

Visitor Center Location and Feasibility Study



Intra Search, Inc.

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Devils Tower National Monument

VISITOR CENTER LOCATION AND FEASIBILITY STUDY
for
DEVILS TOWER NATIONAL MONUMENT
State of Wyoming
Crook County

United States Department of the Interior
National Park Service

Recommended: Debbie Burd 1/93
Superintendent, _____
Devils Tower National Monument Date

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SUMMARY RECOMMENDATIONS


This study provides a basis for a comparative evaluation of sites on which to construct a replacement visitor center for Devils Tower National Monument in northeastern Wyoming. The study process evaluated six potential sites and areas to determine one that would best provide for needs of visitors to the monument while protecting monument resources. Consideration was given to enhancing visitor experience, providing increased interpretive opportunities, and increasing the efficiency of park operations. The logistical problem of moving increasing numbers of visitors through an area having limited parking capacity was taken into consideration resulting in a proposal for a transportation shuttle to the tower in all alternatives.

The study concluded with two recommendations:

1. Site D be selected as the area to build a replacement visitor center.
2. Operation of a transportation system from the replacement visitor center to the tower be implemented during the peak season of use immediately after construction of the facilities.

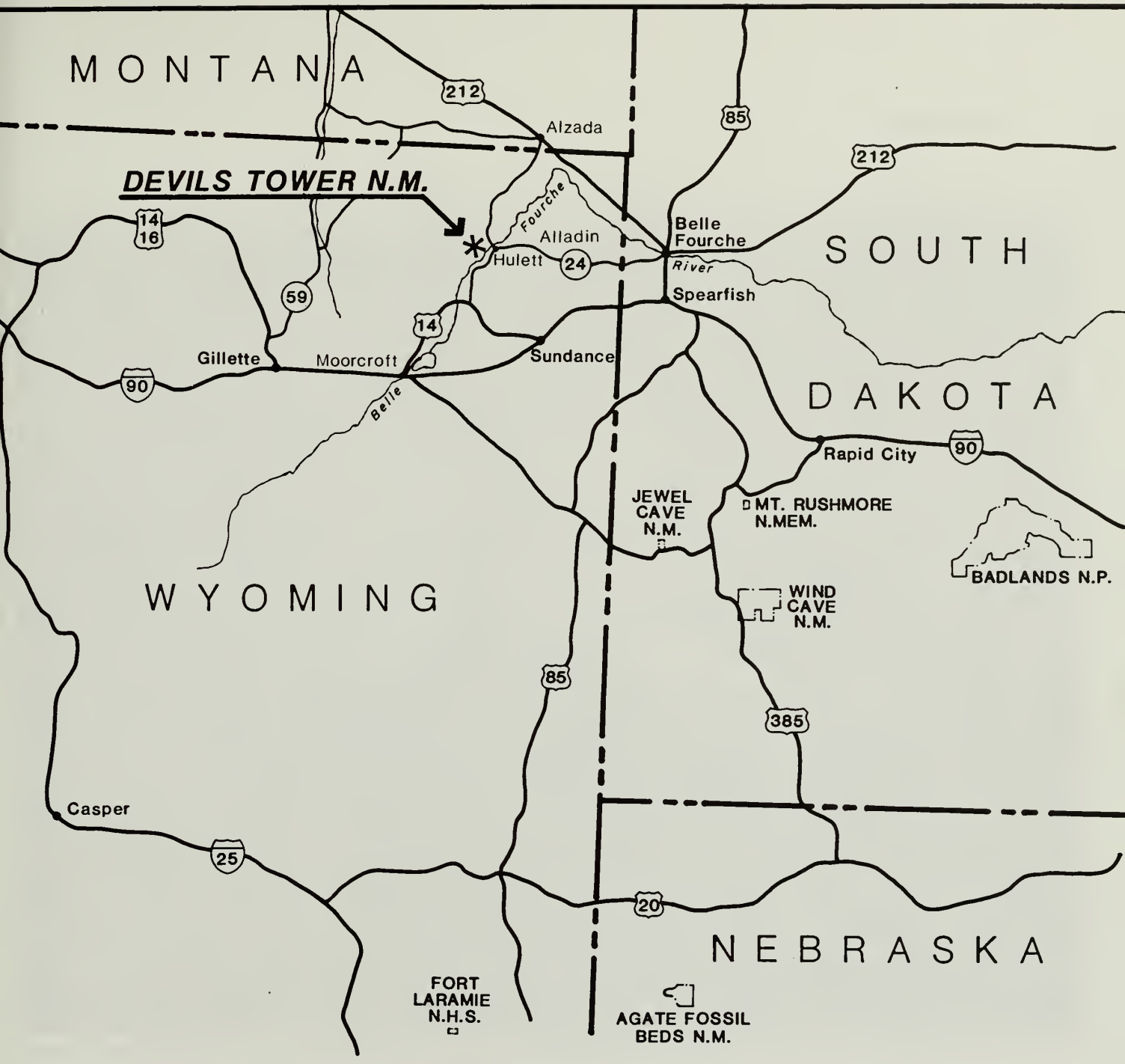
Each site was evaluated on its merits through a comparative analysis. Site D was selected after consideration of public input. Although the cost of this alternative is slightly higher than others, disadvantages for site D are few. Site D's proximity to the entrance station makes this the best location for orienting visitors to the park's resources. Clustering facilities with other commercial development provides the advantage of minimizing impacts on the natural environment. The site gives visitors one of the better views of the tower. It makes use of, and enhances, the existing trail system, allowing pedestrian access to the tower. Its greatest asset is land available for expanded parking capacity. It provides a 240-car parking area, with another space for a 140-car expansion.

Site D is by far the best of the six sites evaluated. Its attributes best fit the criteria established for the study.



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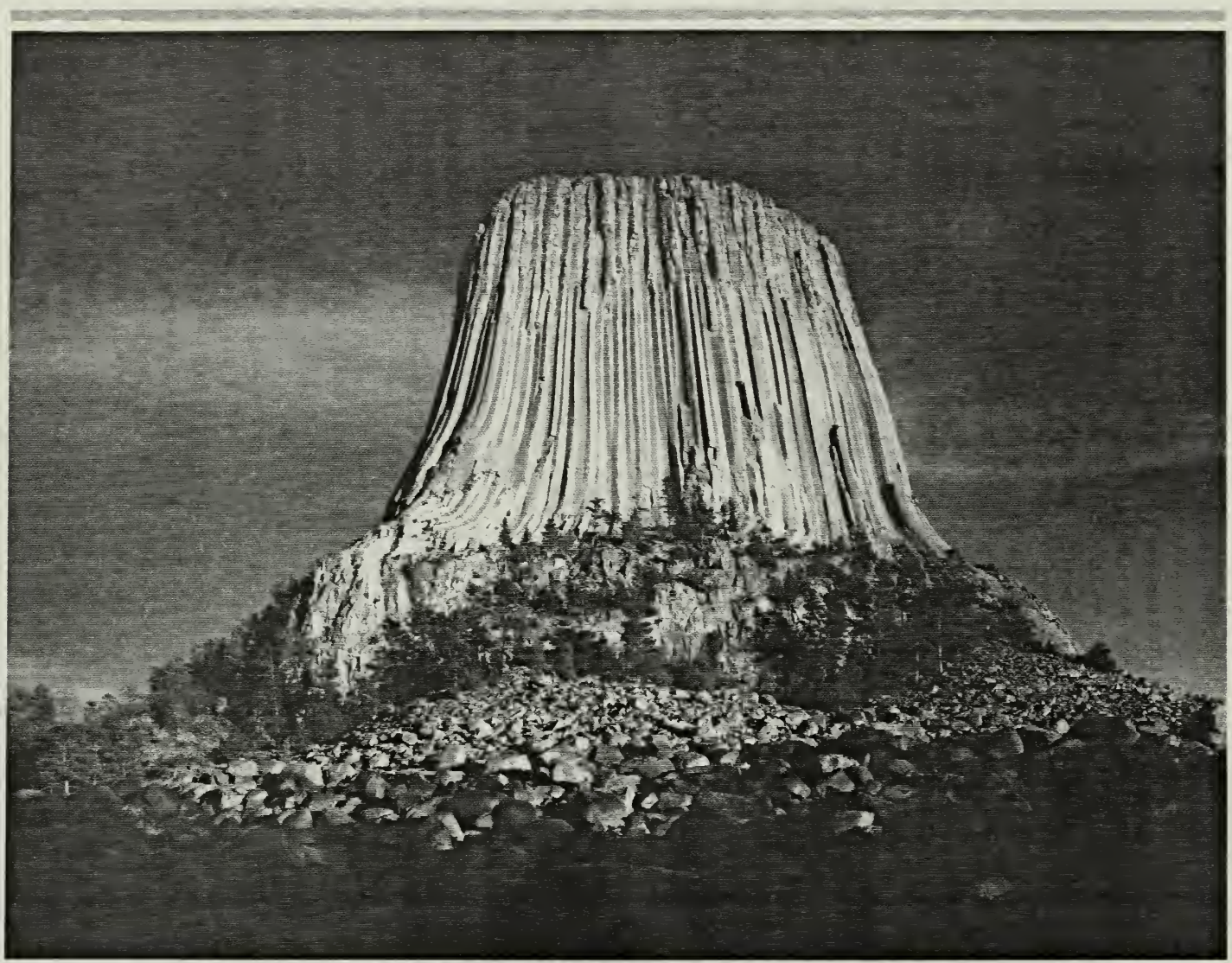
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Vicinity Map

Devils Tower National Monument

United States Department of the Interior - National Park Service



Bob Kolbrener

Bob Kolbrener

STUDY BACKGROUND

Visitation to Devils Tower National Monument has grown steadily over the last ten years, with levels exceeding estimates made in the 1986 *General Management Plan (GMP)* by almost 80 percent. The existing visitor center was built in 1935. The 900-square-foot space currently used for visitors lacks adequate ventilation and is too small to accommodate half a million visitors a year. The existing parking facilities lack the space to accommodate current levels of vehicles. These factors greatly diminish the visitor experience at the monument.

