REPORT OF THE
DEPARTMENT OF CONSERVATION AND RECREATION

A FEASIBILITY STUDY FOR THE INCLUSION OF NATURAL CHIMNEYS AND GRAND CAVERNS REGIONAL PARKS IN THE STATE PARK SYSTEM

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

SENATE DOCUMENT NO. 23

COMMONWEALTH OF VIRGINIA
RICHMOND
2000

James S. Gilmore, III
Governor

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COMMONWEALTH of VIRGINIA

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December 23, 1999

The Honorable James S. Gilmore, III, Governor
Members of the Virginia General Assembly

It gives me great pleasure to submit the Feasibility Study for the Inclusion of Natural Chimneys and Grand Caverns Regional Parks in the State Parks system. This report, as directed by the 1999 General Assembly through Senate Joint Resolution No. 403, requested the Department of Conservation and Recreation (DCR) to study the "feasibility of including Natural Chimneys and Grand Caverns Regional Parks in the state park system." It would not have been possible to complete this study without the cooperation of the Upper Valley Regional Park Authority, local government officials, business leaders and area Chambers of Commerce.

The Mason Enterprise Center of George Mason University, the DCR Division of State Parks, and the Division of Planning and Recreation Resources are to be commended for their diligence and their professionalism.

Natural Chimneys and Grand Caverns Regional Parks contain natural, cultural, and historic resources that are of statewide significance. These parks could be valuable additions to the Virginia State Parks system. The interpretive features of these sites would complement the DCR recreational and environmental education strategies. However, the feasibility of this action is dependent upon the Governor and the General Assembly providing the necessary resources to operate and manage these unique facilities, as well as the support of local governments and community. It is hoped that this report will serve as a guide for that action.

Respectfully submitted,

David G. Brickley

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PREFACE

The 1999 session of the Virginia General Assembly passed Senate Joint Resolution No. 403, requesting the Department of Conservation and Recreation "to study the feasibility of including Natural Chimneys and Grand Caverns Regional Parks in the state park system." The General Assembly further required DCR to complete work on the study "in time to submit its findings and recommendations to the Governor and the 2000 session of the General Assembly."

The Department of Conservation and Recreation wishes to thank George Mason University's Mason Enterprise Center for coordinating the study and conducting much of the field work, interviewing local businessmen, government officials, Chamber of Commerce directors, and others. Their expertise as economists and straightforward approach to the study process provided additional credibility to the study

The Department of Conservation and Recreation staff provided much of the technical information to support this study. The Division of State Parks staff, including park managers compiled the State Park related data used in the document. The Design and Construction and The Planning Bureaus provided the engineering and technical information and coordinated the development of the study.

A special thanks is due to the Upper Valley Regional Park Authority. Without their assistance, it would have been extremely difficult to complete this report in a timely manner. The Executive Director and his staff promptly provided any information that was requested and spent many hours showing various DCR staff members and the researchers from Mason Enterprise Center around the sites and answering an endless stream of technical questions.

EXECUTIVE SUMMARY

The 1999 Virginia General Assembly requested that the Department of Conservation and Recreation (DCR) study the feasibility of including two regional parks, Natural Chimneys, approximately 130 acres, and Grand Caverns, approximately 99 acres, in the state park system. Both parks are in Augusta County in the Central Shenandoah Valley and are owned and operated by the Upper Valley Regional Park Authority (UVRPA). DCR staff chose an independent consultant, the Mason Enterprise Center (MEC) at George Mason University, to work closely with the department in meeting the General Assembly's request for the study report. The fieldwork on the study was conducted from late-July through October 1999, including several site visits by DCR staff and MEC researchers.

Both Grand Caverns and Natural Chimneys contain geologic, historic, natural and cultural resources that are of statewide significance and are worthy of protecting within the Virginia State Park system. Both sites contain rare, threatened or endangered species, geologic, cultural, and other resources that could be key elements of a major environmental educational programming opportunity for the Commonwealth. Therefore, due to the significance of these varied resources and their key location in the Shenandoah Valley, it is feasible to incorporate Natural Chimneys and Grand Caverns regional parks into the state park system. The 1996 *Virginia Outdoors Plan* has identified the Shenandoah Valley as one of the top ten areas for the location of a future state park, and these sites would also meet that recommendation.

The costs of making upgrades and improvements to bring both parks into compliance with established state standards would be over $7.5 million. Future land acquisition to bring the regional parks to the desired minimum state park size of roughly 600 acres could cost approximately $1.5. These would be one-time costs. Additional costs may be incurred if it is necessary for the state to purchase UVRPA's interests in land and improvements at both sites.

Substantial portions of both parks are within the floodplain, and DCR would be required to comply with all relevant federal, state, and local regulations and ordinances adopted in compliance with the National Flood Insurance program. These restrictions could affect future developments within the floodplain.

An operating budget of more than $850,000 would be a recurring cost. The costs to operate both parks would increase by about $260,000 per year over the current expenses incurred by the regional park authority. Increased operating costs would be due principally to an annual preventive maintenance program, higher salary and wage ranges, and state benefits.

Presently, DCR has no un-obligated financial or staff resources available to acquire, upgrade or operate the proposed new State Park. Therefore, the success of including the two regional parks within the state park system would depend on the addition of staff (9 FTEs plus funds for seasonal workers) and operating resources described above.

Interviews with officials from the constituent local governments indicates a recognition that the funding the localities provide to operate the parks has been a bargain. Some of the officials thought that it would be possible to create a cooperative partnership with the state whereby the local governments would agree to provide ongoing financial support for park operations. An innovative agreement between the state and the regional park authority's local governments would lower the required cost of operating a new state park. A suggestion has been made that through an agreement with the local governments, a subsidy could be used to offset or reduce the fees that local residents would pay at their former regional parks.

Local business and economic development officials suggested that there are opportunities to increase the visibility and use of Natural Chimneys and Grand Caverns parks. Recreation and tourism are significant industries in the region, and both parks are heavily used and well recognized locally. The State Parks marketing strategies, including environmental education could encourage additional visitation from outside the region, increasing the tourism related business in the area.

The unique features of Natural Chimneys and Grand Caverns can present an outstanding Setting for expanding DCR's State Parks Division's environmental education programming. The historic, cultural, natural, and geologic features found in these parks can be used as a platform to educate, inform, and entertain all park visitors. These resources will add an important element to the legacy of natural resources, outdoor activities and educational programming that are an important part of the Commonwealth's efforts to promote a strong conservation ethic and ensure that the best of Virginia's natural resources are available for future generations.

I. INTRODUCTION

A. Reason for the Study

The 1999 session of the Virginia General Assembly passed Senate Joint Resolution No. 403 (See Appendix I on page 34) requesting the Department of Conservation and Recreation "...to study the feasibility of including Natural Chimneys and Grand Caverns Regional Parks in the state park system." The General Assembly further required DCR to complete work on the study "in time to submit its findings and recommendations to the Governor and the 2000 session of the General Assembly."

B. The Department of Conservation and Recreation

The Department of Conservation and Recreation's mission statement reads: "The mission of the Department of Conservation and Recreation is to conserve the natural, scenic, historic and cultural resources of the Commonwealth and provide recreational and educational opportunities consistent with the good stewardship of these lands, waters and facilities that leave them unimpaired for future generations."

Within this broad mission, DCR administers Virginia's State Park System. The State Park System opened to the public with six state parks in June 1936. The system has continued to develop and expand ever since as Virginia's recreation and open space needs have increased. With additional lands acquired through the 1992 Park and Recreational Facilities Bond Referendum, donations and grants, DCR now manages 37 state parks and historic sites plus 30 natural areas. The purpose of the Virginia State Park System is to allow the citizens of the Commonwealth to enjoy significant natural and cultural resources. This is accomplished through active cultural and natural resource management.

The 1996 *Virginia Outdoors Plan* acknowledges the contributions of Natural Chimneys and Grand Caverns Regional Parks, and underscores the current and expected future deficiency of the Central Shenandoah Region in active recreational opportunities such as outdoor swimming pools, ball fields, and tent camping sites. The 1996 plan also establishes DCR's objective to work "with regional park authorities to provide major regional facilities that would supplement nearby local park and recreational systems."

C. The Upper Valley Regional Park Authority

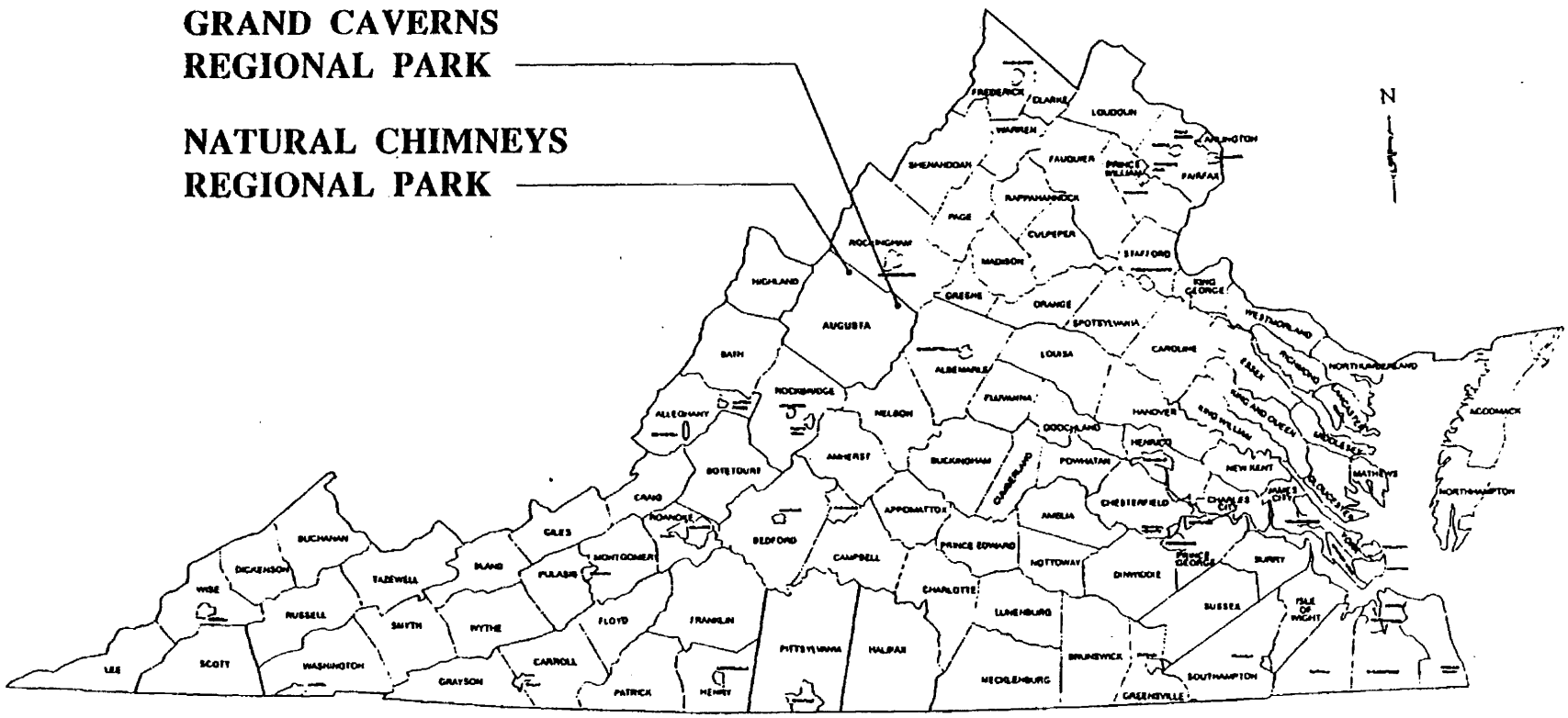
The Upper Valley Regional Park Authority (UVRPA) was created in February 1966 by resolutions adopted initially by the City of Harrisonburg and the County of Rockingham under the provisions of the Virginia Park Authorities Act. The County of Augusta joined the authority in September 1966, followed by the City of Staunton in 1967. UVRPA's purpose was to be a special unit of local government responsible for "planning, acquiring, developing, constructing, operating and maintaining a system of regional parks."

