environmental assessment

development concept plans
march 1985

GLACIER

LAKE McDONALD
SUN POINT/RISING SUN/ST. MARY
MANY GLACIER/ SWIFTCURRENT

NATIONAL PARK / MONTANA

ENVIRONMENTAL ASSESSMENT
for the
DEVELOPMENT CONCEPT PLANS

LAKE MCDONALD
SUN POINT/RISING SUN/ST. MARY
MANY GLACIER/SWIFTCURRENT
areas of
GLACIER NATIONAL PARK
Montana

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

SUMMARY

This Environmental Assessment analyzes alternatives for the Lake McDonald, Sun Point/Rising Sun/St. Mary, and Many Glacier/Swiftcurrent areas of Glacier National Park. The alternatives address a number of issues, including

provision of more day use facilities

redistribution of some overnight accommodations from east to west

increase in the proportion of low-cost accommodations

extension of the visitor season

increase in shower/laundry and automobile services

improvement of visitor contact and interpretive services

improvement of vehicle access, circulation, and parking

removal of facilities from floodplains

possible addition of public transit system facilities

improvement of NPS and concession employee housing

relocation of NPS maintenance and residential facilities

enhancement of critical wildlife habitat

The preferred alternatives would add day use facilities (picnic tables, benches, trails, etc.) at all three areas and new public docks at Lake McDonald and Rising Sun. Overnight accommodations and campgrounds would be maintained with few changes except at Many Glacier/Swiftcurrent, where additional low-cost lodging units would be provided. New shower and laundry facilities would be provided at both Swiftcurrent and Rising Sun, and auto repair services would be added at Rising Sun and Lake McDonald. No facilities would be kept open beyond the existing May-September visitor season.

Visitor information and orientation would be improved by preparing new maps and installing new signs along roadways and at trailheads. A new visitor contact station would be established at Lake McDonald. The operation of the visitor contact station at Swiftcurrent would be improved by making the building more visible, by improving the access, circulation, and parking, and by removing the ranger residence so that the entire structure could be used for visitor contact activities. The St. Mary visitor center would be modified to enhance traffic flow, reduce confusion, and provide additional NPS staff office space. Access, circulation, and parking improvements were also recommended for Lake McDonald, Sun Point, Rising Sun, and Many Glacier.

All concession employee housing would be removed from the 100-year floodplains of Snyder Creek and Rose Creek. The few visitor lodging units in the floodplain of Rose Creek would also be removed, but the historic Lake McDonald Lodge would be retained in the floodplain of Snyder Creek. Some day-use facilities would also be retained in the floodplains. Concession employee housing would be upgraded in new residential areas at Lake McDonald, Rising Sun, Many Glacier, and Swiftcurrent. The NPS maintenance/residential area at St. Mary would be retained, and some new shops, housing, and office space would be added. New NPS housing would also be built at Swiftcurrent.

A transportation staging area for a public transit system was recommended for the Rising Sun area on the east side of the park. A transportation staging area for the west side of the park at Lake McDonald was ruled out because of site constraints. (Implementation of a public transit system for the park is contingent upon the analysis and recommendations of the ongoing transportation plan.)

Removal of facilities from the vicinity of critical wildlife winter habitat at Many Glacier/Swiftcurrent was considered but not recommended because the present habitat appears to be adequate, winter encroachment is minimal, and it would not be cost-effective to relocate usable facilities from the existing developed area.

Overall, the preferred alternatives would have long-term beneficial effects on the visitor experience, the living and working conditions of employees, and the visual qualities of the park. These beneficial effects would be achieved at the expense of some adverse effects on soils and vegetation. A total of 7.2 additional acres of parkland would be moderately to severely impacted by the construction and use of new facilities. This acreage represents less than 0.001 percent of the total park. There would be no adverse effect on significant wildlife habitat, water resources, floodplains, wetlands, or air quality. Impacts on soils and vegetation would be minor.

One historic road bridge (at St. Mary) and a possibly historic ranger station (at Rising Sun) would be removed. The historic Ray Kinley dorm (at Many Glacier) might be removed or relocated. Other adverse effects on historic structures would result from relocation from floodplains or floodproofing, but these effects would be offset by greater protection from flood damage. No known archeological sites would be affected; however, archeological surveys have not been completed, and some of the proposed actions would have the potential to damage archeological resources.

Socioeconomic effects on adjacent communities would be minor, but there would be an adverse effect on the park concessioner, Glacier Park, Incorporated. The increase in sales that would be generated by the proposed actions would not offset the capital expenditures required to replace concession employee housing facilities.

Most of the actions included in the preferred alternatives received either major or moderate support from the public during the preliminary review of planning alternatives. None of the actions appeared to be controversial.

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INTRODUCTION

This Environmental Assessment analyzes alternatives for the development concept plans (DCPs) for three major developed areas in Glacier National Park: Lake McDonald, Sun Point/Rising Sun/St. Mary, and Many Glacier/Swiftcurrent. The North Fork portion of the park initially was also included in the planning program, but it was separated from the other plans because additional information about natural resources and visitor use was needed before planning alternatives could be prepared.

The information contained in this document reflects several successive steps in the planning process. The first step was to define the range of issues to be addressed by the DCPs. The second step involved an extensive exploration of all the reasonable ways of resolving these issues, given the specific problems associated with each developed area. For each area all of the development options were grouped into four alternatives: no action (or minimum requirements) and three possible redevelopment schemes, labeled A, B, and C. Each of these alternatives was analyzed to determine its beneficial and adverse consequences, and based on this analysis a preferred alternative was selected for each developed area. In some cases a new preferred alternative was created by recombining the options contained in two or more of the original alternatives.

This report of the work that has been accomplished to date will be made available for public review and comment for a minimum of 60 days. All public comments will be considered during the formulation of the final development concept plans. Additional copies of this document can be obtained by writing the Superintendent, Glacier National Park, West Glacier, Montana 59936.

Following public review it will be determined whether an environmental impact statement will be prepared.

PURPOSE OF AND NEED FOR THE PLANS

PURPOSE OF AND NEED FOR THE PLANS

The development concept plans describe specific actions for implementing the broad management strategies defined by the park's Final Master Plan, which was approved in 1977. The master plan directed that the developed areas at Lake McDonald (on the west side of the park), Rising Sun (on the east side), and Many Glacier/Swiftcurrent (also on the east side) would continue to provide overnight accommodations, campgrounds, picnic grounds, camper stores, and food service. The plan did not propose any major changes in development, but it identified a need to upgrade both overnight and day use facilities and to provide additional interpretive/visitor contact facilities at some of the study areas. The master plan also proposed a public transit system along Going-to-the-Sun Road.

It was decided that the current development concept planning would focus on the provision of public transit and visitor contact facilities at the major developed areas and on improvements to day use facilities, since those facilities were in particular need of upgrading. Consequently, the DCP alternatives consider numerous possibilities for visitor contact stations, paths, trails, benches, picnic tables, and boat launch ramps at various sites within the study areas.

The master plan determined that the existing level of concession lodging inside the park was adequate. The plan directed that the existing overnight accommodations should be modernized and upgraded but that no major change in type, amount, or general location of these facilities was required. This conclusion of the master plan was reinforced by the findings of the Parkwide Concessions Plan, completed in 1983. That plan stated that if, after considering the occupancy rates in the park and in the surrounding communities, it was determined that additional rooms were necessary to meet visitor demand, the concessioner and other private businesses should be encouraged to construct them outside the park in locations that would be convenient to park visitors, such as West Glacier, St. Mary, and East Glacier. The concessions plan also identified a need for additional low-cost accommodations and possibly for some winter overnight accommodations and food service. It was determined that these options would be considered by the DCP planning team, as well as an additional option of relocating some lodging units to create a better balance of accommodations on the east and west sides of the park.

The Final Master Plan did not specifically address commercial services other than lodging, but the subsequent Parkwide Concessions Plan identified an unmet need for several services including public showers and automobile towing and repair service. It was determined that these options would be considered by the DCP planning team.

Consistent with the master plan proposal for additional interpretive and visitor contact facilities in the park, an Interpretive Prospectus was prepared in 1980 to establish parkwide interpretive themes and to guide the development of an integrated system of interpretive media and facilities. That plan called for visitor contact stations at Lake McDonald and Many Glacier/Swiftcurrent, and it identified Sun Point as an ideal site

for personal services interpretation. The structures necessary to implement these proposals were included in the DCPs, along with basic signing and mapping improvements that would be required to orient visitors to the new developments.