The existing visitor center is at the end of a narrow, 3-mile entrance road. During the peak visitor season, the one-way in/one-way out road is congested with traffic, which includes many large recreational vehicles. Because of this problem many visitors leave frustrated, unable to find a place to park. Those visitors that find a place to park find themselves battling large crowds in the small visitor center. This diminishes the experience visitors have at the monument, as well as the monument's opportunity to tell the Devils Tower story.

The monument offers several potential locations for replacement of the existing facility. To avoid future problems with continued increases in visitation and to protect natural and cultural resources within the monument, the National Park Service decided to study various alternative locations for a replacement facility.

The location selected for a replacement visitor center has important implications for the park's programs. Interpretation, trip planning, and the initial impressions visitors have of a park can all evolve from a visitor center. Consideration of how the location of a visitor center will influence other programs and how these programs will relate to one another is an important part in deciding where such a facility might be placed. In the case of Devils Tower, the following relationships need to be kept in mind when reading this document:

The location of the existing visitor center and parking provides good access and an easy walk to the trail around the base of Devils Tower.

Vehicles are confined to a 2-lane, dead-end road. The existing visitor center and parking are at its terminus, close to the base of Devils Tower. During the peak season, as existing parking areas become full, there is inadequate turning space for larger vehicles, and traffic flow is constricted.

The existing paved parking has inadequate spaces to accommodate increasing visitor use. The park has provided overflow areas on adjacent gravel roads. These gravel

road areas are on granitic soil and have slopes in excess of 10 percent. Resource impacts (social trails) from visitors walking to the main parking are evident.

Regardless of the location of a replacement visitor center, visitors will need access to the area around Devils Tower. Being able to walk existing trails around Devils Tower and to the tower itself is the main attraction. The farther the visitor center is away from Devils Tower, the longer visitors are likely to stay, first parking at the visitor center and then walking, driving, or being transported to the tower itself. The longer visitors stay the more parking space is required.

Parking space required for one car is estimated to be 520-600 square feet, depending on configuration of the parking area, including access lanes. This means that approximately 1 acre is needed to accommodate every 73 cars.

Additional visitor use of new areas through the introduction of replacement facilities has the potential to create additional long-term resource impacts, if not properly integrated into the operations of the park.

In addition, the relationship to other factors influencing park programs, such as interpretation, visitor orientation, and long-term impacts on park resources should be considered, to properly determine the impact each site has on operations of the park. Each site has advantages and disadvantages. The determination made by the study recommendations considers all factors, including the quality of visitor experience, visitor services, and resource protection.

PURPOSE OF THE PARK

President Theodore Roosevelt established Devils Tower National Monument as the nation's first national monument because it ". . . is such an extraordinary example of the effect of erosion in the higher mountains as to be a natural wonder and an object of historic and great scientific interest." Its towering, monolith of igneous rock, with remarkably symmetrical joint columns, is set upon a pine-clad pedestal of colorful sedimentary shale and sandstone. The tower is visible for 50 miles on clear days, exploding from the valley of the Belle Fourche River. The surrounding landscape in rural northeastern Wyoming provides a spectacular backdrop for the inspiring column.

The National Park Service administers parks under the provisions of its Organic Act, the Act of August 25, 1916, 16 U.S.C. 1, 2-4, as amended, which created the service. The fundamental purpose of the National Park Service is to "conserve the scenery and the

natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

PURPOSE OF THE STUDY

The purpose of this study is to identify feasible alternative locations for replacement or modification of the existing visitor center and its parking facilities. The study includes an analysis of operations and associated costs of development of each site. The purpose of a visitor center at Devils Tower is 1) to interpret Devils Tower National Monument resources to the public and 2) to orient the public on what to see and do in the park, as well as in northeastern Wyoming and the greater Black Hills area.

PROCESS

This planning effort was designed to significantly shorten the time of process requirements. Public involvement and consideration of the impacts of each alternative have also been considered. Data needed for the completion of environmental documentation and for use with an environmental assessment in compliance with the National Environmental Policy Act are appended to this document.

STUDY PROCESS

The process for this study involved three steps: the identification of issues, formulation of alternatives, and the presentation of conclusions and recommendations for each site. Initially six sites (A-F) were identified. They are shown on the Devils Tower Location map. The public was involved via a scoping/informational brochure and a series of meetings on September 2, 1992, at the park and the town of Hulett, Wyoming. Public comment was solicited from the general public during a period from August to October 1992, and is summarized in appendix A. The input was also used in helping to develop alternatives and document the merits of each alternative location.

The interdisciplinary team developed some criteria that are important in evaluating each replacement visitor center site. These describe an ideal situation and no site completely meets all of them. These criteria were published in the scoping/informational brochure.



- 1 existing visitor center
- 2 maintenance/housing
- 3 park headquarters
- 4 campground
- 5 prairie dog town
- 6 monument entrance



- monument boundary
- paved road
- - - unpaved road
- · - · - trail

A,C,D,E sites evaluated in detail (see site maps for C,D, & E)
 B,F other sites considered

Visitor Center Sites Devils Tower National Monument

Using public comment, each site considered for detailed study was assessed against these criteria. The criteria and conclusions are listed in table 1.

The interdisciplinary team further developed criteria for evaluating the advantages and disadvantages of each site, considering the visitor use and experience, park operations, and impacts on resources. The criteria and assessment of each site are listed in table 2.

Additionally, the team did a preliminary impact analysis, evaluating each alternative in detail (sites A, C, D, and E), and determined that none posed any significant adverse impact on the environment. Site B was considered, but rejected, because of the impact on natural resources, and historical/contemporary cultural uses. Area F was considered, but rejected, because of its effect on adjacent land uses. Construction of a new loop road from site A was considered as an alternative that would relieve constricted traffic flow, but was rejected because of impacts on park resources and increased cost. The location for a visitor center recommended in the *1986 GMP* was considered, but rejected, because it would have required extensive clearing of vegetation, and terrain modification, and would have negatively impacted historic and contemporary cultural uses. An alternative location was considered at site A that would minimize these impacts. It is included in the study.

PROCESS COMPLETION

After funding is obtained, the NEPA process requirement would be completed prior to construction.

STUDY SITES

SITE EVALUATION

Site locations are shown on the Site Location map. Sites A, C, D, and E were considered in detail and evaluated against the set of criteria listed in table 1. A short write-up about the site, possible development, and approximate cost are also displayed, along with a brief discussion on capacity, operation, advantages, disadvantages, conclusions, and recommendations.

GENERAL CONCEPTS

The current visitor center is about 1,400 square feet, with approximately 900 square feet used for visitor activities. Under all alternatives, the interior of this historic structure would be adaptively restored, ventilation improved, and used for exhibit space, reducing space requirements at the replacement visitor center. It would also provide visitor orientation and exhibit space near the tower, the park's prime resource.

Traffic congestion at the park would be alleviated under all alternatives, through the judicious use of a shuttle during the peak season. The distance from site D, the farthest from the base of the tower, is approximately 2.9 miles, requiring about 10 minutes driving time. A shuttle, scheduled every 10 minutes, would be used to transport visitors from the visitor center to the tower parking area. During the peak season, visitors in cars and recreation vehicles could be required to use the shuttle. During the off-season, visitors would continue to use the tower parking area. Bus tours would all be permitted to go directly to the tower after a short stop at the visitor center.

Visitor experience would be enhanced during the shuttle trip to Devils Tower and stops at other park resources nearby. The trip to the tower via a shuttle bus would provide opportunities for National Park Service interpreters to tell the Devils Tower story. The replacement visitor center would also provide information that would help visitors in local trip planning and orient them on what to see and do in the park, as well as in northeastern Wyoming and the greater Black Hills area.

