occurred within the park. Nine hundred sixty-five acres were burned with the Polecat Creek fire near the south boundary accounting for 948 acres.

Resource Management

Peregrine Falcons: Two additional hack sites were established inside the park. Both sites successfully produced five fledglings, but all five birds in one site were killed by great horned owls which had nested on the shore of the Yellowstone River near Reese Creek. One of the two pairs of peregrines occupying natural sites fledged 3 young while the other pair was unsuccessful.

Whooping Cranes: Two cranes from the Gray's Lake cross-producing program were found inside the southern end of the park. It is hoped that they will eventually re-establish nesting sites in the Bechler area.

Bald Eagles: This was an especially good year for eagles. Thirteen eaglets survived to the fledging stage. Bald Eagle production is highly influenced by weather conditions.

Trumpeter Swans: There were nine swan nesting attempts. A September aerial survey revealed only six cygnets successfully fledged from three nests. Experiments continue with floating nest platforms in two areas. One nest successfully fledged three cygnets while two cygnets were killed by predators on the other platform.

Osprey: Sixty occupied nests were found in 1987 compared to 40 nests in 1986. This is probably the result of more efficient survey efforts than a dramatic population increase. Over 60 young fledged from these nests. Mild weather and a huge fish base contributed to this year's successful production.

Frank Island was designated as an Osprey Management Area, with the southern end of the island open to day use and the remainder of the island closed until the middle of August.

Colonial Nesting Birds: It was a good year for the nesting birds on Molly Islands (550 white pelicans, 11 caspian terns, and 75 double-crested cormorants successfully fledged).

McMinn Bench/Rattlesnake Butte Bighorn Sheep Program: A day use only permit system was implemented during the fall breeding season. The area was monitored at least weekly from December to March.

Bears: There were 1,891 bear sightings reported (939 grizzly, 762 black, and 190 unidentified species). No persons were injured by bears, but there were seven property damage incidents (three grizzly bear and four unknown bear species). Nine grizzly bears and two black bears were relocated. Bear No. 83 was removed as the result of a management action.

Bison: The Lava Creek fence and Undine Falls cattle guard were generally successful in preventing bison from moving into the Mammoth area and eventually out of the park at Gardiner. A few individual animals were able to work their way across the cattle guard, and a few small groups took advantage of the light snow during the early winter and migrated north over the steep slopes south of the guard.

Hazard Tree Removal: 4,159 hazard trees were removed parkwide.

Visitor Services Office

Total visitation was 2,618,429, an increase of 8.9 percent above 1986. This was within 1 percent of equalling the 1978 record year.

Lost and Found: 4,075 lost items were turned in with 554 returned to their owners. 726 articles were returned to the finders and 2,795 items disposed of according to policy.

Fee Collection: \$1,562,252 was collected at the entrance gates. This is a 269 percent increase over last year. \$977,834 was collected in the campgrounds for a 109 percent increase over last year. This was the result of increased entry fees, good weather later in the year, and more active and aggressive fee collection.

Commercial and Special Use Permits: 114 commercial permits and 42 special use permits were issued.

YCC Program: 31 enrollees and 12 staff members were involved in 108 projects with an estimated value of \$100,547.

RESEARCH

General

The Division of Research continues to provide park management with data and recommendations essential to: making informed management decisions; apprising the media, public, and other agencies (both national and state) of park issues; and identifying future research needs. The division also coordinates all (government, university, independent) research conducted in the park and serves as policy and logistics advisor to the Fisheries Assistance Office, U.S. Fish and Wildlife Service. The public, media, and various political interests continue to focus on Yellowstone's resource issues, many of which are controversial, necessitating the existence of a strong and viable research function.

The division's staff now consists of 15 permanent and up to 26 seasonal employees working in three general subjects: plant and animal ecology, geology, and the Interagency Grizzly Bear Study Team. There were also several VIP's and SCA's who made valuable contributions to the division's mission.

Research in the Park

Yellowstone's special physical and biological attributes attract researchers from all over the world. During 1987 about 199 research projects were underway in the park; over 94 percent of which were carried out by university, independent, or non-National Park Service scientists. These projects represent the expenditure of about \$3 million in public and private funds. Roughly 20 percent of this total represents National Park Service appropriated monies.

Of the total number of research projects, 61 percent have a biological theme, 30 percent relate to physical sciences, and less than 9 percent are involved with sociological or "other" topics.

Of the 121 biological projects, 51 percent dealt with park animals, 22 percent were involved with plant life, and 27 percent with the flora and fauna living in geothermal systems.

Fifty-nine projects related to the physical sciences. Broken down further, 68 percent were classic geological topics, and 32 percent were involved with geothermal subjects.

The "Superintendent's Annual Research Report" describes the year's research activities in considerable detail. Readers desiring more information about the program should refer to that report.

MAINTENANCE

General

Much of the staff's time was devoted to dealing with operations evaluations during the winter and summer and with the upcoming Maintenance Management System. The major project that proceeded was the completion of the exterior shell and roof to the new maintenance facility in Mammoth which was accomplished through an 8(a) contract with the Small Business Administration. Due to some retirements and transfers, a major reorganization began to get underway in 1987; full implementation will be accomplished in 1988. As in past years, the lack of a viable cyclic maintenance program is the division's biggest concern.

Buildings

Work on park buildings consisted of responding to critical work orders involving repairs necessary to keep the buildings open and functional. Due to base funding levels, cyclic and preventive maintenance have been deferred at least another year. Most building repair and rehabilitation accomplished this year was funded under the separately funded repair/rehabilitation and cyclic program. The remaining cyclic work was deferred, thus increasing the backlog of necessary work.

Norris: A new wash house was completed by moving an old cabin from Old Faithful. The building received a T1-11 exterior and was wired, plumbed, and painted on the interior. Washers and dryers were installed, and the building received a metal roof.

West Thumb: A new floor and carpet were installed in the warming hut as well as a wood stove and hearth.

Fishing Bridge: New interior doors were built, stained, and installed in the Fishing Bridge Museum to fit the original decor.

Lake: Completed wiring of the Electric and Carpenter Shops and installed light fixtures and outlets. Moved a building from Fishing Bridge to the Lake corral area, leveled and ran electricity to the building, and installed receptacles and lights.

Mammoth: A display room was built in the center corridor of the Administration Building, and the heating system was improved by replacing some radiators with steam baseboard registers. A fire alarm system was installed in the Mammoth School.

Utilities

Work progressed in a manner similar to "Buildings" work. Much of the work was deferred unless special funding was available. A computerized fueling station went on line at Grant Village in July, and wooden louvers were built for many of the vault toilet windows.

The Norris water system was marginal in terms of supplying water and, as a result, the flush toilets near the Norris geyser basin were shut down in late summer. The Norris and Roosevelt sewage systems exhibited failures in 1987. The Norris system will be improved in 1988 while the Roosevelt system was dug out and will be ready for the 1988 season. The Canyon sewage plant continues to occasionally violate its discharge permit and will have to be rehabilitated or reconstructed in the near future. The testing laboratory at Canyon was completed. The anaerobic digester at Madison was cleaned out and successfully converted to an aerobic digester.

Housing

The quarters program continues to lose approximately \$500,000 per year, and the quality of housing has continued to decrease. Over 25 percent of the units are of a temporary nature (trailers, transahomes, wingfoots) that were never intended for use in this climate. The Housing Management Plan, in conjunction with the Servicewide housing initiative, identifies a \$12 million shortfall in upgrading, rehabilitating, replacing, and adding additional housing. Interior park employees continue to live in trailers and other substandard housing throughout the winter. As a start to improving this situation, additional funds were authorized in August to build four replacement houses at Grant Village and Old Faithful. A special emphasis program for appliances and furnishings was assessed all divisions, and stoves, refrigerators, chairs, tables, and lamps were purchased for many seasonal housing units. Out of the \$100,000, heating units were improved throughout the park, and propane systems at Grant Village and Old Faithful were centralized. Building Nos. 629, 633, and 634 at Grant Village and 12 trailer sites at Old Faithful were affected.

North District housing work orders and housing turnover renovations were handled by the Housing Crew. The crew completed 23 quarters this year in turnover renovations at Mammoth.

Ten new trailer sites at Lake and two sites at Mammoth were constructed, and electrical service was provided to seven campground host sites throughout the park.

Building Nos. 124 (Old Faithful) and 123 (West Entrance) were painted on the interior. Building No. 123 also had new carpet installed.

The bathroom floor was replaced in Apartment No. 711A at Lake.

New plumbing fixtures were installed in the Norris Museum apartment.

New flooring and carpet were installed in Apartment No. 810F at Canyon.

The bathroom and kitchen in Building No. 216 at the South Entrance were remodeled. The wooden hot water tank and wooden range were replaced with an electric hot water tank and range.

Two new showers and a new floor were installed in the Nurses Dorm restroom at Lake.

The gas piping, lateral from main and inside piping, and the sewer line from transhome No. 773 (Lake) to the sewer main were replaced.

Utility lines, water, sewer, and electrical lines were installed for the new trailer at West Yellowstone, and the trailer was leveled and cased. New entry porches were installed on trailer No. 171.

Repair/Rehabilitation and Cyclic Projects

Approximately \$2 million was obligated by Yellowstone National Park during FY 87 on repair/rehabilitation and cyclic projects funded by other than park base funds. A description and status of each project administered or coordinated by the Maintenance Division follows.

1. Paint Interior and Exterior of Park Building (\$112,839.90). Day labor and 8(a) contract. 100 percent complete. The exterior trim and siding of seven quarters were painted at Mammoth Hot Springs (Nos. 84, 85, 87, 88, 331, 332, and 502). The interior of five quarters were painted in Mammoth by park crews (Nos. 32, 371, 372, 385, and 81). Park crews also painted the Grant Village amphitheater and the Canyon shop building (No. 803).
2. Rewire Historic and Residential Buildings (\$315,715.55). Day labor. 100 percent complete. Gutted the interior, rewired, and refinished the interior of Building Nos. 84, 10B, 96, and the octagon, 191. These buildings are located at Mammoth Hot Springs and Lake. The electrical wiring was upgraded to current National Electric Codes and improved the life/safety aspects of the buildings. In addition, the electrical wiring was upgraded to current National Electric Code standards without gutting the interior of the following buildings: Nos. 330, 707, 709, 710, 711, 712, 629, 633, 634, and 9B. These buildings are located at Mammoth Hot Springs and Lake.
3. Rehabilitate Buildings to Meet NFPA (\$148,641.62). Day labor. 100 percent complete. The interior of three dormitories were gutted, rewired, replumbed, and refinished in order to bring them up to current NFPA standards. The buildings are located at Lake and are Nos. 762, 268, and 269.
4. Rewire Historic Quarters (\$77,899.96). Day labor. 100 percent complete. The interior of Building No. 6B was gutted, rewired, and refinished. The electrical wiring was upgraded to current National Electric Code standards and improved the health/life/safety aspects of the building. This building is located at Mammoth Hot Springs and is on the National Register of Historic Buildings.

5. Install Radon Barriers (\$45,225.19). Day labor. 100 percent complete. Installed ventilation systems in the basements of three residences in the Mammoth area (Nos. 2A, 2B, and 3). Additional radon detection equipment was purchased. The monitoring and testing of radon in buildings continued throughout the year.
6. Install Smoke Detectors (\$49,107.51). Day labor. 100 percent complete. Installed smoke detectors in 71 residences throughout the park. The detectors were installed in quarters which either had no detectors or had older battery-operated detectors.
7. Health/Life/Safety Improvements (\$99,631.64). Day labor. 100 percent complete. The interiors of six dormitories were updated in order to improve the health/life/safety aspects of the buildings. The buildings improved under this project were Nos. 587 (Mammoth), 419 (Madison), 714 (Lake), and 629, 633, and 634 (Grant Village).
8. Repair Thermal Walks (\$29,620.79). Day labor. 100 percent complete. Thermal area boardwalks were repaired/replaced in the Mammoth Minerva Terrace area, the Old Faithful Geyser Hill trail through the woods, and the Fountain & Paint Pot area.
9. Waterline Materials - West Entrance (\$44,329.49). Day labor and contract. 100 percent complete. A contract with the Town of West Yellowstone was established to tie the West Entrance waterlines into the new city lines. Materials (pipe, meter, etc.) were bought to make this connection in 1988. A new 10-inch main will have to be put in to provide adequate fire protection for the Hamilton Stores warehouse.
10. Rehabilitate Sewage Treatment Plants (\$90,747.16). Day labor. 100 percent complete. The Canyon sewage plant lab was completed in 1987. A new percolation pond was constructed at the Grant sewage plant to prevent any future illegal discharges.
11. Correct Hazards - Administration Buildings (\$20,271.95). Day labor. 100 percent complete. The renovation of the Personnel Office to control the odor problem was completed. The utility trenches were paved to prevent seepage problems during runoff periods.
12. Complete Fire Prevention Facilities (\$124,704.37). Day labor and contract. 100 percent complete. A new fire cache/equipment storage building was constructed at the West Entrance. The foundation and block walls were constructed by an 8(a) contractor and the remainder of the work was completed by day labor forces.
13. Repair Backcountry Cabins (\$40,236.43). Day labor. 100 percent complete. The Calfee Creek Patrol Cabin was totally rehabilitated. This work included major log repair, floor replacement, and roof sheathing reconstruction.

14. Repair Lift Stations (\$23,538.67). Day labor. 100 percent complete. Lift stations at the West Entrance, Grant Village Campground and Marina, Old Faithful lower store and sewage plant, Bridge Bay Marina, and West Thumb were repaired under this project.

15. Repair Heating Plants (\$71,100.72). Day labor. 100 percent complete. The major projects accomplished with this funding included the connection of the Canteen to the Administration Building boiler, installing a propane heating system at Nos. 392 and 393, the Power House apartments, and the beginning of replacing the Supply Center boiler system. Various other minor heating systems were also repaired under this project.

16. Reroof Buildings (\$82,733.40). Day labor and contract. Day labor 100 percent complete, contract 0 percent complete. The remaining fire cache tile was purchased under this project. Metal cupolas for the metal shingled roofs were purchased. The majority of this funding was used in the award of a new roofing contract that covered wood shingled roofs on Building Nos. 35 and 40, built up roofs on comfort stations Nos. 661 through 668, and metal roofs on built up pitched roofs on Nos. 803 and 805. This contract work will be accomplished in the 1988 season.

17. Modular Housing (\$276,384). Contract. 0 percent complete. A contract was awarded to Larry D. "Builders," Afton, Wyoming, for the construction of four new three bedroom houses with garages. Two will be constructed at Old Faithful and two at Grant Village. This project was funded through trailer amortization, repair/rehab, and ONPS funds.

18. Repair Front Country Trails (\$18,005.95). Day labor. 100 percent complete. Front country trails at Boiling River and Petrified Tree were reconstructed and rehabilitated under this project. Additional boardwalk was added at LeHardy Rapids to provide handicap access from the lower end of the rapids.

19. Chipseal 20 Miles (\$91,900.39). Day labor. 100 percent complete. This funding was used in conjunction with ONPS money to chipseal 16 miles on the Canyon to Norris cutoff and portions of Madison to Norris, Mammoth to Norris, and Swan Lake Flats.

20. Repair Road Shoulder Dropoffs (\$57,638.72). Road shouldering continues along the route from Norris to Mammoth.

21. Restore West Thumb (\$50,184.86). Day labor. 100 percent complete. The old dorm site was regraded. The entire parking area was rehabilitated as the large parking area adjacent to the thermal area was demolished and the old service station area was aligned for parking.

22. Replace Mammoth Roofs (\$74,999.57). Metal roofs on Building Nos. 10 and 30 were reroofed with day labor forces. Building No. 9 was added and reroofed by change order to the existing contract.

23. Energy Retrofit (\$10,895.06). \$5,500 of energy funds was spent to buy electric meters for the ongoing program of metering park buildings, especially quarters. Remainder of the funds were spent on wooden storm doors for historic buildings in upper Mammoth.

In addition to the above 1987 projects, work was completed on contracts from FY 86 on striping, roofing, painting, and the garage.

Roads and Front Country Trails

Tree planting and mulching continues on the berm in lower Mammoth as well as in the Grant Village area. The final grading, landscaping, and drainage at the Hamilton store and dorm site at Grant Village was completed. Since there is virtually no base funding for the front country crews, only minor boardwalk and front country trail maintenance was performed in addition to the project work detailed above.

There was only limited major road work due to budget cuts, and patching was the only treatment most of the roads received. Large blade patches were made on Craig Pass, the East Entrance road, the Canyon rim roads, and in the main parking area at Canyon. The Grant Village informational signs were painted with white lettering, and new posts and signs were installed between Mammoth and Tower Junction.

This year's main road project was crack sealing from Norris Campground Junction to Gibbon Meadows and from Norris Junction to Canyon Junction. Under a combination of base and cyclic funds, this road was then chipsealed with a sand seal applied to the road shoulders and parking areas. Late in the year, Park Street, near Gardiner, Montana, was graded in anticipation of reconstruction in 1988. The historic fence was relocated to provide space for this work to begin.

A total of 3,974 cubic yards of one-half inch chips were produced for the Norris chipsealing project, 6,500 cubic yards of sand were produced for sand sealing and winter road sand and 7,000 cubic yards of reject produced for road shoulder rehabilitation. A total of 1,671 cubic yards of three-quarter inch and 205 cubic yards of fine cold asphalt were produced and used by district crews for road maintenance. A total of 6,000 cubic yards of three-quarter inch material was hauled from Gardiner to the Norris pit.

Roadway striping was completed as part of the traffic study implementation project and last year's ongoing contract. The West Thumb intersection, Fishing Bridge intersection, Three Sisters intersection at Old Faithful, Madison Junction, Madison Museum parking lot, Tower Fall parking lot, centerline striping from North Entrance to Obsidian Cliff, centerline and edge striping on the Norris to Canyon chip seal project, edge striping from Lake to West Thumb, and centerline striping from Northeast Entrance east for 12 miles was accomplished.

Spring opening of roads was accomplished on schedule. The West Entrance was opened to Mammoth and Old Faithful on April 8, although spring storms caused it to be closed intermittently into May. The road was officially closed on November 13 due to poor conditions. The East and South Entrances opened on April 11, and both roads were closed to travel on November 13. The Beartooth Highway opened on May 16 and was closed on October 16. Craig Pass closed on October 7 so construction could begin.

The Federal Lands Highway Program (FLHP) continued with the award of the first half of the Old Faithful to West Thumb road segment (Package 254A) to Burgraff Construction of Idaho Falls, Idaho. The contractor completed approximately 80 percent of the clearing on the project and hauled 90 percent of the necessary material to a stockpile at Old Faithful. Planning continues for the second section of this road for an award scheduled in 1988.

In the day labor portion of the Craig Pass project, the park replaced a portion of the waterline from the water intake to the Old Faithful water plant. The line was moved to the opposite side of the road and buried deeper to prevent conflicts with the road construction. The revegetation portion continued in conjunction with seed collection. The Soil Conservation Service trees were removed from Craig Pass and stockpiled at the sewage plant or planted in the Old Faithful area.

Backcountry Trails

Backcountry trail work was accomplished by three trail crews, but much work remains to try and catch up on the work that was deferred over the last two decades. The heavy construction projects accomplished in 1987 are outlined below.

1. Pebble Creek Trail: Stabilized a hazardous crossing at the four kilometer mark with log cribbing. Stabilized tread with waterbars and realigned grade to the top of the hill in the upper Pebble Creek area.
2. Buffalo Fork Trail: Relocated the trail head at Slough Creek.
3. Roosevelt Horse Trails: Reconstructed tread at the top of the second hill.
4. Hellroaring Trail: Bridged three bog holes with 20-foot bridges between site No. 2H9 and the boundary.
5. Coyote Creek Trail: Bridged two bog holes with 20-foot bridges between site No. 2C3 and the boundary.
6. South Boundary Trail: Realigned and anchored the bridge at the two-mile markers.
7. Heart Lake Trail: Improved the bridge approaches and performed tread rehabilitation between the five and seven-mile markers.

8. Big Game Ridge: Stabilized both sides of the ridge with waterbars and checkdams.
9. Trail Creek: Replaced and rehabilitated the trail tread and bog bridges.
10. Sky Rim Trail: Constructed log cribbing along a switchback, including a retaining wall at the top of the trail.
11. Bechler Canyon: Stabilized and reconstructed tread with waterbars, checkdams, and a turnpike between the 7 and 13-mile markers.
12. Polecat Creek: Rebuilt the Polecat Creek Bridge after a wildfire destroyed it.

Operations

As with other facets of the division, the operations portion was hindered by the lack of sufficient cyclic funds. The equipment fleet continues to be replaced at such a pace that it gets older each year. Currently, it is estimated that \$8.5 million will be required to bring it up to par. In 1987, a loader, a groomer, and 32 snowmobiles were purchased in addition to some small pieces.

The winter operation continues to grow both in terms of visitation and expenses, and, as has been the case for the last decade, something has to give -- in this case, the summer operation.

The rehabilitation of disturbed areas continues to be a high priority. In 1987, the landscaping of the Old Firehole Lake dump continued, and tree planting took place around the park. In conjunction with this, the topsoil stripped from Park Street was spread at the new water tank site near Gardiner. Park crews also cleared the new Lake dorm site, stockpiled the material, and spread it before the snow flew. The Canyon "Wranglers" dorm was dismantled and taken to a burn site.

Dock sections were rebuilt at Plover Point and Frank Island on Yellowstone Lake, and security of the avalanche gun site was increased on Sylvan Pass with the addition of a three-eighths inch thick steel box sunk in a concrete base with concealed padlocks.

The condition of the housing units and roads continues to cause the most complaints, although, with the advent of the FLHP program and the realization of the Servicewide housing problem, this could gradually improve. As is always true in a maintenance operation, the need exceeds the resources.

PLANNING AND DEVELOPMENT

Winter Use Plan

After being shelved for more than a year, the draft Winter Use Plan was resurrected in September. As part of the plan, a report summarizing the cost of the winter operation was prepared in response to the winter operation evaluation and for the Congress. It was decided late in the year to split the planning effort into two phases:

Phase I: Will prescribe the perpetuation of the current levels of winter use for the next few years as traditional and appropriate. It will essentially be an operations plan and needs document to be released in the spring of 1988.

Phase II: Will be a comprehensive design level document that proposes alternative solutions for everything from Snow Lodge improvements to research and monitoring efforts to improvements in circulation. This document will include public involvement and an environmental assessment.

Fishing Bridge DCP/EIS

A major milestone was reached this year with the completion and release of the draft Fishing Bridge Environmental Impact Statement. Six alternatives, including a proposed action, were analyzed in the EIS, which was released to the public on October 23, 1987. The six alternatives were:

1. No Action - Minimum improvements to meet health and safety requirements.
2. Alternative A (proposed action) - Removal and replacement of the NPS campground and retention of most support facilities and the RV park.
3. Alternative B - Removal and replacement of all camping facilities and some support facilities.
4. Alternative C - Removal of all camping and support facilities and partial replacement.
5. Alternative D - Removal and replacement of 160 NPS campsites, fencing of the remaining campsites, and retention of all support facilities.
6. Alternative E - Removal of all camping and support facilities without replacement.

In developing the draft environmental impact statement/development concept plan, several issues were identified that require resolution. The primary issue involves the need to reduce bear/human conflicts at Fishing Bridge and the effects they are having on the grizzly bear population in the

Greater Yellowstone Ecosystem. Other issues include the loss of habitat for the grizzly and other species and degradation of ecological values in the Pelican Valley/Fishing Bridge area, the effects of alternative actions on nationally significant historic structures in the Fishing Bridge development and the appropriate levels and locations of visitor services and facilities, and the effects of alternative actions on Yellowstone concessioners and gateway communities.

Close to 3,000 responses to the draft EIS were received. The vast majority of responses expressed support for either Alternative A or Alternative E. A decision contained in a final EIS will be released in May of 1988.

Lake/Bridge Bay DCP

In the fall, this planning effort was once again re-started. Issues, problems, and preliminary solutions were reviewed with the park staff and DSC planning team members.

The major issues driving the development of alternatives were: the location of the visitor center, type of lakeshore experience, circulation, and siting of the gas station. In all alternatives, the visitor center is within walking distance of all lodging and serves as a Lake area visitor center as well as visitor center with the theme of parkwide ecology as proposed in the Interpretive Prospectus. All Alternatives make use of the "one-stop shopping" concept, and all have gas close to but not on the Grand Loop road. Some have the store near the Grand Loop road to ease congestion due to visitors entering the area for shopping only. The main differences among alternatives are the treatment of the visitor center (IP objectives, first contact, and adaptive use), circulation (stem and branch, stem and loop), and lakeshore experience (pedestrian shoreline, mixed traffic shoreline).

A scoping newsletter will be released to the public in February 1988. The new cumulative effects analysis model should also be developed and ready for use on this project in February. The DCP environmental assessment is scheduled to be available for NPS review in June 1988 and released to the public in August 1988. The final DCP should be completed and mailed to the public by February 1989. This schedule is predicated upon the Fishing Bridge DCP being completed in May 1988. Delays in the Fishing Bridge DCP will correspondingly delay this planning effort.

Grant Village Waterfront/Marina Study

The Phase I Study Report received concurrence by Acting Regional Director Neckels on December 3, 1987, subject to certain revisions. The document has been revised and printed as a limited distribution, in-house report. Distribution has taken place.

Based on the recommendation of the Phase I Report, the task directive will be amended to clarify the product and schedule for Phase II. At this time, DSC envisions fielding a team summer 1988 and preparing a "Lakeshore Rehabilitation/Restoration Plan" similar in scope to a DCP. A draft plan/EA will be prepared in FY 88 and the project will be completed in FY 89.

Funding for this is in jeopardy for FY 88. Eventually this project may be combined with the "clean-up" project to be discussed later, however, Phase II will not hold up architectural improvements.

Grant Village Visual Quality Study

Charlie Hudson and Merrick Smith visited the site in November 1987. Items identified for future consideration are: exterior color compatibility, visual screening, signage consistency and management, circulation analysis, relocation of functional activities, and better direction to key resources for visitors. DSC will prepare a report containing illustrations, cost estimates, prioritization, and phasing approaches. The report will include a visual presentation comparable to the prior visuals for the existing Canyon Village.

Lake Hotel Exterior Rehabilitation

Bids received in FY 87 for the building rehabilitation and the site work were in excess of available funds, and all bids were rejected. The package to be readvertised now includes the building exterior rehabilitation (roof, woodwork, millwork, entry porticos, and painting) and the following additives: elevator, fencing, and south side oval and walks. Base bid estimate is \$951,000, additives estimate \$294,000. Estimated bid opening bid date is February 9, 1988. The group of bidders that generally bid Yellowstone work will be specifically requested to bid this package. Available FY 87 fund carryover is approximately \$1,025,000, with remainder to be borrowed from Canyon, 620EH. DSC is also putting together a bid package for the remaining exterior work to go with this summer and fall if money becomes available.

Old Faithful Inn Rehabilitation

A construction contract was awarded in September 1987 for rehabilitation of the Inn, and work is underway. DSC is entering into separate contracts for the lobby carpeting and for glass panels for the bar. Proposals were received for the glass panels on December 7, and best and final offers were requested. Proposals for the carpeting were received on December 22. Robbie Brockwehl is handling a lions share of the coordination on this project.

Canyon Lodging Redevelopment

The present design concept was reviewed with the Regional Director and staff and park staff in November 1987. The design firm is proceeding with the design. A revised project estimate in the amount of \$3,018,128 was received

early December 1987. Programmed FY 88 construction funding is \$2,488,600 net. Anticipated date to specifications is June 1, 1988. Due to the present high estimate and the prospect of borrowing from this account to fund a portion of the Lake project, rescoping of the project will be pursued.

INTERPRETATION

Chief Naturalist's Office

In 1987, the Division of Interpretation was able to moderately expand its program over that of 1986. Our seasonal staff increased to 39, with one position being devoted to publications and another to work with the master slide file. Seasonal training was held at the YCC Camp June 3 through 10. Topics covered included: bears, communication skills, geology, cultural resources, birds, botany, aquatics, puppetry, and others. The Summer Seminar Series reinforced the emphasis on continuing education, with sessions on wolves, geysers, natural fire, limnology, the northern range, and geology.

The Winter and Summer Operations Evaluation Teams found that the Interpretive program in Yellowstone was highly diverse and creative. On-going projects include: production of an aerial-oblique poster of the greater Yellowstone area; production of a Yellowstone area natural history handbook; and a major fund raising campaign.

The Volunteers in Parks (VIP) Program, which is coordinated through the Division of Interpretation, had an exemplary year. During 1987, 263 volunteers compiled 33,759 hours, providing over \$218,420 work of voluntary services. Of the \$8,600 allocated to the park for VIP funds, 92 percent was spent on volunteer subsistence, with the remaining 8 percent being used to purchase uniform items, such as shirts, name tags, and hats. Cost per volunteer hour was 25 cents, a substantial decrease over 1986.

Yellowstone Association Business Manager Geri Hape retired in October after 20 years of service. Pat Eisenbise Cole was selected to fill this vacancy upon Geri's departure. During 1987, the Association provided \$150,690 of aid to the Division of Interpretation. Among projects funded were: publication and distribution of "Discover Yellowstone"; financial support for the park's newspaper; support of seasonal training; and salaries of part-time librarians. The Yellowstone Institute continued to offer a growing number of classes on a variety of subjects. In 1987, 59 courses were given at the Institute with 645 individuals participating.

Special Projects Unit

The Special Projects Unit achieved a long-sought goal in 1987: The publication of Expedition: Yellowstone! The major work on this project during the year was editing and proofreading galley proofs and promotion. The curriculum was published in October, and at year end, 43 schools had registered to bring students to the park.

With the completion of the developmental phase of this project, Jack de Golia was appointed as program coordinator for environmental education, with Joe Zarki being designated as project development and fund raising coordinator.

All the schools in Wyoming, Montana, and Idaho were sent flyers about the curriculum in the spring. Articles about the program appeared in the park newspaper, in several states' teacher newsletters, and in the NPS Courier. Articles were also sent to important teacher journals. Jack de Golia presented promotional workshops at regional teacher conferences in Sale Lake City (National Science Teachers Association), Cheyenne (Wyoming Curriculum Convention), and Billings (Montana Education Association).

Other projects Jack was involved with included writing and developing a program to pay tribute to the late Horace Albright at a ceremony rededicating the Lake Ranger Station. Director Mott, regional directors, and superintendents from many large parks were in attendance. Jack also operated an information service for interpreters in the field. He recorded a taped daily message about events (accidents, bear management activities, interpretive seminars, natural history events) in the park that persons in the field could call.

Joe Zarki again coordinated an orientation program for seasonal NPS employees in the spring, reaching 190 employees in 11 sessions. In the summer, Joe served as the Canyon interpretive supervisor once again.

With the fall, Joe became involved with fund raising efforts for the joint NPS/Science Museum of Minnesota exhibit, "Bear! Imagination and Reality." A detailed grant proposal was prepared and, together with the Science Museum prospectus, was mailed to 105 corporations and foundations in late December. In addition, Joe undertook similar fund raising efforts for several other major projects including the National Park Ranger Museum, the Canyon Visitor Center renovation, Yellowstone's Wayside Exhibit Plan, and the proposed Lake area visitor center.

Joe, at the request of the Superintendent, undertook the development of an environmental education curriculum about wolves for the Wolf Education Task Force convened by the Director. Joe attended one meeting of the task force in December and was asked to become a regular member of the group. A group of 12 activities, as well as supporting material, was prepared for presentation to the task force at their January meeting.

In July, a new checklist of Yellowstone birds, prepared by Joe, was published by the Yellowstone Association as one of their regular sales items. By late fall, nearly 1,000 of these had been sold at 50 cents each.

Collections/Publications/Exhibits

In March, the position long titled "Curator" was reclassified and upgraded to Park Ranger GS-7/9. The position was filled by Linda Young.

Publications continued to dominate the workload of this office. Among the many publications and/or printed items produced, the park newspaper, Yellowstone Today, and the schedule of interpretive activities, Discover Yellowstone, were by far the most difficult, challenging, and rewarding projects of the year.

Superintendent Bob Barbee decided to re-establish a park newspaper as a primary means of communicating park information to all visitors entering Yellowstone. Another goal was to consolidate the various handouts given at gates into one convenient, attractive format. The park map was also incorporated into the newspaper. Four issues (spring, summer, fall, winter) were printed and distributed free of charge at entrances, visitor centers, and ranger stations. Though originally planned as a 4-page tabloid for the spring, fall, and winter issues, expanding to 8 pages during summer, the newspaper grew to 8 pages for the spring issue and 12 pages for each of the rest. Cost of production was partially funded by contributions from park concessioners, with the remainder being funded by the National Park Service and the Yellowstone Association.

A seasonal assistant, Ginny Cowan, was hired specifically to coordinate production of the biweekly schedule of interpretive activities, Discover Yellowstone, and to help with other publication projects. Discover Yellowstone was sold for 50 cents plus tax at visitor centers and concession facilities around the park. In addition to changes in design, the content was expanded to feature a wide range of articles about the park, games, and crossword puzzles. Those working on the schedule found the demand for services growing rapidly as staff from every division requested a variety of signs, handouts, posters, leaflets, etc. New directions in long existing interpretive publications, such as trail guides, were launched by experimenting with site bulletin formats.

Exhibits, specifically the parkwide wayside exhibit plan, were important on-going projects. The Winter Wayside Exhibit Plan was reviewed and approved; production awaits funding. The North District Wayside Exhibit Plan, comprising 40 exhibits, was launched. Extensive time was devoted to research on subject matter ranging from various aspects of park history to geology, ecology, wildlife habitat, bear management issues, and visitor safety/resource management concerns. To expedite planning of the remaining packages of the parkwide plan, Linda Young was detailed to Harpers Ferry Center as an exhibit planner effective November 1. Ginny Cowan was designated as acting editor of the park newspaper during Linda's detail.

Exhibit planning was also launched for the Canyon Visitor Center and, in a more preliminary sense, for the Ranger Museum to be housed in the Norris Soldier Station. All exhibits at Madison Museum were rehabilitated by Bill Chapman and installed by the start of the summer season.

For the first time since 1977, a full-time seasonal position was established to deal exclusively with the master slide file. Jim Peaco began work on the file on June 12. An inventory of the file was accomplished, missing

material replaced, and new material evaluated and either selected for the file or sent to subdistrict slide files. Jim also filled numerous requests for slides from NPS staff and other individuals.

Late in the summer, money became available to construct a space in which to store the historic photograph collection. Plans were drawn, equipment and supplies ordered, and construction was scheduled to begin around the first of 1988. Establishment of the photo storage room on the second floor of the Albright Visitor Center will greatly improve basic conditions of security and environment. However, the entire project is major, long term, and will require significant amounts of money to meet standards for care and use.

North District

The North District winter interpretive staff in both early and late 1987 remained the same size as in previous years: one seasonal interpreter joined by a second during the open months of the Mammoth Hotel (approximately December 20 to March 6) and one full-time volunteer position. The interpretive programs included evening presentations in the hotel four or more nights each week, a variety of daytime talks, ski programs, and walks. The Albright Visitor Center was open each day from 8:30 a.m. to 5 p.m., including all holidays (8 a.m. to 7 p.m. during the summer).

Two North District summer seasonal positions were restored, one at Mammoth and one at Tower. In 1986 there was no regular interpretive program at Tower or anywhere in the northeastern quarter of the park. The Tower interpreter in 1987, with occasional help from visiting Australian interpreter Tammie Reid, provided a wide ranging program of evening presentations at Tower and Pebble Creek Campgrounds, walks and hikes, discussion programs focusing on resource management problems, and early morning workshops in wildlife observation. Special programs for concession employees and roving contact at bear jams on the road toward Canyon were also significant parts of the summer's efforts. The experimental approach of the 1987 Tower area program will help define the direction of interpretation in northeastern Yellowstone in the coming years.

The Mammoth Hot Springs interpretive staff during the summer included six seasonal naturalists, one Student Conservation Association volunteer, and two part-time Yellowstone Association sales clerks. Jack de Golia, from the Chief Naturalist's Special Projects staff, also participated in the program two days per week. More than half of the Mammoth staff was new to Yellowstone and for the most part new to interpretation. They brought new ideas and an abundance of enthusiasm as well as a continuing level of diversity which the Mammoth program has had for some years. The program was particularly strong in its interpretation of wolves, park history, and aspects of the park which have traditionally received less attention such as reptiles and amphibians, smaller mammals and birds, and wildflowers. Special exhibits at the visitor center included color photographs of park wildlife by Steve Fuller and an exhibit on the history of skiing in Yellowstone prepared by Seasonal Naturalist Dave Cowan.

At Norris the staff of three naturalists was the same size as in 1986 with one of the group new to Yellowstone. With Association sales clerks on duty in the museum breezeway, Norris naturalists were able to devote most of their time to interpretation. They consequently offered an unusually large and diverse program for such a small group. Programs were highly participatory and ranged from geyser basin walks, hikes to backcountry thermal areas, and children's programs to presentations on bats, birds, and caldera explosions, sculpting Yellowstone animals and scenes from clay, and peering through microscopes at thermophilic algae and bacteria. Here and throughout the North District, Tammie Reid's environmental awareness activities added an important dimension to the program.

Reports prepared by naturalists at Norris and Mammoth summarized changes in thermal activity in those areas. At Mammoth the increase in the activity of Reservoir Spring and on Angel Terrace, as well as shifts in Narrow Guage Terrace and Canary Spring, were particularly notable. The unusual ice cone built by Porkchop Geyser at Norris lasted into the summer and began to form again late in the year. Interpretive hikes near Norris included excursions to the unusual new explosion craters in the backcountry north of the basin.

Also serving as Park Historian, the North District Naturalist answered 70 letters on historical topics. Several hundred requests for historical information were answered orally. He reviewed manuscripts of articles and books for historical accuracy, wrote a published article on Yellowstone as a humanistic institution, prepared the nomination for naming "Albright Falls," and performed a variety of other duties more or less related to history. The park archives received several major accessions (records of wildland fire management and of the Public Affairs Office) as well as selected records from the central files. Work begun in 1986 to improve the storage of the oldest records was continued as was indexing of some of the earliest park correspondence. The Park Historian completed an NPS correspondence course in historical research and then served as proctor for two other employees.

The Park Historian sent out 48 letters about donations of books, historic photographs, and objects offered to the library and museum collection. Several journals of early trips to Yellowstone were also obtained. At the request of the Buffalo Bill Historical Center, the historian evaluated the "Yellowstone Days" exhibit designed by the center for the Livingston Depot. He also supervised the park curator and performed some curatorial functions while she was involved with publications and with a detail to Harpers Ferry Center.

The park research library was open 19 hours per week and served 839 patrons (up from 800 in 1986) in addition to the several staff members who use it daily. These patrons included 539 NPS staff and 300 members of the general public. In 1987; 314 books were checked out, and 200 were added to the collection. Library services expanded to include the career library, formerly maintained in the Personnel Office, and a collection of videotapes. The librarians obtained or sent out more than 100 items through the interlibrary loan system.

South District

During the winter of 1986/87, the West Thumb warming hut was staffed by one full-time GS-5 interpreter. No eligible person was found to work the remaining two days per week. Ranger staff started the fire on those two days and provided some visitor services. New vault toilets were installed -- a much needed improvement. Traffic was re-routed so that all snowmobiles stayed in front of the warming hut away from the thermal basin. In addition to the normal interpretive duties, were restroom cleaning on weekends, shoveling of the boardwalks, and cleaning of the interior of the warming hut. The Canyon warming hut was staffed by one full-time GS-5 interpreter (five days per week) and the District Clerk (two days per week). Snowmobile tours were given "on request" because of poor attendance in prior years. This provided for more hut coverage during lunch and time to interpret on snow coaches. Detailed winter reports are available. Interpreters continued to be the main contact of park visitors.

The Canyon summer interpretive staff was supervised for the second year by Joe Zarki of the Special Projects staff. His staff consisted of six paid seasonal interpreters plus one SCA. Numerous volunteers from the local Canyon community staffed the visitor center desk. The Yellowstone Association staffed the sales counter 12 hours per day; they ran the visitor center alone from 8 a.m. to 10 p.m. Canyon Visitor Center dates were from May 15 to September 21, 1987. Harpers Ferry staff and Yellowstone staff began the planning process for new visitor center exhibits. Planning began for a "three senses" nature trail in the Canyon area.

The Fishing Bridge summer interpretive staff was led by seasonal supervisor Judy Visty. Her staff consisted of seven paid interpreters plus one full-time student intern. Fishing Bridge Visitor Center dates were from May 23 to September 7. Interpretive programs were held in the Lake Ranger Station Community Room for the first time in over half a century. Lake rangers and interpreters wrote an exhibit proposal for the Lake Ranger Station. The plan was accepted and funded by park management.

The Grant Village summer interpretive staff was supervised by seasonal supervisor Roger Anderson. There were four paid interpreters and one full-time student intern. The Yellowstone Association ran the entire visitor center operation alone for several hours each day. Interpreters continue to be the main source of thermal information and protection of the resource. Grant Visitor Center dates were from May 23 to September 15. Grant Visitor Center exhibits included "The Lives of Dinosaurs," "The Magnificent West: An American Heritage," "Photography of George Alexander Grant," and "Bears!" Yellowstone Association sales increased 40 percent over 1986. Thumb Geyser, Collapsing Pool, and Abyss Pool all increased in temperature and erupted.

Without the generous help from the Yellowstone Association, interpretive activities would have been severely reduced. NPS staffing in all three areas continues to be below suitable levels to provide necessary visitor services. Detailed summer reports are available for each area.

The winter of 1987/88 staff consisted of two seasonals at Canyon and two at West Thumb. Each person worked 80 percent of full-time (four days per week) to provide seven-day-per-week coverage of the warming huts plus one day of project time. In addition to the normal winter interpretive duties, many writing and other projects were undertaken. Winter visitation continues to increase and appears to be up about 10 percent over last year.

West District

The West District interpretive staff for the 1986/87 winter season consisted of one permanent district interpreter and four seasonals. One of the seasonals was a GS-7 seasonal supervisor and devoted about 50 percent of his time to supervisory and administrative duties. All four employees lived at Old Faithful again this year. However, this year all four participated in the duty at the Madison warming hut on a rotating basis. With this arrangement, we were able to cover the Madison area six days per week as opposed to only five. Additionally, with four interpreters participating at Old Faithful instead of only three, we were able to offer a greater variety of programs.

The winter program went smoothly with an enthusiastic, experienced staff and an interested appreciative group of visitors. Winter is different in that visitors are more relaxed. Yellowstone is their destination, and they are here to spend two to seven days. We get to know them better, and they express an indepth interest and concern for the area and the issues faced by the park. The visitor center was open to the public December 17 through March 14. A diversity of programs was offered including a balance of indoor and outdoor activities such as demonstrations, talks, walks, and ski tours.

The West District Interpreter conducted two training sessions for the snowmobile guides of West Yellowstone.

The 1987 summer staff consisted of only nine seasonals again this year. One of the positions was the GS-7 supervisor who was heavily involved in supervisory and administrative duties. This level of staff is extremely inadequate to serve the record numbers of visitors currently coming to the park. The Yellowstone Association came to our aid again by providing an information receptionist for seven days per week throughout most of the summer season.

We revised and updated the Upper Geyser Basin leaflet prior to the summer's printing. One of the work rooms upstairs in the visitor center was officially assigned to the park geologist, further reducing the work and storage space available to Interpretation. In mid-summer one seasonal employee resigned to accept a permanent position with the Corps of Engineers. In October three seasonal employees were converted to permanent positions at Big Bend National Park.

The Old Faithful Visitor Center opened for the summer season on April 11 and remained open until November 12.

PUBLIC AFFAIRS

Personnel

Employees directly associated with the Public Affairs Office included a GS-11 Management Assistant, a GS-9 Park Ranger, a GS-4 Correspondence Clerk, and a seasonal (June throughout August) GS-4 Park Ranger. The GS-3 Clerk Typist position was upgraded to a GS-4 Correspondence Clerk in February, and the GS-7 Park Ranger position was upgraded to a GS-9 in September. Two individuals worked as volunteers in the Public Affairs Office in 1987, assisting with various projects. Marilyn Lutz, an intern through a graduate program at Miami University, Ohio, worked on various projects as part of her six-month internship, October through December.