The Final Master Plan described broad strategies for balancing public use of the park with preservation of its natural and cultural resources. Specific actions for managing natural resources were identified in the Natural Resources Management Plan, completed in 1983. Specific to the DCPs, that plan directed that rehabilitation of disturbed sites with native vegetation would become an integral part of all park construction projects and that the costs of rehabilitation should be included as part of the construction packages. This will be accomplished for the final DCPs. A cultural resource management plan is currently in preparation and is scheduled for completion in 1985. That plan will analyze all the park historic structures and define a program for their preservation and maintenance. It was determined that future uses of historic structures in developed areas would be determined through the DCPs, in full compliance with all cultural resource preservation policies and guidelines.

Another planning effort that relates directly to the DCPs is the parkwide transportation plan, which is scheduled for completion in 1986. Public transportation in the park today is much like that of the past, in that a bus system connects the various hotels operated by Glacier Park, Incorporated (GPI). Most of the bus service is provided by historic White touring buses, which seat 14-18 passengers. The transportation system is operated by GPI and is designed primarily to serve overnight guests and group tours, and as such it has a limited schedule. The transportation plan will determine the feasibility and desirability of a transportation system that would also serve day visitors. To coordinate with this effort it was determined that some provisions for transportation staging areas and shuttle bus pick-up points would be considered in the DCPs, recognizing that a final determination about required facilities would be made by the transportation plan.

A new issue that was not raised during previous planning for the park as a whole was the need to replace some of the housing for both concession and NPS employees. It was determined that in addition to rehabilitating or replacing deteriorated facilities, the possibility of relocating employee housing away from public areas or even outside the park would also be considered. Also, it was assumed that an additional investment in visitor facilities would be accompanied by expanded maintenance (including fire protection) capability, and facilities to support adequate repair and emergency services were included in the DCPs.

In considering options for future development, floodplain management was determined to be a major DCP planning issue. Heavy spring rains and melted snowpacks caused extensive damage to Glacier's bridges, roads, trails, and facilities in 1953, 1964, and 1975. The U.S. Army Corps of Engineers recently mapped the 100-year floodplains at Lake McDonald, St. Mary, and Rising Sun and determined that numerous structures at Lake McDonald and two at Rising Sun are within the floodplain. Surprisingly, most of the St. Mary development was found to be outside the 100-year floodplain. The NPS regulations for implementing Executive Order 11988,

"Floodplain Management," state that all buildings in the 100-year floodplain should be removed unless there is no practicable alternative. The regulations allow exceptions for significant historic structures, stating that they should be protected in place where practicable, and that all flood-damage mitigating measures that are economically feasible and do not significantly alter the historic setting should be considered. It was determined that the DCP planning team would consider the removal of some or all structures from the floodplain except the historic Lake McDonald Lodge, and that it would also consider methods of reducing flood hazard so that additional historic structures could be retained on their existing sites.

The planning team reviewed all of the federal laws and regulations governing the planning process and determined that, with the exceptions of the federal regulations governing cultural resources and floodplains (discussed above), compliance could be accomplished through standard design features with no need to consider alternative approaches. The mandates for handicap accessibility, energy conservation, and protection of wetlands and air and water quality are examples of regulations that were satisfied in all of the alternatives but were not considered to be planning issues.

LAKE McDONALD

EXISTING CONDITIONS AND PROBLEMS

Lake McDonald is a historic major development complex on the west side of the park along Going-to-the-Sun Road. Historic Lake McDonald Lodge, a concessioner-operated lodge and cabin complex, extends along the lakeshore, with its front facade facing the lake, reminiscent of a time when there was no road access into this part of the park and all guests arrived by boat. The lodge has 33 rooms, and the 12 adjacent cabins have another 33 rooms. Immediately north of the lodge, also along the lakeshore, the more modern, privately owned Stewart Motel provides 20 additional lodging units. Dining facilities are available in the lodge (160 seats) and a separate coffee shop (135 seats). Other concession services include boat tours, stables, gas station, medical clinic, and a camper store/post office. Most of the buildings are owned by the Park Service but are leased to the concessioner. The National Park Service provides interpretive programs in an auditorium near the lodge.

Approximately 95-105 employees of Glacier Park, Incorporated, are quartered in the Lake McDonald area in 11 separate buildings: Garden Court dorm (18 rooms), Cobb House (8 rooms), Snyder Hall (11 rooms), Hydro dorm (4 rooms), Johnson dorm (6 rooms), caretaker's residence (6 rooms), girls' dorms I and II, boys' dorms I and II, and Gearjammer dorm. In addition, employees of Rocky Mountain Outfitters, Incorporated, live in a lakeshore cabin that they rent from the National Park Service. Maintenance buildings include a fire truck garage, a paint storage building, and a carpenter shop.

There are 14 tracts (3.58 acres) of nonfederal land in the area. Eight of the tracts are situated along the shoreline northeast of the lodge (the Stewart Motel and seven private residences). The six tracts south of the lodge are mostly undeveloped.

The domestic water supply is a deep well. Most wastewater is pumped to a spray field in Apgar, but on-site septic tank/leach field systems are still in use for some residences and the Stewart Motel. Electric power lines are both above and below ground. The park is responsible for electric service beyond the meters in the developed area, and the Montana Power Company provides the primary service.

The principal problems to be addressed by the development concept plan are as follows. The lodge, most of the concession employee housing, and the auditorium/recreation room are situated in the 100-year floodplain of Snyder Creek. The lodge, which is on the north bank of the creek, has sustained flood damage to the dining room, and some of the buildings on the south side of the creek have been flooded. Many of the buildings in the development complex are historic properties listed on the National Register of Historic Places, and their removal or even their relocation would constitute an adverse effect on the cultural environment. The lodge is one of the park's major cultural resources, and it has been determined that it will be protected at its historic location and remain open for visitor accommodations. The risk of flooding at the lodge is considered to be low, and the flood potential can be further reduced by minor flood protection measures.

The concessioner employee housing is interspersed with the visitor lodging, and the employee dormitories are often the first buildings visitors see. The employee life-style is different from the experience sought by most visitors and interferes with visitor use of the area. Also some of the GPI employee dormitories are substandard in terms of life-safety and persons per unit. Several of the buildings are undersized and deteriorated, and their maintenance costs are high.

Day visitor parking is currently adequate, but if visitation to the west side of the park continues to increase at the rate it has the past 20 years, the available parking spaces will be insufficient to accommodate all of the additional traffic in the area within the next 15-20 years.

Opportunities for day use of the Lake McDonald area are inadequate. Visitor access to the lakeshore is impeded by the lodge and row of cabins on the north side of Snyder Creek and by the concession employee residential area on the south side. Potentially popular activities such as sightseeing, picnicking, hiking, and recreational boating are discouraged by a general lack of support facilities. Day visitors, especially, need better information and orientation about what activities are available.

There are fewer overnight accommodations on the west side of the park at Lake McDonald and Apgar than there are on the east side of the park at Rising Sun, Many Glacier, and Swiftcurrent (193 rooms versus 365 rooms). During the peak visitor season, the Lake McDonald lodging is completely filled, and overflow visitors must either find lodging in Apgar Village, go outside the park, or drive to the east side. The unbalance also causes problems for the concessioner providing park bus tours because equal blocks of rooms cannot be reserved on each side of the park. Another problem at Lake McDonald is that several of the smaller cabin units do not meet current standards for room size.

Visitor enjoyment of the historic setting is diminished by the visually intrusive bus parking area. Random visitor parking around the guest cabins also detracts from the aesthetic qualities of the site.

No facilities are currently available to support winter use of the area.

The firehouse is undersized and does not provide adequate storage space for the fire truck and ancillary equipment. Also, there is no place to store maintenance parts and equipment; so even for emergency repairs, these must be transported from the maintenance yard near West Glacier.

The interpretive staff needs more office space to adequately support the current workload.

