



# United States Department of the Interior



NATIONAL PARK SERVICE

Zion National Park  
Springdale, Utah 84767

IN REPLY REFER TO:

A2615 (ZION-S)

February 7, 2003

Memorandum

To: Director, Intermountain Region

From: Acting Superintendent, Zion National Park

Subject: Superintendent's Annual Report  
Reply Due: February 7, 2003

Enclosed is the requested subject report for Zion National Park for the fiscal year 2002.



Eddie L. Lopez

Enclosure

## CONCESSIONS

### Amfac Parks & Resorts, Inc. Concessions Contract

The facilities and services provided by Amfac Parks & Resorts within Zion National Park were fully satisfactory this year.

With park visitation increasing by 16.24 percent in 2002 and with the rate increases allowed in the rooms and the food and beverage departments, total revenue for the lodge was up 9.04 percent. The increase in visitation is not reflected in the overall revenues collected by the concessioner. Room occupancy was up 2 percent, and group room sales were up eight percent. Bus traffic for the park was down significantly and foreign individual travel at the lodge was down ten percent. Room revenue increased 10.12 percent. Food & Beverage revenues were up 7.77 percent with revenue from the Café down 1.3 percent. Retail sales were up for the first time in several years 9.2 percent.

Special Accounts projects completed this year included the remodel of the motel bathrooms and the installation of an awning on the dining room patio. Sidewalks throughout the overnight accommodation area were repaired or replaced and all of the parking areas, including the employee housing area were repaired. The design for the remodel of the kitchen and the dining room was completed, but only the dining room construction will occur in January/February of 2003. More funds must accrue in the Special Accounts before any work can begin on the kitchen. The bathroom floor on the second floor of the Overlook historic dorm had to be replaced due to water damage. The two ice cream machines in the Café were replaced because they could not keep up with demand during the hottest part of the season. All gas fireplace logs in the cabins were replaced, ten new HVAC units were purchased for the motels, and the logs in the railings of the historic Canyon Vista dorm were replaced.

### Canyon Trail Rides Concessions Contract

The facilities and services provided by Canyon Trail Rides within Zion National Park were fully satisfactory this year. Mr. Mangum operated under another one-year extension to his contract.

While the number of regular one-hour and three-hour rides declined 4.57 percent and 8.44 percent respectively, overall revenue for this operation increased 3.65. Mr. Mangum offered photos of the riders this year, which is reflected in the revenue increase and the service was very popular with guests.

The desk at Zion Lodge was no longer used by the concessioner as all ticket sales for the horse rides occurred at the new wrangler shack at the loading corral. It worked very well for both the concessioner and the guests.

## ADMINISTRATION

### Budget

The ONPS budget for fiscal year 2002 started out with a green book figure of \$5,963,000; after all assessments and adjustments, the final figure was \$6,075,500. The park received a \$152,000 base increase as part of the Natural Resource Challenge.

Indicated below is the breakout of appropriated or revenue amounts by fund source, accountable in 212 accounts and 9 fund sources:

01)	ONPS	\$6,075.5
01)	SEPAS	\$ 120.6
01)	Volunteers in Park	\$ 5.8
01)	Tunnel Operations	\$ 195.3
01)	Commercial Filming	\$ 1.3
01)	Incidental Business Permits	\$ 5.1
01)	Minor SAR	\$ 7.0
01)	Major SAR	\$ 65.8
06)	Reimbursable	\$ 140.3
22)	National Park Pass	\$ 946.4
25)	Recreation Fee Demonstration	\$2,080.6
26)	Donations (Includes Kolob)	\$ 17.3
34)	Quarters (Includes Kolob)	\$ 217.0
45)	Transportation Fund	\$1,441.1
68)	Concessions Franchise Fee	\$ 5.4
85)	Fire Program	\$3,088.4

**Total fiscal responsibility for FY2002 was \$14,415,900**

### Contracting/Procurement/Property

Advance acquisition plans were prepared for seven "proposed projects" for projects over \$25,000.00.

Prepared bid documents, conducted bid openings, awarded, administered the following contracts:

#### Contracts:

C1590-02-0001 – Maintenance service for elevator – one-year contract with renewal options up to five years. Awarded to: Thyssen Dover Elevator, \$2,584.00.

C1590-02-0002 – Trash collection – one-year contract with renewal options up to five years. Awarded to: Camco Disposal \$21,780.64.

C1590-02-0003 – Alarm monitoring of systems throughout Zion – one-year contract with renewal options up to five years. Awarded to: Mountain Alarm \$3,420.00.

Zion Natural History Association Concessions Permit

The services provided by the Zion Natural History Association under a concession permit to sell film within Zion National Park were fully satisfactory this year.  
ZNHA sales for stamps, film, and phone cards were down 3.51 percent for the calendar year.

Parks Transportation, Inc.

The shuttle began operating on March 28 this year and service finished operations ended on October 27.

There were 2,356,786 (up 10.71 percent) passenger boardings this year, which includes 241,515 (up 15.9 percent) boardings on the town loop, 2,107,044 (up 10.12 percent) boardings on the park loop, 5,109 interpretive tour boardings, and 3,118 (up 66 percent) wheelchair boardings. PTTI operated 45,681.18 hours this season versus the 46,057 hours projected. Four new flag stops were added: two near the Post Office on both sides of the street and two on both sides of the street near the shuttle terminus at the park entrance.

Interpretive tours operated at 9:00 a.m. four times a week in the fall and spring and daily between May 1 and September 21. The tours began April 9 and ended October 12. An afternoon tour was added as a test between June 2 and June 15. All of the tours were well attended. Unfortunately, there was insufficient interpretive staff to continue the afternoon tours.

A repeater was added at Zion Lodge during the season greatly improving communications between buses and the dispatcher at the bus maintenance building. It allowed for the elimination of "relayed" messages between buses and dispatch. PTTI is coordinating with the park to place a second repeater on West Temple and move the park's repeater to the new PTTI repeater housing. The environmental clearance for the project was obtained in September 2002 and the repeater and housing should be in place next spring.

PTTI continues to work to correct electrical system problems such as the one that caused last year's bus fire. The new bus and trailer to replace the ones destroyed last year have now been delivered to the park.

Two employees attended a Service Contract Act seminar in April, assisting the company in insuring full compliance with all Service Contract Act requirements.

The shortfall in the revenue collected from the transportation fees and the amount owed on the service contract was in excess of \$888,000 this year.

Visitor satisfaction forms indicated that most visitors to the park are very pleased with the service provided. Areas of visitor concerns continue to involve the lack of ability to view park features from the bus windows, lack of consistency of driver interpretive information, and the lack of pet kennels in the area.

C1590-02-0004 – Preparing construction documents for human History Museum - Awarded to: Campbell & Associates.

C1590-02-0005 – Preparing documents for Park projects throughout the Fiscal Year – Awarded to: Campbell & Associates - \$100,000.00.

C1590-02-0006 – Providing information to Zion for Park projects throughout the Fiscal Year – Awarded to: Simonsen Architects. IDIQ

C1590-02-0007 – Services for Park projects throughout the Fiscal Year – Awarded to: Leslie Stoker. IDIQ

C1590-02-0008 – Services for Park projects throughout the Fiscal Year – Awarded to: Naylor Wentworth. IDIQ

C1590-02-0009 – Services for Park projects throughout the Fiscal Year – Awarded to: P.C. Architects, IDIQ

C1590-02-0014 – Services for Park projects throughout the Fiscal Year – Awarded to: Campbell & Associates – NTE \$750,000.00.

C1590-02-0015 – Services for Park projects throughout the Fiscal Year – Awarded to: Sear Brown – NTE \$100,000.00

C1590-02-0016 – Services for Park projects throughout the Fiscal Year – Awarded to: Candelaria – NTE \$3,000,000.00.

C1360-02-0018 – Drilling of well at Cedar Breaks NM – Awarded to: Candelaria - \$35,703.00.

Task Orders Off IDIQS:

T1590-02-0010 – Rehabilitation of old Visitor Center (museum) – Awarded to: EPC Corporation. \$424,491.35

T1590-02-0012 – Restructure of Tunnel Spring at Pipe Spring NM – Awarded to: EPC Corporation \$31,889.31.

T1590-02-0016 – Replace waterline Cedar Breaks – Awarded to: Candelaria \$51,601.67

T1590-02-0017 – Irrigation system installed at Watchman Campground – Awarded to: Candelaria \$20,109.37

T1590-02-0018 – Drill well at Cedar Breaks – Awarded to: Candelaria \$35,703.00.

T1590-02-0020 – A & E Construction documents for the EMS building in Zion – Awarded to: Carter-Burgess \$6,495.00.

T1590-02-0021 – Survey work done for rehab of Nature Center – Awarded to: Carter-Burgess \$5,000.00.

T1590-02-0022 – Construction of shuttle stop at Grotto – Awarded to: Candalaria \$51,553.00.

T1590-02-0023 – Reconstruction of Green House – Awarded to: Candalaria \$41,249.00.

T1590-02-0024 – Beginning construction for the EMS building in Zion – Awarded to: EPC Corporation \$606,603.00.

Request for Quotes:

Administered and processed 11 requests for quotes.

Payments:

Administered and processed 76 purchase orders in the amount of \$460,904.00.  
Administered and processed 1150 third party drafts in the amount of \$333,977.00.  
Administered and processed 870 credit card payments in the amount of \$678,562.00.  
Administered and processed 13 GSA orders in the amount of \$8,554.00.  
Administered and processed 12 GPO orders in the amount of \$7,452.00.

Lease of building:

Office space at Cedar City was processed at approximately \$19,000.00. Office space lease at Pipe Spring NM was processed at \$42,874.97.

Fleet Management:

Continued to assist in developing different proposals for fleet management.

Lease of Vehicles:

Administered and processed the leasing of 6 vehicles from Acme Auto Leasing in the amount of \$16,835.92

Purchase of Vehicles:

Administered and processed the purchase of a Dodge Dakota and four Chevy S-10 trucks in the amount of \$85,600.00.

Property:

Supply Technician initiated completed property inventory. Real property was also certified and completed.

Information Management

Zion information management in the last year was able to replace or upgrade computers for those who need to use the Web version of AFS (AFSIII). 74 computers were converted to the Windows 2000 operating system. To date, we have completed 5 on the conversion to XP.

One new Windows 2000 Server was put into place. It has an 80 GB raid and is using Active Directory. Another Windows 2000 Server was also put in place as the Primary Controller for the park. This machine was in use as our old cc:mail server and was upgraded and converted to accommodate regional standards for Win2K Server. The old NT Servers will be put to pasture when IT does the conversion from NT to Win2K, a complicated process that will probably be done in steps.

We also purchased an AIT system for automatic backups of the servers. This 15-tape robot will be used to secure our data.

Lotus Notes conversion was complete in April and the cc:mail Post Office was backed up and shut down in early July.

IT Security dominated most of the last half of the year. We have put into place many server and workstation policies that will only get tighter in the coming years.

Washington sent out a call for all computers in the DOI to be inventoried. They sent us a program to use that they had purchased. Belarc is on all computers in the park, including laptops that are seldom used. This mandate was completed in less than 2 weeks time and all except 3 computers were accounted for. This includes all satellite offices.

## Human Resources

### Staffing

#### Permanent Employees

ZION: 80

CEBR: 4

PISP: 7

#### Term Employees

ZION: 11

CEBR: 0

PISP: 0

#### Seasonal Employees

ZION: 76

CEBR: 7

PISP: 8

#### A total of:

17 Merit Promotion vacancy announcements

47 Recruitment Bulletins

14 Delegated Examining Unit (DEU) announcements

Have been issued, rated and ranked, audited and selection certificates issued.

We were notified that our Delegated Examining Unit would be up for an "off-site" review by the Dallas Oversight Division of the Office of Personnel Management from April 22-26, 2002. This audit was performed with no major non-compliance issues noted.

In an effort to assist other parks within the region with "informal" audits, we were requested to perform an audit on the Delegated Examining Unit of the Southeast Utah Group in Moab, Utah. This was done on site on August 21, 2002.

Employee Development

Employee Relations for Supervisors  
10/28 thru 11/01/02 35 Attendees

Creditable towards 40 hour required supervisory training.

Health Benefits Training

11/15/02 35 Attendees

Thrift Savings Plan (TSP)/Financial Planning  
11/18/02 35 Attendees

PowerPoint and Excel

11/12-15/02 8 Attendees

Classification

Safety and Occupational Health Manager

GS-0018-12

This position was established/classified by the Regional office classifier Anita Hanson 4/11/02 working closely with the Human Resources Officer/Zion.

Museum Technician

GS-1016-06

A new position was established in the Museum Branch in cooperation/coordination with the Procurement Office.

Automotive Worker

WG-5823-09

This is a newly established position to accommodate the growing number of equipment/ vehicles that the park has obtained.

Review of all Information Technology positions to verify classification under the new IT (2210) standard.

Bryce Canyon Assistance  
Human Resources Specialist  
GS-201-07/09 12/16/02

Utility Systems Repairer Operator  
WG-4742-10 12/4/02

Maintenance Mechanic  
WG-4749-09 12/4/02

Maintenance Worker  
WG-4749-08 10/02/02

Maintenance Worker (Historic Preservation)  
WG-4749-08 6/3/02

Maintenance Mechanic (Historic Preservation)  
WG-4749-09 6/3/02

Sign Painter  
WG-4104-09 7/17/02

Facility Management Program Assistant  
GS-303-06 7/01/02

An official request was received from the Administrative Officer in August of 2002 to perform two desk audits.