COMMONWEALTH OF VIRGINIA

COUNTIES

GRAND CAVERNS
REGIONAL PARK

NATURAL CHIMNEYS
REGIONAL PARK



UPPER VALLEY REGIONAL PARK AUTHORITY
FACILITIES LOCATION MAP

Upper Valley Regional Park Authority (UVRPA) is under the direction of a Board of Directors who represent the four constituent local governments. The Board is made up of appointed officials from the four localities, including park and recreation directors, assistant county administrators, and a director of finance. UVRPA's first acquisition was Natural Chimneys Regional Park in 1970, followed by the Grand Caverns site in 1974. Together these two parks are the only lands and facilities owned and operated by the park authority.

II. DESCRIPTION OF THE RESOURCES

This study included an inventory of all the facilities in both UVRPA parks and an assessment of the work and costs that will be needed to bring the parks up to state park criteria. This section of the report lists the facilities inventories and Section V presents a summary assessment of the work and costs needed to upgrade the parks. A detailed Facilities Assessment was conducted on-site on August 17 and 18, 1999, and the resulting technical report is available at the DCR Design and Construction Bureau office.

A. Natural Chimneys Regional Park

Natural Chimneys Regional Park is located in Augusta County, about one mile north of the Town of Mount Solon, Virginia, and about 15 miles west of the City of Harrisonburg. A topographical map of the park is included on page 7. As noted above, Natural Chimneys was UVRPA's first acquisition (1970). The park encompasses about 130 acres of land. The stone towers for which the park is named represent the park's ancient natural history and are thought to have inspired its modern human history in the nineteenth century. Cornerstones of the park's facilities and activities today are campgrounds, picnic areas, an outdoor swimming pool, and an annual jousting tournament. The annual Natural Chimneys Joust has been held at the site since1821, and it is considered to be the oldest continuously held sporting event in the United States.

The seven weathered stone towers that gave rise to the park's name range in height from 65 to 120 feet. The chimneys are the result of ancient geological processes. The region was once covered by an inland sea, hence the sedimentary strata in the columns. Later upheavals caused by plate movements resulted in a hill composed of erodible material that subsequently washed away. However the towers are topped by a layer of insoluble chert, and were left standing while the surrounding hill was eroded by water over millions of years. The natural towers also resemble towers around medieval castles, leading some observers to speculate that the similarity led to the tradition of holding jousting matches at the site.

Natural Chimneys Regional Park is highly developed, although not necessarily to the standards required to meet State Park Facility Standards. Moreover, a major portion of the park is in the floodplain, and should DCR acquire the property the agency will be required to comply with all applicable state and federal regulations governing building in the floodplain.

B. Natural Chimneys Facilities Assessment[1]

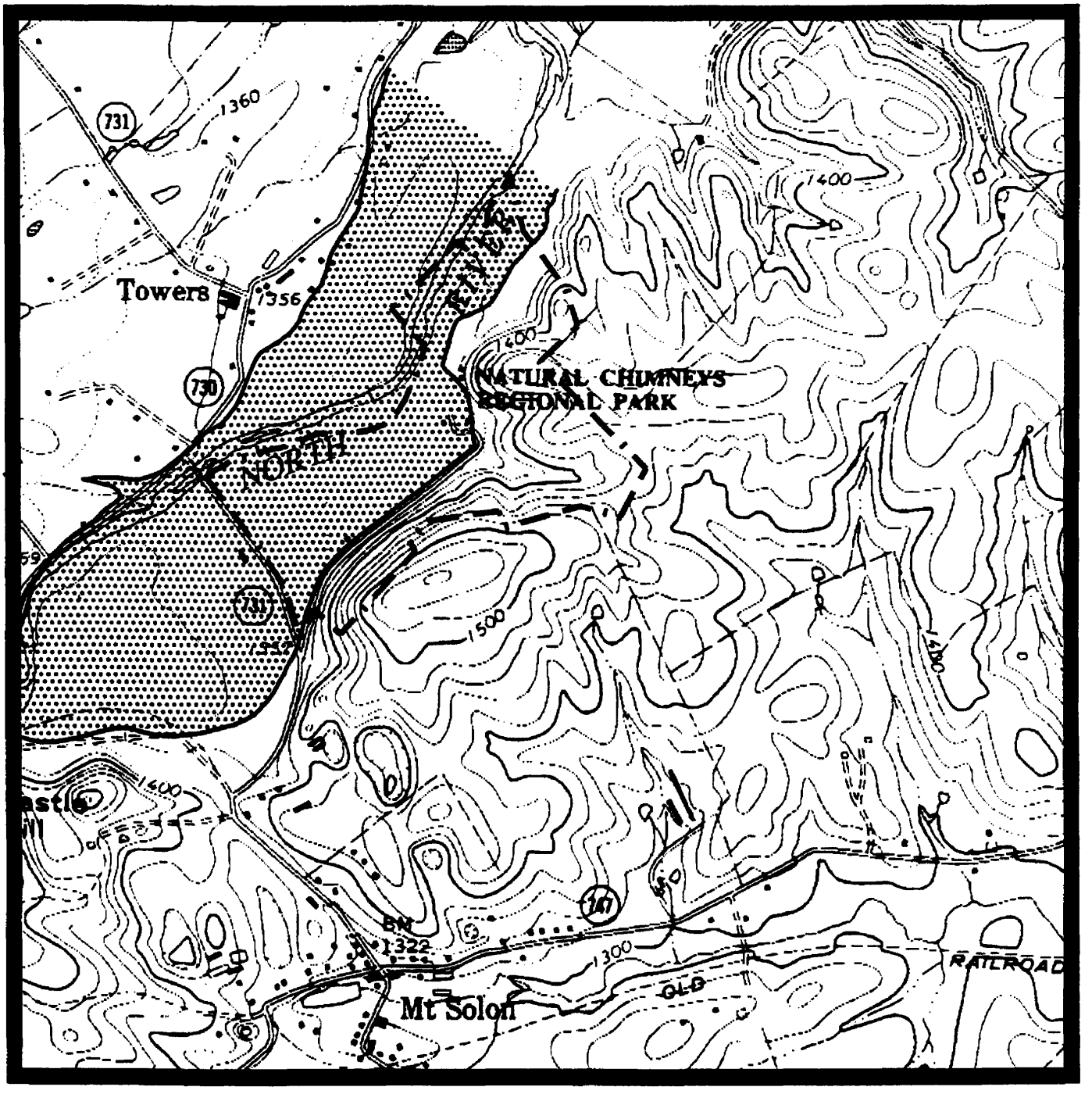
General Description of Facilities:

The buildings are concrete block or wood frame covered with T-111 wood siding with an asphalt shingle roof. A majority of the facilities were constructed between 1972 and 1974. Some additional buildings were added in 1988, 1992, and 1993. Table 1 on the following page includes a summary view of the facilities at Natural Chimneys. Detailed information on costs associated with repairing or replacing facilities is included in Table 3 on page 19.

[1] The information included in the body of this report is a summary discussion of the facilities inventory and assessment. A detailed Facility Assessment Notebook, including photographs, was prepared by the DCR Design and Construction Section. The notebook is available for review at DCR upon request.

NATURAL CHIMNEYS REGIONAL PARK

FLOODPLAIN / SITE MAP



LEGEND

PARK BORDER

FLOODPLAIN

INFORMATION PROVIDED FROM U.S.G.S. MAPS AND F.E.M.A NATIONAL FLOOD INSURANCE MAPS

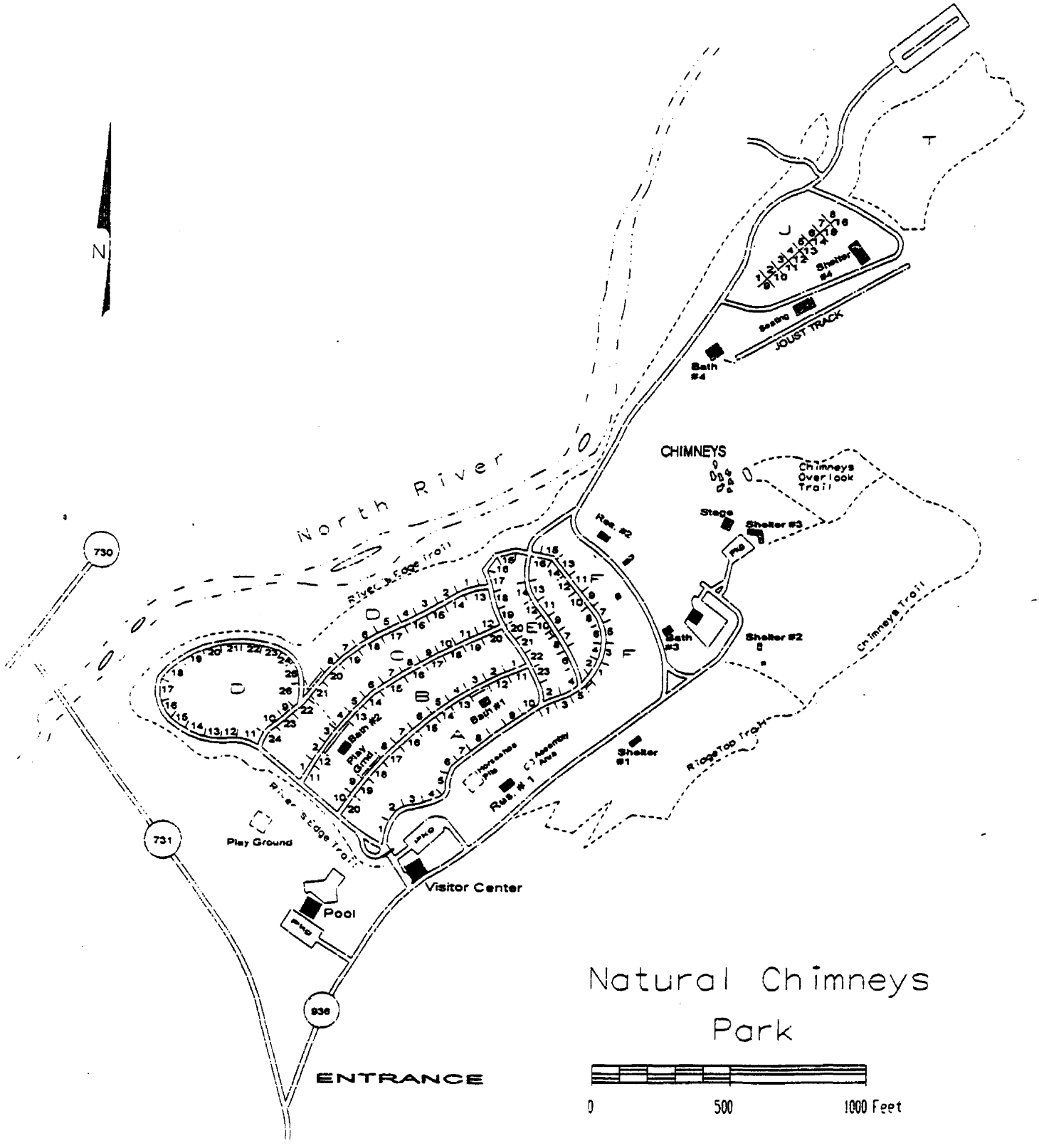

N
North River
730
731
936
River Edge Trail
Play Ground
River Edge Trail
Visitor Center
Pool
ENTRANCE
Bath #1
Bath #2
Play Grnd.
Horseshoe Pits
Amphitheater Area
Res. #1
Res. #2
Shelter #1
Bath #3
Shelter #2
Stage
Shelter #3
Chimneys Trail
Ridge Top Trail
CHIMNEYS
Chimneys Overlook Trail
Bath #4
Seating
JOUST TRACK
Shelter #4
Natural Chimneys Park
0
500
1000 Feet

Table 1. Summary Facilities Assessment: Natural Chimneys

Type of Facility	Area/Size/Capacity	Year Constructed
Maintenance Building	2,628 square feet	1975
Visitors' Center	1,872 square feet	1972
Pool Bathhouse	1,550 square feet	1972
Pool	147,000 gallons	1972
Pool Filter House	240 square feet	1972
Playground at Pool Area		
Residence 1 (Manager)	1,260 square feet	1988
Residence 2 (Park Tech II)	1,132 square feet	1992
Residence 3		
Cabin	900 square feet	1950
Comfort Station #1	266 square feet	1972
Comfort Station #2	323 square feet	1974
Bathhouse #1	840 square feet	1972
Bathhouse #2	960 square feet	1974
Campground Area	149 sites	
Campground Playground Area		
Jousting Area	80 yard track	1993
Picnic Shelter # 1	966 square	1974
Picnic Shelter # 2	966 square feet	1974
Picnic Shelter # 3	1,932 square feet	1974
Picnic Shelter # 4	1,197 square feet	1974
Covered BBQ Pit	600 square feet	1974
Stage	1,500 square feet	1976
Viewing Station	312 square feet	1974
Assembly Area	250 square feet	1976
Pump Building #1	144 square feet	1992
Pump Building #2	144 square feet	1988
Trail System	2.4 miles	

C. Grand Caverns Regional Park

Grand Caverns Regional Park is also in Augusta County, Virginia, adjacent to the Town of Grottoes. The park covers 99 acres. The Caverns were donated to UVRPA in 1974, although they have been open to the public since 1806. Grand Caverns has an extensive Civil War history, giving shelter to troops from both sides. There are more than 230 authenticated signatures from Union and Confederate soldiers in the cave. Grand Caverns is officially recognized as a National Historic Landmark, one of only 14 caves that have been so designated in the country.