ALTERNATIVES

No-Action Alternative

The no-action alternative would involve the minimum change necessary to remove employee housing from the floodplain and to improve flood protection for the lodge. The employee dormitories on the south side of

NO ACTION ALTERNATIVE

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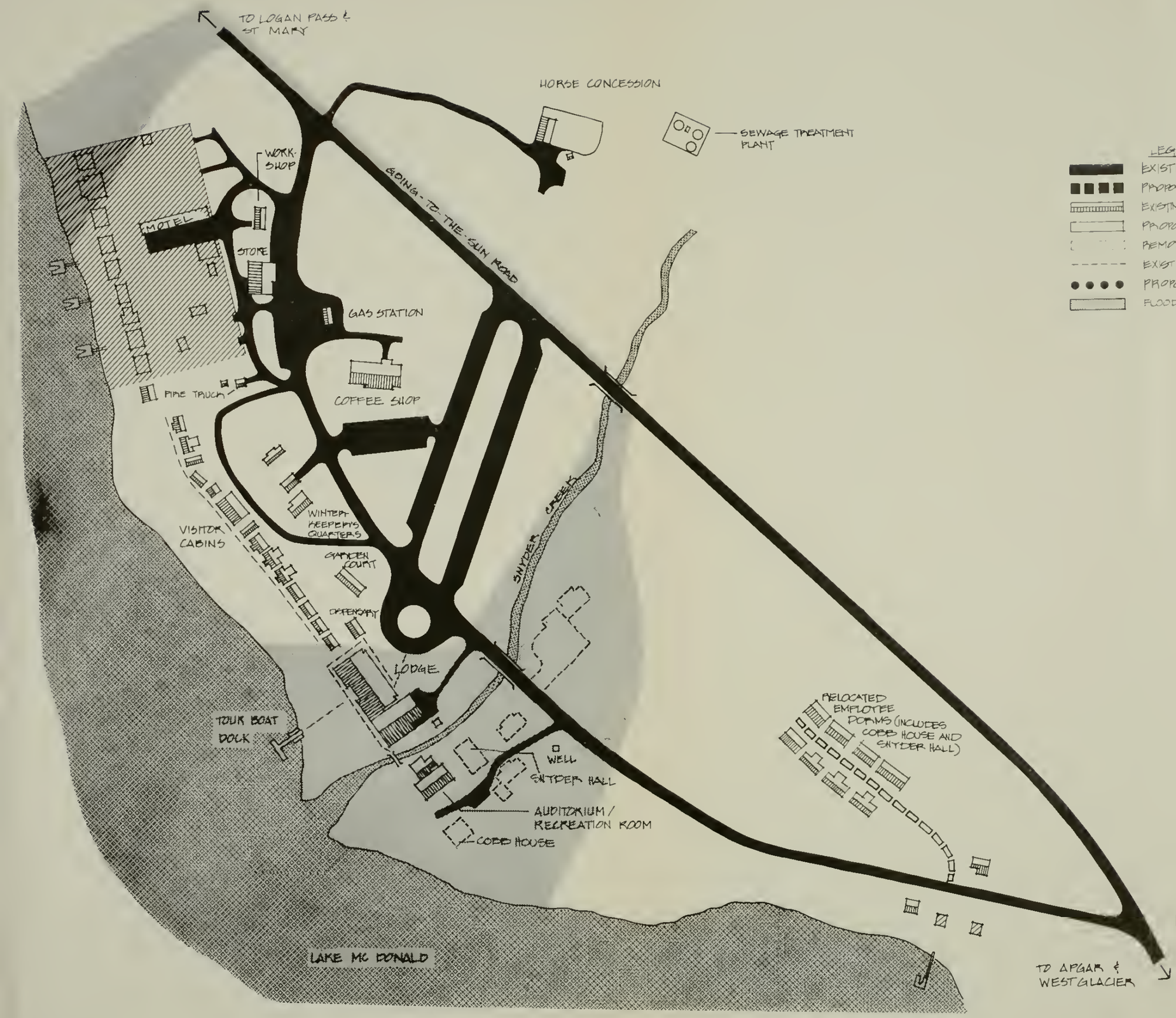

LEGEND

- EXISTING ROADS/PARKING
- PROPOSED ROADS / PARKING
- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- REMOVE OR OBLITERATE
- EXISTING TRAIL
- PROPOSED TRAIL
- FLOODPLAIN

NO ACTION ALTERNATIVE

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Snyder Creek would be relocated to higher ground south of their existing sites. Garden Court dorm, on the north side of the creek, is already outside the floodplain and would be retained in its existing location. Extra flood protection would be provided for the lodge by installing additional riprap on the north bank of Snyder Creek, removing some trees from the bank, and periodically removing sediment from the floodway or overflow channel.

Handicap accessibility would be improved in all the alternatives, including no action, by installing ramps at curbs and some building entrances. Also, all alternatives would provide for upgrading the interpretive exhibit at the lodge and improving trail signing.

Preferred Alternative

The following preferred alternative was created by combining elements from alternatives A, B, and C. Sightseeing and other day use activities would be encouraged by providing trails, benches, and picnic tables at various locations within the developed area. Day use on the south side of the Snyder Creek would be enhanced by relocating all of the employee residential use away from the lakeshore. Cobb House and the employee recreation room would be preserved on their existing sites, but they would be converted to needed interpretive, office, and visitor meeting space. This would help eliminate conflicts between visitor and employee activities and encourage greater use of the lakeshore by visitors. Snyder Hall would also be preserved, but it would be relocated away from the lakeshore (see below). A public boat dock would be provided to support public recreational activities on the lake, and a pedestrian walking trail would be constructed along the south shore of Lake McDonald from near the lodge to the Sprague Creek campground.

Visitor information, public restrooms, and an emergency medical clinic would be provided in what is now the Garden Court dorm. This building is highly visible and easily accessible from the visitor parking area. Interpretive programs would continue to be held in the auditorium and the adjacent meeting hall (previously the employee recreation room).

The existing lodge and cabin accommodations and food service would be retained. The lodge kitchen service and entry areas would be modified to re-create former conditions, prevent further structural damage, and improve accessibility for disabled visitors. The coffee shop would be repainted and landscaped. The building currently used for the dispensary would be relocated and converted to visitor lodging. With this additional lodging, the smallest cabin rooms could be eliminated (through interior modification of the structures) without an overall decrease in lodging units. Any inholdings northeast of the lodge that were acquired on a willing seller basis might also be converted to overnight accommodations.

The daytime parking capacity could be increased as much as 30 percent (when necessary) by expanding parking. Access would be further improved by establishing a pick-up area with a bus shelter/ticket office for the proposed public transportation system (the subject of a separate

plan). Handicap accessibility would be improved by the installation of ramps at curbs and building entrances. Some parking would be redesigned and relocated to improve aesthetic qualities and site circulation. The gas station would be retained, and services would be expanded to include emergency towing and spare parts. This service would not only be more convenient and less costly to visitors, it would also expedite the clearing of traffic congestion caused by stalls and accidents within the DCP area and along Going-to-the-Sun Road.

All of the employee housing would be replaced with upgraded facilities outside the 100-year floodplain and away from the visitor use area. The new housing would include a mixture of dorms, apartments, and trailers to help meet the individual needs of employees. Snyder Hall would be relocated to the new housing area and converted to its original use as a recreation hall.

The fire shed would be removed from the lodging area, and a new firehouse and maintenance shop would be constructed near the employee housing area. The new facilities would provide adequate storage space for the fire truck and emergency parts and equipment.

