# road system evaluation study
# environmental assessment



# CHICKASAW

NATIONAL RECREATION AREA • OKLAHOMA

# road system evaluation study
# environmental assessment

draft
august 1989

**CHICKASAW NATIONAL RECREATION AREA • OKLAHOMA**

UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

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# INTRODUCTION

## PURPOSE

This *Road System Evaluation Study* for Chickasaw National Recreation Area is being prepared in response to the Surface Transportation Assistance Act of 1982 and will establish the planning and management framework for systematic improvement of the roads in the national recreation area. This will be accomplished by (1) classifying all its roads according to function (intended use), (2) recommending design standards in accordance with the approved NPS *Park Road Standards*, and (3) identifying ownership and maintenance responsibility, general road improvements needs, priorities, cost estimates, and significant known natural and cultural resources that could be affected. The *General Management Plan* (GMP) approved in November 1980, and an addendum for Veterans Lake approved in April 1985, set forth broad guidance and direction for the recreation area's roads. The information contained in this study will enable the Chickasaw National Recreation Area and Southwest Regional Office to prepare 10-238 forms necessary to program road improvements.

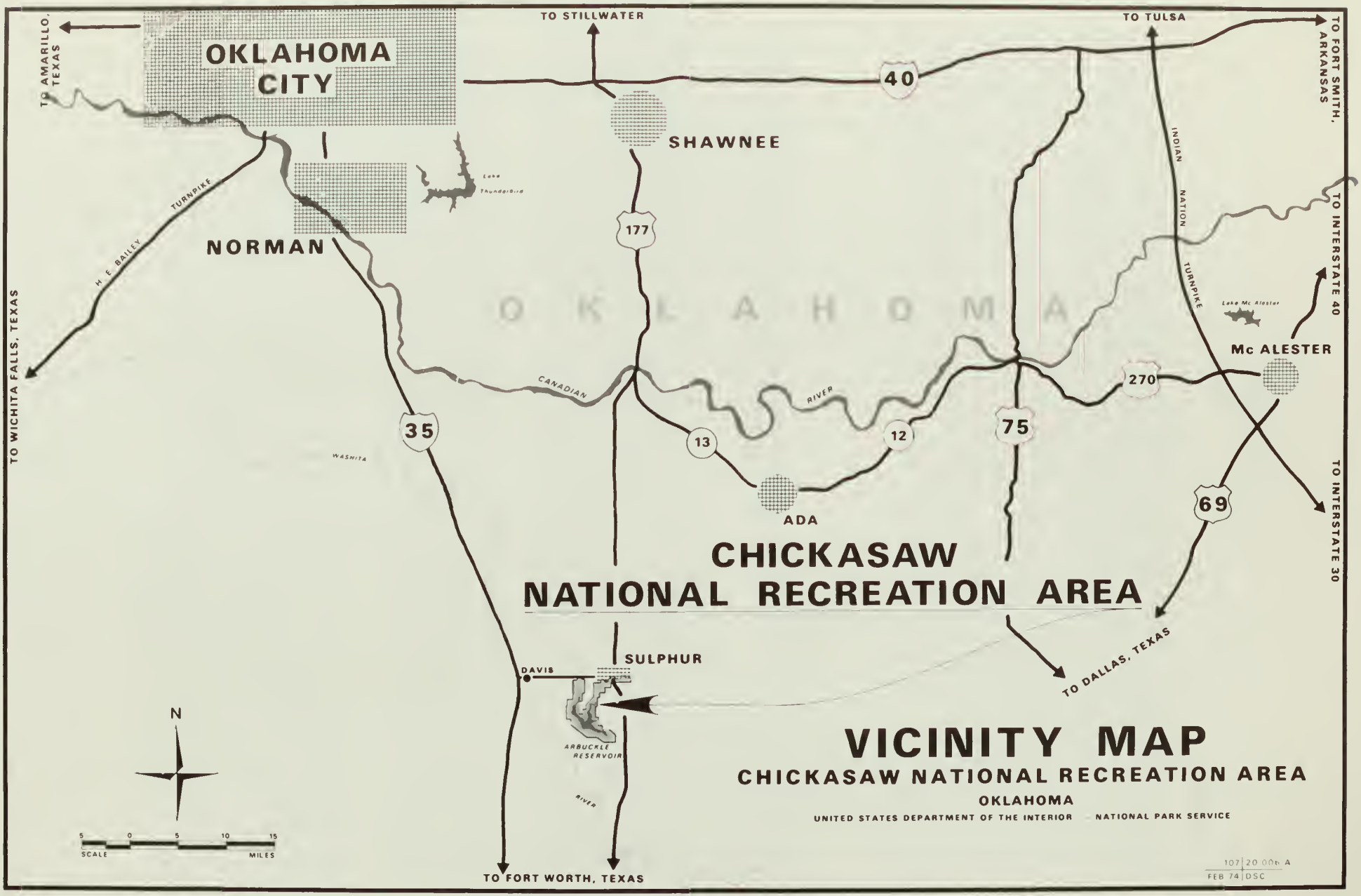
## BACKGROUND AND NEEDS

Chickasaw National Recreation Area is in south-central Oklahoma. It has approximately 2 million visitors annually. The Vicinity map shows the regional road network, communities, rivers, and reservoirs.

The recreation area was established as a unit of the national park system by Public Law 94-235 (90 Stat. 235) of March 17, 1976, "to provide for public outdoor recreation use and enjoyment of Arbuckle Reservoir and land adjacent thereto, and to provide for more efficient administration of other adjacent areas containing scenic, scientific, natural, and historic values contributing to public enjoyment of the area and to designate the area in such a manner as will constitute a fitting memorialization of the Chickasaw Indian Nation. . . ." This act combined two former national park system units – Platt National Park and Arbuckle Recreation Area – and added additional lands.

A component of the GMP proposed the future acquisition of the 343-acre Veterans Lake tract, which is within the authorized boundary of the 9,295.66-acre national recreation area, by the National Park Service through donation by its owner, the city of Sulphur. In March 1983, Sulphur voters passed a referendum in favor of the donation of Veterans Lake. On November 14, 1983, the city council formally conveyed title to the federal government, and Veterans Lake became part of Chickasaw National Recreation Area.

The Federal Highway Administration prepared a "Road Inventory and Needs Study" in 1984 that identified deficiencies, established priorities, and provided preliminary cost estimates for needed construction work. A road project is scheduled for construction in FY 1990 (reconstruct Lake District roads, Pkg. No. 156A) with two subsequent construction projects in FY 1993 and 1996. Therefore, the most pressing need is to classify all roads in the recreation area, provide guidance on their improvement and long-term management, and provide required compliance documentation. This is especially urgent because of the anticipated FY 1990 construction funding for the Lake District roads, the highest priority of which is the Buckhorn developed area.




# VICINITY MAP

## CHICKASAW NATIONAL RECREATION AREA

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## SCOPE OF WORK

This *Road System Evaluation Study* was accomplished by

analyzing existing reports and information describing the recreation area roads and their use (this includes the approved 1980 *General Management Plan* and its final environmental impact statement, the 1976 *Statement for Management*, the 1984 *Park Road Standards*, the approved 1984 *Land Protection Plan*; and the 1985 *Addendum to the General Management Plan and Development Concept Plan/Environmental Assessment for Veterans Lake*).

projecting visitor use and related interpretive needs (GMP and visitor use data from recreation area staff).

identifying critical resource considerations with respect to proximity of roads to identified archeological/historical features, visual quality, threatened and endangered species, and floodplains and wetlands.

considering other resource constraints such as geology, soils, groundwater, and topography (in terms of roadway foundation soils, this area has special soil/drainage problems; a thorough "condition survey" should be completed prior to any major design/construction decisions).

## STUDY ISSUES

Areas of particular concern are as follows:

unsafe intersection at the Chickasaw Trail Road and the Guy Sandy entrance road

crowded boat trailer parking at the Guy Sandy launch ramp

unsafe intersection on the Buckhorn access road and the campground loop D/E entrance road

the unsafe intersection on the Veterans Lake road and the picnic area-pavilion road

lack of road access to Buffalo and Antelope Springs (formerly, the Perimeter Drive went to these, but that segment east of the Travertine Nature Center was obliterated when the center was constructed)

rapidly deteriorating condition of the roads and parking areas at Buckhorn and the Point that were resurfaced and partially reconstructed in 1984-85

need to identify and evaluate cultural resources (i.e., CCC rock work) to see if they are eligible for listing on the National Register of Historic Places (cultural resources that fall within the construction limits of existing roads and proposed road location alternatives will be so identified and evaluated)

## DESCRIPTION OF THE ENVIRONMENT

### NATURAL RESOURCES

#### Topography

Chickasaw National Recreation Area is in south-central Oklahoma at the juncture of the southern Osage Plains and the Arbuckle Mountains. The recreation area is comprised of the lands of the former Platt National Park (now the Travertine District), lands acquired by the Bureau of Reclamation for the Arbuckle Reservoir Project (now the Lake District), and approximately 1,500 acres connecting these two areas (now the Rock Creek Corridor District).

The topography of the area consists primarily of moderately rolling terrain. Exceptions include some steep bluffs in the northern portion and fairly level terrain on the interstream uplands of the southern portion. Steeper valley walls line Arbuckle Reservoir with bluffs along lengthy sections, especially on the sides of the Rock Creek arm. Elevations range from 872 feet (Lake of the Arbuckles normal pool elevation) to 1,082 feet at Mount Airy.

#### Geology and Soils

Surface bedrock consists of the Vanoss formation which includes shales, sandstones, and conglomerates that formed in successive horizontal layers/strata over geologic time.

The recreation area lies within the Arbuckle Uplift, a geologic folding process (anticline) which formed the nearby Arbuckle Mountains. Over millions of years the Arbuckle Uplift has undergone extensive erosion leaving deposits over much of the region including the recreation area.

Major soils include Denton clay loam, Denton stony loam, and Gilson gravelly loam.

> Denton clay loam has developed in lowland areas along streams and is generally the deepest of the soils. This soil has developed from limestone and interbedded calcareous shales and tends to be rich in silt, clay, and organic matter. Average soil depths are 7 to 10 feet. Denton clay loam is a fine-grained soil and is highly susceptible to erosion. This soil also tends to absorb a great deal of water and holds it instead of freely draining as with sandy soils.
>
> Denton stony loam is similar to Denton clay loam but is shallower and stonier. This soil occurs principally in the eastern part of Rock Creek sub-basin.
>
> Gilson gravelly loam is light-colored, forested soil developed from limestone conglomerate. The material is very loose, and erosion is severe on the unprotected cultivated soil. It is associated in most places with Gilson soil material (rough broken land), principally in the breaks of Guy Sandy Creek southwest of Sulphur. The relief is rolling or gently rolling.

## Vegetation

The recreation area lies in a transitional zone between the eastern deciduous forest and the short-grass or steppe type prairie/grassland. Over 600 different species of plants have been identified within the national recreation area. None of these species or plant communities are considered rare or unique.

Common forest species include a variety of oak, elm, ash, and sumac. Other common tree species include sycamore, southern hackberry, roughleaf dogwood, eastern red cedar, bitternut hickory, and Texas redbud. Southern cottonwood and black willow thrive along waterways.

Prairie or grassland species predominate on the more arid uplands. Common species include hairy grama, little bluestem, beardgrass, purple threeawn, hairy tall dropseed, yellow Indiangrass, big bluestem, sideoats grama, and switchgrass. Yucca, pricklypear cactus, and dwarf sumac abound on the higher rocky slopes.

The full extent of exotic plant species is not well known. However, it is known that the vegetative composition of the area has changed since the 1930s. Eastern red cedar is increasing in the uplands with a corresponding decrease in natural grasses and forbs.

In the Travertine District, the original landscape has been altered and manipulated by man planting trees, shrubs, and turf grasses, and constructing ponds and waterfalls creating a naturalistic rather than a natural area.

The Rock Creek Corridor District is a natural area comprised of a mixture of forest and grassland.

The Lake District is also a natural area comprised mainly of forested vegetation except for the northernmost section, which is predominantly a mixed forest/grassland ecosystem.

## Wildlife

More than 100 species of birds have been recorded in the national recreation area. Most common are the cardinal, blue jay, robin, wild turkey, and various species of sparrows and woodpeckers. Common raptors include the northern sparrow hawk and the northern barred owl. A vulture roost of 50 to 100 birds is located near the northern end of the Rock Creek arm of Arbuckle Lake.

Common mammalian species include whitetailed deer, armadillo, opossum, eastern cottontail, jackrabbit, beaver, raccoon, muskrat, fox squirrel, striped skunk, short-tailed shrew, and eastern mole. Predators include the bobcat, coyote, and gray fox. Bison have been reintroduced and are kept in a fenced enclosure near the headquarters building.

Common aquatic species include shad, catfish, carp, shiner, bass, sunfish, bullhead, drum, carpsucker, gar, and crappie. Northern pike and walleye, nonnative species, were introduced into the Lake of the Arbuckles in the 1950s and 1960s. The northern pike has not been observed since 1975; the walleye is reproducing.

Poisonous snakes include the copperhead, water moccasin, and diamondback and timber rattlesnakes. Other reptiles and amphibians include the rough green snake, speckled king snake, hog-nosed snake, coachwhip, bull snake, black rat snake, eastern collared lizard,

Texas horned lizard, ornate box turtle, snapping turtle, three-toed box turtle, bull frog, leopard frog, and narrow-mouthed salamander.

Extirpated species include the pronghorn, elk, black bear, gray wolf, and river otter.

### Threatened and Endangered Species

There are no threatened or endangered plant species in the national recreation area. There is documented use of Chickasaw by two endangered avian species – the bald eagle (*Haliaeetus leucocephalus*), known as a common winter migrant, and the least tern (*Sterna antillarum*), of which there have been very few sightings. The recreation area is within the historic range of the endangered peregrine falcon (*Falco peregrinus*), but no documented sightings have occurred since 1926. It is possible the peregrine could still occur in the area at least as a migrant or transient.

There are two category II species whose range is believed to include the national recreation area – the alligator snapping turtle (*Macroclemys temmincki*) and the kangaroo rat (*Dipodomys elater*) – but there is no documented use by either of them. Category II, a U.S. Fish and Wildlife Service designation, means that some information is now available indicating the appropriateness of listing these species as endangered or threatened, but the available information is not sufficient to biologically support a proposed rule.

### Water Resources

Generally, water quality is good in the national recreation area. During periods of heavy rainfall, temporary siltation of waterways results from eroded soils.

Major surface water resources include the 108,000 acre-foot Arbuckle Reservoir and the 600 acre-foot Veterans Lake. Arbuckle Reservoir is fed by Rock Creek and its tributaries, Guy Sandy Creek, Buckhorn Creek, and the lesser tributary Travertine Creek. Veterans Lake is fed by Wilson Creek. Rock Creek and all of its tributaries except Travertine Creek originate outside the boundaries of the recreation area. Rock Creek is a tributary of the Washita River found several miles southwest of Chickasaw.

Primary groundwater resources include a number of cold water springs in the Travertine District. Most of the springs are sulphur, but two are bromide. Two of the biggest and best known of these cold water springs are Antelope and Buffalo, major suppliers of water to Travertine Creek. The springs derive their flow from the Arbuckle formation (freshwater) and the Simpson formation (mineralized) outside the recreation area. The mineral water in the springs was the primary reason Platt National Park was established in 1902. It was said to greatly improve health and prevent discomforts. Palmer H. Boeger in his excellent book about this area's history, entitled *Oklahoma Oasis* and published in 1987, had this to say: "In 1922 a man who lived around the springs and drank freely of the health-giving waters passed away at a ripe old age. His liver was so lively that it stopped the funeral. Because the liver simply refused to die, the mourners had to take it out and kill it with a club before the funeral could proceed." Boeger also wrote: "Farmers knew that cattle which drink sulphur water had fewer ticks. Early ranchers deliberately hauled water for their livestock from sulphur wells in town. After a few snorts, thirsty cows ignored the odors and strange taste. City residents who sprinkled sulphur water on their lawns had fewer chiggers."

### Floodplains and Wetlands

Based on Bureau of Reclamation authority to direct flood control discharge, there is the possibility of a 13.3-foot rise in the water level of Arbuckle Reservoir. The National Park Service has no influence over this flood control authority. Many of the national recreation area roads and parking areas are within this flood zone. Other potential flood areas include the lower crossings over creeks. Park roads and small parking areas are exempt from compliance with E.O. 11988 "Floodplain Management" under NPS procedures for implementation.

An inventory of wetlands in the recreation area has not been done. Wetlands predominantly occur along creeks and lakeshores. Upland soils are generally well-draining and do not allow the formation of wetland environments.

### Visual Quality

The roadways of Chickasaw National Recreation Area offer a variety of scenic views ranging from open lakeshores, farm fields, and prairies to dense forest. The roadways generally follow rolling terrain. There are several informal unpaved pullouts along some sections of the roadways particularly near heavily used and often crowded parking areas.

### Air Quality

The national recreation area is designated a class II area under the Clean Air Act. Air monitoring studies have not been conducted, but because of the rural character of the surrounding area, air quality is considered good. Automobile emissions undoubtedly concentrate along the more heavily traveled roads, particularly U.S. Highway 177 through Travertine District, but this has not been documented.

## CULTURAL RESOURCES

### Archeology

The area in and around Chickasaw is known to have been inhabited by humans for the past 7,000 years. The recreation area is part of the general prehistoric cultural province of the Caddoan-speaking tribes of the Central and Southern plains. It is internally marginal to the localities of two moderately well-defined cultural entities – the Henrietta Focus and the Washita River Focus, both early village agriculturist. Sites representative of the Spiro Focus and the Fulton Aspect could also exist in the area. Any archaic sites that might be present would be expected to have Fourche Maline or Grove Focus affinities or perhaps the Edwards Plateau material of north-central Texas. There are no known paleo-Indian sites in the area.

Past archeological surveys at the Lake District have identified 53 sites, many of which were inundated by water when the Arbuckle Reservoir was filled. Surface collections made during both surveys suggest that the region has been occupied over a considerable span of time, extending from archaic into historic. Test excavations made in 1968 at Antelope Springs in Travertine District failed to reveal any archeological features, even though a number of artifacts had been collected from that area earlier.

### History

Native American Indians including the Choctaw and the Chickasaw inhabited areas in and around the national recreation area during early historic times. Legends tell that the streams near Sulphur were often dotted with tepees.

The primary historic resources in the recreation area date from the 1930s, the era of the Great Depression. During this period, groups from public work relief programs constructed numerous facilities at the then Platt National Park. These groups included primarily the Civilian Conservation Corps (CCC), but also the Works Project Administration (WPA), Public Works Administration (PWA), and Civilian Works Administration (CWA). They constructed roads, parking areas, trails, comfort stations, pavilions, picnic areas, campgrounds, buildings, fountains, and pools. Associated with the roads are related structures such as stone culverts, curbstone, and bridges. Because the CCC contributed most of the manpower, it receives most of the recognition for this development.

The above facilities will be nominated to the National Register of Historic Places as contributing features to a larger historic district. In addition to this district, the Leeper House (another historic property and currently used as a park administration office), will also be nominated. These two properties are to date the only ones considered eligible for inclusion on the National Register, but most of Chickasaw National Recreation Area must be considered eligible as a cultural landscape created by the CCC, WPA, PWA, and CWA. Even though the cultural context has been somewhat modified over time by changes in the natural environment, the composite combination of natural, political, and cultural elements of the landscape have sufficient integrity to fulfill the requirements for a cultural landscape.

Thematically, this landscape is significant because it relates to important national events such as the *Great Depression*, the *New Deal*, *Rustic Architecture*, the *Conservation Movement*, and *Recreation*. It is also important in its likelihood of yielding important information from prehistory. Regarding its integrity, the Chickasaw National Recreation Area retains the requisite physical characteristics of a cultural landscape – location, design, setting, materials, workmanship, feeling, and association.

## SOCIOECONOMIC ENVIRONMENT/VISITOR USE

Chickasaw National Recreation Area is in Murray County. The county's economic base is agricultural (mostly cattle), oil production and oil well service, and tourism. There are also large gravel quarries, silica sand quarries, a state school for the deaf, and a state veterans center in the county. Tourism related to the recreation area is an important source of revenue in the county.

The city of Sulphur, population approximately 5,000, borders the recreation area on the north. Land beyond the city limits is rural, with scattered homes, pasture land, and some crop land.

There is no public passenger transportation to the recreation area. Private vehicles provide the only passenger access. U.S. 177, a major north/south transportation route, crosses the northeast corner of the recreation area.

Chickasaw is primarily a weekend use area and used predominantly by local and regional residents. Most visitors use the area for repeated weekend visits beginning at Easter and continuing through the middle of September. Overall visitation has declined in the past three years. The economic problems associated with the depressed oil and cattle industry are

believed to be the reasons for this decline. Visitation is expected to increase when the regional economic climate improves. Visitation for the past three years is as follows:

| 1985 | | 1986 | | 1987 | |
|---|---|---|---|---|---|
| **Recreation** | **Non Rec.** | **Recreation** | **Non Rec.** | **Recreation** | **Non Rec.** |
| 2,129,500 | 4,012,100 | 1,983,800 | 2,349,300 | 1,854,300 | 2,104,100 |

Recreation visits include those persons who go to the national recreation area primarily for recreational purposes. Nonrecreation visits include those persons traveling through the area for other than recreational purposes (e.g., through traffic, park business).

## ROAD SYSTEM EVALUATION

The Road Route Numbers map and table 1 entitled "Road System Evaluation" (in back pocket) present an inventory of the recreation area's existing road system, classify these according to function (intended use), recommend design standards, and discuss resource and compliance considerations. Approximately 30 miles of roads (a total of 48 roads) comprise the recreation area's road system, of which 20 miles are paved and 10 are unpaved. Summary information on the roads, the evaluation methodology, and general considerations is included in this section.

### FUNCTIONAL CLASSIFICATION

A park road system includes those roads within or providing access to a park or other unit of the national park system that is administered solely by the National Park Service or in cooperation with other agencies (16 U.S.C. 8-8f). The national park system encompasses many types of environments – mountains, forests, coastal zones, deserts, and urban areas. Within each park unit there often exists a variety of terrains that offer potential visitor experiences.

For purposes of functional classification, the routes that make up the recreation area's road system are grouped, based on use, into two categories – public use roads and administrative roads.

The assignment of a functional classification is not based on traffic volumes or design speed but on the intended use or function of that particular road.

#### Public Use Roads

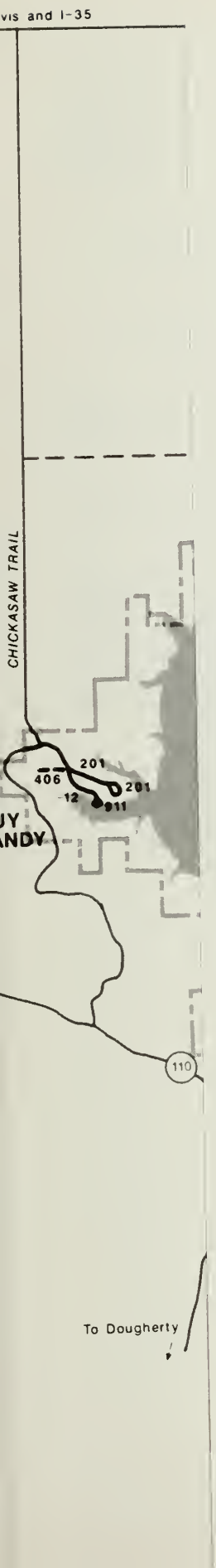
All roads that are intended principally for the use of visitors for access into and within the recreation area are classified as public use roads. This includes all roads that provide vehicular passage for visitors or access to such representative areas as points of scenic or historic interest, campgrounds, and picnic areas. Public use roads are subdivided into the following four classes:

**Class I: Principal Road/Rural Parkway**. Roads that constitute the main access route, circulatory tour, or thoroughfare for visitors.