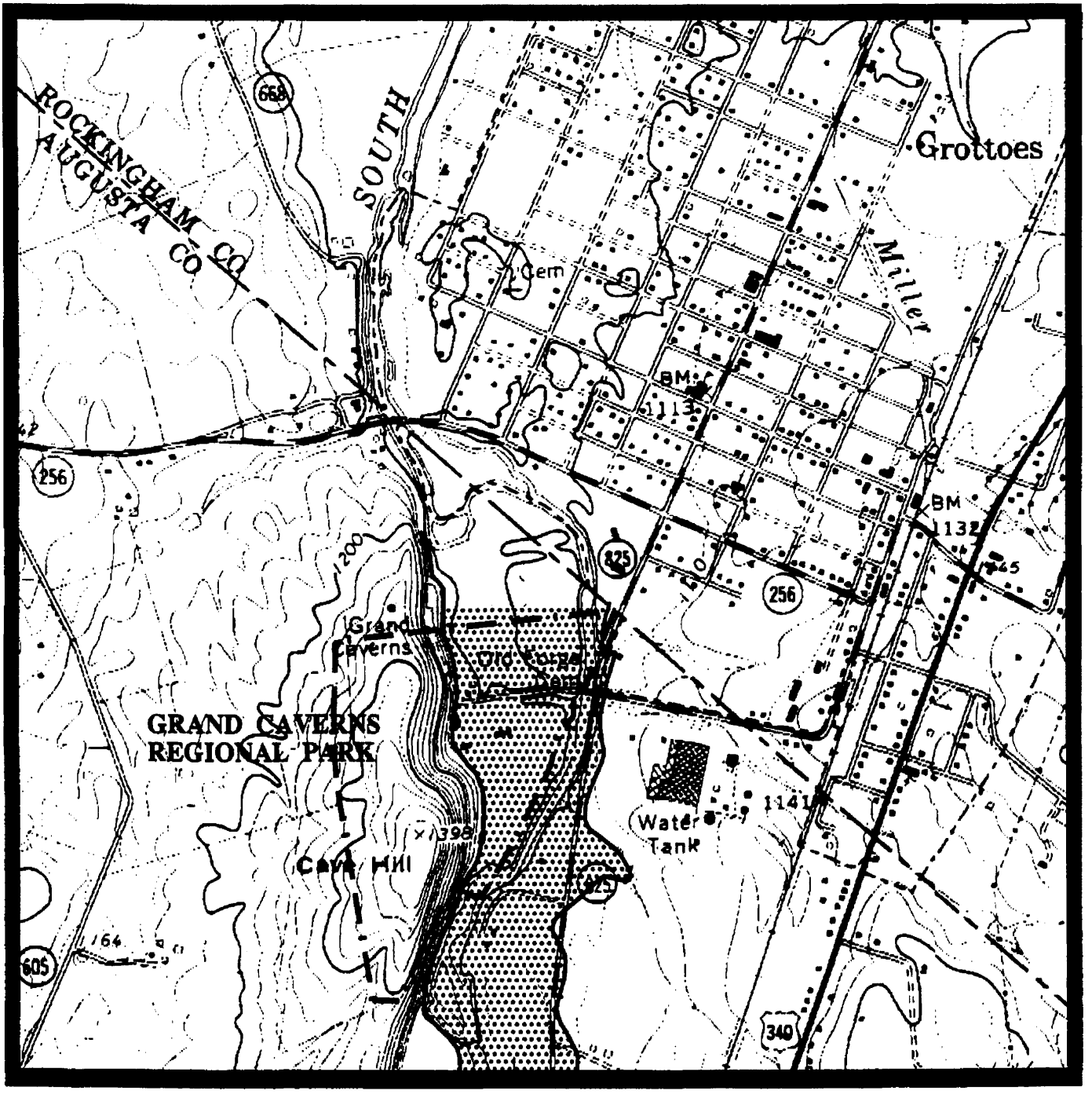
The geological processes that created Grand Caverns are in some ways the reverse of those that resulted in the Natural Chimneys. Water eroded the softer material in the hill surrounding the chimney towers. In the case of the caverns, water, including ground water and rain seeping though cracks and fissures in the hilltop, eroded the soluble limestone inside the hills. In effect, the hill encompassing Grand Caverns was hollowed out, while the hill that once surrounded the Natural Chimneys was washed away. Along the East Side of the Shenandoah Valley there are several caverns with similar geologic processes. Some are operated commercially

Under UVRPA's direction, Grand Caverns Regional Park's facilities and programs have been split into two components. The caverns themselves are tourist-oriented. The local-serving component of activities at Grand Caverns includes an outdoor swimming pool, miniature golf course, picnic pavilions, a championship quality horseshoe complex, tennis courts, and a softball field. The picnic pavilions provide UVRPA with a significant portion of its revenue each year when they are rented for special events. Part of the Grand Caverns site is also located in the floodplain, and DCR would have to comply with all relevant state and federal regulations governing construction in a floodplain. A topographical map of Grand Caverns Regional Park can be found on page 11.

Facilities assessments were done for both regional parks at the same time. The list generated by the assessment for Grand Caverns is included in Table 2 on page 13, and a detailed cost breakout table is on page 23.

GRAND CAVERNS REGIONAL PARK

FLOODPLAIN / SITE MAP

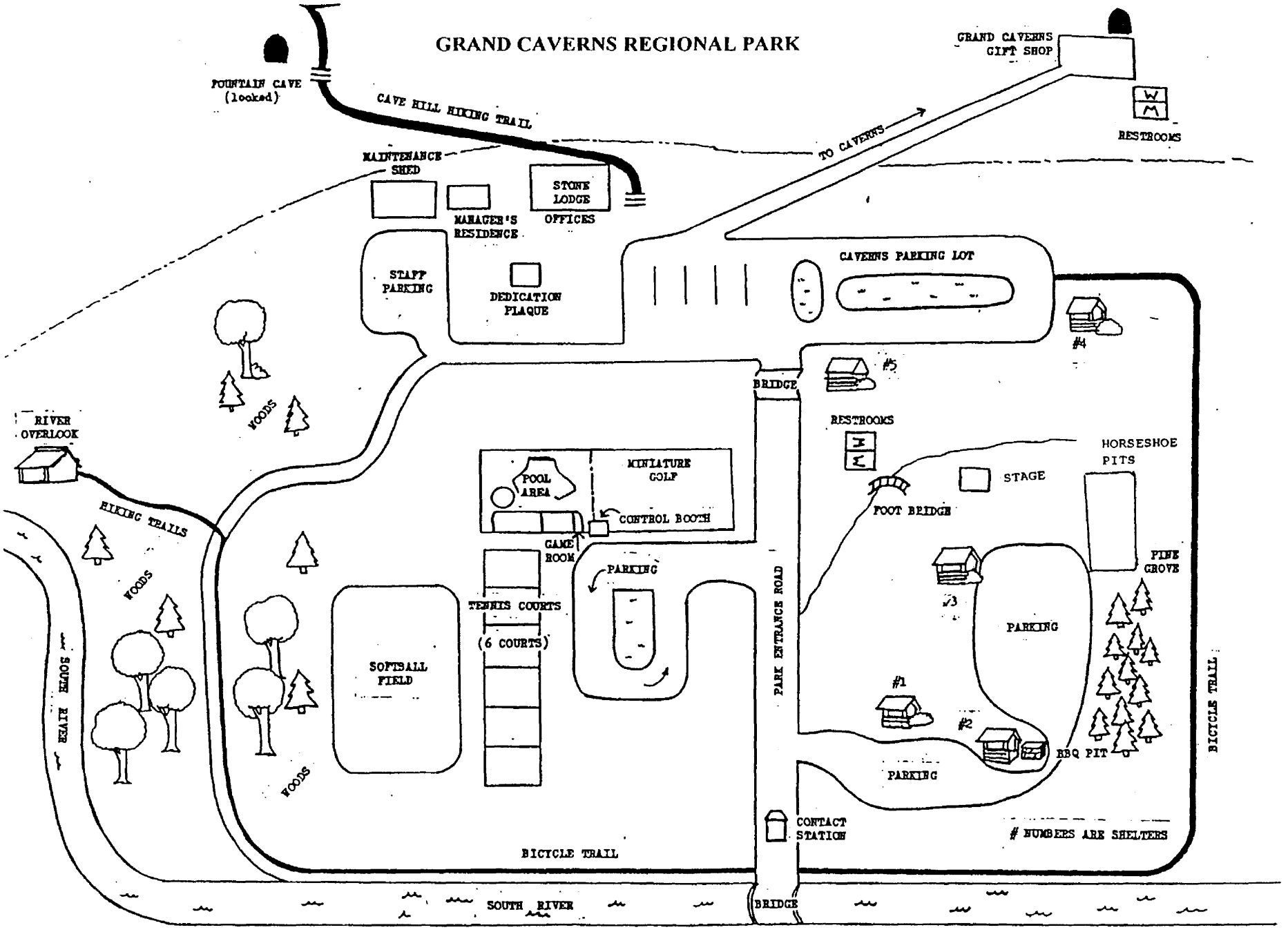


LEGEND

PARK BORDER

FLOODPLAIN

INFORMATION PROVIDED FROM U.S.G.S. MAPS AND F.E.M.A. NATIONAL FLOOD INSURANCE MAPS


GRAND CAVERNS REGIONAL PARK
FOUNTAIN CAVE (locked)
CAVE HILL HIKING TRAIL
GRAND CAVERNS GIFT SHOP
TO CAVERNS
RESTROOMS
MAINTENANCE SHED
MANAGER'S RESIDENCE
STONE LODGE OFFICES
STAFF PARKING
DEDICATION PLAQUE
CAVERNS PARKING LOT
#4
#5
BRIDGE
RESTROOMS
HORSESHOE PITS
STAGE
FOOT BRIDGE
RIVER OVERLOOK
WOODS
HIKING TRAILS
POOL AREA
MINIATURE GOLF
CONTROL BOOTH
GAME ROOM
PARKING
TENNIS COURTS
(6 COURTS)
SOFTBALL FIELD
PARK ENTRANCE ROAD
#3
PARKING
PINE GROVE
#1
#2
BBQ PIT
PARKING
SOUTH RIVER
CONTACT STATION
NUMBERS ARE SHELTERS
BICYCLE TRAIL
BICYCLE TRAIL
SOUTH RIVER
BRIDGE

D. Grand Caverns Facilities Assessment

General Description of Facilities:

The buildings are concrete block or wood frame covered with T-111 wood siding with an asphalt shingle roof. A majority of the facilities were constructed between 1974 and 1976. The Kellow Lodge dates back to 1929 and Picnic Shelter #5 was built in 1965. Kellow Lodge is wood frame and limestone construction with a slate roof. A detailed Facilities Assessment was conducted on-site on August 17 and 18, 1999. Several facilities will either be replaced or removed from the sites. The study also included a detailed assessment of all such improvements that will need to be made in order to bring the regional parks up to State Facility Standards. Section V beginning on page 16 summarizes those findings. Table 4 on page 23 shows the corresponding itemized costs for improvements for those facilities listed in Table 2 below.