- 1-Program Assistant GS-6 in Visitor Service
- 2-Budget Technician GS-7 in Administration

The Human Resources Officer/Zion performed these two desk audits on September 18, 2002 and made recommendations to the superintendent. Final classification is still pending on the Budget Technician.

#### Long Distance Trails Office

The Long Distance Trails Office out of Salt Lake City, Utah asked Superintendent Marty Ott for assistance. Since the regional office was too short staffed, they were way behind on classification. A formal request was received 7/15/02 to classify two positions:

Administrative Support Assistant  
GS-303-07 9/9/02

Park Ranger (Interpretive Specialist)  
GS-0025-12 8/13/02

#### Employee Relations

- 1-Written Reprimand
- 1-Termination of Temporary Employee for conduct issue
- 1-Suspension

Position Management Plan  
Our position management plan was updated at our 2002 management retreat and the organizational chart is to be updated.

## INTERPRETATION AND VISITOR SERVICES

### Role and Function of the Interpretive Division

The role of this division is varied and far-reaching. Division personnel are involved in both personal services (ranger programs and staffing/operating the information desk at the Zion Canyon Visitor Center and Human History Museum) and non-personal services (*Zion Map and Guide*, handouts, site bulletins, bulletin boards, wayside exhibits, website etc.)—all aimed at educating park visitors to help them understand and appreciate park resources and values; and to understand and accept their stewardship role in helping to preserve the park for future generations.

Toward that end, the staff is challenged to not only inform and interpret park resources to the public, but also to build support for park and service management policies and decisions through effective one-on-one communications, outreach effort, formal programs, and media relations. Providing visitor safety information is a critically important function. The I&VS Division plays a key role in the writing and production of hiking information as well as passing on critical information to hikers.

With the implementation of the shuttle system came a new visitor flow pattern. The interpretive division continues to adapt to these changes. The successful ranger-guided shuttle tours were conducted on a schedule of one per day during the main visitor season. Additional shuttle tours should be added to answer the demand for this popular activity. Other ways of helping our visitors to have a more positive experience are being explored.

Following is the Interpretation Division report for the year 2002:

### Personnel

- Chief I&VS, Ron Terry, GS-13
- Assistant Chief I&VS, Tom Haraden, GS-12
- Supervisory Park Ranger, Bob Showler, GS-11
- Curator Mark Herberger, GS-11
- Interpretive Specialist, Christi Carmichael, GS-09
- Park Ranger (Education Coordinator), Sandy Groves, GS-09
- Park Ranger, Frank Hayde, GS-09
- Park Ranger, GS-09 (Vacant)
- Museum Technician, Vicki Parkinson, GS-06
- Secretary, Janis Kali, GS-06
- Visitor Use Assistant, Richard Fesler, GS-05

The seasonal staff included a total of 11 front-line seasonal interpretive positions, one Jr. Ranger seasonal interpreter, one Permanent Fee Collector assigned to the division for the season, two

long-term volunteers, and two new volunteers. One additional volunteer worked one day a week in the library and three worked in the museum program.

### **Program Emphasis**

The major focus of the interpretive program in 2002 was the planning and opening of the Zion Human History Museum. The museum focuses on the relationship between the land, its natural resources and the people who have lived in the area that is now the park.

The division continued to focus personal service interpretation on the thematic approach while encouraging innovation in interpretive techniques. Staff training and coaching were conducted to develop more effective ways to communicate to park visitors who we are, what we do, why we are here, and how the visitor is part of protecting this (and all) national parks.

The program placed an emphasis on expanding the scope of programs to incorporate current research results and resource management issues in interpretive programs.

The park became one of the first to institute the new Message Project standards in our publications program. This effort is continuing to provide all printed information in a standard format to improve agency recognition within the public at large.

### **Interpretive Attendance and Visitor Response**

<u>Visitor Center or Program</u>	<u>Attendance</u>
Zion Canyon Visitor Center	There is no means to count visitor center attendance.
Museum	68,804 (Museum opened June 29, 2002)
Talks (4/day)	9,988
Hikes (2/day)	2,965
Evening Programs (2/day)	22,627
Shuttle Tours (1/day)	5,203
Interpretive Patrols	4,774
Community Outreach Programs	75
Kolob Canyons Visitor Center	74,196
Talks	406
Hikes	36
Interpretive Patrols	4,112
Information Mail Outs	5,459
Information Phone Calls	9,606
Information emails	4,098

(These numbers do not include information responses from Backcountry or information desks at the main visitor center and Kolob Canyons.)

Response to the 2002 interpretive programs was very positive as evidenced by the number of written visitor comments.

The outreach staff also presented a number of special on-site and off-site programs. In the fall, we participated in the Iron County Water Fair where we presented eight programs to just over 200 5th

**Educational Outreach and Junior Ranger Program**  
The Educational Outreach Program reached over 3,500 students. These students participated in the spring and fall Zion Outreach Program, as well as other special on-site and off-site environmental education programs presented during the year. The Zion Outreach Program is offered every year to elementary schools in Washington County and within a 50-mile radius of Zion National Park. These programs focus on environmental themes and meet the science standards for Utah State's core educational curriculum. All programs included pre- and post-visit materials and an in-classroom presentation by the park's education staff. A total of 135 outreach programs were presented to 3,100 students this year. The education staff consisted of Education Coordinator Sandy Groves (NPS) and instructor Maria Frangelli, whose position for the outreach program is funded by the Zion Natural History Association.

The division continued to maintain and operate four travelers' information short-range radio broadcasting stations. These stations provide updated park information and shuttle information to visitors up to 20 miles before they enter the park.

Bulletin cases were ordered to replace all existing wooden bulletin boards throughout the park. The lack of a comprehensive park orientation program at the new visitor center has been an issue for many visitors. To address this interpretive need, a new 22-minute orientation film was completed in June 2002 and is shown every thirty minutes in the Zion Human History Museum auditorium. The program has been well received by visitors.

**Non-Personal Services**  
The park is working with Harpers Ferry Center staff on the development of a Park-wide Wayside Exhibit Plan. Work on phase II of the project continued. Research was completed so that the HFC editor can begin writing copy.

Assistant Chief of Interpretation, Tom Haraden, taught a 40-hour course, Producing NPS Publications, at the National Conservation Training Center for the Harpers Ferry Center. A twelve-page *Zion Map & Guide* in newspaper format was produced for the 2001 summer season. The winter version of the newspaper was updated to the new graphics standards. The *Zion Backcountry Planner* was also produced for 2002. This 8-page publication includes information that visitors could heretofore obtain only verbally at the information desk or through non-NPS guidebooks. The park also participated in the development of a special newspaper format publication for the 2002 Winter Olympics.

**Site Bulletins and Other Printed Media**  
Efforts continued to improve, simplify, and consolidate several site bulletins. The division is responsible for the production of many pieces of park information on specific uses and/or park resources. Two site bulletins were updated to the new NPS graphics standards: *Mammals and Reptiles and Amphibians*. One new site bulletin was produced: *Zion's Amazing Trails*.

grade students, and in the spring we took part in the Washington County Water Fair and presented seven programs to another 200 students.

The Junior Ranger Explorer Program operated from the Nature Center ran from Memorial Day weekend until Labor Day weekend, with 1,430 children (6 - 12 years old) participating. The program was offered seven days a week, with 2 1/2 hour sessions given twice daily. Staffing for the program included Education Coordinator Sandy Groves and Seasonal Park Ranger Maria Frangelli, who serves as assistant coordinator. Additionally, there were four full-time ZNHA employees, Danielle Deane, Shirley Bartschi, Mario Johnson, and Joan Evans. ZNHA also sponsored a volunteer instructor, Hilary Meierdiercks, (through the Student Conservation Association Program), who contributed 450 hours to the Junior Ranger Program.

About 3,100 children participated in our year-round, self-guided, Junior Ranger Program. This program consists of a self-guided booklet for children 6 to 12. Children complete activities in the booklet, participate in a ranger-guided program, or explore the visitor center exhibits. An activity sheet is available for children under 6 years of age.

### **Curatorial Management**

Zion National Park's museum collection consists of over 200,000 natural and cultural items. The collection is inherently valuable for the information that it provides about processes, events, and interactions among the area's cultures, individuals, and environments. The park's museum items are a source of cultural evidence and scientific information that document and support Zion's resource management and interpretive programs.

Highlighting the 2002 fiscal year was the grand opening of the Zion Human History Museum. Planning for the museum dominated our curatorial efforts during the past three years. The project also involved coordination and teamwork from other park staff members and personnel from the Harpers Ferry Center. Exhibit fabrication included custom-made mounts, display cases, and conservation treatment for 105 artifacts and over 100 graphics.

Beyond development of the new museum, a high percentage of curatorial efforts centered on assisting the park's Resource Management & Research Division with various cultural resource programs. RMP Project Statements were reviewed along with completion of 5 PMIS and SEPAS installments. All NAGPRA collections were repatriated during the year, including research and recataloging of the associated records. Other interdivisional partnerships included collection permit training and review, completion of curatorial aspects of cultural resource reports and inventories, assisting the archeological field school, coordinating cataloging with researchers, and orientation and information on collections access and use. The entire backlog of 7,900 archeological items was cataloged.

During FY 2002, curatorial staff continued to promote the collections as a valuable information, research, and interpretive resource. Target audiences included both NPS and non-NPS researchers, local individuals and institutions, park employees, and other Zion National Park partners. Through advertisement and access procedures, over 100 in-park and out-of-park individuals utilized the collections during the fiscal year. Their interests included historical research into events and individuals, the Zion National Park Transportation and Camping

Company, Mission 66 structures, archaeological excavations, vegetation analysis, and "place names." Establishing a professional rapport within local communities resulted in several significant accessions including Union Pacific furniture, an authentic Hilliers glass positive image of Zion, historic photographs, and the historic Howard Russell Butler art collection. Museum staff continued to catalog a Southern Paiute ethnology collection of over 100 items. Another curatorial task centered on upgrading museum records. Pre-ANCS+ loans and deaccessions were researched, reconstructed, and records entered into the computer program. In conjunction with St. George, Utah, we assisted the city's Art Museum with the "first-of-its-kind" exhibit featuring Zion National Park in Art.

During FY 2002, three volunteers and two student interns provided nearly 600 hours of service for curatorial operations. Their work concentrated on cataloging specimens, organization of the park's historic black and white photo collection, organization and addition of scientific nomenclature to the herbarium collection, and completion of the annual inventory. The park established its first permanent museum technician position!

Recreational Fee Demonstration funding provided the mechanism to continue with our paper archives cataloging project. Archivists from the Western Archeological Conservation Center cataloged over 22,000 archival records. The park received CRPF funding for conservation treatment, shipping and handling of the Butler paintings with work currently being completed at HFC.

Although duty-stationed at Zion, the park's museum curator continued to serve Pipe Spring and Cedar Breaks National Monuments by providing direct curatorial management for those park units. Curatorial staff was also able to assist Bryce Canyon National Park with a variety of routine and technical museum issues.

### Interpretive Planning

Planning for the new Zion Human History Museum concluded with the opening of the museum, information desk, and ZNHA sales are in June 2002. The museum is located in a portion of the old visitor center.

A planning effort was completed for the park's new orientation video, now shown in the auditorium of the Human History Museum.

Phase II of the park's wayside exhibit plan is still in progress with Harpers Ferry Center.

### Public Information

The Chief of Interpretation continued to serve as the park's Public Information Officer. A Fire Information Officer, David Baker, was hired in the Fire Management program. A portion of his time was also devoted to helping with the park's public information program. There were a number of significant media events this year, including one fatality, several search and rescue operations, and some wildland fire activity. The park received increased media attention due to the 2002 Winter Olympics in Utah. Over 100 media and 250 public information contacts were completed. The park issued 30 press releases.

### **Special Events**

The Zion Human History Museum was opened and dedicated in June 2002. A dedication ceremony was held on the back patio of the museum with speakers representing the groups featured in the museum and the IMR Deputy Regional Director.

The 2002 Winter Olympics Torch Relay passed through Zion NP on its way to Salt Lake City. Several runners ran legs of the relay in the park and a ceremony preceded the arrival of the torch at the park's visitor center.

Christi Carmichael and Bob Showler coordinated the National Audubon Society's 103<sup>rd</sup> Annual Christmas Bird Count. Twenty-eight people counted individuals and species of birds between Grafton and the east entrance of the park. A total of 75 species were counted.

### **VIP Program**

In 2002, 231 volunteers contributed a total of 23,809 hours of assistance to the park (not just the interpretive division). The VIP budget for the year was \$5,800.00 for the very low cost of \$.24 per hour contributed. To pay for those services at the GS-5 rate would have cost about \$290,470—a benefit to the nation of over \$284,670. The park also utilized the Student Conservation Association volunteer program. These two volunteer programs continue to be valuable additions to park operations. They provide prospective employees with park experiences they would have difficulty obtaining without these options.

### **Zion Natural History Association**

Zion Natural History Association, governed by a nine-member volunteer board of directors, enjoyed a successful year in FY 2002. Two key milestones this year were the initiation of the Zion Canyon Field Institute (see sub-section below) and the opening of our new sales outlet in the new Zion Human History Museum in June. Lyman Hafen continued to direct the business of ZNHA as executive director; Joann Hinman continued as director of operations with supervisory responsibilities over four center managers; and Terese Feinauer became the new center manager of the Zion Canyon bookstore as the previous manager Vauna Lewis moved from the area in June. Toni Tracey became the new warehouse manager in June as well. During FY 2002, ZNHA employed a total of 30 people, including part-time employees.