**Class II: Connector Road**. Roads that provide access to areas of scenic, scientific, recreational, or cultural interest, such as overlooks and campgrounds.

**Class III: Special Purpose Road**. Roads that provide circulation within public use areas, such as campgrounds, picnic areas, visitor center complexes, and concessioner facilities. These roads generally serve low-speed traffic and are often designed for one-way circulation.

**Class IV: Primitive Road**. Roads that provide circulation through remote areas and/or access to primitive campgrounds and undeveloped areas. These roads frequently have no minimum design standards, and their use may be limited to specially equipped vehicles.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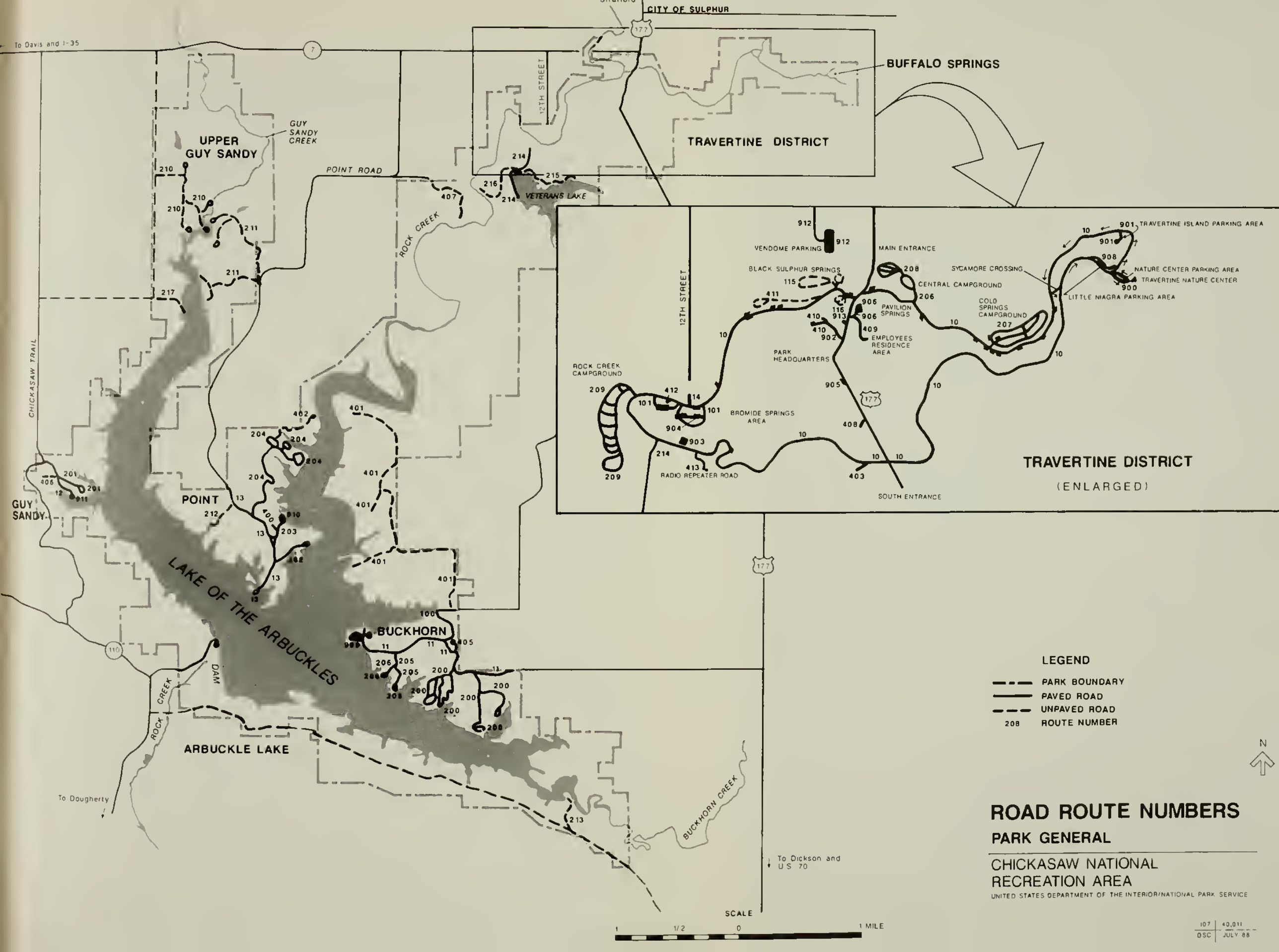


# ROAD ROUTE NUMBERS

## PARK GENERAL

CHICKASAW NATIONAL RECREATION AREA

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### Administrative Roads

The administrative road category includes all public and nonpublic roads intended principally for administrative purposes. It includes roads servicing employee residential areas, maintenance and utility areas, and other administrative developments, as well as restricted patrol roads, truck trails, and similar service roads. Administrative roads are subdivided into two classes:

> **Class V: Administrative Access Road.** All public roads intended for access to administrative developments or structures such as offices, employee quarters, or utility areas.
>
> **Class VI: Restricted Road.** All roads normally closed to the public, including patrol roads, fire roads, truck trails, and other similar roads.

Figure 1 illustrates the application of these functional classifications to a hypothetical park road system. In summary, Chickasaw's road system consists of the following:

| Functional Classification | Number of Roads | Mileage |
|---|---|---|
| Class 1 - Principal | 5 | 7.87 |
| Class II - Connector | 18 | 8.57 |
| Class III - Special Purpose | 12 | 7.62 |
| Class IV - Primitive | 0 | 0.00 |
| Class V - Administrative | 9 | 1.72 |
| Class VI - Restricted | 4 | 4.60 |
| **Totals** | **48** | **30.38** |

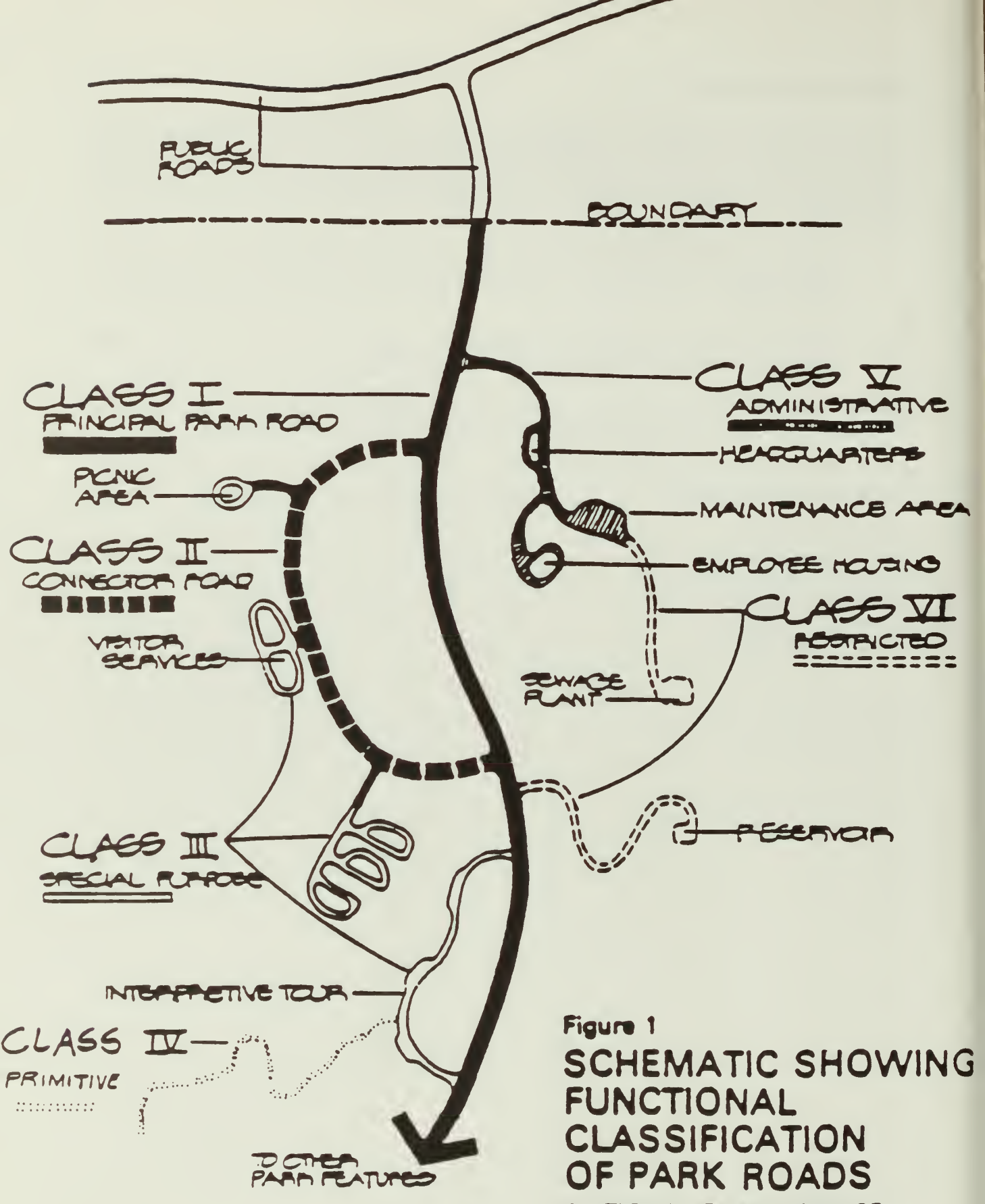


Figure 1

# SCHEMATIC SHOWING FUNCTIONAL CLASSIFICATION OF PARK ROADS

NATIONAL PARK SERVICE

## DESIGN STANDARDS

Recreation area road design is based on the need to provide consistent, leisurely, and safe visitor access to features and developments. Design also facilitates the protection/preservation and management of resources. The NPS *Park Road Standards* provide a guide for establishing a standard of design for each road based on traffic volume, design speed, and vehicle type. These standards are then balanced against visitor use/experience and resource protection/preservation objectives. Of particular significance are the minimum roadway cross-section requirements contained in that publication. The following information outlines these requirements, which were applied to the Chickasaw recommended design standards.

**Table 2: Minimum Roadway Cross-Section Requirements**

| Average Daily Traffic (ADT) | Number of Lanes | Lane Width Feet* | Shoulder Width Feet/Side | Lane Surface Type(s) |
|---|---|---|---|---|
| less than 50 | 2 | 8 | 1 | dirt/gravel/paved |
| 50- 200 | 2 | 9 | 1 | dirt/gravel/paved |
| 200- 400 | 2 | 9 | 2 | gravel/paved |
| 400-1000 | 2 | 10 | 3 | paved |
| 1000-4000 | 2 | 11 | 3 | paved |
| 4000-8000 | 2 | 11 | 4 | paved |

*Widening of traffic lanes should be provided on the inside of sharp curves. Where tour buses are allowed or the proportion of recreational vehicles exceeds 5 percent to the design volume, an additional foot of lane width should be considered, not to exceed 12 feet.

In road design, various criteria are employed to ensure that the road will safely accommodate the expected traffic requirements and to encourage consistent, uniform operation. The primary considerations in recreation area road design are the desired visitor experience, visitor safety, the types of terrain traversed, and environmental constraints. These considerations are addressed through the selection and application of appropriate design standards. The major road design criteria for recreation area roads are volume, speed, and vehicle type.

### Design Volume

The volume is the traffic load that a road must be able to accommodate at an appropriate level of service; it determines to a large degree the type of road and widths required, as well as other geometric features. A volume should be established that reflects the projected traffic use of the road during the recreation area's normal visitor season.

Traffic volume is expressed as average daily traffic (ADT), which is for the high six months of 1987. This was determined for each road by totaling the number of vehicles using it for the six largest visitation months, dividing that total by six, and then dividing that six month average total by 30 days. This included over 80 percent of the traffic in the recreation area that year.

### Design Speed

Speed is the primary criterion that correlates design standards to achieve a roadway that will safely accommodate traffic for the planned use. Speed is affected by such road features as curvature, superelevation, sight distance, and gradient. Selection of this speed is primarily influenced by the purpose of the road, desired traffic volumes, character of the terrain, and environmental considerations.

Once topographic features are assessed, an appropriate design speed is determined. Changes in terrain or environmental factors such as wildlife or vegetation may dictate a change in design speed for certain segments. Any decrease in speed should not be introduced abruptly; this decrease should be extended over a sufficient distance to allow the driver to adjust to a slower speed.

### Design Vehicle

Another major criterion in geometric design of park roads is the vehicle type. It is based on the types of vehicles that will be permitted by park management to use the facility. The physical dimensions and operating characteristics of the vehicle are used to develop sight distance, cross section, intersection design, and other geometric design criteria. Existing and anticipated types of vehicles to be using park roads must be examined to establish representative characteristics for use in the process of designing the roadway.

### Interrelationship of Design Criteria

The road design process involves identifying, on a segment-by-segment basis, the speed for a planned volume and selected vehicle type. Speed for park roads is largely determined by the character of the terrain, the resource traversed, and the planned visitor experience. In cases where these considerations control speed, the planned volume and/or vehicle type may require appropriate adjustment.

## COMPLIANCE CONSIDERATIONS

Generally, a road system evaluation study is categorically excluded from compliance with the National Environmental Protection Act under departmental regulations 516 DM 6, Appendix 7.4.A.(1). The actual rehabilitation of road segments that do not change in configuration or width is also categorically excluded under 516 DM 6, Appendix 7.4C.(7,8). This *Road System Evaluation Study* assesses the cumulative effects of recommended modifications of the road system. Additional compliance with NEPA may be required prior to the proposed action where significant modification to individual road segments is necessary. Specific section 106 compliance will be done on a project-by-project basis during the design and construction process. This document will identify what additional NEPA, section 106, and archeological compliance actions are required on each road section.

Within the recreation area, disturbances to rock walls, stone culverts, and bridges would be avoided. A study to identify and evaluate cultural resources (i.e., CCC rock work) will be conducted in the near future to determine if they are eligible for listing on the National Register of Historic Places.

If future construction activity would in some way disturb any of the above-mentioned cultural resources, formal consultation with the Oklahoma State Historic Preservation Officer would be initiated in accordance with section 106 of the National Historic Preservation Act as amended.

There may be some recreation area level cumulative effects (borrow areas, road closures, etc.) that will only be addressed at this level of planning, not in design environmental assessments. There may also be some segments and specific impacts that cannot be addressed until design. If so, this document will clearly identify what additional compliance action will be required. The study will assess critical resource areas, or at least detail places where further study is necessary.

Texas horned lizard, ornate box turtle, snapping turtle, three-toed box turtle, bull frog, leopard frog, and narrow-mouthed salamander.

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### Threatened and Endangered Species

There are no threatened or endangered plant species in the national recreation area. There is documented use of Chickasaw by two endangered avian species – the bald eagle (*Haliaeetus leucocephalus*), known as a common winter migrant, and the least tern (*Sterna antillarum*), of which there have been very few sightings. The recreation area is within the historic range of the endangered peregrine falcon (*Falco peregrinus*), but no documented sightings have occurred since 1926. It is possible the peregrine could still occur in the area at least as a migrant or transient.

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### Water Resources

Generally, water quality is good in the national recreation area. During periods of heavy rainfall, temporary siltation of waterways results from eroded soils.

Major surface water resources include the 108,000 acre-foot Arbuckle Reservoir and the 600 acre-foot Veterans Lake. Arbuckle Reservoir is fed by Rock Creek and its tributaries, Guy Sandy Creek, Buckhorn Creek, and the lesser tributary Travertine Creek. Veterans Lake is fed by Wilson Creek. Rock Creek and all of its tributaries except Travertine Creek originate outside the boundaries of the recreation area. Rock Creek is a tributary of the Washita River found several miles southwest of Chickasaw.

Primary groundwater resources include a number of cold water springs in the Travertine District. Most of the springs are sulphur, but two are bromide. Two of the biggest and best known of these cold water springs are Antelope and Buffalo, major suppliers of water to Travertine Creek. The springs derive their flow from the Arbuckle formation (freshwater) and the Simpson formation (mineralized) outside the recreation area. The mineral water in the springs was the primary reason Platt National Park was established in 1902. It was said to greatly improve health and prevent discomforts. Palmer H. Boeger in his excellent book about this area's history, entitled *Oklahoma Oasis* and published in 1987, had this to say: "In 1922 a man who lived around the springs and drank freely of the health-giving waters passed away at a ripe old age. His liver was so lively that it stopped the funeral. Because the liver simply refused to die, the mourners had to take it out and kill it with a club before the funeral could proceed." Boeger also wrote: "Farmers knew that cattle which drink sulphur water had fewer ticks. Early ranchers deliberately hauled water for their livestock from sulphur wells in town. After a few snorts, thirsty cows ignored the odors and strange taste. City residents who sprinkled sulphur water on their lawns had fewer chiggers."

### Floodplains and Wetlands

Based on Bureau of Reclamation authority to direct flood control discharge, there is the possibility of a 13.3-foot rise in the water level of Arbuckle Reservoir. The National Park Service has no influence over this flood control authority. Many of the national recreation area roads and parking areas are within this flood zone. Other potential flood areas include the lower crossings over creeks. Park roads and small parking areas are exempt from compliance with E.O. 11988 "Floodplain Management" under NPS procedures for implementation.

An inventory of wetlands in the recreation area has not been done. Wetlands predominantly occur along creeks and lakeshores. Upland soils are generally well-draining and do not allow the formation of wetland environments.

### Visual Quality

The roadways of Chickasaw National Recreation Area offer a variety of scenic views ranging from open lakeshores, farm fields, and prairies to dense forest. The roadways generally follow rolling terrain. There are several informal unpaved pullouts along some sections of the roadways particularly near heavily used and often crowded parking areas.

### Air Quality

The national recreation area is designated a class II area under the Clean Air Act. Air monitoring studies have not been conducted, but because of the rural character of the surrounding area, air quality is considered good. Automobile emissions undoubtedly concentrate along the more heavily traveled roads, particularly U.S. Highway 177 through Travertine District, but this has not been documented.

## CULTURAL RESOURCES

### Archeology

The area in and around Chickasaw is known to have been inhabited by humans for the past 7,000 years. The recreation area is part of the general prehistoric cultural province of the Caddoan-speaking tribes of the Central and Southern plains. It is internally marginal to the localities of two moderately well-defined cultural entities – the Henrietta Focus and the Washita River Focus, both early village agriculturist. Sites representative of the Spiro Focus and the Fulton Aspect could also exist in the area. Any archaic sites that might be present would be expected to have Fourche Maline or Grove Focus affinities or perhaps the Edwards Plateau material of north-central Texas. There are no known paleo-Indian sites in the area.

Past archeological surveys at the Lake District have identified 53 sites, many of which were inundated by water when the Arbuckle Reservoir was filled. Surface collections made during both surveys suggest that the region has been occupied over a considerable span of time, extending from archaic into historic. Test excavations made in 1968 at Antelope Springs in Travertine District failed to reveal any archeological features, even though a number of artifacts had been collected from that area earlier.

### Veterans Lake

Two intersections in this area are of concern from a safety viewpoint. The most serious concern is where North Shore Road (route 215) intersects with Veterans Lake Road (route 214). A downgrade from route 214 to route 215 results in poor sight distance for drivers approaching this intersection from the north or northeast. Visibility from the south is obstructed by a small hill near the dam. The other concern is where Rock Creek Road (route 216) intersects with Veterans Lake Road (route 214). Route 216 drops off steeply from route 214 and at a sharp angle. Visibility from one road to the other road does not exist until a vehicle enters this intersection.

**Preferred Alternative**. This alternative would improve existing conditions by making the elevation here the same as along route 214 by removing the small hill, filling in a small area in Veterans Lake and the rest of the approach on route 215 and, relocating the intersection about 40 feet to the west. This would involve 0.06 mile of new alignment and 0.05 mile of existing road to be obliterated. The intersection of route 216 would be moved 170 feet to the northeast and the approach relocated to form a T intersection at the same elevation as route 214. This would require of 0.08 mile of new alignment and 0.04 mile of existing road to be obliterated.

In addition, as called for in the *Development Concept Plan* (DCP) for Veterans Lake approved in April 1985, the following developments would be included: Route 214 would be extended 0.39 mile to the southeast from its present terminus at the dam spillway to a proposed pavilion/picnic area and small parking area. A new route would be extended east from route 214 to a proposed parking overlook. A proposed paved hike/bike trail would be constructed. A 10-car parking area/trailhead would be added at the end of route 215.

The low water bridge at Sycamore Crossing (on route 10) needs to be rehabilitated to allow control of water flow over and/or under the structure and to provide pedestrian/bicycle crossing.

**Alternative** 1. Under this alternative, the elevation would be made the same along route 214 by removing the small hill, filling in a small area in Veterans Lake on route 215, and eliminating the dangerous intersection of route 215 and route 214. This would involve 0.06 mile of new alignment and 0.05 mile of existing road to be obliterated. As in the preferred alternative, the intersection of route 216 would be improved by moving it 170 feet to the northeast and relocating the approach to form a T intersection at the same elevation as route 214. This would require 0.08 mile of new alignment and 0.04 mile of existing road to be obliterated.

In addition, as called for in the Veterans Lake DCP, the following developments would be included: Route 214 would be extended 0.39 mile to the southeast from its present terminus at the dam spillway to a proposed pavilion/picnic area and small parking area. A new route would be extended east from route 214 to a proposed parking overlook. A proposed paved hike/bike trail would be constructed. A 10-car parking area/trailhead would be added at the end of route 215.

### Buckhorn

The boat launch ramp and large parking area at the Buckhorn marina is the primary objective of the majority of visitors to this very heavily used recreation area marina. Its entrance road, route 11, which had an ADT of 245 in 1987, is reached from U.S. 177 and either of two county roads that end at the recreation area boundary. The smooth flow of

traffic is disrupted by a 0.27-mile portion of road with several curves that are dangerous to drive at the posted 35 mph speed limit. On both ends of this portion, the road is at a higher, safer standard. In addition, the traffic to and from the marina and U.S. 177 from the southern county road should have the right-of-way. The intersection of route 11 with the Buckhorn campground access, route 200, is so confusing because of its Y shape that newcomers do not know who has the right-of-way. This is particularly dangerous because of the high volume of oversized vehicles pulling boat trailers. Another problem area exists at the other end of the curvy section where the southern part of route 11 meets the northern part at a T intersection. Here the right-of-way is wrong with emphasis given to the smaller volume of traffic on that part of route 11 called the Gilsonite Road.

**Preferred Alternative.** This alternative would improve the flow of traffic and provide a safer intersection. The right-of-way would be on a well-designed road, route 11, all the way from U.S. 177 to the marina boat launch ramp. The campground and Gilsonite Road (also route 11) traffic would be required to stop at T intersections before entering the main portion of route 11. New road alignment would be 0.58 mile for route 11, 0.05 mile for route 200 and 0.10 for route 405. Old road alignment to be obliterated and the site restored to a natural appearance would be 0.34 mile for route 11, 0.03 mile for route 200, and 0.10 mile for route 405. Access to the employee residential/maintenance area would be by way of the relocated route 11 rather than the Gilsonite portion of route 11.