SITE A

Site Description

This site is the existing visitor center and parking area and also functions as the trailhead for the tower trail. No concept is shown. It is close to the base of the tower in a clearing of the pine forest. Only limited expansion of the parking area could occur without clearing more of the vegetation and altering the steep topography. Overflow parking on the side slope and resulting visitor social trailing has already impacted soils and vegetation. During the peak season, solutions to traffic congestion and inadequate space for parking cars, buses, and recreational vehicles would require the construction of a remote parking area and shuttle bus service to site A.

TABLE 1

A	C	D	E	INITIAL SITE SCREENING CRITERIA
✓	✓	✓	✓	provides an unobstructed view of Devils Tower.
✓		✓		allows pedestrian access to the base of the tower. Distance and difficulty should be considered.
	✓	✓	✓	complements traffic patterns along existing roads and allows parking and other traffic problems to be solved.
✓	✓	✓	✓	does not adversely impact local businesses or adjacent land uses.
✓		✓	✓	is on slopes that minimize alteration of the natural landscape.
✓	✓	✓	✓	allows protection of the surrounding views and rural scene, including the view from the tower trail.
✓	✓	✓		contains vegetation that will complement development.
✓	✓	✓	✓	offers opportunities for energy-saving design concepts.
✓	✓	✓	✓	is free of geologic and flood hazards, wetlands, threatened and endangered species, and other natural constraints.
	✓	✓	✓	does not impact any cultural resources.
✓	✓	✓	✓	has access to primary utilities (water, electrical, sewer, telephone).

TABLE 2 - ADVANTAGES & DISADVANTAGES

A	C	D	E	
Good	Poor	Good	Good	easy turn off of main road to visitor center.
Poor	Good	Good	Good	ease in finding a place to park.
Poor	Poor	Excellent	Good	room to expand parking.
Poor	Fair	Good	Good	easy terrain to hike from parking area to visitor center.
Fair	Poor	Good	Good	handicap accessibility to visitor center.
Good	Poor	Good	Fair	view of tower from visitor center.
Yes	No	No	No	easy hike to tower.
Yes	No	Yes	No	can incorporate current hiking trails to use between visitor center and tower.
Poor	Fair	Good	Fair	short hike from visitor center to river, prairie dog town, or campground.
Yes	No	Yes	Yes	safe hike from visitor center to tower -- no main roads crossed.
Yes	No	Yes	No	visitor center location enhances use of current backcountry trails.
No	No	Yes	Yes	little terrain modification needed for visitor center and parking area construction.
Yes	No	Yes	Yes	little, if any, tree removal needed for construction.
No	Yes	Yes	Yes	minimizes impacts on contemporary and historic cultural uses.
No	Yes	Yes	Yes	shuttle pickup and visitor center in one location.
No	Yes	Yes	No	opportunity to expand interpretive program topics, information.
Poor	Fair	Excellent	Fair	visitor orientation and trip planning.

Operation and Capacity

Under this alternative, a replacement visitor center would be built at the base of the tower adjacent to the existing visitor center, using post and beam construction methods, minimizing the need for extensive excavation and vegetation removal. Most of the existing parking would be retained. The overflow gravel parking area on side slopes and the social trails would be rehabilitated to natural conditions. A 200-car shuttle parking area with a kiosk information booth would be constructed at either site D or site E. This would provide for parking during the three-month peak season. All recreational vehicles and cars would be required to park at the shuttle parking area.

Trip planning information would be provided at the kiosk, although no information on other area attractions would be provided to the visitor. A transportation shuttle would be operated from this area to the tower during the busy season (3.4 or 5.8 miles round trip), providing interpretive opportunities to orient visitors to Devils Tower prior to their arrival at the visitor center. Buses would be permitted to proceed directly to the tower parking area. The average length-of-stay for visitors at the park would most likely increase by 20 minutes because of shuttle operations.

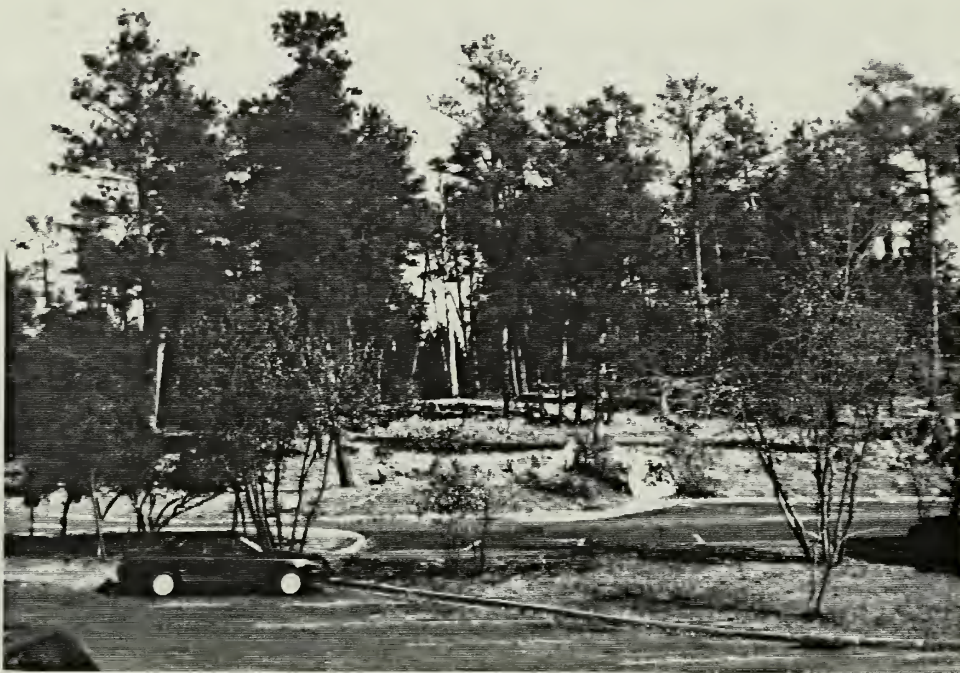
Consideration was given to building parking in the area. This was eliminated from consideration because it would have required extensive construction and landform modifications, increasing costs. Problems of traffic congestion would not be alleviated without the addition of a loop road, which was earlier eliminated as a consideration, because of cost.

Advantages and Disadvantages

Advantages and disadvantages are listed in table 2. This site's advantages of being at the base of the tower and being the least costly of the options are far outweighed by disadvantages. A significant disadvantage is that the site has little to no developable land for parking, requiring the construction of a remote parking facility and no room for future expansion. It also has limited turning radius for larger vehicles and has no expansion room for parking without the use of retaining walls. The idea of visitor orientation at a remote parking area, with little or no personal services, is considered a disadvantage when compared to what is offered by other alternatives.

Conclusion and Recommendations

This site has too many disadvantages and does not allow for the solution of long-term traffic problems at Devils Tower, therefore this site is not recommended.



Looking North from Possible Visitor Center Site A

SITE C

Site Description

This site is a large clearing near the entrance road, separated by a dense row of trees. It lies on an eastern-facing slope and is surrounded by a pine forest of medium density, except for the low edge along the road, which consists of dense deciduous trees and shrubs growing in the drainage gully. From this site, the tower sits high atop a pedestal covered with varying-density pine forest and rock outcrops. The picturesque Belle Fourche valley is visible in the distance. Vehicles would access the site by means of a bypass loop from the entrance road. Pedestrians accessing the tower would cross the entrance road and have to traverse some steep grades. Development of parking areas on this site requires terracing to accommodate the slope of the site.

Operation and Capacity

Under this alternative, the visitor center would be built into a side of the hill and oriented northeast. An observation deck overlooking the parking areas below would be built, allowing visitors to have a relatively unobstructed view of the tower. A new trail to the tower base would need to be constructed for pedestrian access. The trail to the tower base

would be relatively steep, but would provide reasonable pedestrian access. Parking areas would be terraced into the westerly facing slope and would be maintained in a linear configuration. Existing screening vegetation would be maintained between the main road and the new parking areas.

The new road configuration would control the entrance and exit to the replacement visitor center. A 200-car shuttle parking area would be provide for parking during the three-month peak season. A transportation shuttle would be operated from this area to the tower during the busy season (about 3.0 miles round trip), providing a brief opportunity for interpreters to tell the story of Devils Tower before visitors see the tower itself. Buses would be allowed to park at the tower parking area, but would be required to pass through the visitor center area prior to proceeding to the tower. The average length-of-stay for visitors at the park would most likely increase by 10 minutes because of shuttle operations. During the off-season, all vehicles could park directly at the tower.