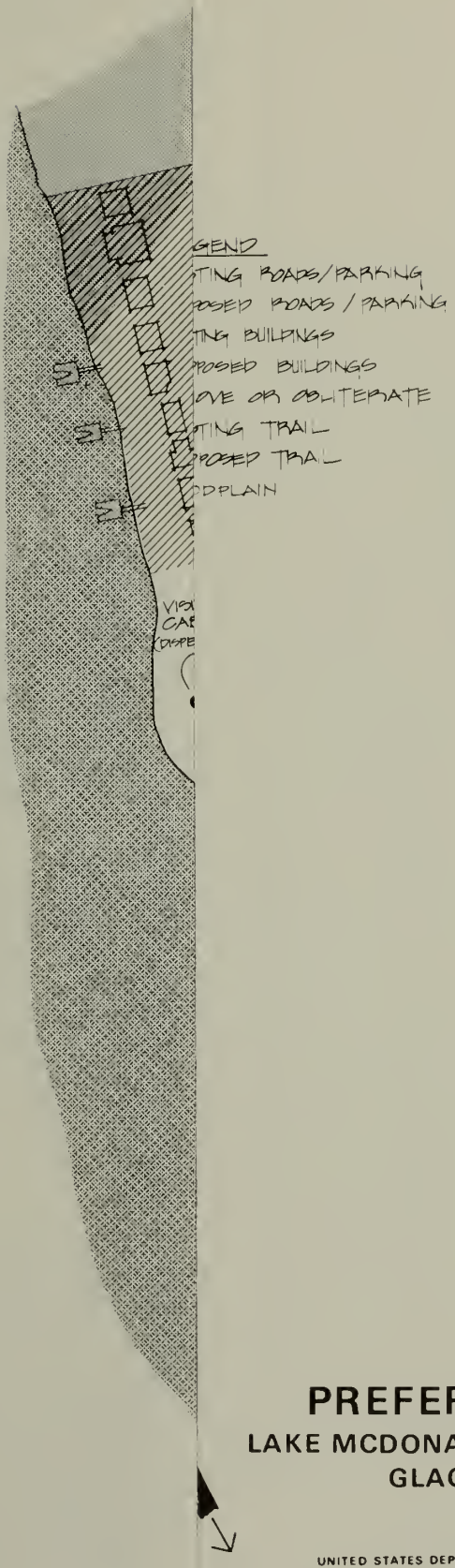
Flood hazard would be reduced by modifying the channel of Snyder Creek and lowering a section of the Going-to-the-Sun Road to divert floodwaters away from the developed area. Channel modifications would involve the installation of additional riprap on the north side of the creek, removing some trees from the bank, and periodically removing sediment from the floodway or overflow channel.

Development costs are shown in table 1. Annual operations and maintenance costs would increase by approximately $20,000. Implementation of the preferred alternative would require two additional seasonal personnel to staff the new visitor contact station. Annual maintenance costs would be slightly reduced by the removal of about half of the badly deteriorated dorms. However, relatively high maintenance costs would continue for Snyder Hall and Garden Court dorm, and the risk of property loss from flooding would continue for Cobb House, the lodge/restaurant, and the auditorium/recreation room.

Alternatives A, B, and C would all contain many of the elements of the preferred alternative. In addition, each would involve one or more unique elements, as described below.

Alternative A

Alternative A would differ from the preferred alternative in the following ways. Parking capacity could be expanded by as much as 40 percent (when necessary). Improved opportunities for day use would be created on the north side of Snyder Creek by relocating several of the lodge cabins to make the lakeshore more visible and accessible from the visitor parking lot. Also, a separate picnic area would be established between the parking lot and the creek. The high visibility of day use areas and facilities would ameliorate the need for a visitor contact station, and none would be provided in this alternative. An informational wayside exhibit



PREFERRED ALTERNATIVE

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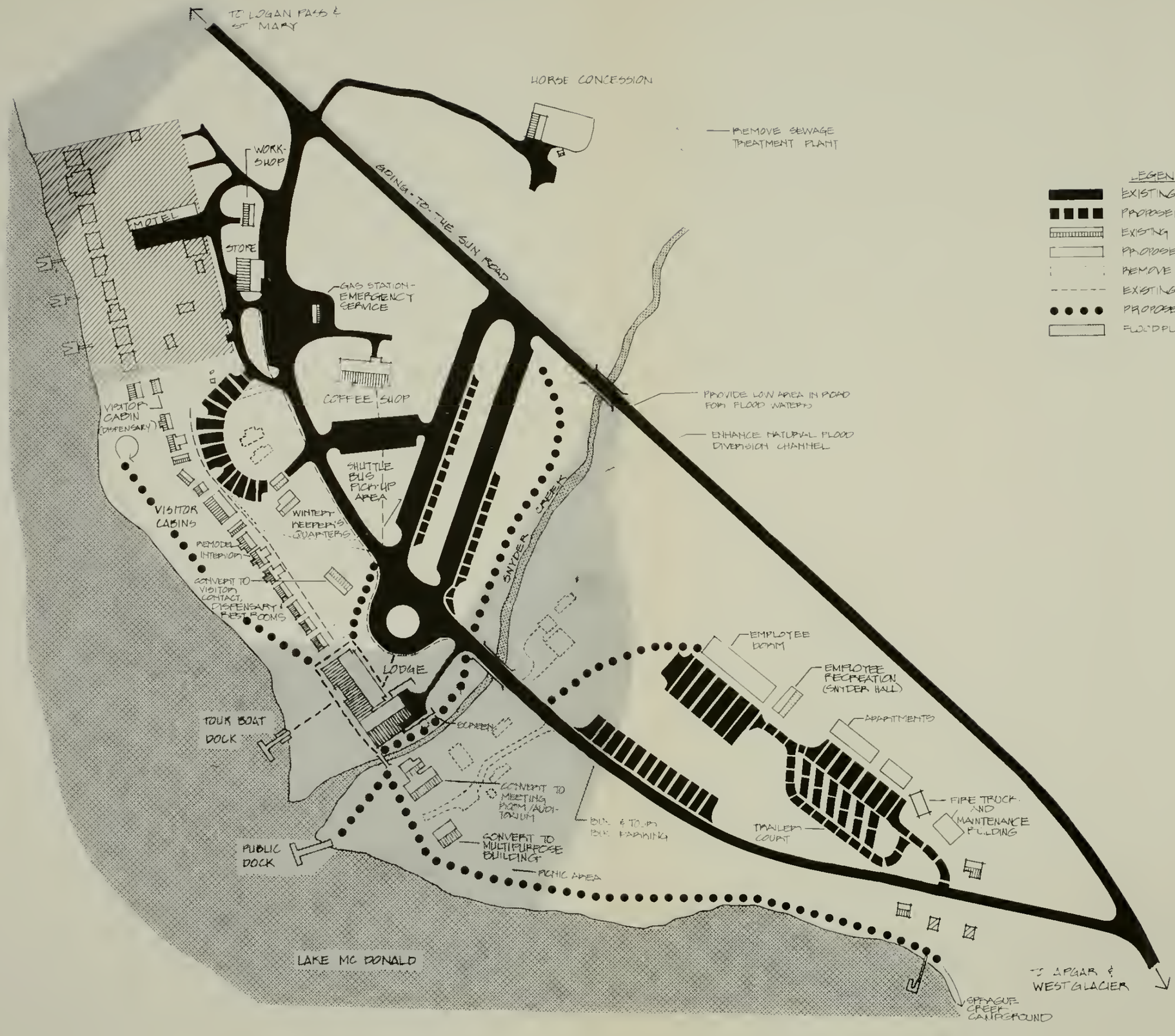

LEGEND

- EXISTING ROADS/PARKING
- PROPOSED ROADS / PARKING
- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- REMOVE OR OBLITERATE
- EXISTING TRAIL
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- FLOODPLAIN

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near the parking lot would inform visitors of the available activities. The winterkeeper's residence, which would visually be part of the new configuration of existing and relocated cabins, would be converted to visitor lodging, and the smallest cabin units in two cabins would be eliminated. A new winterkeeper's residence and firehouse would be constructed near the entrance road. This option for redevelopment of the north side of the creek was rejected primarily because relocating the lodge cabins would destroy the integrity of the Lake McDonald Lodge historic district.

As in the preferred alternative, most of the employee housing would be replaced with upgraded facilities outside the 100-year floodplain and away from the visitor use area. However, the two dorms with the greatest historic significance--Cobb House and Snyder Hall--would not be replaced. Instead, they would be moved outside the floodplain and retained for housing. Continued use of these structures would reduce the new construction costs, partially offsetting the costs of relocating some of the lodge cabins. This option was rejected when it was decided that the lodge cabins would not be relocated.

Alternative A also considered the removal of the service station. That option was rejected in favor of providing cost-effective, expedient emergency services to vehicles on the Going-to-the-Sun Road to help facilitate traffic flow during peak use periods. Finally, this alternative considered the extension of lodging and food service into the fall season, but that option was rejected because it did not appear to be economically attractive to the concessioner, and because additional visitors present on the west side of the park during the fall might cause some negative impacts on the bald eagle and grizzly bear.

Alternative A would have the lowest development costs of any of the action alternatives (see table 1). The estimated increase in annual operations and maintenance costs would be slightly higher than the preferred alternative ($26,000). Unlike the preferred alternative, no additional interpreters would be needed during the summer season; however, expansion of concession operations into the fall would require extended area duty by seasonal NPS rangers and maintenance personnel. Only three, rather than four, of the deteriorated, high-maintenance-cost, and high-flood-risk structures would be retained in alternative A.