**Alternative 1.** This alternative would achieve the same results as the preferred alternative but with somewhat more new road alignment and environmental disturbance. New road alignment would be 0.77 mile for route 11, 0.02 mile for route 200, and 0.08 mile for route 405 (Buckhorn employees residential road). Old road alignment to be obliterated/restored would be 0.74 mile for route 11, 0.06 mile for route 200, and 0.17 mile for route 405.

**Alternative 2.** This alternative would achieve the same results as the preferred alternative but with slightly more new road alignment and environmental disturbance. New road alignment would be 0.62 mile for route 11, 0.01 mile for route 200, and 0.10 mile for route 405. Old road alignment to be obliterated/restored would be 0.40 mile for route 11 and 0.17 mile for route 405.

**Alternative 3.** This alternative also would achieve somewhat the same results as the other alternatives with a minimum amount of new road alignment and environmental disturbance. However, its alignment would be the most curvy, which would not be in balance with the better-designed segments on each end. The sharper curves could be difficult to drive safely through. New road alignment would be 0.22 mile for route 11, 0.06 mile for route 200, and 0.09 mile for route 405. Old road alignment to be obliterated/restored would be 0.15 mile for route 11, 0.03 mile for route 200, and 0.10 mile for route 405.

### Buffalo Springs

Prior to 1968 a paved, two-way loop road provided access and parking for visitors to Buffalo and Antelope Springs, two of the most popular resources. The Buffalo Springs CCC Development – 1940 map shows the conditions that existed that year, which also were about the same in 1968. At that time the area was named Platt National Park. The road shown on this map was closed in 1968, and most evidence of it has been obliterated except for CCC stone structures, which include a bridge, a comfort station, 5 culverts, and a formal terrace around Buffalo Springs.

In 1969 the Travertine Nature Center was constructed, and access to Buffalo and Antelope Springs was by trail only. This either denied access by the handicapped and elderly or

made it extremely difficult. Requests to improve access to the springs were made as soon as the road was closed, and have increased through the years as these groups have grown in number. To address this concern three alternatives have been formulated with new road construction identified as route 10A. Under all alternatives, the CCC structures would not and must not be damaged.

**No Action Alternative (Preferred).** Because of strong feelings generated by the prospect of reintroducing the automobile to a scene of tranquility and peaceful contemplation, the preferred alternative is one of no action. Nonetheless, if future pressures required reopening this area so that more people could readily get to the resources that were responsible for setting the park aside, alternative 2 would be the backup proposal. Should adoption of alternative 2 prove necessary at some future date, a development concept plan amendment and environmental assessment would need to be prepared.

**Alternative 1.** This alternative would provide vehicle access close to the springs by the construction of a one-way loop road that would be within the trace of most of the CCC road obliterated in 1968. The one-way loop road would have a 12-foot-wide pavement with 1-foot shoulders as compared to the CCC road, which was two-way with 18-foot-wide pavement with 3-foot shoulders. Under this alternative, the road would go over the CCC bridge and four of the five culverts and would use most of the space in the seven parking areas. The parking closest to the nature center seems to have lost some of its area to erosion by Travertine Creek. New road construction would be 1.60 miles and the seven parking areas would total 3,510 square yards.

**Alternative 2.** This alternative would provide vehicle access close to the springs by the construction of a two-way road with a one-way loop at its end which would be within the trace of 60 percent of the CCC road. The two-way portion would have a pavement width of 18 feet with 2-foot shoulders, and the one-way portion would be 12 feet wide with 1-foot shoulders as compared to the CCC road, which had an 18-foot-wide pavement with 3-foot shoulders. The road would go over the CCC bridge and two of the five culverts, and would use space in six of the seven parking areas. New road construction would total 1.1 miles, and the six parking areas would total 1,910 square yards.

**Alternative 3.** This alternative would provide vehicle access close to the springs by the construction of a two-way road with a one-way loop at its end, which would be within the trace of 27 percent of the CCC road. The two-way portion would have a pavement width of 18 feet with 2-foot shoulders, and the one-way portion would be 12 feet wide with 1-foot shoulders as compared to the CCC road, which had an 18-foot wide pavement with 3-foot shoulders. The road would go over the CCC bridge and one of the five culverts and would use space in five of the seven parking areas. New road construction would total 1.1 miles, and the five parking areas would total 1,600 square yards. This alternative would require a new entrance from State Highway 7 to the north, which would require 0.60 mile of road outside the recreation area and acquisition of a suitable right-of-way.

### Central/Cold Springs Campground

**Preferred Alternative.** Routes 10 and 208 intersect at an acute angle rather than at a 90-degree angle, and there is a fairly sharp curve on Route 208 just prior to the intersection. Route 208 would be relocated to alleviate this problem. In addition, the sharp curve just south of the intersection of Routes 10 and 208 would be straightened to prevent accidents like the ones that have occurred in the past.

GUY SANDY

# PREFFERED ALTERNATIVE

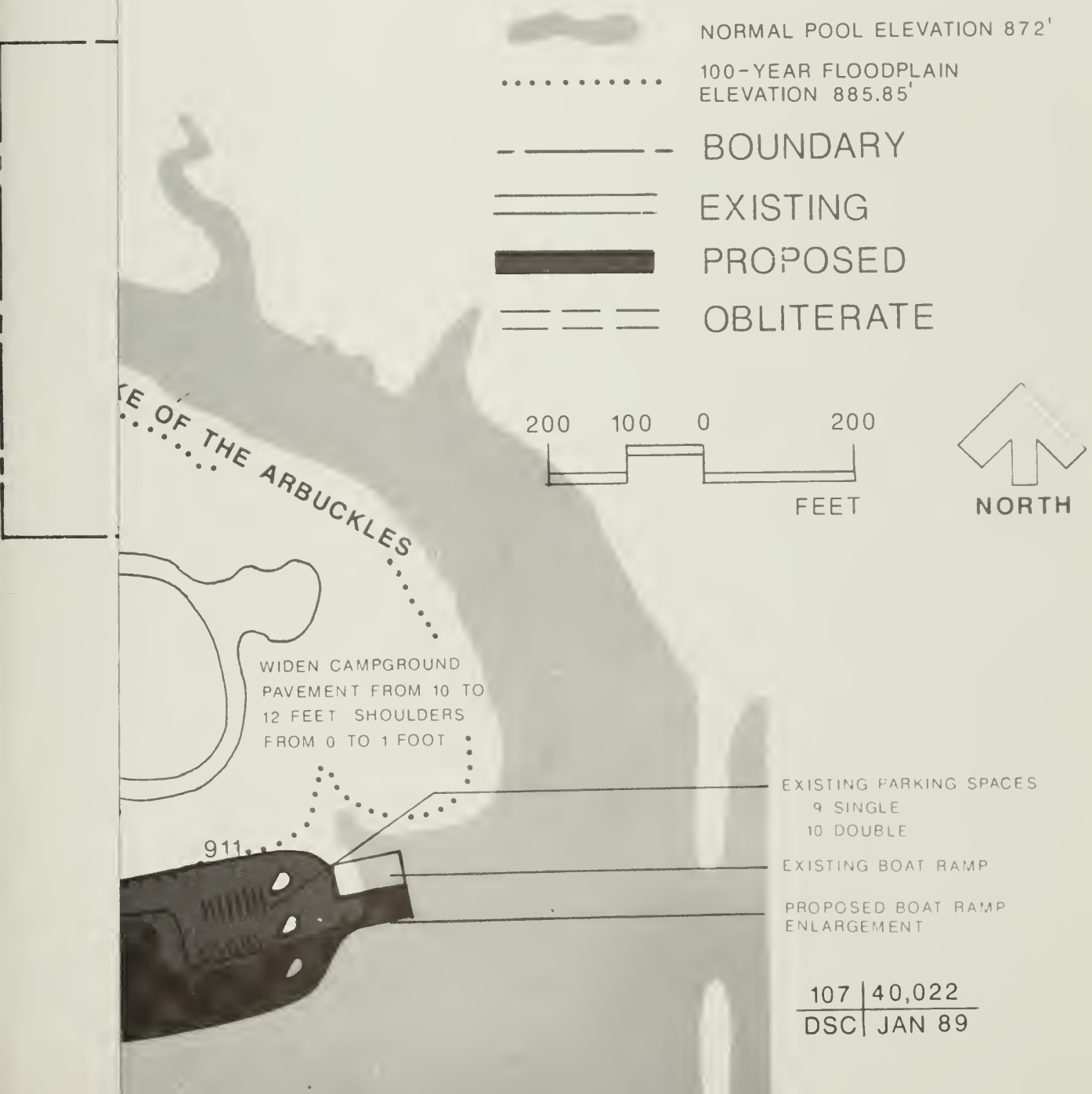
## ROAD SYSTEM EVALUATION STUDY

### CHICKASAW NATIONAL RECREATION AREA

### OKLAHOMA

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE




| 107 | 40,022 |
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| DSC | JAN 89 |


GUY SANDY
PREFFERED ALTERNATIVE
ROAD SYSTEM EVALUATION STUDY
CHICKASAW NATIONAL RECREATION AREA
OKLAHOMA
UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
NEW/CONSTRUCTION/RECONSTRUCTION - 3.129 ACRES
OBLITERATE/RESTORE - 0.462 ACRES
FILL INTO LAKE OF ARBUCKLES - 2.422 ACRES
NORMAL POOL ELEVATION 872'
100-YEAR FLOODPLAIN ELEVATION 885.85'
BOUNDARY
EXISTING
PROPOSED
OBLITERATE
200 100 0 200
FEET
NORTH
TO SULPHUR
12
12
12
WIDEN PAVEMENT FROM 20 TO 24 FEET, SHOULDERS FROM 3 TO 4 FEET
WATER TREATMENT BUILDING
406
201
WIDEN PAVEMENT FROM 12 TO 18 FEET SHOULDERS FROM 0 TO 1 FOOT
WIDEN PAVEMENT FROM 15 TO 22 FEET SHOULDERS FROM 0 TO 3 FOOT
LAKE OF THE ARBUCKLES
201
201
12
WIDEN CAMPGROUND PAVEMENT FROM 10 TO 12 FEET, SHOULDERS FROM 0 TO 1 FOOT
201
100 DOUBLE PARKING SPACES
C 5
911
EXISTING PARKING SPACES
9 SINGLE
10 DOUBLE
EXISTING BOAT RAMP
PROPOSED BOAT RAMP ENLARGEMENT
300 FEET OF WATER FROM EXISTING MARINA PARKING TO SOUTH SHORE
150 FEET OF WATER FROM PROPOSED MARINA PARKING TO SOUTH SHORE
107 | 40,022
DSC | JAN 89

GUY SANDY

# ALTERNATIVE 1

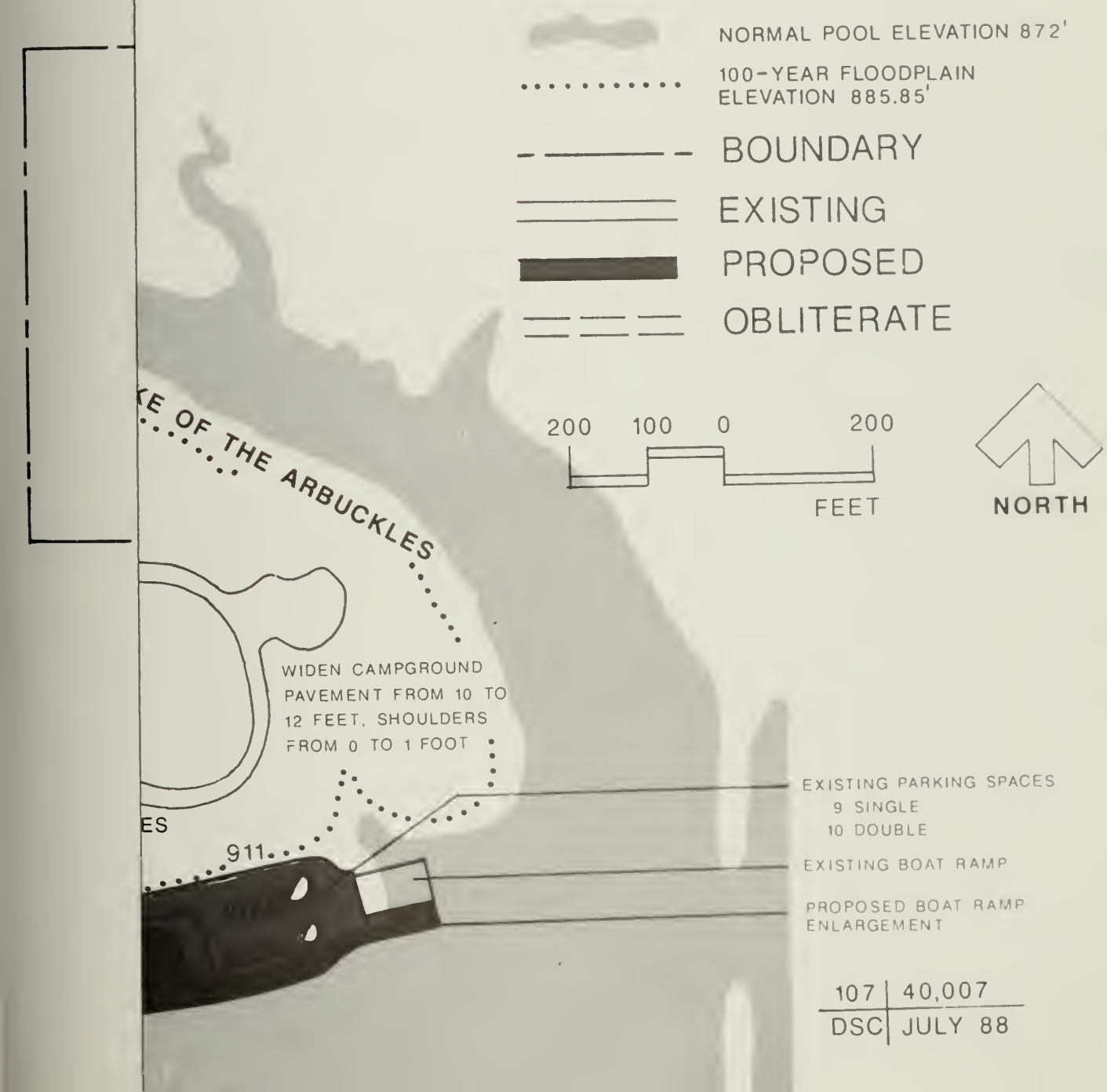
## ROAD SYSTEM EVALUATION STUDY

### CHICKASAW NATIONAL RECREATION AREA

### OKLAHOMA

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE




| 107 | 40,007 |
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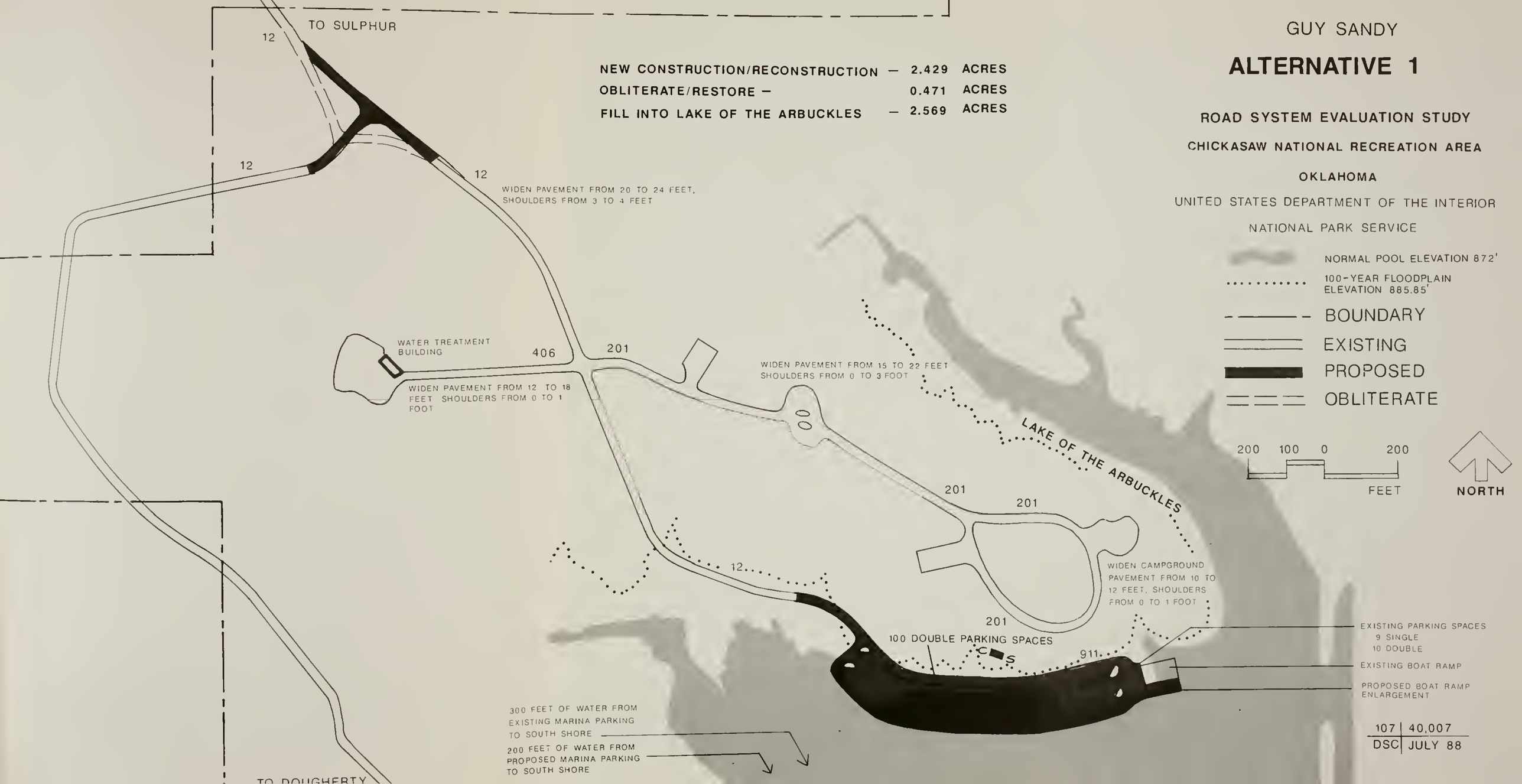
| DSC | JULY 88 |


GUY SANDY
ALTERNATIVE 1
ROAD SYSTEM EVALUATION STUDY
CHICKASAW NATIONAL RECREATION AREA
OKLAHOMA
UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
NEW CONSTRUCTION/RECONSTRUCTION — 2.429 ACRES
OBLITERATE/RESTORE — 0.471 ACRES
FILL INTO LAKE OF THE ARBUCKLES — 2.569 ACRES
NORMAL POOL ELEVATION 872'
100-YEAR FLOODPLAIN ELEVATION 885.85'
BOUNDARY
EXISTING
PROPOSED
OBLITERATE
200 100 0 200
FEET
NORTH
TO SULPHUR
TO DOUGHERTY
12
WIDEN PAVEMENT FROM 20 TO 24 FEET, SHOULDERS FROM 3 TO 4 FEET
WATER TREATMENT BUILDING
406
201
WIDEN PAVEMENT FROM 12 TO 18 FEET SHOULDERS FROM 0 TO 1 FOOT
WIDEN PAVEMENT FROM 15 TO 22 FEET SHOULDERS FROM 0 TO 3 FOOT
LAKE OF THE ARBUCKLES
WIDEN CAMPGROUND PAVEMENT FROM 10 TO 12 FEET, SHOULDERS FROM 0 TO 1 FOOT
100 DOUBLE PARKING SPACES
911
EXISTING PARKING SPACES
9 SINGLE
10 DOUBLE
EXISTING BOAT RAMP
PROPOSED BOAT RAMP ENLARGEMENT
300 FEET OF WATER FROM EXISTING MARINA PARKING TO SOUTH SHORE
200 FEET OF WATER FROM PROPOSED MARINA PARKING TO SOUTH SHORE
107 | 40,007
DSC | JULY 88