Amy Vanderbilt served as Acting Public Affairs Officer when Greg Kroll was away from the park for approximately two months at various times throughout the year.

General Information Services

The Public Affairs Office serves as a clearing house of information for the park and local communities and responds daily to written, telephone, and walk-in requests for assistance and information. A wide range of correspondence, often requiring detailed answers, numbered more than 1,000 pieces. More than 25 percent of this correspondence was from foreign countries.

The Public Affairs Office worked closely with the Regional and Washington Public Affairs Offices, keeping them informed on a variety of matters and seeking advice on sensitive issues. Major news items involving Yellowstone included grizzly bear and bison management, the Fishing Bridge development relocation issue and the release of the Draft Environmental Impact Statement, wolf restoration, road reconstruction over Craig Pass, U.S. Highway 191, fee increases, and increased tourism by international visitors. We provided assistance and research in preparing a wide variety of fact sheets for the Regional and Washington Offices and the park in general.

Frequent assistance was given to the International Affairs Office in Washington with foreign language requests for park information. We also programmed the visits of more than 99 foreign dignitaries and foreign park managers while they were in Yellowstone.

News Releases

There were 36 news releases, 10 call outs, one Public Service Announcement (PSA), and three advisories issued in 1987.

Media Relations

Yellowstone continues to be a focal point for local, regional, national, and international media. This last year was again a very busy media year, with a large focus on grizzly bear and bison management, the Fishing Bridge development relocation plans, with tangential protest demonstrations by Earth First!, and the alleged overgrazing of the northern range relative to the debate posed by Alston Chase in Playing God In Yellowstone. During the year there was continued concern and media interest in the developments on the Church Universal and Triumphant (CUT) property adjacent to the park. Other resource management programs and issues also received considerable attention. In a routine week, we responded to an average of 30 to 40 media inquiries.

Notable media contacts over the course of the year included: "NBC Nightly News," "CBS Evening News," National Geographic Society, "CNN," RAI Corporation (Italian TV), Newsweek, Outside, Modern Maturity, Travel Leisure, Snowmobile, and Sunset Magazines, "National Public Radio," "Voice of America," Denver Post, New York Times, Washington Post, Los Angeles Times, Boston Globe, Christian Science Monitor, Chicago Tribune, Rocky Mountain News, High Country News, Northern Lights, Sacramento Bee, Great Falls Tribune, KSL-TV and KUTV (Salt Lake City), KFMB (San Diego), KIFI and KID-TV (Idaho Falls), and MTN News (Billings). We also remained in daily contact with: Billings Gazette, Bozeman Daily Chronicle, Livingston Enterprise, Cody Enterprise, Idaho Post Register, Casper Star Tribune, Jackson Hole News, Jackson Hole Guide, West Yellowstone News, "UPI," "AP," KSGT, KPOW, and KODI (area radio stations).

Official Visitors

Throughout the year, the Public Affairs Office assisted with programming and arrangements for United States and foreign government dignitaries, park officials, and other guests. Bill Horn, Assistant Secretary for Fish, Wildlife and Parks, visited Yellowstone in August. He accompanied park managers on a trip to Peale Island in Yellowstone Lake.

Neal Sigmon, Staff Assistant on the House Appropriations Subcommittee on Interior, was also here in August. He met with park personal on many issues including budget, restoration and improvement, research/resource management, user fees, concessioners, etc. He met with Superintendent Barbee and Assistant Superintendent Clary and other park managers while he was here.

Congressional visits to the park included Senator Tom Harkin (D-IA), Senator Bill Bradley (D-NJ), Representative Wayne Owen (D-UT), and Representative Ed Boland (D-MA).

In late December, composer Richard Adler visited Yellowstone and met with Superintendent Barbee and Public Affairs Officer Greg Kroll. Mr. Adler toured the park by snowmobile.

The Public Affairs Office also coordinated arrangements for many other official foreign visitors to the park, in cooperation with various agencies and the International Affairs Branch of the National Park Service.

Foreign visitors on official visits came to Yellowstone from the following nations:

Australia (3)	Ghana	Sierra Leone
Barbados	Honduras	South Africa (2)
Belgium	Hungary	Taiwan (25)
Belize	Iceland (3)	Thailand
Brazil (12)	India	West Germany (9)
Burma	Italy (2)	Czechoslovakia
Burundi	Japan (4)	Martinique
Egypt	Nepal (15)	England (7)
Netherlands (3)	France (2)	New Zealand

Of note, Prince Gyanendra of Nepal, his wife, and a group of Nepalese government officials visited the park in June. They were escorted by Public Affairs Officer Greg Kroll during their stay and met with Superintendent Barbee at Lake Hotel.

Mr. Chao-hsing Chen, Chief of Tourism, visited the park to observe park management and learn about Yellowstone.

Filming Permits

Sixty-six filming and photography permits were issued. Some of the major filmers included: National Geographic Society, "NBC," "CBS," "PBS," "World of Audubon," "The Wrong Guys" (New World Productions), Reader's Digest (International Video Network), "Two on the Town," "Eye on L.A.," "Mobile Video Network," "News Travel Network," Colstar Productions feature of artist David Shepard, Encyclopedia Britannica, Mountain Bell, Alternate Current, National Geographic Magazine, and Erich Spiegelhalter (Bunte-West Germany) as well as filmers from Japan and Italy.

The Public Affairs Office staff provided orientation information to all commercial filmers and photographers, assuring compliance with park regulations. In particular, the Filming Coordinator, Amy Vanderbilt, spent considerable time coordinating a grizzly bear film project for the "World of Audubon" and a travel video produced for Reader's Digest by International Video Network. A film crew from Japan's Takion, Incorporated, filmed in the park through coordination with Alternate Current. An appliance commercial was filmed on the boardwalk near Old Faithful Geyser for Easy Appliances.

The Public Affairs Office provided assistance to a filming group from Italian Radio and TV Systems, Inc. This company is the major television producer in Italy and has a large viewing audience throughout most of Europe. They were producing an hour-long feature on Yellowstone and its management, comparing our parks to Italy's.

Meetings and Conferences

Amy Vanderbilt attended the Montana Governor's Conference on Tourism on behalf of the Superintendent in February. Greg Kroll attended the Wyoming Governor's Conference on Tourism on behalf of the Superintendent in May.

The Greater Yellowstone Coalition held their fifth annual meeting at Lake Lodge, May 29-31. The Public Affairs Office staff assisted with preparations and coordination at the meeting and provided interviews and information for media representatives attending the sessions. This annual meeting overlapped with the Director's visit and subsequent meetings.

On behalf of the Superintendent, Amy Vanderbilt attended the 75th anniversary and rededication of the National Elk Refuge in Jackson, Wyoming, in September. On the same trip, Amy also represented the park at the annual conference for the Association of American Film Commissioners and the annual Interagency Grizzly Bear Committee, Information and Education Subcommittee meeting.

Special Events

National Park Service Director William Penn Mott held a meeting in Yellowstone May 28 through June 1, with invited guests and representatives of national constituencies of the National Park Service. Concurrent with this gathering, a memorial service was held to commemorate former Yellowstone Superintendent and NPS Director Horace M. Albright who passed away on March 28. The newly renovated Lake Ranger Station was rededicated at the same time. The staff of the Public Affairs Office assisted Joan Anzelmo with the preparation and coordination of these events.

Photo/Slide Requests

The Public Affairs Office answered over 100 requests for loans of slides and photographs on Yellowstone subjects. With the help of seasonal employee Colleen Crowley, the Public Affairs Office was able to do a long desired reorganization of the slide and photo files. The upgraded system provides efficiency and filing capabilities.

The Public Affairs Office continues to provide photographs for media interests on several newsworthy and special events throughout the year.

Publication Editing Requests

The Public Affairs Office responded to more than 37 written requests for editing publications about Yellowstone and numerous phone requests for the same. These requests were often complex, requiring extensive research to supply accurate information.

Special Projects

The Public Affairs Office updated the reference volume on the greater Yellowstone area. This book was again made available to numerous (50) locations throughout the park enabling employees to assist visitors with questions regarding Yellowstone, the surrounding forests, other regional NPS areas, and gateway communities. Yellowstone continued to utilize the Foreign Language Handbook to locate park staff who can translate for international visitors and incoming correspondence. As part of her intern experience, Marilyn Lutz, began organization and consolidation of all park video cassettes to index a video library for staff and public use.

SAFETY

Progress continues on upgrading visitor and concession employee accommodations. In 1987 the automatic sprinkler system was replaced in the Mammoth Motor Inn. Replacement work, which should be finished before the '88 season, was started on the Lake Hotel and Old Faithful Inn sprinkler systems. All asbestos, except for some encapsulated in the walls of the Mammoth Motor Inn and Old Faithful Inn, was also removed from these buildings.

Automatic sprinklers were installed in concession employee dormitories as follows:

Lake (Mallard), Canyon (Big Horn) Old Faithful (Windflower and Columbine), Mammoth (Lodgepole and Spruce)

Stairwell isolation was completed in all of TW Recreational Services, Inc., concession-operated, government-owned dormitories.

National Park Service dormitories at Lake and Madison were upgraded to the Life Safety Code Standard.

The park Safety Officer continued to act as the Regional Safety Officer from April 22, 1986, until July 5, 1987, providing assistance to numerous regional locations.

The park Safety Committee continued to play an active role in park safety programs. Topics addressed were: visitor/wildlife safety, winter operations, and employee safety. Numerous training sessions were conducted throughout the year, including defensive driving, snowmobile operations, winter survival, hearing conservation, first aid, EMT, fire fighting, etc.

Seven wildlife incidents with bison occurred in the park, up from three in 1986; flyers and pamphlets warning the park visitor of bison injuries were handed out at all entrances. No bear incidents occurred. There were one moose incident, two marmot bites, one mouse bite, and 8 insect bites reported by visitors and responded to by rangers.

The Documented Safety Program for the Yellowstone Operating Procedure (YOP) was revised.

MAMMOTH CHAPEL COMMITTEE

Public use of the Mammoth Chapel stayed about the same as in 1986. The chapel was used for 61 services which were attended by 2,486 people. This is a slight decline from 1986 attendance which was 2,797 people. Wedding use of the chapel was up four fold from 1986. There were 16 weddings performed in the Mammoth Chapel in 1987.

The restrooms and nursery were renovated this past summer by the Carpenter and Plumbing Shops. The organ was repaired this past fall and an estimate was given to the committee on converting the organ circuitry to solid-state electronics. This estimate came to approximately \$1,000. The display case for historical items is still in the construction stage.

The present Chapel Committee consists of three members: Ron Jones, Dick Pippenger, and Dennis Zafft.

SUPERINTENDENT'S ANNUAL REPORT 1988

THE DENVER POST

Wednesday, July 27, 1988



YELLOWSTONE NATIONAL PARK

Robert D. Barbee

2/28/89

Robert D. Barbee
Superintendent

Date

YELLOWSTONE
NATIONAL PARK
LIBRARY
89-75

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ADMINISTRATION

ADP

Yellowstone converted 157 users to the enhanced VISTA WORD word processing system, supports 15 plus users on Word Perfect, and continues to support IEOS where needed. With the implementation of VISTA-GUIDE and VISTA-PRINT all aspects of the laser printers are being fully utilized.

Support was given to the administrative fire personnel by way of equipment and program assistance, such as producing and printing over 5,000 meal tickets for the firemen in West Yellowstone and Gardiner. The operations produced and maintained a weekly colored map of fire progress which was distributed in hardcopy as well as on the KNPS television station.

Expanded operations of ADP included the purchase of the TARGA System to be used for KNPS station identifications. Support was given to the television operations and the Superintendents' Conference with equipment, software, and personnel. Seventeen PC's were installed and supported for the Maintenance Management System. A Data General System was installed to be used with the Forest Service System for the Greater Yellowstone Committee electronic mail system. The use of SEADOG electronic mail system for automatic exchange with the rest of the Service was implemented. The Data Point System continues to be our main connection to the Regional Office with daily transmissions. A total of 3,682,979 records were communicated via modem in 1,675 files transmitted to, and 1,563 files received from, the Regional Office.

TELECOMMUNICATIONS

Yellowstone's radio system served the park well this past year including the overwhelming task of providing support for fire suppression activities. Our portable "Scene of Action" system was used extensively throughout the summer and fall and provided an invaluable service to fire and rehabilitation personnel.

In March, the Communication Dispatch Center, located in the historic Administration Building in Mammoth, was completely remodeled. Additional space was added, special consoles were fabricated, lighting, air circulation, and security were improved. All wiring was replaced, new telephones and new, more sophisticated control consoles were added.

Interest in and use of synthesized radios continues to increase. Some 50 additional portables were added to the inventory during the fire situation.

KNPS, the information TV channel implemented last year, is growing and gaining in popularity as is the general use of video as a means of providing training and visitor information. We have added significantly to our video equipment inventory and our capability to accomplish professional work in

this area and are planning further improvements in our production/reproduction techniques.

FISCAL

The final ONPS funding authorization for 1988 FY was \$14,230,500, of which we spent all. We collected and deposited \$1,631,780 from Bills for Collection through the year. We deposited \$3,416,058 that was generated from entrance and user fees. The maximum number employees on the payroll during any one pay period was 696 employees and that occurred during the pay period of July 17 through July 30, 1988.

CONCESSIONS MANAGEMENT

Concessioners

TW Recreational Services reported 493,106 overnight guests during the summer of 1988. During the same period, 1,169,053 meals were served in TW Recreational Services' food service facilities. This compares to 703,806 overnight guests and 1,611,720 meals during the same period in 1987.

Hamilton Stores, Incorporated, reported a decrease in sales of approximately .9 percent.

Yellowstone Park Service Stations sold 2,399,013 gallons of gasoline in 1988 compared to 2,666,578 in 1987.

West Park Hospital reported treating the following:

Mammoth Clinic:	2,505 visits	visitor/residents
(summer)	756 visits	seasonal employees
Old Faithful Clinic:	635 visits	visitors
	838 visits	seasonal employees
Lake Hospital:	1,453 visits	visitors
	1,420 visits	seasonal employees
	44	in-patient visitors
	11	in-patient seasonals

West Park Hospital's staff provided 74.5 hours of assistance in continuing education programs for park emergency medical technicians and park medics and 62.5 hours of basic cardiac life support for the Yellowstone community in general.

Winter Operations

During the winter season (December 1987-March 1988), 16,151 guests stayed at the Mammoth Motor Inn. Operation of the hotel and winter services have become very successful. The Old Faithful Snowlodge continues to be popular with winter visitors, with 17,855 overnight guests reported.

TW Recreational Services, Incorporated

The construction of the Old Faithful Snowlodge cabins (12 units) lost in the 1988 fires will commence next spring.

TW Recreational Services has developed a video promoting Yellowstone after the fires. Hamilton Stores also made a financial contribution toward this video.

West Park Hospital - Contract Renewal

West Park Hospital was authorized to continue to provide medical services under a new 5-year contract which will expire October 31, 1992.

Yellowstone Park Service Stations

Construction of the Yellowstone Park Service Stations' dorm at Old Faithful will commence next spring.

Restoration of Old Faithful Inn

A ceremony commemorating the restoration and rehabilitation of the Old Faithful Inn was held on May 23. Over 2 million dollars was spent on this effort. This project included removing asbestos, installing a sprinkler system, renovating the gift shop, registration and information desks, adding a new rear entry, replacing the carpets, and rehabbing the bar and dining area.

Restoration of Lake Hotel

The restoration and upgrading of the guest rooms in the center and west wing of the hotel were completed prior to the opening date of May 26. All rooms have been brought up to a level compatible with the previously restored lobby and dining room. The dorm behind the hotel was converted to guest lodging and is now called the Lake Yellowstone Hotel Annex. Hotel exterior improvements commenced last spring. This project consists of exterior painting and reroofing, as well as repairs to the historic millwork. Also, included in this project is the construction of new entry structures to the hotel as well as a new elevator, entry drive reconstruction, concrete flatwork, and landscaping. Due to the fires this summer, these improvements were ceased in August and postponed until next spring.

RESOURCE MANAGEMENT AND VISITOR PROTECTION

The 1988 wildfire fires in Yellowstone captured the attention of the country, if not the world this past summer. The subsequent effects, ramifications and planning needs associated with the fires continued to significantly influence the direction of work activity in the division through the remainder of the year. It bears noting that in addition to managing the several fires in Yellowstone Park personnel were able to keep the park open to visitor use throughout the summer. As disclosed in this report, visitor management problems and statistics were generally better than in 1987, despite a 15 percent drop in visitation.

The dual responsibility of managing the park and visitors and participating in the fire effort was a challenge professionally and administratively met by the Resource Management and Visitor Protection staff.

3. Personnel

The staff decreased from 218 status employees in 1987 to 217 employees in 1988. The decrease can be attributed to budget restraints. Four seasonal employees were hired and the VOT program was not funded.

The division continued to support and upgrade various positions to correct deficiencies and meet documented workload demands. There were no transfers of permanent employees out of the park, and one new employee transferred into the park. Three permanent retired and four resigned in 1988.

Law enforcement commissions were maintained by 41 permanent and 61 seasonal rangers.

Additional certifications include:

- Park Medic - 0
- EMT-A - 47
- Advanced First Aid First Responder - 30
- Deputy U.S. Game Warden - 11
- County Deputy Sheriff - 12
- Deputy U.S. Marshals - 2
- SOBIA certified - 6
- Firearms Rangermaster - 10

Retired:

- Stewart Orgill, West Entrance Sub-District Ranger
- Danbar Susong, Bechler Sub-District Ranger
- Norma Turner, Communications Center Supervisor

Transferred in and around:

- Shirley Squire, Dispatch to Communications Center Supervisor
- Rick McAdam, Dispatcher to Park Ranger, North District

RESOURCE MANAGEMENT AND VISITOR PROTECTION

The 1988 wildland fires in Yellowstone captivated the attention of the country, if not the world this past summer. The subsequent effects, ramifications and planning needs associated with the fires continued to significantly influence the direction of work activity in the division through the remainder of the year. It bears noting that in addition to managing the several fires in Yellowstone, park personnel were able to keep the park open to visitor use throughout the summer. As displayed in this report, visitor management problems and statistics were generally higher than in 1987, despite a 15 percent drop in visitation.

The dual responsibility of managing the park and visitors and participating in the fire effort was a challenge professionally and admirably met by the Resource Management and Visitor Protection staff.

A. Personnel

The staff decreased from 226 status employees in 1987 to 207 employees in 1988. The decrease can be attributed to budget restraints. Fewer seasonal employees were hired and the YCC program was not funded.

The division continued to support and upgrade various positions to correct deficiencies and meet documented workload demands. There were no transfers of permanent employees out of the park, and one new employee transferred into the park. Three permanents retired and four resigned in 1988.

Law enforcement commissions were maintained by 41 permanent and 82 seasonal rangers.

Additional certifications include:

- Park Medic - 9
- EMT-A - 47
- Advanced First Aid/First Responder - 36
- Deputy U.S. Game Warden - 11
- County Deputy Sheriff - 12
- Deputy U.S. Marshals - 2
- SCUBA certified - 5
- Firearms Rangermaster - 10

Retired:

- Stewart Orgill, West Entrance Sub-District Ranger
- Dunbar Susong, Bechler Sub-District Ranger
- Norma Turner, Communications Center Supervisor

Transferred in and around:

- Shirley Squire, Dispatch to Communication Center Supervisor
- Rick McAdam, Dispatcher to Park Ranger, North District

Jon Dick, Fire Inspector to Park Ranger, North District
 Jim Sweaney, West District Resource Management Coordinator to North
 District Resource Management Coordinator
 Craig McClure, North District Resource Management Coordinator to West
 District Resource Management Coordinator
 Bill Schreier, Dispatcher to Resource Management Trainee
 Leah Kremer, Dispatcher
 Greg Fraser, Dispatcher
 Esther Mellott, Dispatcher to Fee Collections
 Andy Mitchell, Dispatcher
 Bonnie Gafney, Old Faithful Criminal Investigator to Old Faithful
 Assistant Sub-District Ranger
 Bundy Phillips, Park Ranger Rocky Mountain National Park to Old Faithful
 Criminal Investigator
 Steve Sarles, Old Faithful Assistant Sub-District Ranger to West
 Entrance Sub-District Ranger
 Rick Bennett, Madison Sub-District Ranger to Gallatin Area Ranger
 Roger Andrascik, Park Ranger, Crater Lake, to Lake District Resource
 Management Coordinator
 Andy Fisher, North District Ranger to Norris Supervisor
 Laura Long, Chief Rangers Office, Clerk/Typist
 Anita Varley, Public Affairs Office Clerk to Visitor Services Office,
 Park Ranger

Resigned:

Melissa McAdam, Dispatch
 Pat Laitner, Park Ranger, Visitor Services Office
 Ellen Gresswell, Clerk Typist, Chief Rangers Office
 Doug Johnston, Dispatch

B. Park Visitation

Annual 1988 park visitation totaled 2,219,128 reflecting a 15.25 percent decrease or 399,301 persons compared to 1987. However, visitation for the month of October was a record-setting 175,019 visitors, an increase of 39.35 percent over 1987. The October visitation probably reflects a curiosity factor about the fires and, hopefully, indicates a trend for 1989.

VISITOR ENTRY BY ENTRANCE STATION

WEST	765,341
SOUTH	538,571
NORTH	401,373
EAST	397,325
NORTHEAST	116,518

C. Fee Collection

On April 1, 1988, Yellowstone National Park implemented a per vehicle fee increase to \$10.

Total fees collected in FY88 from all sources was \$3,416,059.

1. Entrance and Golden Eagles:

	<u>Golden Eagles</u>	<u>Total</u>
WEST	\$ 60,750	\$ 1,095,286
SOUTH	9,675	120,037
NORTH	29,834	414,095
EAST	37,225	714,730
NORTHEAST	10,125	164,186
		<u>\$ 2,508,334</u>

2. Boat Permits:

Motorized:	1,302	\$13,020
Non-Motorized:	1,031	<u>\$ 5,155</u>
TOTALS:	2,333	\$18,175

3. Campgrounds: \$889,425 collected in FY88

D. Permits Issued

Golden Eagles	- 5,904	Special Use	- 83
Golden Age	- 13,046	Park Supplier	- 500
Golden Access	- 441	Commercial Use License	- 126
Annual Area Passes	- 11,132	Fishing Permits	- 165,738

E. Central Communications Center Records Summary

	<u>1986</u>	<u>1987</u>	<u>1988</u>
Employee Vehicle Registration	3,823	3,897	3,823
Visitor Identification Notices	299	283	299
NCIC Inquiries	16,609	14,118	12,614
Wrecker Requests	602	690	712
Law Enforcement Record Checks	43,460	39,983	30,765
All Points Bulletins	20	29	16
Information Packets Mailed	31,977	27,954	23,091
Incoming Calls on Switchboard	189,468	164,509	233,506
Information Calls	38,538	36,228	85,663
Criminal History Check	1,164	1,212	1,097
Law Enforcement Checks	43,460	39,983	30,765

F. Lost & Found Summary

There were 3,654 items processed in FY88

G. Visitor Protection

1. <u>Law Enforcement:</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
Motor Vehicle Accidents	397	478	531
Part I Offenses	170	161	170
Part II Offenses	2,862	2,265	2,747
Violation Notices Issued	2,323	1,755	2,090
Case Incident Reports	4,205	4,167	4,294
Court Cases (those heard in Yellowstone)	260	222	231
Car Clouts	63	66	106

2. Resource Violations

Wildlife Hunting	15	8	33
Preservation of Natural Features	16	13	32
Snowmachine Violations	166	234	222
Camping	355	169	169
Closed Area Violations	306	157	197
Firearm Violations	11	21	14
Fishing Violations	162	91	114
Preservation of Natural Features	16	13	32
Swimming & Bathing Violations	95	44	52
Wildlife Hunting	15	8	33

In response to public concern over commercial truck traffic on US Highway 191, the division implemented a 24-hour road patrol operation. This program focused on speed enforcement, wildlife protection, and gathering statistical information on truck traffic for future planning. Following are 1988 figures noting that there was minimum patrol during August/September.

382 violation notices issued; average speed per ticket - 72 mph in 55 mph zone

182 warnings - 5.5% to commercial vehicles (trucks) and 94.5% to private vehicles

46 large animals were struck/killed by vehicles including 1 grizzly bear cub

36 motor vehicle accidents (6 involving trucks)

West District rangers made eight arrests directly associated with the North Fork Fire Camp, six of which were felonies including one rape. On 1/28/89, the suspect in the rape case pleaded guilty.

Poaching and horn hunting activity continues to be a problem. Fourteen people were arrested this year.

H. Fire Management

1. Structural Fires:

Summary of Alarm and Fire Response

	<u>1986</u>	<u>1987</u>	<u>1988</u>
Alarms	133	201	95
Fires	22	16	28

The entire structural fleet was actively involved in building protection and wildland fire suppression this summer. Multidivision crews received invaluable "on-the-job" training in the defense of Grant Village, Old Faithful, and Canyon Village. Two 1950's vintage Jeep fire engines functioned heroically this summer before seizing up. They are in the process of being replaced by two Type I structural fire engines. A total of 38 structures were damaged or destroyed by the 1988 fires; total loss was \$892,944. Buildings damaged/destroyed involved 35 government owned buildings, 2 owned by cooperating associations and 1 by Hamilton Stores, Incorporated.

2. Wildland Fire

The Greater Yellowstone Area experienced unprecedented and historic wildland fire activity in 1988. Within Yellowstone Park, there were 51 natural ignitions which were managed in accordance with the park's Fire Management Plan. A total of 988,975 acres in Yellowstone Park were affected by the fire or 44.5 percent of the total acreage. Of this figure, 595,225 acres or approximately 60 percent were the result of natural or man-caused fires which started outside the park and burned in.

More than 25,000 firefighters worked on fires in the Greater Yellowstone Area in 1988, with a peak of some 9,500 people and 117 aircraft at one time. Ranger division personnel worked countless hours in a variety of functions in the management of fire activity.

Over 200 park employees were trained for fire suppression duties prior to the fires. Four courses of S-130/S-190 Basic Firefighting were taught in addition to S-211, S-212, S-215, S-230, and S-260.

a. Air Operations:

An Aerospatiale Lama 315 D was contracted from June 15 and eventually worked through November 16, 1988. In addition, an Alouette III was contracted on September 2, and worked through November 18, in support of the fire suppressions/rehabilitation efforts. A total of 915 hours of flight time were logged by these helicopters. There was one aircraft accident of a Super Cub aircraft during a wildlife study flight. Total loss of aircraft and minor injuries resulted. The helirappel program continued in 1988 with 21 Yellowstone rangers being trained or recertified. Approximately 90 rappels were made with no injuries.

b. Search & Rescue:

There were 54 SAR incidents this year including 2 fatalities. On 2/10/88, a TW employee at Old Faithful, John Mark Williams became the park's 13th recorded thermal fatality after falling into a 80 degrees Celsius geyser pool in the Shoshone Lake Geyser Basin. Blizzard conditions hampered rescue efforts. On 8/6/88, Dennis B. Rumble fell over the guard rail on Uncle Tom's Trail, overlooking the Grand Canyon of the Yellowstone. He sustained head injuries. Park Rangers coordinated a helicopter evacuation of the victim, who later died.

c. Emergency Services:

Seven deaths occurred in the park during the year three of which were natural causes. There were two deaths due to motor vehicle accidents, one fall, and one thermal-related fatality. Park rangers responded to 646 medical calls.

I. Wilderness and Backcountry Management:

A majority of the park's backcountry was closed during the months of August and September. Nonetheless, backcountry visitation was still relatively high. During 1988, 11,287 people (25,188 visitor use nights) obtained permits for overnight camping in Yellowstone's backcountry. A total of 3,293 permits were issued for an average of 3.43 people per permit. Stock use nights totaled 5,361 (1,305 horses), an average stay of 4.18 nights per head.

The division coordinated and hosted the first meeting for all park outfitters in June. The response and dialogue were favorable with the groundwork being laid for the Limited Concession Use Permit program. This program should enhance the park's ability to manage outfitter use.

A comprehensive Backcountry Management Plan for the park is in draft form and is expected to be finalized by fall 1989.

J. Resource Management

General:

A great amount of park cleanup was accomplished. Most notable was the removal of a 2-1/2 ton CCC truck body, 10 abandoned range exclosures, several dozen culvert pipes, and a wrecked B-17 airplane (May 1943).

The Resource Management staff drafted and reviewed other drafts of NPS-77, a guideline to natural resource management in the National Park Service.

A number of brown bag seminars were sponsored for the year including resource management and research projects or studies of staff interest.

The Resource Management staff were involved with input into the GYCC, GYA Post Fire Resource Assessment, and in preparation of documents for the Greater Yellowstone Post-Fire Ecological Assessment Workshop.

The draft Church Universal and Triumphant EIS was responded to with a lengthy document expressing Yellowstone's concerns.

The theme of the 1988 Resource Management Workshop was "Protecting the Resources" and was keynoted by Southwest Regional Director, John Cook.

The River Use Management Plan was finalized in May.

Work continued on the McLaren Mine Tailing problem at Cooke City. BOR, Billings, Montana, under contract with EPA, drafted a reclamation plan.

The Reese Creek water right issues remain unresolved at the end of the year but settlements were reached with Homestake and Crevice Creek Mine Companies, and Margaret Reeb of Cooke City. Water structures were found to be on government land in the Silvertip Ranch enclave and a special use permit issued.

Fisheries

Parkwide projects: - Volunteer Angler Report cards were issued for 1988 and cards returned in 1987 were tabulated and statistics produced showed 163,300 permits were issued in 1987, and the park hosted 124,900 anglers who fished 294,800 angler days in 1987.

Aquatic Surveys: - Fish population data was collected on the Bechler, Gardner, Firehole, Lamar, Madison, and Gibbon Rivers. Data was also collected on Slough and Soda Butte Creeks and the Yellowstone River at LeHardy Rapids.

Yellowstone Lake: - The fish trap was operated on Clear Creek to collect data on the spawning run and the annual gillnetting program was accomplished on Yellowstone Lake.

Lewis Lake: - The Lewis Lake lake trout project was accomplished with fertilized eggs collected for a new year class of brood stock.

Much assistance was provided to researchers during the calendar year. Support involved 179 man days of assistance, fish sampling equipment, laboratory space, and consultation on various projects. These projects included genetics studies on Yellowstone cutthroat trout, biological control of mosquitoes, climate and sedimentation rates in lakes and ponds, deep sea mini-rover explorations of Yellowstone Lake, life history of lake trout in Lewis Lake, the effects of Yellowstone fires on primary productivity in the aquatic systems, water quality studies, production of a new map of Yellowstone Lake, ecology of brown and rainbow trout in the Firehole River and sedimentation studies on the Lamar River system.

Wildlife

Wildlife capture and immobilization procedures were more formalized in a draft during the year. The procedure involved the structuring of a Wildlife

Team (designed to increase the pool of trained ranger personnel available to perform and support wildlife captures, immobilizations, and correct care and handling of wildlife) and a Bear Management Committee (designed to discuss management options and formally document decisions). A DEA schedule drug license was applied for and received. Several mammal wildlife surveys were initiated during 1988 including the structuring of a Beaver Survey and an initial start, and a Guard Hair Sampling Project. This project involved a parkwide sampling scheme to catch mustelid guard hairs with little or no disruption to the animal.

Hairless marmots in the Old Faithful area were captured and sent to a laboratory for further analysis. Appropriate signing discussions were held with Old Faithful personnel and recommendations made.

Bison

In June the case brought by Fund for Animals was settled in favor of the government. The case was not appealed. The basis of the suit was an attempt to claim that the park had a statutory duty to keep the bison in the park. Research data and Dr. Meagher's testimony were of paramount importance in a favorable decision for the government.

Bison populations were estimated at 2,600-2,700 (2,644 on February 23, 1988 flight) for the park. The State of Montana, now fully accepting their role in the management of bison outside the park, supervised the cropping of bison outside the park in the Gardiner, West Yellowstone, and Cooke City areas. The threat of brucellosis continues to be their major concern and to a lesser degree depredation to private property.

Bears

There were 2,158 bear sightings reported during the 1988 season; 961 grizzly, 1,015 black, and 182 unknown species of bear. No injuries to people by bears occurred this year. There were 19 property damages by bears; 6 by grizzlies, 6 by black bears, and 7 by unknown species (5 of which grizzlies were suspected). There were no management removals from Yellowstone National Park during 1988. Nine bears were captured and relocated inside the park; four grizzlies and five blacks. Radio collared bear 134 was perhaps the most troublesome in 1988, having been captured and relocated twice near Lake. Yellowstone Park personnel were involved in relocations involving 18 bears captured outside the park and released within, of which 9 were grizzlies.

Raptors

Osprey were impacted by the fires more than other raptors due to nesting patterns. Some nest-bound young were lost in the fires and approximately 17 percent of the nesting territories were affected by fire. The long-term prognosis, however, is good as more snags are now available as nest sites. Eagles and peregrines were generally not affected by the fire activity and their population remains stable. Though several nesting sites were burned raptors quickly returned to their traditional areas.

Trumpeter Swans

The trumpeter swan population appears to be holding their own in the park. Swan populations, nowhere strong, are highly influenced by weather and in 1988 were most influenced by the drought conditions. Wildfires per se had little effect on them directly. Long term, the fires have produced nutrients that will enhance aquatic productivity and, thereby, swan vitality. Nesting success was apparently enhanced by the use of artificial nest platforms in one situation.

Pronghorns

Approximately 40 percent of the pronghorn summer range burned this summer. It is undetermined how significant this is at this time, though the winter migration started approximately one month early this fall. There are approximately 400-500 animals in the northern range herd.

Elk

Elk populations are estimated to be approximately 32,000 for the park. Elk comprised the greatest number of large animals (250) that perished in the fires. These numbers, of course, reflect only those animals observed and no doubt more died but went unobserved. Elk, especially the northern herd, were observed moving to winter ranges earlier than in past years, probably as a result of drought and fire conditions.

Exotic Vegetation

Exotic vegetation control focused on two species, spotted knapweed and oxeye daisy. A number of eroded areas were stabilized and rehabbed including Madison Campground, Firehole swimming area, Otter Creek Campground road, and Mud Volcano.

Hazard trees were marked and cut along burn over roads and other developed areas as a result of the fires.

Consultation was given on the Craig Pass road construction project a number of times.

RESEARCH

General

Given that Yellowstone National Park seems constantly the subject of national attention with regard to resource or managerial topics, the park has necessarily built a larger science program in recent years. The park's Division of Research thus provides management with scientific results and provides recommendations essential to making informed decisions, informing the NPS, public, media, and other state and federal agencies on resource aspects, and identifying future research needs and resource problems. The division also coordinates all government, university and independent research conducted in the park, serves as policy and logistical advisor to the U.S. Fish and Wildlife Service's fishery research unit, U.S. Geological Survey, two interagency elk working groups, the northern Rocky Mountain Wolf Recovery Team, contract researchers, the Interagency Grizzly Bear Study Team, and the post-fire research groups.

The division's staff now includes 44 FTE although there are only 18 permanent employees. In-house efforts are directly related to the park's resources management plan and relate to the following topical areas: plant ecology, ungulate ecology, post-fire research, grizzly bear research, sociological research, earthquake and volcanic hazards, and geothermal research. The division's output in the past five years has included 8 books or book chapters, 56 symposia volume contributions, 39 papers or technical bulletins, 8 popular articles, and 82 reports.

Research in the Park

Yellowstone's special physical and biological attributes attract researchers from all across the United States and several foreign scientists. During 1988, 233 research projects were permitted in the park and performed by 205 individuals. Over 90 percent of these projects were carried out by university, independent, or non-National Park Service scientists. This scientific effort represents an expenditure of over \$3.5 million dollars in public and private funds. Approximately one-third of this total represents National Park Service appropriated monies.

Research associated with animal ecology is the most popular topical area comprising about 32 percent of the total, followed by 25 percent devoted to geothermal aspects, 18 percent directed to geology topics, 13 percent associated with plant ecology and 2 percent sociological subjects. A new major category in 1988 - fire research - comprised 12 projects (5%); a figure that will almost certainly increase in 1989.

Yellowstone National Park's "Superintendent's Annual Research Report", available in the spring of 1989, describes the years activities in considerable detail. Readers desiring more specific information about the park's research program should refer to that report.

MAINTENANCE

General

As with all other operations, the 1988 wildfires dominated all aspects of the Maintenance Division. From midsummer on, virtually all operational aspects were diverted to fuel reduction, structural protection, sprinkler lines, standby power generation, hazard tree removal, and mitigating resource damage. Before the fires started, the hiring of a new Assistant Chief of Maintenance set a major reorganization in motion. The district supervisors now work directly for the Assistant Chief of Maintenance, and the park Landscape Architect joined the Maintenance staff. The new maintenance facility in Mammoth had a crane installed, and the interior floor has now been contracted for. Even under normal circumstances, deterioration of roads and buildings would continue due to the lack of a viable cyclic maintenance program. With the fires of 1988, even more ground was lost.

Buildings

Work on park buildings consisted of responding to critical work orders involving repairs necessary to keep the buildings open and functional. Due to base funding levels, cyclic and preventive maintenance have been deferred at least another year. Most building repair and rehabilitation accomplished this year were funded under the separately funded repair/rehabilitation and cyclic program. The remaining cyclic work was deferred, thus increasing the backlog of necessary work.

Fishing Bridge: Seventeen old cabins were removed and the site cleared.

Mammoth: The Communications Center in Building 36 was complete gutted, offices were built and rewired, and a new bathroom was built. In addition, security bars were installed on windows and a new console for radio equipment was built, as well as various bookcases and tables. A new roof was installed on the supply storage building, No. 78.

Mammoth: The Little People's Learning Center, Building 330, was upgraded with new carpet in all rooms except the bathroom, kitchen, and eating area, which received new linoleum. New sanitary-type countertops were installed in the kitchen and on the eating area table.

Mammoth: A new exterior door with steps was installed at the Mammoth School Carpenter Shop to provide fire egress.

Stevens Creek: A new roof was installed on the feed storage shed at the corrals.

Lewis Lake: A new generator building was built to house a new propane-fired generator.

Lamar: The porch rafters and roof on the Yellowstone Institute building were repaired.

Grant: A metal cold storage building (28 feet by 28 feet) was built in the maintenance area.

Utilities

Work progressed in a manner similar to the "Buildings" work. Much of the work was deferred unless special funding was available. The water spring system at Tower Junction failed this summer. A new, deeper spring box and pump system were installed in time to prevent shutting any facilities down.

The Norris water system that was marginal in 1987 functioned satisfactorily. The Norris sewage system was improved, although not totally fixed, in 1988, while the Roosevelt system was dug out and ready for the 1988 season. The Canyon sewage plant continues to occasionally violate its discharge permit. Reconstruction plans for the Canyon facility are now in progress.

Sewage spills and overflows were a primary topic in 1988. The Fishing Bridge lift station presented the biggest problems, as pump failures and lightning strikes caused discharges into the river. Additional protection and monitoring were added. Until an overflow system is installed, the potential for additional overflows still exists.

Housing

The quarters program continues to lose approximately \$500,000 per year, and the quality of housing has continued to decrease. Over 25 percent of the units are of a temporary nature (trailers, transahomes, wingfoots) and were never intended for use in this climate. The Housing Management Plan, in conjunction with the Servicewide housing initiative, identifies a \$12 million shortfall in upgrading, rehabilitating, replacing, and adding additional housing. Interior park employees continue to live in trailers and other substandard housing throughout the winter. Four replacement houses, two at Grant Village and two at Old Faithful, were completed from a 1987 contract and are occupied. A special emphasis program for appliances and furnishings was assessed on all divisions, and stoves, refrigerators, chairs, tables, beds, and lamps were purchased for many seasonal housing units. Out of this \$100,000, heating systems were also improved throughout the park. A contract for the painting of historic buildings in Mammoth was negotiated through the SBA 8(a) for work in 1989.

North District housing work orders and housing turnover renovations were handled by the Housing Crew. The crew completed 14 quarters this year in turnover renovations at Mammoth.

All but a few miscellaneous washers and dryers were removed and replaced by a contract that installed coin-operated units. The contract calls for all maintenance and repairs. That should improve service and reliability with a savings to the park.

Repair/Rehabilitation and Cyclic Projects

Approximately \$1.26 million was obligated by Yellowstone National Park during FY 88 on repair/rehabilitation and cyclic projects funded by the respective programs. A description and status of each project administered or coordinated by the Maintenance Division follow:

1. Paint Interior and Exterior of Park Buildings (\$98,886.49). Day labor and 8(a) contract. 100 percent complete. The exterior trim and siding of eight quarters were touched up because of peeling paint at Mammoth Hot Springs (Nos. 564, 565, 566, 568, 559, 563, 570, 572). The interiors of six quarters were painted in Mammoth by park crews (Nos. 501A, 70E, 501B, 567, 382, 331). Park crews also painted the Grant Village amphitheater and the Canyon shop building (No. 803).
2. Rewire Historic and Residential Buildings (\$301,711.48). Day labor. 100 percent complete. Gutted the interior, rewired, and refinished the interior of Building Nos. 441, 10A, and 242. These buildings are located at Mammoth Hot Springs, West Yellowstone, and Tower. The electrical wiring was upgraded to current National Electric Codes and improved the life/safety aspects of the buildings.
3. Rehabilitate Buildings to Meet Health/Life/Safety Improvements (\$125,726.21). Day labor. 100 percent complete. The interior of one dormitory was gutted, rewired, replumbed, and refinished in order to bring it up to current Health/Life/Safety standards. The building, No. 351, is located at Canyon.
4. Install Radon Barriers (\$50,039.90). Day labor. 100 percent complete. Installed ventilation systems in the basement and crawlspaces of three buildings in the Mammoth area (Nos. 37A, 37B, 376). Additional radon detection equipment was purchased. The monitoring and testing of radon in buildings continued throughout the year.
5. Repair Lift Stations (\$25,456.58). Day labor. 100 percent complete. Lift stations at the Old Faithful sewage plant, the Long Trail at Canyon, lakeside at Bridge Bay, Fishing Bridge, and Mammoth were repaired under this project.
6. Reroof Buildings (\$52,266.00). Day labor and contract. Zero percent complete. Contracted for the reroofing of roofs in various areas in the park. The work is a part of Contract No. CX 1570-8-0019. The reroofing will take place in 1989.

7. Chipseal 20 Miles (\$201,854.47). Day labor and contract. 100 percent complete. Purchased chips for the West Entrance road but, due to the fires, they were not laid. In lieu of laying the chips, the remaining funds were utilized to overlay surfaces of road between Undine Falls and Frog Rock on the Mammoth to Tower road.
8. Repair Road Shoulder Dropoffs (\$50,263.16). Day labor. 100 percent complete. The road shoulder project from Mammoth to Norris was completed, and areas in Hayden Valley had material added to them.
9. Install Modular Housing at Yellowstone (\$47,391.25). Day labor and contract. 100 percent complete. FY 88 money was used to complete the foundations and sitework for the new houses at Old Faithful and Grant Village.
10. Rehabilitate Log Structures (\$34,007.66). Day labor. 100 percent complete. The Pelican Springs Cabin required total reconstruction. The Thorofare Barn was reroofed after a bear ripped through the old roof to get to the grain.
11. Replace Heating Systems, Building 70 (\$120,461.23). Day labor. 100 percent complete. This repair/rehab project involved the removal of the old radiator and boiler system and the installation of new boilers and fin tube heaters in the entire apartment building.
12. Replace Boiler, Building 34 (\$39,805.83). Day labor. 100 percent complete. A new boiler room and boiler were completed for the Supply Center.
13. Upgrade Fire Lines (\$64,957.34). Day labor. 100 percent complete. A new water main and meter vault were installed, and the West Entrance area water system was converted to the new City of West Yellowstone water system.
14. Rehab West Thumb Landscape (\$45,297.08). Day labor. 100 percent complete. A new boardwalk/asphalt walk system was built through the old store area to connect the parking area with the thermal basin. The area was regraded and mulched to improve the landscaping. The parking area reconstruction was completed. The old trailer comfort station was removed, and the existing wooden comfort station was moved and remodeled into a vault system.

