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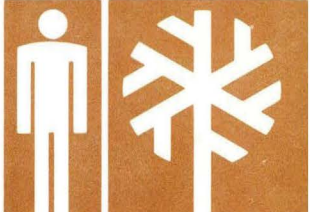
IN
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development concept plan

january 1982

ROCKY MOUNTAIN

BEAR LAKE



NATIONAL PARK / COLORADO

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DEVELOPMENT CONCEPT PLAN

BEAR LAKE

Rocky Mountain National Park

Colorado

December, 1981

RECOMMENDED:

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12-24-81
Date

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I. INTRODUCTION

A. Purpose of this Document

This document describes a proposed course of action that will be undertaken in the future to alleviate the problems described later in this section. This plan is a result of the consideration given to alternatives described in the Environmental Assessment for Bear Lake published in September 1980. These considerations included public input at several points during the planning process.

B. Regional Setting

Rocky Mountain National Park is a key attraction for the residents of the fast-growing metropolitan corridor which stretches from Pueblo, Colorado to Laramie, Wyoming (see Regional Setting map). Over 2.5 million people visit the park each year. Rocky Mountain is one of the most accessible traditional mountain parks and may become increasingly popular as automobile travel becomes more restricted.

The Interstate 25 urban corridor has access to Rocky Mountain National Park via U.S. Highways 34 and 36. Denver, located about 60 miles from the park, is a major transportation center with air, rail, and bus service. Interstate Highways 70 and 80 provide east-west access to the region from much of the United States. About 75 percent of the park's visitors enter from the east. Trail Ridge Road (U.S. 34) allows park users to experience the high country and ties eastern gateway towns, such as Estes Park and Allenspark, to Grand Lake and Granby on the west. Many of Colorado's western slope communities are recreation oriented and depend heavily on national park visitors.

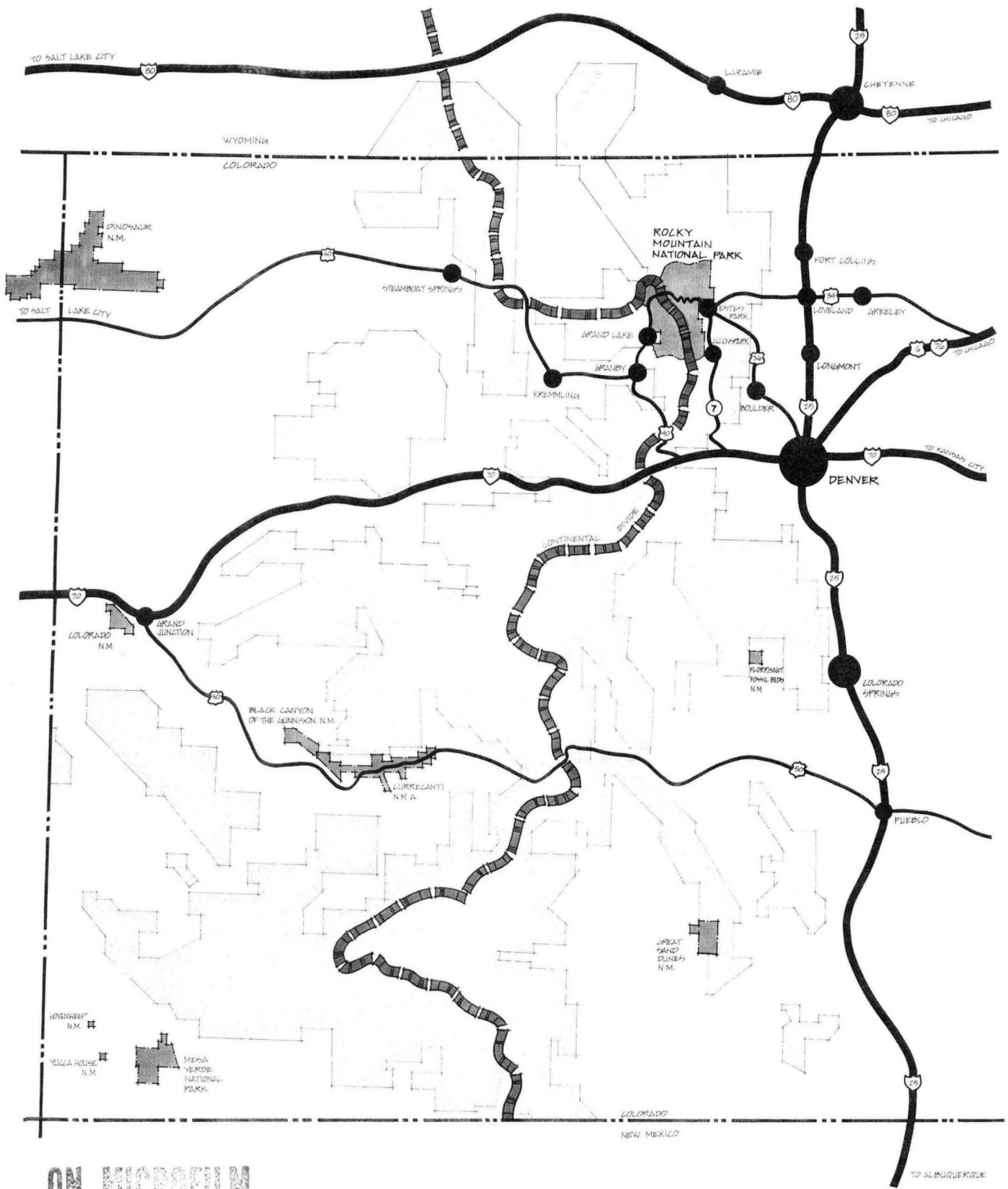
The Continental Divide bisects Rocky Mountain and forms the spine of one of the largest national forest/national park complexes in the country. Recreation is tremendously important to this mountainous region and Colorado's spectacular peaks, meadows, and cascading streams are sought after by visitors from around the world--both in summer and winter.

C. Background of Planning

1. Establishment

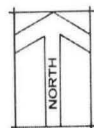
Rocky Mountain National Park was established in 1915 to include approximately 260,000 acres of alpine valleys, peaks, and ridges. Congress's intention was to "...set apart a public park for the benefit and enjoyment of the people...and for the preservation of the natural conditions and scenic beauties thereof."

Since then, additional legislation and several planning studies which affect the Bear Lake Development Concept Plan have been completed. (This plan covers only the portion of the park illustrated on the Park/Study Area map). A summary of these other influences on planning follows.



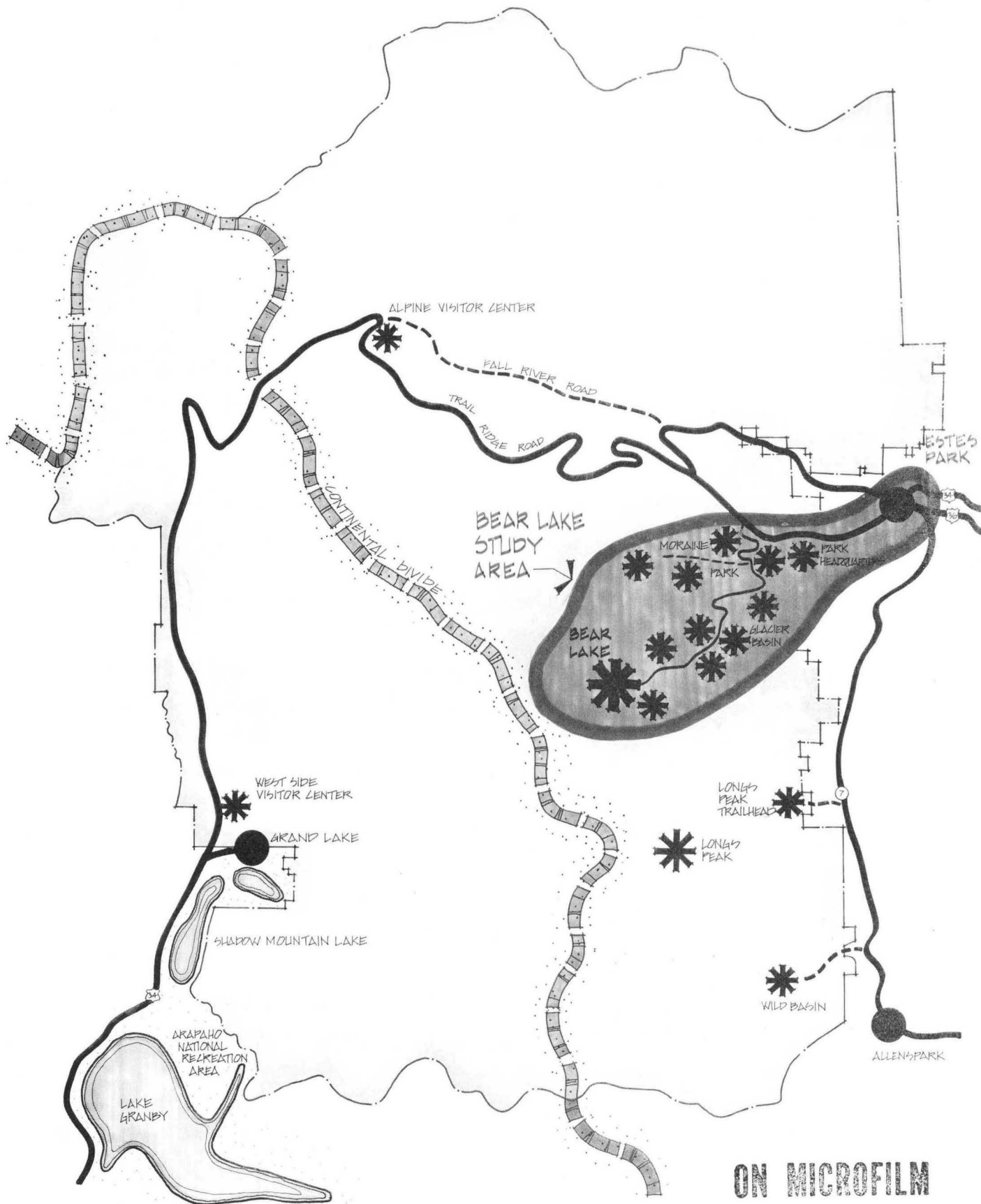
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- | | | |
|---------------|--|---|
| LEGEND |  NATIONAL PARKS & MONUMENTS |  CONTINENTAL DIVIDE |
| |  NATIONAL FORESTS |  INTERSTATE HIGHWAYS |
| |  CITIES & TOWNS |  US & STATE HIGHWAYS |








REGIONAL SETTING
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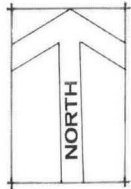
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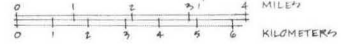
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LEGEND

-  MAJOR ROADS
-  MINOR ROADS
-  CONTINENTAL DIVIDE
-  MAJOR VISITOR USE AREAS
-  STUDY AREA



PARK / STUDY AREA
BEAR LAKE DEVELOPMENT CONCEPT PLAN
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2. Wilderness

In 1974, in response to increasing visitation pressures and the 1964 Wilderness Act, President Nixon recommended to the Congress wilderness classification for over 239,000 acres of Rocky Mountain National Park. To date this wilderness recommendation has not been enacted by the Congress and the President. When, and if, wilderness classification is established, use will be based on the premise that wilderness is "an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain."

Because wilderness classification places constraints on the kind of development that is allowed in an area, a detailed boundary for the wilderness recommended in the Bear Lake area was needed for planning purposes. Using the original wilderness recommendation field notes, the recommended wilderness boundary was delineated in greater detail (see Recommended Wilderness Boundary map). There are two minor differences between the detailed map included in this document and the original parkwide map: (1) the boundary now parallels the Glacier Creek trail between the Glacier Gorge trailhead and the park boundary, and (2) the boundary now coincides with Glacier Creek between the Glacier Gorge trailhead and Dream Lake and thus avoids the very heavily used, paved trail to Nymph Lake.