# GUY SANDY

# ALTERNATIVE 2

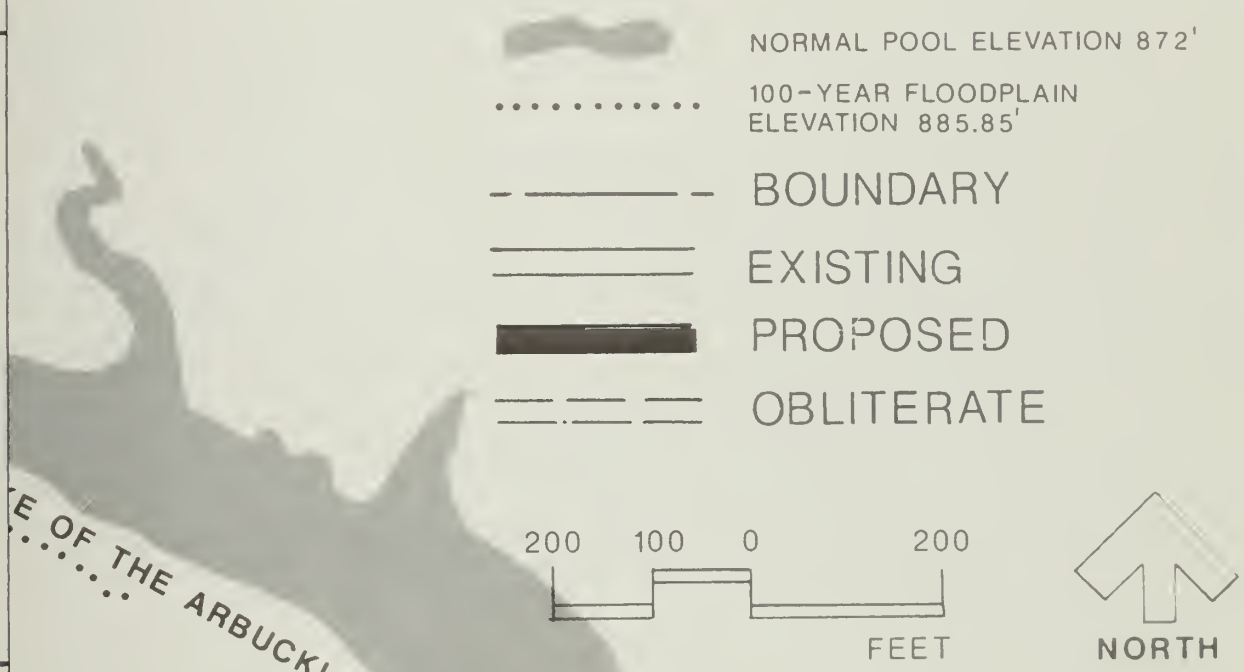
## ROAD SYSTEM EVALUATION STUDY

### CHICKASAW NATIONAL RECREATION AREA

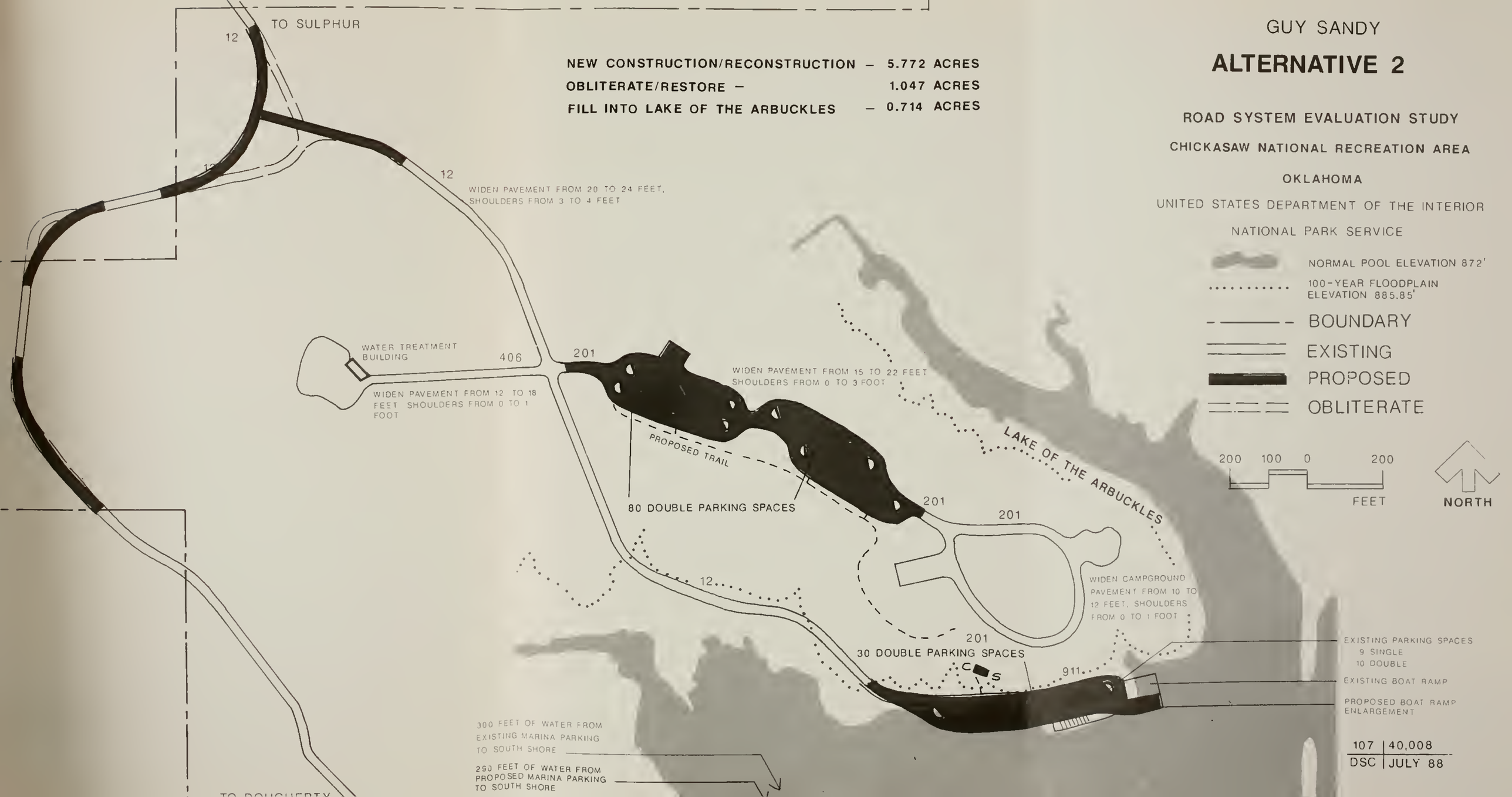
### OKLAHOMA

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE




| 107 | 40,008 |
|---|---|
| DSC | JULY 88 |


TO SULPHUR
12
12
12
WIDEN PAVEMENT FROM 20 TO 24 FEET, SHOULDERS FROM 3 TO 4 FEET
WATER TREATMENT BUILDING
406
201
WIDEN PAVEMENT FROM 12 TO 18 FEET SHOULDERS FROM 0 TO 1 FOOT
WIDEN PAVEMENT FROM 15 TO 22 FEET SHOULDERS FROM 0 TO 3 FOOT
PROPOSED TRAIL
80 DOUBLE PARKING SPACES
LAKE OF THE ARBUCKLES
201
201
12
WIDEN CAMPGROUND PAVEMENT FROM 10 TO 12 FEET, SHOULDERS FROM 0 TO 1 FOOT
201
30 DOUBLE PARKING SPACES
C
S
911
EXISTING PARKING SPACES
9 SINGLE
10 DOUBLE
EXISTING BOAT RAMP
PROPOSED BOAT RAMP ENLARGEMENT
300 FEET OF WATER FROM EXISTING MARINA PARKING TO SOUTH SHORE
250 FEET OF WATER FROM PROPOSED MARINA PARKING TO SOUTH SHORE
TO DOUGHERTY
NEW CONSTRUCTION/RECONSTRUCTION – 5.772 ACRES
OBLITERATE/RESTORE – 1.047 ACRES
FILL INTO LAKE OF THE ARBUCKLES – 0.714 ACRES
GUY SANDY
ALTERNATIVE 2
ROAD SYSTEM EVALUATION STUDY
CHICKASAW NATIONAL RECREATION AREA
OKLAHOMA
UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
NORMAL POOL ELEVATION 872'
100-YEAR FLOODPLAIN ELEVATION 885.85'
BOUNDARY
EXISTING
PROPOSED
OBLITERATE
200 100 0 200
FEET
NORTH
107 | 40,008
DSC | JULY 88

# GUY SANDY

# ALTERNATIVE 3

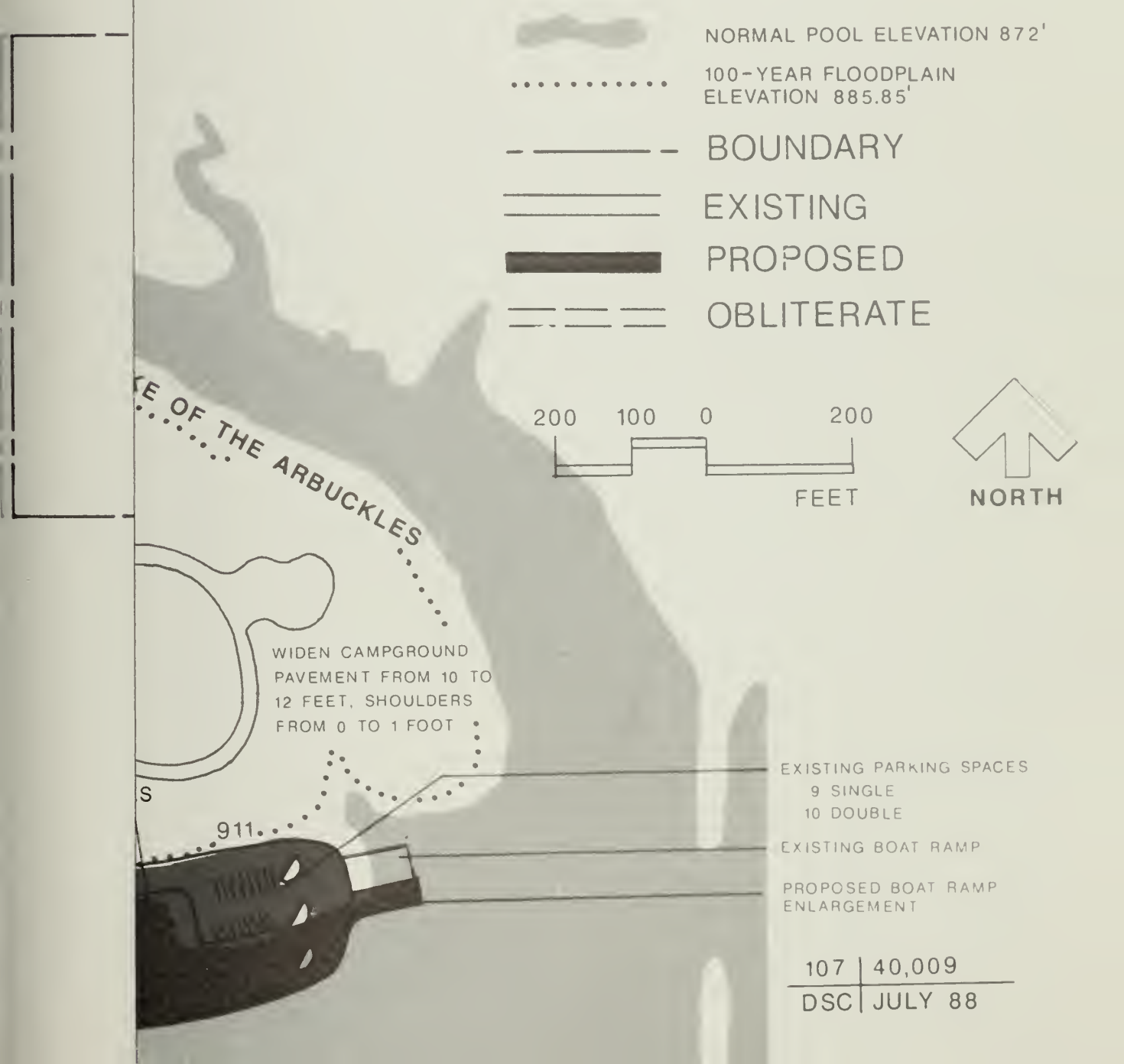
## ROAD SYSTEM EVALUATION STUDY

## CHICKASAW NATIONAL RECREATION AREA

## OKLAHOMA

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE




| 107 | 40,009 |
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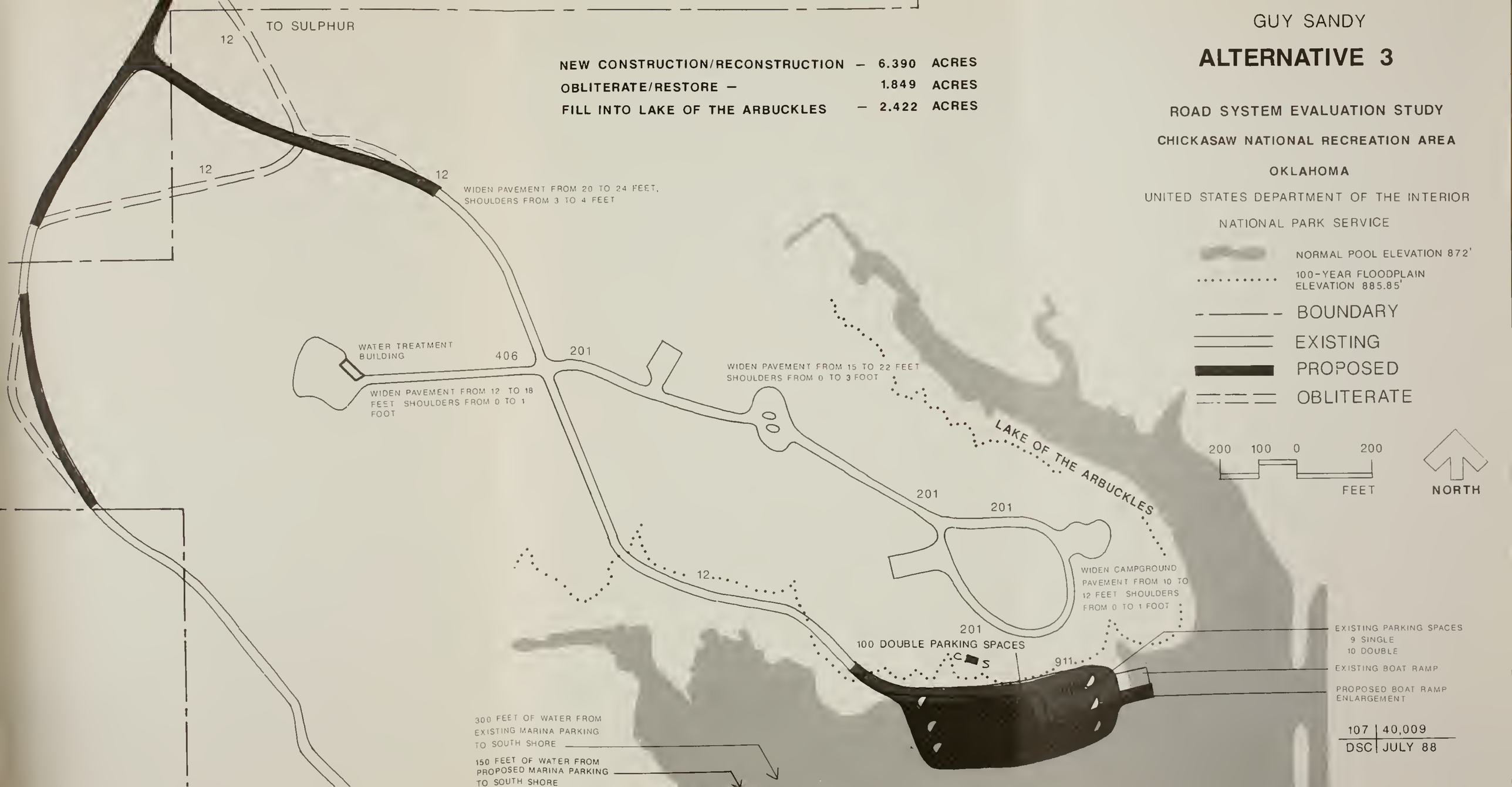
| DSC | JULY 88 |




NEW CONSTRUCTION/RECONSTRUCTION – 6.390 ACRES
OBLITERATE/RESTORE – 1.849 ACRES
FILL INTO LAKE OF THE ARBUCKLES – 2.422 ACRES

GUY SANDY

# ALTERNATIVE 3

ROAD SYSTEM EVALUATION STUDY

CHICKASAW NATIONAL RECREATION AREA

OKLAHOMA

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

NORMAL POOL ELEVATION 872'

100-YEAR FLOODPLAIN ELEVATION 885.85'

BOUNDARY

EXISTING

PROPOSED

OBLITERATE

200 100 0 200

FEET

NORTH

107 | 40,009

DSC | JULY 88

GUY SANDY

# ALTERNATIVE 4

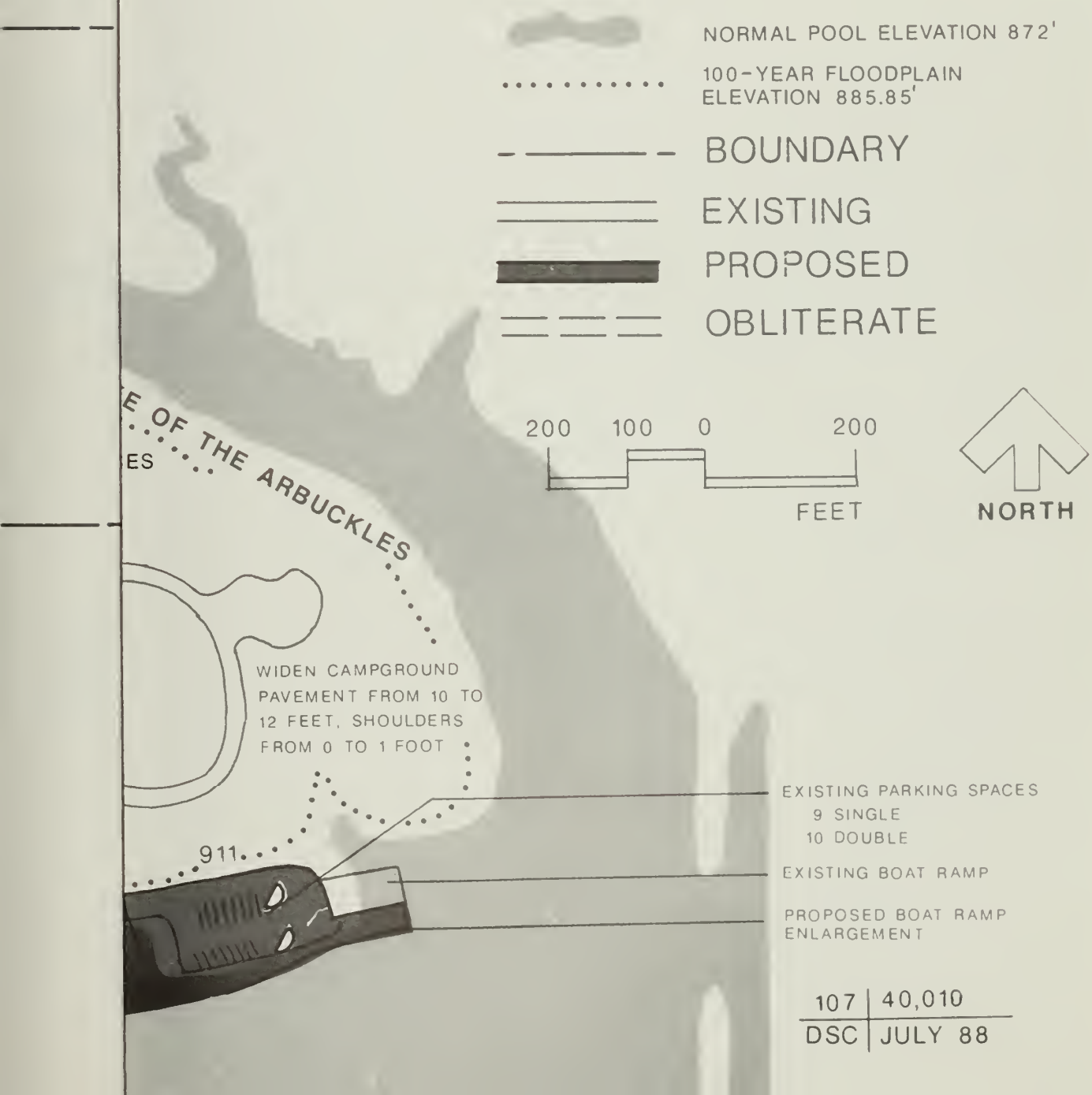
## ROAD SYSTEM EVALUATION STUDY

### CHICKASAW NATIONAL RECREATION AREA

### OKLAHOMA

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

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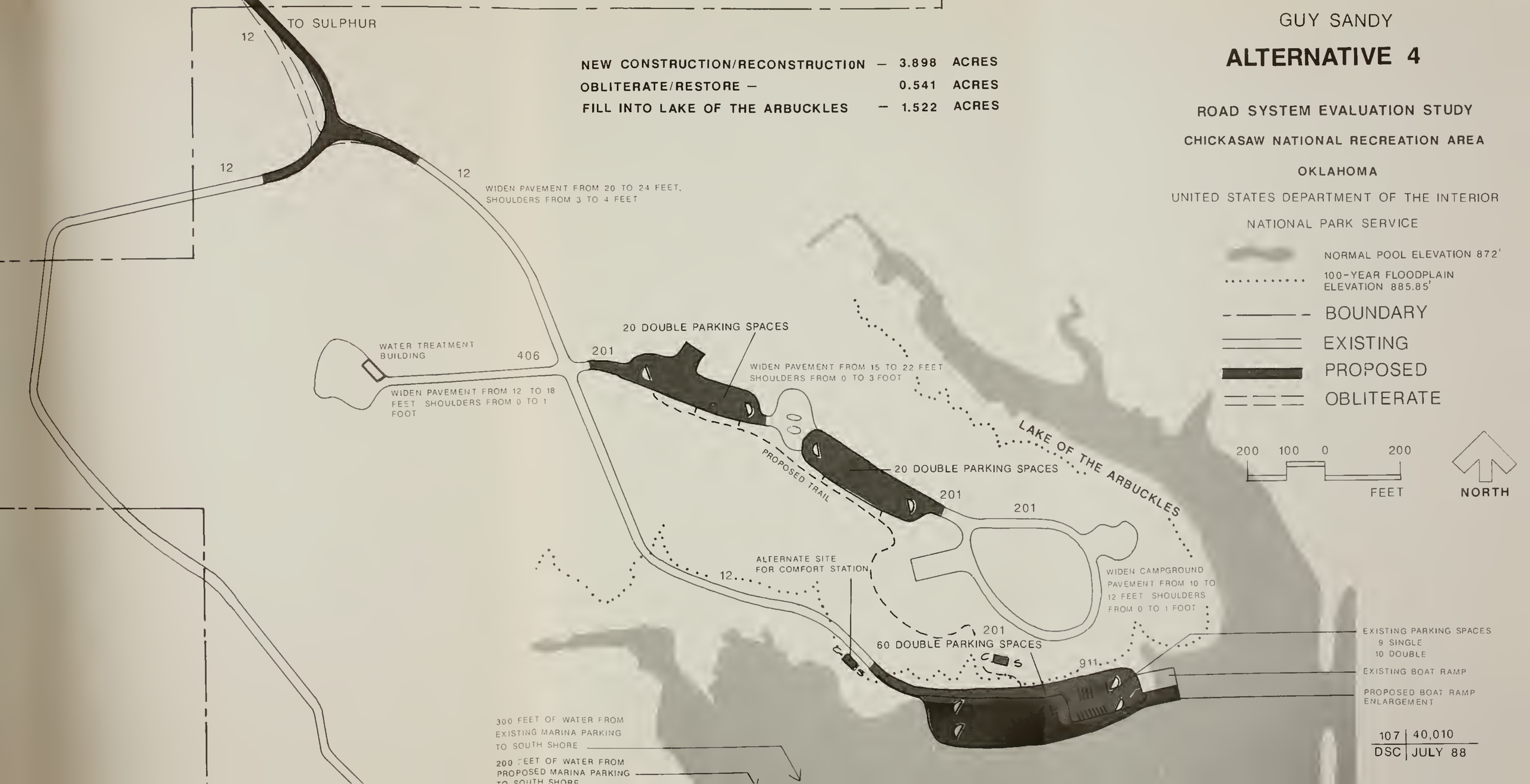
| 107 | 40,010 |
| DSC | JULY 88 |




NEW CONSTRUCTION/RECONSTRUCTION — 3.898 ACRES
OBLITERATE/RESTORE — 0.541 ACRES
FILL INTO LAKE OF THE ARBUCKLES — 1.522 ACRES

GUY SANDY

# ALTERNATIVE 4

ROAD SYSTEM EVALUATION STUDY

CHICKASAW NATIONAL RECREATION AREA

OKLAHOMA

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

NORMAL POOL ELEVATION 872'

100-YEAR FLOODPLAIN ELEVATION 885.85'

BOUNDARY

EXISTING

PROPOSED

OBLITERATE

200 100 0 200

FEET

NORTH

107 | 40,010

DSC | JULY 88

VETERANS LAKE

# PREFERRED ALTERNATIVE

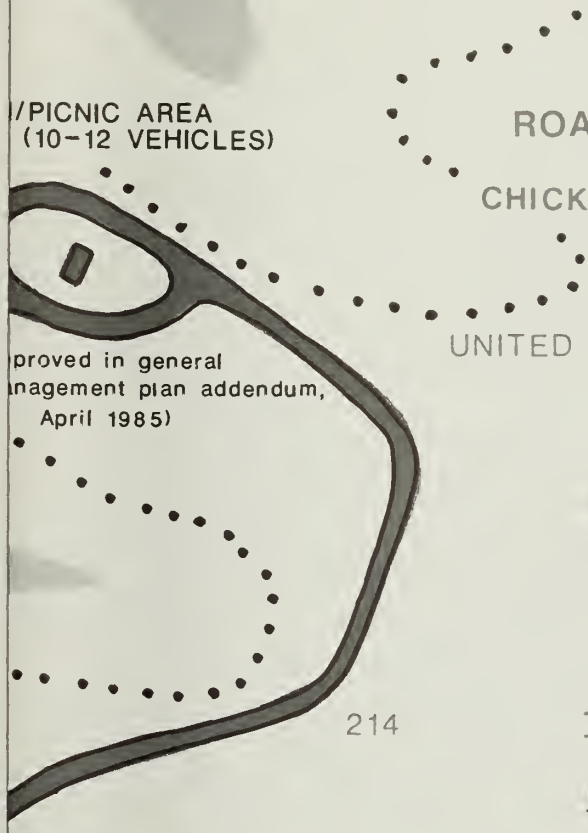
ROAD SYSTEM EVALUATION STUDY

CHICKASAW NATIONAL RECREATION AREA

OKLAHOMA

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE




VETERANS LAKE ELEVATION
964.8'