In FY 2002, ZNHA continued its successful operation of six interpretive sales sites. The visitor center outlets at Zion Canyon, Kolob Canyons, Cedar Breaks, Pipe Spring, and Salt Lake City had combined gross sales of \$1,677,212 in 2002, up 9 percent from 2001.

The new sales outlet in the Zion Human History Museum is seen as an excellent addition to the facility. Only a small selection of products is offered in the museum related mainly to human history. Though sales were relatively small in the museum, they met our projections for the first year, and we feel it is definitely a worthwhile operation. ZNHA published a new interpretive poster entitled "Zion as Sanctuary" as a commemorative of the museum opening. The poster has become a popular sales item in the ZNHA inventory.

ZNHA continued its support of the Junior Ranger Program in Zion National Park. This very popular program for children 6 to 12, operated from Memorial Day to Labor Day, seven days a

The Zion greenhouse and the office building for the greenhouse were found to be sinking due to an underground water leak. With financial help from the repair/rehab contingency fund, we were able to construct a new greenhouse. The original construction was drywall without flashing which was deteriorating rapidly. Zion maintenance staff was successful at lining and flashing all three cooling towers at the new Visitor Center and Comfort station. Base funds were used to accomplish this task. The original Zion maintenance staff was successful at lining and flashing all three cooling towers at the new Visitor Center and Comfort station. Base funds were used to accomplish this task. The original construction was drywall without flashing which was deteriorating rapidly.

Plans, specifications and compliance continue for the Nature Center. The original timeline for construction during the winter of FY03 has been delayed by a year due to the funding needs of the Emergency Operations Center that is presently under construction.

Zion averaged 92% occupancy in permanent housing and 91% occupancy in the seasonal housing in FY02. Quarters #36 rehabilitation was completed in this fiscal year and opened as a seasonal residence. With a total house count of 34 residences, Zion has 21 for permanent use and 13 for seasonal use. The seasonal house total has increased over the last three years at the expense of the permanent house total in an effort to eliminate shared bedrooms in the seasonal houses. That goal was reached in FY02.

#### Buildings and Utilities

### MAINTENANCE

Zion Canyon Field Institute After three years of planning and preparation, ZNHA hired Eileen Smith as director of the Zion Canyon Field Institute. Eileen came on board May 1, 2002 and by midsummer, in consultation with Zion's interpretive staff, had a full program of outdoor education courses planned and underway. ZCFI's first catalog of courses listed more than 30 programs. These were one, two and three-day courses on subjects varying from mountain wildflowers at Cedar Breaks National Monument, to an archaeological inventory in Zion National Park, to bighorn sheep and mule deer workshops, to backcountry skills and ethics. The courses were taught by area experts and were attended by more than 150 participants from the southern Utah and Nevada region, as well as all parts of the United States.

The association supported scholarships to Dixie College and Southern Utah University and continued its support of NPS resource management programs. ZNHA funded the printing of 600,000 copies of the Zion Map and Guide, which is the newspaper-guide distributed to almost every vehicle entering the park. We also funded the printing of 150,000 copies of the winter Zion Map and Guide, as well as 50,000 copies of the Zion Backcountry Planner. ZNHA also printed many free site bulletins provided to visitors to enhance their enjoyment of Zion National Park.

one SCA volunteer for the program. ZNHA also provided funds for the park's educational outreach program in which park naturalists travel to local schools for their presentations. The association continued to fund the position of ranch hand at Pipe Spring National Monument and aided the monument's living history programs through the purchase of costumes and supplies for the livestock and gardens.

able to stabilize and re-level the office building. The greenhouse required disassembly and piers with a bond beam and concrete slab. The operation will be ready for the 2003 growing season.

The new Zion Museum had its grand opening in May of 2002. The project was accomplished by contract and finished on time.

A photovoltaic ventilation system was purchased and installed on the Weeping Rock vault toilet. This new vault toilet was installed with the transportation system upgrades, but due to the wind direction in that canyon, a fan system was needed to move out the odors.

Annual and preventative tasks were completed such as: sewer main cleaning, heating and cooling start up and shut down, fire hydrant test flows, backflow tests, pressure valve maintenance, septic tank inspections, fire extinguisher service, emergency light testing, ditch cleaning and chimney cleaning.

Zion maintenance chlorinated and distributed over 50 million gallons of culinary water to three concessioners and to park facilities. The Wylie system 52,000-gallon concrete storage tank developed a leak that required an interior repair. That system was back in service within a month.

Kolob maintenance had a reorganization in FY02. There was one WG-5 seasonal employee in charge of maintenance and repairs during the peak season. During the off season, custodial duties were done one day a week by a Zion maintenance employee with the Kolob VC staff helping out with custodial duties during the remainder of the week.

The Kolob visitor center had some substantial repairs on the exterior. The wooden timbers were replaced as well as a complete job of weather and pest sealing on the exterior. Radon testing in the VC indicated levels that require mitigation. A contractor has submitted a bid for a new radon extraction system that is guaranteed to get the levels below the EPA maximum.

The residence at Kolob received an upgrade of the kitchen and bathroom, interior painting as well as exterior repairs such as roofing, porch and exterior painting.

### **Roads and Trails**

The Zion Roads and Trails crews accomplished by day labor the construction of 18 walk-in campsites in Watchman campground. The project consisted of the construction of walking trails to each campsite, tent pads, dressed stone fire rings, wood benches, picnic tables, a new parking area and a large amount of dead tree removal.

Crews rehabilitated three center islands between the south entrance and the administration building. All materials were removed from the islands down to 6" and depth barrier cloth was added for weed control; new decorative cover material was added; natural local boulders and plants were also added.

The crew accomplished a huge amount of crack sealing this year, 10 miles of roadway from the east entrance of the park to the valley floor on Route 10. A 5.5-mile section of the Kolob Canyons road was crack sealed, as well as the 5-mile section at Cedar Breaks National Monument.

A 2-mile section of Route 10 was overlaid with assistance from Ashdown Brothers Construction and also the Zion Lodge parking lot in front of the western cabins and the employee housing area. 4,000 tons of 1/2" minus hot mix was used to accomplish the work. Park maintenance crews provided all traffic control, loader operation and water for the project. The asphalt was provided by Western Rock Products Company.

6 miles of park road were re-stripped from tunnel east to the east entrance of the park. 14 parking areas were also re-stripped by park crews.

Tunnel safety delineation was added to the 1 and 1/10 mile-long Zion-Mt. Carmel tunnel. This consisted of applying 2 miles of pre-mark thermoplastic tape. 100 reflective delineators were attached to the tunnel wall. This project helped in a very positive way in the safety of the tunnel. We have received many favorable comments from people who travel the tunnel on a regular basis. The Roads crew assisted with the Grotto shuttle stop add-on project, which consisted of the removal of 300 yards of old asphalt parking area and excavation of 18" of fill material. Then 350 tons of 3/4" base gravel was added and compacted.

The Zion Frontcountry Trail crew repaired 4 large rock retaining walls on Walters Wiggles and 2 walls in Refrigerator Canyon on the West Rim Trail.

The Backcountry Trail crew worked with other parks staff members to create an interdivisional work force that went into the backcountry and worked on projects ranging from campsite construction to routine trail maintenance. The crew spent ten weeks completing projects.

Fence crews constructed 2 miles of new boundary at Cedar Breaks National Monument and made repairs to another 1/2 mile section at the monument. Repairs were also made to boundary fences in the upper Lee Valley section.

The maintenance division also hired a 10-person YCC crew that assisted on trails, fences, housing, grounds maintenance and recycle projects in the park.

In a joint effort, Roads and Trails crews completely re-constructed the viewpoint at the end of the 5.5-mile road at Kolob Canyons. Work consisted of pouring a new 12' x 25' colored concrete viewing area, 60' of weathering steel safety railing, concrete accessible ramp, 40 feet of new stone curbing and two stone benches.

Annual preventive maintenance tasks were completed such as: roadway ditches were cleaned twice, all trails were gone over and cleaned and routine repairs made, boundary fences were inspected and needed repair accomplished. All road signs were painted and repairs made as necessary. 20 new road signs were installed. The auto shop continued to service and maintained 130 pieces of equipment and vehicles along with numerous small engines.

Crews assisted Pipe Spring and Cedar Breaks with trail maintenance, road maintenance, tree trimming, and cleaned up and chipped the large pile of wood debris at the bone yard at Pipe Spring.

Excavation and compaction of new base material for the reconstruction of the native plant greenhouse was accomplished with park crews.

A joint effort between Buildings and Utilities crew and the Roads and Trails crew ended up in the clean up and organization of the storage area next to the native plant greenhouse in Watchman campground. This was a huge improvement in this area.

## RESOURCE AND VISITOR PROTECTION

### Fee Management

2002 Visitation – 2,614,445 compared to 2000 Visitation – 2,249,387 - up16%.

2002 Revenue - \$6,123,366 compared to 2001 Revenue - \$6,683,486 - down 8%.

We were the number one seller of National Park Passes for the third year in a row. We sold approximately 38,000 passes for a total revenue of \$1,832,527.00. We are in full compliance with national directives in providing upgrades and customer service.

We implemented Key Total Treasury online banking system, allowing us to allocate revenue into appropriate PWEs on line. We were the first park to initiate the credit card deposit system as part of the national pilot program.

We contributed personnel to assist on major incidents including wildland fire, SAR, and EMS operations in the park. Many of these major events could not be accomplished successfully without the assistance of fee personnel.

Two electric golf carts were purchased to replace two Interior owned vehicles for campground operations. The new vehicles contribute toward increased visitor satisfaction by providing camp hosts a quiet and non-polluting vehicle for campground operations.

Periodic contact was maintained with the Bryce Canyon Fee Program to maintain consistency in operations. This included several meetings where both parties discussed issues and concerns.

### Personnel

The fee manager position was filled this year and all three field supervisory positions were also filled.

In an effort to provide career development opportunities and support the superintendent's initiative for Zion workforce integration, fee management contributed members of the staff to fill vacancies in other branches and divisions including interpretation, dispatch, and backcountry operations.

Campground personnel were integrated with the rest of the fee operation at the stations and tunnel. This led to improved camp operations, employee well-being and a reduced number of visitor complaints.

All supervisory staff fulfilled their 40-hour annual training requirements. Seasonal staff were able to participate in a number of training opportunities including S 130 / 190, CPR, first aid, first responder, fundamental, and "How to Handle Difficult People."

The Fee Program Manager continues to participate in park-wide workforce enhancement and worked with Personnel to expand our diversity recruiting efforts.

#### National Issues

Fee staff attended annual National Park Service Reservation System (NPRS) training in Cumberland, Maryland and participated in the new contract negotiations for the NPRS.

We continue to participate in national advisory groups including one on National Park Pass issues.

The park was open for 2 fee-free days over the summer in association with the President's fitness for America plan.

#### Safety and Security

Cooling vests purchased in 2001 were used at the tunnel regularly contributing to employee health and well-being.

Traffic management at the tunnel has been addressed and safety improvements are scheduled to be completed prior to the beginning of the busy season.

Other safety accomplishments included the restriping of the traffic lanes at Watchman campground to slow traffic down as it exits the campground.

A security camera was installed in the accounting room to improve security and accountability during cash remits.

#### Resource Management

Two members of the staff participated in the Interdivisional Resource Rehab crew spending two weeks rehabilitating backcountry campsites.

The campground staff worked on a project to remove Russian thistle plants in and around Watchman campground. They initially coordinated a 1/2-day weed pulling venture with resource management staff and followed up with over 40 hours hand pulling over 20,000 Russian thistles.

### Canyon District

2002 was a difficult year for the National Park Service and Zion as well. The Canyon District suffered from a staffing shortage, unable to fill a permanent position due to budget issues and short on seasonal help as well. The workload, however, did not decrease. Rangers tied the record for major technical SAR's this year, including a dramatic night lowering from Angel's Landing, which included over twenty rescuers. Four team members were recognized with awards for this incident, which was the largest single rescue event in recent memory. A similarly heavy EMS workload was handled in the district with several lives saved by rangers.

All commissioned rangers actively participated in the aftermath of the terrorist attacks against this country. Zion staff was dispatched to Washington, DC, dam sites, and icon parks identified as terrorist targets throughout the year. Three Canyon District rangers were detailed to the Winter Olympics on security assignments for one month. These activities further drained an already short staff.

Our continued liaison with the concession reduced the number of law enforcement incidents there. Significant investigations were completed, which included fatalities, a carjacking indictment from a 1999 case, and a murder prosecution.

Resource protection efforts included continued monitoring of archaeological sites and a successful hunting patrol operation in the fall. Resource management operations included dealing with ongoing wildlife issues and working closely with the division of resource management. The district supported wildland fire operations, detailing two rangers as helicopter crewmembers, and providing others as firefighters. Fire restrictions in the park for much of the summer resulted in a significant workload.

Canyon District rangers were active in the community, supporting public safety personnel there on an ongoing basis, including special events and parades. The district hosted a variety of training sessions attended by other parks and outside agencies.

A Canyon District ranger is a member of the safety committee, and the division continues to fully support the safety program at Zion. The result was no lost-time incidents and no significant accidents.