Table 2. Summary Facilities Assessment: Grand Caverns

Type of Facility	Area/Size/Capacity	Year Constructed
Maintenance Building	1,500 square feet	1974
Kellow Lodge	5,000 square feet	1929
Round House	961 square feet	1974
Pool Bathhouse	6,000 square feet	1976
Pool	250,000 gallons	1976
Pump House	242 square feet	1976
Gift Shop and Offices	3,696 square feet	1974
Upper Comfort Station	396 square feet	1974
Lower Comfort Station	418 square feet	1976
Picnic Shelter # 5	480 square feet	1965
Picnic Shelter # 4:	1,120 square feet	1976
Picnic Shelter # 3	1,120 square feet	1976
Picnic Shelter # 2	2,240 square feet	1976
Picnic Shelter # 1:	1,120 square feet	1976
Barbeque Pit	880 square feet	1976
Contact Station	48 square feet	1976
Ranger Residence	900 square feet	1976
Stage	1,500 square feet	1976
Playground		
Horse Shoe Pits		
Tennis Courts	six (6) courts	
Bridge		

III. PRESENT USE LEVELS OF THE REGIONAL PARKS

UVRPA provided information on recent usage levels at both parks. The UVRPA budget document projects total annual attendance at both parks of more than 160,000. This number includes relatively large numbers of visitors at the numerous special events held at Grand Caverns every year. Thus the vast majority of visitors to the UVRPA park system are day users who live within the region or very close by.

As noted above, visits to Grand Caverns are divided among the tourist-oriented cave operation and the locally oriented facilities and special events. 20,000 to 25,000 individuals visit the caverns each year. UVRPA estimates that 80% to 90% of those visitors (roughly 18,000 to 22,000 individuals at the high end) are "tourists," defined as living outside the Shenandoah Valley but not necessarily outside Virginia.

As of mid-July 1999 the caverns had been visited by 11,419 individuals, 418 (or 3.5%) less than in 1998. The slight decline in 1999 visits is accounted for by a significant reduction (by almost 14% over 1998) in the number of visits from school groups. The school groups, however, are local groups and the slight decline in visitation on their part does not affect tourism. The numbers of adults and non-school children taking tours of Grand Caverns increased slightly (by roughly 4%) by mid-summer 1999 compared to 1998.

The percentage increase in the number of campers at Natural Chimneys was significant, almost 23%, although total numbers are not large—1,519 campers by mid-July 1999 compared to 1,236 in 1998. Day use of Natural Chimneys increased by slightly more than 15% (358 visitors) in 1999.

IV. ECONOMIC IMPACT OF UVRPA FACILITIES TO THE REGION

The total economic impact of Grand Caverns and Natural Chimneys to the Central Shenandoah Region is extremely difficult to measure, but it is very small and could be classified as insignificant in financial and fiscal terms. However, the parks contribute significantly to the quality of life in the region and may thereby enhance the region's economic development potential. Numerous interviews conducted for this study suggest that this potential is mostly untapped. There are several important reasons for the small economic effect from the regional parks.

The use of both parks is predominantly local, and spending by those patrons does not represent marginal, or additional, economic activity. That is, local spending on recreation by local residents would have occurred elsewhere in the region if UVRPA parks were not available.

The definition of a "tourist" is simply a visitor from outside the region, and it is impossible to estimate the number of regional park visitors who stay overnight in the region (other than those in the campground at Natural Chimneys). Thus it would be inaccurate to attribute to UVRPA facilities the full economic impact of an overnight Virginia tourist staying in a hotel, motel, or a bed-and-breakfast and eating restaurant meals.

During this study numerous interviews were conducted with area resort owners and resort management officials, economic development officials, and local park and recreation officials. They indicated that neither Grand Caverns nor Natural Chimneys is recognized as a state significant destination or attraction. They are not identified in regional public or private economic or business development strategies, although some interview respondents indicated that this failure might be a missed opportunity.

There is no significant effort made to "export" UVRPA services outside the region. That is, only a very small percentage of all annual visitors to Virginia tour the region, and UVRPA has no coordinated strategy to increase those percentages or to capture a greater number of them. A 1992 study by National Family Opinion Research, Inc. (NFO) indicated that only 5.0% of all Virginia visitors stop in Staunton or at Luray Caverns (a private commercial cave that receives three times the number of annual visitors that Grand Caverns receives). A 1997 study by the Virginia Tourism Corporation found that less than 4.0% of Virginia visitors stopped at any cavern in the state. While UVRPA's facilities do not have a significant economic effect on the region when they are considered alone, recreation and tourism within the region are economically important.

The same 1997 study by the Virginia Tourism Corporation estimated the net annual fiscal effects of travel spending at the local level. Local tax revenues from travel spending in the four jurisdictions that make up UVRPA totaled $6.51 million in 1997: Augusta County, $1.94 million; Staunton, $670,00; Harrisonburg, $1.3 million; and Rockingham County $2.6 million. These figures reflect the financial contribution to the localities of all travel related spending in the region, including national parks and forests and private recreational facilities.

Moreover, UVRPA's programs and facilities provide active recreational opportunities for a sector of the region's population that might otherwise not be able to afford them. That is, the region has numerous private swim clubs, country clubs, and resorts that are too expensive for many middle income families and probably all lower income families. The picnic pavilions at Grand Caverns also are the location for several annual corporate outings for employees and their families. This traditional activity may provide important institutional underpinnings for economic development in the region, the value of which might go unappreciated unless it were lost.

If Grand Caverns and Natural Tunnel Parks become a component(s) of the State Parks system, state marketing and advertising strategies would include these two important resources. The sites would also be identified on state maps and described in other tourist-related publications, increasing their popularity. It is felt that significant tourist traffic could be enticed into the region to visit the sites and spend extra time in the area. During 1998, almost 5.5 million visits were recorded in the Virginia State Parks. Many of these visitors came to see the magnificent natural resources of the Commonwealth, participate in environmental education opportunities, and find out more about some aspect of the state' history. These sites could further diversify the offerings within the state parks system.

V. COSTS OF IMPROVING AND OPERATING THE REGIONAL PARKS AS PART OF THE STATE PARK SYSTEM

Virginia's State Park System is operated under legal and regulatory requirements and guidelines. The facilities at Grand Caverns and Natural Chimneys Regional Parks will require major modifications if they are transferred to the state park system. These improvements would enable the sites to meet State Park Facility Standards, restore the structural integrity of buildings, help meet requirements of the Americans with Disabilities Act (ADA), and bring improvements into compliance with current building codes. Engineers and architects in DCR determined the following items and associated costs.

A. Recommendations for Facility Improvements at Natural Chimneys

General recommendations are as follows:

1) Remove existing rotted and damaged T-111 siding and replace with cedar wood siding. 50% of all siding is rotted or damaged. 100% of all the buildings have rot or damage.
2) Replace exterior wood doors and screen doors.
4) Replace fascia, soffits, and wood framing that have rotted.
5) Paint interior and exterior of buildings.
6) Provide disability access to facilities
7) Repoint stone fireplace to fix cracks in mortar. (Visitor Center)
8) Replace damaged exterior lights. (Pool Bathhouse)
9) Provide new aluminum grandstand seating with disability access. (Jousting Area)

Comfort Stations and Bathhouses:

1) Provide disability access fixtures.
2) Replace metal partition with a plastic vandal proof solid core partition.

Maintenance Area:

1) Upgrade existing 100 amp electrical service to 200 amps.
2) Improve parking area with 6 inches of 21A stone on compacted subgrade with asphalt topping.
3) Provide a new fuel pump with underground fiberglass tank and leak detection system.
4) Provide a new pole shed.
5) Replace existing wood overhead doors with metal roll-up overhead doors.

New Asphalt Roofs: Maintenance Area and Pool Filter House

1) Replace existing asphalt shingle roof in very poor condition. Provide means of ventilation for new roof at ridge and soffit.

Pool:

1) Patch whitecoat on pools as required.
2) Replace skimmer baskets.

Playground at Pool Area and Campground:

1) Demolition and replacement is required. The existing equipment does not meet the current safety code.

Campground Area:

1) Delete half of the sites and redesign the campground for a total of 75 sites to allow for larger areas and more privacy.
2) Provide water/electric for all 75 sites, sewer for 4 sites.
3) Upgrade road network.

Picnic Shelters:

1) Replace all columns that have rotted at the base and bracing.
2) Provide new gravel drip area around perimeter of shelter to allow for drainage and deter water damage to columns.

Viewing Station (Chimney Area) and Assembly Area:

1) Due to excessive wood rot to over 70 percent of the structure it is recommended that these buildings be demolished and replaced with a new buildings.

Trail System:

1) Restore the existing trail surfaces and provide signage. Provide disability access.

New Construction:

1) Provide two new staff residences at 1,500 sq. ft. each

B. Recommendations for Utilities at Natural Chimneys

Water System Overview:

The existing water supply is provided by two ground water wells located within the park. The first well is located near Picnic Shelter 2 and will be referred as Well 1. The second well, Well 2, is located within Picnic Area B. Well 1 is used as the secondary water supply in the event that Well 2 cannot provide sufficient volume and/or pressure for the Park's demand. Well 2 provides the majority of the Park's water supply via a single 150 gallon bladder tank and chlorination feed system. System pressure is maintained by the well pumps, which turn on and off according to the pressure settings of the respective pressure switches located at the bladder tanks. The distribution piping is predominantly PVC.

Existing System Upgrades:

The Upper Valley Park Authority is currently in the process of making some water system upgrades. This project was scheduled to begin construction in October 1999. The scope of the project consisted of installing a new 30,000 gallon steel water tank and new distribution lines to serve this tank. The existing pumps and bladder tanks will be modified to start and stop according to the water level in the tank. Several other upgrades are recommended if this facility becomes a State Park. First, new well houses should be constructed around each well head to provide security from vandalism and protection from the elements. Secondly, new pumps should be provided that deliver the same discharge head, at the safe yield of each well, to adequately fill the tank, without the added pressure of the bladder tanks. The controls can be installed to allow the alternation and off peak pumping. The estimated cost for these improvements is $142,000.

Public Water Availability:

The closest public utility service is located in Bridgewater, Virginia, approximately four miles from the park. Any public water extension is currently cost prohibitive.

Water Service Recommendations:

The Design and Construction Bureau of the Department of Conservation and Recreation recommends that the domestic water service be upgraded as described in the Existing Water System Upgrades section above.

Sewer System Overview:

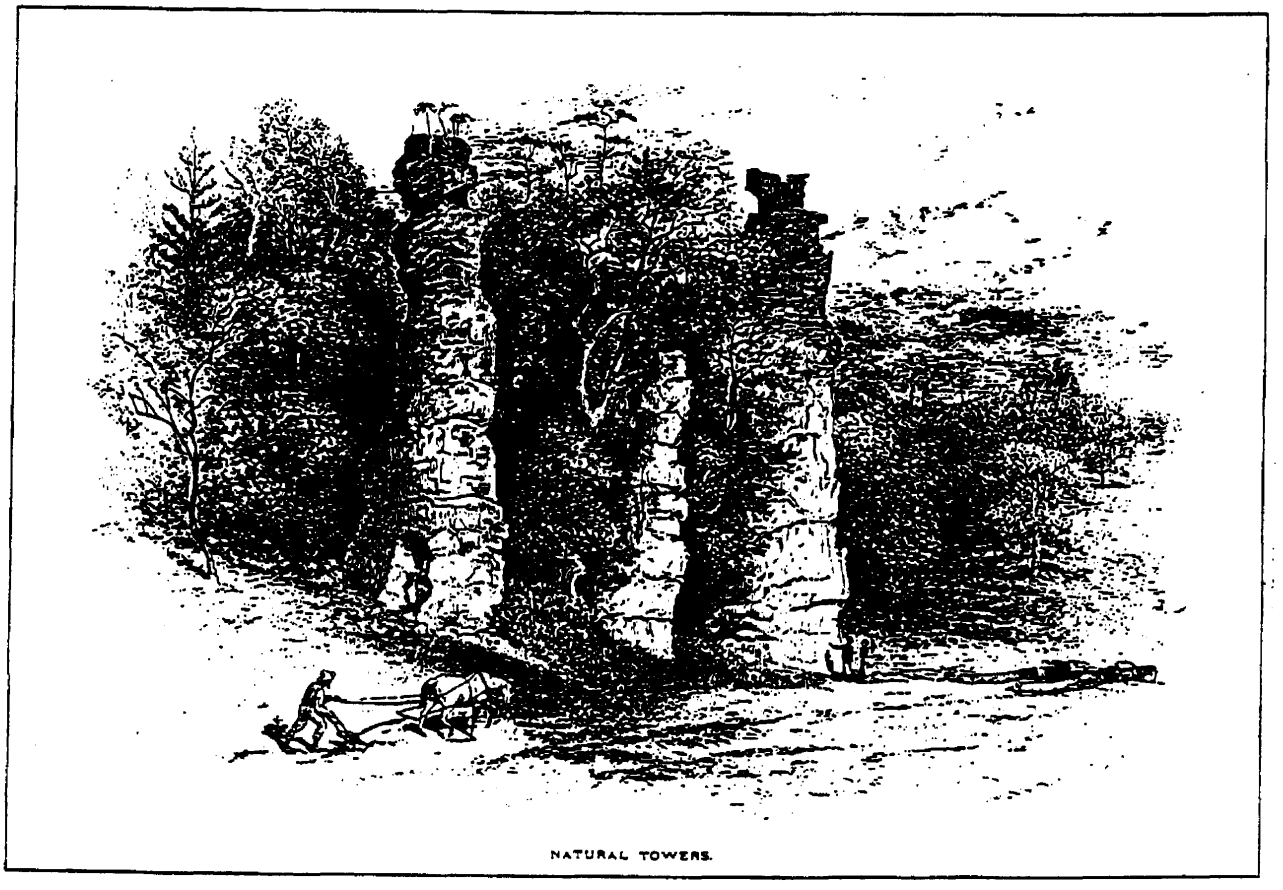
The existing sewer system consists of eleven (11) individual drain fields preceded by individual septic tanks located at each building. The Park staff has indicated that they have not experienced any problems to date. They estimated that the systems were constructed around 1974.