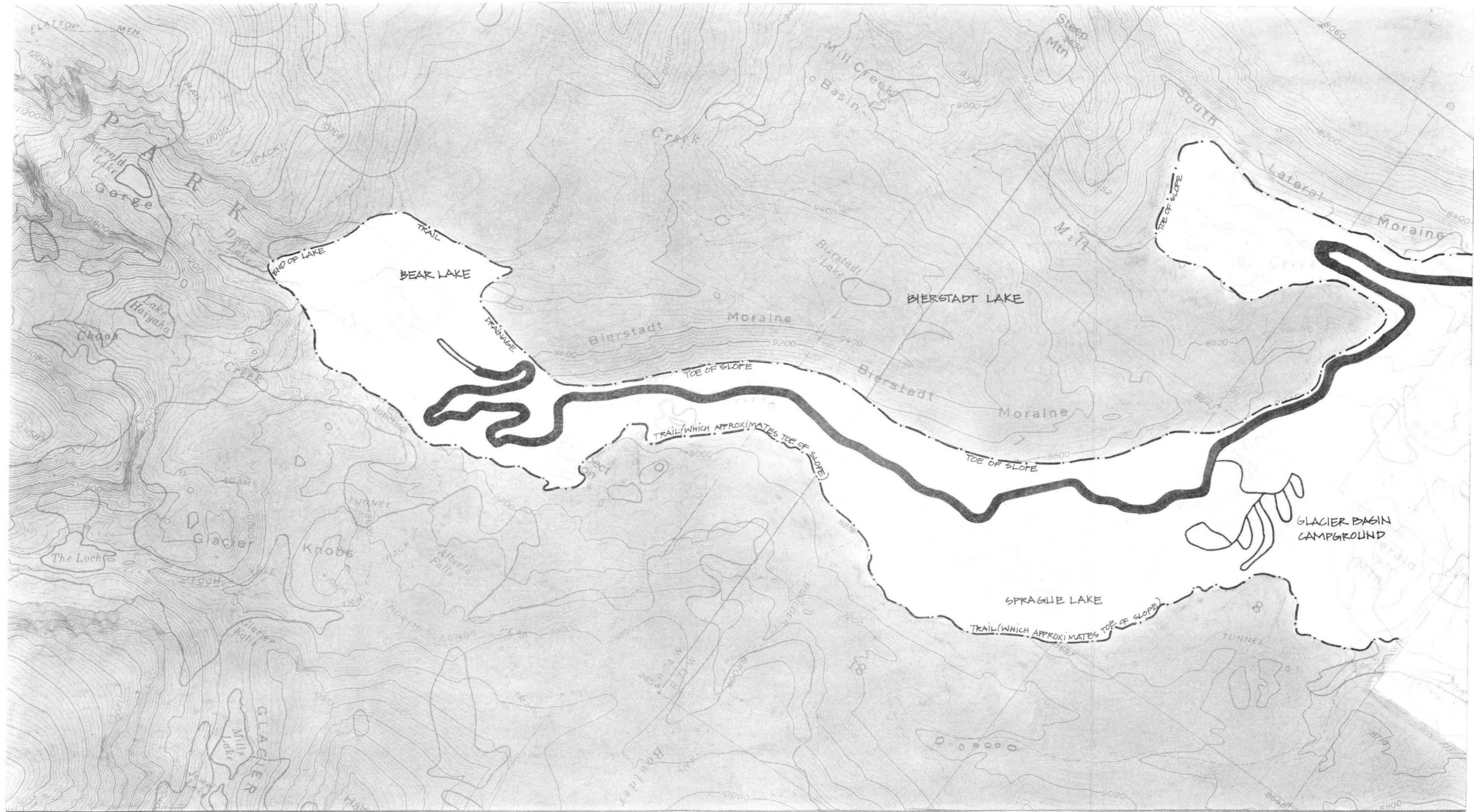
3. Transportation

Problems generated by increasing numbers of park users led to the completion of a two-phase transportation study in 1975. In order to combat parking and circulation conflicts, a shuttle system was recommended for both Bear Lake Road and Trail Ridge Road.

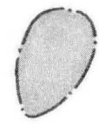
The master plan was approved January 9, 1976 for the entire national park. This plan also included recommendations concerning transportation problems at Bear Lake:

- a. Establish a shuttle system to increase enjoyment of Bear Lake and other heavily used areas.
- b. Place more emphasis on interpretation and dissemination of visitor information especially information about the transportation system and wayside exhibits.
- c. Develop cooperative orientation/information especially relating to a transportation system and wayside exhibits.

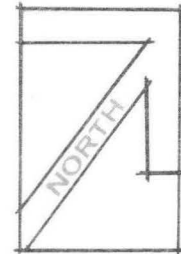
During the summers of 1978-1981, an experimental shuttle system was operated on the Bear Lake Road - as recommended in the master plan and the 1975 transportation study.



LEGEND



RECOMMENDED WILDERNESS



RECOMMENDED WILDERNESS

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4. Additional Master Plan Recommendations

The master plan also proposed the following objectives for Bear Lake:

- a. Continue the emphasis on Bear Lake as a major trailhead, but channel visitor use in high density areas using elevated walkways and other nontraditional facilities.
- b. Encourage day use activities, especially picnicking, nature walks, and cross-country skiing.

5. Trails

A parkwide trails plan has been conducted. It addressed existing conditions and needed maintenance as well as recommend closures and new alignments. The trails plan was accomplished in close cooperation with the Bear Lake Development Concept Plan to ensure compatible recommendations.

D. Problems

The Bear Lake area, a natural, and in some cases primitive portion of Rocky Mountain National Park, is strangling on its own popularity. In order to accommodate increasing visitor use and minimize impact on park resources, some trails have been smoothed, paved or widened and an experimental shuttle system has been implemented. Winter use, particularly cross-country skiing, is increasing.

A review of previous planning documents and discussions between park, region, and Denver Service Center staffs identified the following problems:

1. Visitor Use Levels/Experiences

Determine whether visitor use should be decreased, increased, or held at the present level. Associate use levels with the types of experiences.

2. Transportation/Parking/Circulation

Determine the feasibility of establishing a permanent shuttle system. Identify desirable staging areas, routes, stops and seasons and times of operation. Determine which existing parking areas should be retained, enlarged, and eliminated. Determine the need for new parking areas. Determine the best location for an emergency helispot near Bear Lake. Determine the appropriateness of allowing bicycle, moped, and motorcycle use on Bear Lake Road.

3. Interpretive/Hiking/Cross-Country Ski Trails

Determine solutions to existing problems with all existing trails including marking, surfacing, and channelizing. Determine desirable new alignments.

4. Information/Orientation

Determine needed improvements to sign, wayside exhibits, and visitor contact stations.

5. Picnicking

Determine ways of improving existing picnic facilities and locations for new kinds of picnic opportunities (e.g., a designated picnic area without tables or with benches only).

6. Utilities

Determine adequacy and needed improvements to emergency telephones, drinking fountains, and restrooms. Determine possible alternative energy sources that could provide heat and electricity at Bear Lake.

7. Landscape Plan/Architectural Theme

Determine methods of restoring impacted areas with native plant materials. Ensure that all future structures will be compatible with the established architectural theme.

II. SUMMARY OF THE PLAN

After considering public input, the National Park Service has decided not to limit visitation to the Bear Lake area. Anyone who wishes to visit the area may continue to do so without reservations or other restrictions. In order to accommodate large numbers of visitors while minimizing environmental degradation, two strategies will be used.

The first strategy will be to design areas to withstand large numbers of visitors in locations that have long been popular destinations. Trails will be widened. Picnic areas will be expanded. Additional comfort stations will be constructed. Visitor contact stations and interpretive overlooks will be built to orient visitors and to interpret the fragile environment and encourage respectful use.

A second strategy, however, will be to encourage visitors to use areas now receiving little use - and thus be dispersed away from heavily used sites. This will be accomplished by developing new trails and picnic areas.

The existing shuttle system will be upgraded. A new shuttle staging area will be located on the west side of Estes Park. The exact location of the Primary Staging Area will be selected at a later date. Shuttle use between Sprague Lake and Bear Lake will become mandatory during peak use periods. This will alleviate traffic congestion and minimize the impact of private automobiles on the environment and the visitor experience. Some parking areas will be eliminated or decreased in size.

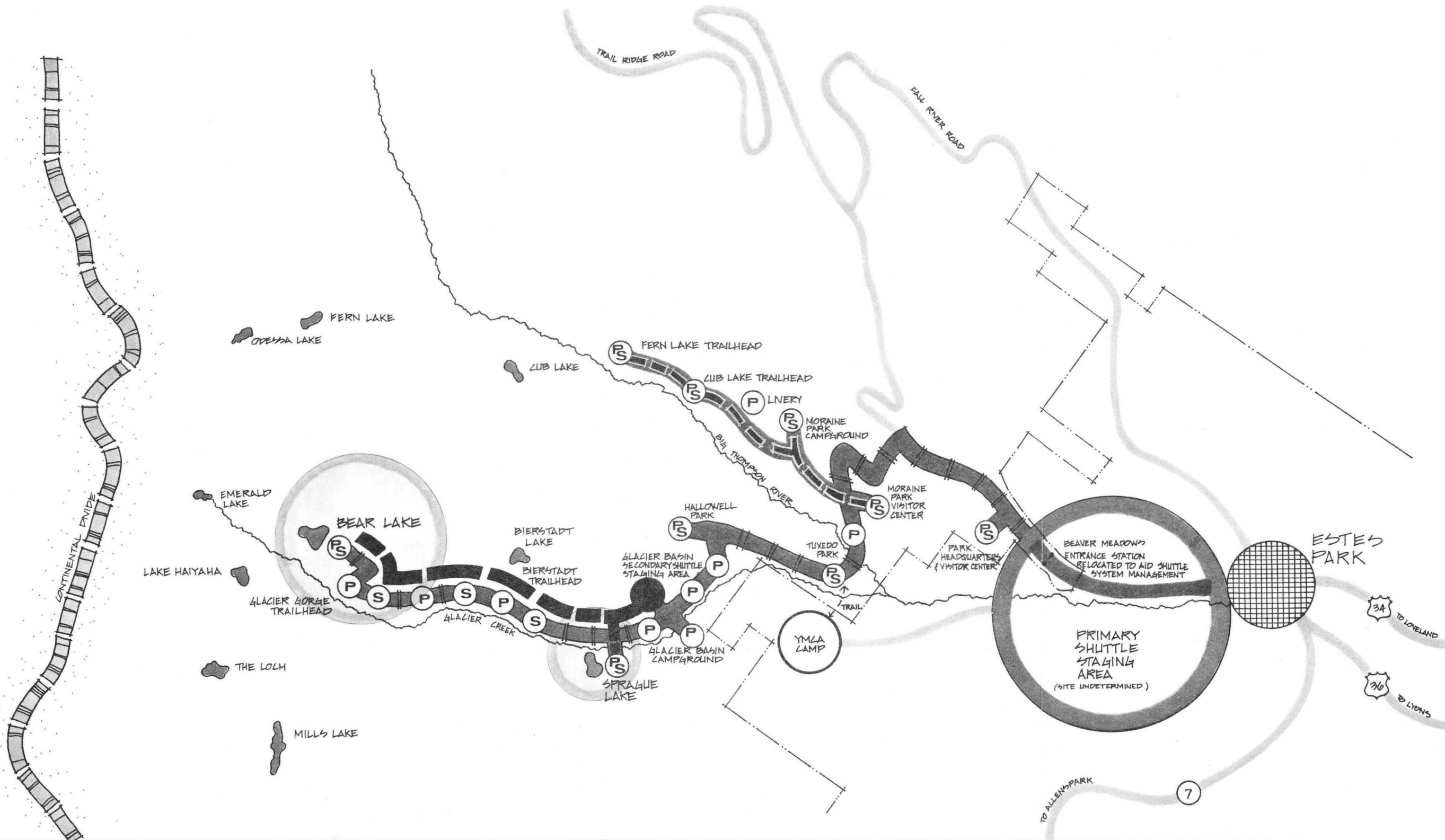
III. DESCRIPTION OF THE PLAN

A. Transportation









During peak periods, (including summers and possibly weekends during the fall and winter) visitors will be asked to use a shuttle bus system that is mandatory throughout much of the study area (see Transportation map). A primary shuttle staging area will be located between park headquarters and Estes Park and the Beaver Meadows Entrance Station will be relocated to better inform visitors and aid in managing traffic. (The exact location and ownership of the primary shuttle staging area will be determined later based on negotiations between the park and the community.) A secondary shuttle staging area will be located at the site of the existing staging area in Glacier Basin. Because this parking area will be too small to meet demand, many visitors will need to use the primary facility in Estes Park during peak periods. Visitors will be encouraged to leave their automobiles at the secondary shuttle staging area and ride the shuttle system to destinations farther up Glacier Creek valley. During peak use periods, visitors will be required to ride the bus for access above Sprague Lake. Climbers and other visitors whose schedules are not compatible with the shuttle system will be permitted to use the trailhead parking areas. Handicapped visitors will also be allowed to use their private automobiles and will be issued a permit for the parking areas between Sprague Lake and Bear Lake.