In addition to the above projects, work was done on the following projects:

1. Old Faithful Inn. Day labor. 100 percent complete. Rewired the historic light fixtures in the lobby and hall of the Inn in order to upgrade the wiring to current National Electric Codes.
2. Install Concrete and Block Walls (\$200,434.00). Contract. Zero percent complete. Contract was awarded to Norbert Herauf Masonry and Concrete, Inc., Livingston, Montana, to install the concrete floor and block walls and under-slab utilities in approximately two-thirds of the new Maintenance Garage. The work will be accomplished in 1989.

3. Parking Lot and Road Striping - Parkwide (\$76,311.75). Contract. Zero percent complete. A contract was awarded to Mark Rite Lines, Inc., Billings, Montana, for the striping of roads and parking lots, including the North Entrance road, West Entrance road, and the Beartooth Highway. This contract work will be accomplished in the 1989 season.
4. Lake Dorm Site Work. Day labor. 40 percent complete. Utility connections were completed at the Teal Dorm and Golden Eye Dorm sites. Parking lot and sidewalk construction are still in progress.
5. Install Fire Lines, Old Faithful and Lake. Day labor. 100 percent complete. Although the majority of this project was completed in other fiscal years, considerable time was spent disconnecting and tracing unknown connections found in the old systems.
6. Repair Sewage Plant Fences. Day labor. 100 percent complete. A crew was assigned to inspect and repair all the sewage plant fences. The most critical situation was the horse corral fence at the Old Faithful sewage ponds. A new fence was constructed to separate the corral and totally enclose the sewage ponds. All fences were repaired until the fire burned through at Grant and Old Faithful and new snags started to fall on the fences.

Roads and Front Country Trails

A new boardwalk was installed at Norris in the area of Pork Chop Geyser. The area continually floods the unsurfaced trail and had been rerouted away from the feature. New bumper logs were installed at the Old Faithful Hamilton's lower store.

Twenty-one miles of ditching were accomplished in the Hayden Valley area. Ten ditch miles were accomplished between Gardiner, Montana, and Mammoth Hot Springs, Wyoming.

A contract was awarded to Burggraf Construction, Idaho Falls, Idaho, to crush 8,500 cubic yards of 8-inch minus rock.

Teal Dorm was graded and back sloped, and a base was laid for parking and Penta-primed. Landscaping around the dorm was completed.

An area of timber was cleared, graded, and a base laid for parking at the new Lake YPSS Dorm which is adjacent to the Teal Dorm. The parking area was Penta-primed. A 250-linear-foot French drain in front of the new YPSS Dorm was also installed.

The entrance to the Bridge Bay Campground was widened and realigned, and a new base was laid. One hundred and twenty feet of new drain were installed. Montana Power rerouted the primary feeder to the Bridge Bay Marina at a cost of \$2,128. The new reservation system implemented by the NPS was the cause of this project.

Paving of the West Thumb parking area was completed, and landscaping of the West Thumb thermal area was completed. Two hundred linear feet of asphalt walk, seven feet wide, were installed in the thermal area.

Fourteen miles of the West Entrance road were crack sealed.

The various districts used 104 cubic yards of fine cold mix and 4,045 cubic yards of 3/4-inch cold mix for overlay and pothole patching. For a 3.2 mile overlay from Lava Creek to .4 miles east of Blacktail Deer Creek, 3,878 cubic yards of hot mix were used.

Crusher operation produced 3,000+ cubic yards of 3/8-inch chips, 3,500 cubic yards of 3/4-inch rejects, and 1,200 cubic yards of sand.

A contract for 3/4-inch minus aggregate was awarded to STS Gravel, Livingston, Montana, for 40,000 cubic yards at a cost of \$140,035.29. The park will haul and stockpile the rock at Norris Hot Mix Plant.

Eighty linear feet of 36-inch vitrified clay pipe were replaced in Hayden Valley, one-half mile north of Trout Creek.

The West Thumb parking lot was striped using 20 gallons of paint.

Landscaped Gardiner Pit around the new Gardiner School.

Rebuilt 18 linear feet of rock headwall at Frying Pan Springs.

Spring opening of roads was accomplished on schedule. The West Entrance was opened to Mammoth and Old Faithful on April 9, although spring storms caused intermittent closures into May. The road was officially closed November 10 due to poor conditions. The East and South Entrances opened April 20, and both roads were closed to travel on November 6. The Beartooth Highway opened May 20 and closed November 2. Craig Pass was open weekdays from 9 a.m. to 9 p.m., and Friday at 9 a.m. to Sunday at 9 p.m. It was closed for reconstruction the balance of the time.

The Federal Lands Highway Program (FLHP) and Burggraf Construction continued with the construction of the first half of the Old Faithful to West Thumb road segment (Package 254A). The contractor completed approximately 90 percent of the project including all of the paving. Guardrail work, pullout details, and final cleanup remain. The second half of the Old Faithful to West Thumb road was awarded to HK Construction of Idaho Falls, Idaho. Clearing and culvert replacement began in the fall of 1988. The revegetation portion continued in conjunction with seed collection and distribution.

Backcountry Trails

Backcountry trail work lasted for approximately 1-1/2 months before the fires shut the work down or incorporated the crew members in firefighting and rehab work.

Despite the fire, a few projects were accomplished. The Crevice Creek Bridge was totally replaced, with new steel beams flown in for the project. Other trail work was accomplished in the Daily Creek and Trail Creek areas.

The trail crews were an integral part of the fire rehabilitation work accomplished in the fall. The trail crew members supervised other crews in bridge and water bar reconstruction and trail and fireline rehab.

Operations

As with other facets of the division, the operations portion was hindered by the lack of sufficient cyclic funds, besides expending most efforts on fires. The equipment fleet continues to be replaced at such a pace that it gets older each year. Currently, it is estimated that \$8.5 million will be required to bring it up to par. In 1988, a loader, road sweeper, truck tractor, and 36 snowmobiles were purchased in addition to some small pieces.

The winter operation continues to grow both in terms of visitation and expenses and, as has been the case for the last decade, something has to give--in this case, the summer operation.

The condition of the housing units and roads continues to cause the most complaints, although, with the advent of the FLHP program and the realization of the Servicewide housing problem, this could gradually improve. As is always true in a maintenance operation, the need exceeds the resources.

MMS Implementation

The program continues on schedule with all 18 management units past the orientation phase and 6 of them (North District, Beartooth, West District, Old Faithful, Grant Village, and Canyon) fully implemented and reporting. Personnel turnover, weather, and equipment problems notwithstanding, the implementation effort with the others is proceeding and will be complete in April 1989.

As full system implementation and report utilization become regular parts of daily maintenance operation, the requirement for dependable computer equipment is becoming more evident. To achieve maximum effectiveness of the overall system, an additional four complete work stations need to be acquired.

INTERPRETATION

Overview

The Division of Interpretation operated with a budget of \$701,000 in FY 88, a 20% increase over FY 87. Over 1,314,000 visitor contacts were made at the 8 visitor and information centers located in the park. Over 4,200 different interpretive programs were offered in 1988, resulting in over 438,250 visitor contacts. Total number of visitors contacted by interpreters was 1,752,606.

In 1988 the Division of Interpretation expanded its permanent and seasonal staff. In addition to 39 seasonal naturalists assigned to field locations, 3 seasonals assumed positions as curator, photo archivist and artist/interpreter. Five new permanent subject-to-furlough positions were also established in 1988: Editorial Clerk (GS-1087-4), Mammoth Area Supervisor (GS-025-07), Canyon Area Supervisor (GS-025-07), Grant Area Supervisor (GS-025-05/07), and Old Faithful Area Supervisor (GS-025-05/07). In March, South District Naturalist William Laitner transferred to North Cascades, and Elizabeth Knight was selected for the vacant position.

Seasonal training was held at the YCC Camp June 1-8. In addition to workshop and lecture presentations, three days of field classes were offered. Subjects covered included: biodiversity, ecosystem management, interpretive skills, storytelling, wolves, and others.

Chief of Interpretation George Robinson attended a meeting of Regional Chiefs of Interpretation in Santa Fe and assisted with the drafting of the "Interpretive Challenge." He also attended the Bi-annual Conference of National Park Cooperating Associations in Tucson, Arizona. It was also confirmed that Yellowstone will host a national conference of interpreters in the fall of 1991.

The unprecedented fire season of 1988 resulted in a substantial adjustment in the summer interpretive program. From the onset, interpreters were actively involved in the fire program both at headquarters and in field locations. Staff members provided a variety of services: serving as Fire Information Officers, assisting Public Affairs Office, staffing barricades, extensive roving assignments, etc. Also, several interpreters were actively involved with actual fire fighting.

In response to the unique opportunity to interpret fire and its aftermath, the Chief of Interpretation has worked closely with Harpers Ferry Center in creating a number of media interpreting the fires of 1988. Planning was underway in 1988 for several projects to be in place by the summer of 1989, including: a major exhibit at the Grant Village Visitor Center, seven site-specific wayside exhibits, seven digital sound stations, 16mm film and video, and a B6 folder. Several other projects were proposed but not funded, including: self-guiding nature trails (with accompanying leaflets) through burned areas, motor nature trails, fire supplement to environmental education

curriculum. In addition to these projects, a traveling FIRE (Fire Information and Resource Education) Team was established. Led by Greg Kroll, interpreters Gregg Fauth and Georgia Dempsey developed a program on fire to be given at various schools, civic groups, and other community organizations in the tri-state area.

The Volunteers in Parks (VIP) Program is coordinated through the Division of Interpretation. During 1988, 242 volunteers compiled 24,172 hours, providing over \$165,000 worth of voluntary services. Of the \$12,000 allocated to the park for VIP funds, \$9,978 (83%) was spent on volunteer subsistence, with the remaining \$2,028 (17%) being used to purchase uniform items, such as shirts, nametags, and hats.

During 1988, the Yellowstone Association provided \$53,112 of aid to the National Park Service. Among projects funded were: publication and distribution of "Discover Yellowstone", financial support of the park's newspaper, support of seasonal training, and salaries of part-time librarians. The Yellowstone Institute continued to offer a growing number of classes on a variety of subjects. In 1988, 63 courses were given at the Institute with 642 individuals participating.

PUBLICATIONS/EXHIBITS/MEDIA

Linda Young Tankersley coordinated park input for seven site-specific and one generic (with 24 duplicate copies) fire waysides, meeting tight deadlines before the end of the year.

Planning and production of non fire-related Yellowstone wayside projects, the subject of review and planning for the last several years, has been postponed well into 1989 or possibly longer by Harper's Ferry Center. Rehabilitation of existing exhibits continued slowly due to lack of funds at either the park level or through Harpers Ferry Center emergency rehabilitation programming.

Publications staff also worked closely with Paul Schullery and others in producing several specific fire publications, including: an interim fire site bulletin (for emergency handout to summer visitors); a site bulletin on Yellowstone's fire recovery and donations program; and a full-color supplement to the park newspaper. The latter is a comprehensive publication describing fire history and management planning, climatic conditions peculiar to 1988, what burned and how the fires were fought, and what the fires mean for the future. Each visitor to Yellowstone and many requesting mail-out information now receives this fire supplement to the park newspaper covering these topics.

The park newspaper Yellowstone Today, and listing of ranger-led activities, Discover Yellowstone, were produced on the same basic schedule and format as in 1987. This meant that four newspapers of twelve pages each and five editions of Discover Yellowstone provided a structure around which other workload was arranged. Publications staff worked with numerous people in our

own and other divisions to fine tune design and content and to streamline production of these publications.

Other publications produced in 1988 included general site bulletins on hiking and auto tour opportunities in the Canyon, Fishing Bridge, and Grant Village areas; and tips for observing wildlife throughout the park. A new trail guide for the Norris Geyser Basin was also published. The Winter Guide, used primarily by snowmobilers, was also redesigned and reprinted.

Initial plans to produce a Yellowstone natural/cultural history journal, perhaps along the lines of the Teton Science School's Biologue, were laid with the Yellowstone Association. A premier issue might appear as early as summer 1989, for sale in visitor centers and concessioner sales outlets.

To aid with the mushrooming publications demands, a permanent (subject-to-furlough) editorial clerk position was created in May. Ginny Cowan was selected for that vacancy

SPECIAL PROJECTS UNIT

The two-man special projects unit was active in a variety of projects. Joe Zarki served as an active member of Director Mott's Task Force on Education about Wolves. Joe also organized and carried out an orientation program for over 350 seasonal National Park Service employees. Ten orientation sessions were held in May and June. Planning and production of an exhibit on bear management at the Lake Ranger Station made significant progress in 1988.

An active private sector fund raising effort was pursued, with the development and printing of four different illustrated booklets on the Yellowstone Wayside Exhibit Plan, the Canyon Visitor Center Renovation, the Museum of the National Park Ranger, and the Yellowstone Children's Fire Trail.

Other projects included the production of a daily park briefing during the summer. A message was recorded on extension 2280, providing news and natural history information to NPS interpreters, TW tour guides, YPSS attendants, and TW activity desk people. Jack de Golia spear-headed an effort to provide a packet of information on the fires to teachers, students, and others. The mailing list is now over 900 names.

The spring of 1988 brought "Expedition Yellowstone" to the end of its first full-fledged season. The staff grew from one seasonal to two full-time and one part-time seasonal. Aside from one weekend when a school cancelled, the program operated non-stop from the first of April to the end of May. The fires of 1988 threatened Lamar in September, and we cancelled all fall expeditions. Approximately 313 children and 96 adults from 15 schools participated in the program.

The program, based on just one season, is a huge success. We now have 76 teachers registered. We have gone to a lottery system to assign expedition

dates, as the demand for the environmental education program now exceeds our capacity to accommodate school groups.

NORTH DISTRICT

The North District winter interpretive staff in early 1988 included two seasonal interpreters and one volunteer position shared by two people. Interpretive programs included evening talks in the hotel at least four nights each week and a variety of daytime programs including demonstrations, ski tours, and walks. The Albright Visitor Center was open each day from 8:30 a.m. to 5 p.m., including all holidays.

The Winter Wildlife Expedition, the caravan program formerly called the Winter Camera Safari, was presented on 11 Sundays from January into March with a total attendance of 148 people, up 53% from 1987.

The summer interpretive staff at Tower/Roosevelt was doubled to two ranger-naturalists. They continued and expanded many of the ideas tried in the revamped program of last year, including more frequent campfire programs at Pebble Creek Campground. As fire activity increased, the two ranger-naturalists did more and more roadside information and interpretation at vantage points from which the activity was visible and moved on to other assignments less related to interpretation.

The staff at Norris remained at three ranger-naturalists. The program was a varied one, especially strong in geology and programs for children. The North Fork Fire approached to within 100 yards of the Norris Museum, a National Historic Landmark, but the presence of a firetruck and crew and their advance work prevented any damage to the buildings. The boardwalk system also sustained no damage. The walks at Artist Paint Pots were partially burned. Norris interpreters provided roadside information related to fire and after the area's evacuation assisted at various road barricades.

The staff for the Albright Visitor Center at Mammoth Hot Springs of one SCA and six seasonal positions, was the same as in 1987. One seasonal position was shared by two half-time employees. Jack de Golia, of the Chief Naturalist's Special Projects staff, participated in the program two days per week. Yellowstone Association sales clerks in the visitor center and at the Norris Museum also answered many visitor questions. Programs again covered a wide range of topics, including an evening program about wildland fire, which was being presented before the first ignition of the season. The only day that the Albright Visitor Center was not opened in at least five years was September 10, 1988, when Mammoth was evacuated.

In September, Tom Tankersley was chosen to fill a new subject-to-furlough GS-7 position as Mammoth Subdistrict Naturalist. The fall/winter 1988 staff included Tom, full-time seasonal interpreter Sandy Snell, and part-time seasonal interpreter Dave Cowan. Beginning in mid-December they presented a variety of winter interpretive programs.

Successive exhibits of color photographs by Steven Fuller and of black and white Yellowstone photographs with calligraphy by Lee Silliman hung on the visitor center's second floor through the summer. In December, Dave Cowan revamped the wall covering on the second floor and mounted a large display of children's art works resulting from the Imagine Yellowstone art project. "Imagine Yellowstone" was a National Park Service sponsored art contest for children ages 10-15. In its initial year, this project resulted in 250 entries in a variety of media.

The North District Naturalist also serves as Park Historian, in the course of the year splitting his time equally between the two positions. The workload was approximately as in 1987 with the addition of participation in two history conferences. He assisted with the review of a large number of manuscripts, several exhibit plans, and the preparation of interpretive programs related to history. Work also continued with additions to and care of the Park Archives. Records related to wildland fire which were organized in 1987 were used repeatedly during 1988 in answering questions concerning past Yellowstone fires.

The park research library was open 19 hours per week and served 1,051 patrons (839 in 1987) in addition to several staff members using it daily. Patrons included 637 NPS staff and 414 members of the general public. In 1988, 486 books were checked out, and 121 were added to the collection. The collection of video tapes grew greatly and was actively used by members of the park staff with 100 tapes circulated. The librarians again did a brisk business in interlibrary loans. The library staff includes two part-time librarians, both employees of the Yellowstone Association. Mary Ann Davis resigned this year to supervise the Fire Record Center at Mammoth. Barbara Zafft replaced her, joining Beverly Whitman.

MUSEUM AND PHOTOGRAPH COLLECTIONS

Part-time seasonal curator Beth Blacker accomplished a large amount of curatorial work. The storage and work rooms were reorganized, a partial inventory completed, and many partially completed projects brought to a close. Examples of tools and other small items of equipment used during the summer's fires were added to the collection for eventual display.

In September, the approach of forest fire to Mammoth Hot Springs increased smoke density and eventually introduced ash into the air. On Thursday, September 8, the park curator and historian, in conjunction with the Chief Naturalist quickly made arrangements to move the Thomas Moran paintings, historic negative collection, and certain other objects to the Museum of the Rockies in Bozeman for safekeeping. Concerns included possible damage from smoke and ash and from water in the course of firefighting. Other measures were taken inside the visitor center to minimize the chance of damage to objects on display or in storage. Fire arrived at the edge of the Mammoth area on September 10, at a point approximately one air mile from the museum. No known damage occurred to any museum objects.

The park's large collection of historic negatives and prints and the master slide file were moved into two rooms constructed by maintenance on the second floor of the Albright Visitor Center. These new facilities have greatly improved security, environment and accessibility to the slide and negative collections. Work continued on the photo collection during 1988, beginning with inventory of the historic negative collection and identification of nitrate negatives that would later be copied to prevent further deterioration.

For the second summer, Jim Peaco was hired seasonally to care for the master slide file. Jim became actively involved with photo documentation of the Yellowstone fires, both in terms of actual photography of the fires and establishment of a slide file and slide bank to assist in answering the many fire-related requests. Constant upkeep and review of possible slide file additions to meet the diverse needs of NPS staff and others continued into the fall and winter. Approximately 250 slide/print requests, totalling close to 5,000 images, were processed in 1988.

SOUTH DISTRICT

During the winter of 1987/88 the West Thumb warming hut was staffed seven days a week with two individuals, each working four days. With visitation through the South Entrance up 28% over the previous year, the additional staffing was put to good use. Historic photos were added to the inside of the warming hut. Interpreters wrote site bulletins in addition to warming hut responsibilities. Canyon Warming Hut was also staffed by two persons sharing one and one-half positions. Canyon is increasingly becoming a destination for visitors seeking an alternative to Old Faithful. Plans should be started for increasing the size of the warming hut as it is currently stretched to the limit.

When South District Naturalist William Laitner transferred to North Cascades, Joe Zarki was temporarily promoted to the acting South District Interpreter position. Joe handled seasonal hiring, budgeting, and planning responsibilities for the South District. Elizabeth Knight from Sequoia and Kings Canyon National Parks was selected as the new South District Interpreter and arrived in the park in June.

The Canyon interpretive operation was supervised by Sandy Snell-Dobert. Her staff of six paid interpreters was supplemented by numerous volunteers from the local area. Canyon Visitor Center dates were from May 15 until September 30. From mid-July until the visitor center closed, Canyon employees were responding to the fire situation, including frequent roving assignments on Mt. Washburn and other areas where smoke was readily visible. Short programs updating visitors on the current situation were initiated.

Fishing Bridge/Lake operation was led by seasonal supervisor Harlan Kredit. His staff of seven paid interpreters and three regular volunteers operated Fishing Bridge Visitor Center from May 27 to September 26. The season was extended from the traditional closing date of Labor Day to meet the visitor's

need for information on road closures. Operation was at the visitor center itself until Lake was evacuated but was then resumed at the Lake Ranger Station. Fishing Bridge also responded to the fire situation with additional roving assignments. One additional person was hired to assist with visitor information services. Several interpreters were also used as Fire Information Officers on the Snake River Complex. Fire information was integrated into all programs.

Roger Anderson supervised the Grant Village operation for a second year. He had a staff of three paid employees and a half-time volunteer. Three special exhibits were on display: Wolf Art - a collection of paintings of wolves; Ranger Memorabilia - included pins, badges, and uniforms of the National Park Service; and a Smithsonian poster collection on biodiversity.

Dates that the Grant Village Visitor Center was open are complicated due to the extent that the area was involved in fire activity. It opened May 27 and closed the first time July 21 when the area was first evacuated. Interpreters assisted in the evacuation. An interpreter was assigned to interpret fire at the Jackson Chamber of Commerce building, the Jackson airport, and at the South Entrance when that road re-opened. When Grant Village was preparing to reopen, interpreters presented programs to concession employees giving both information about the current fire situation and also about park fire policy. A nightly program at the visitor center about the fires drew large crowds. The area was evacuated a second time and reopened. In mid-September operations were moved to the ranger station which was jointly staffed by ranger and interpretive staff.

The South District Interpreter spent the majority of the summer as a Fire Information Officer. Considerable time was devoted to both media and to giving programs to the Army about National Park Service philosophy and personal safety in grizzly bear habitat.

In September, Roger Anderson was selected for the newly created permanent (subject-to-furlough) position as Grant Village Area Supervisor. Gregg Fauth from Sequoia Kings Canyon was selected as the Canyon Area Supervisor.

Winter operations for the 88/89 season began December 4 when park roads opened to snowmobiling. Two employees are working full-time at West Thumb. At Canyon, one part-time and one full-time employee staff the warming hut and provide interpretive programs. Canyon supervisor Fauth has been assigned to the Fire Interpretation Team for the winter but is still supervising the Canyon operation.

WEST DISTRICT

The West District Interpretive staff for 1987-88 winter season consisted of one permanent District Interpreter and four seasonals. Additionally, one volunteer assisted in the visitor center and with various projects two days per week. The four regular employees lived at Old Faithful and took turns with duty at the Madison Warming Hut. This system continues to work out

satisfactorily. The extra help provided by the volunteer enabled the scheduling of several all-day ski tours. The visitor center was open to the public from December 16 through March 20. The daily schedule of conducted activities consisted of one in the morning, one in the afternoon, and one evening visitor center program. Activities were concluded on March 14.

The 1988 summer staff included, in addition to the District Interpreter, nine full-time seasonals, one intermittent seasonal (two days per week), and one full-time Yellowstone Association Information Receptionist. Emphasis was placed on providing a diversified program of creative, inspiring, and provocative activities designed to involve visitor participation. The visitor center was open from April 9 through November 6.

From the beginning of the season fire ecology was one of the themes included in our interpretive programs. When lightning started several fires in early July the number of those programs for the public was increased. As fire suppression activities were initiated in late July the interpretive staff became directly involved in an expanding way. In late August conducted activities were reduced to release personnel for fire related duty.

The Old Faithful Visitor Center remained open every day except for a short period from 2:30 p.m. on September 7 until 1 p.m. on September 11. Many guided tours as well as some interpretive programs were conducted for the fire fighters both civilian and military. Later in the season as the fires came under control we returned to more normal interpretive services. Information to the public centered heavily on the facts of the fires, the plans for restoration, and more importantly on the biological and ecological phenomena generated by such a dominant natural agent.

The permanent (subject-to-furlough) position of Old Faithful Area Supervisor was filled in September with Dan Ng who transferred from Big Bend.

Public Affairs Office

Personnel

Employees directly associated with the Public Affairs Office included a GS-11 Park Ranger/Management Assistant, a GS-9 Park Ranger, a GS-5 Correspondence Clerk, and three emergency appointees, Mary Ann Davis, Kim Laubach, and Sandi Robinson. The GS-4 Clerk Typist position was upgraded to a GS-5 Correspondence Clerk in July when Emily Anderson was hired to replace Anita Varley. One individual worked as a volunteer in the Public Affairs Office in 1988, assisting with various projects. Marilyn Lutz, an intern through a graduate program at Miami University, Ohio, worked on various projects as part of her 6-month internship, January through March. As many as 34 individuals worked for the Public Affairs Office at some point during the fire season. They provided both general fire information and served as media contacts.

Joan Anzelmo replaced Greg Kroll as the Public Affairs Officer in June when Greg took a another position in interpretation.

Amy Vanderbilt served as Acting Public Affairs Officer for approximately two months at various times throughout the year.

General Information Services:

The Public Affairs Office serves as a clearing house of information for the park and local communities and responds daily to written, telephone, and walk-in requests for assistance and information.

A wide range of correspondence, often requiring detailed answers, numbered more than 1,000 pieces. More than 25 percent of this correspondence was from foreign countries.

The Public Affairs Office worked closely with the Regional and Washington Public Affairs Offices, keeping them informed on a variety of matters and seeking advice on sensitive issues. Major news items involving Yellowstone included the fires in the Greater Yellowstone Area, the Environmental Impact Statement for Church Universal and Triumphant's proposed development, grizzly bear and bison management, the Final Environmental Impact Statement on the Fishing Bridge development relocation, wolf restoration, road reconstruction over Craig Pass, U.S. Highway 191, fee increases, and increased tourism by international visitors.

A Document Center was established to provide a central repository for all fire documents. This Document Center will remain open and available to the public and media for at least one year after the fires were declared out in November 1988. The Public Affairs Officer supervises this operation.

The Public Affairs Office provided assistance and research in preparing a wide variety of fact sheets for the Regional and Washington offices and the

park in general. Frequent assistance was given to the International Affairs Office in Washington with foreign language requests for park information. The PAO also programmed the visits of numerous foreign dignitaries and foreign park managers while they were in Yellowstone.

News Releases.

There were 34 news releases, 21 call-outs, 1 Public Service Announcement (PSA). and 4 media advisories issued in 1988.

Media Relations.

The Greater Yellowstone Area (GYA) fires of 1988 created a media event unequalled in the history of wildland fire. Between July 21 and September 21, there were more than 3,000 media representatives assisted either in person or by phone interview in Yellowstone National Park (YNP). Every major newspaper in the United States, foreign correspondents, many major magazines, and all the major radio and television networks were represented. Since YNP is well known, the park's Public Affairs staff even received information requests about fires outside the GYA. As of November 15, the park was still receiving 40-70 media/public information requests per day about the 1988 fires.

Due to YNP's high visibility and the extreme competition for news in the media business, there were occasions when minor events were blown out of proportion. These occasions had the potential to cause conflict among the agencies managing the fires.

The Yellowstone Public Affairs Office (PAO) at park headquarters in Mammoth assumed the role of the central fire information office at the onset of the fire season on June 23, 1988, and continued this role throughout the entire fire season, assisting the media. During the early stages of the fire season, most of the media and public interest was local and regional and was handled by the park's existing two Information Officers.

The PAO responded daily to media inquiries, media visits, and public questions and concerns. As many as 5,000 visitors were personally assisted by personnel responding to incoming calls from the public. These calls varied from fire information to assistance with trip planning.

As the fire season continued and the situation grew increasingly more serious, the media interest greatly intensified. The PAO expanded hours and staff to meet the growing demand of media requests and public inquiries. The office operated from 6 a.m. to midnight, 7 days a week. In addition to Joan Anzelmo, Chief Public Affairs Officer, and Amy Vanderbilt, Public Affairs Officer, other staff were brought on to serve as Information Officers in the Mammoth Office, including Steve Iobst, Robbie Brockwehl, Sandi Robinson, Linda Miller, Marsha Karle (Denver Office), Greg Kroll, and George Robinson to assist media. Thirty-four other staff were brought on to assist visitor inquiries. During peak days, the Mammoth Public Affairs Office assisted over 200 media by telephone and in person each day.

As more Incident Command Posts were established, the PAO brought on other staff to serve as Field Fire Information Officers. More than 15 NPS staff were used in this capacity at the different incident locations. These staff were fire-qualified and also familiar with Yellowstone.

Area Command (AC) initially set up on July 23 in West Yellowstone, Montana, and opened an information office at AC headed by US Forest Service (USFS) Wally Shievedecker, Director of Public Affairs, and seven other information officers. The AC Information Office worked very closely with the Mammoth PAO and relied on Mammoth to continue to serve as the primary information center. In early August, most of AC in West Yellowstone closed--including the information office--and relied on Mammoth to continue to serve as the primary fire information center. Later in August, AC re-opened with an expanded information office. Once again the Mammoth PAO and AC Information worked together very closely. Initially, AC asked Mammoth to continue to serve as the primary central Fire Information Office. Later in August, AC assumed an increased central information role. In late September, AC and their Information Office once again closed. Mammoth again served as the primary information center for both current fire information as well as the massive follow-up information source. Follow-up has continued with an average of 20 media and filmers in the PAO daily throughout the fall. As many as 50-70 media inquiries/interviews have continued to be received on a weekly basis. Throughout the winter an average of 5-10 media representatives have traveled back to the park weekly to research and prepare follow-up stories. An estimated 200 plus media are anticipated to return to the park in April and May to continue follow-up, postfire stories, documentaries, and videos.

In addition to the increased staffing of the Mammoth office, YNP's Public Affairs staff soon recognized that they needed additional help. Their first request for assistance was to the NPS Fire Office in Boise on July 21. This request was outside the fire-ordering system. Help was slow in arriving because the standard ordering system was not followed. Once Area Command was established, the system worked well. Coordination with the park was good. Unfortunately, the Public Information section of Area Command (AC) was released on two days notice during the first part of August. Yellowstone National Park picked up most of the workload again. The Area Command Public Affairs Information section had to be reestablished a few days later. It was staffed by a Region-5 Information Team. The break in the Public Information section at Area Command created a tremendous duplication of effort until the YNP and Area Command information personnel got coordinated. Once the coordination was in place again, it worked well. There were countless positive contacts with the media as well as the communities surrounding the park.

There was some uncertainty among Area and Incident Teams about how the Freedom of Information Act applies to fire records, especially while suppression efforts are in progress.

The NPS was organizationally unprepared at the park, Region, and Washington level to handle the media/information requests generated by this and the other fires. Part of the problem was due to the fact that there are very few

qualified Incident Information Officers in the NPS. Yellowstone management innovatively utilized personnel who were good communicators with some knowledge of fire suppression. The knowledge level varied from person to person, and this created some problems. A number of employees plan to attend Incident Information Training during the spring of 1989.

Overall, Yellowstone had a very positive communication program with the media and the public in spite of the problems that occurred. There have been numerous letters of commendation from the media and the public for the help they received covering the fires.

Notable media contacts over the course of the year included: "NBC Nightly News," "CBS Evening News," "ABC World News Tonight," "McNeil-Lehrer Report," "PBS Frontline," "20/20," "NOVA," "ABC Nightline," "Good Morning America," "NBC Today Show," "CBS Sunday Morning Show," "CNN," "BBC," "National Geographic Explorer," "World of Audubon," "National Public Radio," "Voice of America," Newsweek, Time, Outside, National Geographic, Audubon, Sierra, Defenders, and Sunset Magazines, Denver Post, New York Times, Washington Post, Los Angeles Times, Boston Globe, Christian Science Monitor, Philadelphia Inquirer, Chicago Tribune, Rocky Mountain News, High Country News, Northern Lights, Sacramento Bee, numerous foreign newspapers from countries such as England, France, Italy, Japan, Taiwan, Australia, West Germany, and all local and regional affiliate television stations in the intermountain west as well as many from the midwest and west coast. The Public Affairs staff also remained in daily contact with: Billings Gazette, Bozeman Daily Chronicle, Livingston Enterprise, Cody Enterprise, Idaho Post-Register, Casper Star-Tribune, Jackson Hole News, Jackson Hole Guide, West Yellowstone News, "UPI," "AP," KSGT, KMTN, KPOW, and KODI (area radio stations).

Official Visitors.

Throughout the year, the Public Affairs Office assisted with programming and arrangements for United States and foreign government dignitaries, park officials, and other guests. A sampling of official visitors follows:

NPS Director William Penn Mott visited the park both during the fire season and early in the winter season to review park operations.

Congressional visits to the park included Senators Dale Bumpers (D-AR) and Malcolm Wallop (R-WY) and Representatives George (Buddy) Darden (D-GA), Nick Rahall (D-WV), Ron Marlenee (R-MT), Max Baucus (D-MT), and Pat Williams (D-MT).

In February, members of the Senate Committee on Energy and Natural Resources visited the park to review and observe winter operations. Senators in the group were J. Bennett Johnston (D-LA), Malcolm Wallop (R-WY), and James A. McClure (R-ID). They were accompanied by Assistant Secretary William Horn, and Regional Director Lorraine Mintzmyer.

The Public Affairs Office also coordinated arrangements for many other

official foreign visitors to the park, in cooperation with various agencies and the International Affairs Branch of the National Park Service.

Foreign visitors on official visits came to Yellowstone from a number of nations, including Taiwan, Israel, Southern Australia, New South Wales, France, England, Nigeria, Nepal, Morocco, Poland, Switzerland, Belgium, West Germany, and Japan, however, due to the unprecedented situation throughout the fire season, complete records are not available.

Filming Permits.

Eighty-one actual filming and photography permits were issued, however, throughout the fire season, hundreds of free-lance filmers and photographers were provided access whenever feasible without being issued filming permits. In these instances, vehicle registrations were maintained by the Public Affairs Office. The Public Affairs Office staff provided orientation information to all commercial filmers and photographers, assuring compliance with park regulations. In particular, considerable time was spent coordinating a number of post-fire documentary productions for "NOVA," PBS "Nature," "World of Audubon," National Geographic's "Explorer," PBS "Frontline," and PBS-KUED (Salt Lake City).

Meetings and Conferences.

In April, Amy Vanderbilt and Terry McEneaney spoke on a panel regarding wildlife filming ethics at the 11th Annual International Wildlife Film Festival in Missoula, Montana. Amy Vanderbilt and Greg Kroll attended the Tri-State Travel Conference on Tourism in May at the Old Faithful Lodge. Amy arranged for and coordinated the presentation by Dr. Gary Machlis, University of Idaho, on the results of the Yellowstone Visitor Use Survey.

The Greater Yellowstone Coalition held their sixth annual meeting at Lake Lodge in early June. Greg Kroll attended the conference and assisted with interviews and information for media representatives attending the sessions. This annual meeting overlapped with the Superintendent's General Conference held at Jackson Lake Lodge.

Of particular note, Joan Anzelmo served as conference coordinator for the Superintendent's General Conference May 31-June 5 at Jackson Lake Lodge in Grand Teton National Park. This was the first gathering of all senior managers in the NPS in almost 12 years. Joan coordinated all conference arrangements, speakers, and logistics for approximately 800 individuals including managers, other senior staff, spouses, and speakers. Amy Vanderbilt served as the press officer for the conference. Three press conferences and countless interviews of NPS managers were facilitated for members of the electronic and written press, representing both regional and national media interests.

Special Events.

Democratic presidential candidate Michael Dukakis visited Yellowstone in mid-September. A press conference was coordinated by Yellowstone's Public Affairs Officer and was held along the Firehole Canyon Drive. Superintendent Barbee, Assistant Superintendent Clary, Greater Yellowstone Area Command managers, Gallatin National Forest personnel and other key field personnel from Yellowstone attended and provided assistance and security for Mr. Dukakis, the campaign media, and the other local, regional, and national media attending the press conference.

Secretary of the Interior, Donald Hodel, visited Yellowstone in July and again in August to review the fire situation. In August he was accompanied by Secretary of Agriculture, Richard Lyng, and Assistant Secretary of Defense, William Howard Taft. A press conference was arranged by the Public Affairs Officer along with the staff at Area Command.

Photo/Slide Requests.

The Public Affairs Office answered over 200 requests for loans of slides and photographs on Yellowstone subjects. With the help of seasonal employee, Jim Peaco, the Public Affairs Office was able to respond to countless requests for fire and post-fire slides from the public and the media.

The Public Affairs Office continued to provide photographs for media interests on several newsworthy and special events throughout the year, especially the fires of 1988.

Publication Editing Requests.

The Public Affairs Office responded to more than 50 written requests for editing publications about Yellowstone and numerous phone requests for the same. These requests were often complex, requiring extensive research to supply accurate information. Many lengthy magazine and book manuscripts were submitted for review and comments before, during, and after the fires. Sandi Robinson was hired in an emergency appointment to provide the assistance with these projects.

Special Projects.

The Public Affairs Office updated the reference volume on the Greater Yellowstone Area. This book was again made available to numerous (50) locations throughout the park enabling employees to assist visitors with questions regarding Yellowstone, the surrounding forests, other regional NPS areas, and gateway communities. Yellowstone continued to utilize the Foreign Language Handbook to locate park staff who can translate for international visitors and incoming correspondence.

As part of her intern experience, Marilyn Lutz, continued organization and consolidation of all park video cassettes to index a video library for staff and public use.

Many office forms and procedures were updated and computerized in order to expedite office operations.

The Public Affairs staff also assisted the Greater Yellowstone Coordinating Committee (GYCC) in producing timely video productions on the Greater Yellowstone Area as well as fact sheets providing pertinent questions and answers on the Greater Yellowstone Fires of 1988.

SAFETY

In 1988 the automatic sprinkler systems were replaced in the Lake Hotel and Old Faithful Inn. The west wing of the Lake Hotel was remodeled and brought up to Life Safety Code requirements.

Automatic sprinkler systems were replaced in the Hamilton General Store and dormitory at Canyon.

Remodeling of the Hamilton Store dormitory at Fishing Bridge was started in the fall to bring it up to FSES requirements.

The National Park Service dormitory at Canyon was upgraded to the Life Safety Code Standard.

A new employee recreation building was constructed by TWPS at Grant Village to replace two condemned house trailers.

The park Safety Committee continued to play an active role in park safety programs. Topics addressed were: visitor/wildlife safety, winter operations, and employee safety. The Safety Awards program was reviewed and is being revised. The new program will be in effect early in 1989. Defensive driving, snowmobile operations, winter survival, hearing conservation, first aid, EMT, and fire fighting training sessions were conducted throughout the year.

Five wildlife incidents with bison occurred in the park, down two from 1987. Flyers and pamphlets warning the park visitor of bison injuries are handed out at all entrances. No bear incidents occurred, but 2 squirrel bites, 1 tick bite, 7 horse incidents, 4 dog bites, 3 fish hooks, and 18 insect bites were reported by visitors and responded to by rangers.

The Documented Safety Program for the Yellowstone Operating Procedure (YOP) is current. A draft YOP was prepared on OSHA's Hazardous Communications Program and will be finalized in the spring of 1989.

Considerable time was spent on accident prevention during the wildfires of 1988 with obvious success since there were no fatalities and very few serious injuries.

MAMMOTH CHAPEL COMMITTEE

During the calendar year of 1988 the following events occurred at the Chapel:

34 Protestant Sunday Worship Services

11 Catholic Services

1 Special "Christmas in August" Service

1 Good Friday Service

1 75th Anniversary Service which was included in the annual
Christmas Eve Service

20 Wedding Services

For the financial status of the Superintendent's Chapel Committee see the enclosed Treasurer's Report for 1988.

The Superintendent's Chapel Committee is in the process of formulating a policy on the use of candles in services and weddings. This action was necessitated by the damage being done to the candelabras, floor carpet, and altar by the use of cheap colored candles during weddings and services.

The Superintendent's Chapel Committee would like to express its thanks to Mr. Robert Barbee, Superintendent, Yellowstone National Park; Mr. Dan Sholly, who was then the Incident Commander of the Wolf Lake Fire; Mr. Dennis Sutherland, who was then the Branch Director of the same fire; and the men and women who were assigned to the Chapel during the fires of this past summer. The Chapel was protected with fire reflecting material, and water was used on the roof of the Chapel when the Wolf Lake Fire threatened the Mammoth area. The Chapel received no damage from either the fire or the protection activities. Good job!

MAMMOTH CHAPEL COMMITTEE

Following is the status of the committee's funds for CY 1988 through December 31, 1988.

Savings

One share in Yellowstone Federal Credit Union \$25.00

Checking - Balance as of December 31, 1988

\$348.79

Outstanding Income for 1988

Rent of Chapel - Winter Ministry 21 services @ \$10 plus one wedding	= \$260.00
Rent of Chapel - Summer Ministry 13 services @ \$10	= \$130.00
Rent of Chapel - One Wedding @ \$50	= \$ 50.00

TOTAL OUTSTANDING INCOME FOR 1988 - \$440.00

1988 Income

Rent of Chapel for 1988 - Catholic Ministry	= \$110.00
Rent of Chapel for 1987 - Catholic Ministry	= \$130.00
Rent of Chapel for 1987 - Winter Ministry	= \$160.00
Rent of Chapel for 1987 - Summer Ministry	= \$150.00
Rent of Chapel - weddings 19 @ \$50	= \$950.00
Interest earned on Yellowstone Federal Credit Union share	= \$000.67

TOTAL INCOME FOR 1988 - \$1,500.67

1988 Expenditures

Cleaning of the Chapel	- \$ 728.29
Organ Repair	- \$1,050.00
Service charge - Credit Union	- \$ 6.00

TOTAL EXPENDITURES FOR 1988 - \$1,784.29

The Yellowstone Fires

A Primer on the 1988 Fire Season



National Park Service

Yellowstone National Park

October 1, 1988

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INTRODUCTION

The Greater Yellowstone Area fires of 1988 have received more national attention than any other event in the history of the parks, and are already being described as the cause of the largest fire suppression effort ever undertaken in this country. The fires have provided compelling evidence of the power of nature, and have generated renewed interest in the parks and their management. Fighting the fires has required all of the attention of the concerned agencies, so that no comprehensive overview of the whole fire story has been possible. This summary has been prepared for use until more complete reports are available.

This summary provides a brief overview of the Yellowstone fire situation as of October 1, 1988. Eventually complete fire histories will be assembled for all Yellowstone fires. In the meantime, the present narrative should serve to introduce the essential information. Statistics presented here should be regarded as preliminary and may have to be revised later as more complete information is received on various fires.

The bracketed numbers in the narrative refer to a variety of publications, information papers, and working reports produced during the fire that are appended to provide in-depth information.

Additional information will be available from the Superintendent, Yellowstone Park, Wyoming, 82190, 1-307-344-7381.

YELLOWSTONE'S FIRE PREHISTORY AND HISTORY

Naturally caused fires have occurred in the Yellowstone area as long as there has been vegetation to burn--at least since vegetation appeared following the retreat of glaciers about 12,000 years ago [1,2]. Fire, climate, erosion, and a vast assortment of life forms ranging from microbes to insects to mammals have all played roles in the creation of the vegetative landscape of Yellowstone.

The process was still going on when humans first arrived. During several thousand years of intermittent occupation of the Yellowstone area, native Americans may have influenced the vegetation in many ways, such as setting fires (accidental or intentional), moving seeds (in plant foods or horse's feed, for example), or influencing the

numbers or movements of various plant-eating mammals.

The arrival of European man heightened human influence on vegetation, primarily through suppression of fires that would have burned unimpeded in earlier times. After the park was established, in 1872, park managers gradually improved their ability to monitor and control fires. Virtually no effective fire fighting was done until 1886, when the U.S. Cavalry was placed in charge of protecting the park. In fact, these soldiers marked the debut of federal involvement in fighting wildfires in the United States. The army, which did not leave Yellowstone until 1918, successfully extinguished some fires, though it is difficult to determine what effect their efforts had on overall fire frequency or extent.

In these early days, fire suppression was most effective on the grasslands, shrublands, and savannas of the park's northern range; fires were not allowed to burn freely on the grasslands and groves of the northern range for nearly a century [3]. Over the rest of the park, which is largely covered by forest, reliable and consistent fire suppression had to wait until modern airborne firefighting techniques became available, in the last thirty or forty years [4].