EXISTING

PROPOSED

OBLITERATE

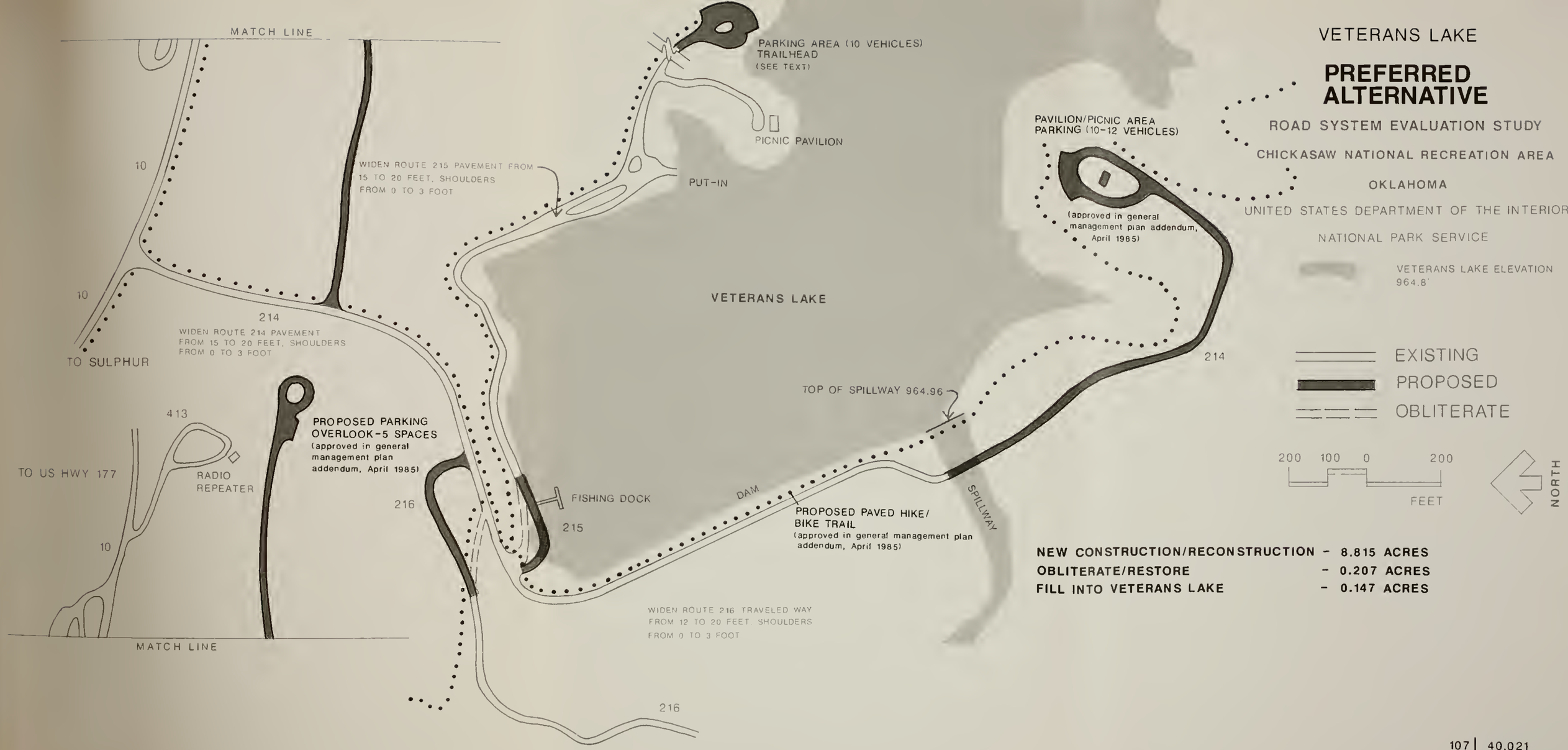
200 100 0 200

FEET

NORTH

**CONSTRUCTION/RECONSTRUCTION - 8.815 ACRES**
**ERATE/RESTORE - 0.207 ACRES**
**NTO VETERANS LAKE - 0.147 ACRES**

| 107 | 40,021 |
|---|---|
| DSC | DEC. 88 |




| 107 | 40,021 |
|---|---|
| DSC | DEC. 88 |

VETERANS LAKE

# ALTERNATIVE 1

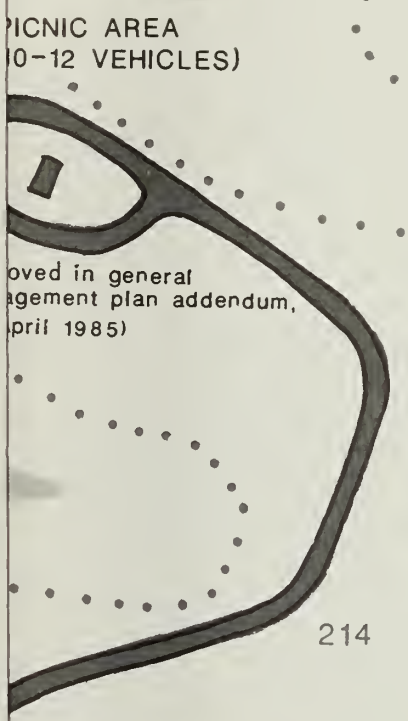
ROAD SYSTEM EVALUATION STUDY

CHICKASAW NATIONAL RECREATION AREA

OKLAHOMA

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE




VETERANS LAKE ELEVATION
964.8'

EXISTING

PROPOSED

OBLITERATE

200 100 0 200

FEET

NORTH

**ONSTRUCTION/RECONSTRUCTION - 5.656 ACRES**
**RATE/RESTORE - 0.207 ACRES**

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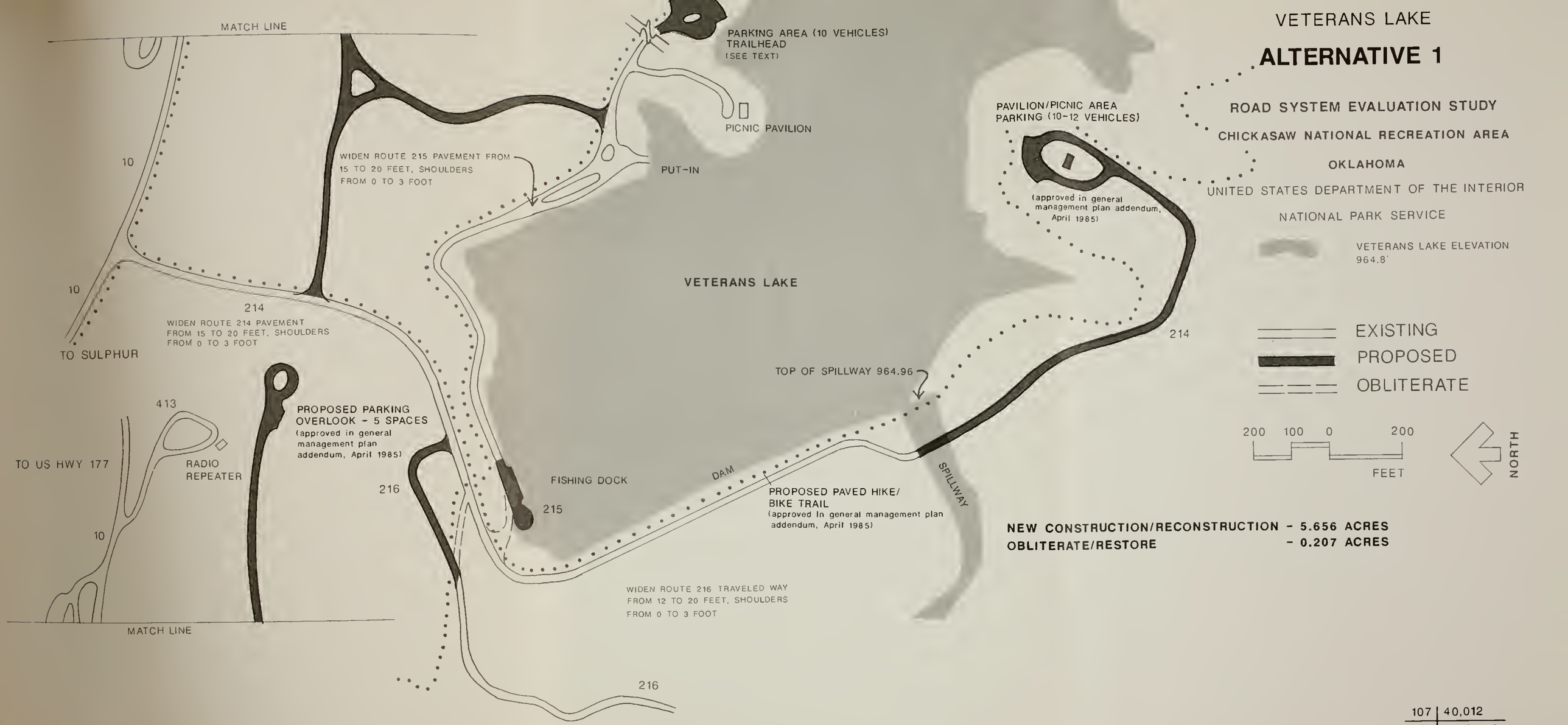
| DSC | AUG. 88 |


MATCH LINE
PARKING AREA (10 VEHICLES)
TRAILHEAD
(SEE TEXT)
PICNIC PAVILION
PUT-IN
WIDEN ROUTE 215 PAVEMENT FROM
15 TO 20 FEET, SHOULDERS
FROM 0 TO 3 FOOT
10
10
214
WIDEN ROUTE 214 PAVEMENT
FROM 15 TO 20 FEET, SHOULDERS
FROM 0 TO 3 FOOT
TO SULPHUR
VETERANS LAKE
PAVILION/PICNIC AREA
PARKING (10-12 VEHICLES)
(approved in general
management plan addendum,
April 1985)
214
TOP OF SPILLWAY 964.96
413
PROPOSED PARKING
OVERLOOK - 5 SPACES
(approved in general
management plan
addendum, April 1985)
TO US HWY 177
RADIO
REPEATER
10
216
FISHING DOCK
215
DAM
SPILLWAY
PROPOSED PAVED HIKE/
BIKE TRAIL
(approved in general management plan
addendum, April 1985)
WIDEN ROUTE 216 TRAVELED WAY
FROM 12 TO 20 FEET, SHOULDERS
FROM 0 TO 3 FOOT
MATCH LINE
216
VETERANS LAKE
ALTERNATIVE 1
ROAD SYSTEM EVALUATION STUDY
CHICKASAW NATIONAL RECREATION AREA
OKLAHOMA
UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
VETERANS LAKE ELEVATION
964.8'
EXISTING
PROPOSED
OBLITERATE
200 100 0 200
FEET
NORTH
NEW CONSTRUCTION/RECONSTRUCTION - 5.656 ACRES
OBLITERATE/RESTORE - 0.207 ACRES
107 | 40,012
DSC | AUG. 88