Advantages and Disadvantages

Advantages and disadvantages are listed in table 2. Selection of this site would help alleviate congestion and provide adequate parking for today's visitation. The site's limited expansion capacity for parking, slopes causing poor accessibility for persons with disabilities, and terrain modification requirements for proper construction make this site less desirable than either site D or site E. The viewing angle to the tower is also poor. Parking layout would have to be terraced into the hill, requiring the use of extensive cuts and fills. The northeast exposure of the site retains snow longer in the spring, which would increase operational costs. Parking design would also have to follow a linear pattern, which would make it difficult to plow snow in the winter.

Conclusion and Recommendations

The site offers some advantages. It is the closest to the tower, reducing transportation time of a shuttle by a third when compared with site D and site E. However, because of some of the disadvantages (e.g., steep slopes, lack of expansion space for parking, extensive terrain modification requirements, and poor circulation/limited turning radius for larger vehicles) selection of either D or E would seem to be a better choice.



Looking North from Possible Visitor Center Site C

TO DEVILS TOWER

FUNCTION DIAGRAM

PARKING EXPANSION

TO DEVILS TOWER

VISITOR CENTER

PARKING

SHUTTLE STOP

PARKING

TRAFFIC CONTROL

DENSE PONDEROSA PINE

PARKING EXPANSION - 80 CARS

TO DEVILS TOWER 3000'

4000

MIXED DENSITY PONDEROSA PINE

DENSE DECIDUOUS GROWTH IN GULLY

VIEW OF DEVILS TOWER

OFF SEASON ACCESS TO DEVILS TOWER

VISITOR CENTER WITH OBSERVATION DECK

OPEN FIELD

PARKING WITH LANDSCAPING - 200 CARS & 10 BUSES

TRAFFIC CONTROL

SHUTTLE STOP

15% SLOPE

TO MON. ENTRANCE

OVERHEAD POWER LINE

3900

4100

4000

3900

DENSE PONDEROSA PINE

EXISTING
PROPOSED

NORTH
1" = 200'

Visitor Center Concept-Site C Devils Tower National Monument

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SITE D

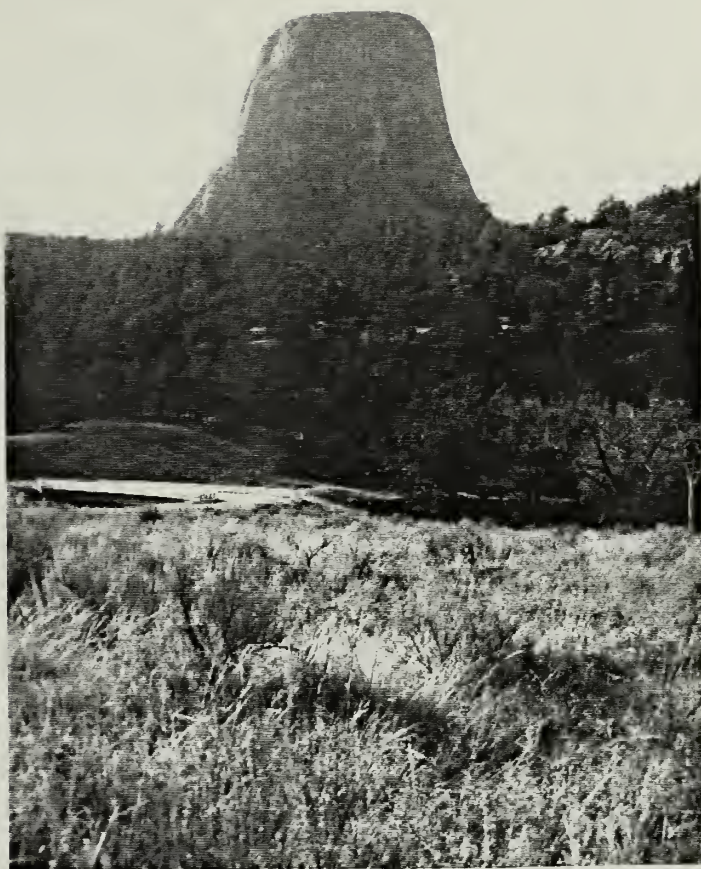
Site Description

This site is a low-lying field at the monument entrance adjacent to existing commercial development. Short grasses cover the site and large cottonwoods line the river's edge providing natural screening for developed facilities. Views towards the monument entrance include all of the development immediately outside the monument boundary. Views toward the tower include dense pine forest and numerous rock outcrops, including a large band of red sandstone on the far bank of the river. Pedestrian access to the tower would connect to existing trails, but would involve a ½+ -mile hike, crossing some of the steepest slopes in the monument. Some of this site is within the Belle Fourche River floodplain.

Operation and Capacity

Under this alternative, the visitor center would be built on a large, flat site, adjacent to the boundary of the park, with the building oriented toward the tower. The visitor center would be constructed in an area of the site outside the 100-and 500-year floodplains. Parking would be to the northern side of the site, screened and positioned so as to not obstruct the view of the tower. Building design would take into consideration views from the interior of the building toward the tower. Trails would connect to existing tower trails and allow pedestrian access to commercial establishments just outside the park boundary. Parking areas would allow for the greatest flexibility, for expansion to meet future growth. Screening vegetation would be planted and maintained between the main road, commercial areas, visitor center, and the new parking areas. Because of the adjacent topography, cars in this area would be unseen from most locations inside and outside the monument.

The new road configuration would control traffic entry and exit from the visitor center. A 240-car shuttle parking area would provide for the three-month peak season. A transportation shuttle would be operated from this area to the tower during the busy season (5.8 miles round trip), providing a good opportunity for interpreters to tell the story of Devils Tower. Buses would be allowed to park at the tower parking area after passing through the visitor center area. The average length-of-stay for visitors at the park would most likely increase by 20 minutes or more because of shuttle operations. During the off-season, all vehicles would be permitted to bypass the visitor center and park directly at the base of the tower.

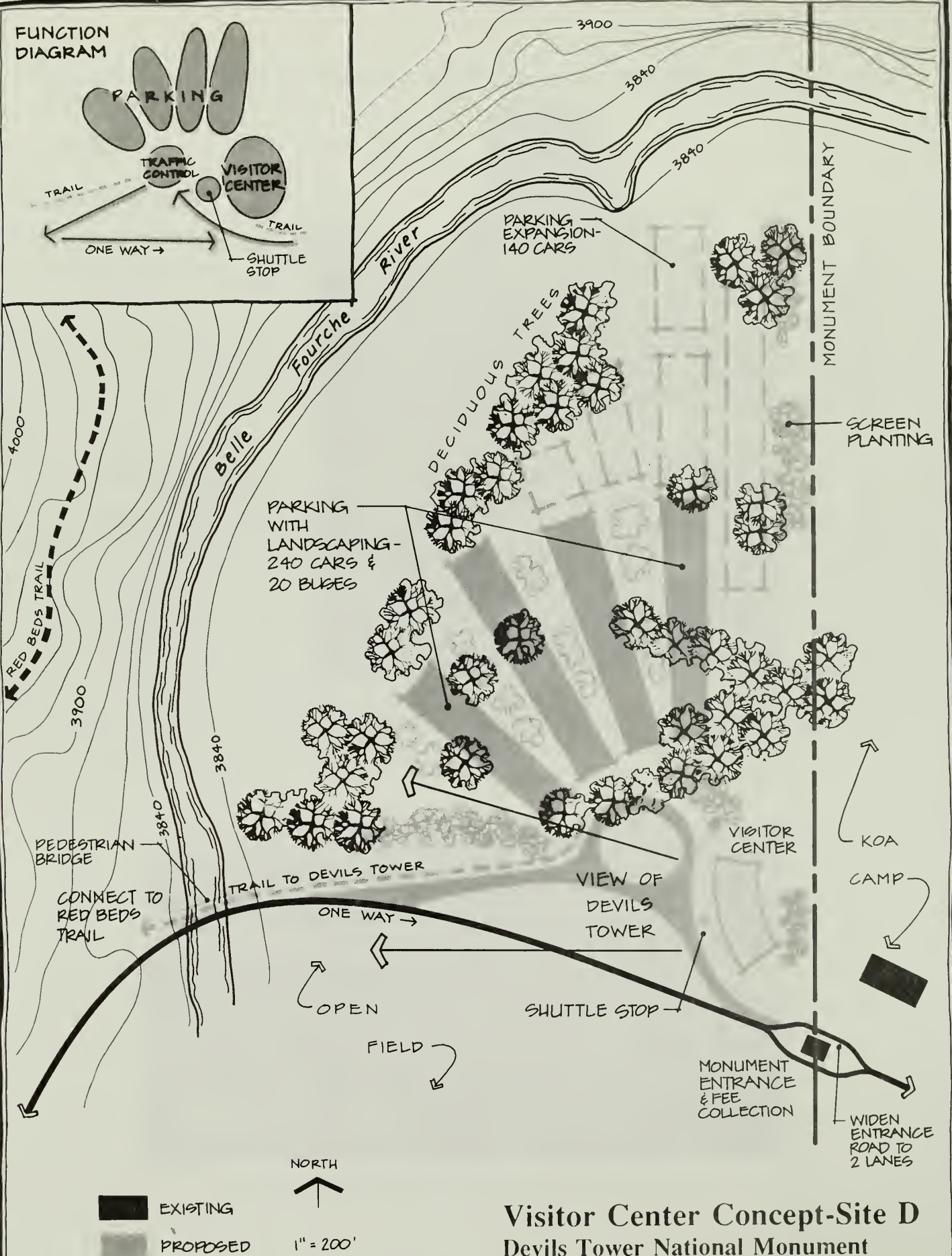
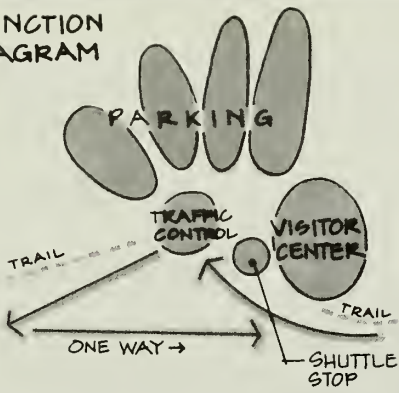