YELLOWSTONE'S FIRE MANAGEMENT PLAN

At the same time that we were learning more about putting fires out, a sense of the importance of natural processes was also increasing. Starting in the 1960s, managers in many national parks attempted to restore as much of the primitive setting as practical [5]. Step by step, Yellowstone's wildness has been given greater respect and freedom. Thus, in the 1930s, predators such as wolves, cougars, and coyotes were no longer controlled, in recognition of their possible role in the population dynamics of the park's herbivores; after the 1950s, hot springs were no longer channeled from their natural courses into swimming pools; in the 1960s black and grizzly bears were divorced from a variety of human food sources, and elk and bison population numbers, long pruned, were permitted to reach levels in keeping with available habitat; and in the 1970s the park's fisheries management program was redirected to restore high quality angling while restoring depleted fisheries populations. Many of these management actions were or continue to be controversial, and are the subject of ongoing research and evaluation.

Ecologists have known for many years that wildfire is essential to the evolution of a natural setting; when fires are suppressed, normal plant succession processes are stagnated, and biological diversity is reduced or altered. Research into Yellowstone's prehistory has shown that on the park's northern range fires occurred one to four times a century, while over the vast extent of the park's subalpine forests the fire interval was more typically 200 to 400 years. Nature has lots of time, and at either interval fire was a premier force (along with climate and soils) in determining vegetative cover in what would become the park. The legislative mandate of the National Park Service is to maintain as near as possible a primitive ecological situation, and so it was that in the 1960s and early 1970s interest grew in restoring the influences of fire to the park [6].

On most public and private lands, of course, maintaining wild processes is not as high priority as other activities, such as grazing stock, harvesting timber, or providing recreation. On such lands, permitting wildfire to burn may be no more appropriate than trying to maintain a population of grizzly bears on a commercial sheep ranch. But in natural areas such as Yellowstone, preserving a state of wildness is a primary goal of management.

In 1972, Yellowstone was one of several national parks that initiated programs to allow some natural fires to run their courses. That year 340,000 acres, in two backcountry units, were designated as appropriate for naturally caused fires. The plan was developed and implemented after substantial communication with related agencies, and with the endorsement of the conservation and scientific communities. In 1974, after the initial successes of the program, plans were made to expand the acreage. In 1975, an Environmental Assessment was prepared on allowing fires to burn on about 1,700,000 acres in the park; the E.A. was approved early in 1976, and shortly thereafter Yellowstone Park and the Bridger-Teton National Forest entered into a cooperative program to involve the Teton Wilderness in the fire plan, so that naturally caused fires could burn across the boundary between the two federal units.

Over the years since 1976, Yellowstone's fire management plan has been gradually revised and updated in accordance with National Park Service guidelines. In 1986 a new revision of the plan--really just a refinement of earlier plan editions--was completed, and was in the final stages of approval as of the spring of 1988.

All park fires, whether man-caused or natural, are managed according to criteria in the fire management plan. Natural fires are continuously monitored, and tactics for monitoring and possible control are updated daily. Fires that threaten adjacent public or private lands and communities, park developments, or other significant resources, are suppressed with the same effort applied to fires on other public lands.

Yellowstone's fire management plan has four goals:

1. To permit as many lightning-caused fires as possible to burn under natural conditions.
2. To prevent wildfire from destroying human life, property, historic and cultural sites, special natural features, or threatened and endangered species.
3. To suppress all man-caused fires (and any natural fires whose suppression is deemed necessary) in as safe, cost-effective, and environmentally sensitive ways as possible.
4. To resort to prescribed burning when and where necessary and practical to reduce hazardous fuels, primarily dead and down trees.

Scientists have learned much about the occurrence and behavior of fire during the sixteen years since this plan has been put into effect. Tens of thousands of lightning strikes simply fizzle out with no acreage burned. Of those that have occurred in the past sixteen years, 140 produced fires. Most burned only a small area, but a few larger fires were started, so the average burn size was 250 acres. Eighty percent of the lightning starts in this period went out by themselves.

During this sixteen-year period, a total of 34,175 acres burned in the park due to natural fires [7]. The largest natural fire burned about 7,400 acres. During these years we lost no human lives and had no significant human injuries due to the fires. No park structures or special features were affected.

The largest natural fire in the park's written history prior to 1988 was a burn at Heart Lake in 1931. It was fought, but burned about 18,000 acres.

Fire was permitted to reassert its role in creating and maintaining the natural variety of habitats and vegetation

types typical of a healthy wilderness, and millions of visitors had the opportunity to observe this fascinating natural process in operation.

THE FIRES OF 1988

Conditions

The summer of 1988 has been the driest on record in Yellowstone. April rainfall was 155 percent of normal, and May rainfall was 181 percent of normal, but practically no rain fell in June, July, or August, an event previously unrecorded in the park's 112-year written record of weather conditions. In early summer, about 20 lightning-caused fires had been allowed to burn [8]. According to the fire plan, fires were evaluated on a case-by-case basis, each on its own situation and merits, before being allowed to burn. Eleven of these burned themselves out, behaving as such fires did in previous years.

But those that survived into the extremely dry weeks of late June and July met dramatically changed conditions. By late July, moisture content of grasses and small branches in the park reached levels as low as two or three percent, and down trees was measured at seven percent (kiln-dried lumber is 12 percent). At 8 to 12 percent, lightning will start lots of fires, many of which will burn freely. At 12 to 16 percent, some fires will burn to 200 to 300 acres. At greater than 16 percent, there are still some starts, but few will burn any significant amount. Twenty-four percent is saturation. A series of unusually high winds, associated with dry fronts, fanned flames that even in the dry conditions would not have moved with great speed.

Yellowstone experienced an untypical weather pattern in recent years. Though there was below-average precipitation in winter, summers were abnormally wet, sometimes reaching 200 to 300 percent of normal rainfall in July. The recent statistics on rainfall in summer are striking enough to merit listing here:

Percent of normal rainfall

	April	May	June	July	August
1977	10	96	63	195	163
1978	91	126	42	99	46
1979	6	17	42	115	151
1980	33	152	55	143	199
1981	49	176	102	103	25
1982	169	74	89	118	163
1983	22	29	69	269	88
1984	44	84	66	297	121
1985	42	93	44	160	84
1986	145	47	64	212	75
1987	42	144	72	303	122
1988	155	181	20	79	10

Anticipating the continuation of this pattern, park managers and fire behavior specialists saw reason to expect that natural fires could be allowed to burn. Six consecutive years of significantly above-average July rainfall suggested that July of 1988 would be similarly wet.

Fighting the Fires

By July 15, however, it was clear that recent weather patterns were not of use in predicting this summer's weather. As of that day, the perimeter of fires in the park was about 8,600 acres. After that day, no new natural fires were allowed to burn. Exceptions were made for natural fires that started adjacent to existing fires, when the new fires were clearly going to burn into existing fires. After July 21, all other fires were also subjected to full suppression efforts as manpower would allow. As of that day, the perimeter of the fires in the park totalled less than 17,000 acres. On July 27, during a visit to Yellowstone, the Secretary of the Interior reaffirmed that the natural fire program had been suspended and all fires would be fought. Man-caused fires had been vigorously suppressed all along.

An extensive interagency fire suppression effort was initiated in mid-July in the Greater Yellowstone Area, to attempt to control or contain an unprecedented series of wildfires. The extreme weather conditions and heavy, dry fuel accumulations presented even the most skilled professional firefighters with conditions rarely observed.

Accepted firefighting techniques, such as constructing fire lines along the edges of the advancing fires to create

fuel breaks, and backfiring to reduce fuel accumulations in front of advancing fires, were frequently ineffective because fires spread long distances by "spotting," a phenomenon by which wind carries embers from the tops of the 200-foot flames far out across unburned forest to start spot fires well ahead of the main fire. Regular spotting up to a mile and a half away from the fires made the widest bulldozer lines useless and enabled the fires to cross such major topographic features as the Grand Canyon of the Yellowstone River. Fires routinely jumped such traditionally recognized barriers as rivers and roads.

Fires often moved two miles per hour, with common daily advances of five to ten miles, consuming even very light fuels that would have been unburnable during an average season. The fast movement, coupled with spotting, made frontal attacks on the fires impossible dangerous, as fire crews could easily be overrun or trapped between a main fire and its outlying spot fires.

Even night time fires could not be fought. Normally, wildfires "lie down" at night, as increased humidity and decreased temperature quiet them; humidity remained low at night, and fire fighting was further complicated by extreme danger from falling trees.

Fire fighting efforts were directed at controlling the flanks of fires and protecting lives and property in the advancing paths of the fires, and the experts on site generally agreed that without help from the weather, in the form of rain or snow, there was no technology in existence that could stop the fires.

The frustration and wonder of the firefighters at these conditions were summed up by Denny Bungarz, a U.S. Forest Service fireboss from Mendocino National Forest in California. Bungarz was incident commander on the North Fork Fire, the one that threatened Old Faithful and West Yellowstone and eventually reached the northeast region of the park. Bungarz said, "We threw everything at that fire from Day One. We tried everything we knew of or could think of, and that fire kicked our ass from one end of the park to the other." Similar sentiments were expressed by other leading firefighters.

Some media attention has been given to restrictions routinely placed on firefighting techniques in the park and in surrounding wilderness areas. In many situations, for example, the use of motorized equipment is limited or excluded in order to preserve primitive values to whatever

extent practical. Such restrictions are a matter of established guidelines, and were rarely considered a hindrance by the firebosses who ran the operations (most comments on the restrictions seem to have originated from rank and file firefighters). Contrary to media reports, bulldozers were in fact used in the park when requested by the firebosses, and fire engines were used regularly off roadways in fire suppression efforts. A complete review of these tactical matters will occur this winter.

By the last week in September, about 50 lightning-caused fires had occurred in the park, eight of which were still burning [9]. More than \$100,000,000 had been spent in control efforts on fires in the Greater Yellowstone Area, and most major park developments--and a few surrounding communities--had been evacuated at least once as fires approached within a few miles of them. At the operation's peak, nine thousand firefighters (including army and marine units), more than 100 fire engines, and dozens of helicopters from many states participated in a huge, complex effort to control the fires and at least protect developments.

As there were also many fires burning in the Greater Yellowstone Area outside the park, and because of the magnitude of the firefighting effort within the park, many agencies and organizations were involved in the effort. The fire suppression effort in the Greater Yellowstone area is the largest such effort ever undertaken in the United States. This summary cannot do justice to the logistical challenges, spectacular natural power, human drama, and sheer size of this fire season. Chronicles of many forms will certainly be produced, both within and from outside of the various agencies that took part in the fires.

Extent of Fires

No topic has caused more confusion in the media and in the public mind than the actual extent of the fires. Confusion has resulted from all fires in the Greater Yellowstone Area, which includes more than ten million acres of public land, being called "Yellowstone Park fires," from all fires in the Yellowstone area being ascribed to the park's natural fire program, and from frequent and unfortunate oversimplification and exaggeration of burn acreages.

This was an extremely difficult fire year throughout the west, and the country surrounding Yellowstone Park was

hit heavily. A number of major fires, most notably the North Fork Fire, the Hellroaring Fire, the Storm Creek Fire, the Huck Fire, and the Mink Fire, started outside the park and moved in. These fires accounted for more than half of the total burn in the Greater Yellowstone area, and include most of the ones that have received intensive media attention. The North Fork Fire, which threatened Old Faithful, Madison, Canyon, Norris, West Yellowstone, Mammoth Hot Springs, and Tower-Roosevelt Lodge, was probably started by a woodcutter's cigarette in Targhee National Forest and was the subject of immediate suppression efforts. The Storm Creek Fire started as a lightning strike in the Absaroka-Beartooth Wilderness of the Custer National Forest northeast of Yellowstone Park, and eventually threatened the Cooke City-Silver Gate area, where it received extended national television coverage and was usually reported as a result of Yellowstone Park's natural fire program.

Additional confusion results from continued media and public belief that managers in the Yellowstone area let park fires continue burning unchecked, out of devotion to the natural fire plan, long after such fires were in fact being fought. As pointed out earlier, no fires have been managed to burn since July 21. Public confusion was probably heightened by misunderstandings over just what the firefighting strategies were; if crews were observed letting a fire burn an area, it may have seemed to the casual observer that the burn was merely being monitored. In fact, in many instances firebosses recognized the hopelessness of stopping fires in certain situations, and concentrated their efforts on the protection of buildings and developed areas. The most unfortunate public and media misconception about the Yellowstone firefighting effort may have been that human beings can always control fire if they really want to; the raw, unbridled power of these fires cannot be overemphasized. Firefighters were compelled to choose their fights very carefully, and they deserve great acclaim for working so successfully to save all but a few of the buildings in the park. This was a heroic achievement.

Perhaps the worst source of confusion, however, has resulted from oversimplification of burn acreages. The daily reports issued cooperatively by the U.S. Forest Service and the National Park Service on fire status gave total acreages within the perimeters of each fire, pointing out that, "only about half of the vegetation has burned within many fire perimeters." Most reporting has focussed on the total acreage, and neglected the important statement about unburned vegetation. The park was regularly portrayed as a blackened moonscape.

The perimeter estimates are indeed shocking at first sight. Fires that started in Yellowstone Park totalled about 659,000 acres (preliminary estimate as of October 1) in and out of the park. Fires that started outside the park and moved in totalled about 969,000 acres in and out of the park. More detailed statistics will be available soon.

Because all available resources, including helicopters, were committed to fighting the fires, and because of dense smoke, it was not possible during the fires to make accurate estimates of unburned acreages within the fire perimeter. As of the last week of September, however, preliminary flights indicate that, though there is great variation from area to area, "about half" is probably not far off as a general estimate. As of October 1, the total fire perimeter (areas within which some burning occurred) within the park was about 1,100,000 acres (50 percent of the park). Approximately 440,000 acres (20 percent of the park) actually experienced some burning. Approximately 220,000 acres (10 percent of the park) experienced canopy fires only, and approximately 22,000 acres (one percent of the park) experienced high heat intensity fires.

Of the 1,100,000 acres within the burn perimeters in the park, roughly half were the result of man-caused fires.

There was substantial variation of burn acreage from fire to fire. For example, about 30 percent of the area within the perimeter of the Fan Fire burned, while as much as 70 percent of the Lava Creek, Firehole, and Madison River areas may have burned areas. Preliminary surveys suggest that about 90 percent of the burned areas received light to moderate soil heating, 10 percent received high heat, and none received extreme heat. Light to moderate heats do not customarily kill seeds and bulbs more than an inch below the surface, so Yellowstone's plant communities will be fully capable of regenerating.

Photographic mapping flights are currently underway, and more detailed surveys will be made later this fall. Resurveying the vegetation cover of more than 2,000,000 acres of national park is a time-consuming and expensive project. It may well be, when all the information is in, that only about half of the acreages now being reported as burned are actually burned. The significance of this characteristic of the burns, that they do not take everything, has as yet been unappreciated by both the media and the public; the ecological significance of the burn patterns is enormous.

Post-fire Response--Assessment and Rehabilitation

By late September, as the fires were diminishing, plans were underway in Yellowstone Park to develop comprehensive programs for all aspects of post-fire response. These will include replacement, rehabilitation, or repair of damaged buildings, power lines, fire lines, trails, campsites, and other facilities. An estimated 1,000 miles of fire lines, dozens of fire camps, tons of litter, 100 miles of roads, more than 600 miles of trails, and innumerable helispots and other local impacts will eventually require restoration. The restoration of Yellowstone's wilderness setting--that is, the healing of the necessary wounds of firefighting--will be of great importance to the National Park Service, to many members of the conservation community, and the public.

Similarly, programs are being developed to interpret the fires and their effects to visitors and to the general American public.

Yellowstone will cooperate with other agencies and state and local governments in promoting economic recovery of the communities near the park whose business was affected by the fires, including national and international contacts with the travel industry.

The scientific community, both private and public sector, has already shown great interest in monitoring the ecological processes following these major fires. The National Park Service is cooperating with other agencies and independent researchers and institutions in developing comprehensive research directions to take full advantage of this unparalleled scientific opportunity. It is probably safe to say that this research effort will be unparalleled in the history of the national parks, and its impact will be felt throughout the scientific community for many years to come.

The public has been expressing great interest in somehow helping with the Yellowstone fires and future programs involving the park's response to the fires. The National Park Service is determined to be responsive to these interests, and to find ways for all who may be interested to participate. A cooperative agreement has been entered into with the National Park Foundation, a Washington-based nonprofit institution, to serve as the main repository for contributions. For more information on contribution programs and how the public can help, contact

the Superintendent, Yellowstone National Park, Wyoming, 82190.

Yellowstone Park's Post-Fire Recovery Plan is being developed at present, and will be available later this fall.

Ecological Consequences and the Esthetics of Fire

The fires of 1988 had an enormous effect on the Greater Yellowstone area. The face of the park and surrounding lands has been dramatically changed, on a scale not widely anticipated even among fire ecologists. But the change is not without precedent. The most recent research by Dr. William Romme, and independent Colorado fire history scientist, and his associates, still unpublished, suggests that the Yellowstone area has been visited by natural fires on this scale periodically in the past, including comprehensive burns in the early 1700s and in 1850.

The many effects of fires on wilderness processes were the subject of considerable scientific scrutiny even before 1988, as suggested earlier; this scrutiny will now expand. What is well known is that the vegetative setting of Yellowstone is in good part the product of fires that burned here freely before the arrival of European man. Each new burn initiates a sequence of events in the plant community that influences all other living forms in the area, especially in terms of the nutrient flow through the ecological systems. Fire suppression, as suggested earlier, halts or retards that flow [10].

Some plants, such as the lodgepole pine, are fire tolerant, and begin to seed in immediately following the fire, with seeds being released from both heat-sensitive cones and from mature cones-of-the-year. Park plant ecologist Don Despain has already documented seed densities in forests burned in 1988 ranging from 50,000 to 1,000,000 seeds per acre. Some of these seeds will survive the appetites of mice, squirrels, and birds, and will eventually produce a forest much like the one that burned on the site. Within five years, there may be 1,000 seedlings per acre, depending upon how much competition they face from grasses, wildflowers, and shrubs.

The growth of the new biotic community begins immediately following a burn. As mentioned earlier, temperatures high enough to kill seeds penetrate less than an inch into the soil in most places. Only under logs and deep litter accumulations, where the fire was able to burn

for several hours, does the lethal heat pulse penetrate more deeply into the soil. Where water is available, new plant growth is immediate--within a few days. In dry soils the rhizomes, bulbs, root crown, seeds, and other reproductive tissues must wait until soil moisture is replenished the following spring.

Insects not associated with the pre-burn forest begin to use the new food sources (dead trees) immediately, while others lay their eggs in the bark. Squirrels and birds make use of a variety of seeds and cones, and root stalks of many plant species resprout within a few weeks. Within a few growing seasons, the forest floor is a mat of grasses, shrubs, and flowers, and seedlings of future forests of fir, spruce, and pine appear. Plant growth is unusually lush because of the mineral nutrients in the ash and because of increased light levels on the previously shaded forest floor.

The fires of Yellowstone did not simply annihilate all life forms in their paths. Burning at a variety of temperatures, sometimes as ground fires, sometimes as crown fires, they killed many lodgepole pines and other trees, but in fact did not kill most other plants; they merely burned the tops off of them, leaving roots to regenerate.

As the fires passed, they created a vegetative mosaic of burns, partial burns, and non-burns that will now become the new habitats of plants and animals in Yellowstone. One of the most frequent comments heard from recent visitors to Yellowstone Park has been, "I didn't expect to see so much green."

This is not to understate the large acreages that were indeed burned; it is instead to suggest that the Yellowstone fires of 1988 did not do any known harm to the natural systems for which the park is being protected. For all their other effects, including substantial economic ones for the region, and the expenditure of more than \$100,000,000 in firefighting, the fires did nothing to Yellowstone that has not been done many times in the past. We may have preferred that only natural fires had burned, and it certainly would have been preferable if the process had not involved such expense and economic hardship, but the park's natural systems do not directly suffer from human economics. One of the greatest challenges offered by national parks is a conceptual one: they compel us to take the long view, and consider nature's directions rather than our own [11]. We are not protecting the parks merely for ourselves, but for many later generations, who will witness the revegetation of

Yellowstone with an interest and excitement hard to appreciate through the smoke of 1988.

And the burns will affect future fires. Vegetation capable of sustaining another major fire is quite rare for decades, except in extraordinary situations (the 1988 fires actually reburned heavily burned areas in some locations). Lightning strikes and even firebrands from fires in neighboring forests can only ignite small spots. The mosaic of young and mature plant communities provides natural firebreaks, reducing the number of fire starts and limiting fire size over time while sustaining a greater variety of plant and animal species.

Smoke, quickly moving fires, and the demands of firefighting logistics made it impossible to monitor mortalities of large mammals during the fires. Preliminary surveys in late September reveal that surprisingly few large mammals were killed by fire or smoke. Park biologists anticipated a certain amount of mortality; the fires were both extensive and fast-moving. Firefighters reported few incidents of animals involved with fires. Local rumors of large numbers of animals killed by the fires are to date unsubstantiated; extensive radiotelemetry involving more than 100 animals--elk, cougars, moose, and grizzly bears--indicates that though animal movements were sometimes affected dramatically by the passage of fires, relatively few animals succumbed, considering the large size of park wildlife populations.

As of September 29, fewer than 50 dead elk had been located throughout the Greater Yellowstone Area, and 4 bison were known killed by the fire on the park's northern range. One black bear, reportedly burned on its feet, was destroyed by a Montana State Highway Patrolman near Cooke City, and a few mule deer had been reported killed. These are only the most preliminary of numbers, and will be updated later.

Of greater significance are the short- and long-term effects of the fires on wildlife. Portions of the park's northern range burned, which may have effects on winter survival of grazing animals when coupled with summer drought conditions that reduced production of forage. In this and many other ways, fires dramatically altered the habitat and food production of Yellowstone. There is general agreement among observers that in the long run the fires created much new habitat that will serve the large mammals well [12]. The fires of Yellowstone are not an isolated event, but part of an endless process.

Wildfire has been regarded as evil in America for centuries. Though ecologists have recognized the important role of natural fire in wilderness ecosystems for more than fifty years, the general public is still largely unaware of the implications of fire suppression in wilderness. On the fundamental level of esthetics, fires still evoke a negative emotional response. Appreciation of fire is an esthetic issue, one for which the Park Service's sixteen years of natural fire experience did little to prepare the public; most Americans were unaware of the policy until the media attention this summer. Introducing Americans to the esthetic values of wildfire after the fact, so to speak, is going to be difficult, at least partly because to some it will appear that the Park Service is merely trying to put a good face on a bad situation.

And in some respects the situation is indeed bad. The great expense of the fires, coupled with considerable economic difficulties caused by the fires, cannot be simply justified in terms of the ecological health of Yellowstone Park.

But in other respects the fires cannot be judged as bad. In a naturally functioning wilderness, natural fire is neither bad nor good; it is simply a part of the process. We judge the presence of fire in a wilderness as good or bad based on our personal views of man's place in the natural world. There will never be unanimity on such a touchy topic as fire. But at all costs we should maintain a distinction between our scientific understanding of fire as a wilderness process and our personal feelings over the appropriateness of letting fires burn in national parks.

CONCLUSION

Ultimately, the greatest impacts of the 1988 Yellowstone fire season will not be ecological. Yellowstone itself is already well on its way to responding to the massive stimuli provided by the fires: natural revegetation is underway, wildlife is adapting, and winter is about to settle the last of the fires for the winter.

Far greater concern is now being expressed in many circles over the future of park management. The course of the summer's fire management raised many questions, and some management actions and policies will be challenged. Already there are debates underway about the timing of first suppression of natural fires, uses of heavy equipment in park backcountry, and related procedural matters, as well as

over the natural fire management plan itself. The entire firefighting effort will also be scrutinized as part of the necessary and routine review that must be gone through following any such huge expenditure of public funds.

The American public, management agencies, and many special interest groups now face a singular challenge: to come to grips with a newfound understanding of the power of the natural settings we are attempting to preserve and celebrate in the national parks. Beyond the operational questions of just how best to fight fires in wilderness, and beyond the policy questions of how an agency can be true to its mandate and yet anticipate an extraordinary one-in-300-year event of this sort, are deeper questions of just what we want from our parks, and just how far we are willing to let nature go in giving it to us.

Fire is one of the last great natural "public enemies." The same ecological community that decades ago taught us that predators are not bad in any intrinsic sense, and that natural diversity is as useful to human culture as a closely managed harvest, has more recently recognized that wildfire also has its values--scientific, esthetic, and even commercial. Fire is and has always been an essential part of the setting in our parks and natural areas; we cannot ignore its role, and to return to the total exclusion of it from those areas would be a folly for which our descendants would pay dearly.

Our goal in the national parks is the same as it has always been: to find some balance--some "reasonable illusion," as A. Starker Leopold so aptly put it in 1963--between the directions the natural setting might take on its own and our needs of it. We need a course of action that will permit us to appreciate fire's place and power without so wholly risking the financial and emotional disasters of the 1988 fire season. But even at that we would be well advised to retain enough humility to know that nature will not always be controlled despite our best, most carefully planned management.

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ADMINISTRATION

Automatic Data Processing (ADP) Support

Yellowstone had 220 Datapoint users using the Datapoint system; 54 of these were new users trained during the 1989 calendar year. These users accessed Vista Word 30,630 times. Multiplan was accessed 967 times. Datascan was accessed 285 times. The cost tracking programs were accessed 3,104 times, AFS 124 times, and PFM 1,910 times. Databus was accessed over 6,500 times. We have over 600 Databus programs. All other programs were accessed about 25,000 times. Overall the Datapoint was accessed over 66,000 times during 1989.

Datapoint is still our main connection to the Regional Office with daily transmissions. A total of 2,973,366 records were communicated via modem in 911 files transmitted to, and 1,580 from, the Regional Office. We are using SeaDog and ProComm for electronic mail exchange on the PC's, transmitting one to two files a week.

Twenty-five additional personal computers were installed during 1989. We now have the capability to convert documents from Vista Word to Word Perfect and vice versa. We have converted the code for two Databus programs so that they can be used on the PC as well as the Datapoint.

Cost tracking training was given in November for 48 users. Communication between the PC's out in the park and Datapoint was also covered.

Fiscal

The final operational funding authorization for FY 89 was \$24,038,900. Of this amount, \$9,387,100 was monies for fire restoration. We collected and deposited \$1,555,047 from Bills for Collection throughout the year. We deposited \$3,836,195 that was generated from entrance and user fees. The maximum number of employees on the payroll during any one pay period was 851, and that occurred during the pay period ending July 15, 1989.

Procurement/Property

Procurement activity totaled over \$7.1 million with over 5,600 transactions (purchase orders, contracts, GSA FEDSTRIP, and Imprest Fund).

11,143 items of property were converted to the new property numbers associated with the bar code system. The annual GSA auction held on September 20, 1989, netted \$227,100 in proceeds and disposed of 218 lots of property.

Telecommunications

Yellowstone's radio system continues to adequately serve the park. The rehabilitation projects accomplished by the Student Conservation Association (SCA) necessitated significant expansion of the system via the implementation of a network of temporary mountain top repeaters and the deployment of 50 additional portable radios. These logistics and safety requirements were handled on our portable "Scene of Action" system, with minimum disruption to the park's normal operation. Interest in and use of synthesized radios continues to increase. Some additional portables were added to the inventory during the last year.

New and expanded telephone and data communications services were implemented in support of the significant growth of the Research Division following the 1988 fires. In the Mammoth area, offices and storage spaces were converted/modified to accommodate this growth. Many of these facilities required telephone and data communications services.

This past year we implemented the use of an automated telephone answering system which provides callers with a menu of information options. It also includes an opportunity to leave a recorded message. This computerized device generates a good quality synthesized voice and answers four of the incoming central office trunk lines. This system has done much to improve service to visitors and to reduce the workload in the Communications Center.

We have planned, acquired, and started the implementation of a significantly improved parkwide alarm system. This is a computerized system, including a sophisticated data base, which will greatly enhance the intelligibility of alarm reports and simplify the subsequent response action. A smooth transition to this system will be possible since the new equipment is compatible with most of the existing alarm units.

The park's use of and reliance upon computer systems and computer technology continues to expand. This past year, we have expanded the Datapoint LAN (Local Area Network) and implemented a data communication system to support GIS (Geographic Information System). The recognized need for data communications systems and for networking ADP devices is becoming critical. We are now documenting these requirements and will soon begin an effort to develop a formal data communications plan and design a networking system.

The use of video as a means of providing training and visitor information continues to grow. KNPS, the information TV channel in Mammoth, has been expanded to include Gardiner. This past year equipment was acquired and installed at the Gardiner Cable System office to provide KNPS to subscribers in that community.

The (TIS) Travelers Information Stations used at the entrances and at many of the campgrounds have been replaced with new solid state, computerized, voice synthesized equipment and are now much more reliable.

Traffic counter systems at three entrance stations were upgraded with new improved equipment. These new vehicle detectors will enhance the capability of documenting the traffic flow both in and out of the park.

Personnel

Due to fire rehabilitation efforts, an exceptionally high number of employees were appointed to positions in Yellowstone during 1989. A total of 733 appointments were granted, and 254 of those appointed were new hires.

During the year 351 classification audits were conducted, and a new automated system designed to facilitate position management tasks was put in use. This system was designed locally and will be utilized by other parks in the Rocky Mountain Region during 1990.

Two permanent positions were filled in the Personnel Office during 1989. Amy McClelland was selected to fill a Personnel Clerk vacancy, and Kevin Hermanson was selected for the Personnel Officer position that was vacated by Biff Fox.

CONCESSIONS

All concessioners provided satisfactory services and facilities during the 1989 season.

Listed below is information on overnight guests and meals served by TW Recreational Services, Incorporated.

<u>1989 Summer Season</u>	<u>Number of Guests</u>
Hotels/Lodges:	584,119
Fishing Bridge RV Park:	<u>87,304</u>
TOTAL	671,423

Meals Served: 1,583,347

<u>1988/89 Winter Season</u>	<u>Number of Guests</u>
Old Faithful Snow Lodge:	14,015
Mammoth Hot Springs Hotel:	<u>13,243</u>
TOTAL	27,258

Meals Served: 83,223

Hamilton Stores, Incorporated, reported a 15 percent increase in sales during 1989.

Yellowstone Park Service Stations sold 2,504,510 gallons of gasoline in 1989 compared to 2,399,013 gallons sold in 1988.

West Park Hospital provided services to park visitors and employees during 1989 as follows:

Lake Hospital:	1,653 visitors
	1,483 seasonal employees
	20 inpatient days, visitors
	11 inpatient days, seasonal employees
Mammoth Clinic:	517 visitors
	665 seasonal employees
	2,756 area residents
Old Faithful Clinic:	660 visitors
	1,273 seasonal employees

West Park Hospital's staff presented 62 hours of continuing education suitable to Yellowstone's Emergency Medical System personnel. In addition, they certified, through the American Heart Association, 51 members of the Yellowstone community in Basic Life Support (cardiac-pulmonary resuscitation).

RESOURCE MANAGEMENT & VISITOR PROTECTION

The 1989 year featured record visitation and a comprehensive fire recovery program. These factors significantly influenced our goals and direction. Fire recovery funding supported many of our front and backcountry resource management programs. This included the return of a full-scale YCC program that contributed 15,000 hours of work and an SCA program that coordinated the efforts of over 400 individuals and contributed 60,000 hours of service.

The winter weather of 1988/89 brought the return of more normal and significant snow depths. This, combined with the effects of summer drought and fires, resulted in our most significant winter kill in many years. Our resource management staff was very involved in the bison hunt of 1988/89. Hunters killed 569 animals outside the boundaries of Yellowstone Park. These hunts were sponsored and conducted by the State of Montana.

Our staff was involved in the development of numerous plans and documents on a variety of resource issues. These included the Backcountry Management Plan, the Winter Use Plan, a draft Lake/Bear Plan, the Bison Long-Range Management Plan, a draft Pronghorn Research Plan, and the CUT EIS.

Personnel

We continued to support and convert various field positions to meet our identified supervisory and year-round operational needs.

The staff increased from 207 employees in 1988 to 314 employees in 1989. The increase can be attributed to fire recovery and YCC programs.

The division continued to support and upgrade various positions to correct deficiencies and meet documented workload demands. There were 1 resignation, 2 transfers, 14 seasonal positions converted to career conditional status, 6 career conditional positions established, and 2 new fire-pro funded positions filled.

Resigned:

Greg Fraser, Dispatcher

Transferred/Converted:

Mike Pflaum, Supervisory Park Ranger, Visitor Services Office, to Chief Ranger, Mount Rushmore National Monument.

Jon Dick, Park Ranger, Mammoth, to Park Ranger, Santa Monica Mountains National Recreation Area.

Rob Danno, Park Ranger, Channel Islands National Park, to Sub-District Ranger, Madison.

Dennis Young, Park Ranger, Golden Gate National Recreation Area, to Assistant Sub-District Ranger, Madison.

Bob Love, Park Ranger, Saguaro National Monument, to Criminal Investigator, Old Faithful.

Steve Sarles, Sub-District Ranger, West Entrance, to Supervisory Park Ranger, Visitor Services.

Doug Ridley, Sub-District Ranger, Grant Village, to Sub-District Ranger, Bechler.

Rick McAdam, Park Ranger, Mammoth, to Backcountry Supervisor, Mammoth.

Mark Marschall, Night Shift Supervisor, Lake, to Backcountry Supervisor, Lake.

Brian Chan, Park Ranger, Zion National Park, to Backcountry Supervisor, Lamar.

Andy Mitchell, Dispatcher, to Backcountry Supervisor, Snake River.

Tom Oliff, Dispatcher, to Resource Management Coordinator, Snake River

Bundy Phillips, Criminal Investigator, Old Faithful, to Assistant Sub-District Ranger, Old Faithful.

Christie Kalkowski, Dispatcher, to Entrance Station/Campground Supervisor, Mammoth.

Phil Perkins, Emergency Operations Specialist, Mammoth, to Fire Management Officer, Mammoth.

Melissa McAdam, Dispatcher, to Programs Clerk, Fire Cache.

Paul McLaughlin, Park Ranger, Rocky Mountain National Park, to Assistant Sub-District Ranger, Grant Village.

Colette Daigle-Berg, Assistant Sub-District Ranger, Grant Village, to Sub-District Ranger, Grant Village.

Mary Taber, Night Shift Supervisor, Lake.

Rich Finnerty, Park Ranger, Old Faithful.

Marie Tuxhorn, Park Ranger, Old Faithful.

Lindsay Robb, Clerk, Visitor Services Office.

Doug Lentz, Park Ranger, Mammoth.

Wes Miles, Park Ranger, Thorofare/East Entrance.

Roy Renkin, Vegetation Management Specialist, Mammoth.

George McKay, GIS Computer Specialist, Mammoth.

Dub Kennedy, Night Shift Supervisor, Mammoth.

Susan Hender, Dispatcher.

Tom Huntington, Dispatcher.

Lisa Pottebaum, Dispatcher.

Katie Temple, Dispatcher.

Park Visitation

1989 was a record year for visitation with 2,680,376 visitors travelling to Yellowstone. This represented an increase of 57,235 visitors over the previous record year (1978) and a 21 percent increase over 1988.

VISITOR ENTRY BY ENTRANCE STATION

WEST.....	891,083
SOUTH.....	760,026
NORTH.....	424,371
EAST.....	463,476
NORTHEAST.....	141,420

Fee Collection

Total fee collection in FY 89 from all sources was \$3,836,196.

Entrances

West	\$1,208,750
South	100,740
North	509,103
East	829,218
Northeast	<u>197,459</u>
	\$2,845,270

Campgrounds

\$968,266

Boat Permits

\$22,660

Visitor Services Operations**Permits Issued**

Golden Eagle	7,231	Park Supplier Permit	900
Golden Age	24,698	Fishing Permit	159,204
Golden Access	1,117	Employee Vehicle Permit	500
Annual Area Pass	14,469	Fee Waiver	250
Boat Permit: Motorized	1,530	Special Use Permit	99
Non-motorized	1,376		

Commercial Operations

The majority of the Special Use Permits were for commercial traffic from Mammoth to the Cooke City/Silver Gate area.

We issued 135 Commercial Use Licenses for various guided commercial operation (stock outfitters, guided fishing trips, ski touring, etc.).

The Visitor Services Office began converting Commercial Use Licenses to Limited Concessions Permits for all commercial backcountry stock use. Through the Limited Concessions Permit program we have the ability to better manage our commercial backcountry stock use.

Visitor Information

The Visitor Services Office received approximately 10,000 informational calls and responded to 1,000 written informational requests. The staff inventoried and distributed 35 different park publications such as maps, newspapers, bison and bear warnings, backcountry brochures, boating permits and information, etc., to 13 campgrounds, 5 entrance stations, and 7 visitor centers. Over 60,000 pounds of brochures, maps, and newspapers were delivered by the office staff through the course of the summer. The office supervisor, with the help of the Communications Center and Interpretive staff, coordinated and produced a new park informational mail-out package. The new design and reduced printing costs will save the park an estimated \$29,000 annually.

Lost and Found

The office received 4,034 found items and 1,750 reports of lost items. Over 600 items were matched to lost reports and returned to owners (35%), and 1,500 items were returned to finders.

Communications Center Operations

See attached YELL-311.

Visitor Protection

Law Enforcement commissions were maintained by 52 permanent and 88 seasonal rangers.

Additional certifications include:

- Deputy U.S. Game Warden - 11
- County Deputy Sheriff - 12
- Deputy U.S. Marshal - 2
- SCUBA certified - 5
- Firearms Rangemaster - 10

Law Enforcement	<u>1987</u>	<u>1988</u>	<u>1989</u>
Motor Vehicle Accidents	478	531	495
Part I Offenses	161	170	169
Part II Offenses	2,265	2,747	3,532
Violation Notices Issued	1,755	2,090	2,391
Case Incident Reports	4,167	4,294	5,258
Court Cases (heard in Yellowstone)	222	231	243
Car Clouts	66	106	93

YELLOWSTONE PARK
COMMUNICATIONS CENTER

RECORDS SUMMARY 1989

COMPARED TO : 1987 1988 1989

CASE INCIDENTS.....				4,167	4,294	5,258
BONDS ISSUED.....				1,755	----	2,259
MOTOR VEHICLE ACCIDENTS.....				476	531	476
EMPLOYEE MOTOR VEHICLE REGISTRATION CARDS ENTERED.....				3,897	3,137	3,307
PERMANENT	208	560	201			
SEASONAL	2,915	2,491	3,021			
COOKE CITY RESIDENTS	74	79	85			
IDENTIFICATION NOTICES.....				283		287
NUMBER LOCATED			54			
PERCENT LOCATED			10.8%			
TELETYPE MESSAGES SENT ON LAW ENFORCEMENT TELETYPE SYSTEM.....						17,198
CRIMINAL HISTORY CHECKS	1,212	1,097	1,394			
LAW ENFORCEMENT CHECKS.....						36,282
VEHICLE CHECKS			2,964			
PERSONS			4,451			
LOCAL			6,255			
NCIC ENTRIES			21			
NCIC INQUIRIES.....						17,885
APB'S.....				29	16	32
ATL'S.....				28	22	24
WRECKER REQUESTS.....				690	712	743
INCOMING CALLS ON SWITCHBOARD.....				164,509	233,506	186,729
INFORMATION ONLY	36,228	85,663	61,819			
INFORMATION PACKETS MAILED.....				27,954	23,091	24,976
FOREIGN			1,845			
REGULAR			23,131			

Resource Violations

Preservation of Natural Features	13	32	67
Snowmachine Violations	234	222	142
Camping	169	169	117
Closed Area Violations	157	197	198
Firearm Violations	21	14	39
Fishing Violations	91	114	104
Swimming and Bathing Violations	44	52	50
Wildlife Hunting	8	33	18

Structural Fire

Summary of Alarm and Fire Response

	<u>1987</u>	<u>1988</u>	<u>1989</u>
Alarms	201	95	146
Fires	16	28	28

Two 1950's vintage jeep fire engines were taken out of service and surveyed in 1989. Two new Type I (1,000 gpm) fire engines were ordered and are expected to arrive in the spring of 1990. A new concession fire inspection program was implemented and has been very successful. One of the field fire inspection positions was not filled in 1989, and this had a significant impact on specialized fire training. However, local area fire training sessions were conducted throughout the park on a regular basis.

Wildland Fire

All fires were suppressed in Yellowstone during 1989. There was a total of 24 fire starts; 17 lightning-caused and 7 human-caused. These fires burned a total of 10 acres and were suppressed at an approximate cost of \$25,000. The largest single fire was five acres in size.

Yellowstone personnel were dispatched to 35 out-of-park wildland fire assignments to assist the Forest Service, BLM, and BIA in suppression efforts. Assignments included overhead personnel, helitack crew with park contract helicopter, CWN (call when needed) helitack module, and firefighter crew members.

Approximately 100 park personnel were trained in fire suppression courses. The courses taught in 1989 included the following: S-130/S-190, Basic Firefighter and Fire Behavior; I-220, Introduction to Basic ICS; S-390, Intermediate Fire Behavior; Interagency Helicopter Training; and Helirappel/Short-Haul Operations.

Air Operations

An Aerospatiale 315B "Lama" and Bell 206 L-III "Lone Ranger" were contracted from June 15 through September 30. The Lama was extended through October 13 because of "HIGH" fire danger. These aircraft flew a total of 605 hours in support of NPS and interagency operations. In addition, a Bell 212 was used (1 day) to assist in flying in supplies and materials for reconstruction of the Sportsman Lake cabin which burned in the 1988 fire season. The helirappel program continued with 20 Yellowstone personnel being trained or requalified. An additional 26 people from the Forest Service and Bureau of Land Management went through the training and were qualified. Three wildland fires were attacked using helirappel techniques; two of the fires were on Forest Service jurisdiction and one National Park Service. In addition, the short-haul program became fully operational and two short-hauls were executed for evacuation of injured persons.

Search and Rescue

There were 70 search and rescue incidents this year including 6 fatalities. Of these, 14 were major incidents due to aircraft response or the amount of time required to resolve the incident. There were an additional 10 aircraft responses to surrounding counties in support of their search and rescue activities.

Emergency Medical Services

Ranger EMS responses	658
Cases above the EMT level	61
Life flights	19
Ambulance transports	164

These numbers do not include medical cases at the Mammoth Clinic, Old Faithful Clinic, and Lake Hospital. Medically certified ranger staff included:

- 1 paramedic
- 9 park medics
- 55 EMT's

Resource Management

Wilderness and Backcountry Management

A total of 4,562 backcountry permits were issued during 1989. Average party size was 3.1 people/permit for a total of 32,747 visitor use nights. Stock use averaged 3.7 nights/head for a total of 7,518 stock use nights.

The development of the draft Backcountry Management Plan continued during 1989. The plan is about 80 percent complete.

Fire recovery funds were used to begin an evaluation of backcountry campsites in relation to fire and human use impacts. Brad Sauer was hired to collect data in the field. He surveyed a total of 93 sites; the majority in the Snake River District where visitor impacts are high at lake sites.

The restoration of backcountry campsites was a high priority along with the above-mentioned evaluations. Restoration efforts were concentrated in the heavily used and impacted Shoshone and Heart Lake sites. Over 35 backcountry privies or wallowa toilets were installed and maintained in highly used sites.

Other backcountry work consisted of erecting bear poles and wooden site signs, installing water bars, trail marking and reroutes, bridge construction and reconstruction, and trail clearing (5,289 trees were cleared in the Snake River District alone).

Vegetation

Funds were limited for a total assault, but resources were expended on the fight against exotic vegetation. Mechanical as well as chemical tools helped control these noxious plants. Roadsides were sprayed using the trailer and tractor rig. Unfortunately, exotics continue to spread through the park aided, in part, by the fires of 1988.

Jim Sweaney was appointed to a Greater Yellowstone Coordinating Committee committee to address noxious weeds in the greater Yellowstone area and to recommend solutions in a regional approach.

Dump sites were identified, and work has begun to construct a map (using GIS) of the locations. This map will be used for planning purposes as well as assessing cumulative effects of future developments. Several dump sites were rehabilitated.