BUCKHORN

# PREFERRED ALTERNATIVE

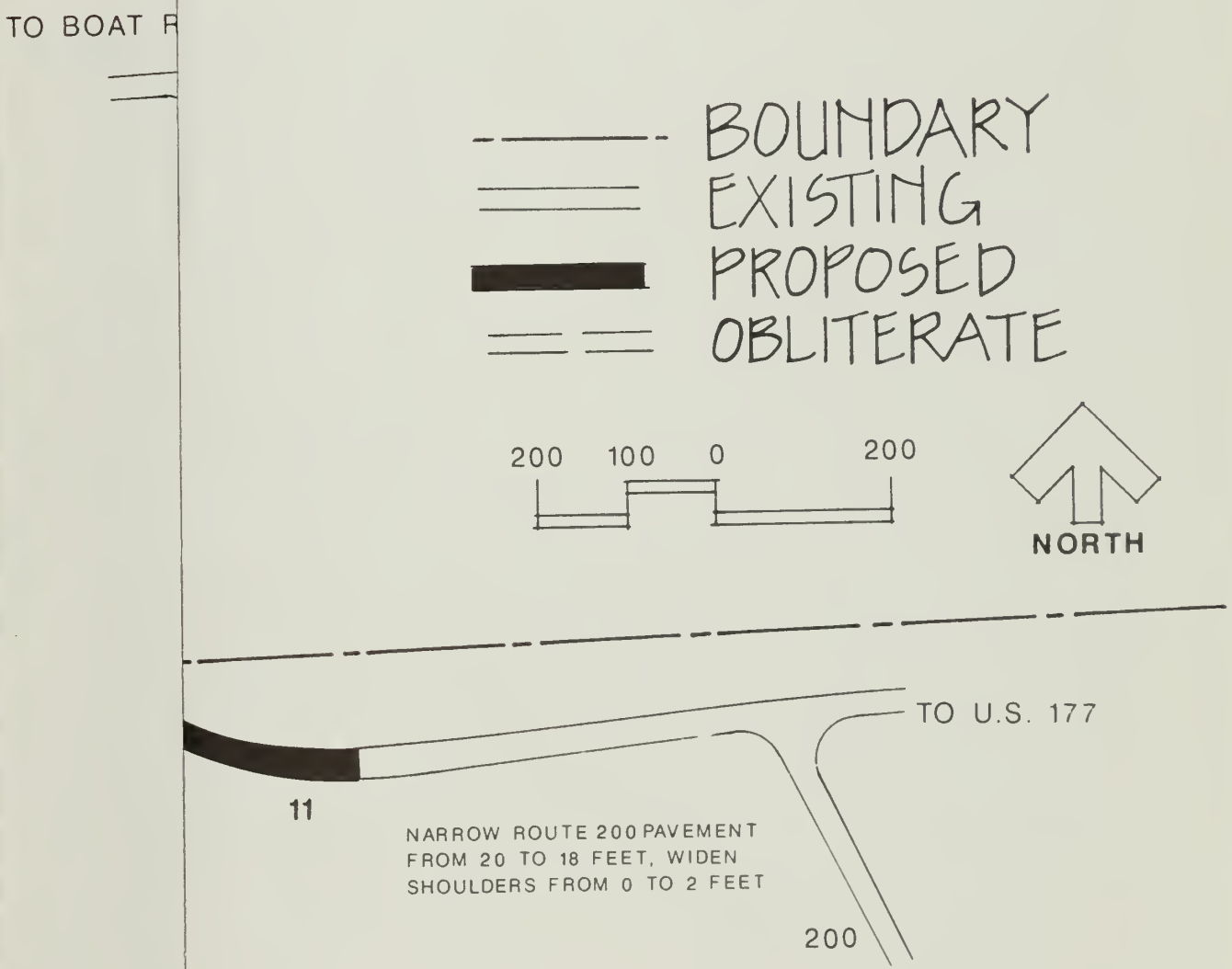
## ROAD SYSTEM EVALUATION STUDY

### CHICKASAW NATIONAL RECREATION AREA

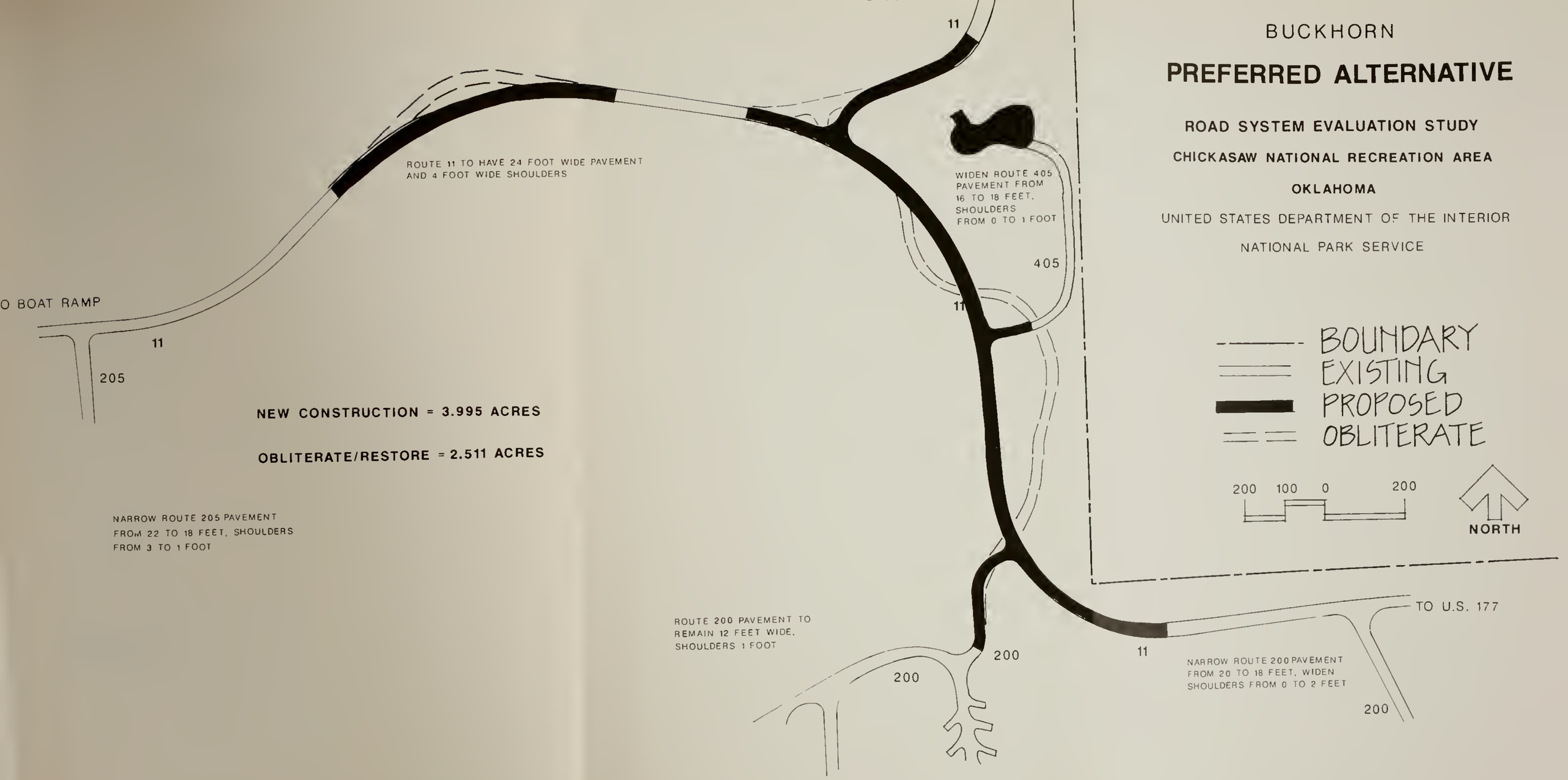
### OKLAHOMA

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE




| 107 | 40,016 |
|---|---|
| DSC | JAN 89 |




BUCKHORN

# PREFERRED ALTERNATIVE

**ROAD SYSTEM EVALUATION STUDY**

**CHICKASAW NATIONAL RECREATION AREA**

**OKLAHOMA**

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

| 107 | 40,016 |
|---|---|
| DSC | JAN 89 |

BUCKHORN

# ALTERNATIVE 1

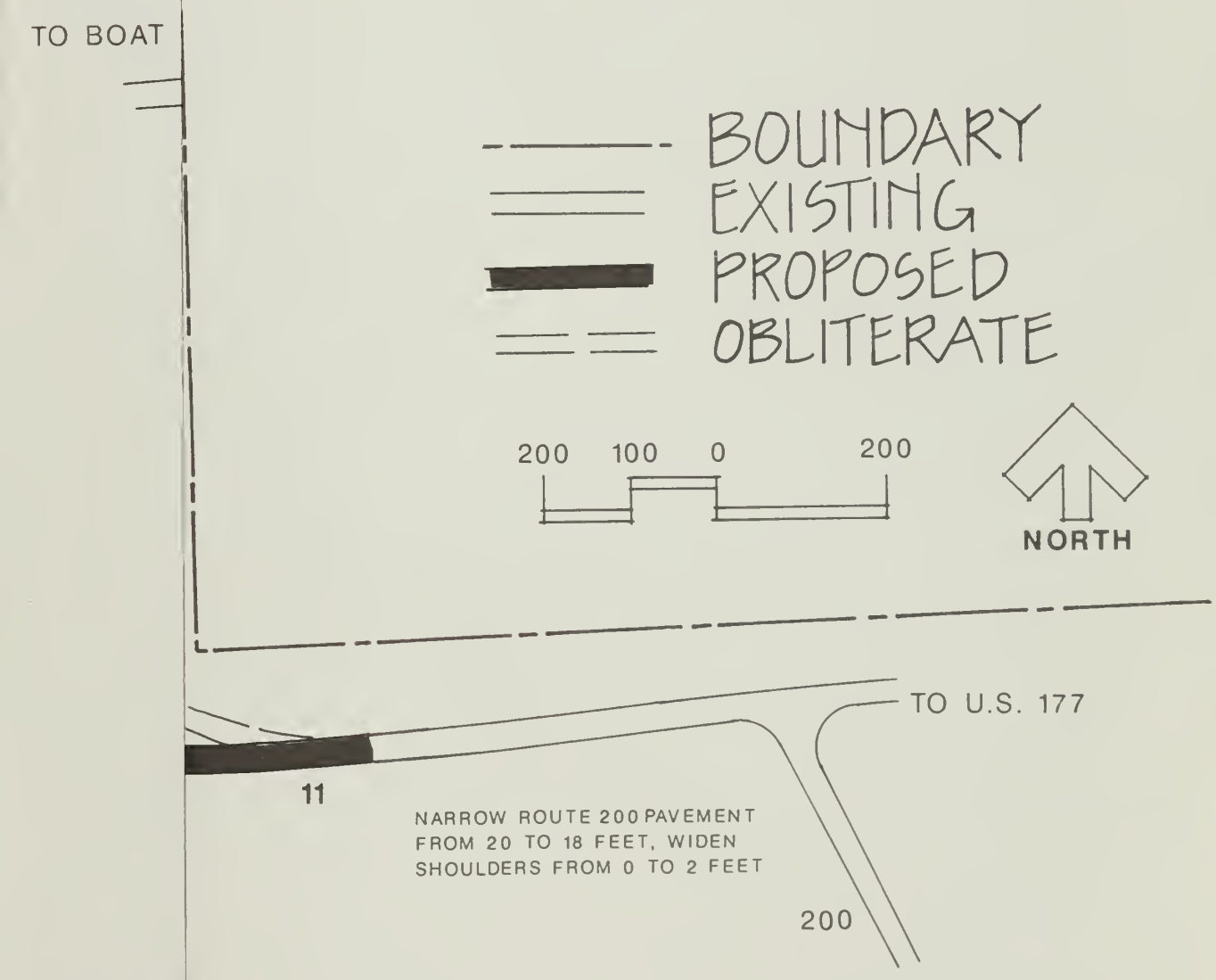
## ROAD SYSTEM EVALUATION STUDY

## CHICKASAW NATIONAL RECREATION AREA

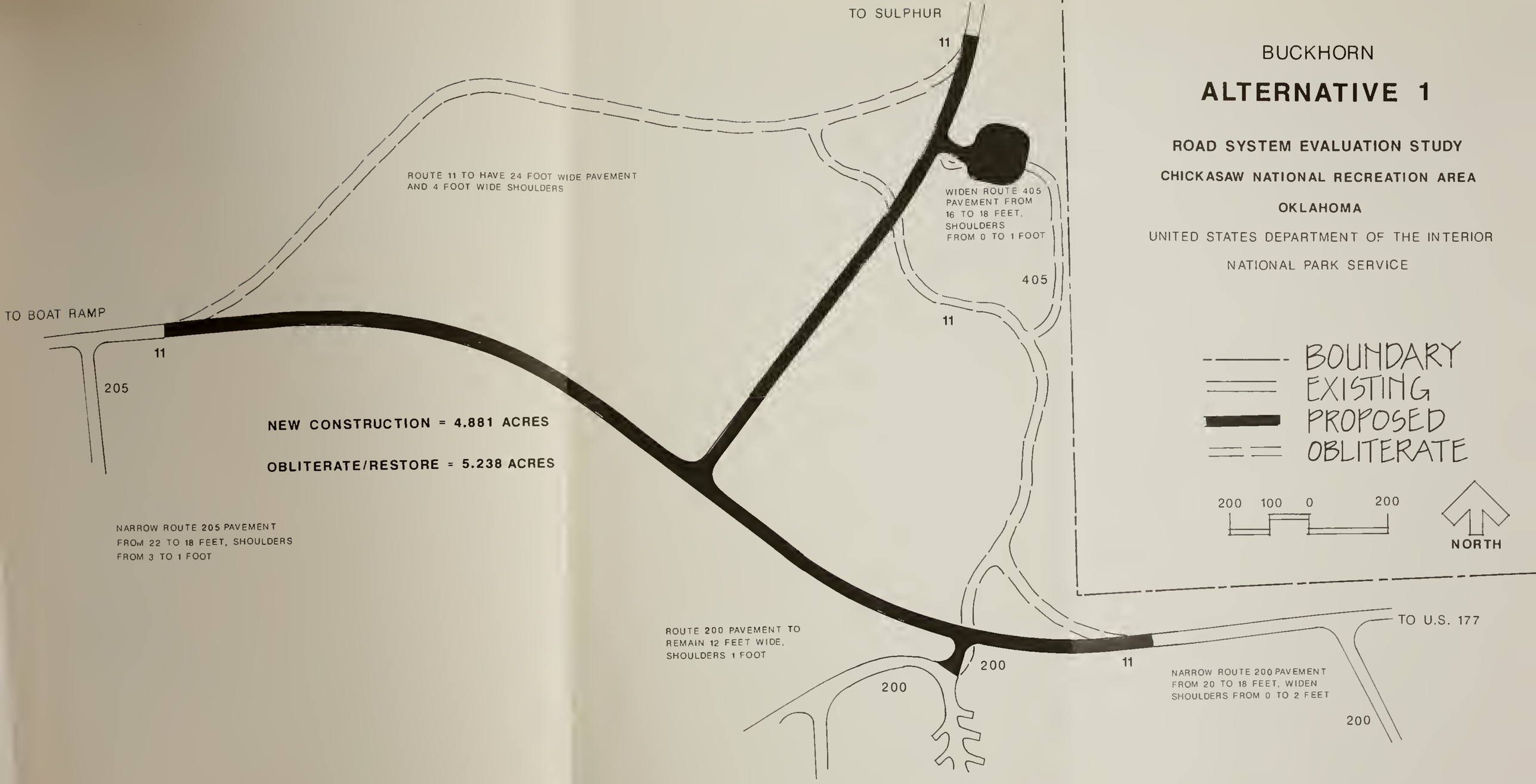
## OKLAHOMA

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE




| 107 | 40,013 |
|---|---|
| DSC | JULY 88 |




BUCKHORN

# ALTERNATIVE 1

**ROAD SYSTEM EVALUATION STUDY**

**CHICKASAW NATIONAL RECREATION AREA**

**OKLAHOMA**

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

| 107 | 40,013 |
|---|---|
| DSC | JULY 88 |

BUCKHORN

# ALTERNATIVE 2

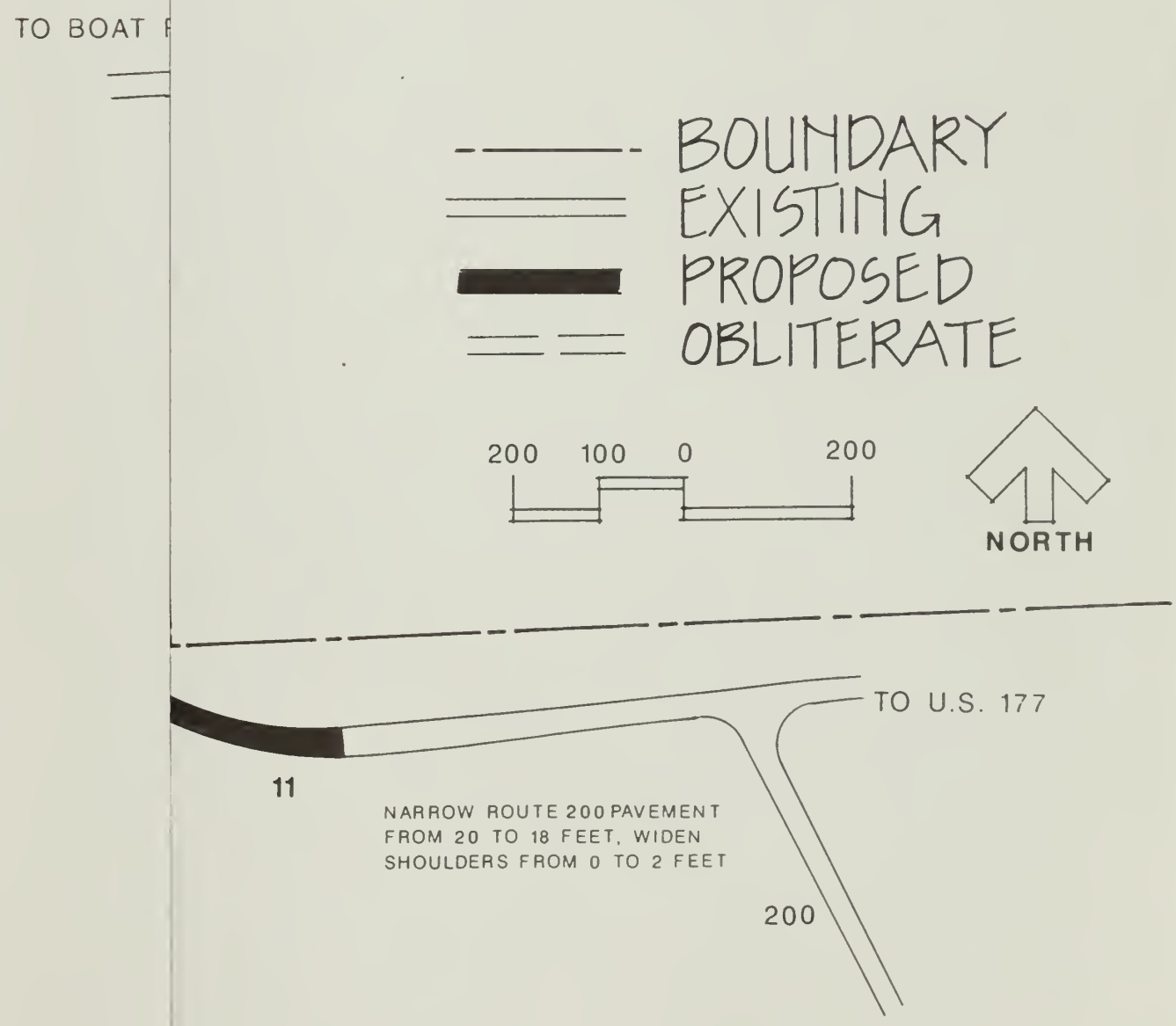
## ROAD SYSTEM EVALUATION STUDY

### CHICKASAW NATIONAL RECREATION AREA

### OKLAHOMA

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE




| 107 | 40,014 |
|---|---|
| DSC | JULY 88 |

BUCKHORN

# ALTERNATIVE 2

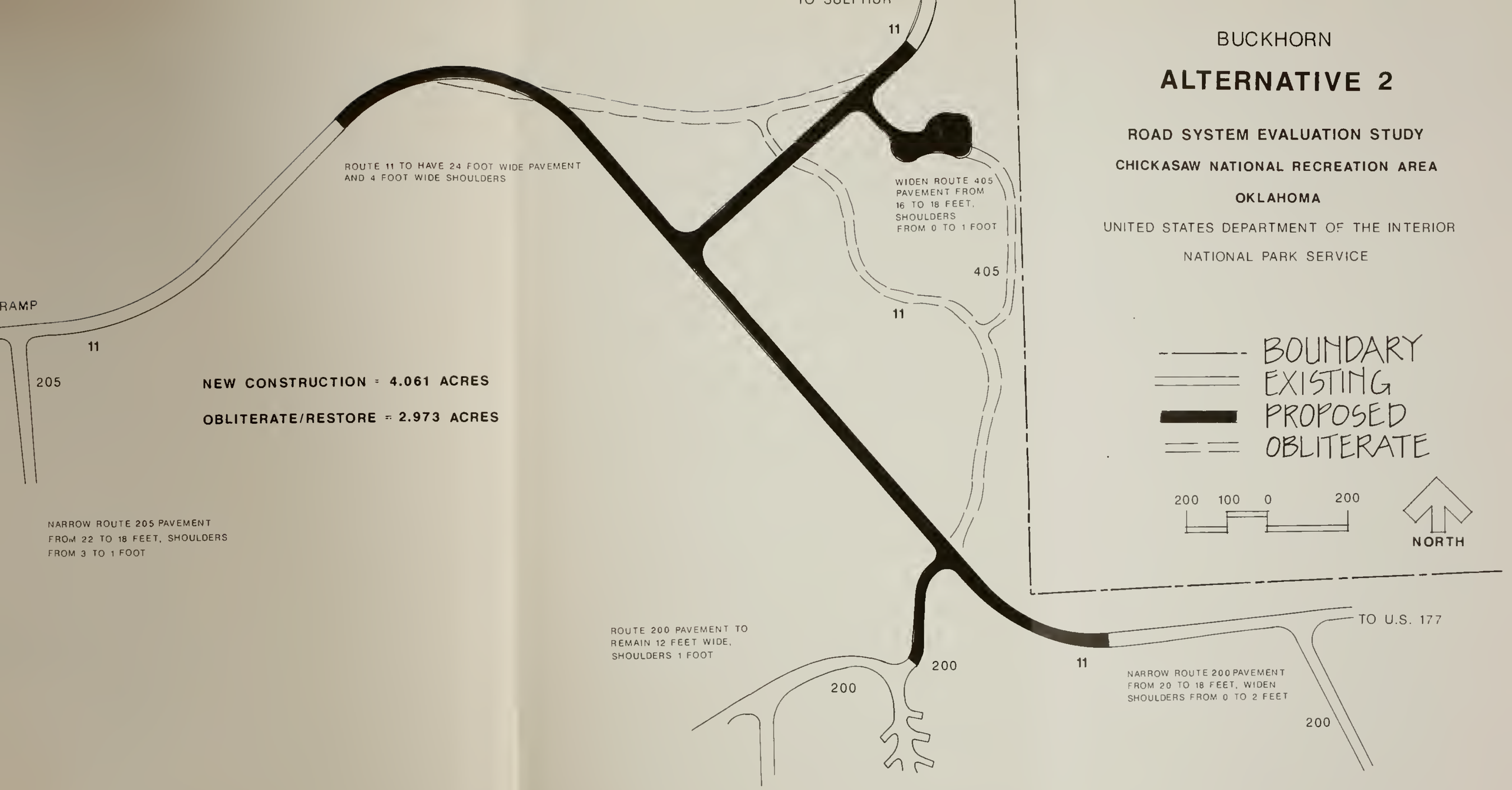
**ROAD SYSTEM EVALUATION STUDY**

**CHICKASAW NATIONAL RECREATION AREA**

**OKLAHOMA**

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE




| 107 | 40,014 |
|---|---|
| DSC | JULY 88 |

BUCKHORN

# ALTERNATIVE 3

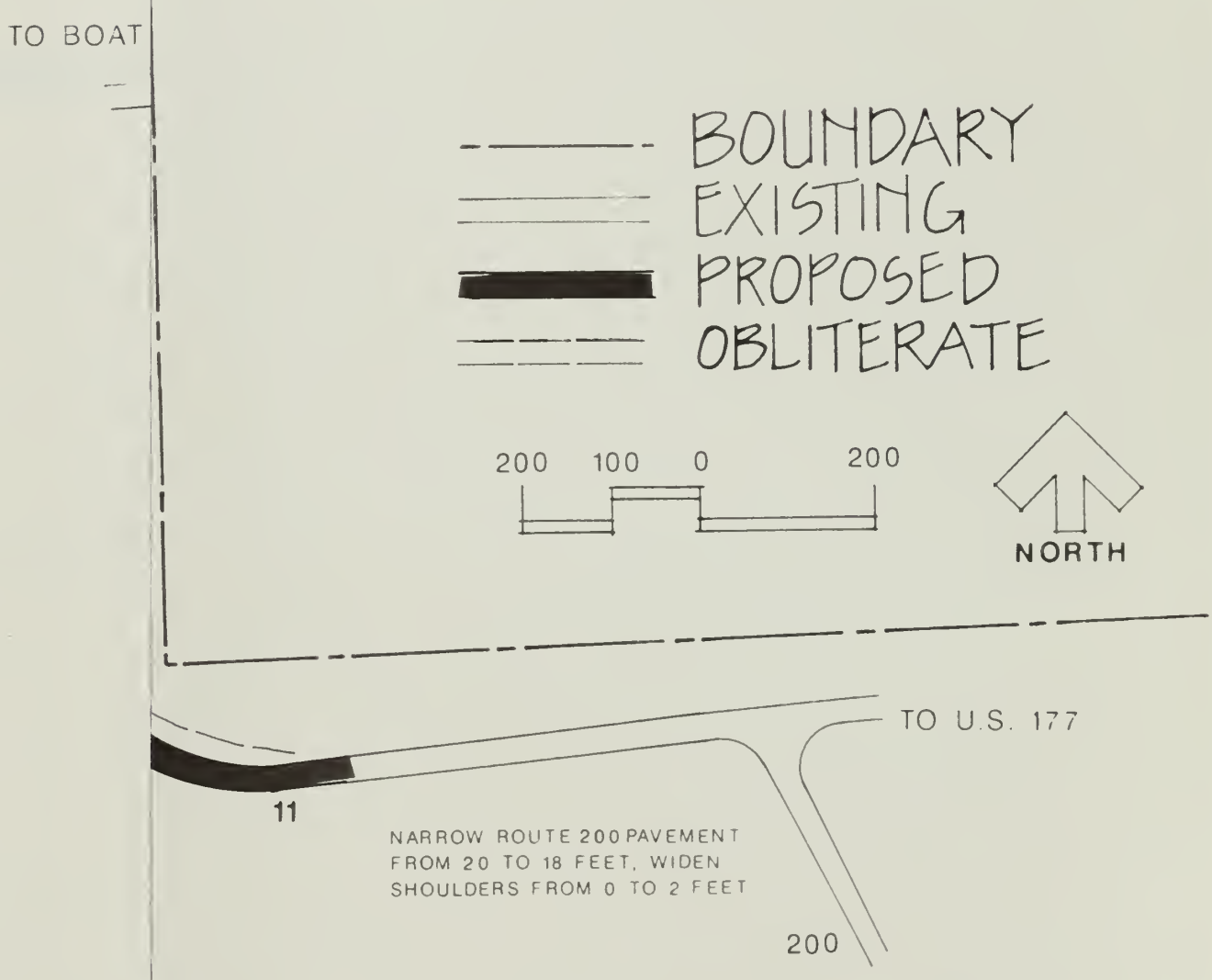
## ROAD SYSTEM EVALUATION STUDY

## CHICKASAW NATIONAL RECREATION AREA

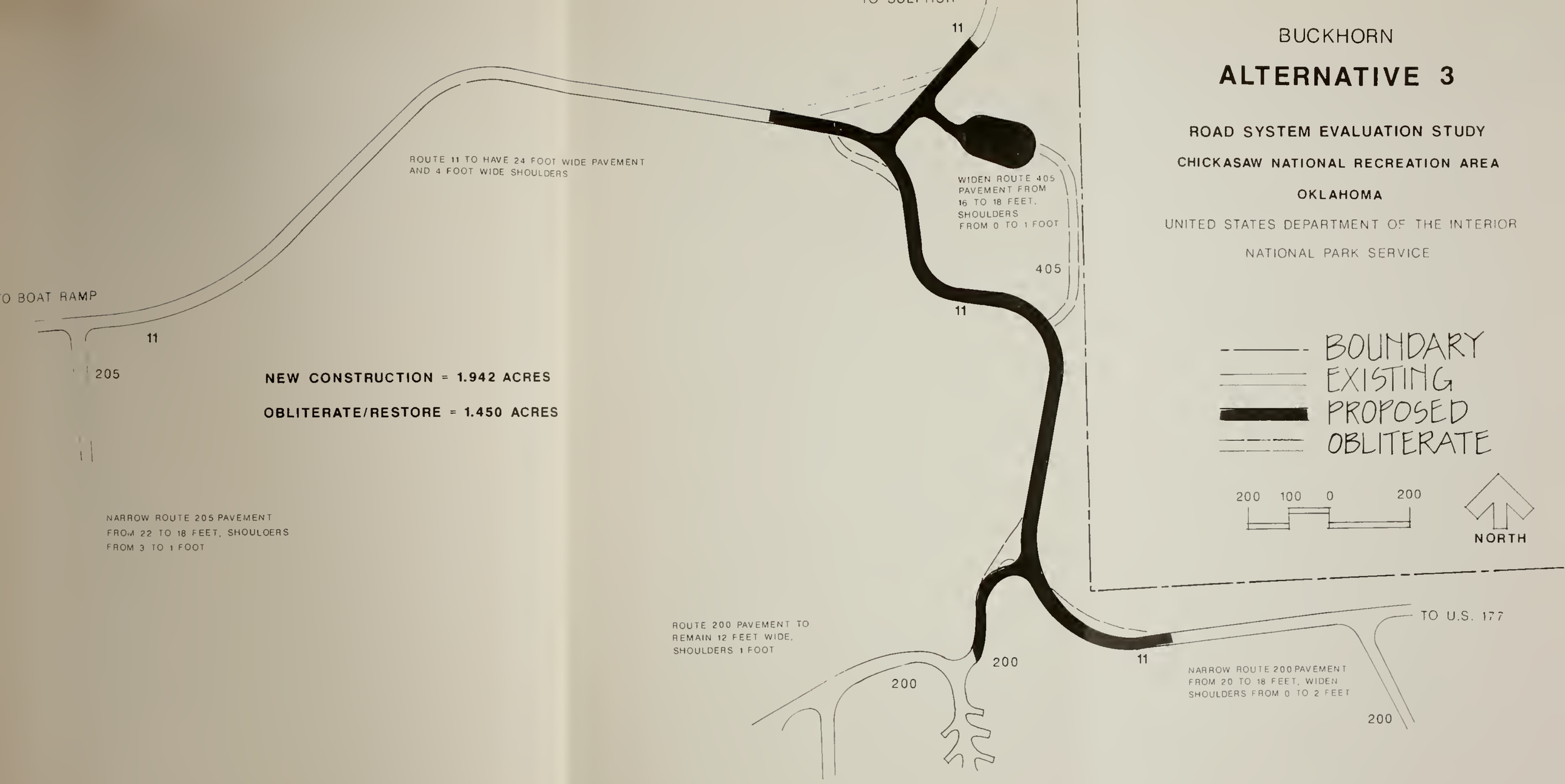
## OKLAHOMA

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE




| 107 | 40,015 |
|---|---|
| DSC | JULY 88 |


BUCKHORN
ALTERNATIVE 3
ROAD SYSTEM EVALUATION STUDY
CHICKASAW NATIONAL RECREATION AREA
OKLAHOMA
UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
TO BOAT RAMP
11
205
ROUTE 11 TO HAVE 24 FOOT WIDE PAVEMENT AND 4 FOOT WIDE SHOULDERS
NEW CONSTRUCTION = 1.942 ACRES
OBLITERATE/RESTORE = 1.450 ACRES
NARROW ROUTE 205 PAVEMENT FROM 22 TO 18 FEET, SHOULDERS FROM 3 TO 1 FOOT
11
WIDEN ROUTE 405 PAVEMENT FROM 16 TO 18 FEET. SHOULDERS FROM 0 TO 1 FOOT
405
11
BOUNDARY
EXISTING
PROPOSED
OBLITERATE
200 100 0 200
NORTH
ROUTE 200 PAVEMENT TO REMAIN 12 FEET WIDE, SHOULDERS 1 FOOT
200
200
11
TO U.S. 177
NARROW ROUTE 200 PAVEMENT FROM 20 TO 18 FEET, WIDEN SHOULDERS FROM 0 TO 2 FEET
200
107 | 40,015
DSC | JULY 88

# BUFFALO SPRINGS
# CCC DEVELOPMENT - 1940
## ROAD SYSTEM EVALUATION STUDY
### CHICKASAW NATIONAL RECREATION AREA
### OKLAHOMA
UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE


| 107 | 40,017 |
|---|---|
| DSC | AUG.88 |

# BUFFALO SPRINGS
# CCC DEVELOPMENT - 1940

**ROAD SYSTEM EVALUATION STUDY**

**CHICKASAW NATIONAL RECREATION AREA**

**OKLAHOMA**

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

TWO-WAY ROAD AND PARKING WITH 18 FOOT PAVEMENT AND 3 FOOT SHOULDERS 1935-1939

STONE BRIDGE

CULVERT WITH STONE HEADWALLS

STONEWORK AROUND BUFFALO SPRINGS 1934

C S STONE COMFORT STATION 1938

BOUNDARY

TO SULPHUR

LITTLE NIAGARA FALLS

10 A

CCC ROAD TRACE ALIGNMENT

ANTELOPE SPRINGS

TRAVERTINE CREEK

C S

BUFFALO SPRINGS 1934

10 A

BOUNDARY PLATT NATIONAL PARK

THE CIVILIAN CONSERVATION CORPS WAS AUTHORIZED ON MARCH 31, 1933, AND THE FIRST ENROLLEES ARRIVED IN PLATT NATIONAL PARK THAT MAY 15TH. THIS CCC CAMP CLOSED IN MARCH 1940 AFTER 550,000 TREES AND SHRUBS HAD BEEN PLANTED, AND SEVERAL MILES OF ROADS AND TRAILS AND NUMBEROUS STONE STRUCTURES HAD BEEN CONSTRUCTED. THE ROAD SHOWN ON THIS DRAWING WAS CLOSED IN 1968 AND MOST EVIDENCE OF IT HAS BEEN OBLITERATED EXCEPT FOR CCC STRUCTURES.