Public Sewer Availability:

Public Utilities are not currently available to Natural Chimneys. The closest public utility service is located in Bridgewater, Virginia, approximately four miles from the Park. Any public water extension is currently cost prohibitive.

Sewer Service Recommendations:

The Design and Construction Bureau recommends that the existing septic tanks and drain fields remain in use for as long as possible. Due to the age of the existing septic tanks and drain fields, it is assumed that at least six (6) of the systems would need to be replaced within the next five (5) years. The cost for replacing these is estimated at $204,000.



"The Chimneys" as drawn by William L. Sheppard, about 1872, for "Picturesque America," a 2-volume encyclopedia of the wonders of America, edited by William Cullen Bryant.

Table 3. Costs for Facilities Improvements at Natural Chimneys

Natural Chimneys Facilities Activity	Cost (in dollars)
Maintenance Area	
Paving	25,000
Maintenance building repairs	100,000
Fuel station/underground tank/leak detection system	200,000
New pole shed	25,000
Landscape screen	10,000
Clean up yard	5,000
Visitors' Center/Park Office Renovations	150,000
New Staff Residences (2)	250,000
Residence Renovations	
Park manager's residence No. 1	25,000
Park tech II residence No. 2	5,000
Cabin restoration	10,000
Jousting Area	
New bleachers	80,000
Announcer's box repairs	2,000
Track restoration	3,000
Pool/Playground Area Repairs and Renovations	
Pool	10,000
Bath house	45,000
Filter house	10,000
Demolish existing playground	2,500
New playground	45,000
Campgrounds	
Campsites (75 sites relocated)	450,000
Bath house No. 1 repairs (loop B)	50,000
Bath house No. 2 repairs (loop A)	50,000
Water and electric utilities (75 sites relocated)	600,000
Sewer (2 sites relocated)	4,000
Upgrade road network	175,000
Demolish existing playground	2,500
New playground	45,000
Picnic Shelter Repairs	
Shelter No. 1	5,000
Shelter No. 2	5,000
Shelter No. 3	5,000
Shelter No. 4	5,000
BBQ pit	5,000
Comfort Station Repairs	
Comfort station No. 1 (Chimney area)	15,000
Comfort station No. 2 (Joust Area)	10,000
Viewing Station	
Demolish existing	2,000
New viewing area	20,000
Stage Area Repairs	25,000
Assembly Area	
Demolish existing	2,000

Table 3 continued	
New assembly area	25,000
Pump Building No. 1 (new)	40,000
Pump Building No. 2 (new)	40,000
Trail System Restoration/Signage	40,000
Construction Subtotal	**2,623,000**
Table 3 continued	
Utilities	
Water	
Existing controls demolition	5,000
New well pumps	15,000
New controls	20,000
Sewer	
New septic tanks (6 drain fields)	204,000
Utilities Subtotal	**244,000**
Construction and Utilities Subtotal	**2,867,000**
A/E Fee	487,390
Includes: site visits, code review, agency reviews, design, plan review, bidding, construction admin., project close-out	
Contingency/Other Project Costs	670,878
Other costs include project inspection, equipment and furnishings, survey, abatement, geotech, materials testing, document printing, advertising, utility connection fees.	
Total Natural Chimneys Project Costs	**4,025,268**

C. Recommendations for Facilities at Grand Caverns

The following list presents a summary of the findings and recommendations of the Facilities Assessment for Grand Caverns, and an itemized cost Table 4 on page 22.

General recommendations are as follows:
1) Remove existing rotted and damaged T-111 siding and replace with cedar wood siding. About 50% of all siding is rotted or damaged. 100% of all the buildings have rot or damage.
2) Replace exterior wood doors and screen doors.
4) Replace fascia, soffits, trim, and wood framing that has rotted.
5) Paint interior and exterior of buildings.
6) Provide disability access to facilities

Comfort Stations and Bathhouses:
1) Provide disability access fixtures.
2) Replace metal partition with a plastic vandal proof solid core partition.

Caverns:
1) Upgrade, to code, the entire electrical and lighting system within the Caverns.

Kellow Lodge:
1) Repair existing slate roof.
2) Repair plaster ceiling at water leaks upstairs.

Maintenance Area:

1) Upgrade existing 100 amp electrical service to 200 amps.
2) Improve parking area with 6 inches of 21A stone on compacted subgrade with asphalt.
3) Replace existing wood overhead doors with metal roll-up overhead doors.
4) Replace or supplement wood heat with LPG or electric heat units.

New Asphalt Roofs: Picnic Shelters, Maintenance Area and Pool Filter House

1) Replace existing asphalt shingle roof in very poor condition. Provide means of ventilation for new roof at ridge and soffit.

Pool Bathhouse and Area Buildings:

1) Upgrade bathhouse to usable changing area and restroom.
2) Upgrade concession, install new equipment and open to the public.
3) Upgrade game room to meet health and safety requirements

Pool:

1) Patch whitecoat on pools as required.
2) Replace skimmer baskets.
3) Repair leak in circulation system.

Playground:

1) Demolition and replacement are required. The existing equipment does not meet the current safety code.

Picnic Shelters:

1) Replace all columns that have rotted at the base and bracing.
2) Provide new gravel drip area around perimeter of shelter to allow for drainage and deter water damage to columns.
3) Repair structural cracks in slab base. (Shelter # 1, 2, & 4)

Round House, Contact Station, Pool Bathhouse Control Building, Maintenance Ranger Residence, Stage, and Bridge:

1) Due to excessive wood rot and the state of disrepair, it is recommended that these facilities be demolished and replaced with new structures.

Parking:

1) Recommendations are to repair sub grade in designated areas, grade access roads and parking areas, install filter fabric and 8 in. stone base, and remove existing railroad ties.

New Construction:

1) Provide a new comfort station to serve lower park facilities.

D. Recommendations for Utilities at Grand Caverns:

Water System Overview:

The existing water supply is provided by two existing groundwater wells located within the park. The first well is located behind the maintenance facility and will be referred as Well 1. The second well, Well 2, is located near the ranger's residence, behind the Stone Lodge. Each well pumps to two (2) 150 gallon bladder tanks connected in parallel,which

then provide the operating pressure for the distribution system within the park. The bladder tanks are located in the maintenance building. System pressure is maintained by the well pumps which turn on and off according to the pressure settings of the respective pressure switches located at the bladder tanks. The distribution piping is predominantly PVC.

Public Water Availability:

Public Utilities are available at the entrance to Grand Caverns. However, VDOT would require the road crossing to be bored and installed in a casing. Additionally, approximately 1,600 linear feet of six-inch water line, a metering station, and other appurtenances would be required to make public water available to the park. Lastly, the existing water wells would have to be abandoned in accordance with the Virginia Department of Health regulations, by chlorinating and disinfecting the well, filling it with clay,and sealing it with a watertight cap.

Water Service Recommendations:

The DCR Design and Construction Bureau recommends that the domestic water service be connected to the Public Utility Authority distribution system. The estimated cost is $125,000. However, the existing well system may remain in service to fill the pool each year. It could also serve as an emergency back up supply.

Sewer System Overview:

The existing sewer system consists of three drain fields preceded by individual septic tanks located at each building. The current park staff has indicated that they have not experienced any problems to date. They also stated that they do not have any records of when each system was installed. They have estimated that the systems were probably constructed about 1978.

Public Sewer Availability:

Public Utilities are available at the entrance to the regional park. However, there is a moratorium on new sewer connections until the existing public system is upgraded for collection and treatment capacities. The onsite septic systems would have to be upgraded for pumping the sewer to the closest connection point. The extent of the public upgrade activities and costs are not known at this time. However, if the site is transferred to DCR, arrangements could be made for a future connection as part of the conversion process.

Table 4. Costs for Facilities Improvements at Grand Caverns

Grand Caverns Facilities Activity	Cost (in dollars)
Maintenance Area	
Roof	13,000
Maintenance building repairs	10,000
Security fence	38,500
Landscape screen	10,000
Parking area	30,000
Kellow Lodge	200,000
Round House Demo	12,000
Pool Bathhouse	
Control building	8,000
Bathhouse	200,000
Concession	150,000
Game room	25,000
Pool	200,000
Gift Shop/Offices	500,000
Upper Comfort Station	5,000
Lower Comfort Station	5,000
New Comfort Station	150,000
Picnic Shelter No. 5	8,000
Picnic Shelter No. 4	12,000
Picnic Shelter No. 3	10,000
Picnic Shelter No. 2	15,000
Picnic Shelter No. 1	10,000
Barbeque Pit	10,000
Contact Station	12,000
Residence	
Demolish existing	5,000
New residence	125,000
Playground	
Demolish existing	2,500
New playground	45,000
Horse Shoe Pit	20,000
Foot Bridge	25,000
Parking	
Caverns area	0
Pool/tennis area	42,000
Horse shoe pits	100,000
Lower area	200,000
Trail System Restoration/Signage	100,000
Construction Subtotal	**2,268,000**
Utilities	
Water	
Road bore	10,000
Waterline	40,000
Metering station	25,000
Well abandonment (2 wells)	30,000
Sewer: Drain Fields Nos. 1, 2	
New septic tanks (5)	15,000
New drain fields	65,000
New collection piping	23,000
Utilities Subtotal	**208,000**
Construction and Utilities Subtotal	**2,476,000**
A/E Fee	420,920
Includes: site visits, code review, agency reviews, design, plan review, bidding, construction admin., project close-out	
Contingency/Other Project Costs	579,384
Other costs include: project inspection, equipment and furnishings, survey, abatement, geotech, materials testing, document printing, advertising, utility connection fees	
Total Grand Caverns Project Costs	**3,476,304**

E. Operating Costs and Revenue Comparisons

The costs to operate Grand Caverns and Natural Chimneys as state parks will result in higher operating costs than UVRPA currently experiences. Table 5 compares the park authority's costs figures, as supplied by the UVRPA Executive Director on August 26, 1999, with required costs that would be incurred by the state.

Table 5. Grand Caverns and Natural Chimneys: Upper Valley Regional Park Authority and Department of Conservation and Recreation (DCR) Virginia State Parks Operating Costs/ Revenue Comparison

	Upper Valley Regional Park Authority	Virginia State Parks
Salaries	$193,582	$253,188
Benefits	$46,460	$60,765
Wage	$74,889	$108,404
FICA	$5,729	$8,293
SUTA	$861	
Operating Costs	$209,536	$245,536
Preventative Maint. Costs		$117,750
TOTAL Operating Costs	$531,057	$793,936
Additional Start Up Costs		
Equipment Replacement		$95,200
Law Enforcement*		$33,582
TOTAL Revenue	$402,153	$396,156**
Incl. Sponsor contribution	$106,000	
Interest	$5,750	
Donations / other	$4,950	

* If DCR is to operate the parks, one of the start up cost would be to provide law enforcement training to some of the staff. This figure includes the required law enforcement equipment, training, and certifications.