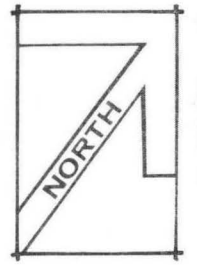
In addition to the primary and secondary shuttle staging areas, buses will provide service to park headquarters, the Moraine Park visitor center, the Moraine Park campground, Cub Lake trailhead, Fern Lake trailhead, Tuxedo Park, Hallowell Park, Sprague Lake, Bierstadt Lake trailhead, Glacier Gorge trailhead, Bear Lake and one other point between Sprague and Bear lakes. There will be three separate shuttle routes, which will be interconnected to provide optimum service throughout the study area: (1) Estes Park to Bear Lake, (2) the Moraine Park visitor center to the Fern Lake trailhead and (3) the Glacier Basin secondary staging area to Bear Lake (this route will be mandatory during peak use periods).

The experimental shuttle system, which was operated during the summers of 1978-1981, used older model school buses without modifications to serve the special needs of park visitors. Visitor use surveys indicated some visitors were dissatisfied with the old equipment. The National Park Service will strive to procure funds for new shuttle buses. Equipment similar to that used in Grand Canyon and Yosemite National parks will provide adequate leg-room for adults and large windows for scenic viewing. All buses (either the new equipment or used school buses) will display a distinctive, color-coordinated paint scheme. Drivers will wear distinctive uniforms to aid identification by visitors and establish a sense of professionalism. Comparison costs between old and new buses are found in Transit System Study, Phase II Report, Centennial Engineering, Inc., 1980 and Rocky Mountain National Park Transportation Study, URS Company, 1975. Schedules will be printed on signs at each stop, and a folder will be available which includes maps and schedules.

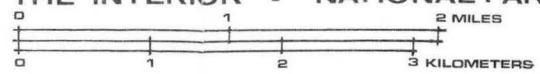


LEGEND

-  ESTES PARK SHUTTLE
-  FERN LAKE/MORaine PARK SHUTTLE
-  BEAR LAKE SHUTTLE MANDATORY DURING PEAK USE PERIODS
-  PARKING AREA
-  SHUTTLE STOP
-  SECONDARY SHUTTLE STAGING AREA
-  CONCENTRATED VISITOR USE AREAS
-  URBAN DEVELOPMENT



TRANSPORTATION
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The intersection of Bear Lake Road and the Glacier Basin staging area entrance will be improved to better direct traffic into the staging area. A major road improvement will be made at the intersection of Bear Lake Road and the Sprague Lake entrance road. There, the alignment of the Bear Lake Road will be changed to direct visitors into the Sprague Lake area via a new two-lane road and bridge. Vehicular access to Bear Lake will require a 90-degree turn off the new entrance road. Access at this point will be limited during peak use periods.

The Bear Lake parking lot will be visually softened with planters spaced along the sidewalk median and its size will be reduced by no more than 50 cars to improve vehicle circulation (see the Landscape Rehabilitation section). The Glacier Gorge trailhead parking area will be redesigned to minimize circulation conflicts. The Bierstadt Lake trailhead parking area will be redesigned as a "flow-through" facility using an abandoned lane. A new 100 space parking lot will be located on the north side of Sprague Lake. The Tuxedo Park parking area will be moved farther north to minimize soil erosion at the present site. About 25% of the existing pulloffs along the Bear Lake Road will be closed to improve safety and allow resource rehabilitation. The resulting parking capacities are summarized in the following table.

PARKING LOT CAPACITIES

	EXISTING	PROPOSED
ESTES PARK PRIMARY STAGING AREA	0	500 ⁺
PARK HEADQUARTERS	70	70
MORaine PARK VISITOR CENTER	50	50
CUB LAKE TRAILHEAD	40	40
FERN LAKE TRAILHEAD	31	31
BIG THOMPSON RIVER	12	12
TUXEDO PARK	5	30
HALLOWELL PARK	11	11
GLACIER BASIN	236	236
SPRAGUE LAKE	45	100
BIERSTADT LAKE TRAILHEAD	10	20
GLACIER GORGE TRAILHEAD	32	32
BEAR LAKE	200	150
PULLOFFS: BEAR LAKE-MORaine PARK	133	100
Total	875	1350 ⁺

NOTE: Parking capacities are based on 1990 visitation projections and Transit System Study Phase II Report, Centennial Engineering, Inc., 1980.

Use of bicycles between Sprague Lake and Bear Lake will be encouraged during the time that the mandatory shuttle is in operation.

B. Visitor Contact/Information/Interpretation

New visitor contact stations will be constructed at the primary shuttle staging area near Estes Park, at the Glacier Basin secondary staging area, Sprague Lake and Bear Lake. The visitor centers at park headquarters and Moraine Park will continue to function as they do now. Use of the visitor center at headquarters will increase significantly because of the shuttle system (see Transportation map).

The design of all new contact stations will be compatible with traditional park architecture (see Architectural Theme section). Each contact station may be designed using different modules for different functions. For example, one module may be for the bus shelter which will also serve as the weather shelter in winter. This module will be open on one side (the south, if possible). The comfort station and information/orientation functions may be in other modules which are design-related and contiguous to the bus shelter. These modules will be designed to be used in the winter, and because of the heavy snowfall the walkways around the modules will be designed to permit snow removal with heavy equipment. Each visitor contact station will be able to operate as both a staffed and unstaffed facility.

The visitor contact stations at the Estes Park primary shuttle staging area and the Glacier Basin secondary shuttle staging area will serve as an information/orientation center and comfort station. The Sprague Lake and Bear Lake contact stations will also provide these services, in addition to a bus shelter. At Sprague Lake, the building will be located near the new parking lot on the north side of the lake and will be a focal point for arriving visitors. All trails in this area will start from the contact station. At Bear Lake, the station will be built at the west end of the parking lot. It too will be a focus for arriving visitors and the starting point for the local trail network. The existing bus shelter, information booth, Ranger Station and orientation signs at Bear Lake will be removed.

The first components of the information and interpretive program encountered by many visitors are the visitor contact stations. These stations will provide information and orientation whether they are staffed or not. Information provided parkwide and especially in the study area will emphasize the shuttle system, Sprague Lake, Bear Lake, and the entire Glacier Creek valley.

Wayside exhibits like those in use now will be provided at all shuttle stops and major visitor use areas. They will inform and orient visitors to the shuttle operation and the opportunities available in the immediate area. Part of the information will be a detailed map of the immediate area and the trail destinations that can be reached from there. A wayside exhibit located at Hallowell Park will interpret the archeology and history of that area, pending an interpretive prospectus.

The interpretive trail around Sprague Lake will be upgraded to be handicapped accessible for its entire length. Interpretive overlooks will be constructed at three locations on the north shore to take advantage of the views. These structures will allow large numbers of visitors to use popular viewpoints without damaging soils and vegetation. They may contain benches and wayside exhibits. The interpretive overlooks will be designed to be compatible with the environment and existing structures (see Architectural Theme section).

At Bear Lake, the existing interpretive trail will be upgraded, but its natural history theme will remain as it is now, pending an interpretive prospectus. Four interpretive overlooks will be located around the edges of Bear Lake.

Interpretive overlooks will be constructed along both improved existing trails and new trails above Bear Lake. Locations include Alberta Falls, Nymph Lake, Dream Lake, Bear Lake overlook trail, and Bierstadt Moraine trail.

6. Recreation Activities

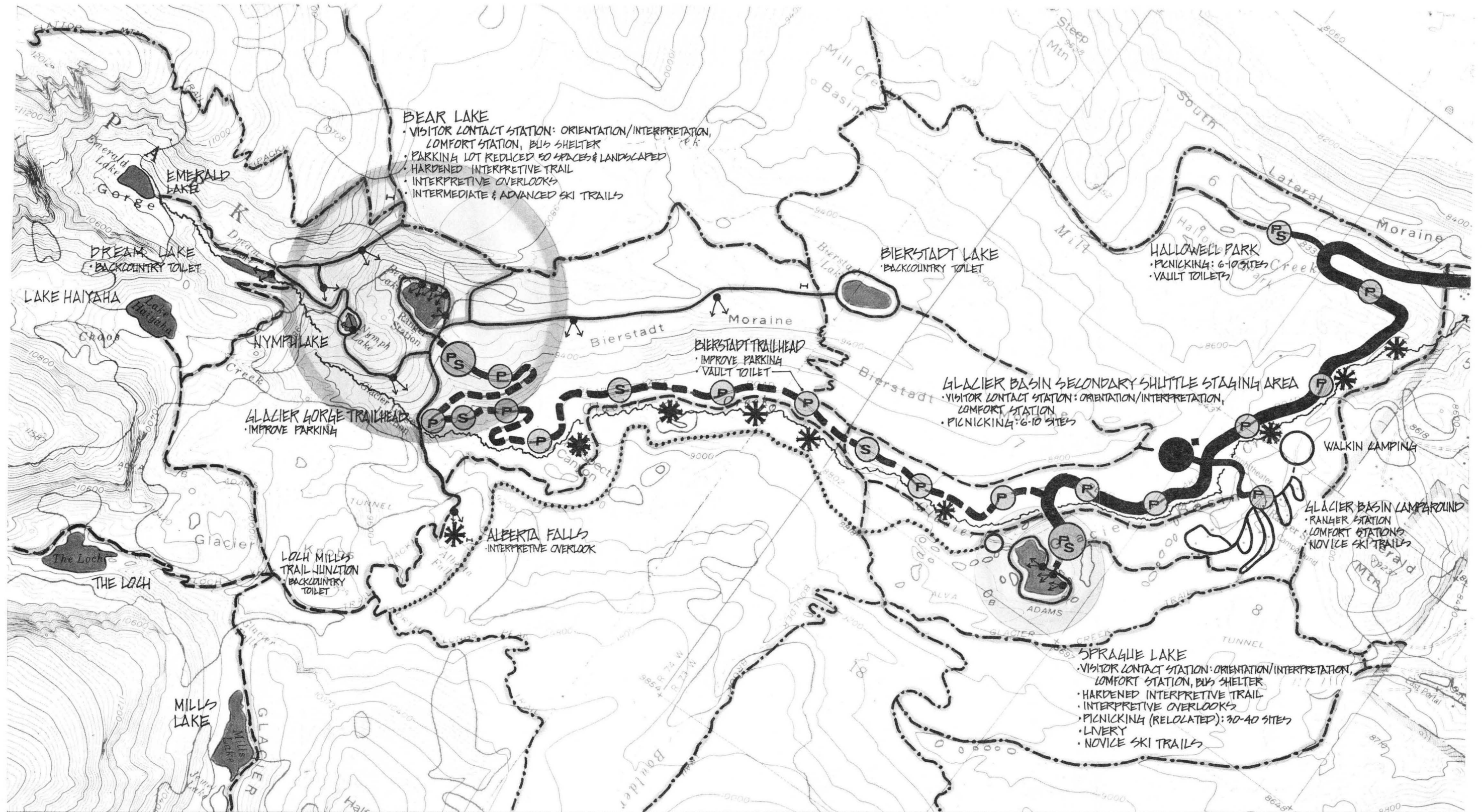
1. Trails

Areas of visitor concentration will be designed to accommodate large numbers while facilities in other places will be offered to disperse visitors. To achieve these aims, the National Park Service will harden trails (see Appendix for definition) around Bear Lake, trails from there to several other popular areas, and trails around Sprague Lake (see General Development map). A few formal interpretive overlooks will be developed at the most spectacular vistas on the hardened routes around Bear and Sprague lakes. The hardened alignment around Sprague Lake and less than half the Bear Lake trail will be made handicapped accessible. While the Bear Lake Trail is now paved, it has far too much sideslope to be handicapped accessible. The sideslope will be eliminated.