Alternative B

Alternative B would differ from the preferred alternative in the following ways. Overnight accommodations at Lake McDonald would be expanded by relocating Cobb House and Snyder Hall to the north end of the concession cabins and converting them to additional lodging units. Snyder Hall would provide 10-12 new units, and Cobb House would be converted to dormitory style accommodations, thus providing an option of low-cost lodging for visitors traveling on a tight budget. Also, two of the existing cabins would be winterized to allow for some year-round overnight use. In addition, a new lodge would be constructed on the south side of Snyder Creek to bring the total number of new lodging units to somewhere between 56 and 86 additional units. The increase in concession overnight facilities at Lake McDonald would be accompanied by

a decrease in accommodations at Rising Sun, Swiftcurrent, or both, with the result that lodging on the east and west sides of the park would be more balanced and there would be no overall increase in park lodging. Food service would be expanded by the addition of outdoor service at the lodge during the summer months. Some food service would also be available in the winter. Parking capacity would be expanded by as much as 75 percent (when necessary). This option was rejected partly because it was not economically attractive to the concessioner. The concessioner would favor an increase in accommodations at Lake McDonald, but not at the expense of abandoning usable facilities on the east side of the park. Another reason for rejection was that the additional lodging facilities would encroach upon the historic district. Also, there was concern that a large increase in overnight use at Lake McDonald would overcrowd the area and diminish the visitor experience.

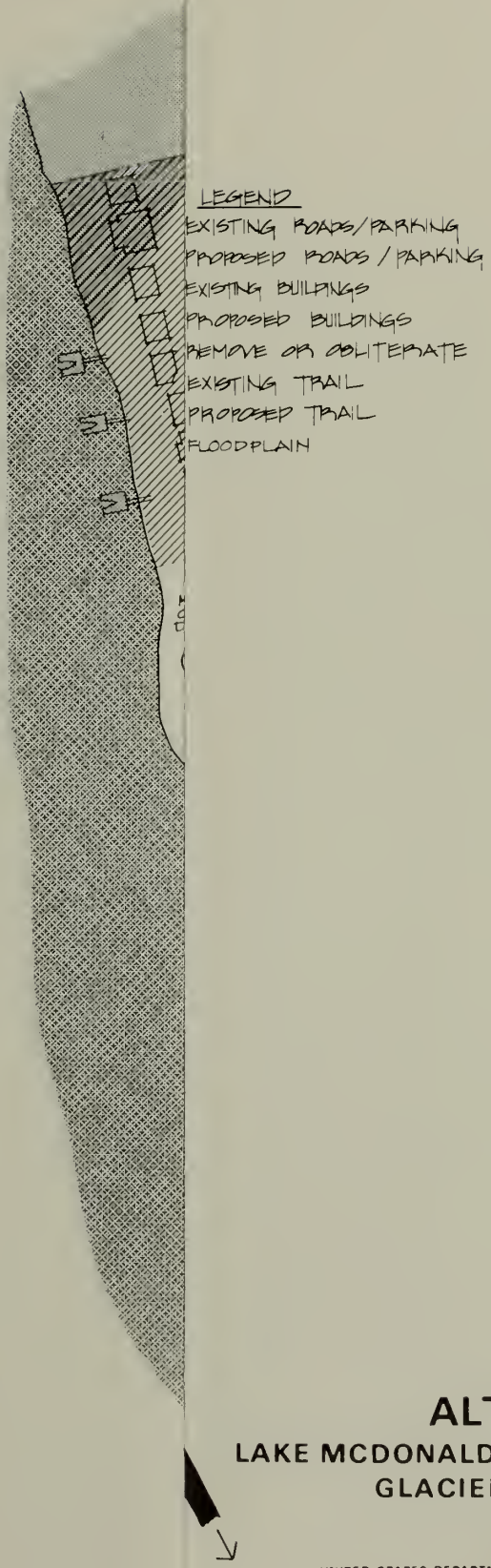
Alternative B would have the highest development costs (see table 1). The estimated increase in annual operations and maintenance costs would be $30,000. Implementation would require additional seasonal interpreters to staff the visitor contact station and a couple of extra rangers and maintenance personnel to accommodate increased visitor use.

Alternative C

Alternative C would differ from the preferred alternative in the following ways. A new building large enough to accommodate information services, auditorium programs, public restrooms, and an emergency medical clinic would be constructed on the site of the Garden Court dorm, near the visitor parking lot. The consolidation of NPS visitor services at this location would eliminate the need for the dispensary and the auditorium/recreation building. The dispensary would be relocated and converted to visitor accommodations, and the smallest cabin rooms would be eliminated. The auditorium/recreation building would be removed, eliminating the floodwater bottleneck along Snyder Creek that currently exists between that structure and the lodge on the opposite bank. This would significantly improve flood protection for the lodge. No buildings would be retained in the floodplain on the south side of Snyder Creek. This option was rejected to avoid the high construction cost of a new interpretive facility and to protect the historic auditorium/recreation building and Garden Court dorm.

Alternative C also considered additional trail improvements and the installation of warming huts and vault toilets to encourage winter use. The coffee shop would be rehabilitated to provide fast food and cafeteria service to accommodate a larger number of day visitors. Some food service would be available during the winter. This option was rejected primarily because winter use would have adverse effects on wildlife populations.

Alternative C would have the second highest development costs. The estimated increase in annual costs for operations and maintenance would be $34,000. Additional seasonal interpreters would be required to staff the new visitor contact station, and winter day use of the area would require the periodic presence of NPS ranger, interpretive, and maintenance personnel.



ALTERNATIVE A

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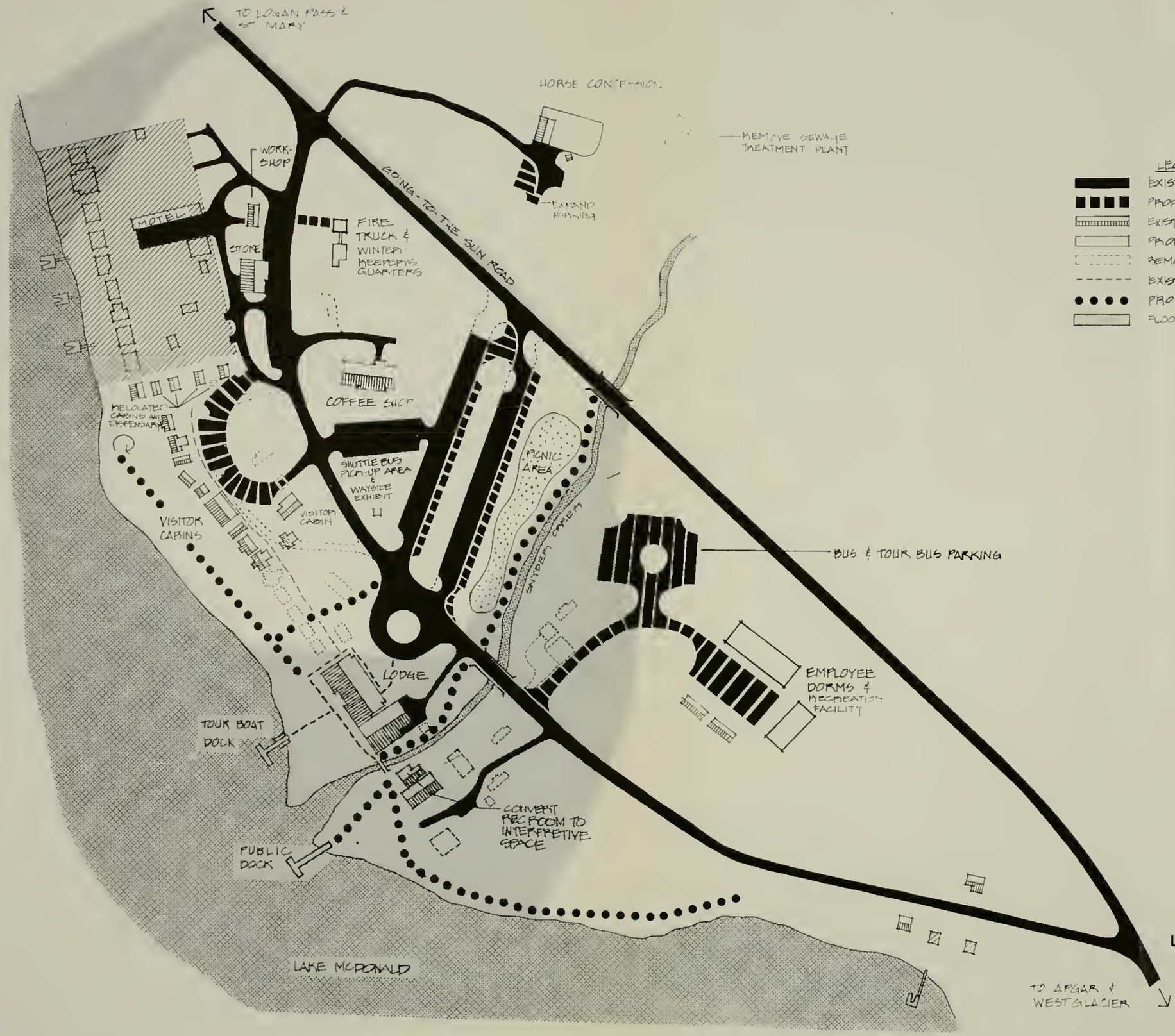