Fuel reduction activities centered around developed areas and corridors. An experiment was established by the Snake River Resource Management Coordinator (RMC) to evaluate slash burn sites and their impact to the organic material and the soils.

Air Quality

Air quality stations were operated at Lake and Mammoth. The Lake station monitors a number of parameters while the Mammoth station is a visibility instrument and was installed this past calendar year. In addition, a NADP site is operated at Tower. The air quality documentation camera was relocated from the old Lake pump station to the Lake Ranger Station at the direction of WASO Air Quality Resource personnel.

Water Issues

A number of water rights issues were resolved or are near resolution at the close of the calendar year. Stipulations resolving water disputes have been signed with Crevice Creek Mining, Homestake Mining, Silvertip Ranch, Margaret Rebb of Cooke City, and Mrs. Johnson of Jardine. Claims yet to be resolved deal with CUT (Reese Creek) and Donald DePuy (Soda Butte Creek).

The naegleria threat in thermal areas was investigated. We consulted the Solicitor's Office, and appropriate signs were posted at frontcountry sites where it is thought there may be a chance of infection.

RM staff worked with the park geologist and district RMC's to provide the text for a sign to aid in limiting the vandalism of geothermal features. A number of geothermal signs were placed or replaced (over 300 in the Old Faithful area alone). Time was devoted to erecting barrier logs to protect geothermal features because of burned vegetation screening (especially in the West Thumb region) as well as litter pick-up and feature clean-up.

GIS Operations

A GIS (Geographic Information System) was added to the park capabilities to deal with post-fire recovery efforts and integrated into park research and management activities as a tool. The system is a MASSCOMP 6600 Mini Computer with a 600 mega bite hard disk. It has the capability of running GRASS, SAGIS, and ELAS systems.

Over 30 data themes are now archived, giving users an almost endless combination of possibilities when different data themes are overlayed in unison. New user data themes are archived as they enter the system and, in turn, become data theme bases for others to use. Products produced this year include the following: fire burn severity maps, burn pattern analysis, soil maps (both Yellowstone and Grand Teton), elk home range (over 300 animal locations involved), beaver survey maps, mountain lion range maps, drainage maps, riparian maps, and Craig Pass profile maps (for maintenance). In addition, five maps were made for articles in Bioscience, and map requests were granted to Audubon magazine, "Nova" (PBS), and the BBC.

The GIS manager has conducted training sessions in the use of the system for 24 individuals in the past calendar year. He has consulted the USFS, GYCC, University of Wyoming, Grand Teton National Park, State of Wyoming, and MSU personnel on hardware and software.

Reviews/Presentations

Mary Meagher and Gary Brown testified in Helena for a court challenge on the State of Montana prepared EIS on CUT developments. Terry McEneaney and Dan Mahoney (USFWS) prepared written depositions for the same proceedings. The courts ruled that the EIS did assess all impacts before the final decision was made.

Fisheries

Parkwide projects: Volunteer angler report cards were issued for 1989. Cards returned in 1989 were tabulated and statistics produced showed that 159,200 permits were issued in 1989 and the park hosted 124,360 anglers who fished 320,900 angler days in 1989.

Aquatic Surveys: Fish population data was collected on the Firehole River, Lamar River, Madison River, Gibbon River, Yellowstone River, Slough Creek, and Soda Butte Creek.

Fish Habitat Data: Data was collected on the Firehole River, Madison River, Lamar River, Gibbon River, Slough Creek, Soda Butte Creek, Blacktail Deer Creek, and Lava Creek.

Yellowstone Lake: The cutthroat trout spawning run was monitored in Clear Creek, and age-growth and population data was collected. The annual gillnetting program was accomplished on Yellowstone Lake, and population data was collected.

Lewis Lake: The Lewis Lake lake trout project was accomplished with fertilized eggs collected for a new year class of broodstock.

A substantial amount of assistance was provided to outside researchers during the year. Support involved 221 man-days of assistance, fish sampling equipment, laboratory space, and consultation on various projects. These projects included genetics studies on Yellowstone cutthroat trout, biological control of mosquitoes, climate and sedimentation rates in lakes and ponds, deep sea mini-rover explorations of Yellowstone Lake, life history of lake trout in Lewis Lake, the effects of Yellowstone fires on primary productivity in the aquatic systems, water quality studies, ecology of brown and rainbow trout in the Firehole River, and sedimentation studies on the Lamar River system. The fishery staff provided 54 man-days of assistance to various other organizations involved with the management of the greater Yellowstone area. These organizations included the Bear Creek Council, Wild Trout IV (Trout Unlimited and Federation of Fly Fishers), the Greater Yellowstone Area Coordinating Committee, and the American Fisheries Society (Riparian Symposium).

A task force was formed to structure a monitoring regime on the Shoshone Channel to collect data for four years to ascertain human impacts on the bird, animal, and fish populations that use the channel seasonally. During the first two years, data will be collected in a status-quo situation. During the second two years, the channel will be closed during the spawning period. The experiment is a cooperative venture of the USFWS, Snake River RMS, and Management Biologist Terry McEneaney.

Wildlife

A report was completed on first year guard hair sampling of mid-sized carnivores and a second year sampling initiated as well as winter track surveys. We initiated and completed a parkwide horseback moose survey in conjunction with the Research Division.

We maintained a file on experience of Wildlife Capture and Immobilization team members and drafted YOP guidelines for wildlife immobilization.

Bison: Resource Management staff worked with the Montana Department of Fish, Wildlife and Parks and the U.S. Forest Service to begin NEPA compliance in formulating a bison long-range management plan. The first stage scoping document (brown book) was drafted and has been reviewed by the participating agencies.

Resource Management personnel were very involved in the bison hunt of 1988-89. Hunters removed 569 animals outside the boundaries of the park. These hunts were sponsored and conducted by the State of Montana.

Dr. Meagher attended and co-chaired two ad hoc technical committee interagency meetings on bison and brucellosis in the greater Yellowstone area. She also served as a member of the NPS-APHIS bison/brucellosis meetings held in Washington, D.C.

Bears: There were 1,792 bear sightings reported during the 1989 season; 919 grizzly, 757 black, and 116 unknown species of bear. There were 9 property damages by bears; 3 by grizzly, 3 by black bears, and 3 by unknown species. There was one injury to a person by a bear during 1989. A hiker was attacked by a female grizzly with 3 cubs of the year after a surprise encounter. The hiker sustained only minor injuries. This was the first bear-caused injury within the park in 3 years.

No grizzly bears were removed by management in Yellowstone during 1989. One black bear was removed to a research facility from the Indian Creek Campground area after a number of property damages and close encounters with people. There was one documented natural mortality of a grizzly bear; a female cub of the year. The young bear apparently died from injuries which were probably inflicted by another bear.

Three bears were captured and translocated inside the park; one female black bear from Indian Creek Campground and a sow with one male cub of the year from the Lake area. The sow grizzly (radio collared bear number 134) and her cub were attracted to the spawning trout in streams in and adjacent to the Lake area development.

Extensive spawning surveys and monitoring activities were conducted on bear utilization of the fisheries resource. Particular areas of concern were the Lake and Grant Village streams. Excellent historical data has been gained from the work.

Assistance was given in carcass counts (especially in the Firehole area) as well as carcass movements and monitoring.

Assistance was also rendered in the bear aversive stimuli experiments particularly in the Lake area.

Whitebark pine transect were conducted in conjunction with the IGBST.

A range of values was worked out for the Regional Solicitor's Office (Curt Menefee) on dead grizzly bears. The information will be used for assessing civil financial penalties.

A great deal of field time was devoted to closure compliance, food storage enforcement, and providing employee information and training on bear management.

Avian: Signs protecting nesting bald eagles and osprey on Stevenson and Frank Islands were installed. We monitored productivity for all bald eagles, osprey, and peregrine falcons and completed remote area census for peregrine eyries.

We identified swallow problem areas throughout the park and installed netting to reduce nesting on buildings. We tried to control pigeons in the Mammoth-Stevens Creek area; censused loons, harlequin ducks, and colonial nesting birds throughout the park and monitored whooping cranes. We secured \$5,000 from Chevron and \$3,500 in private donations for a trumpeter swan project at Call of the Wild Ranch (north end of Paradise Valley). Two pairs of swans have been introduced on this private ranch.

Several specimens of needed birds were secured for the interpretive fire exhibit at Grant Village. A data storage system for the tracking and monitoring of sensitive bird species was initiated. Two orphaned ospreys were accepted into the park and placed into foster nests; both fledged, but their fate is unknown.

A pamphlet was written and distributed to park concessioners and other visitors using the Yellowstone Lake area entitled "Nesting Birds of Yellowstone Lake Need Your Help." The pamphlet was designed to educate the users about sensitive bird species and their habitat on the lake.

General: The Resource Management Office cooperated with the Research Division in sponsoring a park seminar entitled Yellowstone Resource Management: Challenges for the Future. The session discussed real and theoretical problems facing the park in resource management.

The theme of the 1989 Resource Management Workshop was The Long, Hot Summer - Implications and Impacts of the '88 Fires. The session was well attended and well received.

We produced seven issues of the resource management newsletter, The Buffalo Chip, and distributed it to WASO, RMRO, and park personnel.

Brown bag seminars were sponsored where resource management and research projects and studies were discussed. Yellowstone hosted a WASO Natural Resource Management Training Program for a nine-day overview of resource management issues of the park.

Resource Management staff completed a draft Lake Bear Plan for management's consideration and implementation as well as submitted task direction and revision plan to RMRO for the Resource Management Plan.

Resource Management staff provided comments and information for the Draft Winter Use Plan, Fire Management Plan, CUT EIS, GYCC goal-setting "Visions" document, wolf prey base studies/document, draft pronghorn research plan, log hauling EA, draft Noranda/Crown Butte baseline environmental studies document, bison long-range management plan, and NEPA compliance and district project directives. Staff assisted with the draft of the RMR policy on surplus wildlife disposal.

Resource Management staff presented papers, instructed classes, and/or attended conferences dealing with the Greater Yellowstone Ecosystem, the Northern Range, RMR Interpreting Resource Issues, Northern Yellowstone Elk Working Group, Riparian Workshop, Whitebark Pine Workshop, Helena Nature Conservancy Natural Heritage Program, and Colonial Nesting Bird/Everglades.

Gillian Bowser of the Research Division spent seven months with resource management on a special assignment. Her time was spent reviewing the state of park knowledge of invertebrates and making subsequent recommendations. She also worked on a study plan for mid-level carnivores.

RESEARCH

Given that Yellowstone National Park seems to constantly be the subject of national attention with regard to resource or managerial topics, the park has necessarily built a larger science program in recent years. The park's Division of Research provides management with scientific results and recommendations essential to making informed decisions, informing the NPS, public, media, and other state and federal agencies on resource aspects; and identifying future research needs and resource problems. The division also coordinates all government, university, and independent research conducted in the park and serves as policy and logistical advisor to the U.S. Fish and Wildlife Service's fishery research unit, U.S. Geological Survey, two interagency elk working groups, the Northern Rocky Mountain Wolf Recovery Team, contract researchers, the Interagency Grizzly Bear Study Team, and the postfire research groups.

The division's staff now includes 40 FTE although there are only 16 permanent employees. In-house efforts are directly related to the park's Resource Management Plan and relate to the following topical areas: animal ecology, archeology, classical geology, fire, geothermal, life in thermal waters, plant ecology, and sociology.

Yellowstone's special physical and biological attributes attract researchers from across the United States and several foreign countries. During 1989, 290 research projects were permitted in the park. Over 90 percent of these projects were carried out by university, independent, or non-National Park Service scientists.

Yellowstone National Park's "Superintendent's Annual Research Report," available in the spring of 1990, describes the year's activities in considerable detail. Readers desiring more specific information about the park's research program should refer to that report.

INTERPRETATION

In FY 89, the Division of Interpretation had an operating budget of \$739,400. In addition, \$270,200 was allocated to the division for fire related projects, specifically: fire nature trails, trail folders, motor fire trails, fire environmental education, traveling fire team, and the Grant Village Visitor Center. Also, a special appropriation of \$14,933 for museum cataloging was given to the park. Total funds available to the division were \$1,021,533.

A staff of 16 permanent and 30 seasonal employees provided interpretive and informational services to 2,680,376 visitors to Yellowstone National Park. Over 1.5 million individuals were contacted by various members of the Interpretive staff at visitor centers, on guided walks, at evening programs, etc. Over 4,500 different interpretive activities were offered in 1989.

The transfer of several permanent staff members and reorganization within the division resulted in several new positions. North District Naturalist/Park Historian Tim Manns transferred to Zion National Park in March. This vacated position was then identified as two separate roles. Greg Kroll joined the staff in May as the North District Naturalist, and Tom Tankersley was appointed as Park Archivist/Historian in December. The Environmental Education Coordinator, Jack de Golia transferred to the U.S. Forest Service in May. His duties were combined with those of the Special Projects Coordinator, and the position of Headquarters District Naturalist was created. Joe Zarki assumed this role in May. The position of Environmental Education Field Coordinator was created, and Jenny Matsumoto transferred from Sequoia National Park to take over those responsibilities. The Park Curator position was established in August with Beth Blacker being selected for that job. The Norris and Fishing Bridge/Lake area supervisors were converted to permanent status in February.

Seasonal interpretive training was held May 31 - June 7 at the YCC Camp. With an overall theme of "A Changing Yellowstone," the focus was heavily on fire ecology, fire history, fire rehabilitation efforts, etc. Other topics included: bison management, the wolf recovery issue, learning styles, moose ecology, and others. Two days of field trips were included in this six-day session.

In response to the Yellowstone fires, planning was under way in 1988 for several projects to be in place by the summer of 1989. These efforts continued in 1989 with the final production phases of most projects. A new fire exhibit was installed at the Grant Village Visitor Center. Seven site-specific wayside exhibits and

multiple copies of a "generic" fire wayside exhibit were produced and in place by June. Development of a 16mm film and video on fire continued in 1989 (to be available in the park May 1990). A B6 folder, "Wildland Fire in the Northern Rockies," was produced and available in the park by late August. The traveling FIRE (Fire Information and Resource Education) team continued their travels in the tri-state area giving presentations on the role of fire in the ecosystem.

The Volunteers in Park (VIP) program continued to provide invaluable assistance to the Interpretive Division and the entire park. During 1989, 288 volunteers worked 31,685 hours, resulting in approximately \$200,000 worth of services. The FY 89 VIP program allocation was \$9,200. Of that amount, \$7,785 was expended on subsistence payments, and \$1,414.25 was spent on uniform items.

In addition to our standard volunteer program, the Student Conservation Association, in conjunction with the National Park Service, sponsored the Yellowstone Fire Recovery Corps. Through this program, 425 volunteers contributed 49,144 hours of voluntary services rebuilding trails in the backcountry that were damaged during the 1988 fires. Participants in this program stayed for as little as one day and as long as four months.

The Yellowstone Association continued to contribute to the Interpretive Division both monetarily and by supplementing our staff. The Association donated funds in the amount of \$164,244 and their staff provided 14.5 work years of service. Specific projects funded included: \$11,000 for the research library (payroll, books, equipment, etc.); \$7,600 for enhancement of desktop publishing system maintained by Interpretive Division; \$13,000 for interpretive training, books, and supplies; and \$4,300 for environmental education. The Yellowstone Association led the Rocky Mountain Region in the percentage of increased sales from 1988 to 1989. The Yellowstone Institute offered 67 courses, with a total enrollment of 701 students.

West District

The West District Interpretive staff for the 1988-89 winter season consisted of the District Interpreter, the Old Faithful area supervisor, and three seasonal interpreters. The area supervisor, Dan Ng, performed a full schedule of visitor contact duties as well as performing 11 of the necessary administrative functions. At Old Faithful, the daily schedule of conducted activities included one in the morning, one in the afternoon, and an evening visitor center program. The visitor center opened December 2, and conducted activities started December 14 when Snow Lodge opened. These activities terminated March 12, and the visitor center closed March 19. The Old Faithful staff also provided informational and interpretive services at the Madison Warming Hut.

Dan Ng attended the 36-hour "Resource Management/Interpretive Workshop" which was presented in Mammoth in February. He also attended the 80-hour training session "Interpretive Management for First Line Supervisors" presented at Mather Training Center in March. This training has helped Dan considerably and has benefitted the program at Old Faithful.

Reductions occurred in the summer staff again this year. In addition to the District Interpreter and the Old Faithful area supervisor, only six seasonals were employed; a decrease of 2 1/2 positions over 1988. Also, there was a significant decrease (approximately 35 hours/week) in assistance from Yellowstone Association employees. Throughout the season, we closed the visitor center at 6 p.m. rather than at 8 p.m. as in previous years. Other cuts resulted in very little roving duty in the geyser basins, minimal program development time, and essentially no support project time.

On June 9, a young man who had entered the visitor center approached the book sales desk and drew a handgun from beneath his coat. He ordered the sales clerk to come out from behind the desk so he could take that position and then ordered everyone in the lobby to get down on the floor. Many visitors fled, but he did hold Rangers Ann Deutch and Tom Hougham, as well as Yellowstone Association sales clerk Delores Lauderbaugh and several visitors, hostage for three hours. After a period, he released the hostages and then finally gave himself up. No one was physically injured.

We were fortunate to have two Student Conservation Association (SCA) aids join our staff for two months in late June. They assisted in information desk duty and also conducted interpretive activities. They provided quality visitor services and were very pleased with the training and experience they gained. Their contribution to the summer program, the rest of the staff, and the visitors was tremendous.

This year the visitor center opened for the summer on April 15 and remained open through November 2. During the winter, spring, and fall, we were able to give video presentations in the auditorium. This was very popular, as we presented a variety of topics such as fire, swans, elk, coyotes, and Yellowstone in winter. The video programs were discontinued in summer as the 19-inch screen was too small for the large summer crowds.

North District

The North District winter interpretive staff included the Mammoth and Norris subdistrict naturalists, one seasonal interpreter, and 40 hours per week of volunteer assistance. Interpretive activities included evening programs at the Mammoth Hotel, Fort Yellowstone

history walks, Mammoth Hot Springs walks, and a diversity of other skiing and hiking experiences. On a weekly basis during the winter season (mid-December through the first week of March), the staff was able to operate the visitor center daily from 8:30 a.m. to 5 p.m.; provide three evening programs; and offer approximately 26 hours per week of other interpretive activities.

The Winter Wildlife Expedition, which was offered on 10 Sundays from mid-January into March, had a total attendance of 73 people (On 2 occasions no one attended the program.). This program, under various names, has been offered in the same format since the early 1970's. The Winter Wildlife Expedition is a six-hour driving caravan using CB radios to interpret the range between Gardiner and Cooke City and requires 160 staff hours per season. The program was developed in cooperation with the Gardiner Chamber of Commerce when there was little winter park visitation, an adequate interpretive staff, and little in the way of alternative winter activities. The program has now become antiquated and needs some major changes. In the winter of 1990 we plan to offer a program which is more time and staff efficient, targeted at the same audience, and in cooperation with the Gardiner Chamber of Commerce.

The summer interpretive staff for the Mammoth area consisted of Subdistrict Naturalist Tom Tankersley, five seasonal naturalists, and one individual from the Student Conservation Association. Yellowstone Association sales clerks also assisted in the operation of the visitor center. In addition to providing a variety of walks and demonstrations each day, evening programs were presented nightly at Mammoth Hot Springs and Indian Creek Campground.

The Norris interpretive staff consisted of Subdistrict Naturalist Sandy Snell-Dobert, one full-time seasonal employee, and two half-time seasonals. The Yellowstone Association also provided support staff at Norris. Campfire programs were given nightly at Norris Campground, in addition to daily walks, demonstrations, and children's programs at the geyser basin, the "blowdown" site, and Artist Paint Pots. Norris receives very high visitation and desperately needs an increased interpretive staff.

The North District also lost one seasonal employee at Tower/Roosevelt, compared to the previous year. The sole Tower/Roosevelt naturalist gave campfire programs at both Tower and Pebble Creek Campgrounds, in addition to leading a variety of guided walks and roving activities.

North District accomplishments in 1989 involved the construction of two new sections of boardwalk at Norris' Porcelain Basin which connected existing boardwalk sections; the removal and replacement

of the asphalt walk from the Norris parking lot to the museum; updating and replacement of signs at Norris Geyser Basin; the construction of a new boardwalk and wayside exhibit at the "blowdown" between Norris and Canyon; and the renovation of several district wayside exhibits.

South District

During the 1988/89 winter season, the West Thumb Warming Hut was staffed by one permanent and one seasonal employee. Continued improvements to the interior of the building were made; however, the entire building needs to be stabilized.

Although the Canyon Subdistrict Naturalist was detailed to the FIRE team for approximately six months, he continued to supervise the two Canyon winter seasonals. Approximately 56 hours of interpretive services were offered each week. Scheduled guided snowmobile tours were reinstituted along with a more obvious NPS presence at the warming hut.

South District Naturalist Betty Knight was detailed to Harpers Ferry Center during January and February to act as an interpretive planner for the fire exhibit for the Grant Village Visitor Center. During that time, all artifacts and photos were chosen as well as all text for the exhibit written. With a supreme effort by Harpers Ferry Center and the contractor, the exhibit was installed and opened to the public on June 17.

Three permanent subdistrict supervisors were stationed in the South District: Roger Anderson (Grant Village), Carol Shively (Fishing Bridge/Lake), and Gregg Fauth (Canyon). They assumed responsibility for hiring and skills training of their employees, as well as working on many long-range projects.

Due to funding cutbacks, all visitor center hours were reduced to 8 a.m. to 6 p.m. during the core season (June 12 to August 26). Canyon Visitor Center opened on May 13 with limited hours, increasing Memorial Day weekend to 8 a.m. to 5 p.m. Canyon closed for the season on September 30. Fishing Bridge Visitor Center opened May 25, as did Grant Village. Fishing Bridge closed Labor Day. Grant Village Interpretation operated out of the ranger station until June 17 due to the installation of the fire exhibit. It closed on September 17.

In addition to the installation of the new exhibit at Grant Village, a new orientation slide program, "Touring Yellowstone: A Journal of Exploration," was installed. A 13-minute fire video

produced by Harpers Ferry from Video Vision footage was also installed pending production of a movie by Harpers Ferry. Building modifications for these changes included carpeting the exhibit room, fresh paint, additional lighting in the exhibit room, and carpet purchased for the office and auditorium. Grant Village had a staff of five, an increase of one over 1988. Two full-time volunteers supplemented the coverage.

Fishing Bridge had a staff of six, down one position from 1988. The staff was augmented by three full-time volunteers. A great effort was made to increase the interpretive presence in the Lake area with early evening programs being given at the Lake Hotel, Lake Lodge, and Lake Ranger Station each week, as well as one morning hike.

A new exhibit was installed at the Lake Ranger Station. The exhibit, the result of the cooperative efforts of Lake area ranger and interpretive personnel, is entitled Bear MAN-agement. At the Fishing Bridge Visitor Center a video tape viewing area was added to the Lake biology room. It was in almost constant use by visitors. Specimens in the bird room were cleaned by the curator and a contractor, and cases were stabilized by the Lake maintenance crew.

Improvements to amphitheater facilities included a new door over the screen at Bridge Bay as well as a paint job; at Fishing Bridge the stage was reconstructed, as were the projection and sound boxes, and all were painted as well as the seats at Fishing Bridge.

Canyon staff was decreased by one position this year with five seasonals. One SCA resource assistant (subsidized with fire recovery funds) worked 12 weeks of summer. A second assistant was recruited for September. Canyon remains an extremely busy visitor center. When Craig Pass closed in September, Canyon became increasingly used and remained open 8 a.m. to 5 p.m.

A trail was located and built at the 1953 Kiewit burn site. That area will be developed as a self-guiding fire trail. The Mt. Washburn facility continues to receive heavy use, and the lookout provides an interpretive presence there. A fire wayside was developed by Harpers Ferry Center and installed in the Lewis River Canyon.

Kodak representative Paul Johnson contributed four evening programs and six walks weekly to the South District program. This was the first year that Kodak used contract personnel rather than employees, and Paul's previous experience as a naturalist was evident and an asset.

Cooperation with Yellowstone Association personnel was excellent. A major change this year was that they were not scheduled to operate facilities by themselves, an NPS employee was always present. Overall, sales were up over 1987: at Canyon by 45%, Fishing Bridge by 70%, and Grant Village by 50%.

For the winter of 1989/90 Fishing Bridge Warming Hut will have an interpretive presence. The area supervisor will assess interpretive possibilities in the area, as well as work on special projects. Canyon and Grant Village were each staffed by the area supervisor and a seasonal.

Headquarters District

The Headquarters District staff included the District Naturalist (Joe Zarki), the EE Field Coordinator (Jenny Matsumoto), the Artist/Illustrator (Dave Cowan), and several EE seasonals. Both the EE Field Coordinator and the Artist/Illustrator occupy split positions whereby 50% of their time is spent working as part of the regular park interpretive program. Jenny Matsumoto serves as the Tower Area Naturalist, while Dave Cowan works as a seasonal interpreter in Mammoth.

Five different seasonals (three per season) were hired to work with the Expedition Yellowstone program in 1989. The visits of 29 schools were organized, planned, and coordinated through the Expedition Yellowstone program. These activities brought 781 students and 221 adults to the park. Wolf Pac! was released under the auspices of the Expedition Yellowstone program.

A proposal for a Touch-Source computer information system by Poseidon Systems of Boulder, Colorado, was developed for approval by park management. A contract for the production of one such system was signed early in 1990.

Work on Wolf Pac! was completed. This involved setting up a database for the distribution of the 30,000 copies, working with the Regional Office and Roberts-Rinehart Publishing Company on the distribution of these copies, and answering numerous letters, telephone calls, and requests for information about the Wolf Pac! project. We also researched a way teachers could obtain additional copies of Wolf Pac! through both the Yellowstone and Zion cooperating associations. A mass mailing was sent out to over 2,000 schools informing them of how and when they could obtain additional copies of these materials. Development of Wolf Pac! has been a highly controversial effort, and we continue to receive requests for this material at the rate of about 25 per week.

Joe Zarki worked with the Avalon-Hill Game Company and the Yellowstone Association on an agreement whereby the Association purchased the remaining stock of the Yellowstone Board Game at cost. This will enable us to do our own marketing of the game. Staff set up and coordinated a mailing to over 5,000 teachers about the availability of the game at special prices.

Staff worked with Jim O'Rourke of Ward's Natural Science on the production of a special catalog insert for their 1990 catalog that is mailed to tens of thousands of schools and educators around the country. In this catalog, teachers are asked to donate money to Yellowstone's fire recovery program.

Ellen Petrick was hired to write a special chapter of Expedition Yellowstone on fire ecology. The Headquarters District Naturalist helped her in the planning and design of this curriculum unit and acted as the primary editor of her efforts. An arrangement was reached with the U.S. Forest Service for the production of a poster that will be packaged with the fire ecology curriculum. This is a unique venture with the Forest Service that could lead to future cooperative environmental education efforts.

Joe Zarki planned, organized, and coordinated the "Resource Management and Interpretation Workshop" held at the YCC Camp last February. This workshop was sponsored as part of the Regional Interpretive Skills program. He also served as an instructor for "Interpretive Skills I" in Grand Junction, Colorado, in April.

Three educational databases on fire ecology, the wolf, and Expedition Yellowstone continue to grow. These three lists now comprise names and addresses of some 10,000 teachers worldwide.

Archives, Museum, Historic Photograph Collection, Research Library

The new position of Cultural Resources Interpretive Specialist was created in 1989. This position, which reports to the Chief of Interpretation, serves as the park archivist/historian, supervises the library and curatorial operation, provides technical assistance for the historic photo collection, and provides input and review of cultural interpretive efforts.

The new Archivist/Historian position has allowed for greater focus on the archives than has been possible in previous years. Accordingly, the archives storage space was completely reorganized to maximize space and to regroup the records in keeping with the established NPS filing system. This accomplishment makes a significant contribution to the control of the collection. Working relationships with the Mails and Files staff will ensure compliance with the Federal Records Schedule and Yellowstone cooperative agreement with the National Archives. The Archivist/Historian prepared approximately 50 written response to requests for information or research assistance.

Establishment of the Park Curator position will allow for greater attention to the museum collection than previously possible. This year Yellowstone received funds to utilize in updating our records and meeting the backlog in cataloging. With this appropriation it was possible to put our museum records on the Automated National Catalog System (ANCS), hire a seasonal clerk and cataloguer, and catalog 4,000 new items. A major concern this year was bringing Yellowstone into compliance with 36 CFR, Section 2.5, concerning the collection of research specimens. Through the persistence of the Curator and cooperation of the Research Division, application materials for collection permits have been revised and the researcher/curator relationship has been established.

Smoke and soot from the 1988 fires infiltrated museum cooling and ventilation systems. Post fire recovery funds allowed for cleaning of the exhibits by a professional team of conservators. A draft Scope of Collections was prepared by the Curator and sent to the Regional Curator for review. There were 60 new accessions in the museum collection this year.

Through Cultural Cyclic Funding (Type 38), \$15,000 was made available to have copy negatives and prints made for 1,471 historic nitrate negatives. Approximately 38,000 negatives remain to be treated. Eighty-four requests were made for 686 prints from negatives in the historic photograph collection. This demand is consistent with previous years. The source of the orders include: 27 Yellowstone personnel; 10 from other NPS offices; 6 from other agencies; 5 from schools; 19 from media organizations; and 17 from the private sector.

The Research Library was open 19 hours/week and served 877 people. Of those who utilized the library, 601 were NPS employees and 276 were from other agencies or the private sector. Four hundred and forty-eight titles were checked out, and there were 145 new accessions. A fire proof file cabinet was purchased for storage of the manuscript collection, and a better quality copying machine is now available for researcher use. Due to increasing titles and limited space for expansion, over 100 duplicate, rarely used, or out of date titles were culled from the shelves to allow for newer titles. The Research Library staff includes two part-time librarians employed by the Yellowstone Association.

Planning, Exhibits, Publications, Photography

Fire wayside exhibit planning was completed by March, and exhibits were produced and installed during the spring/summer. This project was complicated by widespread roadside enhancement activity which delayed installation and forced the relocation of one exhibit. A

total of 32 were produced: 7 site-specific exhibits, plus 25 copies of a "generic" fire exhibit. Harpers Ferry Center contracted for porcelain enamel panels on an experimental basis. Even though there are some imperfections in color reproduction, the general consensus is that these panels are superior to the fiberglass variety. If production problems can be corrected, we propose that future wayside exhibits be fabricated of porcelain enamel.

Exhibit rehabilitation continued to be an urgent but unfunded need. A few wayside exhibits in the North and West districts were sent to Bill Chapman's studio in Gardiner for renovation. Bill was also able to complete minor touch-up work on the relief map at Grant Village Visitor Center before the summer season began. Deteriorating interpretive media are a Servicewide problem; a recent survey by Harpers Ferry Center estimated that over one hundred million dollars is required to bring media up to standard.

The publications workload continued to expand as they were the vehicle of choice for reaching the public on a variety of issues. Chief among these was fire. The original fire site bulletin was revised several times and used extensively until a special fire supplement to the park newspaper was created. This four page tabloid-sized addition to the newspaper provided a summary of events leading up to the 1988 fires, fire management history, the ecological aspects of the fires, and an assessment of the fire's effects on facilities, wildlife, and the landscape. All visitors entering the park received a copy of it along with the park newspaper, Yellowstone Today.

Four seasonal issues of Yellowstone Today were produced (over 900,000 printed). In November, the National Association of Interpreters awarded Yellowstone Today the second prize in the newspaper category of their publication contest.

Five issues of "Discover Yellowstone" were produced in 1989. The magazine continued to feature a schedule of ranger-led activities plus articles, art, puzzles, and poems about Yellowstone's human and natural history. It was sold for 50 cents at visitor centers, Hamilton Stores, and TWRS gift shops throughout the park.

A number of leaflets/brochures were produced and distributed as free literature at visitor centers. Topics included fire, the roadside enhancement projects, information on hiking and skiing trails, and a variety of natural/human history subjects.

A new mailout publication, The Yellowstone Guide, was developed late in the year (the finished product will appear in 1990). This tabloid-sized publication is intended to replace the packet of information currently mailed to people seeking park information. We plan to consolidate the information presently scattered among dozens of sheets of paper into a publication that is attractive, readable, and less expensive to produce and mail.

The division's desktop publishing operation was upgraded by the purchase of a Macintosh IICX and assorted software. This was made possible by the financial support of the Yellowstone Association. The new computer will greatly expand our capability to provide the public with publications that are attractive, readable, and innovative.

Work resumed on the parkwide wayside exhibit plan, which was deferred during the rush to produce fire media. A draft of the North District component of the plan was reviewed and comments consolidated and sent to Harpers Ferry Center. Research/writing on the South/West district exhibits was completed and sent to Harpers Ferry Center. Initial planning of exhibits for the fire auto/nature trails began in the fall. The bulk of this work will take place in 1990.

A special appropriation for additional fire interpretive media was approved, and planning began for fire auto/nature trails. Several sites for these trails were identified, and an environmental assessment of the project was completed in October. The following trails were approved: the Children's Fire Trail (approximately six miles east of Mammoth), the Two Ribbons Trail (approximately 4 miles east of the West Entrance), the Lodgepole Trail (approximately 2.5 miles west of Canyon Junction), the Timberline Trail (beginning at the Chittenden Road parking area near Dunraven Pass), the Bunsen Peak Road, and Blacktail Plateau Drive. Construction of the Children's Trail was begun before winter arrived and will be completed in 1990. The remainder of the trails will be undertaken as weather conditions permit in 1990.

Jim Peaco continued to manage the park's photography operation. He was assisted by three part-time employees at different times of the year. Two volunteers also contributed to the effort.

Much of Jim's workload centered around the fires: processing film shot during and after the 1988 fires, accessioning and cataloging the material into the slide file and historic photo collection, and responding to hundreds of requests for fire material. During 1989, 283 orders for photographic images were received; a total of 13,962 slides were processed as a result of these orders. The Yellowstone staff, with 92 orders totalling 6,400 slides, comprised the largest segment of demand. Print media were second, followed by other NPS units, other federal agencies, schools/educational organizations, and other miscellaneous requests.

A total of 1,377 slides were added to the master slide file, bringing the number of slides in that collection to 13,600. A backlog of material remains to be evaluated for possible addition to the file.

Jim also performed a multitude of field photographic assignments. We worked with staff in Research and Resource Management on a variety of post-fire research projects. He responded to requests for specific types of slides from interpreters, rangers, fire managers, and the Superintendent's Office by personally shooting the requested material. Ceremonies, special events, and visits by dignitaries were documented by Jim.

Jim spent a significant amount of time on copy stand work, shooting slides from technical reports and a variety of documents, books, magazines, and other sources. These were almost exclusively for "in-house" uses such as special presentations or for use in NPS-generated publications or exhibits.

MAINTENANCE

General

As with all other operations, 1989 was dominated by the fire recovery program resulting from the 1988 wildfires. Much of the Division's energy was directed to clean-up and support of the fire recovery, and a facility manager was added to the staff to meet this need. The rest of the organization went through its first full year of district reorganization, and four Motor Vehicle Operators were filled in subject-to-furlough positions. These positions were directly related to the increasing winter and shoulder season operations that continue to demand more and more time and energy. The new maintenance facility in Mammoth now has a floor, and the interior walls were contracted for. The lack of a viable cyclic maintenance program is becoming more and more evident, especially in roads. Even though some work was done, the estimate to repair the roads has now climbed to \$280 million.

Buildings

Work on park buildings consisted of responding to critical work orders involving repairs necessary to keep the buildings open and functional. Due to base funding levels, cyclic and preventive maintenance have been deferred at least another year. Most building repair and rehabilitation accomplished this year was funded under the separately funded repair/rehabilitation and cyclic program. The remaining cyclic work was deferred, thus increasing the backlog of necessary work.

A variety of funding sources were pooled to accomplish numerous major building, utility, and housing projects. Funding sources included repair/rehabilitation and cyclic projects (rehabilitate buildings to meet NEPA - \$110,000, rewire historic buildings - \$100,000, and replace heating plants - \$100,000), fee enhancement projects (preservation of historic structures - \$100,000 and rehabilitate historic structures - \$107,300), winter use funds (South Entrance - \$225,000, Mammoth warming hut - \$400,000, employee vehicle storage units - \$100,000, and warming huts - \$50,000), fire rehabilitation funds, and a small contribution from ONPS funds. The following projects were accomplished in 1989:

Mammoth: The electric shop was reroofed. The plumbing shop front drainage was corrected, and the rotten boards were replaced. The painting contract from previous years completed painting both of these two shops, building 28, and the judge's house and garage. The basement of building 27 was renovated into offices. Storage

areas for the items from building 27 were constructed in the Fire Cache and the Administration building. The total rehabilitation of building 28 was started. The Mammoth terrace project included the grading of a snowmobile unloading area and the site for the new warming hut. The new log warming hut was constructed for use in the 1989/1990 winter season. Work remains to complete both the building and the grading. Smoke detectors were cleaned/replaced because of the smoke residue from the 1988 fires. A contract to install the stairwells at the new Mammoth garage was awarded to Herauf Construction of Livingston, Montana, in September.

West Entrance: The foundations for three 7-unit garage buildings was awarded to J & W Construction, Afton, Wyoming. One of the three garage units was constructed in 1989.

Canyon: A new sloping metal roof was installed on the Maintenance shop.

South Entrance: Two new log kiosks were constructed. The new ranger/contact station is 90 percent complete and was useable for the 1989/1990 winter snowmobile season. This work was all day-labor except for the ranger/contact station foundation which was part of the foundation contract to J & W Construction. A new septic tank and leach field was installed for the ranger station. Water, power, and propane utilities were also installed to this building. Site work included widening the entrance road, moving the existing vault toilets, installing the new vault toilets, and general clean-up of the construction area.

Old Faithful: One of the two movie theaters was converted to an area to be used as a lunch room by snowmobilers. The seats were removed, and a wall was constructed to allow for future construction of offices in the rear of the building.

West Thumb: The West Thumb comfort station conversion to a vault toilet was completed.

Sportsman Lake: The materials for the replacement cabin were bought and flown into the site by helicopter.

Most other maintenance activities on buildings were deferred unless special funding sources were available. Instead, emphasis was placed on quarters repair/rehabilitation throughout the park. In the South District, the Canyon and Grant Village visitor centers, both with serious roof problems, were periodically worked on throughout the year to minimize water damage to their interiors and contents.

Through contract, the following buildings received new roofs in FY 89: Lake 268 (mess), Lake 269 (bunk), 9 comfort stations at Bridge Bay, Canyon 351 (bunk), Canyon campground (17 comfort stations), and the Lake maintenance shop (originally awarded in 1988). Major accomplishments included the Lake maintenance shops, South District craft shops (3), nurses dorm, doctor's 4-plex, and some comfort stations. Electrical service to the Fishing Bridge historic restroom was upgraded and buried. Floor, wall, and roof repairs were made to the West Thumb store. A new overhead door, drain system, and upgraded electrical service were completed at the Lake transfer station as well as the construction of retaining walls.

The hospital auxiliary power needs were upgraded, and a new 100kw generator was purchased for installation in 1990. The frost-free storage room at the hospital was remodeled/upgraded for the winter storing of pharmaceuticals.

A new building was constructed at East Entrance to house washers/dryers with upgraded electrical/plumbing utilities.

A comfort station at Grant Village campground was rebuilt after severe damage from the '88 fires. Major remodeling was accomplished at the Grant Village Visitor Center to accommodate new fire exhibits.

A new metal storage building was constructed in the Canyon maintenance area.

The West District maintenance of buildings was similar to that in the South District. A 900 square foot storage building was completed and painted at the West Entrance, and the Bechler office building was leveled with a new foundation. The Old Faithful shop (building 523) had a fueling pad installed and an addition for oil storage added. The upper restroom interior at Old Faithful was painted as was the office (building 419) at Madison.

Utilities

Work progressed in a manner similar to "buildings" including the mixture of funding sources. Unless special funding was available, much of the work was deferred.

Work continues on phasing out inefficient sources of heat. Twelve efficient propane heating units replaced outdated furnaces throughout the South District. Work continues on installing individual electric meters on quarters throughout the district.

The chlorination process at East Entrance has been improved, resulting in satisfactory residual readings. To accommodate the influx of SCA fire crews at Canyon, additional utilities were supplied to a pair of trailers which contained multiple showers, toilets, etc. Chain link fence repair/rehabilitation occurred around the Canyon and Lake sewage lagoons as well as the Lake transfer station. An assessment was made on the basic stabilization costs for the historic Fish & Wildlife buildings at Lake. These buildings are in an advanced state of deterioration which will continue to worsen until funds are available for complete restoration.

The amphitheater at Fishing Bridge was completely rebuilt. A bat control program was initiated for South District buildings, and mitigation procedures have begun at the ranger station, general store, and Lake Lodge.

The water plant at Old Faithful was repaired after it had been vandalized. A new sewer line was installed for the new TW cabins that replaced those cabins that burned in 1988 at Old Faithful. The remaining portion of the water transmission line from the intake at the Firehole to the Lone Star parking area was replaced and completed this year.

Due to legislation, numerous underground fuel storage tanks were required to be upgraded or removed. Old tanks were removed, and new fueling stations were constructed at Old Faithful, Lake, Grant Village, Canyon, and the Beartooth Road Camp. Some contaminated soil was removed at these sites. Contamination at Norris is being studied, as this station, along with Tower Junction, was taken out of service. Other heating fuel tanks were also removed as a part of this program.

New vault toilets were installed at 18 various locations throughout the park through a Regional supply contract. The holes were dug and backfilled with park day labor forces. Site work and walks at these locations still remain.

Both the water and sewage systems at Norris continue to be a problem. The sewage mound system at the geyser basin parking area failed again this year.

The rehabilitation of the Canyon Village sewage treatment plant is in the design stage through the Denver Service Center.

Park County's rehabilitation of the Gardiner sewage plant is also in the design stages, with a request for monetary support from the park.

The main water line to Madison Campground was repaired after a long period of leakage. Fenced enclosures were constructed for garbage truck storage at Mammoth and Madison. Sewage plant fences parkwide were inspected, and some restoration accomplished.

Housing

The quarters program continues to lose approximately \$500,000 a year, and the quality of housing is very low. Over 25 percent of the units are of a temporary nature (trailers, transahomes, wingfoots) and were never intended for use in this climate. The Housing Management Plan, in conjunction with the Service-wide housing initiative, identifies an \$18 million shortfall in upgrading, rehabilitating, replacing, and adding additional housing. Interior park employees continue to live in trailers and other substandard housing throughout the winter. A special emphasis program for appliances and furnishings was assessed on all divisions, and stoves, refrigerators, chairs, tables, beds, and lamps were purchased for many seasonal housing units.

A community planning effort was begun by the Denver Service Center with two contracts for all major park areas except Canyon. By the end of the year, 25 percent of the plans were completed for park contracted areas. The infusion of \$335,000 from the housing initiative, combined with funds for fire recovery housing, allowed three 4-plex units and one duplex to be contracted for.

To relieve the housing impact from the fire recovery crews, a new four-unit apartment building with a full basement was built at Lake (fire funds - \$460,900). This building was built by contract through the Denver Service Center. The contract was awarded to J & W Construction of Afton, Wyoming, and was 95 percent complete and occupied in late October 1989. The utilities were installed by the park day-labor forces. Site work and walks still remain.

Two additional four-plex units (one at Grant Village and one at Old Faithful) and a duplex at Mammoth were contracted to Intermountain Construction Co., Inc., of Idaho Falls, Idaho, for \$1,294,405. These units were funded as part of the fire recovery, the housing initiative, trailer replacement, and cyclic maintenance programs. Construction at all sites began in late 1989.

Norris: Building 2273 was totally rehabilitated with housing initiated funds. An addition was constructed, and the bathroom moved inside to provide a more useable living area. Because of the building's historic significance, numerous boards had to be numbered, removed, repaired, and replaced.

West Yellowstone: Building 457 was completely rewired, insulated, and repaired with housing initiative funds. Walls were moved to provide a more useful living area.