** State Parks has a variable entrance fee structure. Entrance fees, estimated at $2.00 per car, would probably be the established fee if the sites were operated as state parks. Since UVRPA does not charge entrance fees or count actual visitations, there is no attempt to project that revenue source in Table 5 above.

Salaries and Benefits: Salaries are based on the mid range for the Upper Valley Regional Park Authority using the salary information provided in an August 26, 1999, letter from the UVRPA Executive Director to Derral Jones of the Department of Conservation and Recreation. Benefits were calculated using the 24% of salary formula, assuming this is a standard for most employers. Virginia State Park salary and benefit costs are calculated

based on the mid range of the specific grade with benefits calculated as 24% of the salary. (Refer to Appendix II on page35)

Wage, FICA, SUTA: Wage costs for the UVRPA are based on figures provided in the budget information. This information included hourly rates and the estimated number of hours to be worked by individuals in specific wage categories. DCR wage costs are based on comparable positions within state park wage categories. The expected number of hours are based either on the UVPRA hours of operation or on typical DCR staffing levels for comparable activities/programs. For example, DCR has a specific requirement for the number of lifeguards on duty during pool operating hours, which exceed the hours listed by UVRPA. The costs for FICA and SUTA are based on a set formula. DCR costs for SUTA are handled separately by the agency. (Refer to Appendix III.)

Operating costs: The costs listed are based on the UVRPA estimates in the budget provided. These estimates were based either on the proposed 1998 budget or the actual 1997 budget; the larger of the two amounts was used. The assumption was made that operating costs for DCR would basically be the same as for UVRPA for items such as electricity, office supplies, telephone service, postage, printing, and other items associated with basic operating costs. Also included in this amount are staff support costs. For UVRPA staff, the annual estimated support cost is $275 / person (training and uniform allowance). For DCR staff, the annual estimated support cost is $4,000 / person (uniforms, training, communications equipment, computers, and other support equipment)

Preventative maintenance: These costs are associated with annual maintenance of structures, vehicles, equipment and infrastructure. If this maintenance is not performed annually, a particular structure or piece of equipment will not be usable for its full life expectancy. (Refer to Appendix IV, starting on page 39)

Revenues: The figure for UVRPA is based on the revenue estimate provided in the budget information. The total figure includes the funding provided by the four supporting local governments, interest generated and other miscellaneous donations and gifts. The DCR revenue figure is based on DCR standard fees for similar offerings, such as swimming and camping. The DCR does not currently offer cavern tours, but has several contracts for recreational facility and equipment rentals. The UVRPA fee structure was used but modified to eliminate the differences between in area visitors and out of area visitors. The DCR does not distinguish between local and non-local residents in its fee structure.

1. Grand Caverns:

The park in general is open to the public year round, but with limited facility offerings during the November to March timeframe. No entrance or parking fees are charged, nor is there a fee to play tennis. Fees are charged to reserve picnic shelters, attend specific special events, take a cavern tour, use the pool, or play miniature golf. Fees may be associated with the horseshoe pits depending on the specific activity or sponsoring organization.

Cavern approximate hours of operation:

The cavern is open for tours from April through October; it is open weekends during March, with group reservations only between November - February. Special seasonal programs are offered from time to time, such as for Halloween or Christmas. The information provided references a 32 week operating calendar of 7 days/week, 8 hours/day, with a daily schedule of 9 am to 5 pm and the late tour ending at 6 pm. The cavern operator serves as an assistant park manager in the park manager's absence and receives ¾ benefits. State Park operating expenses will be based on the UVRPA operating schedule.

Swimming pool (Grand Caverns) approximate hours of operation:

The pool is open from Memorial Day weekend through Labor Day weekend from 11am to 6pm daily. However, Department of Conservation and Recreation (DCR) swimming facilities are typically opened the weekend prior to Memorial Day weekend, but are closed on the weekdays prior to the holiday weekend. The state park operating expenses will be based on an operating schedule, 11am – 7pm daily from Memorial Day weekend to Labor Day. DCR lifeguard staffing requires at a minimum on weekdays, 1 head lifeguard plus 2 guards, and on weekends, 1 head lifeguard and 3 guards. Due to the difficulty in maintaining qualified guards, the hourly rate is typically higher than a step 1 on the hourly wage scale.

Miniature golf hours of operation:

The miniature golf course appears to operate concurrently with the swimming pool operation. The ticket booth operator for the pool apparently also manages the golf. If state parks were to continue to operate the miniature golf, a similar operating schedule would be used.

Bluegrass Festival:

The festival is an annual two-day event, running from 5 p.m.-midnight Friday and 3 p.m.-midnight Saturday in 1999. Camping is apparently allowed for a nominal fee for this event. DCR offers similar special events; however, camping would not be allowed under the current development scenario unless special Health Department waivers are obtained.

2. Natural Chimneys:

The park in general is open to the public year round, but with limited facilities available from December to March. Non- residents are charged an entrance or parking fee. Fees are charged to use the campground, reserve picnic shelters, attend specific special events, or use the pool.

Campground:

The campground is open from March to December, with limited facilities available during November. State park campgrounds are operated on a similar schedule. For a nominal fee, UVRPA allows individuals to store their RV trailers in a designated parking area in between park visits. There are also different options for length of stay. The state park policy limits a user's stay to a maximum of 14 continuous days.

Visitor Center:

The visitor center appears to operate in conjunction with the campground and is open daily during the peak season from 8:30am to 8pm. The hours during the non-peak season are not known. However, the visitor center operator is a part time, 35 hours/week, 12-month position. The visitor center serves as a gift shop, camp store, and facility for the Jousting Hall of Fame. Camper registration and park admissions are also collected at the visitor center. The DCR operating expenses will be based on the same operating and staffing schedule.

Swimming pool:

The pool is open from Memorial Day weekend through Labor Day weekend from 11am to 7pm daily. However, DCR swimming facilities are typically opened the weekend prior to Memorial Day weekend, but are closed on the weekdays prior to the holiday weekend. The state park operating expenses will be based on an operating schedule, 11am – 7pm daily from Memorial Day weekend to Labor Day. DCR lifeguard staffing requires at a minimum on weekdays 1 head lifeguard plus 2 guards, and on weekends; 1 head lifeguard and 3 guards. Due to the difficulty in maintaining qualified guards, the hourly rate is typically higher than a step 1 on the hourly wage scale.

Special Events:

The UVRPA hosts annual jousting events in June and August. Although certain aspects of these events may be modified if managed by state parks, the events would probably continue to be offered annually.

F. Preventive Maintenance Costs

Virginia State Parks has developed standards for conducting annual or cyclical preventative maintenance on all structures, major equipment, grounds, and infrastructure. The costs described in Appendix IV are based on performing certain activities per the

established standards. In addition, several assumptions were made relating to the generation of preventative maintenance costs:

- The cost estimates deal only with preventive maintenance. It is assumed that if these parks become the property of the Commonwealth, major capital improvements would be made in order to bring these facilities to the required standard.

- All interior park roads at both parks are the property and responsibility of the park authority.

- All interior utilities are the property and responsibility of the Park Authority. These include water, sewer, electric, and telephone.

- The transfer of these properties would include all permanent and temporary structures, utilities, infrastructure, signage, equipment, and vehicles.

The preventative maintenance standards are divided into specific categories as follows:

Buildings: Interior and Exterior
This category includes inspection, repair and/or servicing of items such as roofs, chimneys, gutters, siding, pest control, doors/windows/screens, lighting/electrical, HVAC units, painting, floors/carpets, appliances/furniture, fire suppression, security systems, etc. Some aspects can be handled by park staff, while others are under service contracts.

Utilities
This includes sewage systems, water systems, electrical distribution (park owned), telephone and radio systems, fuel systems, grounds lighting, etc. Actions required include inspection, repair/replacement, pump servicing, tank pumping, and so on. These activities are performed by park staff or by service contractors.

Open Facilities
This category includes areas such as playgrounds, tables/grills, swimming areas (beaches and pools), docks/piers, kiosks, dams, etc. Actions required include inspections, cleaning, patching/sealing, etc., which are conducted by park staff or service contractors.

Grounds
Included in this category are trails, drainage systems, roads, walkways, parking lots, lawn areas, trees/shrubs, signage, boundaries, fencing/gates, hydrants/fountains, etc. Actions include inspections, boundary marking, surveying, cleaning, winterizing and so on, and are conducted by park staff or contractors.

Major Equipment
There are five sub-categories included under this topic: office equipment, vehicles, maintenance equipment, concession equipment, and interpretive equipment (A/V). Actions associated with these systems include servicing, cleaning, adjustments, lubricating, filters etc. and are performed by park staff, service providers, or contractors.

VI. OTHER OPPORTUNITIES AND CONSTRAINTS THAT WOULD AFFECT THE SITES AS STATE PARKS

There are several additional factors that should be considered regarding any decision on iwhether to include UVRPA's two parks in the State Park system. Some of these factors are structured as guidelines or policies rather than legal requirements.

A. Size Limitations

In the event the Department of Conservation and Recreation is requested to take Grand Caverns and Natural Chimneys Regional Parks and operate them as State Parks, the sites would not meet the desired 600 acre standard for State Parks identified in the *Virginia Outdoors Plan*. Although 600 acres is a desired standard that is intended to provide for dispersed recreation opportunities and natural resource protection, some State Parks, such as Leesylvania State Park, contain less than the recommended acres.

The operating scenario for the Division of State Parks would be to run one site as the primary park and the other as a satellite facility. The significance of the natural resources would play a role in future decision on which site would be considered as the primary location. Additional site and resource analysis would be required before a determination could be made on the best approach for protecting the resources. It is estimated that a minimum of 400 to 500 acres of land would be needed to bring the sites up to the recommended size for a state park.

As described in the *Virginia Outdoors Plan*, the purpose of acquiring a state park would be to provide significant recreational experiences and protect a significant natural resource base or landscape. The site should have a unique character and contain extensive open space and / or important natural features in the form of views, terrain, landforms, or vegetation. Compatible recreational uses are a necessity, and access to a major stream or lake is desirable. The location of new state parks is usually determined by the presence of unique natural features and a property's location within a reasonable proximity to population center(s). Both sites meet these criteria as they each contain resources that are considered to be of state significance. In this case, additional land would be desirable to provide resource protection and serve as a development buffer around the resource while providing trails and other remote recreational resource opportunities.

According to local real estate sources, large tract land values in a rural setting (Natural Chimneys) in Augusta County range from $1,000 to $1,900 per acre, depending on financing arrangements, zoning, etc. In the immediate Grottoes area, close to town, the per acre price for a large tract would increase to between $1,300 to $2,100 per acre. The fact that DCR would be limited to buying land adjacent to an existing facility could escalate these estimates 20% to 30%. Any structures or other improvements could increase the total costs substantially.

Based on the information above, acquisition costs could range from about $500,000 to over $1.5 million. The costs of fees, surveys, and the value of structures and other improvements could raise this estimate substantially.

B. Establishing Precedent

Any technical or legal distinctions between regional and local parks in Virginia should not be the basis for considering the precedent setting nature of this case. Interviews with local officials indicate that a primary reason for transferring the regional parks to the state park system is that operating the parks costs the local partners in the UVRPA money each year. That is, the parks operate at a loss.

Virtually all public park and recreation systems require some subsidy from the governments that own them. For example, the Fairfax County Park Authority recovers only about one-half of its annual operating costs through fees, other donations and contributions. DCR officials reported that based on FY 99 figures, approximately 35 percent of the total costs of operating the state parks comes from revenue. This less-than-market-cost provision of park and recreation services may even be desirable. Many moderate and lower income families cannot afford private recreation opportunities.