There were two fatalities in the park this year, one traumatic and one non-traumatic. The EMS cases are broken down as follows:

- 164 NPS EMS cases
- 54 advanced life support cases
- 6 advanced cardiac life support cases
- 62 significant basic life support cases
- 102 minor EMS cases
- 9 lives saved by EMS
- 63 ground NPS ambulance transports
- 3 helicopter ambulance transports
- 38 search and rescue incidents
- 13 helicopters

The park played host to numerous training sessions for NPS and other agencies, including the annual law enforcement refresher, Leave No Trace training, and Rigging for Rescue. Numerous outreach training was also conducted, including Technical Rescue, Leave No Trace, CPR, Emergency Vehicle Operations, First Responder, OAS Safety, and various fire courses. The MOU for interagency law enforcement assistance with the Town of Springdale Police Department, and the Washington and Kane County Sheriff Offices continues to function well. This MOU facilitates emergency assistance for either agency during both emergencies and routine calls.

2002 R&VP Workload

Visitation - 2,614,445  
 Ranger Incidents - 2,650

Law Enforcement Incidents

Incident Type	2001	2002	% change
Citations	749	662	-12%
Warnings	1,315	1,073	-18%
Arrests	63	28	-56%
Drug Violations	93	60	-35%
DUI	13	7	-46%
Alcohol Violations	90	39	-57%
Resource Violations	138	46	-67%
Weapons Violations	33	19	-42%
Vandalism	14	15	+7%
Burglary	0	2	+200%
Agency assists	57	47	-18%
Larceny	66	26	-61%
Visitor assists	507	423	-17%
SAR	31	39	+26%
EMS	119	164	+38%
Total CIRs	3,288	2,650	-19%

### Plateau District

Some of the most dramatic increases occurred in the slot canyons. This was the fifth season that we required permits for all technical slot canyons (as opposed to just requiring permits for canyons that feed into the Narrows). Part of the increase in use for canyons like Behunin, Mystery, and Pine Creek canyons could be attributed to visitors' increasing understanding of the permit requirement and exposure through use.

### 2002 Backcountry Statistics Comparison

During the 2002 season, we issued 7,801 permits to 27,298 visitors who spent 14,342 nights in the backcountry. Trends that we have seen over the last few years have continued. The number of permits increased by 6% over the number of permits issued in 2001. The number of backcountry camping permits remained static, and the number of climbing bivouac permits decreased. The number of day and overnight permits for Zion's slot canyons increased with some areas seeing dramatic increases.

Here are some comparisons over the last five years.

#### Overall

1998 3,950 Permits  
1999 5,358 Permits, 36% increase over 1998  
2000 6,947 Permits, 30% increase over 1999  
2001 7,358 Permits, 6% increase over 2000  
2002 7,801 Permits, 6% increase over 2001  
1998 through 2002, 97% increase

#### Backcountry Camping

1998 1,874 Permits  
1999 1,938 Permits, 3% increase over 1998  
2000 2,618 Permits, 35% increase over 1999  
2001 2,519 Permits, 4% decrease over 2000  
2002 2,505 permits, 1% decrease over 2001  
1998 through 2002, 34% increase

#### Narrow Canyon Day Use

1998 1,039 Permits  
1999 1,990 Permits, 92% increase over 1998  
2000 2,910 Permits, 46% increase over 1999  
2001 3,437 Permits, 18% increase over 2000  
2002 3,812 permits, 11% increase over 2001  
1998 through 2002, 267% increase

Narrow Canyon Overnight Use

1998 471 Permits  
1999 761 Permits, 62% increase over 1998  
2000 1,051 Permits, 38% increase over 1999  
2001 934 Permits, 11% decrease over 2000  
2002 1,091 Permits, 17% increase over 2001  
1998 through 2002, 132% increase

Overnight Climbing

1998 566 Permits  
1999 669 Permits, 18% increase over 1998  
2000 371 Permits, 45% decrease over 1999  
2001 433 Permits, 17% increase over 2000  
2002 392 Permits, 9% decrease over 2001  
1998 through 2002, 31% decrease

Virgin River Boating

2000 11 Permits  
2001 35 Permits  
2001 1 Permit

Recent Permit Changes

1998 was the first year that permits were required for all of the park's technical canyons. There have been no significant changes in permit requirements since 1998. The cost of permits did decrease from \$5 per person per night to \$5 per permit from the 1999 to the 2000 season. 2000 was the first year that there was a fee for overnight climbing permits.

Long-Term Trends

There have been a number of changes in permit requirements over the last 20 years. Once those changes have been accounted for, it appears that we had a 100% increase in backcountry use from 1980 through 1990, and another 100% increase from 1990 to 2000. 1997 was the first year that the park charged for permits. There was a dip in use from 1996 through 1997.

Specific Areas

The following areas received greater than a 30% change in use from 1998 through 2001. Only areas where 100 or more permits were issued were looked at.

## Backpacking

### Southwest Desert

1998 248 permits  
1999 113 permits, 54% decrease over 1998  
2000 196 permits, 73% increase over 1999  
2001 173 permits, 12% decrease over 2000  
2002 123 permits, 29% decrease over 2001  
1998 through 2002, 50% decrease

### LaVerkin Creek

1998 378 permits  
1999 470 permits, 24% increase over 1998  
2000 1,141 permits, 143% increase over 1999  
2001 1,032 permits, 10% decrease over 2000  
2002 1,139 permits, 10% increase over 2001  
1998 through 2002, 201% increase

### East Rim

1998 446 permits  
1999 411 permits, 8% decrease over 1998  
2000 381 permits, 7% decrease over 1999  
2001 329 permits, 14% decrease over 2000  
2002 204 permits, 38% decrease over 2001  
1998 through 2002, 54% decrease

### West Rim

1998 727 permits  
1999 899 permits, 24% increase over 1998  
2000 840 permits, 6% decrease over 1999  
2001 909 permits, 8% increase over 2000  
2002 955 permits, 5% increase over 2001  
1998 through 2002, 31% increase

### Narrow Canyon Day Use

Narrows – 80 person/day limit throughout period

1998 286 permits  
1999 482 permits, 69% increase over 1998  
2000 640 permits, 33% increase over 1999  
2001 646 permits, 1% increase over 2000  
2002 698 permits, 7% increase over 2001  
1998 through 2002, 144% increase

Subway - 50 person/day limit throughout period

1998 565 permits  
 1999 1,022 permits, 81% increase over 1998  
 2000 1,389 permits, 36% increase over 1999  
 2001 1,399 permits, 1% increase over 2000  
 2002 1,281 permits, 8% decrease over 2001  
 1998 through 2002, 127% increase

Pine Creek

1998 71 permits  
 1999 154 permits, 117% increase over 1998  
 2000 317 permits, 106% increase over 1999  
 2001 417 permits, 32% increase over 2000  
 2002 598 permits, 43% increase over 2001  
 1998 through 2002, 742% increase

Mystery Canyon

1998 38 permits  
 1999 81 permits, 113% increase over 1998  
 2000 143 permits, 77% increase over 1999  
 2001 215 permits, 50% increase over 2000  
 2002 283 permits, 32% increase over 2001  
 1998 through 2002, 645% increase

Keyhole Canyon

1998 0 permits  
 1999 49 permits  
 2000 139 permits, 184% increase over 1999  
 2001 268 permits, 93% increase over 2000  
 2002 306 permits, 14% increase over 2001  
 1999 through 2002, 524% increase

Behuin Canyon

1998 9 permits  
 1999 45 permits, 400% increase over 1998  
 2000 77 permits, 71% increase over 1999  
 2001 120 permits, 56% increase over 2000  
 2002 99 permits, 18% decrease over 2001  
 1998 through 2002, 1000% increase

Narrow Canyon Overnight Use

1998 434 permits  
 1999 710 permits, 64% increase over 1998  
 2000 989 permits, 39% increase over 1999

Narrows

2001 870 permits, 12% decrease over 2000  
2002 1012 permits, 16% increase over 2001  
1998 through 2002, 133% increase

Some other areas to watch

Spry Canyon

2001 28 permits  
2001 65 permits, 132% increase

Echo Canyon

2001 45 permits  
2002 72 permits, 60% increase

Kolob Creek

2001 24 permits  
2002 44 permits, 83% increase

Months

January 47 permits  
February 76 permits  
March 498 permits. Permit staff took the desk over from interpretation on 3/9.  
April 668 permits  
May 1,323 permits. Permits were issued through the spring for the Narrows.  
June 1,348 permits. Busiest month ever for Zion's backcountry.  
July 1,055 permits  
August 1,004 permits  
September 841 permits. After a record setting spring/summer, the fall was slow.  
October 657 permits  
November 238 permits. Desk operated 50% by permit staff, 50% by interpretation.  
December 48 permits. Desk operated by interpretive staff.

District Incident Summary

- 10 weapons violations on KT road (one a concealed weapon)
- 1 wildlife incident; spotlighting, possession, molesting
- 1 damage to government property/BC signs
- 1 damage to private property
- 3 natural resource damage; KT road and Virgin River
- 10 dog violations in the backcountry
- 5 incidents of driving off roadway
- 14 drug/alcohol cases on KT road
- 1 incident of theft from vehicles parked at trailheads on KT road
- 1 incident of recovery of stolen property
- 1 DUI arrest
- 2 cases of public intoxication
- 1 incident of disorderly conduct
- 259 vehicle license, driving, equipment violations on KT road

The supervisory dispatcher position description was reclassified in May due to an accretion of duties.

Lorri Economy was hired through the Student Career Employment Program (SCEP) into a permanent, full-time dispatcher position in May. Karen Fleming, who transferred to a dispatcher position at Shenandoah National Park in February, previously occupied this position.

One permanent, full-time dispatcher position was vacant at the end of the year. The position was previously occupied by Scott Cooper, who went on leave without pay in December to move to North Carolina.

Communication Center

- Patrolled over 3,500 miles of trails and canyon routes
- Dismantled a total of 40 fire rings
- Removed 50-60 graffiti panels
- Removed an estimated total of 150+lbs. of trash
- Inventoried exotic plants and provided eradication assistance
- Collected annual campsite monitoring data on all designated campsites
- Performed trails clearing and project work
- Conducted Peregrine Falcon monitoring for climbing restrictions
- Ten district personnel obtained Red Cards
- Provided a canyoneering safety training for all staff
- Conducted and documented archaeological site data
- Continued human waste disposal program in the Narrows
- Worked with Access Fund to improve climbing route access trails with clean up
- Developed backcountry trip planning and education displays in visitor center

Resource Protection

- 3 warrant arrests
- 3 incidents of closure/trespass violations
- 18 visitor assistance calls
- 1 LE agency assist
- 2 livestock trespass/grazing violations
- 8 closure/trespass violations
- 3 camping violations
- 1 commercial business, operating without a permit
- 25 BC permit violations
- 1 bicycle in the backcountry violation
- On staff: 2 Park Medics, 5 EMT's, and 3 First Responders
- Coordinated EMT-B refresher for all park EMS staff
- 19 EMS cases in BC (includes 3 ALS cases)
- 3 technical rescues
- 13 non-technical rescues
- 2 water rescues
- 8 searches

A secondary (dispatch) operator station was installed in May. This second station allows a dispatcher to be dedicated to an incident while allowing the primary dispatcher to continue with day-to-day operations.

The communication office continued to establish an Emergency Medical Dispatch (EMD) program and all dispatchers attended the required training.

### Fire Management

The 2002 fire season can best be described as hot and dry, setting new extreme records in the fire danger rating system. Zion began exceeding historical levels in late April and remained in severe conditions until September. During severity we hosted type 3 and 6 engines for the response for Zion and the Color Country. Severity engines came from Wind Cave, Everglades, Grand Teton and Grand Canyon, each rotating for a two-week detail. We also hosted an Incident Commander Type 3 from the Everglades, who supported one of the larger fires in the Color Country zone.

The Zion helitack module made a mid-season move to the new Interagency Air Operations Center in Cedar City. The new facility was built by BLM with National Fire plan money to house an interagency air operations center. This is the first phase of the development of the center. The normal helicopter contract is for 120 days, but due to the severity of the season, the helicopter was brought on 25 days early for a total of 145 days. The module flew 252 hours and responded to 58 fires, and 7 Search & Rescue/Medicals. In addition, we brought on an ARA/CWN helicopter pre-season, which we staffed for an additional 64.7 hours. The helitack crew supported 10 detailers for Helicopter crewmember for 2-week increments.

### Fire Use Module

The 2002 fire season proved to be another busy one for the Zion Fire Use Module. The season saw changes in both crew personnel and leadership on the module. The crew participated in prescribed burning, hazard fuels reduction, wildland fire suppression and wildland fire use on National Park Service, US Forest Service, Bureau of Land Management, US Fish and Wildlife Service, and Utah State lands.

The prescribed fire season began in April with several burns at Bryce Canyon National Park and one in Zion National Park. The module spent three weeks in the Midwest Region supporting RX programs in a number of park sites and National Wildlife Refuges.

Upon return from the Midwest, module operations were affected by a hectic early wildland fire season. National fire preparedness reached level "five" in June due to a multi-year drought in the Southwest. The Fire Use Module supported suppression efforts on the Big Wash fire (local area) by prepping historic structures at Cedar Breaks NM. The Zion FUM crewmembers formed a portion of a CWN helitack crew for the Sanford fire (local area) in mid-June. In late June we hosted the Intermountain Region module meeting in Cedar City, Utah. During this meeting, it was decided that the four IMR modules would participate in national suppression efforts in the month of July in the form of Intermountain Region Type II hand crews. The month of July saw the Zion FUM on six suppression fires in the states of Utah, Colorado and Idaho with several trainee assignments being fulfilled.

Fire use season began in August and the Zion FUM responded to the White River/Rout National Forests for the Big Fish and Lost Lakes WFRB. The module monitored both fires for two weeks and participated in hazard tree falling around Trapper's Lake. In September the module staffed the Pinto Ridge WFRB on the Wasatch-Cache NF in the High Uintas Wilderness Area.