200 100 0 200

FEET

NORTH

| 107 | 40,017 |
|---|---|
| DSC | AUG.88 |

BUFFALO SPRINGS

# ALTERNATIVE 1

## ROAD SYSTEM EVALUATION STUDY

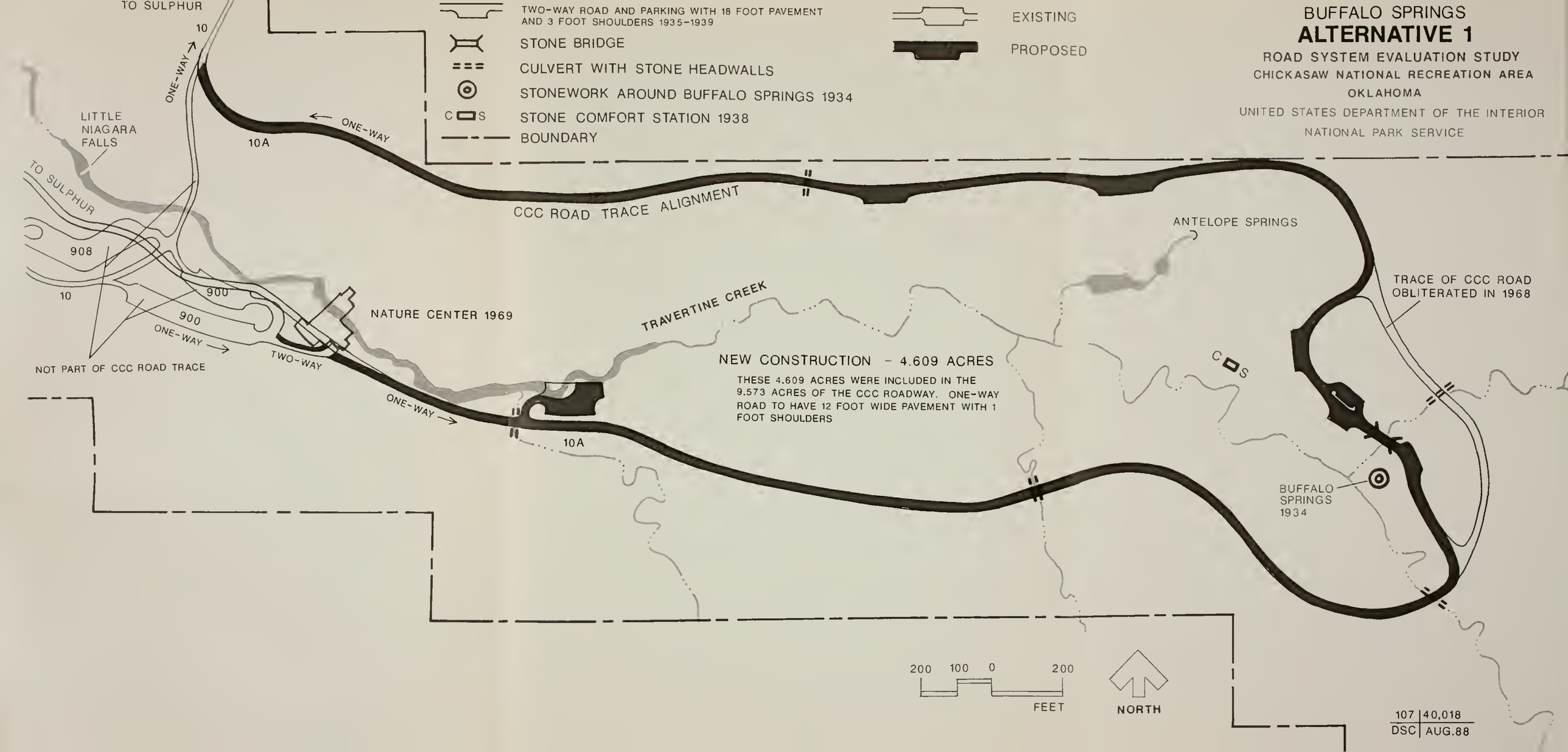
### CHICKASAW NATIONAL RECREATION AREA

### OKLAHOMA

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE


| 107 | 40,018 |
|---|---|
| DSC | AUG.88 |


TWO-WAY ROAD AND PARKING WITH 18 FOOT PAVEMENT AND 3 FOOT SHOULDERS 1935-1939
STONE BRIDGE
CULVERT WITH STONE HEADWALLS
STONEWORK AROUND BUFFALO SPRINGS 1934
C S STONE COMFORT STATION 1938
BOUNDARY
EXISTING
PROPOSED
BUFFALO SPRINGS
ALTERNATIVE 1
ROAD SYSTEM EVALUATION STUDY
CHICKASAW NATIONAL RECREATION AREA
OKLAHOMA
UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
TO SULPHUR
10
ONE-WAY
LITTLE NIAGARA FALLS
10A
ONE-WAY
CCC ROAD TRACE ALIGNMENT
ANTELOPE SPRINGS
TRACE OF CCC ROAD OBLITERATED IN 1968
TO SULPHUR
908
10
900
900
ONE-WAY
TWO-WAY
NOT PART OF CCC ROAD TRACE
NATURE CENTER 1969
TRAVERTINE CREEK
NEW CONSTRUCTION - 4.609 ACRES
THESE 4.609 ACRES WERE INCLUDED IN THE 9.573 ACRES OF THE CCC ROADWAY. ONE-WAY ROAD TO HAVE 12 FOOT WIDE PAVEMENT WITH 1 FOOT SHOULDERS
ONE-WAY
10A
C S
BUFFALO SPRINGS 1934
200 100 0 200
FEET
NORTH
107 | 40,018
DSC | AUG.88

NG

OSED

BUFFALO SPRINGS

# ALTERNATIVE 2

## ROAD SYSTEM EVALUATION STUDY

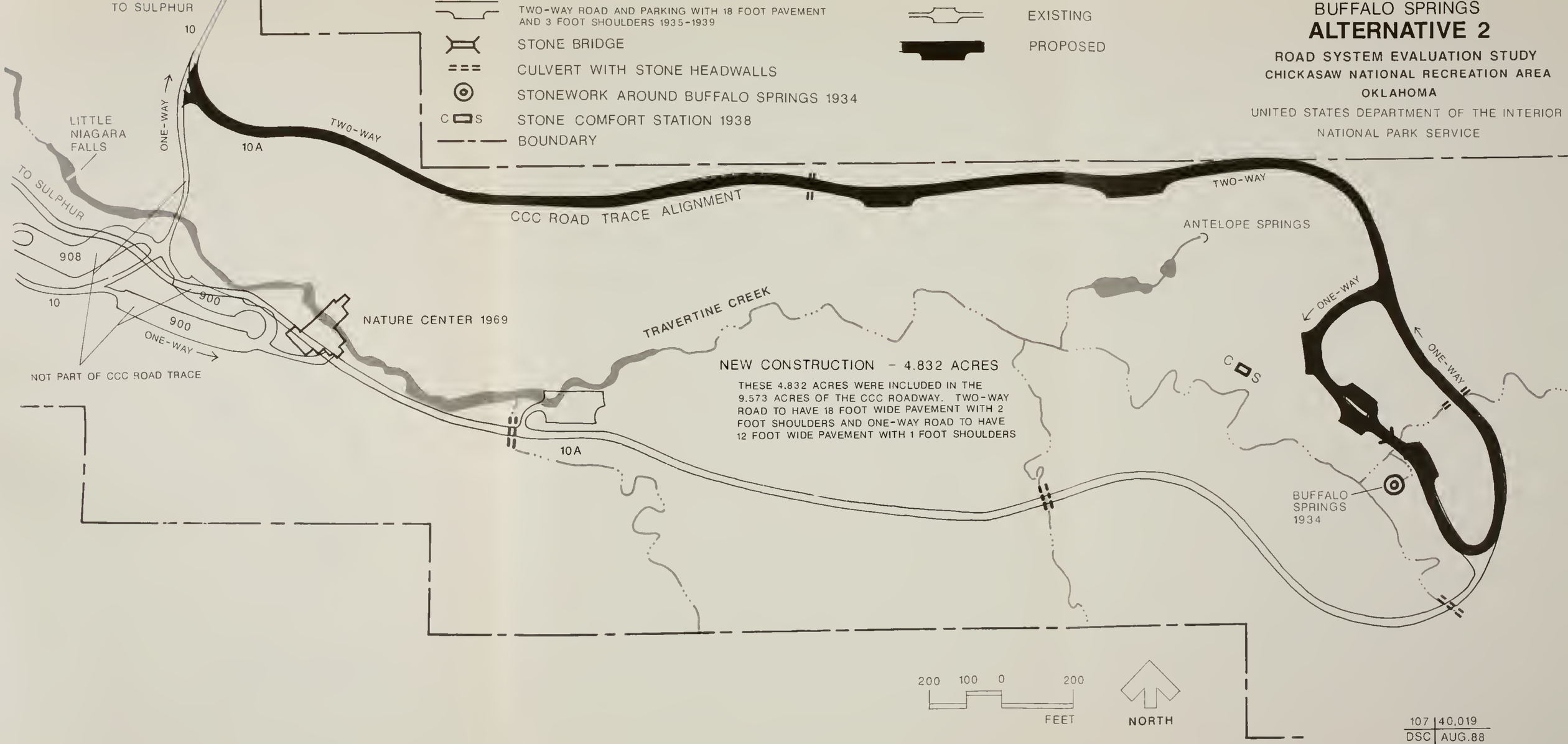
### CHICKASAW NATIONAL RECREATION AREA

### OKLAHOMA

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE


| 107 | 40,019 |
|---|---|
| DSC | AUG.88 |


TWO-WAY ROAD AND PARKING WITH 18 FOOT PAVEMENT AND 3 FOOT SHOULDERS 1935-1939
STONE BRIDGE
CULVERT WITH STONE HEADWALLS
STONEWORK AROUND BUFFALO SPRINGS 1934
C S STONE COMFORT STATION 1938
BOUNDARY
EXISTING
PROPOSED
BUFFALO SPRINGS
ALTERNATIVE 2
ROAD SYSTEM EVALUATION STUDY
CHICKASAW NATIONAL RECREATION AREA
OKLAHOMA
UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
TO SULPHUR
10
ONE-WAY
LITTLE NIAGARA FALLS
10A
TWO-WAY
CCC ROAD TRACE ALIGNMENT
TWO-WAY
ANTELOPE SPRINGS
TO SULPHUR
908
10
900
900
ONE-WAY
NOT PART OF CCC ROAD TRACE
NATURE CENTER 1969
TRAVERTINE CREEK
NEW CONSTRUCTION - 4.832 ACRES
THESE 4.832 ACRES WERE INCLUDED IN THE 9.573 ACRES OF THE CCC ROADWAY. TWO-WAY ROAD TO HAVE 18 FOOT WIDE PAVEMENT WITH 2 FOOT SHOULDERS AND ONE-WAY ROAD TO HAVE 12 FOOT WIDE PAVEMENT WITH 1 FOOT SHOULDERS
10A
C S
ONE-WAY
ONE-WAY
BUFFALO SPRINGS 1934
200 100 0 200
FEET
NORTH
107 | 40,019
DSC | AUG.88


# BUFFALO SPRINGS
# ALTERNATIVE 3

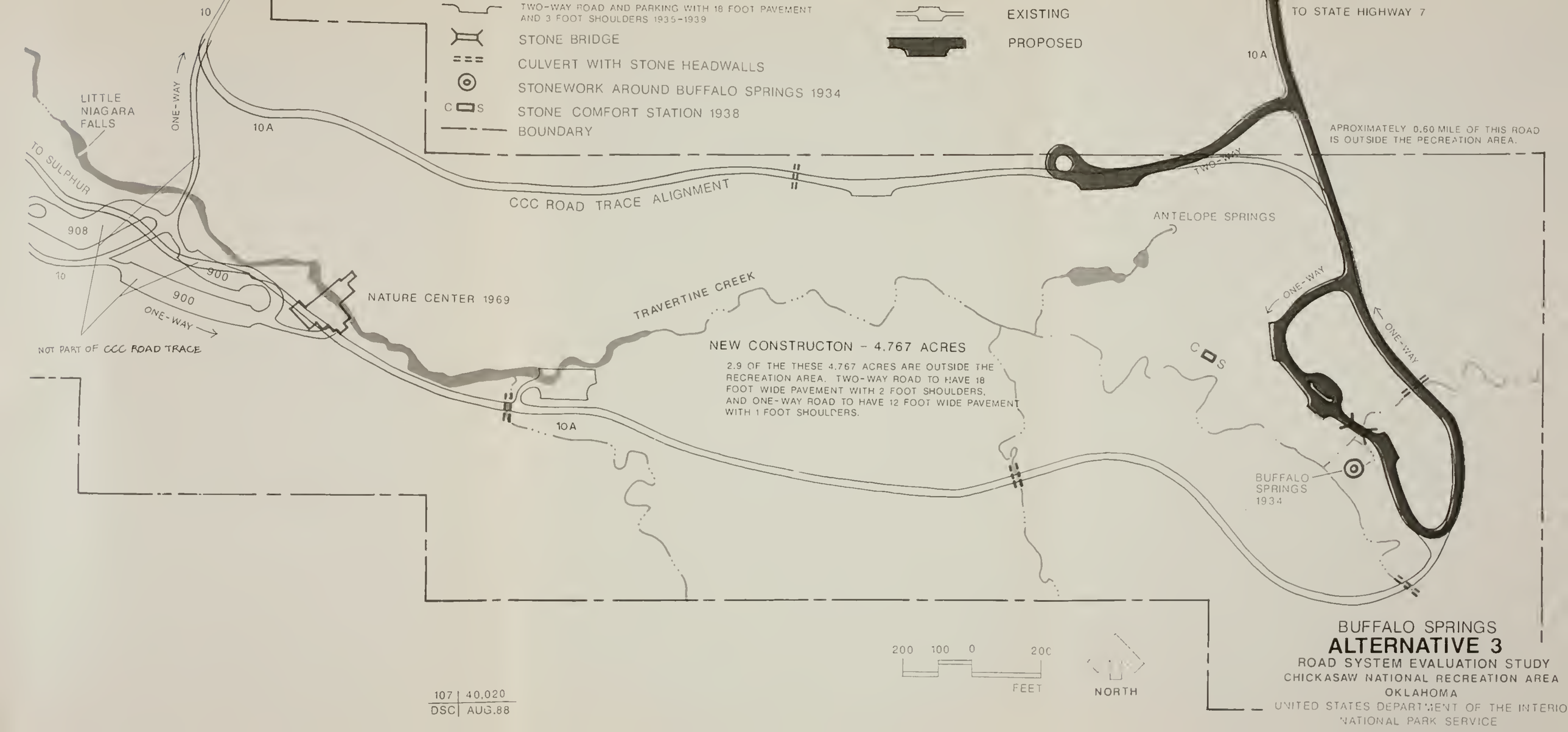
ROAD SYSTEM EVALUATION STUDY

CHICKASAW NATIONAL RECREATION AREA

OKLAHOMA

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE


TWO-WAY ROAD AND PARKING WITH 18 FOOT PAVEMENT AND 3 FOOT SHOULDERS 1935-1939
STONE BRIDGE
CULVERT WITH STONE HEADWALLS
STONEWORK AROUND BUFFALO SPRINGS 1934
C S STONE COMFORT STATION 1938
BOUNDARY
EXISTING
PROPOSED
TO STATE HIGHWAY 7
10A
LITTLE NIAGARA FALLS
ONE-WAY
10
TO SULPHUR
908
900
ONE-WAY
NOT PART OF CCC ROAD TRACE
NATURE CENTER 1969
CCC ROAD TRACE ALIGNMENT
TRAVERTINE CREEK
ANTELOPE SPRINGS
TWO-WAY
APROXIMATELY 0.60 MILE OF THIS ROAD IS OUTSIDE THE RECREATION AREA.
NEW CONSTRUCTON - 4.767 ACRES
2.9 OF THE THESE 4.767 ACRES ARE OUTSIDE THE RECREATION AREA. TWO-WAY ROAD TO HAVE 18 FOOT WIDE PAVEMENT WITH 2 FOOT SHOULDERS, AND ONE-WAY ROAD TO HAVE 12 FOOT WIDE PAVEMENT WITH 1 FOOT SHOULDERS.
C S
BUFFALO SPRINGS 1934
200 100 0 200
FEET
NORTH
107 | 40,020
DSC | AUG.88
BUFFALO SPRINGS
ALTERNATIVE 3
ROAD SYSTEM EVALUATION STUDY
CHICKASAW NATIONAL RECREATION AREA
OKLAHOMA
UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

CENTRAL

RINGS
OUND

# CENTRAL/COLDSPRINGS CAMPGROUND

# PREFERRED ALTERNATIVE

## ROAD SYSTEM EVALUATION STUDY

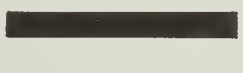
### CHICKASAW NATIONAL RECREATION AREA

### OKLAHOMA

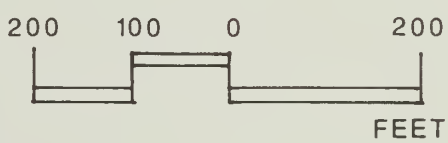
UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE













| 107 | 40,023 |
|---|---|
| DSC | JAN 89 |


CENTRAL/COLDSPRINGS CAMPGROUND

# PREFERRED ALTERNATIVE

ROAD SYSTEM EVALUATION STUDY

CHICKASAW NATIONAL RECREATION AREA

OKLAHOMA

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

BOUNDARY
EXISTING
PROPOSED
OBLITERATE

200 100 0 200
FEET

NORTH

| 107 | 40,023 |
|---|---|
| DSC | JAN 89 |

## ENVIRONMENTAL CONSEQUENCES

### ALTERNATIVE A: NO ACTION

#### Impacts on Natural Resources

Existing roadways and parking areas occupy approximately 125 acres. Continued use and maintenance practices along these routes would result in minimal impacts on soils, vegetation, wildlife, water, and air quality.

Impacts on soils and vegetation include the increased potential for soil erosion resulting in alterations of soil strata and the loss of some topsoil, particularly on sloped areas. Eroded soil could also cause a temporary increase in siltation of streams and lakes, which in turn decreases water quality and might negatively affect aquatic animals.

Continued use of the roadways would also result in wildlife disturbances including roadkills. There would be no impacts on threatened or endangered species.

No additional impacts on floodplains or wetlands would be expected. Air quality would continue to be affected by emissions from vehicular use of the roadways.

#### Impacts on Cultural Resources

Areas along the roadways and parking lots have not been surveyed for archeological resources. As discussed in the "Description of the Environment" section, sites have been discovered in the area and more are likely to be present. However, the relatively minor impacts from continued use and maintenance of roads and parking areas would not likely disturb any known or unknown archeological resource.

The section of the old loop road that was scarified in 1968 is now overgrown with vegetation. Maintenance of the existing structures along this route – bridge, culverts, comfort station, and reflecting pool – would continue to be minimal at best. This neglect would perpetuate the gradual, slow deterioration of these structures, which has been occurring since the removal of the associated CCC road.

Road design in the Travertine District must be sensitive to the many cultural resources. The roads can be widened without these resources being affected. It may be necessary in some instances to reduce shoulder widths at culvert headwalls on bridges.

#### Impacts on Socioeconomic Environment/Visitor Use

Roadways would continue to deteriorate because of substandard width and/or base materials resulting in increased maintenance actions and costs.

Congested parking areas and confusing intersections would continue to be a source of aggravation for visitors. The continued congestion and poorly maintained roadway would detract from the quality experience anticipated by visitors.

Businesses in local communities would not be affected in the short-term, but if road deterioration continued, profits in the long term could be affected by declining visitation.

## ALTERNATIVE B (PREFERRED): RECONSTRUCT ROADS, PARKING, AND INTERSECTIONS TO MEET NATIONAL PARK SERVICE DESIGN STANDARDS

### Reconstruct Roads Other than Developed Areas

**Impacts on Natural Resources**. The majority of road reconstruction work would be within previously disturbed rights-of-way, resulting in minor impacts on bedrock, soils, vegetation, wildlife, air, and water quality. Approximately 140 acres (including existing roads prisms) would be disturbed; of this, 52 acres would be restored/revegetated (cut and fill slopes).

Shallow or exposed bedrock within the construction corridor would be lost due to excavation, leveling, drilling, and recontouring of road corridors. The amount of bedrock lost would be undeterminable and irretrievable but should be minor.

Proposed road reconstruction would disturb approximately 140 acres of soils/vegetation, which would cause an increased potential for soil erosion with resulting impacts similar to those described in the no action alternative. Erosion abatement techniques such as matting and contour ditches would be used to reduce soil erosion. Revegetation efforts would also be used to limit soil erosion and help prevent establishment of exotic plant species. Only native grass, shrub, and tree species would be used. Reestablishment of grasses and forbs would take from 2 to 3 years, shrubs from 3 to 5 years, and trees from 8 to 20 years.

Soil compaction would occur in areas of heavy construction equipment use and from the direct placement of the roadway. Compaction results in dense, firm soils with reduced pore space that limits air and water infiltration; this reduced porosity increases surface runoff and accelerates local erosion. Reduced porosity also limits the ability of soils to support vegetation. Paved roadways either wholly or partially eliminate direct inflow of water to soil, which results in local changes in soil chemistry and alters adjacent vegetation types.

None of the proposed construction activities are in areas containing rare plant species or unique vegetative communities.

Impacts on wildlife would be minimal. Existing use of the roadways have reduced the value of these areas as important wildlife habitat. Some wildlife mortality from motor vehicles would continue.

There would be no impacts on threatened or endangered species.

Minor, localized, short-term siltation would occur in streams and lakes as a result of soil erosion from construction activities. This could negatively affect aquatic species especially fish-spawning habitat. Soil erosion reduction methods as described previously would be used to reduce/mitigate this impact.

Although certain sections of roadways lie in the 100-year floodplain of streams, section 5.B.2.c. of the NPS final procedures for implementing E.O. 11988 "Floodplain Management" and E.O. 11990 "Protection of Wetlands" (45 CFR 35916 as revised by 47 CFR 36718) exempts entrance, access, and internal roads from compliance with E.O. 11988.

Temporary reductions in ambient air quality would occur from dust and fumes from construction activities. Trucks hauling construction materials would be an additional source of air pollution.

**Impacts on Cultural Resources**. There is a potential for disturbance of unknown archeological resources from proposed road and parking improvements. An archeological survey would be conducted prior to any ground disturbance activities. No known archeological resources would be disturbed.

The reconstruction of the CCC road, whose culverts, bridge, and some (minimal) curbstones are still extant after the road trace destruction in 1968, would not have a negative impact on the CCC structures. In fact, the reconstruction of the former CCC road would improve their condition as the structures would be subject again to regular maintenance procedures which they now lack. The Buffalo Springs pool area would receive the same benefits from its being brought into access/use again by reconstructing the road nearby. Reconstruction of the road would also help re-create a portion of the area's historic landscape.

A study to identify and evaluate cultural resources (i.e., CCC rock work, including rock walls, stone culverts, and bridges) will be conducted in the near future to determine if they are eligible for listing on the National Register of Historic Places. If construction would in some way disturb any of the previously mentioned cultural resources, formal consultation with the Oklahoma State Historic Preservation Officer would be initiated in accordance with section 106 of the National Historic Preservation Act as amended.

**Impacts on Socioeconomic Environment/Visitor Use**. Visitors would be temporarily inconvenienced by disruptions in normal traffic patterns and delays/detours common during the construction period.