A new hardened trail will be built from Dream Lake north to connect with the Flattop Mountain Trail. This alignment will offer spectacular views of Bear Lake and the Glacier Creek valley. It will allow a relatively easy loop hike around Bear Lake, but at an elevation several hundred feet above the lake.

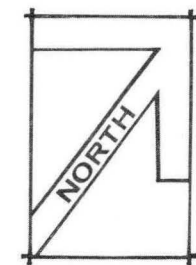
A new hardened trail will also be built from Bear Lake to Bierstadt Lake along the top of the Bierstadt Moraine. This trail will permit outstanding views of Glacier Gorge and Longs Peak. It will provide a loop hike from Bear Lake to Bierstadt Lake.

A new hiking trail will be built along Glacier Creek from near Glacier Gorge Trailhead to Glacier Basin Campground. This route will provide easy access to the beauty of the Glacier Creek pools and cascades. Much of this alignment will follow existing "social" trails. This

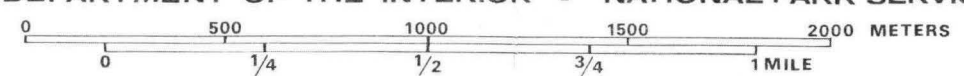


LEGEND

- ROAD OPEN TO ALL TRAFFIC
- MANDATORY SHUTTLE DURING PEAK PERIODS
- PARKING AREA
- SHUTTLE STOP
- SECONDARY SHUTTLE STAGING AREA
- INTERPRETIVE OVERLOOK
- HARDENED TRAIL
- HIKING TRAIL
- HORSE TRAIL
- HIKING & HORSE TRAIL
- HITCH RACK (END OF TRAIL FOR HORSES)
- CONCENTRATED VISITOR USE AREA
- INTERESTING NATURAL FEATURE



GENERAL DEVELOPMENT
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WALK-IN LAMPROUND - PROPOSED

- ORIENT TOWARDS VISITORS ARRIVING WITHOUT CARS (HIKERS, BICYCLISTS, ETC.)
- PROVIDE COMFORT STATIONS, FIRE PLACES & PICNIC TABLES

TRAIL - EXISTING

- HARDEN A SINGLE ALIGNMENT TO ELIMINATE MULTIPLE TRAILS IN MEADOW

STEPS - PROPOSED

- PROVIDE A SINGLE TRAIL ON SLOPE BY BUILDING WOOD OR STONE STEPS

IMPROVE BRIDGE

- PROVIDE TRAIL CROSSING ON SIDE OF EXISTING BRIDGE

TRAIL - PROPOSED

- SEPARATE HIKERS FROM CARS BY PROVIDING HARDENED TRAIL

VISITOR CONTACT STATION - PROPOSED

- ORIENTATION / INTERPRETATION
- COMFORT STATION
- STAY CLOSE TO PARKING SO SLOPE SCREENS VIEW FROM MAIN ROAD

SHUTTLE STAGING AREA - EXISTING

- 236 CARS
- RETAIN PINE GROVES TO BREAK UP SPACE

PICNIC AREA - EXISTING

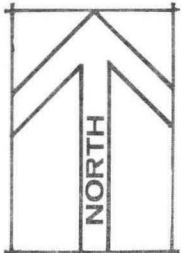
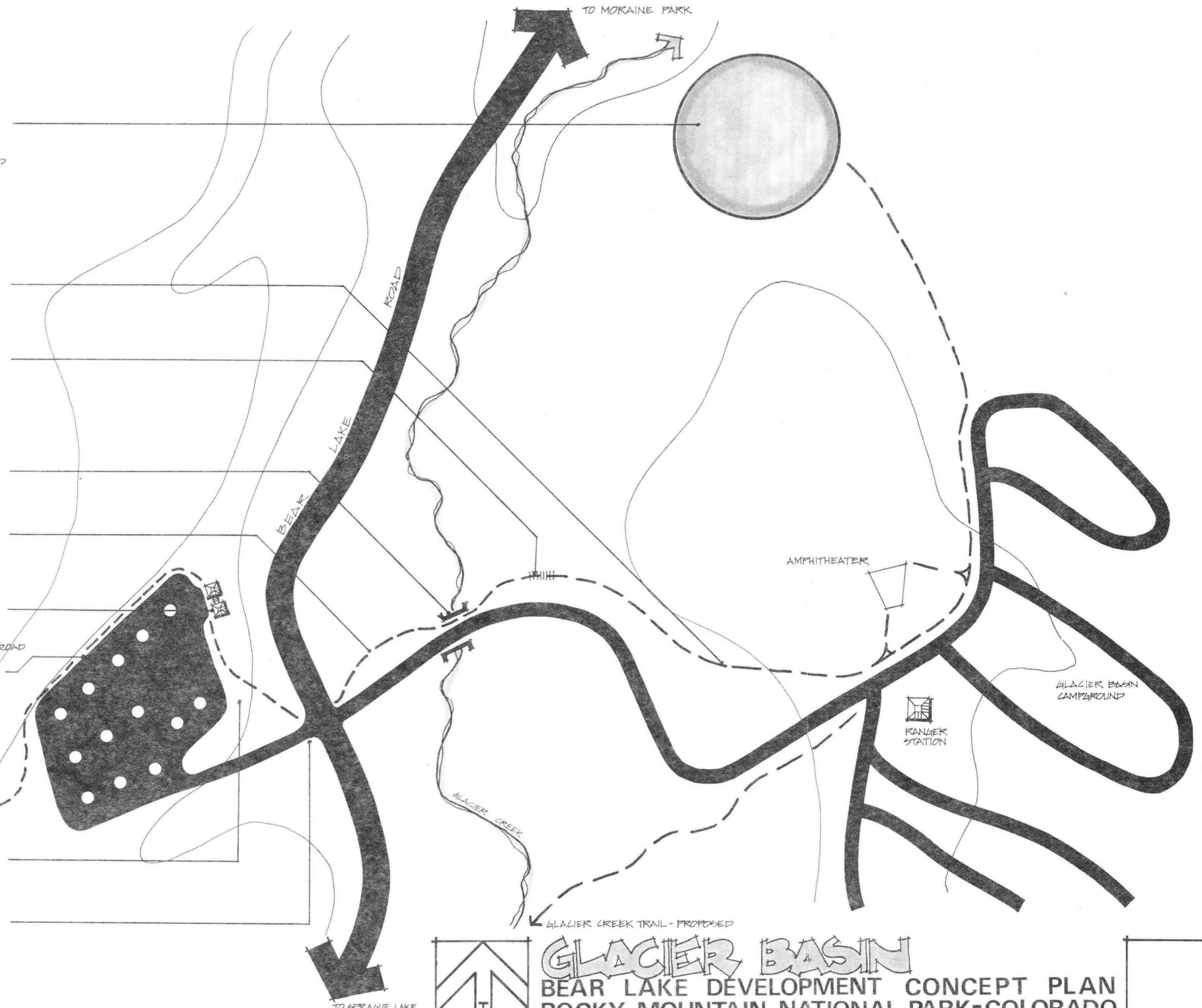
IMPROVE INTERSECTION

- ENCOURAGE TRAFFIC TO ENTER STAGING AREA
- EASE RADII'S ON NORTHWEST CORNER
- PROVIDE 4 WAY STOP SIGNS
- PAVE ACCESS ROAD TO STAGING AREA
- PAINT TRAIL CROSSING LINES AND INSTALL SIGNS
- INSTALL RIPRAP AND LANDSCAPING ALONG ACCESS ROAD TO STOP EROSION

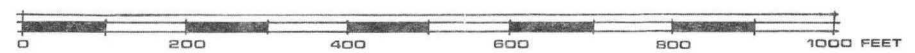
NOTE

BASE DATA IS USGS QUAD ENLARGEMENT, THIS SCALE AND TOPO ARE APPROXIMATE

LEGEND



GLACIER BASIN
BEAR LAKE DEVELOPMENT CONCEPT PLAN
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PARKING- PROPOSED

- 100 LARKS
- LEAVE EXISTING ROCK OUTCROPPS AND PINES TO BREAK UP SPACE AND SCREEN FROM INBOUND TRAFFIC ON MAIN ROAD

RECONSTRUCT EXISTING ROAD

- PROVIDE DIRECT TWO LANE ACCESS TO SPRAGUE LAKE
- ACCESS TO BEAR LAKE REQUIRES 90° TURN

CONTROL GATE-PROPOSED

- SHUTTLE MANDATORY ABOVE THIS POINT DURING PEAK USE PERIODS

OBLITERATE EXISTING ENTRANCE ROAD

WIDEN EXISTING BRIDGE

- TO ACCOMMODATE TWO-WAY TRAFFIC

SHUTTLE STOP - PROPOSED

- TWO LANES ONE-WAY (ONE FOR LOADING/UNLOADING AND ONE FOR BUS AND AUTO CIRCULATION)

VISITOR CONTACT STATION- PROPOSED

- ORIENTATION / INTERPRETATION
- COMFORT STATION
- BUS SHELTER
- STAFFED/UNSTAFFED FACILITY

CORRAL - EXISTING

LIVERY - EXISTING

- RETAIN LIVERY PARKING
- OBLITERATE EXISTING PICNIC AREA & PARKING AND RESTORE SITE
- USE EXISTING COMFORT STATION FOR LIVERY CUSTOMERS