Mammoth: A new two bedroom dorm was constructed to replace a wingfoot that was demolished. New heating systems were installed in 4A, 5, and 6A from a new boiler located in building 27. New heating systems for buildings 30, 31, 32, and 33 on Soaps Suds Row were installed and connected to the boiler in the Supply Center. Building 40 was converted back to quarters from offices. Funding was from base funds, housing initiative, and repair/rehabilitation.

Canyon: To accommodate the larger SCA fire rehabilitation crews, an old dorm that was being used for storage was rehabilitated for sleeping quarters.

Even with very limited funds and manpower, substantial quarters repair/rehabilitation occurred in every developed area within the South District.

Canyon remodeled 6 units in building 804, which included a new heat system, carpeting, new cabinets, appliances, metered electric service, etc. Lake completely remodeled building 711 (4 units), 709 (2 units), and the Bridge Bay kiosk quarters. At Grant Village buildings 633F, 633H, 629H, 629G, and 633B had various degrees of remodeling done.

The North District quarters shop renovated 24 quarters in Mammoth Hot Springs during occupant turnovers. The renovations included gutting and rebuilding bathrooms, installing new kitchen countertops and floor coverings, and painting the interiors of the quarters. In addition, the quarters shop completed numerous housing work orders throughout the North District and mitigated radon in two quarters in Mammoth.

The West District remodeled the bathroom, walls, and floors, of the Bechler residence, replaced a canopy over trailer 171 at the West Entrance, and replumbed building 130. The deflouridation units at five residences were serviced at Madison and the West Entrance. A new floor was put in trailer 130, three bathrooms were remodeled in building 530, and new carpet was installed in 531A and 531C at Old Faithful. New carpet was installed in building 455 at the West Entrance, and units 419A, 419B, and 123 were painted and had carpet installed at Madison.

Repair/Rehabilitation and Cyclic Projects

Approximately \$535,000 was obligated by Yellowstone National Park during FY 89 on repair/rehabilitation projects and cyclic projects funded by the respective programs. The projects are incorporated into other sections of this report (buildings, utilities, and housing). For clarity, they are listed here:

1. Fire rehabilitation housing (\$160,000) - housing units
2. Reroof portion of 131 buildings (\$5,355) - housing units
3. Reroof historic structures (\$1,134) - housing units
4. Rehabilitate buildings to meet NEPA (\$110,000) - buildings 27, 28
5. Rewire historic buildings (\$100,000) - buildings 27, 28, and 2273
6. Replace heating plants (\$100,000) - buildings 4, 5, 6, 7, 27, and 28
7. Generators (\$52,192) - Lake Hospital and Lake government area
8. Install 10 solar water tanks (\$4,000) - Mammoth

In addition to the above projects, work was done on the following projects:

1. Install concrete and block walls - Mammoth garage (contract). The exterior and all interior floors were completed. The interior walls were 95 percent complete.
2. Striping (contract) - Striping was completed on the West Entrance road, East Entrance road, Gardiner to Tower, Canyon to Lake, and part of the road between Tower and Northeast.
3. Lake dorm site work (day-labor) 45 percent complete. Only minor progress was made in FY 89.

Roads and Front Country Trails

The roads continue to feel the brunt of the park's belt tightening. The road structures are for the most part failing, and the current estimate to repair them is \$280 million.

On the major road work at Craig Pass, Burggraf Construction completed the first half of the road from West Thumb to Old Faithful. Day labor crews continued revegetation projects including major work on the white cliffs. H-K Construction continued work on the second phase from Delacy Creek to West Thumb. The first layer of asphalt had been layed in both lanes of the main road.

The West Entrance road (14 miles) was chip sealed using a new oil, high float emulsified (polymerized) asphalt. The results were excellent. After most of the plowing operations, the adhesion of chips was as good as can be expected.

The asphalt surface was removed from Geode Creek Hill (.6 miles). A new grade and overlay was layed with AC-10 hot mix. Overlay was accomplished from this point to .4 miles west of this project. Total overlay was 1 mile.

National Park Service trucks and Les Pintars contract trucks hauled 15,620 cubic yards of 3/4" minus aggregate from 5 miles north of Yellowstone Park to the Norris hot plant storage pit.

The West Entrance road was crack sealed in preparation for the chip sealing project.

Four 10-cubic yard dump trucks and one 50-ton lowboy were purchased from the Navy surplus list, and a grapple bucket was purchased to clean up and load trucks with fire debris from along roadsides.

Approximately 400 cubic yards of material was relocated, and a new parking area for 10 to 14 cars was constructed for a fire trail in the blowdown area between Norris and Canyon. Paving was done with MC 800 cold mix, and the area was striped.

Park Street, in Gardiner, was graded and reshaped using 3/4" minus aggregate and watered and then compacted.

Yellowstone had a three-person slash crew cut hazardous trees which were bucked up and stacked along the road side for pick-up and removal to Swan Lake and Norris dry dump pits. All debris was burned in the Swan Lake pit. Crews started on June 12, 1990, and ended on November 2, 1990 (2,520 hours).

Yellowstone transferred the old white bus to Bryce Canyon National Park for their museum transportation display.

Bumper logs were stained and painted in the Madison Campground, and rotten fence logs were replaced near the West Entrance.

Signs were painted and converted to the new color and system parkwide. Approximately 60 percent of the signs have now been converted.

Boardwalks were repaired in the Norris Geyser Basin and Old Faithful areas, and the old trail to the Mammoth horse corrals was upgraded.

Construction began on interpretive fire trails. Both the Children's Trail near Frog Rock and the trail between Canyon and Norris are 90 percent complete.

Rip rap and fill were installed on several large washouts in the West District. Shoulders on the West Entrance and Fountain Freight roads were pulled.

Large mud slides occurred on the Gibbon River on two occasions in August causing the road to be closed for parts of 6 days. Heavy rain brought an estimated 5,000 cubic yards of debris onto the road prism. Approximately 3,000 yards were hauled away at once to open the road, and the remainder was stacked along the road shoulders. Another 5,000 plus yards also had to be dealt with. Approximately 60 percent of the slide material was removed or redistributed by winter.

Spring opening of roads was accomplished on schedule. The West Entrance was opened to Mammoth and Old Faithful on April 15, although spring storms caused intermittent closures into May. The road was officially closed November 24 due to poor conditions. The East and South Entrances opened May 1, and both roads were closed to travel on October 1. The Beartooth Highway opened May 25 and closed October 15. Craig Pass was open weekdays from 9 a.m. to 9 p.m. and Friday at 9 a.m. to Sunday at 9 p.m. It was closed for reconstruction the balance of the time.

Backcountry Trails

The backcountry trails operation was expanded to cover the fire rehabilitation of several miles of trail. Total accomplishments for the year included the following major items:

- 21 3/4 miles reconstructed new tread
- 465 linear feet turnpike constructed
- 3/4 mile rehabilitated and obliterated trail
- 44 1/2 miles cleared trees
- 1,206 feet of bridges constructed
- 1,322 person hours of drainage devices constructed
- 2,281 square feet of walls constructed

Major projects included work from Cabin Creek to Trail Creek, Mountain Creek to Eagle Pass, the Mirror Plateau, Speciman Creek Trail up to Electric Pass, Horse Bypass Trail at Bechler, the Lamar River Trail, the Mist Creek Trail, Shoshone Lake, Snake River Canyon Reservoir, and the brink of the Lower Falls Trail.

Fire Recovery

Yellowstone identified six objectives to accomplish during the fire recovery effort. With the magnitude of the fire recovery effort and time needed to be devoted to accomplish objectives, a position was developed to coordinate fire recovery activities for two of the objectives. Those objectives are: rehabilitation of visitor use area and rehabilitation of the backcountry. Two major concerns are: results from suppression (32 miles of bulldozer fire line, 100 helispots/staging areas, and 600 miles of hand fire line) and damage by the fire and visitor safety (hazard trees along 170 miles of road and 600 miles of trail). 253 separate fire-related projects were immediately identified and scheduled to be accomplished within the next three years.

Interpretation was funded \$60,000 to develop a new paper supplement explaining about the fires, suppression of fires, and the recovery efforts.

Fire recovery funded the majority of the design and construction of two quad-plexes (Lake and Old Faithful), and one duplex will be completed by July of 1990. Backcountry patrol cabins damaged by fire were repaired. The old Blister Rust Control bunkhouse (Canyon) was rehabilitated and utilized to house 50 volunteers.

The local utility companies (power/phone) were funded to perform repairs and reconstruction of services destroyed by fire. The parks Bunsen Peak translators were replaced after being burned over.

FIRE RECOVERY PLAN
YELLOWSTONE AND DSC EXPENDITURES - SUMMARY

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<u>PROJECT DESCRIPTION</u>	<u>EXPENDED FY 89 (1000's)</u>	<u>ACCOMPLISHED</u>	<u>WORK REMAINING</u>
Objective 1: Rehab of Visitor Use Areas			
1.0 Rehab 30 miles of dozer line	85.0	35 miles	2 miles
2.0 Rehab 200 miles of road side	900.0	99%	Clean up
3.0 Rehab 100 helispots	97.0	95%	2-3 spots
4.0 Replace and repair elect. service	1344.3	100%	
5.0 Rehab 12 developed areas	479.0	90%	Screening
6.0 Rehab 10 picnic areas & campgrounds	248.1	90%	Screening
7.0 Rehab 50 miles of front country trails	50.0	100%	
8.0 Snag removal from 200 miles of road	120.1	150 miles	50 miles
9.0 Replace 2 structural fire trucks	321.0	100%	
0.0 Repair Madison water tank	55.1	Contracted	Complete 9/90(est.)
1.0 Replace NPS housing unit	116.2	Contracted	Complete 10/89
2.0 Replace solid waste storage facility	20.0	100%	
3.0 Repair/replace gauging stations	20.3	100%	
4.0 Replace 3 storage buildings	63.9	100%	
5.0 Repair telephone service	5.0	100%	
6.0 Repair comfort station	25.0	100%	
7.0 Replace Bunsen Peak translators	12.9	100%	
8.0 Repair/replace snow courses	70.0	100%	
	<u>4032.9</u>		
Objective 2: Rehab of Backcountry Areas			
9.0 Rehab 600 miles of backcountry trails	1618.7	300 miles	300 miles
0.0 Rehab 1000 miles of fire line	304.0	95%	50 miles
1.0 Rehab 50 spike camps	50.0	99%	Clean up
2.0 Erosion protection - 10,000 acres	300.0	100%	
3.0 Replace Sportsman Lake Cabin	49.0	75%	Complete 8/89(est.)
4.0 Repair 26 patrol cabins	30.0	100%	
	<u>2351.7</u>		

Contracts Awarded:

- Mountain Rotor's Helicopter Service	\$95,000
- Johnson Rack, Inc. (newly designed boundary marker)	30,600
- National Sign Co. (trail marker manufacture)	20,700
- Eastern Metal Meadow (trail crossing marker)	14,950
- Vermeer Intermountain (disc, wood chipper)	17,035
- Brand S Corporation (hazard tree removal)	credit

Two refuse compactor trailers were purchased to replace two waste storage structures destroyed by fire (\$83,861).

Fire recovery funds (\$261,337.79) purchased two replacement structural fire trucks. Both trucks shall be in operation by July 1990. Total funding for the two trucks and equipment was \$311,337.79.

Fire recovery required work for much of the road operation. This funding provided salaries for seasonal employees, supplies, and materials. Types of projects performed: shoulder maintenance, ditching, pothole patching, and hazard (Mammoth).

The park trail program was funded \$250,000. Only seasonal employees, supplies, and materials were charged to this money. Types of projects performed: trail tread maintenance, shoulder maintenance, water bar maintenance and installation, and bridge repair and construction. The Ranger Division's backcountry program also was funded through the trails account. Total parkwide funding for backcountry trails was \$1,618,700.

A cooperative agreement was developed with the Student Conservation Association, Inc., to assist with Yellowstone fire recovery. A base camp was established within the park at the Blister Rust Control camp at Canyon. 65 crews, or 429 individuals, participated through SCA from June to October 1989. Types of projects performed: trail tread maintenance, water bar maintenance and installation, bridge repair and construction, campsite restoration, rehabilitation of hand and dozer lines, and assisting within the visitor contact stations answering questions (funded \$850,000).

A Youth Conservation Corps nine-week program, consisting of 40 enrollees and a staff of 15 utilized the old YACC facilities in Mammoth. Types of projects performed: trail tread maintenance, water bar maintenance and installation, bridge repair and construction, campsite restoration, corral pole peeling, litter pickup, range revegetation, range fence maintenance and repair, and rehabilitation of hand and dozer lines (funded \$170,000).

Landscape Architecture

Parkwide signing, Federal Lands Highway projects, and fireline rehabilitation dominated landscape involvement during the 1989 fiscal year.

Parkwide Signing

Implementation of the parkwide sign standards continued in 1989. Progress was made in most districts. Several specialized signs were developed including a test model for boardwalk interpretive signs. Many interpretive fire signs were constructed and placed.

Federal Lands Highway Projects

Reconstruction is in progress on an 18-mile section of the Grand Loop road between Old Faithful and West Thumb. Phase I encompassed a 9-mile section from Old Faithful to Delacy Creek. Phase II includes the remaining 9-mile section from West Thumb to Delacy Creek. The landscape department was responsible for revegetation design and implementation on road slopes. Topsoil salvaging and sensitive slope treatment minimized disturbance. Additional plant materials were developed and transplanted utilizing native species. Cooperative agreements with Soil Conservation Service and Bridger Plant Materials Center provided seed cleaning and propagation of collected materials. Monitoring and analysis of test plot data for cover type and density are also provided by Bridger. First year (1989) results indicated excellent recovery of native species.

Planning and vegetation materials development is in progress for both the East Entrance reconstruction project and the West Thumb overlay.

Postfire Rehabilitation Projects

Public safety concerns following the wildfires of 1988 prompted the need for a significant roadside hazard tree removal program. The primary objective of the project was to prevent unstable trees from falling into roadways due to wind or other stresses. A secondary objective was to make the treated roadsides blend into the natural environment. The removal program began in 1989 utilizing landscape personnel as supervisors and contract inspectors. Approximately 25,000 hazard trees along 24 miles of roads were removed during the 1989 field season. Road corridors from Swan Lake Flats to Elk Park and Gibbon Falls to Madison Junction were completed, and the Gibbon Falls picnic area was rehabilitated.

Hazard tree removal in intensely burned areas increased visibility and overall visitor safety while improving vistas at some locations. In many lightly to moderately burned areas, vigorous regrowth of grasses and forbs occurred during the summer of 1989. Openings created by tree removal in these areas often resemble natural meadows. Spot fire or patchy burned areas that received selective tree removal will soon be very difficult to visually detect. By utilizing select cutting where possible and prescribing irregular boundaries to patch cuts, along with slash and stump removal, the visual impact of the project was significantly reduced. By not allowing equipment off road, soil disturbance was minimized.

The hazard tree removal program is scheduled to continue in 1990. An additional 80 miles of public roadways and scenic drives will be evaluated for visitor safety and may require some degree of tree removal.

Backcountry Fireline Rehabilitation

Major fireline rehabilitation efforts were put forth following the 1988 fires, but early winter snows precluded completion of the projects. Planning efforts preceding the 1989 field season targeted several areas for continued rehabilitation work. Completion of fireline rehabilitation was critical in restoring disturbed areas to natural conditions as well as preventing erosion and introduction of exotic species. Landscape personnel performed and supervised work by volunteer crews from SCA and YCC.

Areas receiving additional fireline rehabilitation work included the Northeast Entrance, Black Bear Canyon, west boundary bulldozer firelines, and approximately 12 miles of hand fireline near Gibbon Hill.

Documentation of completed work indicated that regeneration of native plant materials is occurring. (Photographic monitoring results are included on the following pages for reference.)

Bulldozer fireline prior to rehabilitation.



Bulldozer fireline following rehabilitation.



Bulldozer fireline prior to rehabilitation.



Bulldozer fireline following rehabilitation.



Hand fireline prior to rehabilitation.



Hand fireline following rehabilitation.



The Black Bear Canyon site
prior to rehabilitation in 1988.



The Black Bear Canyon site
following rehabilitation, fall 1988.



The Black Bear Canyon site at
maximum snow depth of 20 feet,
March 1989.



Documentation

Parts of the "Greater Yellowstone Area Postfire Assessment" were written by the Maintenance Division. This report was prepared in early 1989 to assess damages to visual resources including developments, thermal features, and road corridors resulting from the wildfires of 1988. Included is a description of resource impacts with maps depicting fire perimeters and impacted area locations.

"Rehabilitation of Wildfire Suppression Impacts on the North Fork Yellowstone National Park" - Preparation of this document is currently in progress and is scheduled for completion during the spring of 1990. This report includes background information on the North Fork Fire and resultant impacts to park resources. Techniques used during the fires to minimize resource damage from suppression activities, as well as rehabilitation methods, will be presented. A significant portion of the report will be photo documentation of disturbed and rehabilitated sites.

Other Projects

- Bison Study Graphics -- pamphlet design and graphics.
- Stephens Creek Nursery -- implementation and beginning plant production.
- Revegetation Projects -- current parkwide revegetation projects.
 - Lake Hotel
 - Bridge Bay campground
 - Fishing Bridge parking area
 - Lava Creek picnic area
 - snowmobile fuel tank (Mammoth Terraces)
 - Mammoth berm (additional topsoil, seed, and mulch)
 - YACC camp area
- Seed Collection -- for current and future revegetation projects.
 - Sylvan Pass
 - Old Faithful
 - Canyon
 - Mammoth
- Lava Creek/Tower powerline -- topsoil salvage and revegetation.
- Mammoth Warming Hut -- landscape design
 - topsoil salvage and re-distribution
 - revegetation
- Roosevelt Lodge parking area -- new design for more efficient use.
- Fishing Bridge Restoration Plan -- planning and specification for campground and related area restoration.
- Madison campground rehabilitation -- campground improvements.
 - tent pad construction
 - tree/shrub transplants
- Norris Campground Rehabilitation -- campground improvements.
 - tent pad construction
 - erosion control

Operations

As with other facets of the division, the operations portion was hindered by the lack of sufficient cyclic funds besides expending a major effort on fire recovery. The equipment fleet continues to be replaced at such a pace that it gets older each year. Currently, it is estimated that \$8.5 million will be required to bring it up to par.

The winter operation continues to grow both in terms of visitation and expenses, and as has been the case for the last decade, something has to give--in this case the summer operation.

The condition of the roads and housing units continues to cause the most complaints, although with the advent of the FLHP program and the realization of the Servicewide housing problem, this could gradually improve. As is always true in a maintenance operation, the need exceeds the resources.

Maintenance Management System

The Maintenance Management System is now fully implemented and being used by foremen and supervisors to plan and track their work. Planning for all 1990 programs is more effective than that of the past two years because actual data is available to planners to use as the bases for new programs. It is anticipated that both planning and performance will continue to improve with time until Maintenance Management is an effective and fully integrated part of the park's maintenance operation.

The final phase of the installation of the MM System will take place in May when contractor personnel from DeLeuw-Cather Company will make their final on-site inspection known as the "Task 20 Review." A favorable report is anticipated.

PLANNING AND DEVELOPMENT

The position of Management Assistant was vacant for the first three months of 1989. Kevin Brandt filled the position, arriving in March 1989. The Park Planner position, vacant for nearly a year, was filled in November 1989 with the addition of Bill Schneider. The following were the major projects for the Management Assistant's Office in 1989.

HUDAT

Yellowstone has always tried to provide suitable housing for its employees due to the isolation of the park from communities with available housing. Over the years of changing government housing policies and changing employee needs, the quantity and quality of existing housing has proven itself inadequate. The current situation often times inhibits our ability to hire the most qualified job applicants and dampens our employees' morale.

In response to the growing recognition that previous housing policies failed to address the park's long-term needs, a major planning/design effort was initiated during 1989. As part of the Servicewide Housing Initiative (HUDAT), Yellowstone has started to develop comprehensive community plans for all major areas within the park. These community plans will address the housing needs of the concessioners, contractors, as well as park staff.

Two architect/engineer contracts were awarded through the Denver Service Center in FY 89 to complete community plans, assess rehabilitation needs of existing housing, and prepare recommendations for new housing locations at 7 of 12 developed areas. The first contract (HUDAT-1) includes the Lake, Old Faithful, and East Entrance areas, while the second contract (HUDAT-2) includes the Mammoth, West Entrance, Grant Village, and Tower/Roosevelt areas.

The process of planning community development has included sociological analysis of each employee residential development as well as multiple community meetings in each of the areas. By the close 1989, alternative sites had been proposed, and an analysis of each was under way to determine, through the National Environmental Policy Act process, which sites represented the best solution to each area's environmental and sociological issues. The project will continue throughout 1990 with completed plans and environmental documents expected in early 1991.

Lake/Bridge Bay DCP

In 1986 the Lake/Bridge Bay Development Concept Plan (DCP) was separated from the Fishing Bridge/Lake/Bridge Bay DCP due to the amount of controversy surrounding the Fishing Bridge portion of the plan (the final Fishing Bridge EIS/DCP was released in 1988).

The major issues being addressed in the DCP are: access, circulation, and parking; visitor and administrative facilities; visitor experience; and interpretation. Although a preferred alternative was selected (original Alternative C) in January 1989, following further field data and review, the park requested that a new preferred alternative be considered. In July, when the Regional Director visited the park, a new preferred alternative was agreed upon. In late summer Cynthia Young (DSC) was selected as new team leader for the project.

Presently, DSC is taking the lead, with assistance from the Regional Office and the park, in preparing the draft EA/DCP. The draft EA/DCP will be available for public review in late spring 1990. It is expected that the final EA/DCP will be complete by fall 1990.

Winter Use Plan

During the past 20 years, winter use at Yellowstone and Grand Teton National Parks has increased from almost no use to well over 100,000 winter visits today. Winter visitor use and winter park operations create management issues that differ substantially from the summer. In 1983 staff at Yellowstone determined that a winter use plan was needed to summarize established winter management practices and set a direction for future winter use in the park.

In 1988 the State of Wyoming proposed the Continental Divide Trail, a major long distance snowmobile trail that would connect Yellowstone and Grand Teton to existing trails in the Togwotee Pass/Green River area. The proposed route would create a separate off-road snowmobile trail in Grand Teton National Park. Because this is a significant departure from NPS management policy and because winter use in the parks is integrally related, the Regional Director decided to initiate a joint winter use planning effort for Yellowstone, Grand Teton, and the John D. Rockefeller (JDR) Parkway.

The purpose of the plan is to guide management of park winter activities for the next 10 to 15 years and identify resource protection and development needs to support winter visitor use and park administration.

In 1989 two winter use plan (WUP) newsletters were published by the Denver Service Center (DSC). The first newsletter listed problems and issues for the plan, and the second newsletter listed alternatives for solving winter use issues. An estimated 1000 copies of each were distributed requesting public comment. The first public input report (May) summarized 250 public comments on the issues the respondents felt the WUP should address. The second public input report (December) summarized 675 responses to the alternatives. A visitor use survey was conducted in the parks from February 26 to March 4. In addition, six public scoping meetings were held in communities in the surrounding area.

A draft plan/EA is being prepared and will be released in March 1990. Public review of the draft plan/EA is scheduled for spring 1990 with the Record of Decision and final plan to be completed and distributed by the end of 1990.

PUBLIC AFFAIRS

Personnel

Employees directly associated with the Public Affairs Office included a GS-11 Park Ranger/Management Assistant, a GS-9 Park Ranger, a GS-5 Correspondence Clerk, and for most of the year, three emergency appointees. Marsha Karle, a former Yellowstone employee who had worked in the Rocky Mountain Region Public Affairs Office for the past three years, was appointed to replace Amy Vanderbilt who accepted the position of Public Affairs Officer in Glacier National Park in February. Cheryl Matthews replaced Emily Anderson in the Correspondence Clerk position in May.

Joan Anzelmo, the Public Affairs Officer, was on maternity leave for two months, during which time Marsha Karle was Acting Public Affairs Officer.

General Information

The Public Affairs Office serves as a clearinghouse of information for the park and local communities and responds daily to written, telephone, and walk-in requests for assistance and information.

A wide range of correspondence, often requiring detailed answers, numbered more than 1,000 pieces. More than 15 percent of this correspondence was from foreign countries.

The Public Affairs Office worked closely with the Regional and Washington Public Affairs Offices, keeping them informed on a variety of matters and seeking advice on sensitive issues. Major news items involving Yellowstone included the aftermath of the greater Yellowstone area fires of 1988, fire management policy, bison management, wolf restoration, Church Universal and Triumphant, winter use planning, grizzly bear management, and increased regional tourism.

The Fire Document Center, which was established to provide a central repository for all fire documents, remained open the entire year and is now completely organized with complete and final information in the appropriate places.

News Releases

There were 41 news releases, 10 emergency call-outs, 1 Public Service Announcement, and 3 media advisories issued in 1989.

Filming Permits

Seventy-eight actual filming and photography permits were issued in 1989, ranging from nature film documentaries to product commercials.

Photo/Slide Requests

The Public Affairs Office answered over 158 requests for loans of slides and photographs on Yellowstone subjects, including numerous requests for fire and post-fire slides from the public and the media. More than 5,000 photographs and slides were mailed out in response to these requests.

The Public Affairs Office continued to provide photographs for media interests on several newsworthy and special events throughout the year, especially the fires of 1988.

Publication Editing Requests

The Public Affairs Office responded to more than 60 written requests for editing publications about Yellowstone and numerous phone requests for the same. These requests were often complex, requiring extensive research to provide accurate information for major national and international publications.

Official Visitors/Countries

USSR delegation (hosted by Unicover Corporation)
 Peter Wright, Chief Ranger, Yorkshire Dales National Park, England
 Professor Francesco Parducci & Giulian Cappeli, Florence, Italy
 David Rutter, Consul General for Australia
 Paul Blake, Director, Environment & Tourism, Queensland, Australia
 Dr. Ian Rollf, Keeper of Geology, Royal Museum of Scotland
 Jennifer Shipley, New Zealand Parliament member
 Kintetsu International, Japan Total Club Jr. Study Team
 Peter Delport, South Africa
 Didier Migaud, Member, France's National Assembly
 Miguel Castroviegjo, Director, Teide National Park, Canary Islands
 An official visitor from Sri Lanka
 Willem Gertenbach, Chief Researcher Kruger National Park, S. Africa
 An official visitor from Thailand
 Raul Gauto, Director, Conservation Data Center, Paraguay
 Rudolf Schwarzboeck, Member, Austrian Parliament
 Dr. Bosheng Li, China
 Charles Llewelyn, United Kingdom Head of European Community
 Division, Ministry of Agriculture
 Curtis Nkondo, President, National Education Union, S. Africa
 Official Italian Parliament members
 Geoff Wescott, Head of Department of Heritage & Resource
 Management, Melbourne, Australia
 Turin Laksanawisit, Thailand Parliament

Lars Hedlund, Outdoor Recreational Researcher, Sweden
 Norwegian Foresters
 Dr. Willie Knduku, Director of Department of National Parks &
 Wildlife, Zimbabwe
 Venezuela officials
 Erkki Ikaheimo, a Fullbright scholar from Finland
 John Anfield, Assistant Superintendent of Peak District National
 Park, England

Media Contacts

This is a sampling of many of the media we assisted in person (on site). There were so many calls and visits during the year after the fire it was difficult to log them all. Approximately 2,000 more were assisted by phone in 1989, representing national, international, regional, and local media.

TV/Video/Filming/Etc.

ABC
 Business World
 Good Morning America
 Nightly News
 National News
 PrimeTime Live
 World News
 American Express Travel Show
 Audubon TV
 Buick commercial
 Camera 1 Productions
 Business Week
 Big Dog Productions
 CBS
 Nightly News
 World News
 48 Hours
 Cineworks
 CNN
 ESPN
 Fishing the West TV
 Idaho Public Television
 KTVK, Phoenix, Arizona
 KCRA-TV, Sacramento
 KARE-TV, Minneapolis/St. Paul
 KTVQ
 KBNS-TV
 KUTV
 KOAT-TV, Albuquerque
 KFMB-TV
 KTVH, Helena
 King Television
 KSL TV

KEMC
KCNC
KXTV, Sacramento
KIFI
KTWO
Midwich Entertainment, Inc.
National Geographic
News Travel Network
Nickelodeon
NBC
PBS

 Frontline
 McNeil-Lehrer Report
 Nature Series
 NOVA

PRC Pictures
Polaris Enterprises
Sage Advertising
Silverwood Productions
USA Today
US News & World Report
Video Dynamics
Weather Channel
WEAV TV
Wertz Films
WSMB
WSLA TV
Wolfgang Bayer Productions
WNET
WGBH
ZCMI

Radio

John Hopkins Public Radio
KXLS
KGWN
KSGT
KNX News Radio
KMTN
KMVT
KCMO
KTGF
KEVN
KPOW
KIVI
Mutual Broadcasting System
National Public Radio
Network Radio
Sunsound Radio
Voice of America
WBEN Radio, Buffalo, New York

Magazines/Newspapers/Etc.

Associated Press
Akron Beacon Journal
American Spectator
Alamo Gordo Daily News
Alumni Magazine, Princeton University
Boston Globe
Billings Gazette
Bozeman Chronicle
Casper Star Tribune
Champion International
Chicago Sun
Chicago Tribune
Christian Science Monitor
Cincinnati Post
Copley newspapers
Daily Universe
Dayton Daily
Denver Post
Fargo Forum
Gannett News Service
Gazette Times
Hartford Courant
Herald Tribune
Houston Chronicle
Idaho Post Register
Idaho Statesman
Insight Magazine
International Game Warden Magazine
Jackson Hole Guide
Jackson Hole News
Journal Times
LA Times
Lewiston Tribune
Life Magazine
Livingston Enterprise
Miami Herald
Milwaukee Journal
Minneapolis Star Tribune
National Wildlife
Natural History Magazine
Newsday Magazine
Newsweek
New York Times
Oakland Tribune
Outdoor World
Outside Magazine
Philadelphia Inquirer
Rapid City Journal
Record Searchlight
Rocky Mountain News

Sacramento Bee
San Francisco Examiner
SELF Magazine
Skiing Magazine
Smithsonian Air & Space Magazine
Smithsonian Magazine
Spokesman Review
St. Louis Post Dispatch
St. Paul Pioneer Press
St. Petersburg Times
Sunday Telegram
Sunset Magazine
The New Yorker
Time Magazine
Trails Away Magazine
United Press International
Washington Post
Wayne Independent
Whole Life Times

Freelancers

Bill Grunkmeyer
Murry Steiman
George Bellerose
Bob Cohn
Michael Jensen
Bob Albright
Lee Gray
Bob Miller
Les Gapay
Gregory Vogt
Ken Speak
Dorothy Patent
Marcus Schenk
Karl Suchman
Craig Larcom
Todd Wilkinson

Foreign Media Contacts

TV/Video

National Italian TV
Tokyo Broadcasting TV
Italian Television Network
MBC Television, Seoul, South Korea
Finnish TV
German Radio TV ARD
Swedish TV
French TV 1
Soviet TV

BBC, Liverpool
German National TV
British TV
East Productions, Japan
Belgian film crew
Japan Broadcasting Corporation
Canadian BC
Norwegian Broadcasting

Radio

BBC Radio
CKO Radio
Multiple radio interviews by phone with foreign broadcasters

Magazines/Newspapers/Etc.

Melbourne Age Magazine, Australia
London Daily Telegram
Cosmo Magazine, France
You Magazine, Britian
De Standard, Belgium
London Telegraph
Sonntags Zeitung, Germany
Southam News, Canada
Toronto Globe & Mail
Daily Mirror, London

Freelancers

French travel writers
Petra Schlemm & Ruediger Schleem, Germany
Wolf Boehriner, Germany
Emil Bergmann & Rudi Bock, German filmers
Till Meyer, Germany
Jerome Delcourt, France
Juergen Koar, Germany
Asahi Shimbun & Masahiro Ohya, Japan
Jochen Siemens, Germany
Klas Bergman & Dagens Nybeter, Sweden
Wolfgang Weber, Germany
Alexander Connock, England
Ulf Boehring, West Germany
Jacqueline Queniart, France

Congressional/Official Visitors

Throughout the year, the Public Affairs Office assisted with programming and arrangements for United States Government dignitaries, park officials, and other guests. A sampling of these visitors follows.

In February members of the House Appropriations Committee and the Senate Committee on Energy and Natural Resources were in the park to review and observe winter operations. Director Mott also visited the park in February to assess the bison management controversy.

Wyoming Governor Sullivan visited the park in March to discuss winter operations and tourism marketing.

In June President Bush visited burned areas in Yellowstone while enroute to Grand Teton National Park. Public Affairs staff assisted White House staff with arrangements.

In July Director Ridenour and Rocky Mountain Regional Director Mintzmyer visited the park to discuss park issues. Ted Roosevelt IV came to Yellowstone to help kick off the Student Conservation Program.

Governor Sullivan
 Congressman Dick Cheney and party
 Director Mott
 Senator McClure's staff (Idaho)
 Lorraine Mintzmyer
 President Bush
 White House staff
 Director Ridenour
 Theodore Roosevelt IV
 Mr. O'Halleran, Director General, Loyal Order of the Moose
 State officials from Washington
 Congressman Marlenee
 Mansfield Center for Pacific Affairs

Meetings

Yellowstone/Grand Teton Winter Use Plan public open house (Bozeman)
 Cody Chamber of Commerce/TWRS - State of the City Forum - Priscilla Baker

House Appropriations Committee
 Dedication Ceremony at Old Faithful
 Appropriations Hearings
 Greater Yellowstone Coalition 1989 Annual Meeting
 Fire Review Public Meeting in Cody
 Assoc. for Conservation Information Officer
 Winter Use Planning Team

Governor's Centennial Conference on Tourism
 Interagency East Zone Type II Overhead Team Meeting
 Regional Directors Meeting in Washington
 Wild Trout Symposium
 Wolf Recovery Meeting (Congressman Owens)
 GYCC Meeting, Chico
 Public Meeting, Cooke City
 Summit meeting between Baker and Sheverdnaze
 2nd Annual Northern Range & Fire Ecology Meeting
 IGBC I&E Subcommittee Meeting, Gardiner
 Senate Appropriations Hearings
 Washington Hearings regarding wildlife
 Grant Village VC Fire Exhibit Dedication Ceremony

Tours

Society of American Foresters
 Western States Water Council (Kate Cameron)
 West German Forest Service group
 International Soil Correlation Group
 National Wildlife Federation
 Wyoming Travel Group
 FAM Trips
 Cody Chamber of Commerce Tour (20 journalists)
 Wyoming Travel Commission (6 French journalists/USITA)
 State of WY/USFS (Gary Heath) - 25 officials of state agencies
 Colorado School of Mines Energy & Minerals Field Institute
 Rexburg Chamber of Commerce International Dance Troup

Miscellaneous

WY Travel Commission/Knowles Ferrari/KSL - live broadcast from
 Old Faithful
 DOW Chemical donation presentation
 Earth First! demonstration
 Fund for Animals (Wayne Pacelle)
 Eastern National (Eastern Park & Monument Assc.)
 Montana Travel Commission
 Mannheim Steamroller Benefit Concerts
 Hanna Barbera
 IMAX
 US Geological Survey (EROS Data Center)
 Ward's Natural Science Establishment

SAFETY

Two wildlife incidents involving bison occurred in the park, down 3 from 1988. No bear incidents occurred, but 1 tick bite, 11 horse incidents, 1 dog bite, 5 fish hooks, 13 insect bites, and 1 bee sting were reported by visitors and responded to by rangers. Seventeen thermal burns were also reported, 10 of which required treatment.

The Documented Safety Program for the Yellowstone Operation Procedures (YOP) is current. A YOP was prepared on Occupational Safety and Health Administration's (OSHA) Hazardous Communications Program.

A fire safety evaluation by a team of designers, engineers, and safety professionals from the Denver Service Center, the Regional Office, and the park was completed on the Old Faithful Inn.

OSHA inspected various park facilities and operations in August and issued several citations. All items cited have been corrected or are on an abatement schedule.

Installation of an automatic sprinkler system in the Hamilton Store dormitory at Fishing Bridge was started in the fall and will be completed before the 1990 opening.

Automatic sprinkler systems were installed in the Teal dormitory at Lake and the TW Recreational Services Gardiner Commodity Warehouse.

Topics addressed by the Park Safety Committee were employee safety, visitor/wildlife safety, and winter operations. A revised safety awards program is in place. Training sessions conducted throughout the year included defensive driving, hearing conservation, first aid, EMT, winter survival, snowmobile operations, and fire fighting.

There were 58 motor vehicle accidents involving visitors. Fatalities included 1 snowmobile accident, 3 heart attacks, and 2 motor vehicle accidents.

CHAPEL COMMITTEE

During 1989 the following events occurred at the chapel:

- 36 Protestant Sunday worship services
 - 1 Special "Christmas in August" service
- 18 Weddings
- 14 Catholic services
- 1 Funeral

The Chapel Committee instituted a new policy on the use of candles in services and weddings. This has substantially reduced the amount of damage done to the candelabra, carpet, and alter.

Financial Status

Savings

One share in the Yellowstone Federal Credit Union	\$26.80
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Checking - Balance as of December 31, 1989

\$1,213.79

Outstanding Income for 1989

Rental of chapel - winter ministry 22 services @ \$10	\$220.00
Rental of chapel - summer ministry 14 services @ \$10	140.00
Rental of chapel - Catholic church 14 services @ \$10	140.00
Weddings - 2 unpaid @ \$50	<u>100.00</u>
TOTAL	\$600.00

Income - 1989

Rental of chapel for 1988 - winter ministry	\$310.00
Rental of chapel for 1988 - summer ministry	130.00
Rental of chapel for 16 weddings @ \$50	800.00
Interest earned on Yellowstone Federal Credit Union Share	1.13
Rental of chapel for 1 funeral	50.00
Rental of chapel for 5 weddings @ \$50	<u>250.00</u>
(prepaid for 1990)	
TOTAL	\$1,541.13

Expenditures - 1989

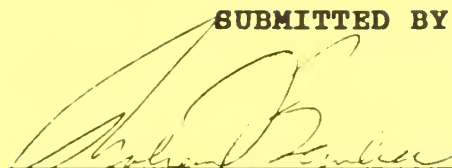
Cleaning of chapel	\$575.00
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ANNUAL REPORT OF THE SUPERINTENDENT

YELLOWSTONE NATIONAL PARK

1990

SUBMITTED BY:

A handwritten signature in dark ink, appearing to read "Robert D. Barbee", is written over a horizontal line.

Robert D. Barbee, Superintendent

YELLOWSTONE
NATIONAL PARK

LIBRARY

91-45

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RESOURCE MANAGEMENT AND VISITOR PROTECTION

The 1990 year featured record visitation with accompanying proactive and reactive visitor services and resource protection activities. An extensive number of quality resource management projects were identified and accomplished.

The Ranger staff was involved in the development of numerous documents and plans on a variety of resource issues. These included the completion of the Winter Use Plan, the completion and implementation of the Lake Bear Plan, and the Lake/Bridge Bay DCP.

The issue of bison crossing park boundaries and the State of Montana bison hunt became paramount in wildlife management planning. Ranger staff and Montana Department of Fish, Wildlife and Parks personnel developed an Interim Bison Management Plan. A cooperative long-range bison management plan and environmental impact statement (EIS) is being developed in conjunction with the State of Montana and the U.S. Forest Service with consultation from the Animal and Plant Health Inspection Service and the Ad Hoc Technical Committee on Brucellosis in the Greater Yellowstone Area.

PERSONNEL

Deaths:

Donald Henderson - Fire Mechanic

Transfers out of RM&VP:

Joe Fowler, Lamar Sub-District Ranger, to Resource Management Specialist, Lake Clark National Park and Preserve.

Sandi Fowler, Bear/Backcountry Office Supervisory Park Ranger, to Seasonal Park Ranger, Lake Clark National Park and Preserve.

Randy King, Tower Sub-District Ranger, to Chief Ranger, Glacier Bay National Park and Preserve.

Paul McLaughlin, Grant Village Assistant Sub-District Ranger, to Resource Management Trainee, Lake Clark National Park and Preserve

Andrew Fisher, Norris Supervisory Ranger, to Sub-District Ranger, Sequoia/Kings Canyon National Park

Julia Kuncel, Mammoth Assistant Sub-District Ranger, to Supervisory Park Ranger, Glacier National Park.

Lindsay Robb, VSO Clerk, Mammoth, to Maintenance, Mammoth.

Christy Kalkowski, Mammoth Ranger, to U.S. Forest Service, California.

Laura Long, CRO Headquarters Clerk, to Secretary, Administration.

Tom Huntington, Communications Operator, Mammoth, to Fee Collections Supervisor, Mammoth.

Susan Hender, Communications Operator, Mammoth, to Pennsylvania.

Transfers to RM&VP:

Jerry Ryder from Glacier National Park to Mammoth Assistant Sub-District Ranger.

Larry Carr from Sequoia/Kings Canyon National Park to Grant Village Sub-District Ranger.

Tom Betts from Rocky Mountain National Park to Snake River Assistant Sub-District Ranger.

In-park Reassignments:

Andrew Mitchell, Snake River Backcountry Supervisor, to Helicopter Foreman, Mammoth.

Richard Bahr, Helicopter Foreman, Mammoth, to Emergency Operations Specialist, Mammoth.

Colette Daigle-Berg, Grant Village Sub-District Ranger, to Lamar Assistant Sub-District Ranger.

Les Inafuku, Snake River Sub-District Ranger, to Tower Sub-District Ranger.

Brian O'Dea, Lamar Assistant Sub-District Ranger, to Lamar Sub-District Ranger.

Nick Herring, Snake River Assistant Sub-District Ranger, to Snake River Sub-District Ranger.

Keith Young, Communications Operator, Mammoth, to Supervisory Park Ranger, Mammoth.

New Hires:

Don Unser, Grant Village Assistant Sub-District Ranger.

Dave Phillips, Snake River Backcountry Supervisor.

Rick Fey, Lake Boat Ranger.

Kerry Gunther, Wildlife Biologist (Bears/Backcountry Office), Mammoth.

Christy Stalder, Communications Operator, Mammoth.

Debby Young, VSO Clerk, Mammoth.

Georgia McAdams, CRO Headquarters Clerk, Mammoth.

Shelton Johnson, VSO Courier/Clerk, Mammoth.

Nancy Clemens, Communications Operator, Mammoth.

Mark Roberts, Communications Operator, Mammoth.

Allan Bush, Communications Operator, Mammoth.

VISITOR SERVICES OPERATIONS**Park Visitation**

1990 was a record year for visitation with 2,857,096 visitors traveling to Yellowstone. This represents an increase of 176,720 visitors (6.59%) over the previous year's record (1989).

Visitation by Entrance Station

West	1,011,248
South	763,354
North	444,640
East	500,970
Northeast	136,884

Fee Collection

Total fee collection in FY90 from all sources was \$3,874,896.

Collections by Entrance Stations:

West	\$1,176,842
South	79,944
North	503,428
East	932,451
Northeast	<u>187,031</u>
	\$2,879,696
Campgrounds Collections:	\$970,465
Boat Permit Collections:	\$24,735

Permits Issued

Golden Eagle	450	Park Supplier Permit	6,807
Golden Age	171,724	Fishing Permit	17,241
Golden Access	500	Employee Vehicle Permit	520
Annual Area Pass	265	Fee Waiver	12,451
Special Use Permit	1,660	Group Camping	1,629
Boat Permits: 78 motorized; 210 non-motorized			

Commercial Operations

The majority of the Special Use Permits were for commercial traffic from Mammoth to the Cooke City/Silver Gate area.

Eighty-two Commercial Use Licenses were issued for various guided commercial operations (fishing trips, ski touring, snowmobiles, etc.).

Fifty-nine Limited Concessions Permits were issued for commercial backcountry stock use--both horse and llama outfitters.

Visitor Information

The Visitor Services Office received approximately 11,000 informational calls and responded to 1,000 written informational requests. The staff inventoried and distributed 35 different park publications such as maps, newspapers, bison and bear warnings, backcountry brochures, boating permits, and general information to 11 campgrounds, 5 entrance stations, and 7 visitor centers. Over 60,000 pounds of brochures, maps, and newspapers were delivered by the office staff during the summer, and 35,000 park guides were mailed to those who requested information on Yellowstone.