LEGEND

- EXISTING ROADS/PARKING
- PROPOSED ROADS / PARKING
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- REMOVE OR OBLITERATE
- EXISTING TRAIL
- PROPOSED TRAIL
- FLOODPLAIN

ALTERNATIVE A

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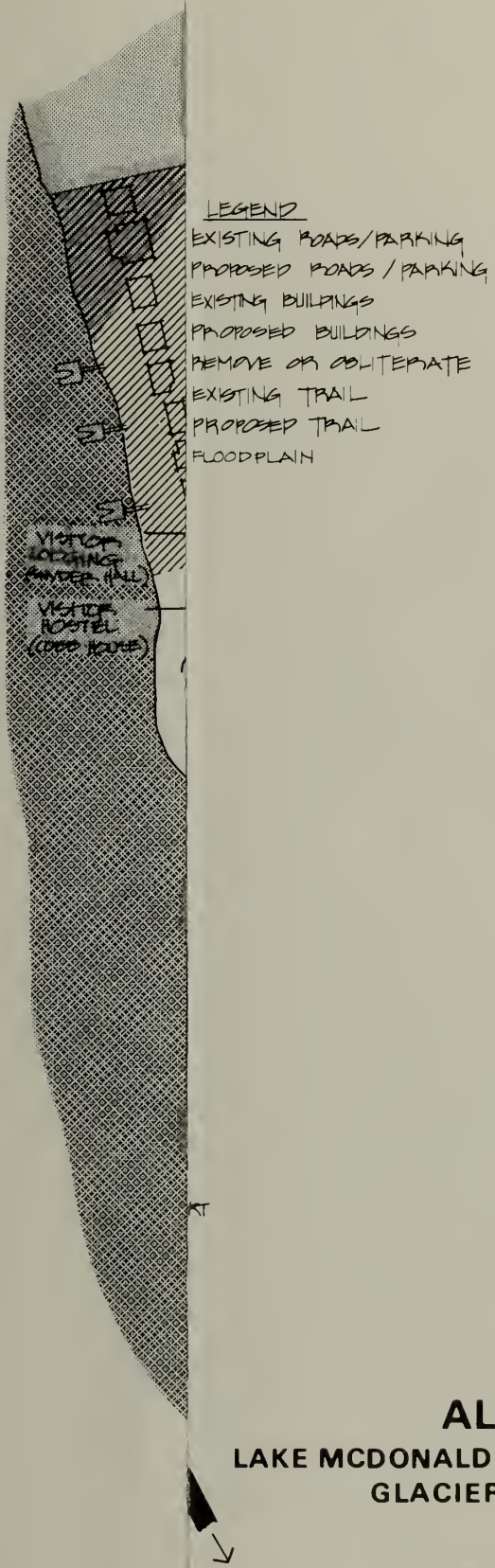

ALTERNATIVE B

LAKE MCDONALD DEVELOPMENT CONCEPT PLAN
GLACIER NATIONAL PARK

UNITED STATES DEPARTMENT OF THE INTERIOR – NATIONAL PARK SERVICE

N

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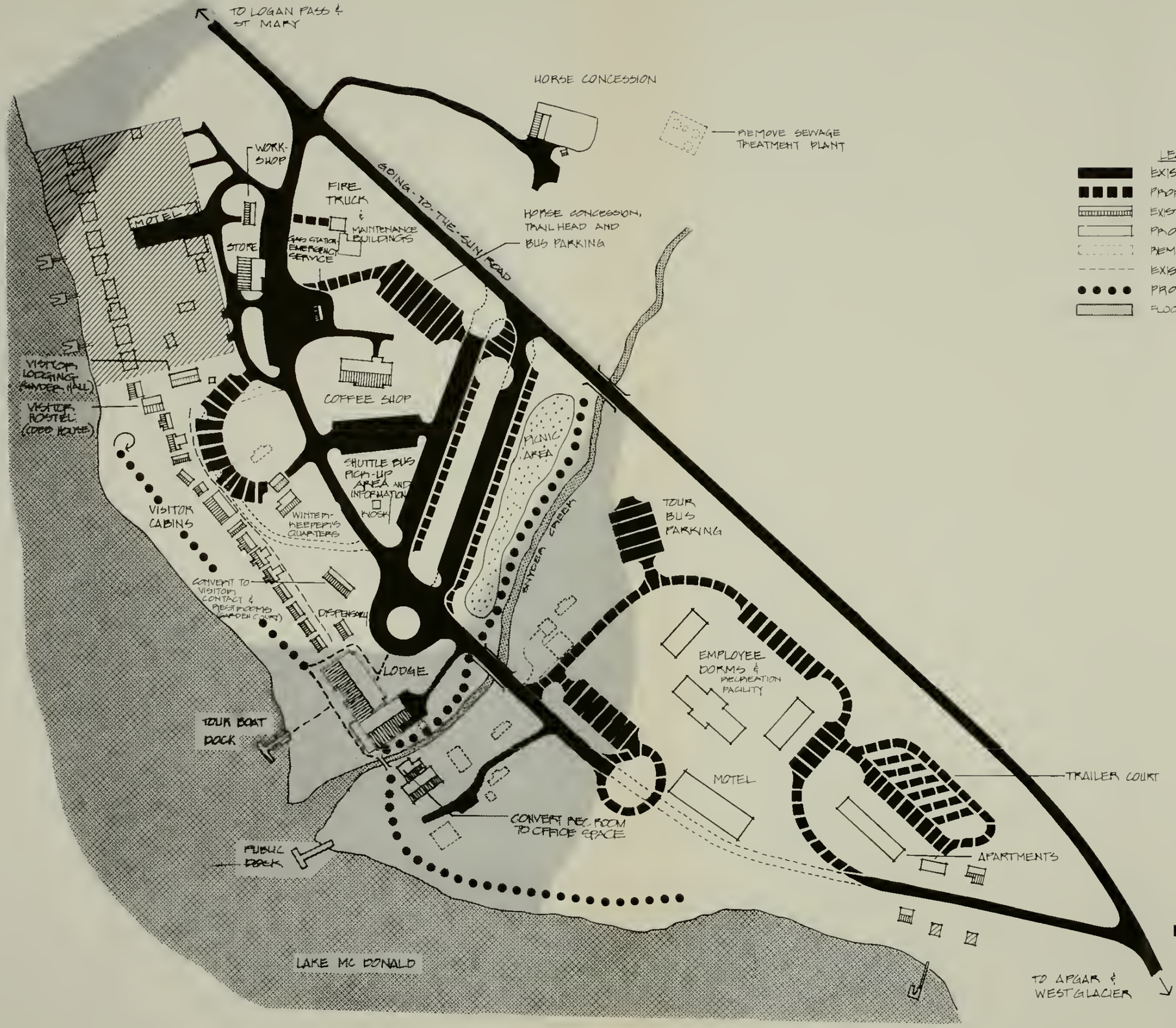
DSC | DEC 84



LEGEND

- EXISTING ROADS/PARKING
- PROPOSED ROADS / PARKING
- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- REMOVE OR OBLITERATE
- EXISTING TRAIL
- PROPOSED TRAIL
- FLOODPLAIN