Fall prescribed fire season took the Zion module north to Glacier NP for the Big Prairie burn, south to Saguaro NP for the Mica Bowl burn, then West to Lassen Volcanic NP for the Hole burn. Overall 1,210 acres were treated this fall. The Clear Trap RX burn planned at Zion NP was canceled due to unfavorable weather. In between assignments this season, the module participated in four hazard fuels reduction projects. In the end, this module had a successful year, in the process demonstrating the diversity and flexibility of each individual.

### Fuels Management

2002 brought endless spreadsheets and new tracking software to the national office, called FASTRACS. This is all part of the 2000 National Fire Plan and accountability for fuels treatments.

Much of the winter months were spent burning piles along the park boundary. Jeff Hickerson was hired as the Wildland Urban Interface (WUI)/Fuels Management Specialist and started work in March.

The Finding Of No Significant Impact (FONSI) for the park's WUI Environmental Assessment (EA) was signed, and this was followed by the execution of the 500 AC Blue Creek Burn in early April.

Project work focused on treating fuels in and around Oak Creek historic district, the maintenance yard, and the park headquarters. Personnel also assisted Arizona Strip BLM, Bryce Canyon NP, Cedar Breaks NM, Dixie NF, and the Grand Canyon NP with prescribed fire and fuels related projects.

During the fall, personnel completed last minute preparation work related to the Clear Trap Prescribed Fire in anticipation of a prescription window for the 4,400 AC burn. However, weather failed to cooperate and plans are to complete the project next year.

### Fire Effects Monitoring

#### Zion National Park

➤ Immediate post-burn monitoring of:

○ 2 grass plots in the Weeping Rock Experimental burn unit

○ 4 forest plots in the Blue Creek burn unit

○ 10 mechanically treated/slash plots in the Blue Creek burn unit

○ 2 rare plants plots in the Blue Creek burn unit

➤ 2-year post-burn monitoring of:

○ 1 forest plot and 2 brush plots in the North Lee Valley burn unit.

- 5-year post-burn monitoring of:
  - 1 forest plot in the East Boundary burn unit
  - 3 forest plots in the Echo Canyon burn unit
  - 5 forest plots in the Goose Creek burn unit
  - 3 forests plot in the East Mesa burn unit.
  - 1 brush plot in the Stave Spring burn unit
- 5-year control monitoring of:
  - 1 forest plot in the East Boundary burn unit.
  - 3 forest plots in the Pocket Mesa burn unit.
  - 2 brush plots in the Hop Valley burn unit
- Installation of:
  - 2 grass plots in the Weeping Rock Experimental burn unit
  - 2 forest plots in the Clear Trap burn unit
  - 10 photopoints for the Zion Lodge WUI project
  - 8 photopoints for the Kolob Visitor Center WUI project

The Weeping Rock Experimental burn unit was initiated by Zion Resource Management and Zion Fire Management to test treatments of invasive exotic plant species for the Virgin River Restoration Project. Native tree seedlings were planted in the area following mechanical and chemical treatment of tamarisk (*Tamarix ramossisima*) in 1997 and 1998. Five exclosures in the experimental unit are designated for different treatments, three of which involve burning: Spring burning followed by chemical treatment. This year, the Zion Fire Effects crew created a new monitoring type and installed plots within 2 exclosures. We monitored during the burning this spring and collected immediate post-burn data. Our objective in this burn unit is to monitor changes in the proportion of native vs. non-native vegetation in response to various treatments.

Bryce Canyon National Park The Zion Fire Effects Crew began this year's work at Bryce Canyon National Park, installing photopoints and taking weather and fire behavior observations during the burning of East Creek Meadow Phase 1, Fairyland 2 VC/Loop Unit 1, Fairyland 2 WUI, and Loop Unit 8. A total of 4 photopoints were installed: one in Fairyland 2 WUI, one in Loop Unit 1, and two in Loop Unit 8.

We re-measured 8 forest plots and 3 brush plots this year; immediate post-burn monitoring of a Black Sagebrush plot in the East Creek burn unit, 1 year post-burn monitoring of Ponderosa Pine plots and Black Sagebrush plots in the East Creek burn unit, and 2-year post-burn monitoring of a White Fir/Mixed Conifer plot in the Agua burn unit.

Golden Spike NHS One-year post-burn monitoring was done this year on the two brush plots in the Last Cut burn unit.

Great Basin National Park The Zion Fire Effects crew was responsible for sampling of 2 Western Bristlecone (PILO) plots that burned in the Phillips Ranch Wildfire in 2000. We also installed 3 photopoints within the area burned by the Granite Wildfire in 2001. These wildfire plots are not included in the plot network information.

We traveled to Great Basin to monitor fire behavior and weather during burning of the Baker Creek burn unit. Unfortunately, ignition attempts were unsuccessful due to the weather (high RH, low temperatures, high fuel moisture).

Lake Mead NRA The Zion Fire Effects crew performed 10-year post-burn sampling on 7 plots in the Sacatone burn unit this year. Few programs have been in effect long enough to have 10-year post-treatment data from FMH plots.

We installed 20 brush plots in the Twin West Multiple burn units. These plots are designated for burning, mechanical thinning, chemical treatment, or combinations thereof.

We sampled a total of 49 plots at Lake Mead:

- 10-year post-burn monitoring of 6 TARA plots and 1 SPAL plot in the Sacatone unit
- 5-year post-burn monitoring of 4 PPO plots in the Waring burn unit
- 2-year post-burn monitoring of 4 TARA plots in the Meadow Wash burn unit
- 1-year post-burn monitoring of 3 TARA plots in the Burro Springs burn unit
- Immediate post-cut monitoring of 3 Shivwits JUOS plots in Twin West Multiple units
- Immediate post-burn monitoring of:
  - 4 TARA plots in the Burro Springs burn unit
  - 1 PPO plot in the Pine Valley Ranch burn unit
  - 1 PPO plot in the Green Springs burn unit
  - 2 PPO plots in the Pleasant Valley East burn unit
- Installation of 20 Shivwits JUOS plots in the Twin West Multiple burn units

The 2003 workload will require the following:

- 5-year post-burn monitoring of 1 PPO plot in the Horse Valley burn unit
- 1-year post-burn monitoring of 4 TARA plots located in the Burro Springs burn unit

The three Shivwits JUOS plots in the Twin West Multiple burn units for which we performed post-cut sampling will need 1-year post-treatment sampling if seeded units receive enough moisture for germination.

Mesa Verde National Park Fire management planning support was provided. Plots were not visited due the severe fire season that they experienced and timing of sampling of the plots.

Arches National Park Was not scheduled to be visited this year.

### Kolob Canyons District

The year 2002 again proved to be an exciting and productive year for Kolob Canyons personnel. The Kolob Canyons staff continued to perform well as a team to accomplish projects in all disciplines. While the Kolob Canyons staff remained successful and involved in interpretive functions, outreach programs, resource management and backcountry operations, the district is still understaffed and under budgeted. The Fee and Backcountry Permit programs continued to be hampered due to the fact that a term position was vacant. This impacted our ability to conduct backcountry, frontcountry patrols and many backcountry projects. The GS-07 Bio-Tech position remained vacant during FY 02. This vacancy severely impaired our ability to accomplish projects

in interpretation, outreach, resource management and backcountry projects, and to coordinate volunteers and SCA's in these areas of work. In spite of the short staff, all projects and activities identified in the FY 02 operations plan were completed.

#### Visitation

Total visitation in 2002 was up 4% from 2001 numbers. Fees collected, visitor center count, and the number of backcountry permits issued were all up. A total of \$244,750.00 in fees was collected in 2002. 157,838 people visited Kolob Canyons in 2002.

#### Staffing

Fred Hoeger served as the Kolob Canyons District Ranger. Craig Thexton and Laurel Carlson each served as protection rangers in 1040-hour appointments.

The permanent GS-07, Bio-Tech, position remained vacant during FY 02. As identified in the position management plan, we plan to add versatility to this much-needed position by filling it with a commissionable person.

Kodi Schoppmann occupied the permanent Kolob Canyons Fee Program Supervisor position. Craig Thexton served in one of the Term VUA positions until May of 2002, then resigned to accept the 1040 -hour seasonal protection ranger appointment at Kolob Canyons. Milt Hokanson filled the term position vacated by Thexton. Kim Oldroyd served in another Term VUA position. The third term VUA position was temporarily filled with a 1040-hour appointment occupied by Christine Kennedy.

Richard Fesler occupied the permanent maintenance position, and then transferred to Zion Canyon at the end of October 2001. This position was intermittently backfilled with maintenance personnel throughout the winter. The Kolob Canyons staff worked hard to fulfill the duties of visitor center and restroom cleaning, and garbage collection during maintenance staffing shortages. In mid-May, the seasonal maintenance position was filled by Tom Bain.

All of the Kolob Canyons staff performed well with a team concept approach to attain goals in maintenance, resource management, backcountry projects, short talks, guided hikes, outreach programs, Junior Ranger programs, bulletin boards, and other projects.

#### Resource and Backcountry Management

Fred Hoeger, District Ranger, coordinated with Resource Management to have several volunteer groups from Americorps to work on the Horse Ranch Mountain area exotic plant eradication. This is a continuing program to control the scotch thistle and mullein in this area.

Americorps groups also continued work in the La Verkin Creek drainage to control scotch thistle, mullein, and tamarisk.

The Kolob Canyons staff was able to continue in exotic plant eradication using mechanical means in the frontcountry and in Taylor Creek.

Water bars were cleaned on the Middle Fork of Taylor Creek Trail. This work was much needed and should help preserve the trail for several seasons.

The Timber Creek Overlook Trail received new water bars and existing bars were cleaned.

The trail counter was replaced at South Fork.

The yearly campsite monitoring in LaVerkin Creek was completed along with trail monitoring. Dr. Jeff Marion from Virginia Tech, along with Kolob Canyons' staff, reviewed our campsites monitoring program in LaVerkin Creek.

The interdivisional backcountry work team ZIBC had very successful year in LaVerkin Creek. They spent four weeks on the first four miles of trail with a six-man crew. Campsite #1 was delineated with natural materials and campsite #4 was delineated using copper sulfate treated logs. Both of these site delineations proved to be aesthetically pleasing and appear to be successful in mitigating resource impact. The ZIBC crews also made great strides in the trail rehabilitation on the first four miles of the LaVerkin Creek trail. New water bars were constructed, old water bars cleaned, the trail was de-rocked and delineated. ZIBC crew leaders Stuart Deines and Tom Green returned in the fall and installed rock steps and several water bars near the Lee Pass trailhead.

Air quality monitoring was continued in the Kolob Canyons District under a cooperative agreement with NPS and the University of California-Davis with weekly checks required. The staff also continued with the ozone monitoring project near the Timber Creek Overlook.

### Interpretation

In 2002, interpretive roves and short talks increased significantly over 2001. All staff performed multiple interpretive roves daily and short talks during high visitation, while also handling informal interpretation at the front desk in the visitor center. The Kolob Canyons staff also maintained and updated all trailhead signs and bulletin boards for visitor information. VUAs, and the seasonal LE rangers alike worked to make our interpretive program work.

### Short Talks

In 2002, 45 short talks were presented to 406 visitors. This was a significant increase from 2001 with the addition of a term VUA and adequate transportation. These program topics included ecology, geology, botany and park history.

### Guided Hikes

Guided hikes were presented every Saturday morning in April through August. 13 guided hikes were presented in 2002. Information was published in local newspapers and posted in public buildings in the area. Both the VUA's and the seasonal LE rangers presented these hikes.

### Interpretive Roves

Roving interpretation also increased with the addition of a second term VUA. In 2002, 4,112 visitors were contacted during 319 roves.

### Junior Ranger

The Junior Ranger program was well received by visitors. Approximately 160 Junior Ranger Badges were distributed to participants in 2002.

### Bulletin Boards

The bulletin boards were changed and updated monthly. Subjects ranged from trailhead information to varied interpretive information on wildlife, backcountry safety and national park trivia.

### Taylor Creek Trail Guide

In 2001, the Taylor Creek Trail Guide was rewritten and revised. This project is still in Zion Canyon awaiting approval and printing.

In 2002, the Kolob Canyons staff focused on improving the interpretive program in the district by increasing the number of interpretive programs presented and the number of visitors contacted. With the increase in staffing and adequate transportation, we were able to rebound from our low numbers in 2001.

### Maintenance

The inside of the seasonal employee house was remodeled. The outside was painted and some landscaping was performed. The visitor center timbers were replaced, the bathrooms remodeled, and outside trim was painted. The scenic drive was crack sealed and ditches cleaned. The overlook viewing area was re-constructed. Numerous smaller projects were also completed.

### Public School Outreach

The school outreach program continues to be a high point for interpretation in 2002 as in other years. This program is constantly expanding and being updated in order to fit with the school curriculum and teacher lesson plans. Acceptance from both students and teachers is outstanding. In 2002, first, third and fourth grade students from six different schools participated in the outreach program. A total of 1,258 students attended the programs in 2002. In addition to programs presented in the classroom, the outreach program was also presented to youth groups within the park. Feedback from teachers, school administrators, students and the community continues to be very positive.

### Backcountry Permits

In 2002, Trakker software was again used for issuing backcountry permits. 1,137 permits were issued for the Kolob Canyons District in 2002. This was an increase in the number of permits issued compared to 1,020 permits issued in 2001. The number of user nights also increased from 3,957 in 2001 to 4,562 user nights in 2002. May was the busiest month this year for permits. 232 permits were issued in May (20% of 2002's total).