View of Devils Tower
from Possible
Visitor Center Site D



Looking North from Possible Visitor Center Site D

FUNCTION DIAGRAM



EXISTING
 PROPOSED

NORTH

 1" = 200'

Visitor Center Concept-Site D
Devils Tower National Monument

Advantages and Disadvantages

Advantages and disadvantages are listed in table 2. Although the cost of this alternative is slightly higher than others, disadvantages for this site are few. The site is occasionally used by park user groups as a primitive camping area. Some of site D lies within the 100-year floodplain (see appendix B), but the location of the replacement visitor center, as shown on the concept map, is well outside the floodplain area. Site D's proximity to the entrance station makes it the best of the alternatives for orienting visitors to the park's resources. Clustering development with other commercial development also provides the advantage of minimizing impacts on the park's natural environment. This site gives visitors one of the better views of the tower. It makes use of, and enhances, the existing trail system, allowing those who would access the tower on foot to do so. Its greatest asset is land available for expanded parking capacity. It would provide a 240-car parking area, with an expansion area that could accommodate another 140 cars.

Conclusion and Recommendations

Although this alternative is slightly more expensive than others, this is by far the best of the four sites evaluated. Site D's attributes fit best the criteria established for the study. This site is the one the study team chose to recommend as its preferred.

SITE E

Site Description

This site is a low-lying field bordered by the entrance road and existing monument administrative, maintenance, and housing facilities. The site is mostly short grasses, with a few scattered small trees. It is bordered with pine forest on the uplands, and shrubs and cottonwood toward the river's edge. Visually, the site is one of the lower quality areas in the monument, with unhealthy cottonwoods, power lines, eroded slopes, and the entrance road all in the view of Devils Tower. Pedestrian access to the tower involves a large change in elevation. Some of the site is within the Belle Fourche floodplain.

Operation and Capacity

Under this alternative, the visitor center would be built on a large, flat site near the existing administrative, maintenance, and housing area, in an area outside the 100- and 500-year floodplains. Because park operations and housing are close by, certain operational efficiencies could be gained were this site chosen. Parking would be south of the visitor center. The existing road would be relocated to provide traffic control and unobstructed pedestrian access, from the replacement visitor center to the base of the tower. Building

design would take into consideration the use of outdoor exhibit space. A new trail to the tower base would need to be constructed for pedestrian access. Parking areas would allow for flexibility of expansion, for future growth. Screening vegetation would be planted and maintained between employee housing, the main road, the visitor center, and the new parking areas. The new road configuration would allow for efficient through-traffic during the off-season, while maintaining direct control of traffic entry and exit, via a terminus loop, during the peak season. A 200-car shuttle parking area would provide for parking during the three-month peak season, with adequate room for expansion of parking. A transportation shuttle would be operated from this area to the tower during the busy season (about 3.4 miles round trip), providing a brief opportunity for interpreters to tell the story of Devils Tower before visitors see the tower itself. Buses would be allowed to park at the tower parking area, but would be required to check in at the visitor center prior to proceeding to the tower. The average length of stay for visitors at the park would most likely increase by 20 minutes because of shuttle operations. During the off-season, visitors could park directly at the tower.

Advantages and Disadvantages

Advantages and disadvantages are shown in table 2. Site E provides good expansion capacity for parking, could easily be developed, and allows for use of existing utilities. The site's close proximity to existing employee housing could provide for some operational efficiencies, but would decrease privacy, and therefore the desirability of the employee housing area for park families. A new trail to the tower would be constructed, but grades on the trail would be very steep. The view of the tower from this site is one of the least attractive.

Conclusion and Recommendations

This site is less desirable than site D, but costs slightly less. It does offer the advantage of additional parking expansion capacity. The biggest negative for this site is its close proximity to the housing area and potential adverse effects on employees living in park housing.

ESTIMATED COSTS

Construction Costs

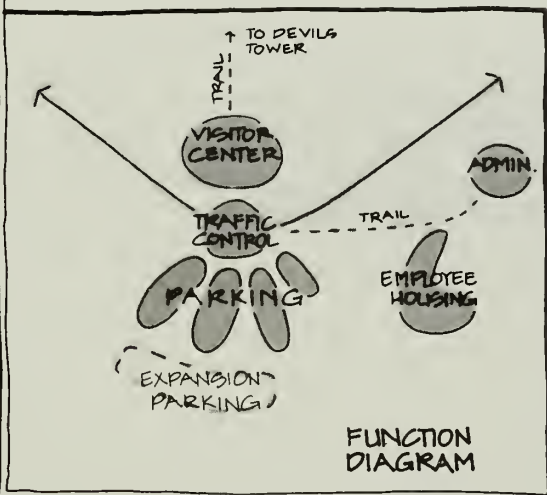
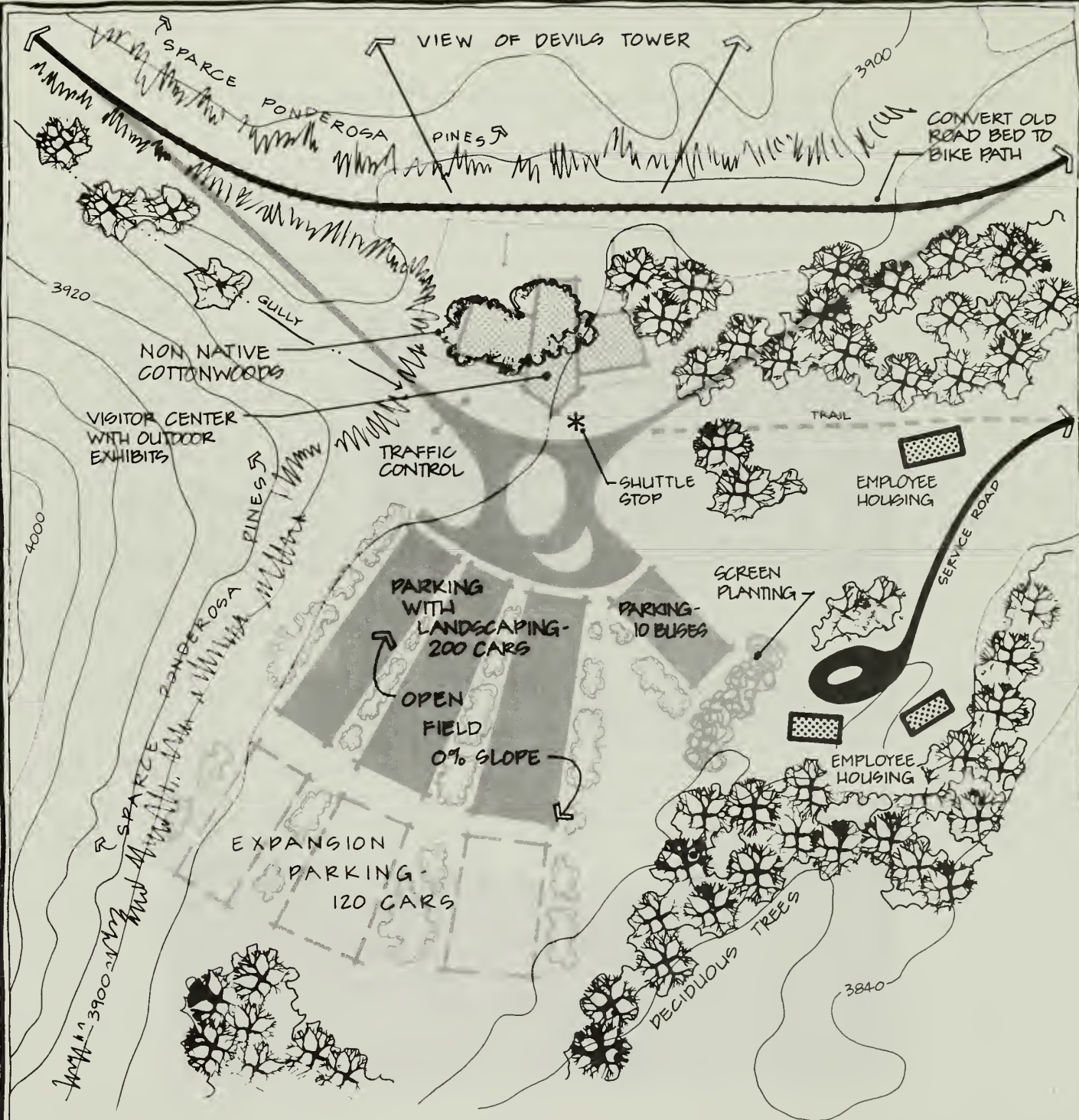
Costs vary slightly for each site, between \$5.3 and \$6.4 million, depending on parking and utilities. These costs, in 1993 dollars, are shown in table 3. Site A is the least expensive at \$5.3 million, and site D the most, at \$6.4 million.