Lost and Found

The office received 3,408 found items and 2,068 reports of lost items. Over 865 items were matched to lost reports and returned to owners (25%); 800 items were returned to finders.

COMMUNICATIONS CENTER OPERATIONS

	<u>1989</u>	<u>1990</u>
Case Incidents	5,258	4,879
Bonds Issued	2,259	2,198
Motor Vehicle Accidents	476	495
Employee Motor Vehicle Registration Cards	3,307	3,256
•Permanent Employees	201	193
•Seasonal Employees	3,021	2,952
•Cooke City Residents	85	111
Identification Notices	287	289
•Number located	54	54
•Percent located	18.8	18.6
Criminal History Checks	1,394	922
Law Enforcement Checks	36,282	43,038
•Vehicle Checks	9,964	10,385
•Persons	4,451	6,817
•Local	6,255	8,634
•NCIC Entries	21	63
NCIC Inquiries	17,885	16,952
APB's	32	26
ATL's	24	15
Wrecker Requests	743	450
Incoming Calls	186,729	191,289
•Calls taken by *CINDI		97,106
•Percent of calls taken by CINDI		50.7
Information Packets Mailed	24,976	27,635
•Foreign	1,845	2,111
•Regular	23,131	25,524

VISITOR PROTECTION

Law enforcement commissions were maintained by 52 permanent and 88 seasonal rangers.

Additional certifications include:

Deputy USF&W Agents - 37
 County Deputy Sheriff - 22
 Deputy U.S. Marshal - 2
 SCUBA certified - 5
 Firearms Rangemaster - 10

Law Enforcement	<u>1988</u>	<u>1989</u>	<u>1990</u>
Motor Vehicle Accidents	531	495	496
Park I Offenses	170	169	161
Park II Offenses	2,747	3,532	3,041
Violation Notices Issued	2,090	2,391	2,403
Case Incident Reports	4,294	5,258	4,879
Court Cases (heard in Yellowstone)	231	243	244
Car Clouts	106	93	53
Resource Violations	<u>1988</u>	<u>1989</u>	<u>1990</u>
Preservation of Natural Resources	32	67	21
Snowmachine Violations	222	142	105
Camping	169	117	181
Closed Area Violations	197	198	219
Firearm Violations	14	39	29
Fishing Violations	114	104	47
Swimming/Bathing Violations	52	50	72
Wildlife Hunting	33	18	10

STRUCTURAL FIRE

Summary of Alarm and Fire Responses:

	<u>1988</u>	<u>1989</u>	<u>1990</u>
Alarms	95	146	206
Fires	28	28	20

Two new Type I (1,250 gpm) fire engines were received in September 1990 from Pierce Fire Truck Company. The first truck was placed in service at Mammoth and the second truck at Old Faithful in the spring of 1991.

There was an electrical fire in Grant Village Lodge D in September that caused an estimated \$40,000 in damage. There was also a fire in a recently constructed government duplex in Lower Mammoth in November. The cause of the fire was due to a wood stove that was in use in the facility. There was approximately \$90,000 in damage to the structure and its contents.

Don Henderson, the permanent structural fire department mechanic, died in March. Don's death hampered servicing and maintaining structural fire equipment during 1990.

WILDLAND FIRE OPERATIONS

All fires were suppressed in Yellowstone during 1990. There was a total of 43 fire starts; 35 lightning-caused, 5 human-caused, and 3 unconfirmed. These fires burned a total of 250 acres and

were suppressed at an approximate cost of \$1,000,000. The largest single fire was 220 acres.

Yellowstone personnel were dispatched to 24 out-of-park wildland fire assignments to assist the Forest Service, BIA, and State of Montana in suppression efforts. Assignments included overhead personnel, helitack crew with the park contract helicopter, and CWN (call when needed) helitack modules.

Approximately 139 park personnel were trained in fire suppression courses. The courses taught in 1990 included the following: S-130/S-190, Basic Firefighter and Fire Behavior; I-220, Basic Incident Command System; S-260, Fire Business Management; S-365, Time Unit Leader; S-212, Power Saws; Interagency Helicopter Training; and Helirappel/Short-Haul Operations.

AIR OPERATIONS

An Aerospatiale 315B "Lama" was contracted from June 15 through September 30. In addition, a Bell 206 L-III and MBB BK-117 were used to support fire suppression operations. A Bell 47G-3, Hiller 12E, and Hughes 500D were used for research operations. These aircraft flew a total of 400 hours in support of NPS operations and 30 additional hours for interagency operations. The helirappel and short-haul program continued with 36 people from within the park and the U.S. Forest Service participating. Three wildland fires were attacked using short-haul techniques. An additional six short-haul missions were executed for evacuation of injured persons.

There were 53 search and rescue incidents this year including 5 fatalities. Of these incidents, 15 were considered major incidents due to use of aircraft or because of the amount of time required to resolve the incident. There were an additional 4 responses to surrounding counties in support of their search and rescue activities.

RESOURCES MANAGEMENT

Avian

The second of a three-year study to monitor peregrine falcon nesting in Yellowstone National Park was completed. To date, six peregrine falcon eyries have been located. A report summarizing the history of the peregrine falcon in Yellowstone will be compiled. Money to support this three-year effort was received from the Regional Office.

The second year of a multi-year study to monitor the effects of wildfires on nesting birdlife was completed. To date, nesting ospreys have responded favorably to the aftermath of wildfires. Although snags are currently abundant for nesting, security of snags appears to influence the success of osprey production. Nesting bald eagles, on the other hand, although slow to respond in some cases, have all rebuilt nests in traditional nesting areas. Peregrine falcons appear to be highly adaptable to the effects of wildfires. However, one particular nesting area influenced by wildfires failed to produce young in 1990. The cause for failure at this site is not believed to be fire-related. Trumpeter swan nesting does not appear to be noticeably influenced by the effects of wildfires.

The private-federal program to introduce additional trumpeter swans into the Greater Yellowstone Ecosystem entered its second year. Five additional birds were purchased and joined last year's birds at the Call of the Wild Ranch. One of the recent transplants died from a mold infection leaving a total of nine surviving swans to date. No federal monies are involved in the purchasing of the birds, and involvement entails salaried employees only. Awards signed by the Superintendent were given to the private contributors, Chevron Corporation and Sandy and Len Sargent of the Cinnabar Foundation and the owners of the participating ranch, Eva and Betty DuPuy.

Biologist Terry McEneaney worked on a State of Montana committee with private conservation organizations to initiate a program called "Watchable Wildlife." The program designates areas where the primary emphasis is on watching wildlife rather than hunting. Participation in the Greater Yellowstone Ecosystem Bald Eagle and the Greater Yellowstone Ecosystem Peregrine Falcon Working Groups continued in 1990. Rangers participated in Operation Swan Shield on the Henry's Fork of the Snake River to try and save swans from perishing from food shortages. A Greater Yellowstone Trumpeter Swan Working Group was initiated to better coordinate and manage this sensitive species in the greater Yellowstone area. Artificial swan platforms were again used and built up at Beach Springs and 7-Mile Bridge. A swan information packet was developed for school children and an educational swan video produced for station KPIX, San Francisco.

An extensive amount of bird data, including observations, were collected for processing into the park's GIS Library of Archival Data Sets (LOADS) system and I&M park programs.

Mining and Minerals

During 1990, Noranda Minerals Corp. and Crown Butte Mines, Inc., submitted draft baseline data collection studies, draft powerline data collection studies, a plan of operation, and an application for permit to the Montana Department of State Lands and Gallatin

National Forest for the New World Project (approximately 3 miles outside the northeast corner of the park). Natural resource management staff extensively reviewed and submitted written comments at all these stages of the proposed mining development.

Yellowstone National Park, not being a regulatory agency in mining activities outside the park, has increased its involvement in the permitting process by participating on the New World Project Task Force. Natural resource management staff are actively participating on this task force.

Natural resource management staff researched, surveyed, and inventoried the abandoned McMinn Coal Mine. The mine was operated by the Army prior to 1917. A survey of safety hazards and potential reclamation was completed with documents sent to the WASO Mining and Minerals Branch.

Natural Resource Management Staff have attended all Mineral Hill Mine Citizen's Advisory Committee meetings during the past year.

Phase I was completed on the McLaren Mine Tailings project by Kennicott Mining Corporation. The site was declared an EPA Super Fund Site in 1990, and the stabilization of the tailings dam by reinforcing it was Phase I. The Phase II of this Administrative Order calls for further stabilization by de-watering the ore body proper. Kennicott is expected to begin Phase II by June 1, 1991.

The GIS operation continued to grow in use and capability from its initial start in 1989. Data themes now number in excess of 200, and operational time must be programmed because of demand. Software and hardware additions for 1990 allowed SAGIS, GRASS, and ARC/INFO systems to be used and information exchanged between the systems. The GIS Manager, George McKay, was used extensively in consultation to establish a Regional GIS program, in the formulation of a greater Yellowstone area GIS, and the integration of the Nature Conservancy's Natural Heritage Program into a greater Yellowstone area Conservation Data Center.

Water Issues

After five years of negotiations on Reese Creek water rights, a stipulated agreement was arrived at and signed by all parties. The signatories included Yellowstone National Park, Church Universal and Triumphant, Charles Mikolich, Jim Hotchkiss, and the State of Montana. As part of the settlement, Yellowstone would incur the costs of installing three stream flow devices to divert the appropriate and adjudicated water flows to claimants. Plans were drawn by the BOR Billings Regional Office, and funds

were provided by the Water Resources Division (WASO) in Fort Collins. Additional funding and consultation were obtained from the park maintenance division for the project. The agreement is to commence with the installation of the structures, scheduled for April 15, 1991.

The USGS report to Congress to investigate and analyze the possible cross-boundary geothermal connection with LaDuke Hot Springs was delayed. The due date was December 1, 1990, and it has been delayed until April 15, 1991. Because of the phase out of cross-boundary investigations and budget cutbacks, previous USGS monitoring parameters were in danger of being dropped. The North and West District Resource Management Coordinators were able to pick up some of the monitoring slated for termination. Participants to the Physical Science Symposium were collected together to formulate a baseline monitoring regime for the park although funding to date has not allowed its full implementation.

Vegetation Management

A hazard tree evaluation methodology was developed using an established U.S. Forest Service procedure. Hazard trees were surveyed and identified in portions of four campgrounds, the Mammoth developed area, the Lake quad housing complex, and along burned road corridors. Limited hazard tree removals occurred because of time and manpower constraints but was mainly focused along burned road corridors and small-scale campground needs. Approximately 36,300 board feet of wood was removed from road corridors while an additional 80,000 board feet still need yarded, decked, and removed. Further campground and roadside removals are needed for an acceptable level of safety to be achieved. Campground revegetation efforts are also needed to achieve desired screening and stocking levels.

A new growth vegetation overstory management regime was initiated in developed areas. Through a process of selected cutting of old growth lodge pole pine trees over a long cycle and the replacement of them with transplanted and natural regrowth, young uneven trees can be established. These younger trees provide better screening for campgrounds and developed areas and pose no threat to visitors and property.

Roadside exotic vegetation mapping was conducted throughout the park by Resource Management Coordinators as an initial step in compiling a computerized database of exotic vegetation distribution. Mechanical control efforts were similarly implemented throughout the park while approximately 60 gallons of herbicide mix were applied mainly in the north and west districts. Chemical control efforts were mostly targeted toward

spotted knapweed, houndstongue, and butter-and-eggs. A number of state, federal, university, and local agency meetings were attended to explain the park's program and to participate in joint control programs. This critical program continues to be underfunded.

Wildlife

Bison

The preparation of a long-range bison management plan and accompanying EIS continued during the 1990 calendar year. Scoping sessions were conducted in Gardiner, West Yellowstone, and Bozeman, Montana, and two public scoping meetings were held with interest groups. In addition, hundreds of letters were received during the scoping process, and by year's end, the mailing list had grown to over 300. Scoping comments were organized and mailed back to respondents in a summary format. Several sets of draft alternatives were formulated, but delays ensued when State of Montana Livestock officials asked the Animal and Plant Health Inspection Service (APHIS) for a quarantine of Yellowstone bison prohibiting them from leaving the park. In addition, the Fund for Animals, an animal rights activist group, sued the National Park Service and the State of Montana to cease the killing of bison outside the park. Dr. Mary Meagher testified on behalf of the park. Neither initiative succeeded.

Until a long-range plan can be implemented, an Interim Bison Management Plan is in effect. This plan was modified by the state of Montana to address animals exiting the park. An environmental assessment was written on federal involvement of the state plan, and a FONSI was signed.

The Ad Hoc Technical Committee on Brucellosis in the GYA met in May and November to continue the exchange of information on brucellosis. Dr. Mary Meagher continues to co-chair the committee with Dr. Tom Thorne from the Wyoming Game and Fish Department.

Bears/Backcountry Office

No bear related fatalities or injuries were recorded by the park in 1990. There were 1,798 bear sightings reported during the season; 848 grizzly, 837 black, and 113 unknown. There were 15 property damage incidents recorded; 4 grizzly, 4 black, and 7 unknown.

The GYA suffered a total of 9 known grizzly bear losses. However, production was high as indicated by the unduplicated female and cub counts of 24 for 1990. Fifty-seven cubs were recorded for an average litter size of 2.4 cubs per litter.

Spawning data, as related to bear use, was collected in the Lake/Bridge Bay area as well as Grant Village. This information was used in adjusting human use of those areas. Trends indicate peak bear utilization lags about two weeks behind peak spawning runs.

A plan to build a grizzly bear theme park next to the park's western boundary in West Yellowstone, Montana, was unveiled and commented on by the park.

A total of 5,171 backcountry permits were issued during 1990. Average party size was 3.1 people/permit. Backcountry use decreased from 32,747 visitor use nights in 1989 to 27,318 visitor use nights in 1990. Stock use increased from 7,518 stock use nights in 1989 to 7,828 stock use nights in 1990. This was the highest recorded level of stock use ever.

Air Quality

Air quality monitoring stations were operated at Lake, Mammoth, and a NADP site at Tower. The Regional Office supports the monitoring process financially and with data.

General

In March, the State of Montana reopened the Church Universal and Triumphant EIS requiring an amendment to the original EIS of March 1989. The park sent a letter to CUT requesting the Church reconsider the jack-legged fence on the northern border of the park. After a year of studying wildlife movement, the park had determined the fence impeded wildlife movement. The CUT responded that they believed the study to be flawed.

A great deal of staff time was devoted to planning issues and reviews of environmental related documents from other agencies in the greater Yellowstone area. Staff assessments of the Lake/Bridge Bay DCP, HUDAT projects, road realignments, and others were completed. A number of timber sales and other impact-producing proposals were reviewed on the Targhee National Forest.

A new and revised Resource Management Plan was drafted for the park. A Backcountry Management Plan strategy was developed for drafting and assignments made.

The annual Resource Management Workshop was canceled because of lack of funding. Unfortunately, much planning went into the session before it was terminated. The workshop was to be entitled the "Physical Side of Yellowstone" and would have featured a geothermal/geographical theme.

Seven issues of the resource management newsletter, the "Buffalo Chip," were written. Over 100 copies of each edition were mailed to addresses outside the park. Brown bag seminars were held throughout the year on resource management and research subjects. Resource management staff made many presentations to public groups and participated in training. A number of professional papers were also written. Numerous media contacts were made during the calendar year.

Crystal Cave was rediscovered in 1990 after a lapse of 60+ years. The cave was located off of the old road to Swan Lake Flats and unfortunately received vandalism. The cave was surveyed with photo points established and photos taken. A cable net closure plan was formulated, but nothing was done because of a lack of funding.

MAINTENANCE

GENERAL

The Maintenance Division's operation in 1990 was a year in transition from the 1988 fires to a "normal" operation. While fire rehabilitation continued, it was at a reduced level from 1989 and allowed for more standard planning and execution of park operations, even with record visitation. Personnel were fairly stable although two engineers, Richard Engle and Mike Finken, left the administrative staff. Removal of old hazardous materials (paint thinners, etc.) and underground storage tanks is demanding more time and focus. The new maintenance facility at Mammoth now has an interior floor and some walls, and the second floor has been contracted for. The lack of a viable cyclic maintenance program is still increasingly evident, especially in roads. Even though Craig Pass is complete, the estimate to bring the roads up to standard now exceeds \$300 million.

Three CO-OP positions were established and filled in the Maintenance Division. These positions are two Utility Systems Operator Trainees and one Engineering Trainee position. Each of these positions were filled by people who had worked at Yellowstone as seasonal maintenance employees for several years. Two of the three CO-OP students are women.

A limited recycling program was begun in conjunction with park concessioners Hamilton Stores and TW Recreational Services. Drop-off points for glass and aluminum were established in housing areas throughout the park. Drop-off points for aluminum were set up in many of the campgrounds.

BUILDINGS

Work on park buildings consisted of responding to critical work orders involving repairs necessary to keep the buildings open and functional. Due to base funding levels, cyclic and preventive maintenance have been deferred at least another year. Most building repair and rehabilitation accomplished this year was funded under the separately funded repair/rehabilitation and cyclic program. The remaining cyclic work was deferred, thus increasing the backlog of necessary work.

A variety of funding sources were pooled to accomplish numerous major building, utility, and housing projects. Funding sources included repair/rehabilitation and cyclic projects (rehabilitate buildings to meet NEPA - \$110,000; protect fuel tanks - \$260,000; rehabilitate the Lake generator building - \$20,000; purchase generators - \$100,000; reroof buildings - \$89,500; paint park buildings - \$100,000; chip seal roads - \$200,000; highway striping - \$25,000), winter use funds, fire rehabilitation funds, HUDAT - \$420,000, and ONPS base funds. The following projects were accomplished in 1990:

Mammoth:

The new maintenance garage in Mammoth now has a second floor and interior walls in the center section of the building. Work in completing the center section will continue in 1991. North District Maintenance operations were consolidated into one building with the complete remodeling of and move into building 28. The painting and sealing of the warming hut was completed. A new Bear Management area was built in building 75. A new location for books belonging to the Yellowstone Association was also built into one of the garage bays of building 75. An uninterrupted power source was installed and an office in the Blacksmith building was rewired for the GIS. The roof of the school was patched and numerous interior items were either repaired or replaced. Buildings 32 and 33 were reroofed with the historical red metal shingles. A new Sportsman Lake cabin was completed in its original location. The Maintenance Division provided craftsman supervision and workmanship in the rehabilitation of the Nez Perce cabin with the YCC.

West Entrance:

A second 7-unit garage building was constructed. The exterior of this building, as well as the new garage built last year, was stained. A room in the storage building was remodeled to provide an exercise room for local employees. Quarters 130 was replumbed.

Canyon:

The Canyon Visitor Center underwent extensive remodeling. Seventy percent of the exhibit and lobby area are complete, and a new boiler will be installed in 1991. Three comfort stations located on the canyon rim were repaired and painted. All SCA facilities (bunkhouse, mess hall, restrooms, etc.) were inspected and upgraded to comply with plumbing, electrical, and fire code regulations. The old water

treatment plant was gutted in preparation for another use. A shower/restroom (multiple) trailer was purchased (\$44,000) for the SCA fire recovery camp. All utility lines are permanently installed at the trailer location.

With the help of YCC work crews, significant work was accomplished at the Mount Washburn lookout tower. The entire building was repainted. Some interior remodeling occurred as well as the rebuilding of 20 feet of rock retaining wall adjacent to the tower. Due to safety concerns, the propane system was abandoned, and the tower is now completely electric. A roofing contract (NPS \$4,000, U.S. West \$3,000) was let to completely reroof the tower and U.S. West buildings. It is 40 percent complete with total completion expected in June 1991. The old generator building on Mount Washburn was completely cleaned up including the removal of the generator, numerous fuel tanks, hazardous wastes, and years of debris. U.S. West has agreed to install a new underground storage tank for the existing back-up generator. An emergency eye wash/shower facility was installed at the Canyon water treatment plant.

Norris/Canyon:

The Norris museum residence was completely gutted and remodeled.

Efficient propane heat was installed in quarters 810 (8-plex), and the above ground fuel storage tanks were removed. Routine, minor maintenance occurred on most quarters at Canyon by area crews. The campground residence (825) was remodeled and retrofitted for winter use.

Norris:

The exterior of the main comfort station was completely repaired and restrained. Work also began on the exterior of the Norris museum. A new maintenance storage building at Norris is under construction with completion expected in spring 1991. The Ice and Grebe Lake pits were cleaned, and all hazardous wastes were removed. Six tent pads were also constructed at the Norris Campground.

South Entrance:

The remaining 10 percent of work on the ranger/contact building was complete.

Grant Village/South Entrance:

The interior of the Grant Ranger Station was completely repainted. A new hazardous waste storage facility was built and is fully operational.

The old generator building was completely gutted and restored to a large storage area. The marina lift station was reroofed. Restaining occurred on the exterior of the entire Grant Maintenance Shop, and a contract was awarded for reroofing the building for \$42,500. A condition assessment of the Mt. Sheridan lookout tower was made. Recommendations on repair work are forthcoming. The South Entrance Ranger Station exterior was completely clear stained and sealed. The auditorium at the Grant Village Visitor Center was completely carpeted. An emergency eyewash/shower facility was installed at the Grant Village water plant.

Additional storage buildings were constructed at apartment buildings 633 and 634. These are attached to the rear of the units and are for permanent/winter seasonal personnel. Two trailers (seasonal) have had their floors rebuilt. Building 211 at South Entrance was completely replumbed. The existing piping was severely corroded and caused many maintenance problems. The building's exterior was also repaired and painted. All storm windows were repaired and retrofitted to provide maximum insulation. Minor maintenance on all quarters at Grant and South Entrance were performed by area crews.

Old Faithful:

A second boiler was added to the Visitor Center heating system.

Bechler:

A new roof and ceiling were installed at the bunkhouse trailer.

Madison:

A new hazardous material storage building was constructed. A 24x24 metal storage building was erected by day labor. The floor in the Madison Museum was replaced. Many facilities were painted including the campground office and residence, all tables and bumper logs in the campground, the lift stations in the picnic areas and in G-loop, the Madison shop (building 427), apartment building 418, and the campground amphitheater.

East Entrance:

The abandoned generator (45kw) was removed and surveyed. The generator building (778) was demolished and the area restored. A complete overhaul of the ventilation system (forced air) above the entrance station was completed, significantly reducing exhaust emission in the kiosks.

East/Lake:

Lake trailer (172), a permanent residence, was completely reroofed because of damage caused by ice build-up.

Lake apartment 711 (4-unit) received a new metal roof with a substantial pitch, and the exterior was stained. Remodeling continues on apartment 707. Three units were remodeled this past year.

Lake:

With the purchase of the Lake hospital generator, a new building (15'x15') was constructed to house it. In addition, a new underground storage tank was buried for its use. The 100kw generator now supplies emergency power to the entire hospital. The old generator was removed from the basement and surveyed. The hospital was also completely painted and sealed. A substantial amount of time and money was spent by South District maintenance personnel in assuring the hospital remained operational. Aging park owned equipment in the hospital again proved to be a major challenge to maintenance crews. The entire sprinkler system was cleaned and inspected, and recommendations were made to incorporate, in conjunction with the NPS Fire Chief, an inspection schedule and preventive maintenance program. A new generator (500kw) was also installed in the Lake utility area for emergency power during winter months. Major renovation was done to the interior of the existing building, and plans are to convert the remaining space into the South District plumbing cache. Three abandoned generators and related electrical equipment were removed and surveyed. Substantial work was done at the Lake transfer station area. Upgrade of the surrounding fence was completed along with the installation of new entrance and exit gates. Major landscaping and retaining wall modifications around the immediate station were done to accommodate new approach requirements of garbage trucks. A portion of the transfer station was modified and designated as hazardous waste storage for the Lake area. The entire station was cleaned and organized.

All utility buildings (pump stations) were repaired, and the exteriors were stained. A new concrete ramp was installed at the Fishing Bridge museum for handicap accessibility. The craft shops at Lake were reroofed with metal, and an additional lumber storage building is 50 percent complete. The two main wings of the Fishing Bridge museum were carpeted. Improvements were made to aid boaters in navigating around the marina area including new buoys, lighting, markers, signs, etc. Some modifications were made to the Lake Ranger Station to help mitigate ice damage that occurs every winter. Plumbing changes were made in order to isolate and drain the residence section in the fall, thus eliminating the need to keep it heated. A new RV dump station was installed in the Bridge Bay area. Bat mitigation continued in the Lake area, particularly the Lake Ranger Station. These efforts will continue. All seating in the Bridge Bay amphitheater and picnic tables at Lake were repaired, reset, and stained. Due to limited funds and manpower shortages, work on stabilizing/preserving the Fish and Wildlife buildings has been deferred yet another year. This situation will continue to worsen until funds are available for complete restoration. The Old Faithful satellite theatres were reroofed.

UTILITIES

Work continued on installing individual electric meters on quarters throughout the districts.

New 500kw generators were purchased for Canyon and Grant Village with actual installation scheduled for 1991. Work continued on phasing out inefficient sources of heat. Fifteen efficient propane heating units replaced outdated furnaces or electric heat throughout the South District. A new "on demand" chlorination system was installed for the domestic water supply at East Entrance. All residual readings are within the acceptable range. A new chlorinator was also installed in the Lake area providing more accurate chlorination and much safer conditions in dealing with chlorine gas. Chain link fence repair/rehab continued around the Canyon and Lake sewage lagoons as well as the Lake transfer station. This included complete new fueling stations. A new tank was also installed at the Lake Post Office. Installation of electric meters on most permanent quarters in the South District was completed. A new program of meter reading and making tenants responsible for actual usage was instituted. Results of first year usage figures will be available September 1, 1991. It is proposed that this program be expanded to include all trailer sites occupied by concessioners and contractors. The monumental task of "bar coding" all property in the South District was completed with great cooperation from all area supervisors. Wood sign replacement continued throughout the district with much progress

made in 1990. A new trailer dumping station at Bridge Bay was built using day labor forces. This station moves this use from the campground to the parking area near the picnic area and ice machine at Bridge Bay.

Installed a new 400kw generator in the maintenance area at Lake.

The existing overhead electrical distribution system was removed and a new underground system was installed in the housing and museum area at Fishing Bridge.

Fueling Stations

Removed the existing fuel tank at Lamar, three tanks at Flagg Ranch, and three tanks at the West Entrance. Removed existing underground fuel tanks (13) at Tower, Norris, and the South Entrance. Installed new 4,000 gallon fuel storage tanks (1 each) at Tower and Norris and installed 2 at the South Entrance. In addition, to replace fuel tanks, new concrete islands and slabs were constructed.

Fuel Storage for Heating Systems

Installed new underground L.P. tanks used for heating the new garage at West, the Lamar Ranger Station, and the South Entrance contact station. The fuel oil underground tanks were replaced at quarters 372 and 373 in Mammoth, the Mammoth Post Office, and the post offices at Old Faithful, Grant Village, and Lake.

Water Treatment

Both the water and sewage systems at Norris continue to be a problem. The sewage mound system at the geyser basin parking area and the government area failed again this year.

The rehabilitation of the Canyon Village sewage treatment plant is in the final design stages through the Denver Service Center.

Park County's rehabilitation of the Gardiner sewage plant is also in the design stages, and the NPS agreed to pay for approximately 70 percent of the capital cost.

A new force main for the Mammoth lift station was completed. This lift station was rehabilitated but still has failure problems.

HOUSING

The quarters program continues to lose approximately \$350,000 per year, and the quality of housing is very low. Over 25 percent of the units are of a temporary nature (trailers, transahomes, wingfoots) and were never intended for use in this

climate. The Housing Management Plan, in conjunction with the Servicewide housing initiative, identifies a \$50 million shortfall in upgrading, rehabilitating, replacing, and adding additional housing. Interior park employees continue to live in trailers and other substandard housing throughout the winter.

A community planning effort continued through the Denver Service Center with two contracts for all major park areas except Canyon. By the end of the year 75 percent of the plans were completed for park contracted area.

Site work and walks were installed at the new Lake four-plex.

Two additional four-plex units (one at Grant Village and one at Old Faithful) and a duplex at Mammoth were completed.

Progress continued in 1990 with upgrading sub-standard conditions of park housing. In the South District, eight new refrigerators replaced outdated, inefficient, non-repairable units. Over fifteen existing refrigerators were repaired and fine tuned by private contract. Eight old residential ranges were also replaced. In excess of 400 square yards of carpet were laid throughout quarters used by permanent and/or winter seasonals. A quarters inspection process was launched and has produced two main results, accountability by tenants, and raw data to more accurately reflect what the actual work backlog is in order to better prioritize work needed to be done.

Norris:

The apartment attached to the Norris Museum was gutted and rehabilitated.

Mammoth:

The interiors of buildings 2B and 86 were completely gutted and rehabilitated. Buildings 2A and 11A were gutted and are scheduled for rehabilitation in 1991.

South Entrance:

Painted the exterior of the duplex (building 211) and converted existing storm windows to combination storm and screen windows.

Old Faithful:

Painted the exterior of quarters 124.

Madison:

Painted the exterior of apartment building 418.

Lake:

Installed four new propane fired furnaces in apartment building 711 and one new furnace in quarters 708.

The North District Quarters Shop renovated 26 quarters in Mammoth Hot Springs during occupant turnovers. The renovations included gutting and rebuilding bathrooms, installing new kitchen countertops and floor coverings, painting the interiors of the quarters, and insulating crawl spaces. In addition, the Quarters Shop completed numerous housing work orders throughout the North District. The bathroom at the Northeast Entrance ranger residence was also totally replaced.

ROADS AND FRONTCOUNTRY TRAILS

Roads continue to feel the brunt of the park's belt tightening. Road structures are for the most part failing, and the current estimate to repair them is \$300 million.

Landscaping was completed around the new Mammoth Terrace warming hut and around the new duplex quarters in lower Mammoth. All of the campfire rings were replaced in the Slough Creek Campground. Additional rings were purchased at the end of the season to replace many of the deteriorated campfire rings in campgrounds throughout the park. Work continued on the change-over of sign color on all wood routed signs in the park.

The railing on the Beryl Springs bridge was repaired and painted.

The South Entrance road (20.2 miles) from Grant Village junction to the South Entrance was chip sealed.

Park maintenance crews placed an asphalt overlay on one mile of road in the Blacktail area past the Frog Rock pit entrance. In the same area, they constructed and paved a parking area at the Children's Fire Trail.

Approximately 1500 cubic yards of material that was washed on to the roads during mud slides in Gibbon Canyon was removed and hauled to the "old" Fire Hole dump. The material was used to completely rehab and landscape the area.

Yellowstone produced and used 4,000 cubic yards of MC800 asphalt cold mix material to patch roads throughout the park. We "experimented" with a finer graded mix material using 1/2" minus aggregate in lieu of the 3/4" minus aggregate used in Yellowstone for many years. The finer graded material worked well, and we will continue to use it in the future.

National Park Service trucks and Jaype Trucking contract trucks hauled 21,000 cubic yards of 3/4" minus aggregate from 5 miles north of Yellowstone National Park to the Norris hot plant storage pit.

The park crushing crew crushed the remaining material at Gardiner for 3/8" chips. 4,000 tons of these chips were used on the South Entrance road chip seal project.

An old asphalt oil spill at Soldiers Pit was cleaned up, and the contaminated material was transported to the Norris Pit. All oil/fuel contaminated soil that has been stored at the Norris Pit during the past three years was processed through the hot mix plant dryer. The processed material tested clean as per EPA standards and will be used for backfill throughout the park.

Paved parking areas were constructed at Lake for TWRS and YPSS employee dormitories. Waterline cuts were patched behind the Lake Hotel and cabin area parking lots. The Fishing Bridge Hamilton Store parking lot received an asphalt overlay.

Yellowstone road crews installed an asphalt overlay on the service roads and parking areas for the U.S. Forest Service at their office in West Yellowstone, Montana. The job will be completed with a chip seal during the 1991 season.

Park maintenance crews removed dog hair pine in many locations throughout the park from road ditches near intersections and pullouts to increase visibility and driver safety.

Many of the parking lots in the park were striped this year by maintenance crews, using a new lead free traffic paint.

Road striping was accomplished in several areas in the park including the road from the North Entrance to Norris Junction, Norris Junction to Canyon Junction, Norris Junction to Madison Junction, and Grant Village Junction to the South Entrance.

Spring opening in the park began on March 6 and was completed ahead of schedule on April 9. Opening the Beartooth Highway began on April 11 and was completed by May 3. The road was then closed for most of the following three weeks by spring snow storms and heavy blowing and drifting.

A new parking area was constructed by the maintenance crews at the TWRS horse corrals in Mammoth.

The park purchased a new 5-cubic-yard loader this fall. A new rotary snow head package was also purchased for this loader and should be delivered by next summer.

The Federal Highways Administration administered two road contracts this past year. H-K contractors of Idaho Falls, Idaho, completed the road reconstruction project from West Thumb to Delacy Creek. This project included the obliteration of the West Thumb to Old Faithful one-way road at the West Thumb junction. A new contract to overlay the bypasses at Lake, West Thumb, and Old Faithful (including the four-lane into Old Faithful) was awarded to Burggraf Construction of Idaho Falls, Idaho. This 3R type of construction project included minor pullout work, dig outs, and a new asphalt overlay. Work started on the Old Faithful area in the fall of 1990. Revegetation (mulching, seeding, tree planting, etc.) continued in conjunction with FHWA road construction for Craig Pass. Trees were planted to help revegetate the one-way road obliteration.

BACKCOUNTRY TRAILS

The backcountry trails program, excluding SCA work, was similar to 1989, as the last large scale fire recovery effort was undertaken. Total Accomplishments for the year included the following major items:

- 90,318 feet of tread reconstruction
- 615 feet of turnpike constructed
- 3,950 feet of trail rehabed (will no longer be used as trail)
- 182,372 feet of trees and brush cleared
- 783 feet of bridges constructed
- 2,343 person hours of drainage devices constructed
- 5,660 square feet of retaining walls constructed
- 1,704 person hours spent packing livestock

The Trails Foreman, Animal Packer, and Trail Worker Leaders spent considerable time in support and supervision of work of the SCA and YCC.

Major areas of trails worked in FY90:

Lake:

- Old Faithful frontcountry trails
- Fern Lake trail
- Lynx Creek trail (40% finished major reroute)
- Eagle Pass

Snake River:

- Canyon Horse trails
- Heart Lake trail
- South boundary trail
- Snake River Cutoff trail
- Mariposa Lake trail

West:

- Old Faithful frontcountry trails
- Daly Creek trail
- Fan Creek trail
- Bechler Canyon trail

North:

- Yellowstone River trail
- Osprey Falls trail (major slide 50% finished)
- Agate Creek trail
- Buffalo Plateau trail
- Mammoth and Tower horse trails

Frontcountry trail crews reconstructed boardwalk in a portion of Biscuit Basin and completed the new Children's Fire Trail near Frog Rock and a new Two Ribbons Fire Trail near the West Entrance.

FIRE RECOVERY

Yellowstone identified six objectives to accomplish through the fire recovery program. Two of the six objectives were assigned to maintenance for coordination--rehabilitation of visitor use areas and rehabilitation of the backcountry. These two objectives result from suppression (32 miles of bulldozer line, 100 helispots/staging areas, and 600 miles of hand fire line) and damage by the fire brought about with regard to and visitor safety (hazard trees along 170 miles of road and 600 miles of trail). There are 253 separate fire-related projects identified and scheduled to be accomplished over a period of three years.

Fire recovery funded the majority of the design and construction of three quad-plexes (Old Faithful, Lake, and Grant Village) and one duplex (Mammoth). The Sportsman Lake Patrol cabin, destroyed during the fire, was reconstructed.

1989 fire recovery funds (\$311,337.79) purchased and equipped two structural fire engines put into service October 1990.

The park trail program was funded \$250,000. Only seasonal employees, supplies, and materials were charged to this money. Types of projects performed were trail tread maintenance, shoulder maintenance, water bar maintenance and installation, and bridge repair and construction.

Cultural resources was funded \$40,000 to insure all projects with the potential for ground disturbance were cleared through the compliance process. Most cases required archaeologists from the Midwest Archeological Center to survey and document results.

During year two of the fire recovery program the cooperative agreement developed with the Student Conservation Association, Inc., was modified to show a decrease in funding and staffing. This program again utilized the Blister Rust facilities at Canyon. A bathroom/shower facility was purchased for the camp to meet requirements for man camps. From mid-June through August, 13 high school work groups and 2 international exchange crews (Latvia and Estonia) worked in the backcountry, and 7 work groups worked in the frontcountry. A total of 125 individuals participated in this program. Types of projects performed were trail tread maintenance, water bar maintenance and installation, bridge repair and construction, rehabilitation of dozer lines, assisting within the visitor contact stations answering questions, and patrolling trails in the backcountry (cash - funded \$68,000 and support costs - \$61,000).

Hazard Tree Removal

Public safety concerns following the wildfires of 1988 prompted the need for a significant roadside hazard tree removal program. The primary objective of the project was to prevent unstable trees from falling onto the road. The secondary objective was to blend the cut areas with the residual forest.

South Entrance Road

Roadside operations began at the Grant Village intersection proceeding south for eight miles. All operations ceased approximately one mile north of the Dogshead Trailhead Parking area. Operations included identifying and felling hazardous trees and cutting stumps flush with the duff line. A rental agreement for equipment with operator to yard and deck logs was developed. A logging company from Oregon supplied an operator with a Barkco, three axle, rubber tired, hydraulic log loader with winching capabilities. This machine set up on the pavement and winched in and decked logs along the road shoulder. A disposal sale was advertized for decked logs. The park received one bid. Six log truck loads (approximately 19,800 board feet) were removed from the park along the roadside before weather conditions forced work stoppage. At this time, there is approximately 50,000 board feet of decked logs to be removed when weather and road conditions allow (spring 1991).

Canyon/Norris Road

This phase of the project began on the forested slope to the west of the Canyon area meadow and continued west to the Grebe Lake Trailhead Parking area. Operations included identifying, felling, cutting stumps flush with the duff line, and hauling stumps to the roadside for disposal.

Madison Campground

Operations involved surveying, identifying, felling, and cutting stumps flush with the duff line in five campground loops. Logs and slash were hauled to a local pit for disposal. A mechanical stump grinder spent considerable time removing stumps below ground level. Hundreds of stumps still need to be ground to complete this campground.

Nez Perce

Operations involved removing hazardous trees (standing dead) and cutting stumps flush with the duff line throughout the picnic area. Area was opened for fire wood gathering.

Tuff Cliffs

Severe weather conditions prevented this area from being completed during the fall of 1989. The project included bucking, hauling, and stacking slash along the roadway and cutting stumps flush with the duff line. Slash stacks were hauled to a local pit for disposal.

	<u>TREES FELL</u>	<u>STUMPS CUT FLUSH</u>	<u>STUMPS GROUND</u>
South Entrance Road	4,938	8,100	
Canyon/Norris Road	1,777	2,800	
Madison Campground	70	70	550
Nez Perce Picnic Area	25	25	
Tuff Cliffs		400	
	<u>6,810</u>	<u>11,395</u>	<u>550</u>

At this time there are 15 areas that need hazard trees felled and hauled out of the park before this project can be considered complete. Those areas are:

PRIMARY ROAD

•South Entrance Road	10
•West Thumb to Osprey nest area	2
•Canyon Norris Road	4
•Dunraven Pass	5
•Petrified Tree Area	3
•Elk Park to Gibbon Falls	8
•Madison to Old Faithful	8
•Madison to West Entrance	<u>14</u>
	54 Miles

SECONDARY ROAD

•Virginia Cascades Drive	2.6
•Firehole Canyon Drive	.2
•Fountain Flats Drive	4.7
•Petrified Tree Drive	.5
•Blacktail Plateau Drive	2.6
•Chittenden Road	.4
•Bunsen Peak Road	<u>2.9</u>
	13.9 Miles

Total miles to be accomplished: 67.9 Miles

Currently preparations are under way to modify the existing disposal sale or advertize to "yard, deck, and haul" the logs remaining along the road corridor in 1991.

A budget with three options was developed and submitted in hopes of funding a crew to continue this program in 1991.

"L" Loop - Grant Campground

Operations included identifying and felling hazardous trees. Utilizing chain saws, stumps were cut flush with the duff line. The stumps were hand carried to the roadside for disposal. A mechanical grinder ground the remaining stump to mineral soil. A rental agreement for equipment with operator to yard and deck logs was developed. A logging company from Oregon supplied an operator with a Barkco, three axle, rubber tired, hydraulic log loader with winching capabilities. This machine set up on the pavement and winched in and decked logs along the road shoulder. An advertised disposal sale for decked logs received one bid. Five log truck loads

(approximately 16,500 board feet) were removed from "L" Loop. "L" Loop also was opened for fire wood gathering which assisted in the clean up process.

TREES	STUMPS	STUMPS
<u>FELL</u>	<u>CUT FLUSH</u>	<u>GROUND</u>
750	700	514

At this time there are at least 50 stumps to be cut flush with the duff line and 250 to be mechanically ground to mineral soil.

Lake Quad

All trees in the immediate area of the quad were individually evaluated using established Forest Service Hazard Tree Evaluation procedures. Fourteen trees on the west side (direction from which prevailing winds occur) were identified for the first phase (immediate removal). Eleven of the 14 trees had a severe lean toward the structure. Safety dictated that these trees be rigged with ropes during removal procedures.

Operations included climbing, rigging, felling, limbing, and bucking into fire wood trees removed. Stumps were cut flush with the duff line. Slash was stacked for disposal at a later date. Due to excessive ground water, conventional methods for clean up, utilizing rubber tired equipment, was unacceptable.

TREES	TREES	STUMPS	TREES
<u>FELL</u>	<u>RIGGED</u>	<u>CUT FLUSH</u>	<u>BUCKED</u>
14	11	14	7

LANDSCAPE ARCHITECTURE

Parkwide signing, Federal Lands Highway projects, and fireline rehabilitation dominated landscape involvement during the 1990 fiscal year.

Parkwide Signing

Implementation of the parkwide sign standards continued in 1990. Progress was made in most districts. A total of 1,661 metal regulatory and specialty signs and 565 log signs posts were purchased and, for the most part, installed. In addition, 194 metal signs and 247 wood signs were made or repaired. Program costs of over \$40,000 did not go far in decreasing the backlog of work, but it represented a positive step forward.

Federal Lands Highway Projects

Reconstruction was completed on an 18-mile section of the Grand Loop road between Old Faithful and West Thumb. Phase II included the remaining 9-mile section from West Thumb to Delacy Creek and the landscape department was responsible for revegetation design and implementation on road slopes. Additional plant materials were developed and transplanted utilizing native species. Cooperative agreements with Soil Conservation Service and Bridger Plant Materials Center provided seed cleaning and propagation of collected materials. Monitoring and analysis of test plot data for cover type and density were also provided by Bridger. The first two years (1989 & 1990) of results indicated excellent recovery of native species.

Planning and vegetation materials development is in progress for both the East Entrance reconstruction project and the West Thumb overlay.

Postfire Rehabilitation Projects

Rehabilitation of the 1988 fires continued in 1990 with the use of native seed near Gibbon Falls and Crystal Springs and the staining of new power poles to make them blend in with the terrain. The Children's Fire Trail parking area was designed and graphics for the fire assessment document were completed. Photo documentation of rehabilitated lines and areas continued in 1990 to record the regeneration of native plant materials.

Rehabilitation was completed on the Cooke City bulldozer fire line, although it shows the effect of delaying rehabilitation. A report on the "rehabilitation of wildfire suppression impact on the North Fork Fire in Yellowstone National Park" was completed.