There would be a short-term increase in noise from construction activities, which might negatively affect the overall visitor experience.

Until vegetation returned to the roadsides, construction scars would be common along the roadways.

In the long-term, the roadways and intersections should provide a safer, more enjoyable driving experience.

**Reconstruct Roads, Parking, and/or Intersections at Developed Areas**

Impacts from construction/reconstruction of roads, parking, and intersections in developed areas except for the proposed lake fills at Guy Sandy (Arbuckle Reservoir) and Veterans Lake would be similar to those described above. Additional amounts of disturbance are given for each alternative.

**Guy Sandy**. In the **preferred alternative,** new road construction/reconstruction activities would result in 6 acres of disturbance. Fill into the lake for the marina parking area expansion would result in an additional 2.4 acres of disturbance.

In **alternative 1**, reconstruction of roads would result in 2.5 acres of additional disturbances. Another .5 acre would be affected from placing fill material into Lake of the Arbuckles to expand the marina parking area. Corps of Engineers approval has been issued for this proposed parking expansion project (permit no. OKR2001261). Impacts associated with this proposed fill would include destruction of 2.5 acres of aquatic habitat and increased siltation in adjacent aquatic habitat. Aquatic vegetation would be destroyed. Fish and other aquatic wildlife would be displaced, and some would be killed during construction activities. No threatened or endangered species would be affected.

Under **alternative 2** road reconstruction would result in the disturbance of approximately 6 acres. Another .7 acre would be disturbed because of the marina parking modification/expansion. Disturbances would be similar to those described above.

In **alternative 3** new construction/reconstruction would result in the disturbance of approximately 6.5 acres. Fill into the lake for the marina parking expansion would result in an additional 2.4 acres of disturbance.

In **alternative 4** new road construction/reconstruction would result in approximately 4 acres of disturbance. Fill into the lake for the parking area expansion would result in 1.5 acres of disturbances.

**Veterans Lake**. Implementation of the **preferred alternative** would result in approximately 5.5 acres of disturbances on shore and another .15 acre of lake bottom. Lake fill impacts would be similar to those discussed above for Guy Sandy, alternative 1.

Under **alternative 1** approximately 8.8 acres would be disturbed on shore and another .15 acre of lake bottom. Lake impacts would be similar to those discussed under Guy Sandy, alternative 1.

**Buckhorn**. The additional amounts of disturbances resulting from implementation of the Buckhorn area alternatives would be as follows: **preferred alternative** - approximately 4 acres; **alternative 1** - approximately 5 acres; **alternative 2** - approximately 4 acres; and **alternative 3** - approximately 2 acres.

**Buffalo Springs**. The amounts of disturbances for the three alternatives would be as follows: **alternative 1** -approximately 4.5 acres; **alternative 2** - approximately 5 acres; and **alternative 3** - approximately 5 acres.

## STUDY TEAM

### DENVER SERVICE CENTER

Larry Knowles, Team Captain
John Murphy, Landscape Architect
Dave Kenney, Environmental Specialist
Jim Ellis, Soils Engineer
Howard Wagner, FHWA Project Manager
Jim Mote, Historian

### CHICKASAW NATIONAL RECREATION AREA

Jack Linahan, Former Superintendent
Bob Peters, Present Superintendent
Cal Meyers, Facility Manager

### SOUTHWEST REGIONAL OFFICE

David Gaines, Landscape Architect
Melody Webb, Regional Historian



As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural and cultural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people. The department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

Publication services were provided by the graphics and editorial staffs of the Denver Service Center.
NPS D-26 August 1989

☆ U.S. GOVERNMENT PRINTING OFFICE: 1989—673-038/80,041 REGION NO. 8

TABLE 1: ROAD SYSTEM EVALUA

| FHWA Route Number | Road Segment, From/To | Length (Miles) | Visitor Experience/ Significant Resources | Average Daily Traffic (ADT) | Terrain | Travelled Way/Shoulder Width (feet) | Traveled Way/ Shoulder Surface | Pos Lim |
|---|---|---|---|---|---|---|---|---|
| **Class I – Principal** | | | | | | | | |
| 10 | Perimeter Drive, State hwy. 177 via Rock Creek and nature center to State hwy 177 | 4.74 | woodlands, prairie, streams, springs | 1445 | rolling | 18/3 | paved/gravel | 15- |
| 11 | Buckhorn Rd., east boundary to boat ramp | 2.03 | woodlands, lake, boating fishing, swimming | 245 | rolling | 24/3 | paved/gravel | 15- |
| 12 | Guy Sandy Rd., county road to boat ramp | 0.51 | prairie, woodlands, lake, boating, fishing, swimming | 239 | rolling | 22/3 | paved/gravel | 15 |
| 13 | Point Rd., end of county road to loop | 0.54 | woodlands, lake, boating, fishing, swimming | 258 | rolling | 24/3 | paved/gravel | 15- |
| 14 | Twelfth Streeth entrance road, route 10 | 0.05 | woodlands | ? | flat | 20/0 | paved/gravel | nor |
| **Class II – Connector** | | | | | | | | |
| 214 | Veterans Lake Rd., route 10 to dam spillway | 0.52 | prairie, lake, small boating, fishing, swimming | 100 | rolling | 12-15/0 | paved-dirt/none | nor |
| 200 | Buckhorn Campground Rd. Route 11 to 206 | 1.00 | woodlands to campground | 100 | rolling | 20/0 | paved/dirt | 15 |
| 205 | Buckhorn swim beach road | 0.23 | prairie, woodlands to swim beach | 60 | rolling | 20/3 | paved/gravel | 15 |
| 206 | Buckhorn picnic road | 0.08 | prairie to picnic area | 30 | rolling | 23/3 | paved/dirt | nor |
| 204 | Point campground | 0.80 | woodlands to camground | 100 | rolling | 20/0 | paved/dirt | 15- |
| 201 | Guy Sandy campground access, route 12 | 0.19 | prairie, woodlands, to campground | 50 | rolling | 18/0 | paved/dirt | nor |
| 217 | Arbuckle West Access State Ramp Rd., county road to boat ramp | 0.54 | woodlands, prairie, lake, fishing, boating | 20 | rolling | 18/1 | gravel/dirt | nor |
| | | | [illegible] lake, fishing | 50 | flat to | 12/0 | gravel/dirt | nor |



As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural and cultural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people. The department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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# TABLE 1: ROAD SYSTEM EVALUATION – CHICKASAW NATIONAL RECREATION AREA

| FHWA Route Number | Road Segment, From/To | Length (Miles) | Visitor Experience/ Significant Resources | Average Daily Traffic (ADT) | Terrain | Travelled Way/Shoulder Width (feet) | Traveled Way/ Shoulder Surface | Posted Speed Limit (MPH) | Venicle Restriction Hazards | Recommended Design Standards: Average Daily Traffic (ADT) | Recommended Design Standards: Speed Limit (MPH) | Recommended Design Standards: Travelled Way/Shoulder Width (feet) | Recommended Design Standards: Travelled Way/ Shoulder Surface | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Class I – Principal** | | | | | | | | | | | | | | |
| 10 | Perimeter Drive, State hwy 177 via Rock Creek and nature center to State hwy 177 | 4.74 | woodlands, prairie, streams, springs | 1445 | rolling | 18/3 | paved/gravel | 15/25 | pedestrians, bicyclists, narrow bridges, deer | 1445 | 15-25 | 22/3 | paved/paved | Additional parking is required along Travertine Creek. (from Cold springs Campground to Sycamore Crossing) Route 10 contains numerous CCC era stone structures (curbing, drain structures, etc.) |
| 11 | Buckhorn Rd. east boundary to boat ramp | 2.03 | woodlands, lake, boating, fishing, swimming | 245 | rolling | 24/3 | paved/gravel | 15-35 | vehicles towing boats, large RVs, deer | 245 | 15-35 | 24/4 | paved/gravel | Includes former Buckhorn N. Entrance Road – route no. 100, unsafe intersections, deteriorating pavement |
| 12 | Guy Sandy Rd., county road to boat ramp | 0.51 | prairie, woodlands, lake, boating, fishing, swimming | 239 | rolling | 20/3 | paved/gravel | 15 | vehicles towing boats, large RVs, deer | 239 | 15 | 24/4 | paved/gravel | Unsafe intersection at entrance from county road, deteriorating pavement, no base course under pavement |
| 13 | Point Rd., end of county road to loop | 0.54 | woodlands, lake, boating, fishing, swimming | 258 | rolling | 24/3 | paved/gravel | 15-35 | vehicles towing boats, large RVs, deer | 258 | 15-35 | 24/4 | paved/gravel | Includes former route no. 203 (0.19 mile) to boat ramp and parking, deteriorating pavement. Additional parking is required at the end of route 13 |
| 14 | Twelfth Streeth entrance road, route 10 | 0.05 | woodlands | ? | flat | 20/0 | paved/gravel | none | pedestrians, bicyclists | ? | 25 | 20/0 | paved/gravel | CCC era cut stone – stone curbing should not be altered |
| **Class II – Connector** | | | | | | | | | | | | | | |
| 214 | Veterans Lake Rd., route 10 to dam spillway | 0.52 | prairie, lake, small boating, fishing, swimming | 100 | rolling | 12-15/0 | paved-dirt/none | none | narrow width | 150 | 15-25 | 20/1 | paved/gravel | Unsafe intersections, proposed extension across spillway to pavilion and trailhead parking, deteriorating pavement |
| 200 | Buckhorn Campground Rd Route 11 to 206 | 1.00 | woodlands to campground | 100 | rolling | 20/0 | paved/dirt | 15 | vehicles towing boats, large RVs, deer | 200 | 15 | 22/2 | paved/gravel | Deteriorating pavement, unsafe intersection to loops D & E from route 11 |
| 205 | Buckhorn swim beach road | 0.23 | prairie, woodlands to swim beach | 60 | rolling | 20/3 | paved/gravel | 15 | large RVs, deer | 100 | 15 | 20/1 | paved/gravel | Deteriorating pavement |
| 206 | Buckhorn picnic road | 0.08 | prairie to picnic area | 30 | rolling | 23/3 | paved/dirt | none | large RVs, deer | 50 | 15 | 20/1 | paved/gravel | Deteriorating pavement. Needs parking closer to waters edge |
| 204 | Point campground | 0.80 | woodlands to camground | 100 | rolling | 20/0 | paved/dirt | 15-25 | large RVs, deer | 200 | 15-25 | 22/1 | paved/gravel | Deteriorating pavement |
| 201 | Guy Sandy campground access, route 12 | 0.19 | prairie, woodlands, to camp-ground | 50 | rolling | 18/0 | paved/dirt | none | large RVs, deer narrow width | 100 | 15-25 | 22/1 | paved/graver | Deteriorating pavement which is dangerously narrow, no base course under pavement |
| 217 | Arbuckle West Access State Ramp Rd county road to boat ramp | 0.54 | woodlands, prairie, lake, fishing, boating | 20 | rolling | 18/1 | gravel/dirt | none | vehicles towing boats, deer, narrow width | 20 | 15-35 | 20/1 | gravel/dirt | Needs minor change in alignment near ramp to make safer |
| 213 | South Picnic Road Fishing Access Rd. G county road to boat ramp | 0.32 | woodlands, lake, fishing, boating, picnicking | 50 | flat to rolling | 12/0 | gravel/dirt | none | narrow width, deer | 75 | 15-35 | 18/1 | gravel/dirt | Hunting mainly for deer and turkey |
| 210 | West side public hunting area road | 1.30 | prairie, woodlands, hunting, fishing | ? | flat to rolling | 15/0 | dirt/dirt | 25 | narrow width, deer, hunters | 50 | 25 | 18/1 | gravel/dirt | Deteriorating pavement, floods in lower portion frequently |
| 10.202 | Point picnic spur | 0.31 | woodlands, fishing | 100 | flat | 18/2 | paved, gravel | none | vehicles towing boats | 100 | 15 | 18/1 | paved/gravel | |
| 211 | Arbuckle east access roads East side public hunting area road, county road | 1.67 | woodlands, prairie, crops, hunting, fishing | 20 | flat to rolling | 18/0 | dirt, dirt | none | narrow width, deer, hunters | 50 | 25 | 18/1 | gravel/dirt | One segment ends at Breezy Point, access to crop area and fishing |
| 212 | Point fishing access road, route 13 | 0.25 | woodlands, fishing | 30 | flat to rolling | 15/0 | dirt, dirt | none | deer | 50 | 15 | 18/1 | gravel/dirt | Provides access to ranger bird range and fishing |
| 906 | Pavilion Springs Parking & Road, fed hwy 177 | 0.10 | woodlands, springs | ? | flat | 14/0 | paved/dirt | none | pedestrians, deer | ? | 15 | 18/1 | paved/gravel | – |
| 901 | Travertine Island Parking & Road, route 10 | 0.08 | woodlands, creek | ? | flat | 15/0 | paved/dirt | none | pedestrians, deer | ? | 15 | 18/1 | paved/gravel | – |
| 115 | Black Sulphur picnic area roads, route 10 | 0.21 | woodlands, creek | ? | flat | 12-14 | ? | ? | pedestrians, bicyclists, deer | ? | 15 | 18/1 | paved/gravel | The width of a portion of route 115 is limited by CCC era stone curbing |
| 116 | Warm Up area road, route 10 | 0.12 | woodlands, exercise | ? | flat | 12-19/0 | gravel/dirt | none | pedestrians, bicyclists | ? | 15 | 18/1 | paved/graver | Exercise area for physical fitness. Additional parking is required |
| 912 | Vendome Parking Area & Road, Davis Avenue | 0.05 | woodlands, artesian well with sulphur odor | ? | flat | 22/0 | paved/dirt | none | pedestrians, bicyclists | ? | 15 | 20/3 | paved/paved | Access to Vendome well, Flower park, and Lincoln Bridge |
| **Class III – Special Purpose** | | | | | | | | | | | | | | |
| 101 | Bromide Area Rd., route 10 to route 10 | 0.49 | woodlands, stream, picnicking | 400 | flat | 14-23 | paved, gravel | none | pedestrians, deer | 500 | 15-25 | 18/2 | paved/gravel | – |
| 207 | Cold Spring Campground Rd., route 10 to route 10 | 0.82 | woodlands, stream, camping | 150 | flat | 10/0 | paved, dirt | 10 | pedestrians, bicyclists, deer | 150 | 10 | 12/1 | paved/gravel | – |
| 208 | Central Campground Rd., route 10 | 0.57 | woodlands stream, camping | 80 | flat | 18/0 10/0 | paved, dirt | 10 | pedestrians, bicyclists, deer | 80 | 10 | 22/1 12/1 | paved/gravel | – |
| 209 | Rock Creek Campground Rd., route 10 | 1.42 | woodlands, stream, camping | 150 | rolling | 18/0 10/0 | paved, dirt | 10 | pedestrians, bicyclists deer | 150 | 10 | 22/1 12/1 | paved/gravel | – |
| 215 | Veterans Lake North Shore Rd., route 100 | 0.70 | prairie, woodlands, lake, fishing, swimming, picnicking | 100 | rolling | 18/0 | paved, dirt | none | pedestrians, deer, narrow width | 150 | 10 | 20/1 | paved/gravel | No base course under pavement, unsafe intersection with route 100 |
| 216 | Veterans Lake Rock Creek Rd route 100 | 0.22 | prairie, woodlands, stream, fishing | 25 | rolling | 12/0 | dirt, dirt | none | narrow width, deer | 35 | 25 | 20/1 | gravel/dirt | Needs minor change in alignment at intersection with route 100 to make safer |
| 200 | Buckhorn campground roads, route 101 | 1.76 | woodlands, camping | 100 | rolling | 12/14 21/1 | paved, gravel | 15 | pedestrians, bicyclists, deer | 100 | 15 | 12/1 | paved/gravel | Deteriorating pavement |
| 205 | Buckhorn Swim Rd., route 102 | 0.40 | prairie, swimming | 60 | flat | 12-14 | paved, gravel | 15 | pedestrians, deer | 60 | 15 | 12/1 | paved/gravel | Deteriorating pavement |
| 206 | Buckhorn Picnic Rd route 207 | 0.15 | prairie, picnicking | 30 | flat | 12-14 | paved, gravel | 15 | pedestrians, deer | 30 | 15 | 12/1 | paved/gravel | Deteriorating pavement |
| 204 | Point campground roads, route 105 | 0.68 | woodlands, camping | 100 | rolling | 12/1 | paved, gravel | 15 | pedestrians, bicyclists, deer | 100 | 15 | 12/1 | paved/gravel | Deteriorating pavement |
| 13 | Point Picnic Road, route 13 | 0.20 | prairie, woodlands, picnicking | 100 | flat | 17/1 | paved, gravel | none | pedestrians, deer | 100 | 15 | 12/1 | paved/gravel | Deteriorating pavement, south portion floods frequently |
| 201 | Guy Sandy campground road, route 106 | 0.21 | woodlands, camping | 50 | flat to rolling | 12/0 | paved, dirt | none | pedestrians, bicyclists, deer | 50 | 15 | 12/1 | paved/gravel | Deteriorating pavement which is too narrow in places, no base course under pavement |
| **Class V – Administrative and Class VI – Restricted (marked with *)** | | | | | | | | | | | | | | |
| 400 | Point ranger residential road, route 13 | 0.05 | none | ? | flat | 15/0 | gravel, dirt | none | | ? | 15 | 18/1 | paved/gravel | – |
| 401* | Buckhorn water treatment facilities road, route 11 | 1.70 | none | 5 | flat to rolling | 18/0 | gravel, dirt | none | | 5 | 25 | 16/1 | gravel/gravel | – |
| 402 | Point sewer lift station road, route 204 | 0.84 | none | 5 | flat to rolling | 8/0 | gravel, dirt | none | | 5 | 25 | 16/1 | gravel/gravel | – |
| 403 | SW Perimeter Drive residential road, route 10 | 0.18 | none | 10 | flat | 18/0 | paved-dirt/dirt | none | | 10 | 15 | 16/1 | gravel/dirt | Access to four private residences |
| 401 | Buckhorn sewer lift station roads route 401 | 1.70 | none | 5 | flat to rolling | 8-10/0 | gravel/dirt | none | | 5 | 25 | 16/1 | gravel/dirt | Access to sewer lift station #6 and one other |
| 405 | Buckhorn employees residential road, route 11 | 0.16 | none | ? | flat | 12-14/0 | paved/dirt | none | | ? | 15 | 18/1 | paved/gravel | Relocation being considered to complement route 11 intersections alternatives |
| 406 | Guy Sandy water treatment road, route 12 | 0.11 | none | ? | flat | 18-19.0 | paved – gravel/dirt | none | | ? | 25 | 18/1 | paved/gravel | Access to water treatment facility and a storage building |
| 407 | City sewage disposal road | 0.83 | none | ? | flat to rolling | 18/0 | gravel – dirt/dirt | none | | ? | 25 | 16/1 | gravel/gravel | Access to Sulphur sewage treatment plant |
| 408 | Superintendent's residential road, fed hwy 177 | 0.05 | none | ? | flat | 13/0 | paved/dirt edged with stone | none | | ? | 15 | 16/1 | paved/gravel | – |
| 409 | Headquarters residence #2 road, route 113 | 0.14 | none | ? | flat to rolling | 16/0 | paved-dirt | none | | ? | 15 | 16/1 | paved/gravel | – |
| 410 | Headquarters, utility area road, fed hwy 177 | 0.18 | none | ? | flat to rolling | 20/0 | paved dirt | none | vehicles/pedestrians | ? | 15 | 22/3 | paved/gravel | |
| 411 | Sewer line service road, route 10 | 0.36 | none | ? | flat | 10/0 | dirt/dirt | none | | ? | 15 | 10/0 | gravel/dirt | Used by City of Sulphur employees |
| 412 | Residence #4 road, route 10 | 0.01 | none | ? | flat | 20/0 | paved-dirt | none | | ? | 15 | 12/1 | paved/gravel | – |
| 413* | Radio repeater road | 0.02 | none | ? | rolling | 12/0 | paved | | | ? | 15 | 12/0 | gravel | Access to radio repeator park and service personnel only |
| **Parking Areas** | | | | | | | | | | | | | | |
| 900 | Nature center, route 10 | | woodlands | | flat | | paved | | | | | | paved | 4,950 square yards pavement with 97 car spaces |
| 901 | Travertine Island, route 10 | | woodlands | | flat | | paved & gravel | | | | | | paved | 1,200 square yards pavement with 20 car spaces |
| 902 | Headquarters, route 410 | | woodlands | | flat | | paved | | | | | | paved | 3,170 square yards pavement 245 square yards gravel with 15 car spaces plus utility area |
| 903 | Bromide Hill, route 10 | | woodlands | | rolling | | paved & gravel | | | | | | paved | 1,360 square yards pavement with 25 car spaces |
| 904 | Travertine ranger station, route 200 | | woodlands | | flat | | paved | | | | | | paved | 210 square yards pavement 220 square yards gravel |
| 905 | Bison viewpoint, fed hwy 177 | | woodlands, bison sometimes | | flat | | paved | | | | | | paved | 490 square yards pavement with 10 car spaces |
| 906 | Pavilion Springs, route 906 | | woodlands, springs | | flat | | paved | | | | | | paved | 1,300 square yards pavement with 14 car spaces |
| 907 | Residence, ? | | | | ? | | paved | | | | | | paved | 1,090 square yards davement |
| 908 | Little Niagara route 10 | | woodlands, creek | | flat | | paved & gravel | | | | | | paved | 4,810 square yards pavement with 44 car and 19 bus spaces |
| 909 | Buckhorn marina route 11 | | prairie, woodlands, lake | | flat | | paved | | | | | | paved | 15,555 square yards pavement 6,510 square yards gravel pavement for 105 car with boat trailers spaces and 80 car spaces, gravel for about 59 car with boat trailer spaces and 53 car spaces deteriorating pavement – moisture underneath |
| 910 | Point manna, route 13 | | prairie, woodlands, lake | | flat | | gravel | none | park personnel only | | | | paved | 15,000 square yards pavement with 96 car with boat trailer spaces and 32 car spaces deteriorating pavement – moisture underneath |
| 911 | Guy Sandy manna, route 12 | | woodlands, lake | | flat | | paved | | | | | | paved | 2,490 square yards pavement with 10 car with boat trailer spaces and 9 car spaces deteriorating pavement without a base course underneath |
| 912 | Vendome parking, Broadway | | woodlands | | flat | | paved | | | | | | paved | 5,210 square yards pavement with 92 car spaces |
| 913 | Hillside Spring, fed hwy 177 | | woodlands, spring | | flat | | paved | none | | | | | paved | 520 square yards pavement with 20 car spaces |

**SUMMARY OF NPS ROADS**

| Mileage | Functional Classification | Number |
|---|---|---|
| 7.87 | Class I – principal | 5 |
| 8.57 | Class II – connector | 18 |
| 7.62 | Class III – special purpose | 12 |
| 0.00 | Class IV – primitive | 0 |
| 1.72 | Class V – administrative | 9 |
| 4.60 | Class VI – restricted | 4 |
| **30.38** | **Totals** | **48** |

Refer to Park Road Standards – National Park Service 1984 for information about functional classifications and design standards.

– The average daily traffic (ADT) was determined for each road by totaling the number of vehicles using it for the six largest visitation months in 1987, dividing that total by six, and then dividing that six month average total by 30 days. This included over 80 percent of the vehicles using the recreation area during 1987.