View of Devils Tower
from Possible
Visitor Center Site E



Looking North From Possible Visitor Center Site E



EXISTING
 PROPOSED

NORTH

 1" = 200'

Visitor Center Concept-Site E Devils Tower National Monument

109 | 80,034
 DEC 92 | RMRO

Transportation System Operation

Based on estimates for seasonal shuttle operations, costs would be a little over \$100,000 per year. At current visitation levels, the break-even point for shuttle operation is a charge of between \$0.19 to \$0.30 per visitor and the cost of a shuttle, including interpretation, can be financed with increases to existing entrance fees of \$1.00. The shuttle could be operated by either the National Park Service or a concession. A shuttle operated by a concession would provide a small business opportunity to the local economy of Crook County, Wyoming.

STUDY RECOMMENDATIONS

The following are the study recommendations:

1. Barring any adverse impacts on the environment, site D be selected as the site for construction of a replacement visitor center.
2. Operation of a transportation system from the replacement visitor center to the tower be implemented during the peak season of use immediately after construction of the facilities.

DEVILS TOWER NATIONAL MONUMENT - VISITOR CENTER LOCATION AND FEASIBILITY STUDY

TABLE 3 - SITE A ESTIMATED COSTS

Item Description	Unit	# of Units	Cost
Visitor Center Development			
Visitor Center	S.F.	5,000	\$1,521,700
Furnishings	LS		\$228,200
Landscaping/Lighting	LS		\$228,200
Fire Protection/Sprinkler	S.F.	5,000	\$36,200
Interpretation/Audio Visual/Exhibits	LS		\$380,400
Parking/Cars	Space	200	\$347,800
Parking/Buses	Space	3	\$19,500
Remodel Historic Structure at Tower/Exhibit Space	S.F.	1,000	\$362,300
Wayside Exhibits	Each	10	\$50,700
Utilities-Wastewater Disposal System			
Wastewater Lagoons	Acre	3	\$391,300
8" Ductile Iron Sewer Pipe	L.F.	300	\$17,400
Lagoon Liner	S.F.	65,340	\$378,800
6' Chain Link Fencing	L.F.	2,000	\$57,900
Gravel Road	S.Y.	2,025	\$52,800
Utilities-Water System			
Well (6" Diameter)	L.F.	1,400	\$111,600
Submersible Pump/Casing	Each	1	\$36,200
6" Fire Hydrant	Each	3	\$13,900
Chlorinator Building	Each	1	\$57,900
30,000 Gal. Underground Concrete Water Storage Tank	Each	1	\$73,900
6" Ductile Iron Pipe	L.F.	500	\$21,700
Utilities-Electric			
3-Phase Underground Electrical (Incl. Removal of Overhead)	L.F.	7,800	\$23,400
Utilities-Telephone			
Underground Telephone	L.F.	600	\$8,700
Pull Boxes	Each	3	\$1,500
Utilities-Heat			
1,000-Gallon Propane Tank, Fencing, Piping to Building	Each	1	\$7,200
Gross Construction Cost, Material, and Labor			\$4,429,200
Project Planning and Advance Planning (Incl. Compliance Completion Requirements)			\$916,200
TOTAL			\$5,345,400

TABLE 3 - SITE C ESTIMATED COSTS

Item Description	Unit	# of Units	Cost
Visitor Center Development			
Visitor Center	S.F.	5,000	\$1,521,700
Furnishings	LS		\$228,200
Landscaping/Lighting	LS		\$228,200
Fire Protection/Sprinkler	S.F.	5,000	\$36,200
Interpretation/Audio Visual/Exhibits	LS		\$380,400
Parking/Cars	Space	200	\$347,800
Parking/Buses	Space	10	\$65,200
Remodel Historic Structure at Tower/Exhibit Space	S.F.	1,000	\$362,300
Trails and Wayside Exhibits	Each	10	\$50,700
	LF	2640	\$50,700
Utilities-Wastewater Disposal System			
Wastewater Lagoons	Acre	4	\$521,700
8" Ductile Iron Sewer Pipe	L.F.	1,600	\$92,700
Lagoon Liner	S.F.	87,120	\$504,400
6' Chain Link Fencing	L.F.	2,400	\$69,600
Gravel Road	S.Y.	2,700	\$70,400
Utilities-Water System			
Well (6" Diameter)	L.F.	1,400	\$111,600
Submersible Pump/Casing	Each	1	\$36,200
6" Fire Hydrant	Each	3	\$13,900
Chlorinator Building	Each	1	\$57,900
8" Ductile Iron Pipe	L.F.	1700	\$83,700
Utilities-Electric			
3-Phase Underground Electrical (Incl. Removal of Overhead)	L.F.	7,000	\$21,000
Utilities-Telephone			
Underground Telephone	L.F.	1600	\$23,200
Pull Boxes	Each	8	\$4,100
Utilities-Heat			
1,000-Gallon Propane Tank, Fencing, Piping to Building	Each	1	\$7,200
Gross Construction Cost, Material, and Labor			\$4,889,000
Project Planning and Advance Planning (Incl. Compliance Completion Requirements)			\$1,005,800
TOTAL			\$5,894,800

TABLE 3 - SITE D ESTIMATED COSTS

Item Description	Unit	# of Units	Cost
Visitor Center Development			
Visitor Center	S.F.	5,000	\$1,521,700
Furnishings	LS		\$228,200
Landscaping/Lighting	LS		\$228,200
Fire Protection/Sprinkler	S.F.	5,000	\$36,200
Interpretation/Audio Visual/Exhibits	LS		\$380,400
Parking/Cars	Space	240	\$417,400
Parking/Buses	Space	20	\$130,400
Remodel Historic Structure at Tower/Exhibit Space	S.F.	1,000	\$362,300
Trails, Wayside Exhibits, and Pedestrian Bridge	Each	10	\$50,700
	LF	1320	\$25,300
	LS		\$38,000
Utilities-Wastewater Disposal System			
Wastewater Lagoons	Acre	4	\$521,700
8" Ductile Iron Sewer Pipe	L.F.	2,200	\$127,500
Lagoon Liner	S.F.	87,120	\$505,000
6' Chain Link Fencing	L.F.	2,400	\$69,500
Gravel Road	S.Y.	3,800	\$70,400
Lift Station	Each	1	\$131,000
Utilities-Water System			
Well (6" Diameter)	L.F.	1,400	\$111,600
Submersible Pump/Casing	Each	1	\$36,200
6" Fire Hydrant	Each	3	\$13,900
Chlorinator Building	Each	1	\$57,900
8" Ductile Iron Pipe	L.F.	5000	\$246,400
Waterline River Crossing	Each	1	\$36,200
Utilities-Electric			
3 Phase Underground Electrical	L.F.	0	0
Utilities-Telephone			
Underground Telephone	L.F.	200	\$2,900
Pull Boxes	Each	1	\$500
Utilities-Heat			
1,000-Gallon Propane Tank, Fencing, Piping to Building	Each	1	\$7,200
Gross Construction Cost, Material, and Labor			\$5,356,700
Project Planning and Advance Planning (Incl. Compliance Completion Requirements)			\$1,098,700
TOTAL			\$6,455,400