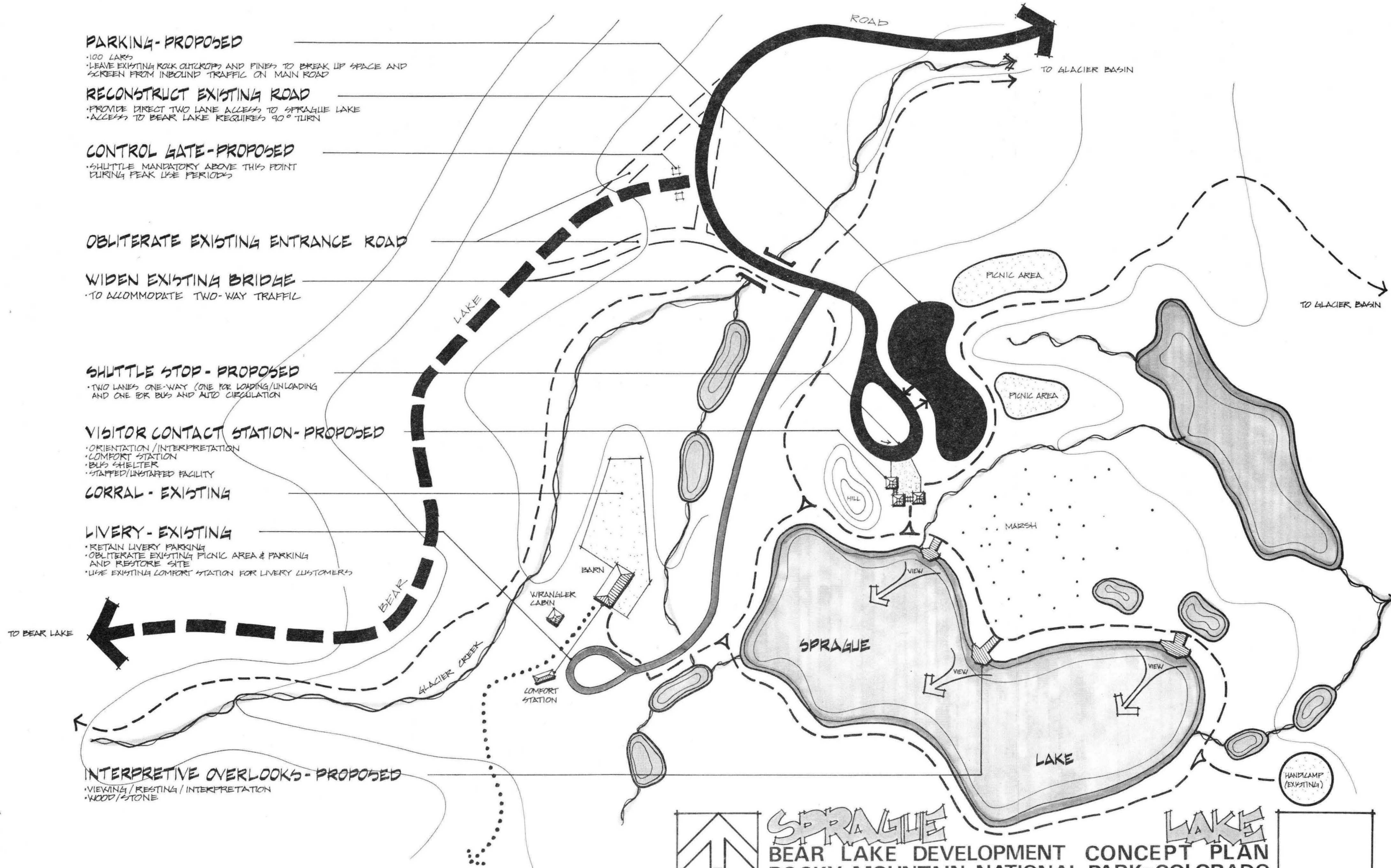
INTERPRETIVE OVERLOOKS- PROPOSED

- VIEWING / RESTING / INTERPRETATION
- WOOD / STONE

TO BEAR LAKE

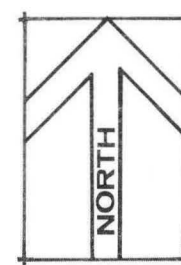
TO GLACIER BASIN

TO GLACIER BASIN



LEGEND

NOTES:
 • BASE DATA IS USGS QUAD ENLARGEMENT, THUS SCALE AND TOPO ARE APPROXIMATE
 • BECAUSE OF LACK OF DATA, VISITOR CONTACT STATION, ROADS, PARKING AND PICNIC AREA NORTH OF LAKE ARE SCHEMATIC. DESIGN PROCESS MUST FINE TUNE SITING.

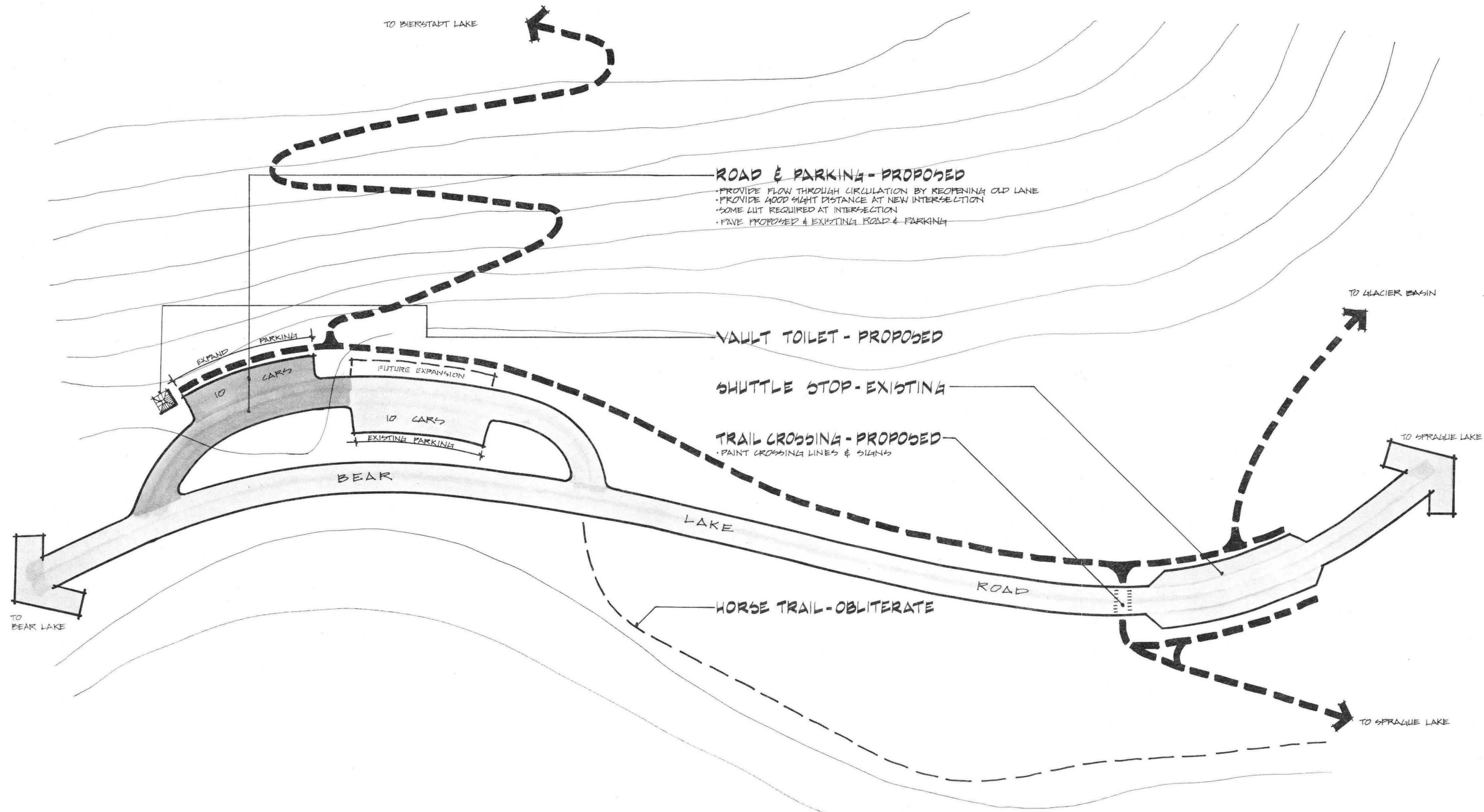


SPRAGUE LAKE
BEAR LAKE DEVELOPMENT CONCEPT PLAN
ROCKY MOUNTAIN NATIONAL PARK-COLORADO
 DEPARTMENT OF THE INTERIOR - NATIONAL PARK SERVICE



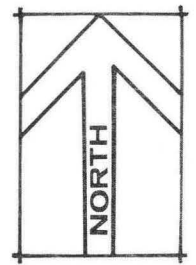
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ON MICROFILM



LEGEND

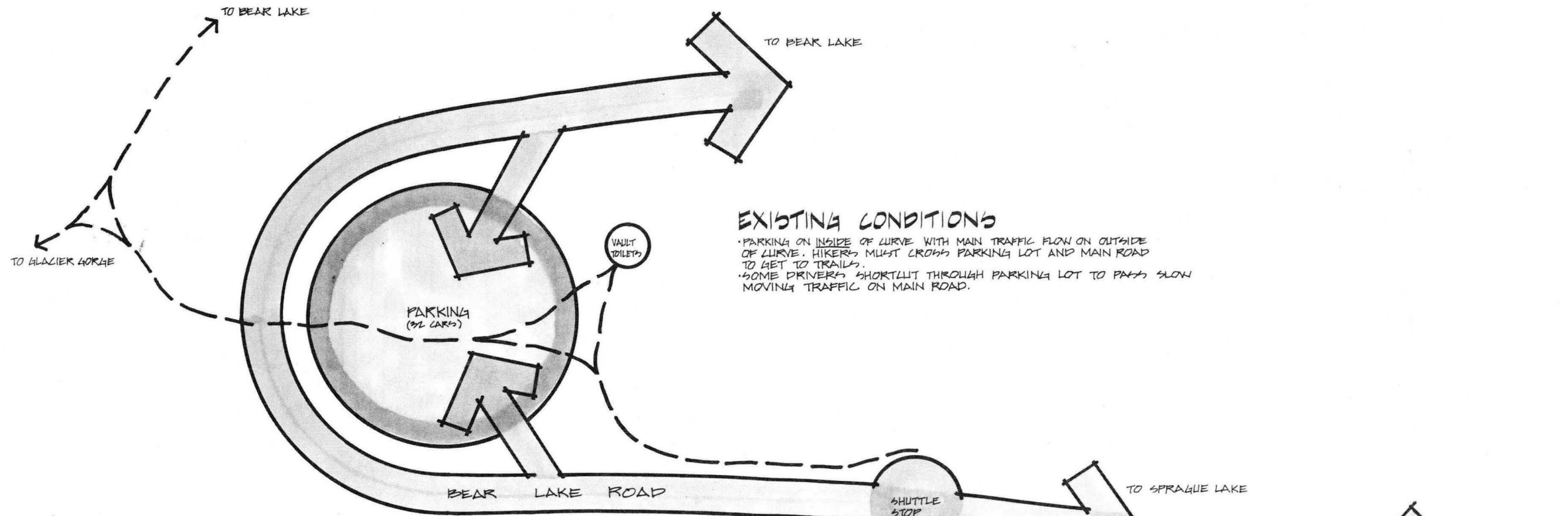
NOTE
THIS IS A SCHEMATIC NOT-TO-SCALE DRAWING
DUE TO A LACK OF DIMENSIONED TOPOGRAPHIC DATA.



BIERSSTADT LAKE TRAILHEAD
BEAR LAKE DEVELOPMENT CONCEPT PLAN
ROCKY MOUNTAIN NATIONAL PARK-COLORADO
 DEPARTMENT OF THE INTERIOR • NATIONAL PARK SERVICE

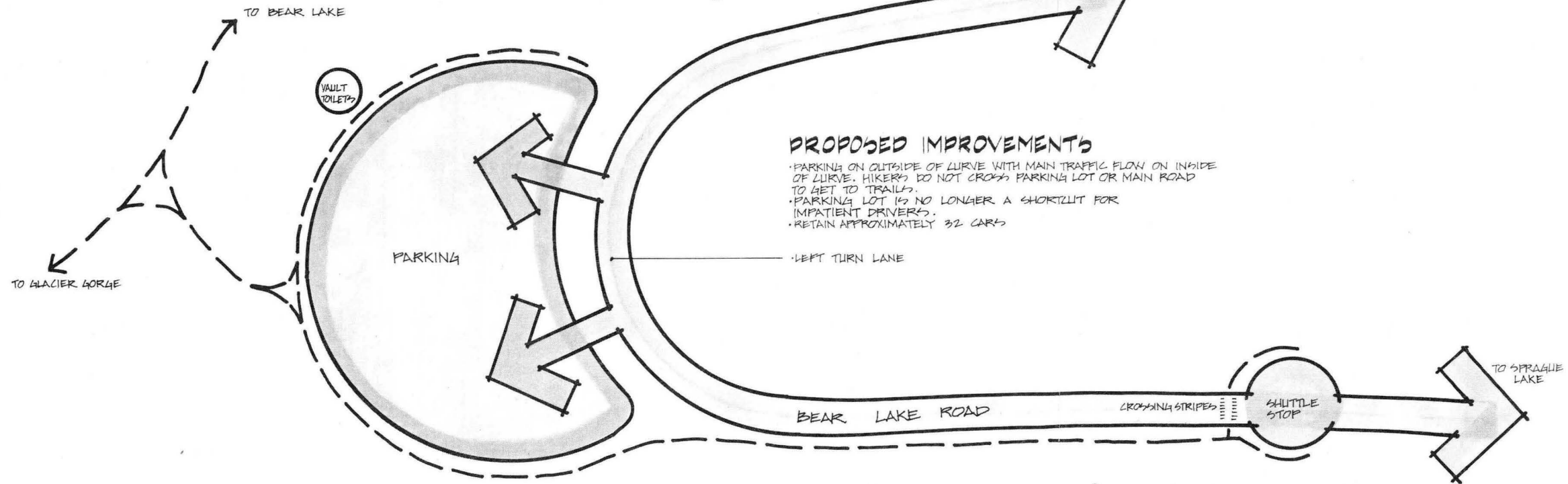
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ON MICROFILM



EXISTING CONDITIONS

- PARKING ON INSIDE OF CURVE WITH MAIN TRAFFIC FLOW ON OUTSIDE OF CURVE. HIKERS MUST CROSS PARKING LOT AND MAIN ROAD TO GET TO TRAILS.
- SOME DRIVERS SHORTCUT THROUGH PARKING LOT TO PASS SLOW MOVING TRAFFIC ON MAIN ROAD.