Other Projects Included:

- Stevens Creek Nursery--general maintenance and front row cottonwood cuttings
- Revegetation Projects--current parkwide revegetation projects:
 - Lake Hotel dorm and new quad
 - Bridge Bay campground
 - Soap Suds Row
 - Fishing Bridge parking area
 - Lava Creek picnic area
 - Opal Terrace
 - Mammoth berm (additional topsoil, seed, and mulch)
 - YACC camp area

- Seed Collection for current and future revegetation projects:
 - Sylvan Pass
 - Old Faithful
 - Canyon
 - Mammoth
- Lava Creek/Tower powerline topsoil salvage and revegetation.
- Fire Escape Design for the Lake Store
- Transplanting trees at Old Faithful and on Firehole Canyon Drive
- Preliminary drawings and layout for HUDAT (housing) study areas
- Norris Soldier Station site plan
- Old Faithful cabins visibility study and preliminary work for planting plan.
- Mammoth Warming Hut:
 - landscape design
 - topsoil salvage and re-distribution
 - revegetation
 - parking area design around Liberty Cap
- Roosevelt Lodge parking area--new design for more efficient use
- Norris Campground rehabilitation--campground improvements:
 - tent pad construction
 - erosion control

OPERATIONS

As with other facets of the division, the operations portion was hindered by the lack of sufficient cyclic funds besides expending a major effort on fire recovery. The equipment fleet continues to be replaced at such a pace that it gets older each year. Currently, it is estimated that \$8.5 million will be required to bring it up to par.

The winter operation continues to grow both in terms of visitation and expenses, and, as has been the case for the last decade, something has to give--in this case the summer operation.

The condition of the roads and housing units continues to cause the most complaints although with the advent of the FLHP program and the realization of the Servicewide housing problem this could gradually improve.

MAINTENANCE MANAGEMENT SYSTEM

Yellowstone completed the final phase, Task 20, of the implementation of the Maintenance Management System in May of 1990. The park was commended for the amount of effort they had invested in the program.

The 1990 fiscal year was the first full year of reporting to MMS for the maintenance operation. In the summer of 1990, the entire MMS program was reviewed and analyzed for compliance with standardized management units and Servicewide activities. Importance of individual activities to the overall program was also considered. Servicewide activities were used in the 1991 fiscal year program when applicable. Many activities were combined in order to simplify the program. Management units were changed to comply with those recommended by the Washington Office. The results are a simpler but effective MMS program for employees and managers.

RESEARCH

Historically, Yellowstone's special physical and biological attributes have attracted researchers from all over the world, but the park's penchant for being in the public's eye and its controversies stimulate scientific interest as well. In 1990, 288 research projects were permitted and under way in the park. Over 90 percent of these projects (approximately 170) were carried out by scientists from universities, other state and federal agencies, and corporations. These projects were valued at about \$2,000,000. During the year, the park had substantial NPS commitment as well with 118 authorized projects under way and \$2,022,000 expended. The Division of Research committed 31 FTE to science projects. About 42 percent of this program was funded with park base funding with the remainder (58%) being supported through a variety of Servicewide project initiatives and reimbursable accounts from other parks and agencies.

Of the total number of projects, approximately two-thirds have a biological theme, one-third relate to the physical sciences, and five projects have a socioeconomic theme. The largest single commitment of money (22 projects amounting to \$795,000) was devoted to projects related to the restoration of threatened and endangered species. This was closely followed by research on the 1988 postfire environment (44 projects and \$755,000), ungulate and grazing questions associated with Yellowstone's northern range (38 projects, \$456,000), cross-boundary geothermal connections (2 projects, \$150,000), and aquatic and fisheries questions (19 projects, \$145,000).

Public, media, and political interests continue to focus to a great extent on Yellowstone's resource issues. The medium and long-term strategy for dealing with these issues commands a strong and viable scientific function. With the level of research activity under way, now combined with the newly created Yellowstone Park/University of Wyoming/Montana State University Cooperative Park Studies Unit, we believe that 1990 represented a major, positive step toward achieving that goal.

ADMINISTRATION

TELECOMMUNICATIONS

Efforts to replace the telephone system serving the National Park Service (NPS) and TW Recreational Services (TWRS) have remained a high priority. In March, a decision was made to abandon use of the government RFP process in favor of allowing TWRS to proceed with their own procurement action to acquire a system which would meet their exclusive requirements. NPS requirements could then be met by upgrading and re-locating some of the existing equipment.

In April, TWRS issued a RFP and was successful in obtaining proposals from three companies. U S West's proposal for Centron Service was considered the best of the three since it included upgrading the old central offices and the parkwide microwave system. However, no agreement was executed due primarily to a requirement for significant up-front money.

During this past year, telephone service in the park and the surrounding communities continued to deteriorate. Incidents of failures and problems with obtaining dial tone or accurately completing calls were abnormally high. Visitors placing long-distance calls to the park often encountered difficulties. Also, US West made organizational and other changes which reduced the support provided to the park. We spent considerable effort, with only minimal success, attempting to communicate our serious concerns to US West. In October, we filed a formal complaint with the Public Service Commission Offices of both Montana and Wyoming.

In early March, Yellowstone was added to the new FTS2000 Federal Telephone System network.

Our requirements for, and use of, alarm and security systems continue to grow. Significant improvements made this last year include the installation/implementation of a controlled access system for the administration building in Mammoth, the addition of alarm systems at several dormitory and sewage pump stations, and major improvements at the South and East entrance stations.

In January the park acquired satellite receiving equipment and subscribed to satellite weather information service which provides local and national weather information to our Communications Center on a 24 hour basis.

The park's workload in the area of data communications continues to grow steadily. This past year, the use of our Data-Over-Voice system was significantly expanded. We also implemented the use of several print sharing devices and accomplished a lot of moves, changes, and interfacing between ADP devices.

The Ranger Division has significantly increased the use of facsimile machines this past year. We now have machines in each of the developed areas.

We are in the process of constructing a new significantly improved audio recording studio. This studio is required to produce audio messages used with interpretive programs and our KNPS information television station.

Considerable change is occurring in the field of audio visual services. The advent and application of new technologies is increasing the options available for satisfying A/V requirements. These changes and other factors are impacting the need for thorough planning in these areas. Consequently, we have put considerable effort into the development of a formal plan which will set the direction of the A/V support program and enhance our ability to identify, meet, and support the park's requirements. As part of this effort, equipment has been purchased to upgrade all amphitheaters.

AUTOMATIC DATA PROCESSING

Our use of computers continues to grow. There has been a continued trend towards the use of more PC's and away from the centralized Datapoint system. We purchased 18 new PC's in FY90 and many new software packages. We added 65 megabytes of additional disk space to the Datapoint.

Most of the communication with our Regional Office is now via PC instead of the Datapoint system. Communication software most used is SeaDog. We also use Procomm & CCmail.

Some PC networking has been implemented. Research, Programs, and ADP are all up and running on a PowerLAN network with file servers in ADP and Research.

We implemented the use of the Department of Agriculture Property System to be used by the Property Office and the Garage.

This past year, we installed and began the implementation of the new Federal Financial System (FFS). This is a large and ongoing project. Personnel from ADP and Fiscal attended training on this new system in Denver.

New programs written in FY90 included crossovers of Purchase Orders from the Purchase Order System to the Cost System and the new FFS system; a Backcountry site narrative program and a Fire Hydrant Maintenance Program for the Ranger Division; and a KSA Program (Knowledge Skills & Abilities) for the Personnel Division.

PROCUREMENT AND CONTRACTING

A total of 13 contracts were awarded during the year. Five-year contracts were awarded to the Park County and West Yellowstone, Montana, Solid Waste Districts for disposal of the park's solid waste. A Cooperative Agreement between the National Park Service and Park County, Montana, was established for capital improvements, expansion, and reconstruction of the Gardiner wastewater treatment plant with the Service committing \$440,000.

The Third Party Draft System was implemented in March as a new method for purchasing from and paying vendors. This has reduced the number of purchase orders issued by about half from the previous year. Totals to date:

Purchase Orders	- 1839
Drafts	- 1519

PROPERTY MANAGEMENT

Bar Code labeling of capitalized property was started in April. About 40 percent of the 8,300 property items have had the labels applied.

CONCESSIONS

All of Yellowstone National Park's concessioners provided satisfactory services during 1990.

Steve Martin was hired as Chief of Concessions in March, replacing Lee Davis who was promoted to Chief of Concessioner, WASO.

TW RECREATIONAL SERVICES

<u>1990 SUMMER SEASON</u>	<u>NUMBER OF GUESTS</u>
Hotels/Lodges	616,421
Fishing Bridge RV Park	<u>102,051</u>
TOTAL:	718,472

<u>1989/90 WINTER SEASON</u>	<u>NUMBER OF GUESTS</u>
Old Faithful Snow Lodge	17,748
Mammoth Hot Springs Hotel	<u>13,123</u>
TOTAL:	30,871

SUMMER/WINTER 1990 NUMBER OF GUESTS SERVED MEALS

Served 1,741,874. This does not include special visits and employee dining room numbers.

Preparations for the renewal of the TWRS contract began in 1990. The concessions management staff began the process of preparing the Statement of Requirements and support documents to advertise this concession opportunity. The Statement of Requirements should be published in March 1991.

HAMILTON STORES, INCORPORATED

The West Thumb Store was removed in the fall of 1990 in compliance with park planning to move facilities away from the thermal area.

YELLOWSTONE PARK SERVICE STATIONS

YPSS sold 2,461,258 gallons of gasoline in 1990, compared to 2,504,510 gallons in 1989.

YELLOWSTONE PARK MEDICAL SERVICES

Mammoth Clinic:	4,369 total visits (visitors, seasonal employees, residents)
Old Faithful Clinic:	1,012 visitor visits <u>1,018</u> seasonal employee visits 2,030 total visits
Lake Hospital:	1,951 visitor visits <u>1,793</u> seasonal employee visits 3,744 total visits
	38 visitor in-patient days 9 seasonal employee in-patient days

West Park Hospital has continued to support the park's emergency medical services program, providing technical support and training.

FIREBOX, INCORPORATED

A permit with Firebox, Incorporated, was executed in April of 1990, and they began operating in Yellowstone in June 1990. Firebox provides firewood to visitors with 25-hour vending machine service in six campgrounds. There was positive feedback from visitors, rangers, and other campground personnel with the vending machine operation.

TRIANGLE FIREWOOD COMPANY

Mr. Britt Lewis, d.b.a. Triangle Firewood Company, filed suit against the National Park Service after the wood concession permit was granted to Firebox, Incorporated. Firebox, Incorporated, offered to provide 24-hour service to the public which was considered a better offer. Mr. Lewis exercised his preferential right to meet the better offer; however, he failed to meet all of the necessary criteria.

OUTFITTERS

Horse outfitters were converted from commercial use licenses to limited concession permits. These are administered by Visitor Services with technical assistance from the Concessions Management Office. There were 59 summer outfitters operating under LCPs in 1990.

INTERPRETATION

In FY90, the Division of Interpretation was allocated an operating budget of \$795,800. Additional funds were designated for specific projects: \$4,100 -rehabilitation of Thomas Moran paintings; \$17,000 - funding for park newspaper and fire supplement; \$17,000 - completion of children's fire trail; \$27,000 - cataloging of items in museum collection. Total funds available to the division were \$868,950.

Division staff consisted of 18 permanent and 30 seasonal employees. Of the 2,857,096 visitors to Yellowstone, 1,999,344 (70%) were contacted by interpretive staff at visitor centers, evening programs, walks, demonstrations, etc. Over 4,027 different activities were offered in 1990.

Additions and deletions to the staff resulted in reorganization within the division. When Headquarters District Naturalist Joe Zarki transferred to the Badlands in October, this position was restructured. The Environmental Education Field Coordinator position was reclassified as a GS-9, advertised, and Jenny Matsumoto was selected. Jenny assumed all responsibility for the environmental education program, while many of the special projects assigned to the Headquarters District Naturalist were given to Media Specialist, Linda Young-Tankersley. South District Clerk, Mary McCutcheon, resigned effective September 30, and Vivian Ridley was hired to fill that position in December. Other staff changes included the permanent assignment of Tom Tankersley to the Historian/Archivist position; the addition of Steve Eide as a subject-to-furlough GS-5 line interpreter; establishment of subject-to-furlough positions for the Photo Archivist and Artist/Illustrator positions; and the reinstatement of the Mammoth Sub-district Naturalist position.

Seasonal interpretive training was held June 4 - June 8 at the YCC Camp. Two days of field trips highlighted this week-long session which covered various topics including: communications, botany, fire ecology, Native Americans, microbiology, etc.

The Volunteers in Parks (VIP) Program continued to provide valuable assistance to the Interpretive Division and the entire park. During 1990, 294 volunteers provided 30,945 hours of service. The program was allotted funding of \$8,050. In addition, 20 Student Conservation Association Resource Assistants contributed 9,371 hours of work in various divisions. The Yellowstone Fire Recovery Corps continued in their second year of operation with 188 VIPs donating 26,880 hours.

The Yellowstone Association (YA) continued to contribute significantly to the National Park Service. In addition to supplementing the interpretive staff at information desks, YA funded the salaries of the librarians for the park's research library; printed trail guides for the six major areas of the park; handled printing and distribution of "Discover Yellowstone"; and provided monetary support to the Interpretive Division. The total contribution by YA in FY90 was \$253,513. Sales of interpretive materials were up 18 percent over the previous year, and membership dues increased 19 percent over the previous fiscal year. The Yellowstone Institute offered 83 courses that were attended by 721 students.

ENVIRONMENTAL EDUCATION

In 1990, Jenny Matsumoto was the field coordinator for Expedition Yellowstone, supervising three seasonals and one volunteer. Expedition Yellowstone had two sessions: spring (April-May) and fall (September-October). During the summer season the field coordinator served as the only interpreter for the Tower sub-district and during the winter assisted in the Mammoth sub-district interpretive operations.

During the Expedition Yellowstone season, over 900 students and teachers participated in the program. The majority of the participants were from Wyoming, Montana, and Utah. Other schools came from Idaho, Colorado, and Ohio. The visits of 27 schools were organized, planned, and coordinated through this program. Due to debate in Congress over the 1991 budget for the Federal Government, two school group sessions were canceled due to lack of funds for staff.

Work on the curriculum Getting to Know Wildland Fires was completed. This curriculum was a joint effort. Ellen Petrick-Underwood wrote the activities, Ellen Meloy drew the illustrations, and Joe Zarki edited the text. The U.S. Forest Service produced a poster that was part of this curriculum, and 20,000 copies were distributed to teachers.

The Children's Fire Trail boardwalk was completed, and it was used in conjunction with the Expedition Yellowstone program. The text for the wayside panels and for the book that will accompany the trail are near completion. A May 1991 dedication for the trail is planned.

Presentations on Expedition Yellowstone were made at Montana State Teachers' Conferences and to an Audubon college class. Expedition Yellowstone appeared in environmental education directories prepared by High Country News, the Student Conservation Association, and educational publications.

PLANNING/MEDIA/SPECIAL PROJECTS

Publications completed or in production included: four issues of the park newspaper, four issues of "Discover Yellowstone," a completely revised fire supplement to the park newspaper, a tabloid format information mailer (the "Yellowstone Guide"), the Fountain Paint Pot and Norris Trail Guides, trail guides to the fire auto/nature trails, several topical site bulletins, a completely revised and upgraded winter guide for snowmobilers, and revision of the tear off locator map presently out of print.

Planning activities took place at the Three Senses Nature Trail, the Children's Fire Trail, the fire auto/nature trails (Blacktail Plateau and Bunsen Peak drives, plus the Lodgepole and Two Ribbons trails). Parkwide planning continued on various components of the wayside exhibit plan, the development of sensory nature trails, and site identification for digital sound stations.

Exhibit planning, design, and production was in progress with respect to the North District Wayside Exhibit Plan, the Norris Soldier Station/Ranger Museum, temporary exhibits for Canyon Visitor Center, and replacement exhibits along the Three Senses Nature Trail. Orientation/information/ leaflet dispensing exhibits were designed for each of the fire auto/nature trails and are in production. Thirteen cast aluminum wayside exhibit panels were completely renovated and installed throughout the park.

Special projects spanned several categories. Among the highlights, the "Imagine Yellowstone" art contest attracted the greatest number of participants to date. Entries were exhibited at the Albright and Canyon Visitor Centers, and a traveling exhibit of these works was developed. Several publications were developed in relation to the exhibit and to publicize the 1991 contest.

Art/illustrations were created for staff in research, resource management, and interpretation. These were used in publications and reports and as part of the development of awards, certificates, signs, and logos.

A Touch Source computer information system was developed and arrived in the park late in the year. The monitor is designed to permit visitors to touch the screen for information about Yellowstone services and facilities, road and weather conditions, and regulations. It also features an overview of a full range of natural/cultural history topics. Modification of the program must be completed before the system can be installed in a visitor center.

Photography projects continued to span both the curatorial/archival aspects of the collection as well as management of the active collection. Requests for photographic services (copy work, research, slide/photo duplication, on-site photography) poured in from every Yellowstone office as well as from hundreds of other sources (writers, publishing companies, schools, organizations, the media, other government agencies). Long-term strategies for the preservation and cataloging of original historic negatives were developed. Over 300 requests for slides/photographs were processed, involving approximately 12,000 slides and 700 historic prints.

ARCHIVES, MUSEUM, AND LIBRARY

The archive storage area was rearranged and the records reorganized to reflect the established National Park Service filing system. This makes the records more easily retrievable, maintains the original order of the historic record, and provides for a quick and logical manner in which to add new accessions. The army records were not effected by this reorganization. There were approximately 200 requests for information or research assistance which required use of archival materials. A cooperative agreement with Montana State University has resulted in several transfers of materials which meet the scope of collections for both the park and university. A proposal was presented to the Montana State University Department of History to establish an internship program at the undergraduate and graduate level. This program, which will provide assistance in the management of the archives and accomplish research needs, should materialize in the coming year. The National Archives performed their annual inspection of the Yellowstone Archives and found everything to be satisfactory. Twelve feet of records from central files covering the years 1979 to 1983 and the 1988 fire records were accessioned into the archives.

The Curator position was upgraded to the GS-7 level. The museum operation benefitted from special appropriations to meet the cataloging backlog. Four part-time positions were filled and several thousand items were catalogued this year. In addition, there were 81 accessions into the museum collection. To insure preservation of items associated with concessioner history in the park, efforts have been made to secure representative examples of historic furnishings and vehicles for accessioning into the museum collection. A team was created for the preparation of a new park collection management plan. This project was funded and coordinated by the Washington Office.

The library served nearly 1,000 people during the past year. Library hours remained 1-5 p.m. Monday, Wednesday, Friday, and 8:30 a.m. to 12 noon on Tuesday and Thursday. There were 105 new accessions into the library collection. Librarians have begun archival treatment and accessioning of the manuscript collection (3,000 items) and transfer of this collection to a fire proof cabinet.

NORTH DISTRICT

The North District winter interpretive staff consisted of the Norris Sub-district Naturalist, the Environmental Education/Tower Naturalist, and one seasonal interpreter. Interpretive activities included evening programs at the Mammoth Hotel, Fort Yellowstone history walks, Mammoth Hot Springs walks, and a diversity of other skiing and hiking experiences. On a weekly basis during the winter season (mid-December through the first week of March), the staff operated the visitor center daily from 8:30 a.m. to 5 p.m. (in December of 1990 hours changed to 9:00 a.m. to 5 p.m.); provided three evening programs per week; and offered a variety of other interpretive programs.

The Winter Wildlife Expedition was restructured into the Winter Wildlife Watch, which required one interpreter to help the public observe wildlife between Gardiner and Mammoth Hot Springs. Attendance was spotty and disappointing, and this activity was discontinued in the winter of 1990/91.

The Mammoth Hot Springs summer interpretive staff consisted of park historian Tom Tankersley, half-time each of the park artist and park photo archivist, a day or two a week of the interpretive secretary and a Fishing Bridge naturalist, and four seasonal naturalists. The staffing situation was chaotic, to say the least. Yellowstone Association sales clerks contributed greatly to the staffing of the Albright Visitor Center. In addition to providing a variety of walks and demonstrations each day, evening programs were provided nightly at Mammoth Hot Springs and four nights a week at Indian Creek Campground.

The winning entries of the 1990 "Imagine Yellowstone" art competition were displayed in the Albright Visitor Center beginning in early summer and remained there throughout 1990. The Norris interpretive staff consisted of the subdistrict naturalist, one full-time seasonal employee, and two half-time seasonals. The Yellowstone Association also provided support staff at Norris. Campfire programs were given nightly at Norris campground, in addition to daily walks, demonstrations, and children's programs at the geyser basin, the "blowdown" site, and Artist Paint Pots. Norris received more than half a million visitors, greatly stressing the resource and the available staff.

The Norris Museum apartment was completely renovated, and the museum was rewired. The campground campfire circle was relocated up the hill from the old one to avoid several hazardous trees. Construction of a new trail segment in the geyser basin from Bathtub Spring to the old roadbed trail on the Porcelain Basin side of the museum, provided wheelchair access for the first time to Porcelain Basin. Construction of a major new boardwalk/observation area at Echinus geyser reduced severe safety hazards and provided greatly improved resources protection.

The North District had only one summer employee at Tower/Roosevelt: the Environmental Education/Tower naturalist position. This individual gave campfire programs at both Tower and Pebble Creek campgrounds in addition to leading a variety of guided walks and roving activities. Bear jams along antelope Creek became such a common occurrence during the summer that she spent much of her time working the jams.

SOUTH DISTRICT

During the 1989/90 winter, three permanent and two seasonal employees operated the three warming huts in South District. This was the first season that interpretation staffed the Fishing Bridge warming hut. Carol Shively evaluated the need and potential for future staffing as well as producing several winter-oriented exhibits. Generally visitation greatly exceeded the previous winter.

Carol Shively and Roger Anderson attended the seven-week Ranger Skills course at the Grand Canyon in March.

All visitor centers increased their hours to 8 a.m. to 8 p.m. during the core season (June 15 to August 24) without an increase in paid staff. There were five seasonals at Canyon, five at Fishing Bridge, and four at Grant Village. All permanent South District employees including the district naturalist spent at

least 12 hours/week on front line interpretation to provide adequate levels of staffing. In addition, two full-time volunteers at Canyon, two full-time volunteers at Grant, and two at Fishing Bridge, along with numerous part-time volunteers made the program possible.

Canyon Visitor Center opened May 18 and hosted the "Imagine Yellowstone" art exhibit. It closed September 30 with visitor contact continuing at the warming hut through October 8. The exhibit area began extensive rehabilitation preparatory to receiving the fire exhibit in 1991. Canyon visitation increased by 82 percent over 1989.

Fishing Bridge Museum was open from May 24 through September 3. Inaccurate geology exhibits were removed, and Yellowstone Association functions were separated from the information desk and moved into part of that space. Visitation at Fishing Bridge increased by 48 percent over 1989.

Grant Visitor Center opened May 25 and closed September 30. The West Thumb warming hut was then operated until October 8. A new movie on the 1988 fires, "Yellowstone, The Unfinished Song" was installed mid-summer as were the remaining parts of the fire exhibit. This exhibit was awarded first place in the 1990 exhibits competition by the National Association of Interpreters. The visitor center visitation increased by 47 percent.

Increased use of the visitor centers may have been partially due to the overall rise in visitation, a desire for maps due to decrease of staffing of entrance gates, or other unknown reasons. There was a significant increase in participation in naturalist-led activities and evening programs which is often correlated to length of stay.

Of particular note is the participation at evening programs at Fishing Bridge. This was the first year the government campground was closed. Average nightly attendance was 328, exceeding that of 1989. Ninety percent of that audience came from the Fishing Bridge RV Park. At all South District areas, family campfire programs were offered at about 7 p.m. several days a week. We wished to evaluate if we were missing an important audience segment, those that could not stay up for the 9:30 p.m. evening program. Attendance more than justified that effort.

The audience seating at Bridge Bay was leveled and painted bringing that facility up to standard. An improved handicapped accessible ramp was installed at Fishing Bridge Museum. New copies of exhibits for Fishing Bridge were obtained, and one new exhibit was developed--"Why there is no fishing on Fishing Bridge."

Kodak representative Mary Mather contributed four evening programs and six walks weekly to the South District program. Volunteer and SCA programs continue to be an important part of operations as National Park Service personnel are reduced.

WEST DISTRICT

The West District interpretive staff for the 1989-90 winter season consisted of the District Interpreter, the Old Faithful Area Supervisor, and three seasonal interpreters. In addition to managing and supervising the daily operations, the area supervisor, Dan Ng, performed a full schedule of interpretive activities and public contacts. Daily interpretive services included a conducted activity in the morning, another in the afternoon, and an evening program. The visitor center opened, and conducted activities began on December 15. These activities terminated on March 10, and the visitor center closed March 18. The Old Faithful staff also provided informational and interpretive services at the Madison Warming Hut.

The 1990 summer staff consisted of the District Interpreter, the Old Faithful Area Supervisor, and six seasonal interpreters. The visitor center opened for the summer on April 14 and remained open through November 4. Daily hours of operation were 8 a.m. to 8 p.m. We were fortunate to have two Student Conservation Association aids again this year, along with several volunteers. Approximately 1800 hours of volunteer time was given to assist the Old Faithful interpretive operation. Without this additional assistance at the visitor center very few conducted activities could have been given.

A new Yellowstone Association sales desk and new book display racks were installed in the visitor center lobby this spring. This upgrades the appearance of the sales area considerably. The lower level false ceiling was removed from the visitor center lobby this spring. Also, the original electronic geyser prediction board that was mounted overhead on the lobby wall was removed as it is now obsolete and repair parts are unavailable. Asbestos insulation was removed from the plumbing in the boiler room, and a supplementary boiler was installed to provide adequate heating capability. Although the wood stove is still being used, the boiler is the primary source of heat for the entire building.

In the fall of 1989, one of the courtyard geyser film theaters was remodeled to provide a warming hut and lunch room for snowmobilers. A second roof with an air space between was put on it in the spring to prevent ice formation which traps water on warm days, causing leaking. The other courtyard theater was double-roofed in September.

Four new benches were constructed for placement along the geyser basin boardwalks where rest stops are needed. The wooden floor in the Explorer's Museum exhibit room had weakened from decay and was completely rebuilt. It was decided to change the appearance of the seats at the Madison Amphitheater from the natural weathered wood to the park sign brown. The seats and the projection facilities were painted during the summer.

The Three Senses Interpretive Trail beside Firehole Lake was abolished this summer. All trailside exhibits were removed and the dirt portion of the trail was rehabilitated. New interpretive panels which encourage visitors to use their senses were acquired by late summer. They are to be installed along the boardwalk which encircles Firehole Lake.

PLANNING OFFICE

The Winter Use Plan, several years in progress, was completed. This plan was prepared not only for Yellowstone, but also for Grand Teton National Park and John. D. Rockefeller Memorial Parkway. It is expected to provide comprehensive management direction in the three-park area for the next 10 to 15 years.

A draft plan and environmental assessment was published and reviewed by the public in the summer of 1990. The comments of about 450 groups and individuals were considered in the production of the final plan. A Finding of No Significant Impact for the Winter Use Plan was signed on November 9, 1990, and the final plan was made available to the public in late December, 1990.

The plan/environmental assessment establishes policies for winter use in the three parks. Its intent is to preserve and emphasize the national park experience of viewing scenery, geothermal features, and wildlife during the winter season. Opportunities will be provided for a spectrum of visitor activities, including snowmobiling, cross-country skiing, snow coach tours, and overnight lodging oriented to this experience. These opportunities will compliment those found on national forests and other lands outside the parks. Implementation of portions of the plan will be contingent on appropriated funding from Congress and will be coordinated with the U.S. Forest Service and others in the greater Yellowstone area.

In 1984, the Lake Village and Bridge Bay areas were separated from the Fishing Bridge/Lake/Bridge Bay Development Concept Plan (DCP) due to the controversy surrounding the removal of facilities at Fishing Bridge. In 1988 the Fishing Bridge DCP/EIS was completed, and planning for the Lake Village and Bridge Bay areas resumed.

The Lake/Bridge Bay DCP addresses access, circulation, parking, and visitor and administrative facilities. In 1990, field data collection was completed and alternatives formulated and reviewed. In June, during the Regional Director's visit, a preferred alternative was agreed upon. Completion of the draft plan and environmental assessment is pending final review.

The Servicewide housing initiative and community planning effort, initiated in 1989, continued in 1990. Community plans were completed for Lake Village and the East Entrance. Community planning for the other ten principle developed areas in the park either continued or was initiated. The community plans address housing needs of concessioners, contractors, and the park staff. The underlying intent of community planning is to improve upon the quantity and quality of park housing and do it in such a way that a sense of community is fostered and park resources are protected.

Two architect-engineer (A/E) contracts were awarded by the Denver Service Center to complete community plans, assess rehabilitation needs of existing housing, and prepare recommendations for new housing locations at ten developed areas. The first contract included the Mammoth, West Entrance, Grant Village, and Tower/Roosevelt areas. A second contract was awarded in 1990 to include Norris, Canyon, South Entrance, Madison, Old Faithful, and the Northeast Entrance areas. The process of community planning has included sociological analysis of each residential development as well as multiple community meetings in each of the areas. In 1990, alternative sites were proposed, and an analysis of each is under way to determine which sites represent the best solution to each area's environmental and sociological issues.

Commercial vehicle use of U.S. Highway 191, which passes through the northwest corner of the park, continued to be an issue in 1990. The park prepared an environmental assessment (EA) analyzing impacts of various regulatory changes. The preferred alternative would have removed hazardous materials from this route but authorize all other types of commercial traffic. The EA, however, did not fully analyze alternative routes, impacts to commodity distribution, and other economic factors. The park is now in the process of including an analysis of these factors in a revised environmental assessment.

The position of cultural resources management specialist was vacant for six months. Sonja Capek-West left the position at the end of February; Catherine Smith filled the position in September. During the vacancy, Management Assistant Kevin Brandt facilitated cultural resources management in the park.

A major emphasis during 1990 was the preparation of a preliminary draft cultural component of the Resources Management Plan. Yellowstone has never had a cultural resources management plan. Preparation of such a plan involved extensive work. Sonja Capek-West worked on the cultural component, on a consultant basis, through the spring and summer of 1990. Catherine Smith continued the compilation and organization of information upon her arrival in September.

Another first for Yellowstone was the entry of archeological site information into the GIS system. George McKay, Yellowstone's GIS

Coordinator, received site information from the Midwest Archeological Center (MWAC). This information was transferred into the GIS system. The park has approximately 400 archeological sites distributed throughout the park.

A major work element was the integration of cultural resource preservation into various planning and management documents. These documents included the draft Statement for Management, draft Wildland Fire Management Plan, draft Yellowstone Post-fire archeological inventory report (two reports, 1989 and 1990), and draft archeological report on Yellowstone's Community Planning projects.

A significant component of cultural resources management in 1990 involved Section 106 compliance for projects that could potentially affect historic and archeological resources. Yellowstone has more than 900 historic structures and 400 archeological sites although less than 1 percent of the park has been surveyed.

Ann Johnson, regional archeologist, and Ken Cannon, MWAC archeologist, lead a crew in conducting archeological surveys for community planning projects, road work, and other construction projects. Les Davis, an archeologist from Montana State University, completed a draft National Register nomination for Obsidian Cliff. Marcy Culpin, regional architectural historian, continued to work on the first park Historic Resource Study entitled "The History of the Construction of the Road System in Yellowstone National Park."

PUBLIC AFFAIRS OFFICE

PERSONNEL

Employees directly associated with the Public Affairs Office included a GS-12 Park Ranger/Management Assistant, a GS-11 Park Ranger, a GS-5 Correspondence Clerk, a part-time GS-7 Public Information Specialist, and a seasonal GS-5 Correspondence Clerk.

Marsha Karle was selected for a special one-year assignment to Mt. Rushmore National Monument as Special Events Coordinator beginning in November.

Kim Kain worked as a seasonal Park Ranger from May to the end of October; Cyd Martin accepted a short-term, part-time position in a clerk/typist position beginning at the end of October. Linda Miller continues to work one day a week for the Public Affairs Office; and Sandi Robinson worked as a GS-5 Park Ranger from June through August.

GENERAL INFORMATION SERVICES

The Public Affairs Office serves as a clearing house of information for the park and local communities and responds daily to written, telephone, and walk-in requests for assistance and information.

A wide range of correspondence, often requiring detailed answers, numbered more than 900 pieces. More than 10 percent of this correspondence was from foreign countries.

The Public Affairs Office worked closely with the Regional and Washington Public Affairs Offices, keeping them informed on a variety of matters and seeking advice on sensitive issues. Major news items involving Yellowstone included continued interest in the aftermath of the greater Yellowstone area fires of 1988, fire management policy, bison management, wolf restoration, Church Universal and Triumphant, winter use planning, grizzly bear management, increased regional tourism, etc.

The Fire Document Center is now under the direction of the Interpretation Office.

NEWS RELEASES

There were 55 news releases, 9 emergency news call-outs, and 1 media advisory issued in 1990.

FILMING PERMITS

Forty-five actual filming and photography permits were issued in 1990, ranging from nature film documentaries to product commercials. A new National Park Service policy effective in 1990 no longer requires all commercial photographers to obtain a permit. Permits are now required only when photography involves product or service advertisement and the use of models, sets, props, etc.

PHOTO/SLIDE REQUESTS

The Public Affairs Office answered 152 requests for loans of slides and photographs on Yellowstone subjects, including numerous requests for fire and post-fire slides from the public and the media; 2000+ photographs and slides were mailed out in response to these requests.

The Public Affairs Office continued to provide photographs for media interests on several newsworthy and special events throughout the year.

PUBLICATION EDITING REQUESTS

The Public Affairs Office responded to 48 written requests for editing publications about Yellowstone and numerous phone requests for the same. These requests were often complex, requiring extensive research to provide accurate information for major national and international publications.

OFFICIAL VISITORS/COUNTRIES

USAID/Bolivia - May

Israeli Visitors - USIA Project - May

Gnophile Hilaire Gome from Cote D'Ivoire - USIA Project - May

Dr. Rusdian Lubis Director of Environmental Study Center at Hasanuddin University, South Sulawesi, Eastern Indonesia -

Eisenhower Exchange Fellowship - June

Ching-Huei Liu from Taiwan - sponsored by the Coordination Council for North American Affairs - June

Mr. Atsushi Takei, Deputy Directory in Charge of Technical Cooperation, Fisheries Agency of Japan - USIA Project - June

Eitan & Karni Gluzman, Director of Economics Department of

Nature Reserves Authority--Israel - DOIA - June
 Miguel Platon from Spain - sponsored by the Montana Council
 for International Visitors - June
 Piero Tinelli, Italian Ministry of Environment, Italy - USIA -
 June
 Tze-Chien Wang of Taipei, Taiwan - June
 Daniel Vreugdenyil, Senior Water Resource Manager--Dutch -
 July
 Cathy Macfie--New Zealand - Fullbright Scholarship - August
 Jiri Kovarik, Czechoslovakian University Professor - August
 Bernard Nievergelt, President of the Scientific Commission of
 the Swiss National Park -- August
 Roger Sidaway, University of Edinburgh, Scotland - August
 Oscar Alvarez and Pilar Norza, Ethics in Government, Costa
 Rica - August
 Dr. Yedidya Kaplan, Nature Reserves Authority, Israel - August
 Joseph Riani, Chairman of Board of Directors, National Parks
 Authority, Israel - August
 Chew Seng Choon & Horvinda Keu, Ministry of Science,
 Technology and the Environment, Malaysia - August
 Marco Antonio Giron, Biologist, Mexico - September
 Nairobi Kenya Narok Country Council members - September
 Soviet conservation leaders - September
 World Wildlife group - Bhuta - September
 Celso Schenkel, Director of Federal Protected Areas, Brazil -
 September
 Yoshiyuki Suezawa, Senior Staff of Environmental Conservation
 and Nature Protection - Kagawa, Japan - September
 Andre Rwamakuba, Director of Environment and Development
 Projects, Ministry of Plan in Kigali, the Republic of Rwanda
 - September
 Tiro Seeletso, Director of Department of Wildlife and National
 Parks, Botswana, Africa - September
 Multi Regional Environmental Project sponsored by the Montana
 Council for International Visitors - October
 Three International Visitors from the Republic of China (one
 of them the Superintendent of the Republic of China's
 largest state park) - November
 Henry Hoyer, Superintendent of the Ontario Natural Resources -
 December

MEDIA CONTACTS

This is a sampling of many of the media we assisted in person (on site). Approximately 2000+ were assisted by phone in 1990, representing national, international, regional, and local media.

TV/Video/Filming/Etc.

ABC News - May
 Home Show
 Nightline - May
 America the Beautiful
 Peter Andrews Productions - August
 Apple Tree Productions
 Centre Communications, Boulder, CO - May, June
 Channel 4, Salt Lake City - July
 CNN (Entertainment 2000) - June
 CNN (Educational Programming) - July
 ESPN - June, August
 Idaho Public TV (Roger Furman) - June
 IMAX Systems Corporation - June
 KCNC, Denver - March
 KDG Teleproductions - June
 KGGM (CBS Affiliate), Albuquerque, NM - April
 KIFI (NBC Affiliate), Idaho Falls - April
 KTVX - July, September
 KTWO-TV, Casper - May, June
 KSL TV - July
 KTST (CBS Affiliate) - July
 KUTV - August
 Mirimar Productions - May
 National Geographic - March, April, November
 National Geographic Explorer - May, September, October
 NBC
 Nightly News - April, August
 Today Show - May
 Nieman-Marcus - May
 Nixon Productions
 Omni Films International - June
 Outdoorsman TV Series - October
 Ray Paunovich Productions - May
 Roamin' Productions - February
 Screenwork Designs - August
 Side-By-Side (TV program) - January
 Sterling Martel Productions - March
 Terra Productions - June, September
 The Travel Channel - June
 University of Wyoming Television - beginning in July--three
 year project
 USA Today - July, September
 USGS EROS Data Center - September
 Wakeman Productions - May

Wildlife Films - May

World Monitor - June

Radio

KJ Radio - September

KMTM - September

KSL Radio (Program - "Get-A-Way") - May

KSL Radio - August, September

WHIO Radio, Dayton, Ohio - April

WJR Radio, Detroit - February, May

WLAC, Nashville - September

Magazines/Newspapers/etc.

Associated Press - June

Atlanta Journal - May

Audubon - August

Baltimore Sun - July

Bergen News Publishing Corp. - June

Billings Gazette - all year

Bozeman Chronicle - all year

Business Week - June

Casper Star Tribune - July, December

Capital Gazette Newspapers - June

Coast to Coast Travel Magazine - May, June

The Daily Oklahoman - June

Enterprise (Bridgewater, MA) - June

Family Travel Times - June

Fodors Travel Guide

Grand Rapids Press (Michigan) - May

Harpers Magazine - March

Home & Away - June

Idaho Post Register - April, August, September

Indianapolis News - June

Jackson Hole Guide - all year

L.A. Times - July, December

Ladies Home Journal - June

Lillie Suburban Newspapers - June

Livingston Enterprise - all year

National Geographic - April, December

National Parks Magazine - April

New Woman - June

New York Times - May, August

Newsweek Magazine - May

The Oregonian - July

Outside Magazine - May, June, December

People Magazine - June

Peninsula Community Newspapers - June

Public Relations Group, Inc. - June

Rocky Mountain News - July

Rocky Mountain Travel - August

RV West - June

San Antonio Light - June
 Sports Illustrated - June
 Sunset Magazine - March, July
 U.S. News & World Report - July
 Washington Post - August
 Western Horseman Magazine - July

Freelancers

Todd Wilkinson - January, August
 Micah Morrison - January, June, July, August, September,
 December
 Tom Hackett - April
 Dan Baum - April
 Margaret Knox - April
 Andy Bird - June, July, August
 Pat Lauber - June
 Dan Cox - June
 Bill Horine - June
 Laura Backus - June
 Will Van Overbeek - July
 Dave Lerner - August, September, December
 Chris Mosner - August
 John Chavick - August
 Jim Robbins - August
 Frank Herrera - August
 John McNeeley - August
 Lane Kimbrell - September

FOREIGN MEDIA CONTACTS

TV/Video

BBC Television - August
 Berline TV - August
 RTZ Radio-Televizija Zagreb, Yugoslavia - June
 Spele Film, Germany - May
 VIVA! Beaver...Tonky, Japan - July
 West German TV (Hans Wiegard), Vancouver, Canada - June
 XL Productions, France - July, August
 French film crew - October

Radio

CBC Radio, Canada - June
 CKO Radio, Canada - May
 German Radio SDR/ARD - July

Magazines/Newspapers/etc.

Panorama (Dutch equivalent of Life), Dutch - May
 Rolf Schneider and Micahel Freitag, Frankfurter Allegemeine,
 Germany - August

Freelancers

James Croall, Britian - May
 Janvier Giraud, France - February
 Miguel Platon, Spain - June
 Brigitte Fugger, Germany - August
 Pekka Anttila, Finland - September
 Anthony Firth, Canada - September

CONGRESSIONAL/OFFICIAL VISITS

Throughout the year, the Public Affairs Office assisted with programming and arrangements for United States Government dignitaries, park officials, and other guests. A sampling of these visitors follows:

Governor Stan Stevens - February
 Director Ridenour - February
 Director of BLM - March
 Idaho Parks & Recreation - May
 Alan C. Jackson and Barbara J. Griffith, grandchildren of
 William H. Jackson - June
 Lorraine Mintzmyer - June
 Conoco President Nikandros - June
 Wives of Senator Bumpers and Congressman Williams - June
 Congressional visit - Michael Andrews, Pat Williams, George
 Miller, Thomas Downey, Robert Mrazek - June, July
 Secretary Lujan - August
 Kevin Fromer, Congressman Roger's office - August
 Mary Carroll, Parks International - August
 Delaware State Parks, park directors - September
 National Parks and Conservation Association, Terri Martin -
 September

MEETINGS

Winter Use Meeting, Superintendent's Conference Room - January
 The Wildlife Society Meeting, Colorado Chapter - January
 (Marsha attended and gave presentation)
 International Visitor Program, Grand Canyon - April (Joan
 attended at the request of Office of International Affairs)
 Scoping Meeting EIS, State of Montana - April
 GYCC Managers Meeting, Bozeman - April
 Custer Country Tourism Meeting, Laurel, MT (Joan attended and
 gave presentation) - April
 Greater Yellowstone Coalition Meeting, Teton Village - May
 Montana Travel Commission, Missoula, MT - May
 Chip Davis/Mannheim Steamroller Concerts, Paul Masson Winery,
 Saratoga California (Marsha attended) - May, June
 Livingston Chamber of Commerce - June (Joe Alston attended)
 Wolf Meeting - June
 Nez Perce Trail Meeting - June
 Greater Yellowstone Area "Vision" Meeting - June
 Cody Chamber of Commerce-sponsored journalist meeting at Old
 Faithful - June
 Chip Davis/Mannheim Steamroller Concerts, Wolftrap, Virginia -
 (Joan attended) - June, July
 Joint meeting with MT Fish, Wildlife & Parks in Bozeman on
 bison issue - August, September
 Marsha and Bob have meeting with Chip Davis at Spring Creek
 Resort - August
 10th National Audubon Society Rocky Mountain Regional
 Conference - September
 Bison Management Plan Scoping Meetings - October
 Bozeman Arts Group - November

TOURS

FAM Trip - January
 USIA-Sponsored/KPVI (Idaho Falls radio) trip of 6 foreign
 broadcast journalists - April
 Allied Tours, group of 75-100 French landscape designers -
 September
 Montana Council for International Visitors - a Multi-Regional
 Environmental Project - October

MISCELLANEOUS

Regional Foresters toured park on Forest-sponsored trip - June
 Denver Youth Group - cleanup of lakeshore - August

SUPERINTENDENT'S CHAPEL COMMITTEE

During 1990 the following events occurred at the chapel:

35 Protestant worship services
 1 Special "Christmas in August" service
 9 Catholic worship services
 20 Weddings

Financial Status:

Savings	\$1,094.59
(Balance as of December 31, 1990)	

Checking	\$907.94
(Balance as of December 31, 1990)	

Income	
Rental of chapel for 1989 winter ministry	\$220.00
Rental of chapel for 1989 summer ministry	140.00
Rental of chapel for 1989 Catholic services	140.00
Rental of chapel for 19 weddings @ \$50/wedding	950.00
Interest earned on savings account	<u>17.79</u>
Total Income:	\$1,467.79

Expenditures	
Cleaning of the chapel	\$570.00
Piano tuning	69.00
Purchase of candles	<u>66.85</u>
Total Expenditures:	\$705.85