TABLE 3 - SITE E ESTIMATED COSTS

Item Description	Unit	# of Units	Cost
Visitor Center Development			
Visitor Center	S.F.	5,000	\$1,521,700
Furnishings	%		\$228,200
Landscaping/Lighting	%		\$228,200
Fire Protection/Sprinkler	S.F.	5,000	\$36,200
Interpretation/Audio Visual/Exhibits	%		\$380,400
Parking/Cars	Space	200	\$362,300
Parking/Buses	Space	10	\$65,200
Remodel Historic Structure at Tower/Exhibit Space	S.F.	1,000	\$362,300
Trail and Wayside Exhibits	Each	10	\$50,700
	LF	2,640	\$50,700
Utilities-Wastewater Disposal System			
Wastewater Lagoons	Acre	4	\$521,700
8" Ductile Iron Sewer Pipe	L.F.	750	\$43,500
Lagoon Liner	S.F.	87,120	\$505,000
6' Chain Link Fencing	L.F.	2,400	\$69,500
Gravel Road	S.Y.	2,700	\$70,400
Lift Station	Each	1	\$131,000
Utilities-Water System			
Well (6" Diameter)	L.F.	1,400	\$111,600
Submersible Pump/Casing	Each	1	\$36,200
6" Fire Hydrant	Each	3	\$13,900
Chlorinator Building	Each	1	\$57,900
8" Ductile Iron Pipe	L.F.	700	\$30,400
Utilities-Electric			
3-Phase Underground Electrical (Incl. Removal of Overhead)	L.F.	5,700	\$17,100
Utilities-Telephone			
Underground Telephone	L.F.	400	\$5,800
Pull Boxes	Each	2	\$1,000
Utilities-Heat			
1,000-Gallon Propane Tank, Fencing, Piping to Building	Each	1	\$7,200
Gross Construction Cost, Material, and Labor			\$4,908,100
Project Planning and Advance Planning (Incl. Compliance Completion Requirements)			\$1,008,800
TOTAL			\$5,916,900

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APPENDIX A - PUBLIC INVOLVEMENT SUMMARY

The public was invited to participate in examining the advantages and disadvantages of each site via written comments and involvement in a series of site tours and public meetings. Five site tours were conducted throughout the summer. Public participation was concluded with a workshop held in Hulett, Wyoming, on September 3, 1992.

At the close of the public comment period, two sites were eliminated from further study. For entirely different reasons, both sites were viewed as creating unacceptable levels of impact on resources, park users, and park neighbors. Both sites had other negatives, such as prohibitive development costs, and lacked broad support with the public.

Site B on Joyner Ridge received the majority of negative comments. Twenty-three percent of all written responses identified the Joyner Ridge location as the single worst place to build a new facility because of the probable impact on natural resources and historical and contemporary cultural uses.

Site F was eliminated due to its probable negative impact on adjacent land uses. This site is on lands yet to be acquired by the park. Only 6 percent of respondents identified site F as a logical choice for a new facility. American Indians tend to favor this site because it is the furthest away from the base of the tower.

Public comment on the remaining four sites is summarized as follows:

Site A: Maintaining a visitor center at its current location at the base of the tower was the preference of about 35 percent of respondents. Most of these respondents address the high desirability of getting visitors to the primary resource of the monument, Devils Tower. Individuals favoring further development at the base of the tower felt it was the most logical location based on its proximity to the resource.

Over half of those favoring site A acknowledge that the clearing of additional vegetation to meet the current and projected demand for additional parking space was not desirable. These respondents suggested an overflow parking lot be developed at site C, D, or E, with shuttle service to the visitor center.

Fifteen percent of respondents expressed opposition to further development at the base of the tower. American Indian groups in particular are opposed to further development in this location. They feel it would interfere with the spirits that they believe inhabit this area, and adversely impact ceremonial use of the area.

Site C: Development of site C was favored by about 9 percent of respondents. This segment of the public felt that site C's advantages were its lack of interference with cultural uses and pristine natural resources. They also liked the screening effect of the vegetation separating this site from the main road. Site C offers a striking view into the Belle Fourche valley, unlike other proposed locations, but perhaps presents a less classical view of the tower than some of the other locations.

Site D: This location was favored by about 18 percent of respondents. More than any other site, it appeared to inspire the imagination of "what could be" among the participants of the site tour on September 2. Reasons for favoring site D include the opportunity to capture visitors before they reach the main resource and to offer safety, interpretive, and orientation messages as they embark on their visit to the monument; its minimal impact on pristine resources and cultural uses; room for future expansion; opportunities to connect with existing trail systems; and interpretive opportunities involving the Belle Fourche River, prairie dog town, and geology, not only of the tower, but of the various soil layer formations exposed in the red beds directly across the river. The concentration of development in one area rather than being dispersed throughout the monument was seen as a significant advantage to many respondents. The view of the tower from this location is also an advantage.

More than 38 percent of respondents who expressed a second choice in writing chose site D.

Site E: Six percent of respondents favored site E. This site was attractive to them because it represented a compromise between other areas that they thought would be extremely sensitive to development.

APPENDIX B - RESOURCE INFORMATION

Devils Tower is a high, isolated monolith of igneous rock, with remarkably symmetrical joint columns, set upon a pine-clad pedestal of colorful sedimentary shale and sandstone, and is located within a gracefully meandering bend of the Belle Fourche River. The tower is a unique example of landscape forms that owe their existence to volcanic intrusion and subsequent erosion. The unusual character of this peculiar landform and its superbly aesthetic aspect were recognized long ago when, on September 24, 1906, it was established as the first national monument.

As identified in the National Park System Plan, Devils Tower is in the Great Plains physiography region. The National Park Service theme is "Works of Volcanism." The monument provides fairly good representation of this theme, although the volcanic feature is not typical of volcanic phenomena of the Great Plains.

LEGISLATIVE CONSTRAINTS

Park Purpose

To preserve and provide for the use of Devils Tower ". . . a natural wonder and an object of historic and great scientific interest. . . ."

The purpose also relates to an act dated August 9, 1955, ". . . and in order to provide suitable public campground facilities and other development for the public benefit. . . ."

ADMINISTRATIVE

Agreements and Permits

Utilities. Special-use permit no. 2109-0002 to Tri County Electric Association, Inc., originally for the period of March 1, 1971, to February 28, 1991, and recently extended through February 28, 1996, provides for right-of-way/permit for overhead power lines and provision of power to the monument.

Special-use permit no. 2109-0001 to Mountain States Telephone and Telegraph Company to be reissued for maintenance of telephone cables. The permit is to provide telephone service to the monument.

Memorandum of understanding (MU-1390-0-9001) with Hulett Emergency Services, Inc., for emergency medical service. Expires June 1995.

Emergency Response. Memorandum of understanding (MU-1390-0-8001) with Hulett Volunteer Fire Department for structural fire response. Expires July 1995. Memorandum of understanding (MU-1390-0-8002) with Crook County Sheriff's Office for law enforcement, fire, and search and rescue assistance. Expires June 1995. Agreement with the U.S. Forest Service for fire protection, written April 1989, for a 5-year period.

Access. The monument maintains several gravel ranch access roads that were in use prior to establishment. They are also used for visitor and administrative access.

Water Rights. About 85 percent of the water rights on the Belle Fourche River have been adjudicated for South Dakota. Nearly all of the remainder has been purchased by Wyoming ranchers. Little, if any, remains unallocated.

EXISTING FACILITIES AND SERVICES

Nonhistoric Roads and Trails

There are 4.3 miles of graded roads and 6.0 miles of paved roads in the monument. The main monument road that runs from the entrance to the visitor center is 2.9 miles long and has the following FHWA 1980 survey ratings: ADT-230, Structural Sufficiency Rating 56.3, Safety Sufficiency Rating 68.4. The roads in Devils Tower National Monument are in fair condition. There are 8 miles of trails in the monument. The Tower Trail is 1.25 miles long and was paved with asphalt in 1965. Although the trail is paved, it is not conducive to use by persons with disabilities. There are portions of the trail that are extremely steep for wheel chairs and the path is variable in width, ranging from 4 to 2½ feet wide. The asphalt has been seal coated, however, sand can be found along many portions of the trail and on steep slopes, which creates an unsafe condition. The trail is in need of realignment, widening, and repaving.

Nonhistoric Buildings and Facilities

There is a 50-site campground, a picnic area, an entrance station kiosk, three residences, a six-unit seasonal apartment building, a maintenance shop, a small administration building, generator building, two hypochlorinator buildings, and an amphitheater. There are two comfort stations in the campground and one in the picnic area. No monument structures are leased or rented to anyone except employees and the monument does not rent or lease buildings from anyone else.

Utility Systems

There is one water system with two reservoirs (one of 50,000 gallon capacity and one of 25,000 gallon capacity), a deep well (1,346 feet) and various pipelines. Over the past 10 years this system has pumped a total of 22,732,900 gallons of water. The average total yearly usage is 2,273,290 gallons, of which 26 percent is used by the visitor center and one residence and 74 percent is used by a 50-site campground, three residences, a six-unit apartment (seasonal), a maintenance building, and the administration building. There are eight sewage systems.

Historic Structures

There are six historic structures listed in the Resource Management Plan, Cultural Portion for Devils Tower. These are: HS-1 the residence, HS-3 the visitor center, HS-4 the checking station, HS-13 the fire hose shed, HS-19 the tetrahedrons (72), and HS-20 the historic ladder.

Cooperative Association

Devils Tower Natural History Association sells books, geology slides, geology maps, and miscellaneous items pertaining to the monument. This is a nonprofit organization and proceeds are used for enhancement of interpretive activities at Devils Tower.