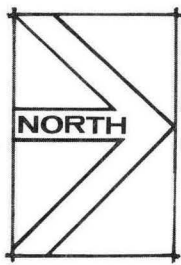


PROPOSED IMPROVEMENTS

- PARKING ON OUTSIDE OF CURVE WITH MAIN TRAFFIC FLOW ON INSIDE OF CURVE. HIKERS DO NOT CROSS PARKING LOT OR MAIN ROAD TO GET TO TRAILS.
- PARKING LOT IS NO LONGER A SHORTCUT FOR IMPATIENT DRIVERS.
- RETAIN APPROXIMATELY 32 CARS

LEGEND

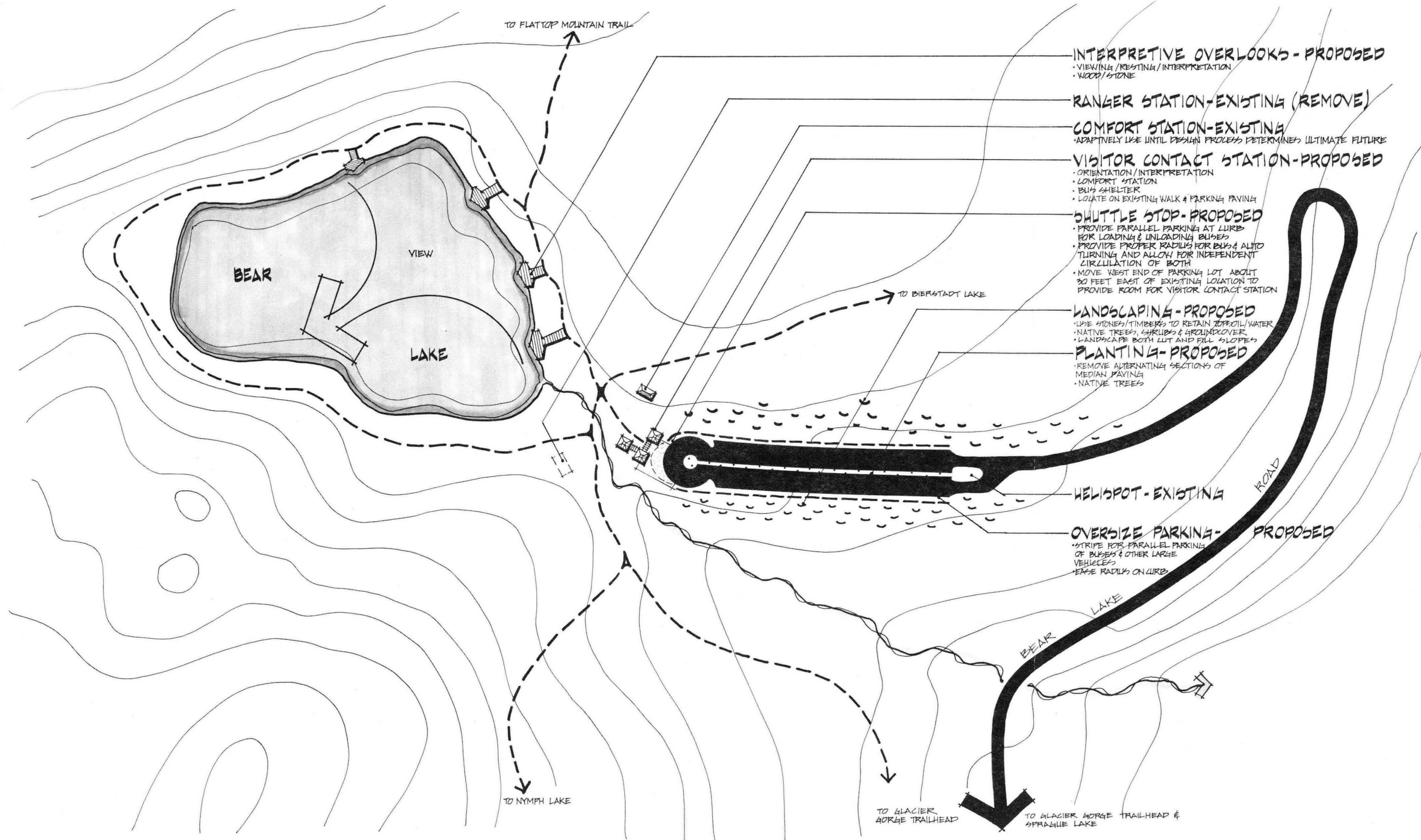
NOTES
 • THIS IS A SCHEMATIC NOT-TO-SCALE DRAWING
 • DUE TO A LACK OF DIMENSIONED TOPOGRAPHIC DATA,
 REFINEMENTS TO BE MADE DURING THE SUBSEQUENT DESIGN PROCESS.
 • THE INTENT OF THIS PROPOSAL IS TO IMPROVE CIRCULATION AND TO
 MINIMIZE THE NEED FOR HIKERS TO CROSS THE MAIN ROAD.



GLACIER GORGE TRAILHEAD
BEAR LAKE DEVELOPMENT CONCEPT PLAN
ROCKY MOUNTAIN NATIONAL PARK - COLORADO
 DEPARTMENT OF THE INTERIOR • NATIONAL PARK SERVICE

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ON MICROFILM



INTERPRETIVE OVERLOOKS - PROPOSED
 • VIEWING / RESTING / INTERPRETATION
 • WOOD / STONE

RANGER STATION - EXISTING (REMOVE)

COMFORT STATION - EXISTING
 • ADAPTIVELY USE UNTIL DESIGN PROCESS DETERMINES ULTIMATE FUTURE

VISITOR CONTACT STATION - PROPOSED
 • ORIENTATION / INTERPRETATION
 • COMFORT STATION
 • BUS SHELTER
 • LOCATE ON EXISTING WALK & PARKING PAVING

SHUTTLE STOP - PROPOSED
 • PROVIDE PARALLEL PARKING AT CURB FOR LOADING & UNLOADING BUSES
 • PROVIDE PROPER RADIUS FOR BUSES ALTO TURNING AND ALLOW FOR INDEPENDENT CIRCULATION OF BOTH
 • MOVE WEST END OF PARKING LOT ABOUT 30 FEET EAST OF EXISTING LOCATION TO PROVIDE ROOM FOR VISITOR CONTACT STATION

LANDSCAPING - PROPOSED
 • USE STONES / TIMBERS TO RETAIN TOPSOIL / WATER
 • NATIVE TREES, SHRUBS & GROUND COVER
 • LANDSCAPE BOTH CUT AND FILL SLOPES

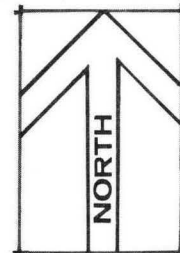
PLANTING - PROPOSED
 • REMOVE ALTERNATING SECTIONS OF MEDIAN PAVING
 • NATIVE TREES

HELISPOT - EXISTING

OVERSIZE PARKING - PROPOSED
 • STRIPE FOR PARALLEL PARKING OF BUSES & OTHER LARGE VEHICLES
 • EASE RADIIUS ON CURB

LEGEND

NOTE:
 BASE DATA IS USGS QUAD ENLARGEMENT, THUS SCALE AND TOPO ARE APPROXIMATE.



BEAR LAKE
BEAR LAKE DEVELOPMENT CONCEPT PLAN
ROCKY MOUNTAIN NATIONAL PARK - COLORADO
 DEPARTMENT OF THE INTERIOR - NATIONAL PARK SERVICE



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ON MICROFILM

new hiking trail will permit the conversion of the existing Glacier Creek Trail to a horse trail - and thus minimize horse/hiker conflicts.

Both private and commercial horse use will be kept off all heavily hiked trails and out of all visitor concentration areas. About 4.3 miles of trails presently open to horse use will be closed to horses. About 1.2 miles of trail will be designated primarily for horse use, and 1.6 miles of new horse trail will be constructed. Also, about 1.0 mile of the Boulder Brook/Trail (now closed to horse use) will be rerouted and its entire 2.7 miles will be upgraded to withstand horse and hiker use. These changes will result in about 5.4 miles of trails being built or redesignated for horse use.

Much of the horse use on the trails is generated from the Glacier Creek Livery at Sprague Lake. The livery will be retained and the existing Sprague Lake access road to it will be left open for livery use.

The trail network, as shown on the General Development map, will have approximately the mixture of trail types quantified in the following table.

<u>TRAIL TYPE</u>	<u>MILES NEW OR UPGRADED</u>	<u>TOTAL MILES</u>
Hardened	4.7	5.8 (1.0 Handicapped accessible)
Hiking	3.2	13.2
Hiking and Horse	2.7	17.8
Horse	1.6	<u>2.8</u>
	TOTAL	<u>39.6</u>

Recognized winter routes and alternate routes that avoid windblown, icy, or avalanche areas will be marked as cross-country ski trails where feasible. These routes will be marked with moveable markers by park rangers at the beginning of each ski season and maintained through the season to show the safest or best trail locations. For example, the recognized winter route through the Glacier Knobs will be marked to reroute skiers away from the windblown Alberta Falls trail. New opportunities for ski trails will develop where new trails are constructed.

For additional details on trails, see the Trails Plan, Rocky Mountain National Park.

2. Picnicking

The Tuxedo Park picnic area will be relocated about ¼ mile north (downstream) to allow for rehabilitation of the existing site. It will contain 15 to 30 picnic sites.

Hallowell Park will provide six to ten picnic sites in the general location of the existing facilities.

At Sprague Lake, picnicking will be relocated to the north side of the lake, in proximity to the new parking lot and visitor contact station. The existing picnic area will be eliminated, its restrooms retained and the picnic parking modified for use by Glacier Creek Livery users.

Picnic tables will be located at scattered roadside pulloffs between Hallowell Park and Bear Lake. Sites will be chosen that can accommodate this use without damage to the resource.

3. Walk-in camping

A walk-in campground will be developed north of the Glacier Basin campground in an area previously disturbed for sewage pits. The site is currently dry, barren of vegetation and presents no public health problems. It will be regraded, and native ground cover and trees will be planted.

This facility will be oriented towards visitors who arrive in the park without automobiles (backpackers, bicyclists, etc.).

Improvements for the walk-in campground will include a comfort station, water hydrants, fire grates, picnic tables and trash cans. Individual campsites will not be designated.

4. Fishing

Fishing will be allowed everywhere in the study area except Bear Lake where the greenback trout has been introduced. Current park regulations will apply. Children under 15 years of age may fish without a license, but may take only one-half the bag and possession limit. If conflicts and/or erosion develop at Sprague Lake and along Glacier Creek because of increased visitation, park managers will resolve the problems.

D. Comfort Stations and Utilities

At Bear Lake, a 16-stall comfort station will be constructed as part of a visitor contact station and the utility systems will be upgraded to current standards. The present water system will be improved.