A decision to transfer Grand Caverns and Natural Chimneys regional parks to the Sate Park system could, in the future, result in similar requests from other localities. In this case however, a compelling argument can be made that the natural resources within these two sites are of statewide significance and could have a place in the State Park system

C. Partnership Opportunities

Interviews with numerous local officials suggest that the UVRPA member local governments actually do recognize that the parks are very important regional resources, regardless of the importance of the natural and cultural resources therein. Several respondents believe that the regional park authority would be willing to structure an innovative ownership and operating agreement with the state wherein UVRPA would continue to provide some level of annual operating support for the parks. This type of arrangement could provide a unique partnership opportunity for the localities of the region and DCR.

D. Importance of the Resources

Notwithstanding issues about ownership and operation of the parks, all parties included in, or interviewed for this study agree that the resources encompassed by the two regional parks should be protected. There are significant, even unique, natural and cultural resources in both parks. Moreover, the Virginia State Parks system does not include any cavern of the magnitude of Grand Caverns, or any geological structures like the towers at Natural Chimneys.

E. Existing State Policy

The *1996 Virginia Outdoors Plan (VOP)* established the priorities for the acquisition of new Virginia State Parks. A site in the Shenandoah Valley, west of Charlottesville is included among the top ten sites for future acquisition of a park site. The UVRPA's location in the central Shenandoah Valley meets that criterion. Both regional parks have natural and cultural resources of statewide significance. They are both suitable for a "variety of popular

outdoor recreational activities," and both provide access to water (frontage on the North and South Rivers). However, the UVRPA regional parks do not meet suggested size criteria as outlined in the *VOP*. Surrounding land use indicates that it is probably feasible to add to the land base at either site.

The UVRPA parks do present the state with some "environmental" or "developmental challenges." Because both parks are located off lightly traveled roads, it is possible that some segments could require upgrading if the number of park visits increases significantly. The matter of future developments within the floodplain could necessitate future revamping of some facilities. There area number of other health, safety, and state code issues that DCR would have to deal with in the event the sites become elements of the Virginia State Parks system.

F. Environmental Education Opportunities

The unique features of Natural Chimneys and Grand Caverns can present an outstanding Setting for expanding DCR's State Parks Division's environmental education programming. The historic, cultural, natural, and geologic features found in these parks can be used as a platform to educate, inform, and entertain all park visitors. These resources will add an important element to the legacy of natural resources, outdoor activities and educational programming that are an important part of the Commonwealth's efforts to promote a strong conservation ethic and ensure that the best of Virginia's natural resources are available for future generations.

G. Other Factors

This action is, to a large degree dependent upon the endorsement of the affected local governments and the support of the citizens of the communities where the sites are located. There would be a number of new laws, regulations, and policies implemented if these sites become state facilities. This would require a period of transition, until local users get used to the management and law enforcement strategies used by DCR to manage its facilities.

DCR is pursuing the possible acquisition of one of the Commonwealth's exemplary natural areas in Rockingham County, northeast of Grottoes. The area contains exemplary examples of the sinkhole pond natural community and five rare plants. If acquired, the site would provide passive recreational opportunities including a self guided nature trail. The natural area would lend to the regional geological and biological interpretation of Shenandoah Valley enhancing the educational and natural history opportunities of Grand Caverns and Natural Chimneys. The funding for this project is restricted to the acquisition of State Natural Area Preserves supporting exemplary natural communities and rare species, as provided for in the 1992 Park and Recreational Facilities Bond Act.

VII. Conclusions

It is feasible to incorporate Natural Chimneys and Grand Caverns Regional Parks into the Virginia State Park system. The costs of making necessary upgrades and improvements to bring both parks into compliance with current building codes and established state standards would be approximately $7.5 million. Future land acquisition costs necessary to bring the regional parks to the desired state park standards of roughly 600 acres could cost $1.5 million or more. These costs for improvements and land acquisition are one-time costs. Additional costs may be incurred should the state purchase UVRPA's interests in land and improvements at both sites.

Both Grand Caverns and Natural Chimneys contain geologic, historic, natural, and cultural resources that are worthy of protection within the Virginia State Park system. Both sites contain rare, threatened, or endangered species, and other resources that could be key elements of a major environmental education program for the region and the state. The sites could offer additional opportunities for local and regional school groups to take advantage of the unique state resources and enhanced programming.

The 1996 *Virginia Outdoors Plan* has identified an area in the Shenandoah Valley west of Charlottesville as one of the top 10 locations for acquisition of a future State Park. The UVRPA sites could fulfil that recommendation.

DCR has no un-obligated financial or staff resources available to acquire, upgrade or operate the proposed new State Park. Therefore, the success of including the two regional parks within the state park system depends on the General Assembly's providing additional staffing and operating resources. Nine new State FTE positions would be required to meet the basic staffing needs. There would be additional requirements for part time wage staffing to operate the visitor center, caverns and the gift shop; to perform maintenance; and to serve as lifeguards, tour guides, and to fulfill other seasonal responsibilities.

Salaries and wages would be part of the estimated operating costs of more than $850,000, which will recur annually. The costs to operate both parks will increase by at least $260,000 per year over the current park authority budget. DCR's increased operating costs are due principally to an annual preventive maintenance program, a higher range for state employee salaries and wages, as well as higher costs for state benefits.

Substantial portions of both parks are within the floodplain, and DCR would be required to comply with all relevant federal, state, and local regulations and ordinances adopted in compliance with the National Flood Insurance program. These restrictions could affect future developments within the floodplain.

Interviews with officials from the constituent local governments indicates a recognition that the funding the localities provide to operate the parks has been a bargain. Some of the officials thought that it would be possible to create a cooperative partnership with the state whereby the local governments would agree to provide ongoing financial support for park operations. An innovative agreement between the state and the regional park authority's local governments would lower the required cost of operating a new state park. A suggestion has been made that through an agreement with the local governments, a subsidy could be used to offset or reduce the fees that local residents would pay at their former regional parks.

Local business and economic development officials suggested that there are opportunities to increase the visibility and use of Natural Chimneys and Grand Caverns parks. Recreation and tourism are significant industries in the region, and both parks are heavily used and well recognized locally. The State Parks marketing strategies could encourage additional visitation from outside the region, increasing the tourism related business in the area. The State Park environmental education initiatives could also encourage additional visitation from outside the region as well as heightened awareness locally.

APPENDIX I

SENATE JOINT RESOLUTION NO. 403

Requesting the Department of Conservation and Recreation to study the feasibility of including Natural Chimneys and Grand Caverns Regional Parks in the state park system.

Agreed to by the Senate, February 25, 1999
Agreed to by the House of Delegates, February 23, 1999

WHEREAS, Virginia is the only state in the country to have opened an entire state park system at one time when it opened six parks covering 19,000 acres in 1936; and

WHEREAS, the Department of Conservation and Recreation is responsible for administering 29 state parks and 15 natural areas; and

WHEREAS, attendance at Virginia's state parks continues to increase, exceeding 5,000,000 visitors annually; and

WHEREAS, the state park system offers a variety of attractions, including small man-made lakes, swimming pools, beaches, and boating access; and

WHEREAS, many of these parks are named for the natural resource they feature, such as Smith Mountain Lake, Claytor Lake, Natural Tunnel and Twin Lakes State Park; and

WHEREAS, the Central Shenandoah Valley is the only region of the Commonwealth without a state park; now, therefore, be it

RESOLVED by the Senate, the House of Delegates concurring, That the Department of Conservation and Recreation be requested to study the feasibility of including Natural Chimneys and Grand Caverns Regional Parks in the state park system.

All agencies of the Commonwealth shall provide assistance to the Department of Conservation and Recreation for this study, upon request.

The Department of Conservation and Recreation shall complete its work in time to submit its findings and recommendations to the Governor and the 2000 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

Patron-Emmett W. Hanger, Jr.

Appendix II
Comparative Personnel Costs

PERSONNEL: State Park Salaried Positions

Position Title	Salary Range	Mid Range
Park Manager Senior	$29,738 – $46,429	$38,083
Business Manager	$27,204 - $42,471	$34,838
Program Support Tech	$19,048 - $29,738	$24,393
Chief Ranger (Grand Caverns)	$22,763 - $35,539	$29,151
Chief Ranger (Natural Chimney)	$22,763 - $35,539	$29,151
Park Ranger (Grand Caverns)	$19,048 - $29,738	$24,393
Park Ranger (Grand Caverns)	$19,048 - $29,738	$24,393
Park Ranger (Natural Chimney)	$19,048 - $29,738	$24,393
Park Ranger (Natural Chimney)	$19,048 - $29,738	$24,393
Salary Total		**$253,188**
Benefits @ 24% of salary		$60,765
COMBINED TOTAL		**$313,953**

PERSONNEL: Grand Caverns and Natural Chimney Salaried Position**

Position Title	Salary Range	Mid Range	Actual Salary
Authority Director	$34,000 - $48,400	$41,200	$47,470
Administrative Asst.	$17,500 - $23,845	$20,672	$23,171
Park Manager (Grand Caverns)	$25,000 - $32,305	$28,652	$25,854
Maintenance Supervisor (Grand Caverns)	$17,065 - $23,845	$20,455	$18,574
Maintenance Worker (Grand Caverns)	$13,500 - $20,995	$17,248	$15,850
Park Manager (Natural Chimney)	$23,000 - $32,305	$27,652	$25,001
Maintenance Supervisor (Natural Chimney)	$17,065 - $23,845	$20,455	$18,491
Maintenance Worker (Natural Chimney)	$13,500 - $20,995	$17,248	$15,000
Salary Total		$193,582	**$189,411**
Estimated Benefits @ 24% of salary		$46,460	$45,459
COMBINED TOTAL		**$240,042**	**$234,870**

** Based on information in August 26, 1999 letter from David Leatherwood to Derral Jones

Appendix III

Wage Employee Comparison

Grand Caverns

Cavern Operator
Range: $7.00 - $10.17 / hour
(1,025 @ $7.00 / hr)
Wage: $7,175
FICA: $549
SUTA: $86

Tour Guides
Range: $5.15 - $8.72 / hour
(3,500 hrs @ $5.48 / hr)
Wage: $19,180
FICA: $1,467
SUTA: $221

Head Lifeguard
Range: $6.50 - $10.17/hour
(300 hrs @ $6.38/hour)
Wage: $1,914
FICA: $146
SUTA: $22

Lifeguards
Range: $6.00 - $9.42 / hour
(650 hrs @ $6.12 / hr)
Wage: $3,978
FICA: $304
SUTA: $46

Booth Operator
Range: ?
(425 hrs @ $5.75 / hr)
Wage: $2,444
FICA: $187
SUTA: $28

Bluegrass Festival – Misc.
Range: ?
(? hrs @ ? / hr)
Wage: $400
FICA: $31
SUTA: $5

Virginia State Parks

Park Interpreter
Range: $7.11 - $10.94 / hour
40 hrs/wk @ 32 wks=1,280 hrs
(1,280 @ $7.11 / hr)
Wage: $9,101
FICA: $696

Contact Ranger / Receptionist
Range: $5.95 - $9.16
7 days x 8 hrs. x 32 wks. x 2.5 guides
(4,480 hrs @ $5.95 / hr)
Wage: $26,656
FICA: $2,039

Head Lifeguard
Range: $$6.50 - $10.01/hour
101 days x 8 hrs = 808 hrs
(808 hrs @ $6.95 / hr)
Wage: $5,616
FICA: $$430

Lifeguards
Range: $5.95 - $9.16 / hour
688 hrs x 2 grds. = 1376 hrs (weekdays)
120 hrs x 3 grds. = 360 hrs (weekends)
(1,726 @ 6.36 hrs)
Wage: $11,041
FICA: $845

Contact Ranger
Range: $5.95 - $9.16 / hour
(425 hrs @ $5.95 / hr)
Wage: $2,529
FICA: $193

Park Maintenance Ranger
Range: $$5.82 - $9.08 / hour
(3 rangers x 20 hrs @ $5.82/hr)
Wage: $349
FICA: $27

Natural Chimney

Visitor Center Operator
Range: $13,500 (salary) or $7.50 - $10,00 / hr
Wage: $13,500
FICA: $1,033
SUTA: $155

Visitor Center Clerks
Range: $5.17 - $8.72 / hour
(1,495 hrs @ $5.35 / hr)
Wage: $7,998
FICA: $612
SUTA: $92

Head Lifeguard
Range: $6.50 - $10.17 / hour
(350 hrs @ $6.50 / hour)
Wage: $2,275
FICA: $174
SUTA: $26