RESOURCES

Natural Resources

The park supports three of the four distinct vegetation complexes that characterize the Black Hills. These include: (1) Rocky Mountain Coniferous Forest Complex dominated by ponderosa pine, (2) Grassland Complex of the northern Great Plains, and (3) Deciduous Forest Complex. The tower top and sides support a variety of bushes, lichens, grasses, and forbs. No flora species are listed as threatened or endangered, nor are any proposed to be candidates for federal listing. Six species, however, are considered species of special concern by the Wyoming Natural Diversity Database of the Nature Conservancy.

Animals most often observed by visitors include white-tail deer, mule deer, prairie dog, squirrel, porcupine, rabbit, chipmunk, and various birds. A 40-acre prairie dog town in the southeast part of the park is a large attraction to the visitors. Birds observed to use the tower include vultures, rock doves, American kestrel, prairie falcon and the white-throated swift. Bald eagles are the only endangered fauna of the park. Rare reports of seeing or

hearing peregrine falcons have been received by rangers. No other fauna species are threatened or endangered, nor are any proposed to be candidates for federal listing.

The Belle Fourche River, part of the Cheyenne River Basin, is controlled by Keyhole Dam 14 miles upstream. In the summer, the water release from the dam causes a significant rise in water depth and velocity.

Devils Tower is a Class II air quality area. The park also has been identified by the Department of the Interior as possessing air quality-related values.

Temperatures range from a maximum of 110 degrees F. to a minimum of minus 48 degrees F. Average summer day-night temperature difference is 30 degrees F. Average annual rainfall is 15 to 20 inches. Prevailing winds are from the west in summer and from the northwest in winter. Maximum recorded wind velocity is 78 miles per hour. Frequent strong winds, hail, lightning, downdrafts, and heavy early morning frosts prevail. Maximum snowpack is 40 inches; frost penetration averages 32 inches, with a maximum recorded of 48 inches.

The scenic natural view surrounding the park contributes to the experience of the tower. Visitors can see a distance of over 5 miles from foot trails and 150 miles when climbing the tower. The view consists of the Belle Fourche River and floodplain bordered by steep slopes and hills covered with ponderosa pine. Several human-built structures can also be seen from the park.

Cultural Resources

The Sundance formation contains clams, oysters, belemnites (squid) and other marine fossils of the Late Jurassic Age. No fossils have been found in the Spearfish or Gypsum Spring formations. No remains or signs of ancient vertebrates have been found in the park.

One historic and fifteen prehistoric archeological sites were found after 92 percent of the monument was surveyed in 1979. All prehistoric sites are open, lithic scatter. The single historic site consists of two land depressions where a cabin and stable stood in 1890.

There are six structures on the List of Classified Structures (LCS). Four of the structures are log buildings built by the Civilian Conservation Corp (CCC) in the 1930s. The other two structures include the stake ladder on the tower, built in 1893 and the 72 tetrahedrons placed along the Belle Fourche River in 1930.

The northeast part of Wyoming, which includes the monument, was historically used by the Prairie Shoshone, Crow, Kiowa, Arapaho, Cheyenne, and Lakota. The tower is considered

sacred by several of these tribes, who still come to the tower to practice their religious beliefs.

SOCIOECONOMIC CONSIDERATIONS

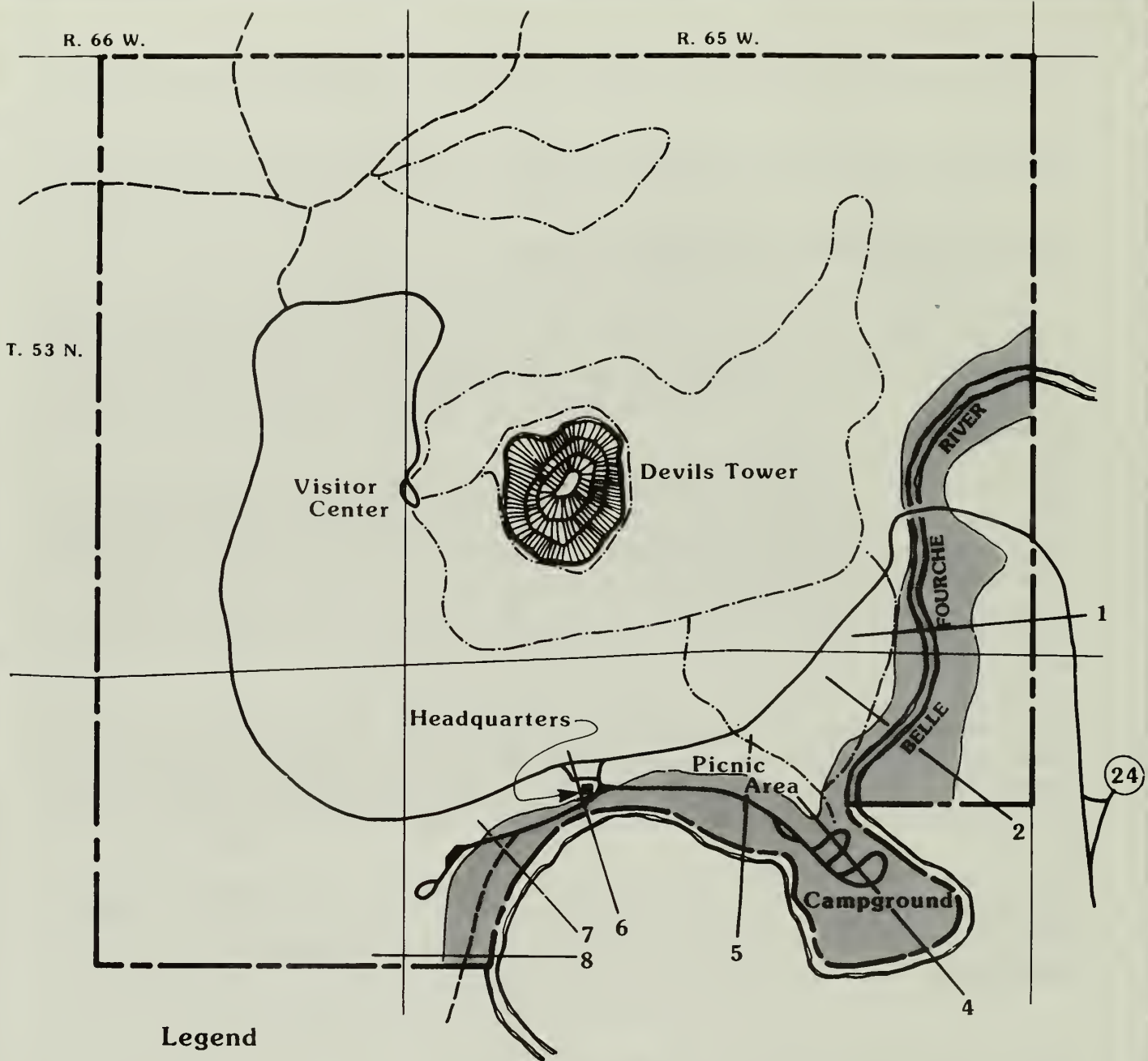
Crook County is a ranching region that hosts large numbers of hunters in the fall. This requires additional patrolling during the hunting season. The county seat is Sundance (28 miles southeast, population 1,700). The other principal town is Moorcroft (33 miles southwest, population 981), which is also the nearest railhead. The nearest town is Hulett (11 miles, population 360).

The nearest Wyoming city is Gillette (62 miles, population 17,000). The nearest large city is Rapid City, South Dakota (105 miles southeast, population about 48,000). Rapid City is also the nearest source of commercial air services providing flights on Northwest, Continental, United, and Delta Airlines.







Access to the monument is by State Highway 24, connecting with U.S. Highway 14. The nearest junctions with Interstate 90 are Moorcroft and Sundance.

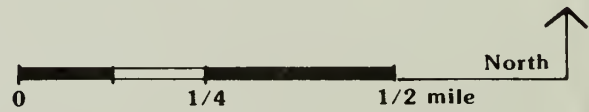
Large deposits of lignite coal are being mined (open pit) about 60 miles west of the monument. At this time there are 10 operating mines--one of which is the largest open pit mine in the United States--with several more proposed. The largest air-cooled electric generating plant in the world went into operation 60 miles west in 1978 (300 MW).

Keyhole State Park is 14 miles upstream of the monument and is a popular recreation area. Keyhole Reservoir, which can contain 191,000 acre-feet of water, presents a potential flood threat and communication has been made with the Bureau of Reclamation to develop a disaster plan.



Legend

-  National Monument Boundary
-  Paved Road
-  Unpaved Road
-  Trail
-  100 Year Flood Frequency Level
-  1 Floodplain Cross Sections and Reference Number



Flood Hazard Map

Devils Tower National Monument

U.S. Department of the Interior - National Park Service

NPS D-27