### Kolob Canyons Fee Operation

Entrance and user fees collected for 2002 totaled \$244,750.00, a slight increase from 2001. Kolob Auto Weekly passes at \$10 and National Park Passes at \$50 continued to have the highest sales. May and August were the most profitable months, bringing in over \$30,000.00 each.

We continued to feel the staffing shortage. The fee staff in 2002 consisted of 1 Fee supervisor, 2 term VUAs and a 1,040-hour seasonal VUA.

Kolob Canyons fee collection staff accomplished all of their goals for the year 2002. Each of them succeeded in acquiring new skills and expressed satisfaction in individual job performance.

### SAR and EMS

Kolob Canyons reported 4 BLS Medicals, 2 minor SARs in 2002, both down from the previous year. Seasonal Protection Ranger, Craig Thexton, attended the Technical SAR course in Canyonlands this spring. Craig Thexton trained regularly with the Zion Canyon SAR Team. The Kolob Canyons SAR and EMS cache remains sufficient to handle all basic medicals and all but the most technical SARs, which would require more manpower than is present in the Kolob Canyons District.

### Visitor and Resource Protection

The Kolob Canyons law enforcement staff reported a total of 101 case incidents in 2002. This number is similar to 2001. These cases ranged from agency assists to numerous natural resource and traffic violations.

Law enforcement staffing consisted of a district ranger and two seasonal rangers. Both seasons were newly commissioned and they spent much of their time performing ride-alongs in Plateau and Canyon districts. The district continued to provide limited patrols at Cedar Breaks to cover the CEBR Chief Ranger's lieu days. Their lack of time spent in the Kolob Canyons District and limited experience impacted their usefulness in the district. A permanent subject-to-furlough position would better serve continuity and effectiveness of these positions.

The Kolob Canyons archaeological sites in Timber Creek and Camp Creek were monitored on a monthly basis to detect new occurrences of vandalism and looting. The Kolob Canyons archaeological sites remained unchanged in 2002.

Kolob Canyons District staff reported 81 backcountry patrols covering 426 miles of trail in Kolob Canyons in 2002. In addition to the use of commissioned rangers for backcountry patrols, Kolob Canyons used VUAs and other non-commissioned staff to help patrol the backcountry whenever possible.

### Fire

Kolob Canyons District made personnel available to serve on fires. There was only one resource call to Kolob Canyons this year. Kodi Schoppmann was dispatched as a firefighter to that resource call.

The Zion Fire Use crew ignited a prescribed burn in Hop Valley in the spring of 2002. In the fall of 2002, a mechanical thinning project was conducted around the visitor center, maintenance buildings and housing areas. This thinning has improved our ability to defend structures in an event of wildland fires.

### Wilderness

The district provided continued presence on the Park Wilderness Committee and involvement with the VERP process. District staff assisted Jeff Marion (VERP researcher, Virginia Tech) in gathering visitor use data, visitor surveys and site visitations.

## **SAFETY MANAGEMENT**

The superintendent's commitment to safety management was implemented in 2001 and aggressively continued through 2002. Elements implemented include a dedicated safety officer/manager, written Safety and Accident Prevention Program with employee input in its design, identification of employee safety training needs and renewed safety committees were given strong management support and visibility.

The three-park area has adopted the safety philosophy of the Dupont Company as a model for safety health management.

Key programs that are being used and strengthened are safety inspections of all facilities and operations, incident investigation procedures with a root cause analysis element. In addition programs focusing on safety communication and safety behavior are emphasized.

2002 included safety workshops for supervisors with a renewed emphasis on the value of employee health safety and well-being and a de-emphasis of accident/incident numbers as a goal.

## **RESOURCE MANAGEMENT AND RESEARCH**

### **Program Management**

#### Budget

The division had an operating budget of \$950,508 in FY02, which was an increase from FY01 (\$743,831). This was comprised of \$564,300 in ONPS funds, supplemented with \$246,000 in Natural Resource Challenge funds, \$131,660 in special project funds successfully secured through NPS and external project proposals, a \$7,100 donation from the Zion Natural History Association, and \$1,448 in individual donations to the resource management program. In addition, through the National Park Foundation, we and the Interpretation Division received a Kodak grant valued at \$5,000 for digital cameras, photographic paper, film and a document scanner; welcomed enhancements for our programs.

#### ONPS Accounts

Vehicles	\$ 30,000
Environment Protection	57,200
Wildlife	50,200
Vegetation	64,600
Division Chief/Support Assistant	127,700
Geographic Information Systems	83,300

Permanent positions:  
 Division Chief GS-13  
 Assistant Chief GS-12  
 Natural Resource Specialist GS-12  
 Archeologist GS-11  
 Biologist (GIS) GS-12  
 Biologist (Wildlife) GS-09  
 Botanist GS-11  
 Hydrologist GS-11  
 Support Assistant GS-06

Staffing  
 The division operated with 9 permanent employees, 4 term employees, 10 seasonal employees, 1 intermittent employee, 2 special needs appointment hires, 5 Student Conservation Association Assistants and Fellows, and volunteers. Volunteers working in cultural resources, vegetation, and in program administration contributed approximately 6,000 hours. Use of volunteers continues as an important means to accomplish project work, provide fulfilling opportunities for the public to participate in park management, and provide student interns with practical experience in resources management.

Assistant Division Chief	79,700
Cultural Resources	71,600
	<u>\$ 564,300</u>
Natural Resource Challenge	
Wildlife	103,000
Eradication of Exotics	42,000
Riparian Restoration	50,000
Data Management	51,000
	<u>\$ 246,000</u>
Special Project Funding	
Visitor Center Landscaping	\$ 35,500
Canon Grant	5,000
Parunuweap Tamarisk Eradication	20,000
National Trust for Historic Preservation	2,000
Recycling & Waste Reduction	20,300
Visibility Monitoring	4,000
Gaseous Pollutant	7,000
Habitat Restoration	16,560
Restore Native Habitats	18,000
Native American Graves Protection & Repatriation Act	3,300
	<u>\$ 131,660</u>

Term positions:	
Archeologist	GS-09
Horticulturist	GS-09
Lead Biologist Science Technician	GS-07
GIS Technician	GS-07

**Natural Resources Management**

The park issued 9 research permits for the following subjects: insect fauna, forestland inventory, herpetological inventory, mammal inventory, vascular plants, lizards, seeps and springs, assessment of biological & geomorphic resources, and ground penetrating radar survey (geologic structure).

Wildlife Management

Various types of projects including inventory and monitoring were done this year, with a new project started monitoring the federally listed threatened desert tortoise. Through the Colorado Plateau Network inventory project, inventories were completed at Cedar Breaks and Pipe Spring National Monuments for small mammals, and for reptiles and amphibians. Cedar Breaks National Monument was also inventoried for bird species. A monthly bat mist-netting was begun to determine any seasonal changes from May through October at Pipe Springs NM.

Mexican Spotted Owl

Zion has excellent slot canyon habitat for the federally listed threatened Mexican spotted owl. Twenty historic Mexican spotted owl territories were located and monitored for pair occupancy in 2002. Of those twenty territories, seventeen were occupied. Two territories reared fledglings successfully: Pine Creek and Great West Canyon. This does not reflect the total successful reproduction for spotted owls, as reproduction is very difficult to monitor in Zion. (Nests are usually in the higher parts of narrow slot canyons with little accessibility.) The Pine Creek adults and fledglings were seen repeatedly over the summer by canyoneering visitors and park staff.

Peregrine Falcon

Although the peregrine falcon was removed from the Threatened and Endangered Species List in 1999, the U.S. Fish and Wildlife Service still mandates population monitoring. Also, because Zion has over 25 years of monitoring data for peregrines, this activity continues, as it is one of most complete data sets on peregrine populations anywhere in the western U.S. In 2002, the focus shifted slightly to monitor a greater number of spotted owl territories and decrease the number of peregrine territories monitored. All peregrine territories affected by climbing routes, however, were monitored closely. 16 historic peregrine territories were re-located and monitored for pair occupancy and fledgling production. Of those historic sixteen territories, fourteen were occupied by pairs. Eleven eyries were located, but only young from nine eyries were observed through the fledgling state. From these nine eyries, 18 young were fledged.

Desert Tortoise

A desert tortoise project was begun to determine the number of tortoises located in the park. Utah Division of Wildlife Resources did a survey in 2000, which determined that we had from four to 59 individuals. Because they used a line-distance sampling technique, the population estimate was imprecise, and line-distance sampling requires at least 100 individuals to be accurate. A quadrat

Year	North Fork of the Virgin R.			East Fork of the Virgin R.			North Creek		
	All	Adult	Y-O-Y <sup>1</sup>	All	Adult	Y-O-Y <sup>1</sup>	All	Adult	Y-O-Y <sup>1</sup>
1999	14	10	4	44	38	6	10	①	10
1998	North and East Fork flows too high to sample			4	①				
1997	75	51		54	51	3	70	23	46
1996	12	2	10	391	44	347	35	13	24
1995	6	①	5	77	76	①	80	12	68
1994	4	4	①	67	7	60	30	7	24

The park was an active participant in the Virgin River Resource Management and Recovery Program, a multi-agency program to recover threatened and endangered fish in the Virgin River Basin. Woundfin (*Plagopterus argentissimus*) and Virgin Chub (*Gila semivulva*), which have been listed as endangered since the 1970s, are native to the river downstream of the park, and the Virgin Spinedace (*Lepidomedea mollispinis mollispinis*), which occur in the park, are managed under a conservation agreement to avoid formal listing. Program activities include investigating the habitat requirements of these fishes, monitoring populations, removing exotic species, and restoring stream flow and riparian lands. Annual fall monitoring of native fish was conducted on the North and East Forks of the Virgin River, and North Creek with the results for Virgin Spinedace shown below.

Native Fish

Small mammal trapping is conducted to track relative population levels, as these animals are key prey in park food webs. Work was done at a limited number of sites to determine effectiveness of a new survey design and increase species identification skills. In summer 2003, small mammal work will focus on riparian restoration areas and be paired with Fire Management vegetation plots to determine pre- and post-treatment conditions.

Small Nocturnal Mammals

Dr. Mark Sogge from USGS-BRD conducted a habitat assessment for the endangered southwestern willow flycatcher in Zion Canyon around the river restoration area, and in Farnuweap Canyon. He determined that only a minor portion of the area surveyed represented "marginal habitat" for the flycatcher. The majority of riparian areas surveyed fell under "poor quality" habitat and will no longer be surveyed annually by park staff. "Marginal areas" will continue to be surveyed and consisted of a single area north of Heap's Canyon (south of the Grotto).

Southwestern Willow Flycatcher

method was instead tested this past summer, which will give a more precise population estimate for a smaller area such as we have at ZION. The quadrat sampling is much more intensive, and found 20 scat and 2 burrows in 16 quadrats (1 hectare each). No individuals were found. Due to time constraints, only 16 out of 49 quadrats were surveyed. In 2003, the project will be expanded to survey the entire study area.

2000	65	21	42	365	67	300	57	15	42
2001	48	30	14	45	41	4	92	39	66
2002	112	38	77	117	18	99	No fish Captured		

<sup>1</sup> Y-O-Y = Young-of-Year (fish hatched in May-June of that year)

From: Freidell and Curtis, 2002. Virgin Spinedace Population Monitoring Summary, 1994-2001. Utah Dept. of Wildlife Resources, Publication number 02-01.

⊙ = Sample size too small to calculate density.

In spite of the lowest stream flows on record, the North and East Forks of the Virgin River in the park continued to provide some of the most productive native fish habitat in the basin. Spinedace densities increased for both adults and young-of-year fish. This is consistent with a pattern of large reproduction occurring every other year. No fish were found at the North Creek monitoring site 3 miles downstream of the park. Further sampling found very small numbers of fish above and below this site, with typical fish densities not found until near the confluence with the Virgin River. This is apparently the result of the stream going dry during the summer of 2002 from drought and irrigation diversions along the creek. This is disappointing because North Creek has traditionally produced significant numbers of Spinedace and other native fish.

#### Northern Colorado Plateau Network Inventory Projects

The Northern Colorado Plateau Network provided inventory funds for parks, which had a poor representation of their vertebrate fauna. Results were not yet reported at the time of this report writing.

#### Reptiles and Amphibians (Herpetology)

Herpetological inventories were concluded in Cedar Breaks, Pipe Spring, and Zion.

#### Birds

While Zion and Pipe Spring had a history of being monitored for bird species, Cedar Breaks did not. In 2002, through the Network, Cedar Breaks completed an extensive inventory of birds.