Lifeguards
Range: $6.00 - $9.42 / hour

(950 hrs @ $6.12 / hr)
grds = 360 hrs 5,700
FICA: $436
SUTA: $66

Maintenance Wage – Campground
Range: ?
(850 hrs @ $5.40 / hr)
Wage: $4,590
FICA: $351
SUTA: $53

Maintenance Wages (June and August Joists)
Range: ?
(36 hrs @ $5.00 / hr)
Wage: $180
FICA: $14
SUTA: $2

Virginia State Parks

Program Support Tech (level)
Range: $9.28 - $14.30 / hour
(1,500 hrs @ $9.28 / hr)
Wage: $13,920
FICA: $1,065

Contact Ranger
Range: $5.95 – $9.16 / hour
(1,495 hrs @ $5.95 / hr)
Wage: $8,895
FICA: $680

Head Lifeguard
Range: $$6.50 - $10.01 / hour
101 days x 8 hrs = 808 hrs
(808 hrs @ $6.95 / hr)
Wage: $5,616
FICA: $$430

Lifeguards
Range: $5.95 - $9.16 / hour
(weekends)
688 hrs x 2 grds. = 1376 hrs 120 hrs x 3
(weekdays)
(1,726 @ 6.36 hrs)
Wage: $11,041
FICA: $845

Park Maintenance Ranger
Range: $5.82 - $9.08 / hour
1.5 rangers x 850 hrs = 1,275 hrs
(1,275 hrs @ $5.82 / hr)
Wage: $7,420
FICA: $568

Park Maintenance Ranger
Range: $5.82 - $9.08 / hour
(36 hrs @ $5.82 / hr)
Wage: $210
FICA: $16

UVRPA Central Office

Central Office Receptionist
Range: $5.75 - $8.72 / hour
(1,010 hours @ $5.50 / hr)
Wage: $5,555
FICA: $425
SUTA: $64

TOTAL
Wage: $74,889
FICA: $5,729
SUTA: $861

Virginia State Parks

Receptionist
Range: $5.95 - $9.16
(1,010 hrs @ $5.95 / hr)
Wage: $6, 010
FICA: $460

TOTAL
Wage: $108,404
FICA: $8,293

NOTE: Question marks (??) in this Appendix indicate that the information was not available.
NOTE: The UVRPA information was generated by using the data in the August 26, 1999, letter from David Leatherwood to Derral Jones and the budget information titled 1999 Upper Valley Regional Park Authority Budget. The state parks information is based on existing operating schedules or the hours of operation proposed by UVRPA for program areas not presently offered with state parks. For certain activities, the UVRPA has a lower fee for residents of the four sponsoring jurisdictions than for out of area users.

Appendix IV
Estimate of Annual Preventive Maintenance Costs Grand Caverns and Natural Chimneys Parks

Description of Building / Structure	Year Built	Estimated Annual Preventive Maintenance Cost
Grand Caverns		
Maintenance Building. Block and Frame (wood siding). Also included in the PM estimate for this bldg. are two well systems, bladder tanks, and maintenance equipment. Approx.1, 500 sq. ft.	1974	**$7,500**
Stone Lodge. Approx. 5000 sq. ft. community rooms, public restrooms and offices on first floor, rooms used for storage on second floor (originally used for office space but no longer due to water damage to ceiling and plaster walls)	1929	**$10,000**
Pool bathhouse and concession stand. Frame T1-11 siding on block foundation.	1976	**$3,000**
Pool pump house. T1-11 siding over block. (Approx. 15' x 25'). New chlorinator and new sand filters this year. Approx. sand replacement every 3 to 4 years.	1976	**$1,000**
Caverns Gift shop and offices. Includes costs associated with the caverns. Gift shop and office bldg. approximately 3,700 sq. ft. Offices located on lower level, gift shop upstairs. Included in these estimates are costs associated with maintaining paved drive approximately 200 feet long and 8' wide.	1974	**$4,000**
Upper Park comfort station. T1-11 over block. Located adjacent to the caverns. Approx. 400 sq. ft. Two septic tanks for this building allow for the full use of the facility even if one tank is temporarily out of operation.	1974	**$500**
Lower park comfort station. T1-11 over block. Same septic tank set up as upper park comfort station. Approx. 400 sq. ft.	1976	**$500**
Shelter #5. Kellow Shelter. Pole frame shelter with shingle roof. Concrete slab. Approx. 480 sq. ft. Includes costs to maintain shelter tables and grill.	1965	**$500**
Shelter #4. Pole frame shelter with shingle roof. Concrete slab. Approx. 1,120 sq. ft. Includes costs to maintain shelter tables and grills.	1976	**$500**
Shelter #3. Pole frame shelter with shingle roof. Concrete slab. Approx. 1,120 sq. ft. Includes costs to maintain shelter tables and grills.	1976	**$500**
Shelter #2. Pole frame shelter with shingle roof. Concrete slab. Approx. 2,240 sq. ft. Large shelter that will hold over 200 people contains a large, stone fireplace. Includes costs to maintain shelter tables and grills.	1976	**$1,000**
Shelter #1. Pole frame shelter with shingle roof. Concrete slab. Approx. 1,120 sq. ft. Includes costs to maintain shelter tables and grills.	1976	**$500**
Barbecue pit. Pole frame shelter with shingle roof. Concrete slab. Approx. 880 sq. ft. Constructed similar to the picnic shelter with the exception of having large vents in the roof structure to allow smoke to escape.	1976	**$500**
Contact Station. Frame on concrete slab. Approx. 48 sq. ft. Located on the	1976	**$250**

Description of Building / Structure	Year Built	Estimated Annual Preventive Maintenance Cost
entrance road, not used except once a year during a blue grass festival.		
Control Building (pool). 6 sided building located at entrance to the pool. Frame construction on concrete slab. Approx. 64 sq. ft.	1976	**$250**
Intern Residence. Located behind stone lodge and built on a semi A-frame design. Approx. 900 sq. ft. and is built back into the hillside. Drainage trenches are cut around each side of the dwelling, but siding goes all the way to the ground. Tin roof. No chimney evident so it is assumed that the building is totally electric. Window A/C unit.	1976	**$1,000**
Stage. Constructed 10 years ago to accommodate the annual Blue-Grass festival. Recommend demolition of this building.	1989	**N/A**
Pool. This includes costs associated with the swimming pool and the surrounding concrete decking, and associated equipment	1976	**$5000**
Security for the caverns, gift shop, and lodge. Monthly service contract.	N/A	**$1,500**
Vector Control for all park buildings. Service Contract	N/A	**$5,000**
Termite control for all park buildings. Service Contract	N/A	**$5,000**
14 septic tanks. Annual service contract to clean 7 tanks every other year.	1976	**$3,500**
Interior roads and parking lots. These are primarily gravel roads and parking lots and all are located in the 100 year floodplain of the South River.	N/A	**$3,000**
Trails. Approximately 2 and one half miles of trails	??	**$2,000**
Playground and miniature golf course.	1976	**$1,000**
TOTAL ESTIMATE FOR ANNUAL PREVENTIVE MAINTENANCE COSTS AT GRAND CAVERNS		**$57,500**
Natural Chimneys		
Pool bathhouse. Approx. 1,550 sq. ft. T1-11 siding over block. Shingle roof. Similar design to that at Grand Caverns.	1972	**$3,000**
Filter house. 240 sq. ft. T1-11 over block on concrete. Freshly painted. All costs associated with pumps, chlorinators, etc. included in this estimate. New filters and new pumps installed in 1999.	1972	**$1,000**
Visitor Center/Park store. Wood and block over concrete. Approx. 1872 sq. ft. Scheduled to be demolished but replaced with a log structure. Membrane roof in very bad shape. Includes costs for the building, public restrooms and all equipment associated with the park store and VC.	1972	**$5,000**
Campground Loop B Camper Service 1 (bathhouse). T1-11 siding over block on concrete. Approx. 840 sq. ft. Includes costs associated with plumbing, electric, etc	1972	**$1,000**
Campground Loop A Camper Service 2 (bathhouse). T1-11 siding over block on concrete. Approx. 960 sq. ft. costs associated with plumbing, electric, etc	1974	**$1,000**

Description of Building / Structure	Year Built	Estimated Annual Preventive Maintenance Cost
Assembly area. Cantilevered roof. 350 sq. ft. Wood on concrete slab. Recommend demolition.	1976	**$250**
Shelter #1. 966 sq. ft. Pole frame shelter with shingle roof. Concrete slab. Includes costs to maintain shelter tables and grills.	1974	**$500**
Shelter #2. 966 sq. ft. Pole frame shelter with shingle roof. Concrete slab. Includes costs to maintain shelter tables and grills.	1974	**$500**
Shelter #3. 1,932 sq. ft. Pole frame shelter with shingle roof. Concrete slab. 42 sq. ft. Stone fireplace. Large shelter that will accommodate over 200 people. Includes costs to maintain shelter tables and grills.	1974	**$1,000**
Shelter #4. 1,197 sq. ft. Pole frame shelter with shingle roof. Concrete slab. Includes costs to maintain shelter tables and grills.	1974	**$500**
Comfort Station #1 (at Chimneys). T1-11 over block on concrete.	1972	**$1,000**
Joist comfort station (J-loop). T1-11 siding over block on concrete slab. This building is scheduled to be demolished and replaced with another comfort station in a different location.	1974	**$1,000**
Maintenance Building. T1-11 over block on concrete slab. 2-bay design with work area. 2 bay entrance doors, single bay exit door. Includes cost estimates for tractor, several mowers, weed eaters, well distribution system, fence, vehicles, etc. Includes costs for adjacent storage building located in the maintenance area.	1975	**$9,000**
Viewing Station #1.Wood on concrete slab. 312 sq. ft.	1974	**$250**
Barbecue Pit. Same as GC14. Pole frame shelter with shingle roof. Concrete slab. Approx. 880 sq. ft.	1974	**$500**
Park Managers residence. Approx. 48' x 24'. Includes costs associated with appliances as well as with the house and storage building.	1988	**$1,500**
Park Tech II Residence. Listed at 1,200 sq. ft. Probably about 1,000 sq. ft. (Approx. 40' x 25'). Stick-built. Includes costs associated with appliances as well as with the house and storage building.	1992	**$1,000**
Cabin. Frame (fake log construction). Currently used for storage.	1950	**$1,000**
Joust area announcement box. Wood structure. 168 sq. ft.	1993	**$250**
Pump Building #2. T1-11 over block on concrete. 168 sq. ft. Includes costs to building as well as interior pumps and associated equipment.	1988	**$250**

Pump Building #1. T1-11 over block on concrete. 144 sq. ft. Includes costs to building as well as interior pumps and associated equipment.	1992	**$250**
Pool. This includes costs associated with the swimming pool and the surrounding concrete decking, and associated equipment. New liner in 1998.	??	**$5000**
Security for store/VC Building. Annual Contract	N/A	**$500**
Vector Control services. Annual Contract	N/A	**$5,000**
Termite treatment on all buildings. Annual Contract	N/A	**$5,000**
Stage. Wood building constructed approximately 8 years ago using donated funds. Approx. 1000 sq. ft with dressing rooms in the rear. Shingle roof covers entire structure so stage area is covered. Plywood flooring on stage. Includes costs for painting, electrical, roofing, gutters, etc	1990	**$500**
Bleachers in Jousting area. Should be demolished.	??	**$250**
Trails. Approx. 2 and one half miles of trails.	??	**$1,250**
Interior roads and parking lots. Primarily gravel roads and parking lots, located in the 100 year floodplain of the North River.	??	**$5,000**
Campground. Reduce to 75 campsites. Contain water and electric hook-ups. 4 sites have sewer hook-ups. Includes costs for electric breakers, water piping, other associated costs, picnic tables and pedestal grills (approx. 15/year).	??	**$6,000**
Septic Systems. 4 tanks pumped each year on a rotating basis (total of 8 tanks)	??	**$2,000**
TOTAL ESTIMATE FOR ANNUAL PREVENTIVE MAINTENANCE COSTS AT NATURAL CHIMNEYS PARK		**$60,250**
GRAND TOTAL ESTIMATE FOR ANNUAL PREVENTIVE MAINTENANCE AT BOTH PARKS		**$117,750**

NOTE: When Question marks (??) are used in this appendix, the information was unavailable.