At this point in the planning process, treatment of the existing surface water source appears to be the best solution. This method will entail installing a filter at the existing chlorination/reservoir structure and will involve more monitoring than a well system but will be much less expensive. During a later design stage, a well system can be considered, but this solution will probably require an electric generator and additional pipeline. These would be located considering hydrologic and esthetic constraints. The existing Bear Lake sewage system will be improved. Due to the rocky soil and heavily forested terrain around Bear Lake, it is questionable whether the existing sewage system can be upgraded to an acceptable level or any on-site underground disposal is possible without

major construction impacts. At this time, trucking the sewage out of the area seems to be the best answer. The comfort facilities will contain an oil or low water use toilet system. A sewage system of this type will cause little local environmental impact and will have virtually no potential to pollute the Bear Lake environment. Electric power is currently not available at Bear Lake and no power service extension is anticipated. Small quantities of electric power may be available from solar, wind or hydroelectric sources.

National Register nominations have been completed for the Bear Lake Ranger Station and Comfort Station, both of which are eligible for inclusion on the National Register. Both are good examples of rustic park architecture of the early twentieth century. Both the Colorado State Historic Preservation Officer and the Advisory Council on Historic Preservation have been consulted regarding removal of these buildings. They have concurred in the National Park Service's decision to remove the Bear Lake Ranger Station, and, since this structure has been determined eligible for the National Register, it will be recorded to Historic American Building Standards (HABS). The comfort station will be retained and adaptively used; further, adjacent new construction will be designed and built according to the standards prescribed in NPS-28, Cultural Resources Management Guidelines.

At Sprague Lake, a 12-stall comfort station will be constructed as part of a visitor contact station. A new septic tank and leach field will be installed in accordance with current standards, subject to further study at the design stage. The existing toilets will be retained for use by the livery customers. The current Sprague Lake water system is part of the Glacier Basin campground water system and does not meet public health standards. Groundwater supplies, however, are available and an acceptable well water system will be developed to serve new facilities at Sprague Lake as well as the Glacier Basin campground (U.S. Department of Interior, 1971, estimates 10 to 50 GPM per well.). Existing electric service at Sprague Lake is adequate to serve the new visitor contact station with a few minor routing changes.

At the primary shuttle staging area near Estes Park, a 16-stall comfort station will be constructed as part of a visitor contact station. It will be connected to city utilities.

At the Glacier Basin secondary shuttle staging area, a six-stall comfort station will be built as part of a visitor contact station. Water service will be a well water system and the sewage system will consist of a septic tank and leach field, subject to further study during the design stage.

The existing vault toilet at Glacier Gorge will be relocated to the southwest edge of the reconstructed parking lot.

New vault toilets will be located at the Tuxedo Park picnic area and at the Bierstadt Lake trailhead.

Backcountry toilets will be located at Bierstadt Lake, Dream Lake and the Loch Mills trail junction.

A comfort station will be constructed in the Glacier Basin walk-in campground.

All other comfort stations and utilities in the study area will remain in their current status.

E. Emergency Telephones

Public telephones for emergency use will be located at each visitor contact station. The phones will be accessible at all times and will be designed to minimize damage by the weather and by vandals.

F. Alternative Energy Sources

Several alternative energy sources have potential for use in the study area. Consideration will be given to the following alternatives during the design of any new facilities:

- Solar - The good solar radiation in the study area could be used for a number of purposes. Among those are various heating applications and photovoltaic cells to power oil-flush comfort stations. New structures, such as visitor contact stations, will be designed to include passive and/or active solar systems whenever feasible.
- Wood - This traditional energy source could provide back-up heating for passive solar weather shelters and visitor contact stations.
- Wind - There is some potential to harness wind energy in the study area; however, the intermittent nature of wind power could require large storage facilities. The most practical uses would be pumping well water or supplementing utility-supplied power.
- Water - The Glacier Creek valley has great potential for small scale hydropower electric generation. This method would be especially applicable at Bear Lake. The existing water supply and pipeline here could generate up to 2 kilowatts of continuous power or up to 9 kilowatts peak power if fitted with a simple pelton wheel-type turbine generator.

G. Landscape Rehabilitation

Due to many years of intense visitor use and inadequate maintenance budgets, the physical landscape within the Bear Lake study area has suffered. Specific problems and suggested solutions are explained below.

1. Streambank Erosion

At numerous places along Glacier Creek, the streambank has been severely compacted by heavy visitor use. Erosion, which is a natural process, has been accelerated because vegetation has been destroyed by overuse.

Efforts will be made to halt the accelerated erosion of the streambank and ease soil compaction along its edge. Boulders and naturally felled trees will be used along the bank to minimize erosion. When feasible, the lost surface soil will be replaced and the new soil stabilized with a seeding and mulching of natural grasses and shrubs. Native creek-side shrub seedlings will be planted to hasten the recovery of the creek edge.

All construction will be done so as to ensure the least amount of disturbance to downstream environments. It will also be timed to take advantage of the prime growing season for plant life.

2. Lakeshore Erosion

Many stretches of lakeshore area are also being severely impacted by heavy visitor use. Compaction and erosion of shorelines are accelerating rapidly. These problems will be addressed in one of two ways: the artificial stabilization of shoreline or closure of the area to allow restoration.

Where large numbers of visitors have access to the lakeshore, the area will be developed to adequately protect the shore. Natural materials, carefully structured and placed, will prevent erosion. Possible solutions include the addition of timber or rock retaining walls along the shore and the construction of timber decks and walkways extending around existing vegetation (see the discussion of interpretive overlooks in the visitor contact/information/interpretation section).

Severely eroded and compacted areas will be closed and allowed to regenerate. Revegetation will be aided by artificial means. Reclamation will concentrate on halting further erosion of the shoreline, alleviating as much of the compaction as possible, replacing lost top soil, and generally providing a suitable environment for plant growth. Native vegetation will be reestablished through a seeding of natural grasses and forbs, followed by an adequate mulching. The seeds for this venture will be collected as close to the problem area as possible so that the plants seeded will be those best suited to prosper in the particular microclimates of the area.

Native tree and shrub seedlings, packaged to be self sufficient for at least one year and thus able to become established under harsh conditions, will be randomly planted in reclaimed areas to establish a natural shoreline more quickly.

All construction will be done so as not to impair any other natural area surrounding a lake. The vegetative restoration will be planned to give plants the best opportunity to become established. Most commonly, seeding will be in late fall, and planting will be done in early spring.

3. Cut and Fill Slopes

Along the entire length of the Bear Lake Road, large unvegetated cut and fill slopes can be seen. Since these slopes intrude on the scenic beauty for which the park is known, they will be revegetated and naturalized.

Where necessary, some of the steep slopes will be modified to create a favorable environment for plant growth. Any restructuring will be sensitive to the natural contours of the surrounding area and will simulate the natural topography. In areas with extremely poor soil, the surface will be scarified, four to six inches of fertilized growing material will be worked into the surface, and the site immediately seeded and mulched. The seeds will be a mix of native grasses, forbs, and shrubs. The seed sources will be from as close to the disturbed slopes as possible. Organic mulchs, if used, will be derived from native materials.

To hasten restoration of cut and fill slopes, seedlings (packaged to be self-sufficient for at least 1 year) will be randomly planted on the slopes. These seedlings will be capable of becoming established under harsh conditions and will be of the same species as trees growing naturally in the surrounding area.

On slopes that sustain heavy foot traffic, stairs or rampways constructed of native rock or timber will be installed to limit erosion of the slope and damage to the vegetation.

4. Parking Pulloffs and Shuttle Stops

Car pulloffs have been provided at irregular intervals along the Bear Lake Road. Some have been upgraded to serve as shuttle stops, others have been paved to accommodate a few cars, and still others are just small gravel areas.

Some pulloffs will be closed. The area will then be scarified and seeded with a native grass and forb mix, gathered from local sources. The area will be mulched immediately after seeding. Boulders placed irregularly along the shoulder (individually and in clumps) will effectively close the pulloff from further vehicular use. The boulders will be buried at least one-half to two-thirds in the ground with the weathered surface exposed.

For the remaining pulloffs, the edges will be defined with boulders and the area paved. Adjoining areas of compacted and/or eroded soil will be restored.

5. Bear Lake Parking Lot

Two distinct problems exist in connection with the Bear Lake parking lot: the lack of vegetation on disturbed slopes and the visual impact of the large expanse of asphalt. Each will be examined separately.

(1) The cut slope on the north side of the lot and the fill slope on the south side of the lot will be revegetated.

Retention of enough soil, nutrients, and water on steep slopes to facilitate plant growth is the object of any reclamation project. For the northern cut slope, this is most important for the top half of the cut since most of the soil nutrients and water are collecting at the bottom of the slope and are supporting a relatively large plant community. The top of the slope is virtually bare. In order to retain some of the materials at the top of the cut, some restructuring of the upper slope will be done, combined with random placing of large boulders along the slope to create "pockets" for plant growth. These pockets, as well as the entire slope will be covered with a good soil mix and then immediately seeded. The upper sections will be planted with randomly placed lodgepole pine seedlings as described in the section on cut and fill slopes. The top of the slope will be rounded to reduce erosion.

(2) The second major problem with the parking lot is the visual effect of the large, unbroken expanse of pavement. To make this area less obtrusive, small islands of vegetation will be planted in the sidewalk median. This visual effect of the parking lot will be softened, but the available parking space will not be reduced.

6. Glacier Gorge Trailhead

The fill slope on the south side of the Glacier Gorge trailhead parking area creates a large visual scar as viewed from the nearby mountain trails. Attempts to revegetate the slope will continue to fail unless the extreme slope and the nutrient-poor soil of the fill are modified. To eliminate the scar, the fill slope will be restructured so that it will blend more naturally into the surrounding landscape and will support vegetation.

Two methods of achieving this are the construction of a rock retaining wall or the creation of a small talus slope like those at other points along Bear Lake Road. In either case, good growing medium will be spread over the scarified soil between the rocks, and the area will be seeded and mulched. The seed mix will be made of native, locally collected seeds and will be applied in late fall. Shrubs will be planted at the bottom of the slope so they will not obstruct the magnificent view from the road.

7. Glacier Basin Secondary Shuttle Staging Area

Drainage in this area is beginning to present a problem, both along the sides of the entrance drive and within the parking area itself. The drainage ditches along the entrance way will be lined with fairly large rip rap and seeded with native grasses to halt the rapid erosion of the drainway. This action will be done, however, only after the cut slopes above the drainage have been treated as described in the cut slopes section. In the parking area itself, culverts will be installed to adequately handle the runoff produced by the frequent summer storms.

Lodgepole pine islands offer good visual barriers which effectively break up the large expanse of the parking area. The edges of these islands need to be better defined, however, with rocks or logs. Those islands receiving high pedestrian use should be fortified with vegetation, organic or stone ground cover to protect the earth from erosion and compaction.

8. Glacier Basin Campground - Staging Area Trail

Joining the Glacier Basin campground, Glacier Creek, and the existing shuttle staging area, is a foot trail which consists of two or three intertwining, poorly defined alignments. A single trail will be established with clear, precise signs at the trailheads, at the creek, and the road crossing. The trail alignment will be separated from the campground access road for as much of its route as possible. The current multiple trails up the cut slope of the access road will be obliterated and the entire area reclaimed as recommended for other cut slopes. Wood or rock steps will be used to ascend/descend the slope.

9. Tuxedo Park

The existing picnic and parking area will be removed and the landscape restored using techniques described previously. The picnic area will be relocated further north.

10. Big Thompson River Crossing

The area around the parking pulloff north of the Big Thompson River crossing is sustaining soil compaction and erosion. This pulloff will be formalized and damaged areas restored as described previously. Due to the hazard of cold whitewater, a pathway with steps, handrails, etc., will provide access to an interpretive overlook. During certain water conditions, park managers may close this parking area and overlook.