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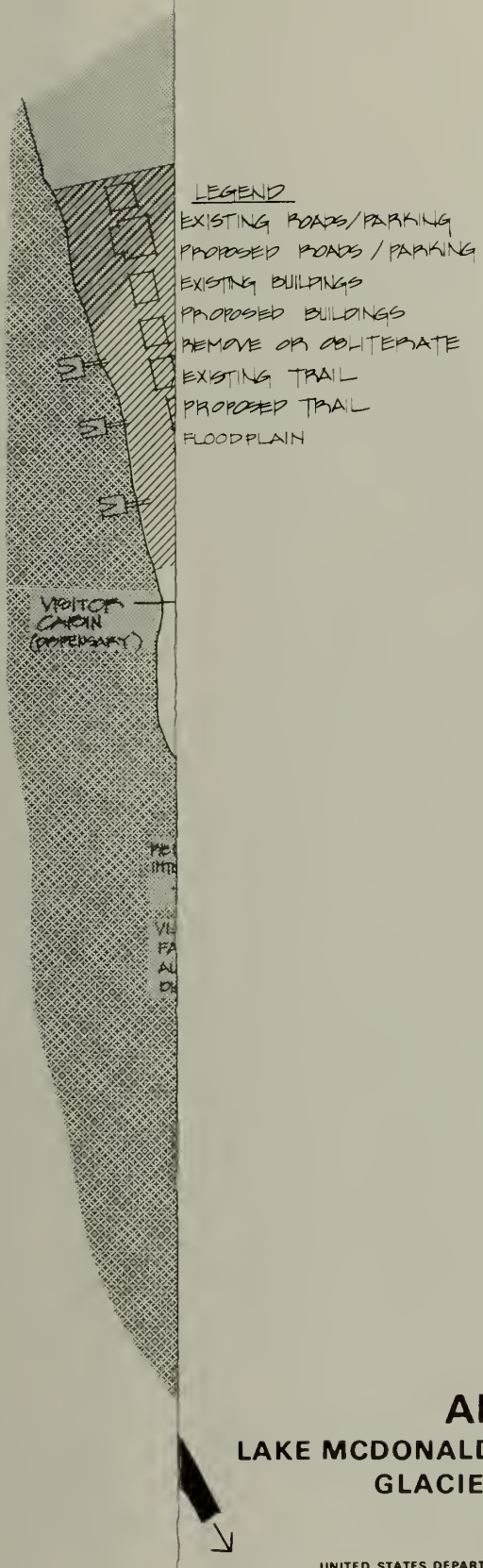

ALTERNATIVE C

LAKE MCDONALD DEVELOPMENT CONCEPT PLAN
GLACIER NATIONAL PARK

UNITED STATES DEPARTMENT OF THE INTERIOR · NATIONAL PARK SERVICE

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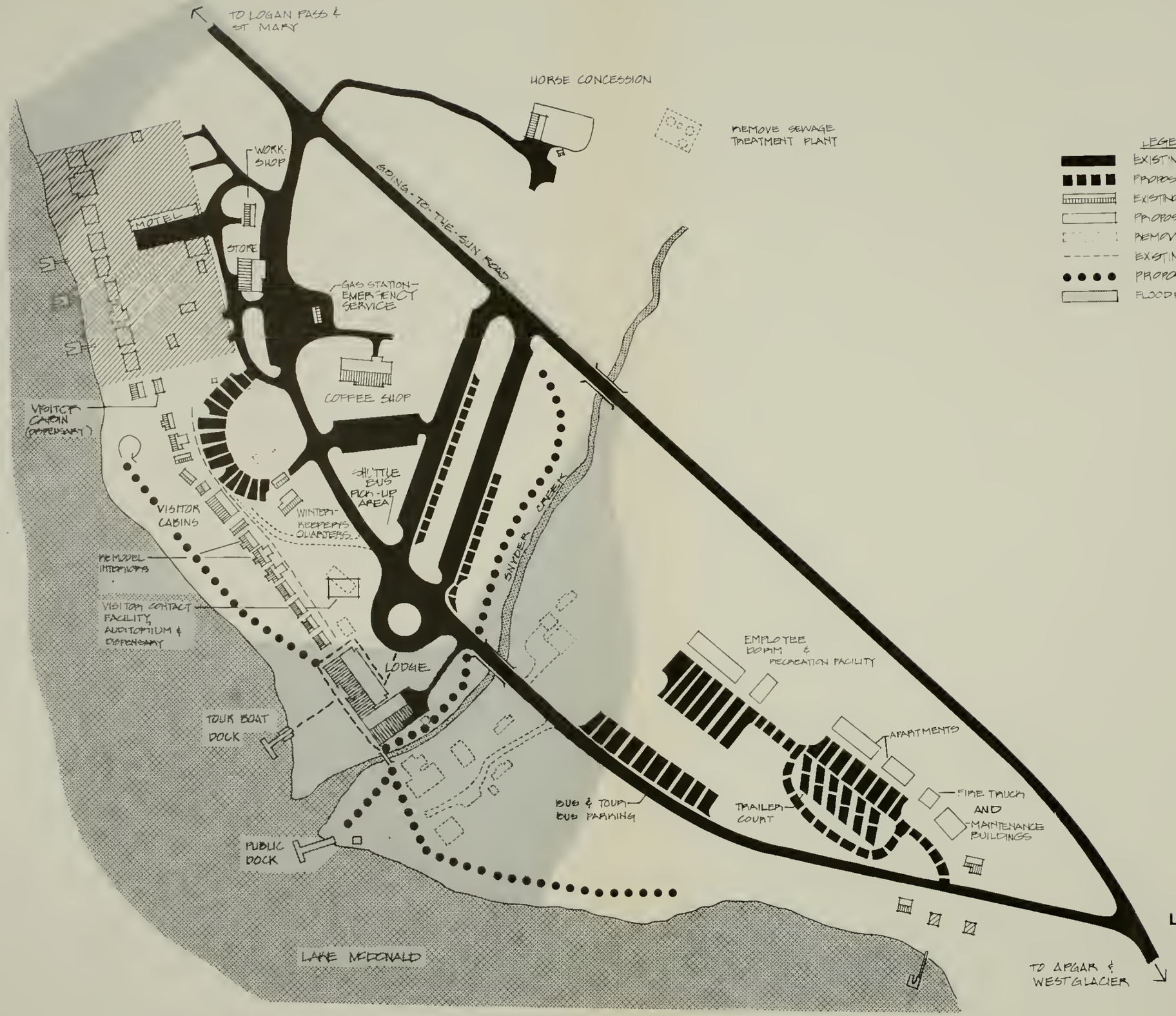

LEGEND

- EXISTING ROADS/PARKING
- PROPOSED ROADS / PARKING
- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- REMOVE OR OBLITERATE
- EXISTING TRAIL
- PROPOSED TRAIL
- FLOODPLAIN

ALTERNATIVE C

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Table 1: Summary Comparison of Alternatives, Lake McDonald

	No-Action Alternative	Preferred Alternative	Alternative A	Alternative B	Alternative C
Concessioner Lodging					
lodge	retain	retain, modify the kitchen service and entry areas and trails ($160,000)	retain	retain, provide outdoor food service ($10,000*)	retain
cabins	retain	rehabilitate two cabins to increase space per unit ($5,000*), redesign parking ($42,000*)	relocate some cabins to improve lakeshore access ($40,000), redesign parking ($42,000*)	winterize two cabins ($4,000*), redesign parking ($42,000*)	rehabilitate two cabins to increase space per unit ($5,000*), redesign parking ($42,000*)
new facilities	none	convert dispensary to visitor lodging (see below) and possibly provide additional overnight accommodations in acquired structures northeast of the lodge if they are offered for sale	convert caretaker's residence to visitor accommodations (see below)	convert Cobb House and Snyder Hall to visitor accommodations (see below) construct new lodge ($1,350,000-$2,250,000*)	convert dispensary to visitor lodging (see below)
Commercial Services					
coffee shop	retain	retain, paint and landscape ($10,000*)	retain, paint and landscape ($10,000*)	retain, paint and landscape ($10,000*)	rehabilitate to provide fast food and cafeteria service ($110,000*), paint and landscape ($10,000*)
service station	retain	retain and add emergency service and towing ($82,000*)	remove ($12,000*)	retain and add emergency service and towing ($82,000*)	retain and add emergency service and towing ($82,000*)
dispensary	retain	relocate and convert to visitor accommodations ($15,000*); function housed at Garden Court	retain	retain	relocate and convert to visitor accommodations ($15,000*); function housed in new structure
Day Use					
new facilities	none	provide lakefront path to Sprague Creek campground, benches, picnic tables, and public boat dock ($208,000)	provide lakefront path, benches, picnic tables, and public boat dock ($165,000)	provide lakefront path, benches, picnic tables, and public boat dock ($165,000)	provide lakefront path, benches, picnic tables, and public boat dock $165,000)
		provide trail along Snyder Creek ($4,000)	provide trail along Snyder Creek ($4,000)	provide trail along Snyder Creek ($4,000)	provide trail along Snyder Creek ($4,000)
			provide picnic area ($5,000)	provide picnic area ($5,000)	provide dual trail system along first mile of Johns Lake and Sperry Chalet trails ($40,000)
					provide warming huts, vault toilets ($30,000)