#### Mammals

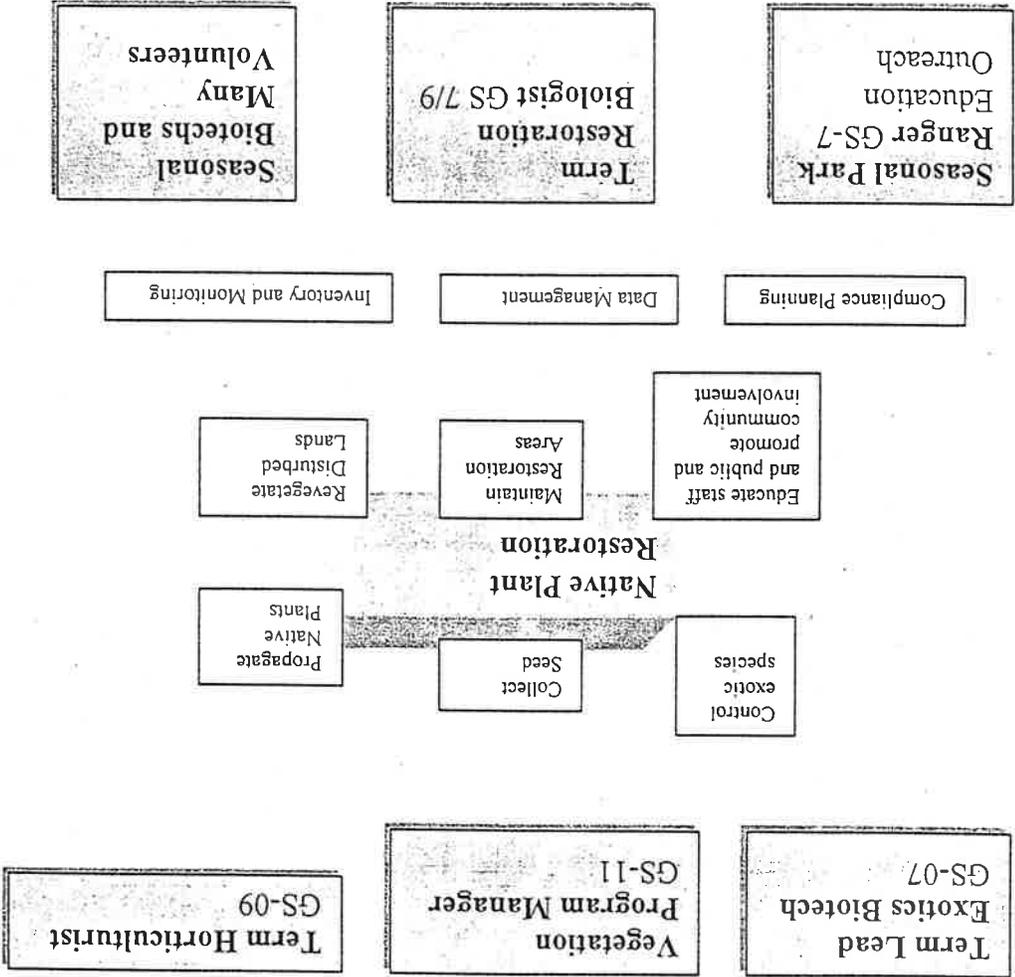
Both Cedar Breaks and Pipe Spring mammal species inventories were completed in 2002. At the time of this report writing, results were not yet known.

#### **Vegetation Management**

The Zion Vegetation Program focuses on native plant restoration of disturbed areas in ZION, PISP and CEBR. We are fortunate to have a core group of talented and dedicated employees – depicted in the graphic below. Our constant challenge is to acquire the funds and infrastructure needed to continue maintaining, developing and advancing our capabilities in a professional manner. Funding through the Natural Resource Challenge has increased our ability to work towards riparian restoration and exotic plant control throughout the park. A SEPAS NRPP Resource Management grant secured 2 new positions for FY03, FY04, and FY05 to focus on backcountry restoration and education outreach. A SEPAS NRPP small park grant was awarded to PISP for native bunch grass restoration in FY03 and FY04. In FY02, we also received two Public Land Corps grants to support an 8-person Utah Conservation Corps Team for 9 weeks of exotic plant

control and revegetation projects; a 9-month SCA Conservation Associate; and a service/learning field trip for 10 low-income high school students from New York City. Finally a wealth of volunteer assistance, over 5,800 hours, is making significant contributions towards native plant restoration efforts.

**Vegetation Program Organizational Framework**



**Vegetation Program Accomplishments**

- Produced or nurtured over 1,200 native plants in the Zion nursery.
- Completed construction of "headhouse" building: nursery office and workspace.
- Revegetated over 15 acres of disturbed lands within a riparian floodplain.
- Experimented with different restoration techniques along the Virgin River on a 2-acre area. Techniques included: fire, herbicide application and mowing.
- Collected over 20 lbs. of native seed for bulk seed increasing or plug propagation (a significant amount considering the drought year and the small size and weight of most seed) from ZION, CEBR and PISP.
- Initiated partnership with NRCS Plant Materials Center for propagating and increasing native grass seed for ZION and PISP.

- Lead over 3,300 volunteer service hours in Zion nursery operations, seed collection, and revegetation along riparian corridors. Groups included local elementary schools, local residents, college groups, a prison crew, AmeriCorps, the Student Conservation Association (SCA) and special interest groups such as Wilderness Volunteers, Boy Scouts of America, and the Utah Native Plant Society.
- Initiated an education program to convey the values of native plant communities, threats, and ways to help protect biodiversity.
- Participated in the 2002 Society for Ecological Restoration / Ecological Society of America conference to network among colleagues for technical assistance and cooperation in riparian restoration activities.
- Toured the Provo River Restoration Project and gained technical assistance from this project's staff ecologists and geomorphologists for river restoration at Zion.
- Toured the Utah State Division of Wildlife Resources Great Basin Research Center in Ephraim, Utah to learn more about processing and cleaning field-collected seed effectively.
- Prepared the Zion nursery for a large-scale riparian restoration project being planned for the near future. Needed supplies and equipment were purchased and organization and storage of these tools were greatly improved. Examples include: creating a seed storage and drying system, improving nursery watering system, building tool racks and customized shelving to efficiently store special equipment, installing bins to house various planting pots and compost material, and developing a riparian tree nursery.
- Treated 350 acres for high priority invasive weeds of which 147 acres directly aided riparian restoration efforts.
- Utilized mules to haul chainsaws, fuel, herbicides, and gear into a backcountry base camp to successfully treat tamarisk and Russian olive throughout the entire Coalpits Wash drainage system (8 river miles).
- Inventoried and mapped 374 acres infested with invasive weeds.
- Led over 2,500 volunteer service hours in exotic plant species control throughout Zion. Groups included local elementary schools, college groups, a prison crew, AmeriCorps, the Student Conservation Association (SCA) and special interest groups such as Wilderness Volunteers, Boy Scouts of America, and the Utah Native Plant Society.
- Participated in the Utah Weed Association meeting and an Intensive Shortcourse on Weeds of the Southwest.
- Coordinated with Network and National staff to adopt a standardized database to track exotic plant treatment activities.
- Attended local Weed Management Area meetings to gain a network of contacts and cooperators to jointly address weed problems through out Washington County, including Zion.
- Working with other agency partners to develop a Weed Management Area proposal to treat tamarisk and Russian olive along the Virgin River Watershed – of which Zion is a part.
- Developing a Weed Action Plan and corresponding Environmental Assessment.
- Assisting with the creation of an Exotic Plant Management Team for the Colorado Plateau.

## Zion Recycles Program

In FY02, the park contributed funds to support 13 pay periods of a half-time employee from mid-April through the beginning of October. A Youth Conservation Corps member was also dedicated to recycling efforts for an eight-week period in the summer. With the assistance of the park concessionaire, Xanterra, over 49,000 pounds of recyclables were kept out of the landfill in FY02. In addition to materials collected in FY01 (aluminum cans, paper and cardboard), we began collecting glass, steel cans, #1 and #2 plastic and batteries – items that can only be recycled in Las Vegas. A SEPAS hazardous waste grant allowed us to purchase essential items (listed below) to help increase efficiency to the program.

10-bin specialized recycling trailer (\$11,000)  
Portable glass crusher  
Metal recycling signs  
Lift gate for recycling truck

## Physical Resources Management Climate and Stream Flow

A total of 7.37 inches of precipitation was received at the park headquarters station in calendar year 2002, less than half the 30-year average of 15.42 inches, and the second driest since record keeping began in 1922 (1956 received 5.38"). This continued a drought beginning in 1999, with total precipitation in the 12 months from September 2001 through August 2002 being a paltry 3.15 inches. The park has not received above average precipitation since 1998.

The North Fork of the Virgin River reached record low flows in the summer of 2002, with extended periods of flows at 20 – 22 cubic feet per second (cfs) in August. The previous low flow was 22 cfs reached briefly in 1994. In the 78 years since records have been kept, summer flows have dropped below 30 cfs in only 13 years (one in 6). Typical summer flows are around 50 cfs. Total discharge from the Virgin River at the Virgin Gage was 60,000 acre-feet, also the lowest on record and well below the mean water yield of 142,000 acre-feet. The previous record low water yield was 1977 when 69,000 acre-feet came down the river. There was essentially no spring flood on the North Fork (peak discharge 150 cfs), and no summer floods (peak discharge 250 cfs September 7).

The North Fork upstream from the park was dry during the summer of 2002. This is a reach that typically carries less flow and is subject to infiltration into the top of the Navajo sandstone. The East Fork of the Virgin was dry for an extended distance upstream of the park near Mount Carmel Junction. Away from the rivers, it was noted that there was no flow into the pond in Potato Hollow and the pond was only a few square feet in size, and of three springs around Pocket Mesa, only one had open water. As noted in the report on native fish, North Creek went dry downstream of the park resulting in a significant fish kill.

## Virgin River Restoration

Planning continued for the restoration of 2 miles of the North Fork of the Virgin River that have been channelized since 1930. The Utah Division of Wildlife Resources conducted a detailed inventory of fish habitat and sampling of fish populations in the channelized reach and the unchannelized reference reach. Three piezometers were installed on the river terraces to monitor

movement of the shallow water table. Technical assistance was requested from USGS to evaluate possible impacts to downstream water users which might result from several alternatives for river restoration that could include letting the river meander and cut into the river terraces (increased sediment loads).

#### Water Rights

Numerous legal notices for water rights filings were reviewed for the Virgin River and Kanab Creek watersheds around Zion and PISP, and uppermost part of the Sevier River, Parowan Valley, and Coal Creek watersheds near CEBR. Of these, 22 warranted further investigation. No new water rights protests were filed this year. Even with the record dry year, no restrictions were imposed on the use of water rights by the park or other nearby users.

#### Geology and Paleontology

Final Geologic Maps were received from the Utah Geologic Survey for the 12 USGS quadrangles that include all of Zion National Park and Cedar Breaks National Monument.

Dr. Annebelle Foos with the University of Akron conducted an investigation into the paleo-history of Hop Valley as part of the NPS Geoscientists in Parks program. A large landslide that occurred several thousand years ago was thought to have created a lake in Hop Valley that filled with sediments. This investigation found no lake deposits, demonstrating that the valley filling that occurred was due entirely to stream sediments accumulating behind the landslide. Several samples of organic material were collected for radiocarbon dating. The results will better constrain the age of the landslide and the rate of valley filling.

An agreement was made with the Utah Geological Survey for the inventory of paleontological resources in the park. Known sites in the park were entered into the state inventory and new areas of the park were inventoried. A casting was made of one dinosaur track site in the park for use as an interpretive tool. The inventory will continue in 2003.

#### Air Quality

Visibility and particulates were monitored using an IMPROVE sampler at the Kolob Canyons administrative area. This is part of a state and national monitoring network, and provides the only site in the Great Basin air shed. Monitoring at Bryce Canyon National Park represents eastern portions of Zion and higher elevations. The park monitored for ozone with passive samplers at three sites: Kolob overlook, headquarters, and east entrance. A new location for particulate and ozone monitoring was identified southwest of the park in the Dalton Wash area. Arrangements were made for site access with BLM in 2002 and site development is expected early in 2003.

#### **Cultural Resource Management**

Cultural Resource Management (CRM) had a productive year in 2002 completing numerous projects and initiating several multi-year program level activities. Specific high profile projects are described in detail below followed by a brief listing of additional tasks completed.

Personnel  
Under the direction of the Assistant Chief of Resource Management, employees in the CRM program during FY02 included the following positions:

Program Manager/Park Archaeologist GS-11 (permanent)  
Supervisory Archaeologist/Fire Pro GS-9 (term)  
Archaeological Technician GS-7 (seasonal)  
3 SCA Interns for 12 weeks each

Native American Graves Protection and Repatriation Act (NAGPRA)

In September, the remains of eleven American Indians, believed to be of prehistoric age, were reburied in the park. This was done in accord with the provisions provided in NAGPRA and brought to a close a 10-year consultation effort with affiliated Indian tribes. Reburial was accomplished by members of the Paiute Indian Tribe of Utah, the Kaibab Band of Paiute Indians, and the Northern Ute. The Hopi Tribe did not participate in the reburial ceremony as originally planned. Park staff prepared the burial site and assisted with transporting the remains to the reburial location.

Birch Creek Historic District

Work continues on efforts for rehabilitation of the four buildings at Birch Creek. A graduate student worked on architectural drawings for the buildings throughout the year. Final draft drawings have been prepared and submitted to the Utah State Historic Preservation Officer for review and comment. The park expects to receive final drawings in 2003.

Watchman Campground Archaeological Site (42WS126)

Archaeological investigations in 2001 were conducted and a second task agreement, *Preparation of Archaeological Site (42WS126) for Public Interpretation Phase II - Final Archaeological Report*, was drafted and approved. The task agreement is between the NPS and the Desert Research Institute in Reno, Nevada under cooperative agreement, CA-1590-9-0001. The report will provide a scientific interpretation on the findings of the archaeological excavation. Several drafts of the final report have been reviewed and the final report will be completed in 2003. The site has been prepared for stabilization (all features re-excavated, the plastic removed and lined with a protective geotextile fabric), the features have been stabilized by backfilling with sandy soil, and several features were prepared for viewing and public interpretation. Also, the Maintenance Trail crew prepared a trail for public access up to the site.