H. Architectural Theme

New structures will conform with the Rocky Mountain Region Design Compatibility Guidelines (Rodd L. Wheaton and John Albright, 1979). This guideline calls for new structures that will be in harmony with old structures in scale, texture and continuity. Basically the buildings will complement but not duplicate existing structures such as the buildings in the historic utility area. Good examples of new construction are the new YACC buildings and the Bear Lake bus shelter. All buildings will be accessible to the handicapped. Some specific examples of design elements that should be followed in Rocky Mountain National Park are listed below:

- | | |
|-------------------|--|
| <u>Scale</u> | - Generally one story with a long rectangular plan |
| <u>Texture</u> | - Natural wood shingle roofs, every fifth course doubled
- Natural wood siding or 11" reverse board and batten plywood siding |
| <u>Continuity</u> | - Brown Color
- Vertical siding or log frame with exposed diagonal bracing
- Concrete or large stone foundations
- Front gabled roof with rafter tips and minimum ridge heights
- Small window openings with casement sash (hinge) |

I. Signs

At the present time, signs within the Bear Lake study area are a combination of the traditional routed-wood style and metal with reflective letters. There are several inconsistencies: one example being at Bear Lake where one sign indicates trail distances in miles (units unlabeled) and a nearby sign provides trail distances in hours (units labeled).

Inconsistencies, errors and shortcomings will be corrected under the direction of the park sign committee and the regional sign coordinator. There will also be a transition to a uniform style, as described in the National Park Service Sign System Specifications. As new facilities and activities are developed, appropriate signs will be included.

J. Accessibility for Disabled Visitors

Most of the facilities in the study area were built prior to awareness of the accessibility needs of the disabled. As a result, few existing facilities are accessible to disabled visitors without assistance.

Minor but significant accessibility improvements will continue in the course of routine maintenance activities. These improvements will consist of curb cuts, ramps, reserved parking spaces, toilet stall expansion and improvement, and other remedial considerations.

Accessibility to and use of facilities in the Bear Lake study area by physically and mentally handicapped visitors will be provided in conformance with all applicable laws and regulations. To the greatest extent possible, commensurate with their physical abilities, the handicapped will be able to enjoy the area and participate in recreational activities using the same facilities and programs as the able-bodied. Sensitive design of new facilities and alteration of existing facilities will facilitate this goal.

Most new facilities developed as a result of this plan will be fully accessible. Each of the larger picnic areas and selected roadside picnic areas will be provided with accessible picnic tables and trash receptacles within easy reach of the parking areas. In various locations, selected trail sections will be made accessible by widening them to six feet, keeping their grade below 8.33 percent; giving them a smooth, paved, or boardwalk surface; and eliminating the sideslope. The visitor information program and literature will be expanded to advertise these accommodations for handicapped persons.

K. Archeological Resources

An archeological survey and evaluation of areas to be affected by this plan was conducted by Anderson, 1979 and Hartley, 1980. Additional archeological survey and evaluation will be carried out in specific areas of proposed scattered roadside picnic areas located between Hallowell Park and Bear Lake when the number and locations of these areas have been determined.

One archeological site has been identified that may receive indirect impact due to the possible increased number of visitors entering the east side of Rocky Mountain National Park when the Bear Lake Development Concept Plan is implemented. The site is located in the Thompson River drainage north of the Fern Lake trailhead access road and west of Moraine Park Campground. The National Park Service, Midwest Archeological Center recommended subsurface testing and mitigation of this site.

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Mountain National Park." Colorado State University.

V. COST ESTIMATES

These estimates are for construction costs only and do not include operations, planning, design or supervision costs. Construction costs are shown in 1982 dollars.

AREA	ITEM AND QUANTITY	COST/UNIT	TOTAL COST
Estes Park Primary Shuttle Staging Area	visitor contact station: orientation/interpretation, 16 stall comfort station, (2,000 feet ²)	110/ft. ²	\$ 220,000
	bus maintenance facility		80,000
	parking area (465 gravel spaces)	500/sp.	232,500
	relocate entrance station		20,000
Park Headquarters	bench and sign	600/ea.	600
Moraine Park Visitor Center	bench and sign	600/ea.	600
Moraine Park Camp-ground	bench and sign	600/ea.	600
Cub Lake Trailhead	bench and sign	600/ea.	600
Fern Lake Trailhead	bench and sign	600/ea.	600
Tuxedo Park	landscape rehabilitation: remove pavement (¼ acre) and seed/mulch eroded area (1 acre)	7/yd. ²	8,500
	parking area (30 gravel spaces)	3,500/acre	3,500
	bench and sign	1,400/sp.	42,000
	picnic tables (15-30)	600/ea.	600
	trash cans (8-15)	250/ea.	5,000
	charcoal grates (10-20)	200/ea.	2,000
	vault toilets (2)	200/ea.	3,000
		7,500/ea.	1,500
Hallowell Park	bench and sign	600/ea.	600
	widen and pave existing road (¼ mile) and construct shuttle stop	350,000/mi.	87,000
	wayside exhibit	400/ea.	400
Glacier Basin Camp-ground	landscape rehabilitation: improve trail (1/8 mile, 6' wide)	12/yd. ²	5,300
	stabilize cut slope (¼ acre)	3,500/acre	900
	walk-in campground: seed/mulch eroded area (2 acres)	3,500/acre	7,000
	drinking fountains (2)	1,000/ea.	2,000
	charcoal grates (30)	200/ea.	6,000
	picnic tables (30)	250/ea.	7,500
	trash cans (10)	200/ea.	2,000
	comfort station (100 feet ²)	110/ft. ²	11,000

AREA	ITEM AND QUANTITY	COST/UNIT	TOTAL COST
Glacier Basin Secondary Shuttle Staging Area	visitor contact station: orientation/interpretation, 6 stall comfort station, (1,300 ft. ²)	110/ft. ²	\$ 143,000
	water system		30,000
	sewage system (septic)		30,000
	electric power extension		10,000
	picnic tables (14)	250/ea.	35,000
	trash cans (5)	200/ea.	1,000
	charcoal grates (10)	200/ea.	2,000
	landscape rehabilitation: seed/mulch (½ acre)	3,500/acre	1,800
	riprap ditch along entrance road (3,000 ft. ²)	6/ft. ²	18,000
	mulch tree islands		1,000
	culverts		1,000
Sprague Lake	visitor contact station: orientation/interpretation, 12 stall comfort station, bus shelter (2,000 ft. ²)	110/ft. ²	220,000
	water system		40,000
	sewage system (septic)		30,000
	interpretive overlooks (3)	6,000/ea.	18,000
	parking area (100 gravel spaces)	700/sp.	70,000
	picnic tables (30)	250/ea.	7,500
	trash cans (4)	200/ea.	800
	charcoal grates (7)	200/ea.	1,400
	road and intersection improvements: construct new 2-lane entrance road (1,500 LF)	95/LF	143,000
	widen existing bridge (600 ft. ²)	85/ft. ²	51,000
	electronic shuttle access gate		7,500
	stabilize lakeshore (500 LF)	10/LF	5,000
	Obliterate old road scars and picnic area and restore sites (2 acres)	7/Yd. ²	68,000
Bierstadt Lake Trail- head	expand existing parking area (10 spaces)	700/sp.	7,000
	build new access road (300 LF)	66/LF	20,000
	picnic tables (2)	250/ea.	500
	trash can (1)	200/ea.	200
	bench and sign	600/ea.	600
	vault toilets (2)	7,500/ea.	15,000
	tire stops (20)	20/ea.	400
	seed and mulch disturbed area	3,500/acre	1,000
Glacier Gorge Trail- head	bus shelter and sign	6,000/ea.	6,000
	reconstruct Bear Lake Road (750 LF)	95/LF	72,000
	reconstruct parking lot and obliterate existing road (15,000 ft. ²)	6.67/ft. ²	100,000
	relocate existing vault toilets		7,000
	build hardened trail between shut- tle stop & trailhead (0.2 mile)	14/LF	15,000
	rehabilitate fill slope on south side of parking area (½ acre)	7/Yd. ²	17,000

AREA	ITEM AND QUANTITY	COST/UNIT	TOTAL COST
Bear Lake	visitor contact station: information/orientation, 16 stall comfort station, bus shelter (2,000 ft. ²)	110/ft. ²	\$ 220,000
	reconstruct west end of parking lot to improve traffic flow		7,000
	landscape rehabilitation:		
	build landscape stabilizers on cut and fill slopes (100)	500/ea.	50,000
	trees (300)	200/ea.	60,000
	tree seedlings (800)	10/ea.	8,000
	shrubs (400)	75/ea.	30,000
	seed/mulch (16 acres)	3,500/acre	56,000
	construct planters in parking median (50)	500/ea.	25,000
	interpretive overlooks (4)	6,000/ea.	24,000
	water system		20,000
	sewage system (oil flush)		160,000
	electric power (photovoltaic)		20,000
	Study Area	hardened trails:	
non-wilderness (3.2 miles)		14/LF	237,000
wilderness (1.3 miles)		10/LF	69,000
boardwalk (0.2 mile)		180/LF	190,000
hiking trails (3.2 miles)		5/LF	85,000
hiking and horse trails (2.7 miles)		7/LF	100,000
horse trails (1.6 mile)		7/LF	60,000
overlooks-Alberta Falls, Nymph Lake, Dream Lake, Bear Lake Overlook Trail (2), & Bierstadt Moraine Trail		6,000/ea.	36,000
Study Area	landscape rehabilitation: restore roadside pulloffs (30 spaces, 0.5 acres)	7/yd. ²	15,000
	seed/mulch eroded lakeshores at Nymph, Dream, Emerald & Bierstadt Lake (4 acres)	3,500/acre	14,000
	cut and fill slope stabilization along Bear Lake Road (slope grading, soil preparation, plant shrubs & trees and seed/mulch- 3.5 acres)	15,000/acre	52,500
Study Area	roadside shuttle stop between Bierstadt Trailhead & Bear Lake bench and sign	600/ea. ²	600
	gravel and edging (100 yd. ²)	5/yd.	500
Study Area	backcountry toilets: Dream Lake (1), Bierstadt Lake (1)	7,500/ea.	15,000
Study Area	subsurface testing and mitigation: Archeological Site No. 5LR325		30,000
		<u>TOTAL</u>	\$3,533,600

VI. PLANNING TEAM MEMBERS

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Editing and graphics were done by the planning team.

VII. APPENDIX: HARDENED TRAIL DEFINITIONS

A. Outside Wilderness

1. Treadway
 - a. Grade 8° max and 5° sustained (generally in areas where Switch-backs are not necessary)
 - b. Virtually no treadway sideslope
 - c. Smooth surface - paved (asphalt or cement) or boardwalk
 - d. Passable by wheelchair where there are no steps or excessive grades
 - e. All roots, rocks, and obstructions removed
2. Erosion Control - paving (asphalt or cement - edges protected rocks or logs)
steps or ramps
boardwalk
stone cribs and retaining walls
generally in areas where switchbacks are not required
3. Formalized Views/Overlook (platforms, railings, benches, etc.)
4. Plank Steps (as few steps as possible and ramps where feasible)
5. Wide Plank Bridges with Handrails
6. Aesthetics - asphalt or cement will be color treated to blend with browns and greys of adjacent soils; benches and handrails of log

B. In Wilderness

1. Treadway
 - a. Grade 10° (switchbacks may be necessary to maintain this grade)
 - b. Little treadway sideslope
 - c. Smooth gravel/soil surface (soil cement could be used with rock and log edge protection)
 - d. Not readily accessible to wheelchairs due to waterbars, etc. required in trail construction
 - e. All major roots, rocks, and obstructions removed
2. Erosion Control - rock waterbars (not log)
rock steps
bog bridges
stone cribs and retaining walls
(Intensive, traditional trail construction will be applied to provide a treadway that will not be wet or boggy, will not erode to any significant extent, and will withstand extremely heavy foot use without degrading.)
3. Formalized Views/Overlooks (rocks and logs used to define overlook and provide benches)
4. Rock Steps (used wherever necessary to protect integrity of treadway from erosion)
5. Wide Plank Bridges with Handrails
6. Aesthetics - materials will all blend easily with landscape

As the nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, parks and recreation areas, and to ensure the wise use of all these resources. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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