Archaeological Inventories

The bulk of inventory work was completed for prescribed fire/fuels management focusing on areas within the park that have been identified for hazardous fuels reduction through management-ignited fires and mechanical techniques. Several additional non-fire related inventories were also completed. All projects combined, approximately 1,400 acres were inventoried and 12 new sites were recorded. Each site was recorded on the required IMACS form, condition assessment baseline data was collected during site recording, and the NPS service-wide ASMIS database was updated with new site information. Geo-spatial data (GPS coordinates) were compiled for each site and entered into the GIS cultural base map data layers.

Specific inventory projects completed include:

- Three Fingers Burn Unit
- Lava Point Helispot
- Pacific Corp Powerline
- Horse Pasture Plateau
- Zion Canyon Field Institute, inventory service project (Upper Dalton Wash)

#### Archeological Site Condition Assessment/Monitoring

Modifications of the site monitoring/condition assessment program are ongoing. Work completed includes establishing monitoring zones within the park based on GMP zones and natural topography, listing of sites within each zone and designation of level of monitoring needed. Tasks remaining are to link this work with the existing monitoring/condition assessment database and finalize the revised condition assessment form.

Cultural staff continue to work with backcountry rangers and the archeological site-monitoring program. Backcountry rangers monitor site impacts and conditions while they are on duty, tracking conditions and changes to sites. Eleven sites were added to the list of sites monitored throughout the year.

#### Data Management

- IMACS updates. All of the recorded sites in our files have been entered into the IMACS database in Access 97.
- HRS database. All of the historic features recorded as part of the historic base map inventory in Zion Canyon and Parunuweap Canyon have been entered into a newly created Access 97 database. GPS work has started on these features and will progress as time permits.
- LCS updates. A work plan has been developed and approved by the regional LCS coordinator for updating existing information for all three park units, ZION, PISP, and CEBR. GPS work was started to provide accurate locational data for each entry in the LCS.

#### Cultural Resource Support for PISP and CEBR

- Archaeological testing and monitoring for the Tunnel Springs underground water pipeline, PISP
- Archaeological monitoring for corral fence construction, PISP
- Archaeological monitoring for hazardous fuel reduction around West Cabin, PISP
- Archaeological monitoring for hazardous fuel reduction around historic structures, CEBR
- Section 106 compliance support for both CEBR and PISP
- Preparation of funding proposals for both CEBR and PISP

#### Additional Projects

- Provided cultural resource advisors for the Fire Management Program for the following number of person hours: 314 hours regular time; 221 overtime hours; and 38.5 hours of weekend backfill.

- Established a working relationship with the Zion Canyon Field Institute. Scheduled two workshops: archaeological inventory (completed) and a rock art study (to be completed in February 03).
- Site estimation and GIS modeling. Staff designed and developed a predictive model estimating the number of prehistoric sites in the park.
- Staff attended and participated in the Great Basin Archaeological Conference presenting a professional paper on the Camp Creek archaeological excavations.
- Staff organized and provided educational activities during Utah Prehistory Week.

National Environmental Policy Act (NEPA)

Environmental compliance was completed for fuels management proposals along the wildland-urban interface at Zion and Cedar Breaks. The environmental assessment (EA) and finding of no significant impact (FONSI) documents, one for each National Park Service unit, were completed and signed by the Regional Director in February 2002. Staff contributed a significant amount of time in the preparation and completion of the documents.

A comprehensive Fire Management Plan/Environmental Assessment for Zion began in FY 02. As part of the planning effort an interdisciplinary team was established to identify and analyze the effects of different fire management strategies on cultural and natural resources in the park. Also, the EA schedule was prepared and public/external/internal scoping was initiated.

Two regional airports have been proposed within 100 miles of Zion – in St. George, Utah and Mesquite, Nevada. Air traffic associated with these airports has the potential to affect resources within the park. Staff coordinated with the WASO Soundscapes Office and the Intermountain regional office to respond to the scoping notice for the proposed St. George airport environmental impact statement (EIS). Staff continues to coordinate with the City of St. George and the Federal Aviation Administration (FAA) to ensure National Park Service concerns are incorporated into the NEPA process. The FAA may officially request that the National Park Service become a cooperating agency for the EIS.

The Chief of Resource Management assisted in the review of proposals by NEPA contractors to prepare the EIS for the proposed Mesquite airport. Staff continues to participate with the City of Mesquite and the Federal Aviation Administration to ensure National Park Service concerns are incorporated into the NEPA process.

Environmental compliance work continued on the PacificCorp power line reconstruction project. The EA analyzed the environmental effects on park resource of upgrading an existing power transmission line. Staff worked with PacificCorp and the contractor to complete the EA, organize and hold public open house session for comment on the EA, reviewed and analyzed comments on the EA, and complete the FONSI. Since the signing of the FONSI by the Regional Director, staff has work with PacificCorp and the contractor constructing the power line to ensure all mitigation identified in the EA is followed.

As part of the park's administrative record, Environmental Screening Forms and Categorical Exclusion Forms were completed for the following:

- CE-02-01 Repair Retaining Wall Behind Zion Lodge
- CE-02-02 Trail Ride Concessions, Birch Creek
- CE-02-03 Aerial Photography for New Park Orientation Video
- CE-02-04 Repair and Resurface Flanigan Diversion Structure
- CE-02-05 West Rim Campsite Relocation/Rehabilitation
- CE-02-06 Overlook Rehab, Kolob Canyons
- CE-02-07 Foot Bridge Lighting, Bus Maintenance Facility
- CE-02-08 Fire Weather Station
- CE-02-09 LaVerkin Creek Campsite Rehabilitation
- CE-02-10 Zion Lodge Awning
- CE-02-11 Zion Native Plant Nursery Storage Shed
- CE-02-12 Coalpits/Dalton Wash/Chinle Trail Intersection
- CE-02-13 Install Shallow Piezometers in Vicinity of Proposed Virgin River Restoration
- CE-02-14 Re-roof Quarters #5, #9, and Re-roof Building #77
- CE-02-15 NAGPRA Reburial
- CE-02-16 Lava Point Helispot
- CE-02-17 West Temple Repeater Rehab
- CE-02-18 Cleaning Intake to Crawford Diversion
- CE-02-19 Feral Cat Trap, Neuter, Release Program

#### National Historic Preservation Act Compliance (Section 110/106)

##### Assessment of Effect Forms (AEF)

The following is a list of Assessment of Effect Forms prepared that address potential impacts, determinations of effect, and mitigation to cultural resources. The park solicited review and comment from the Utah State Historic Preservation Officer and received approval for the following:

- AEF-02-001 Zion Lodge Awning
- AEF-02-002 Gap Prescribed Burn Unit Survey
- AEF-02-003 Zion Lodge Hazardous Fuel Treatment

#### **Geographic Information System (GIS) Program**

During FY02, the GIS program underwent a complete upgrade of GIS and GPS (global positioning system) hardware and software. The program also undertook a rigorous reorganization of the data storage and backup structures into a logical hierarchy for efficient accessibility by GIS and non-GIS personnel. The GIS staff converted over 200 GIS layers to the National Park Service GIS data standards in addition to editing existing and creating over 50 GIS layers. GIS staff completed over 95 project requests from all divisions of the Park with a focus on Resource Management and Research and Fire/Aviation divisions.

#### Hardware and Software

The GIS Program at Zion National Park underwent extensive upgrading in hardware, software, and data structure. A new subnet of GIS computers and peripheral equipment were purchased and configured. New hardware includes a UNIX data server, three dedicated GIS personal computers, a large-format plotter, and tape backup systems for all GIS data. Purchase of the new hardware enabled the GIS program to upgrade to the most recent software releases of GIS, GPS, and data

- A catalog of data that is on CDROM (source data, purchased data, backup data) was developed for GIS and RMR data using ZipCatPro software purchased by the GIS specialist, which is accessible by all RMR staff.
  - 200 GIS data layers were converted to current National Park Service national GIS projection standards.
  - GPS data collection standards were developed and training was provided to resource management and fire staff in the new standards.
  - GPS data dictionaries were developed for RMR staff, including vegetation (exotics, T&E, revegetation), wildlife (desert tortoise, Mexican spotted owl, peregrine falcon, southwest willow flycatcher), fire (wild, prescribed, suppressed), and facilities programs to meet management and fire staff in the new standards.
- A hierarchical data structure was developed for GIS/GPS data and projects for three parks (ZION, CEBR, PISP); this structure was developed to increase the efficiency of data access, management, and backup. Training was provided by GIS personnel to resource management staff to efficiently access the data.
- GIS Data Management

The GIS Specialist received training in the Inventory & Monitoring protocols and databases. Both the specialist and the GIS technician received training in the Federal Geographic Data Committee (FGDC) metadata protocols as required of all federal agencies, as well as training in Microsoft Access database software. GIS personnel then provided training to RMR and Fire/Aviation staff in the NPS and Zion-specific standards of GPS and GIS data collection and management.

The GIS Specialist hired a term GIS technician in FY02. In addition, a cooperative relationship was established with Southern Utah University (SU), GIS Certificate Program Director, Cedar City, Utah. A GIS student was hired for the academic year to edit and update GIS digital data. A GIS volunteer was also brought on board to help the GIS specialist in data management tasks, such as compiling a database of all paper maps within the Resource Management and Research Division.

GIS Personnel and Training

The most current versions of:

- (a) GIS/GPS Software (ArcGIS 8.2, ArcView 3.3, PathFinder Office 2.9, Asset Surveyor 5.2), Distiller, Roxio CD Backup,
- (b) data management software (ZipCatPro, Office2000 and Access97, Adobe Acrobat
- (c) PC backup software (Retrospect 5.6) and PC and Unix backup tape drives with software,
- (d) computer hardware protective software (Diskkeeper, PowerChute UPS) were purchased and loaded; and
- (e) network interfacing software for the 3 new PCs and UNIX data server was purchased and installed (Hummingbird Maestro and Client).

is a summary of networking, data management, and data backup systems and software that were installed:

management programs. RMR also purchased a new integrated switch for the networking of all computers within the Resource Management offices, which greatly facilitated the function of the GIS subnet. Networking software for the GIS subnet was installed and configured. The following

National Park Service inventory and monitoring (I&M) program standards for data and attribute collection, and technical support provided for conversion to GIS layers.

- Quality control processes for development of the I&M vegetation layer was provided to the agency and contractors developing the final product.
- Natural resource data sets were edited and updated, including wild and scenic rivers, water quality stations in Virgin River, resource natural areas of Zion, public land survey layer, real estate inholdings in Zion, 20 fire GIS data layers created or updated, 20 fire data layers were compiled and integrated from several different data servers and incorporated into new hierarchical data structure.
- The GIS program acquired new USGS imagery (digital orthophoto quads, digital elevation models, digital raster graphic files) and state/USGS vector data sets for three parks.

#### GIS Project Support

Over 95 GIS project requests from all divisions at Zion, PISP, and CEBR were accomplished, particularly for RM&R and fire staffs. In addition, the following projects were accomplished:

- Provided GIS data development and technician assistance to non-NPS researchers and scholars (algae, geology, historic vegetation for CEBR, state hydrological researchers, paleontologists, bighorn sheep student researchers).
- Modeled soils for determination of milkvetch (T&E) locations.
- Provided geospatial location information to developers for resource protection.

#### **External Issues and Programs**

The division chief continued as the NPS representative on the administration committee of the interagency Virgin River Resource Management and Recovery Program. He attended monthly meetings in St. George and Salt Lake City. Tasks involved production of the interagency recovery program plan, environmental assessment, contract RFP's, review of land and water rights purchase documents, etc. The park hydrologist serves on the program's technical committee with specialists from partner agencies. As such, he is involved in contact administration and project planning, site evaluations, permit reviews, restoration projects and a number of other activities. Some are within the park, others are external, but most bear on our management of park resources.

Issues regarding the St. George Replacement Airport continued in intensity as the Grand Canyon Trust won their lawsuit against the FAA in Federal Appeals Court. The Trust's case was based on their contention that FAA failed to conduct adequate environmental compliance under NEPA, inadequate cumulative effects analyses, and discounted or ignored park concerns and those expressed by other agencies and organizations. The Court directed FAA to complete a more thorough analysis and to use sound monitoring data collected by the park. The FAA has decided to complete an environmental impact statement for the St. George Airport project, which will be initiated in CY 2003.

The division chief continued as the NPS contact with the City of Mesquite, Nevada regarding the Mesquite Replacement Airport planning process. The city invited NPS/Zion to participate in evaluation or proposals and interviews of perspective contractors for the Mesquite Replacement Airport environmental impact statement process, which will also begin in CY 2003.

The division chief served on the Colorado Plateau Natural Resource Advisory Committee, with primary responsibility to assist in the development of the CESU work plan and allocation of its research funds, coordination of cluster-wide natural resource issues such as pinyon-juniper management, Native American harvest of wildlife, harvest of peregrines under falconry permits, and coordination between parks and networks for the service-wide Inventory and Monitoring Program. The I&M program start-up and development for 34 parks has been a huge undertaking and a significant workload within the entire Colorado Plateau Cluster. However, FY02 saw the continuation of inventory fieldwork in parks throughout the cluster and initiation of planning for long-term monitoring in cluster parks.

The division chief worked with the Southwest Science Foundation in development of their plans to construct a planetarium and science center near Hurricane, Utah and a research facility on the east or west side of Zion. Several possible sites are being examined.

The division chief continued worked with Grand Canyon Trust, University of Utah, and Brigham Young University to evaluate results and continued planning from the "Zion Park Bio-Region Conference," where invited natural resource experts from the region discussed the internal and external pressures affecting Zion park resources. The intended follow-up will be to develop concepts for regional land management and to foster long-term protection of the park.