	No-Action Alternative	Preferred Alternative	Alternative A	Alternative B	Alternative C
Information/Interpretation					
lodge exhibits	upgrade	upgrade	upgrade	upgrade	upgrade
trail signing	improve ($1,000)	improve ($1,000)	improve ($1,000)	improve ($1,000)	improve ($1,000)
new facilities	none	convert recreation room and two dorms to visitor contact and interpretive facilities (see below)	convert recreation room to interpretive facility (see below)	convert one dorm to visitor contact facility (see below)	construct interpretive building with auditorium, dispensary, and restrooms at Garden Court site ($650,000)
	none	none	wayside at triangle ($20,000)	none	none
Access and Circulation					
day parking	retain	expand ($70,000)	expand ($93,000)	expand ($175,000)	expand ($70,000)
bus parking	retain	relocate away from lodge ($113,000*)	relocate away from lodge ($113,000*)	relocate away from lodge ($113,000*)	relocate away from lodge ($113,000*)
horse concession parking	retain	retain	expand ($12,000*)	relocate ($43,000*)	retain
trailhead parking	retain	retain	retain	relocate ($44,000)	retain
general	improve handicap accessibility ($5,000*)	improve handicap accessibility ($5,000*)	improve handicap accessibility ($5,000*)	improve handicap accessibility ($5,000*)	improve handicap accessibility ($5,000*)
new facilities	none	provide shuttle bus pick-up area ($3,000*)	provide shuttle bus pick-up area ($3,000*)	provide shuttle bus pick-up area ($3,000*)	provide shuttle bus pick-up area ($3,000*)
Concession Employee Housing					
Garden Court dorm (56' x 24')	retain	convert to visitor contact facility ($20,000), add public restroom ($40,000) and dispensary ($5,000)	remove ($15,000)	convert to visitor contact facility ($20,000) and add public restroom ($40,000)	remove ($15,000)
Cobb House (36' x 35')	relocate, continue to use for housing ($64,000*)	convert to office and interpretive space ($10,000)	relocate, continue to use for housing ($64,000*)	relocate and convert to visitor dormitory-style accommodations ($70,000*)	remove ($15,000*)
Snyder Hall (40' x 26')	relocate, continue to use for housing ($48,000*)	relocate and convert to recreation hall ($75,000*)	relocate, continue to use for housing ($48,000*)	relocate and convert to visitor accommodations ($70,000*)	remove ($15,000*)
other dorms: Hydro (26'x22'), Johnson (39'x26'), Gearjammer (63'x10'), girls' I & II (47'x10'), boys' I & II (63'x10')	relocate, continue to use for housing ($43,000*), retain girls' I and II	remove ($39,000*)	remove ($39,000*)	remove ($39,000*)	remove ($39,000*)
employee recreation room/auditorium	retain	convert recreation room to meeting hall ($10,000)	convert recreation room to interpretive facility ($15,000)	convert recreation room to offices ($12,000)	remove ($46,000)
caretaker's residence	retain	retain	convert to visitor accommodations ($35,000*)	retain	remove ($15,000*)

	No-Action Alternative	Preferred Alternative	Alternative A	Alternative B	Alternative C
new facilities	none	construct new housing area outside flood-plain ($1,589,000*),	construct new housing area outside flood-plain ($768,000*), add caretaker's residence ($60,000*)	construct new housing area outside flood-plain ($1,592,000*)	construct new housing area outside flood-plain ($1,592,000*), add caretaker's residence ($60,000*)
			construct recreation facility ($54,000*)	construct recreation facility ($54,000*)	construct recreation facility ($54,000*)
Miscellaneous					
concession garbage storage	retain	relocate ($5,000*)	relocate ($5,000*)	relocate ($5,000*)	relocate ($5,000*)
sewage treatment plant	retain	remove ($15,000)	remove ($15,000)	remove ($15,000)	remove ($15,000)
NPS fire shed	retain	remove	remove	remove	remove
new facilities	none	construct firehouse and maintenance shop ($120,000, includes cost of removing structure to be) replaced	construct firehouse ($60,000, includes cost of removing structure to be replaced)	construct firehouse and maintenance shop ($120,000, includes cost of removing structure to be replaced)	construct firehouse and maintenance shop ($120,000, includes cost of removing structure to be replaced)
flood control	periodically remove overflow channel sediment, install riprap on northeast side of Snyder Creek, remove some trees from bank ($20,000)	lower road south of Snyder Creek to divert floodwaters, periodically remove overflow channel sediment, install riprap on northeast side of Snyder Creek, remove some trees from bank ($60,000)	lower road south of Snyder Creek to divert floodwaters, periodically remove overflow channel sediment, install riprap on northeast side of Snyder Creek, remove some trees from bank ($60,000)	channelize Snyder Creek ($30,000)	none
Development Costs					
concessioner	$ 160,000*	$1,983,000*	$1,270,000*	$3,492,000-$4,392,000	$2,180,000*
NPS	21,000	732,000	493,000	631,000	1,156,000
total net costs	$ 181,000	$2,715,000	$1,763,000	$4,123,000-5,023,000	$3,336,000
total gross costs**	$ 264,000	$3,964,000**	$2,574,000	$6,020,000-7,334,000	$4,870,000

*Concession-related improvements. The exact funding by Glacier Park, Incorporated, would be determined in contract negotiations between the National Park Service and the concessioner.

**Gross costs include a 46 percent increase in funding to cover project planning, construction supervision, and contingency costs. They do not include costs of building furnishings or of utility systems.

ENVIRONMENTAL CONSEQUENCES

Soils

Affected Environment. Shallow glacial deposits along the Lake McDonald shoreline consist of soils ranging from clay to cobblestones. Generally the deposits are highly porous and relatively unconsolidated. Some impermeable materials can be found where water action along the lake and stream has deposited silt and clay. The load-bearing capacity of the soils is very high and productivity is low. This type of soil can tolerate a moderate amount of use without harm.

General Effects. Under any of the alternatives, soils would be adversely affected in areas occupied by development, in areas adjacent to impervious structures, and in areas subject to foot traffic. Roads, trails, and other impermeable structures would either wholly or partially eliminate direct inflow of water to soil. Compaction of soils in these areas would either be deliberate (as is the case for roads) or would result from settling due to the weight of an overlying structure. Site leveling for buildings, roads, trails, and parking areas would result in either removal or addition of earth, both of which would destroy the soil structure. Topsoil would be removed from areas to be covered by pavement or buildings and would be used to supplement any shortage of topsoil incurred in installing utilities or other facilities. This would minimize the overall loss of organic matter caused by development. Nevertheless, wherever topsoil was removed and replaced, it would unavoidably be mixed, which would reduce the organic content of the top layer.

Any construction site where soil was disturbed would undergo accelerated erosion, at least temporarily, until drainage structures were fully operable and vegetation recovered in cleared areas. Construction of roads, buildings, and other impervious structures would be restricted to the minimum area required for building.

Areas surrounding visitor facilities would be affected by foot traffic. The primary impact on soils would be compaction, which would decrease permeability, locally alter the soil moisture, and diminish the water storage capability. This effect of foot traffic would be somewhat offset by the effects of frost action, which expands the soil. Where compaction occurred, it would result in slower rates of water transmission within soils and increased runoff on the surface, increasing soil erosion. Prolonged trampling would gradually decrease vegetation and increase exposure of bare ground to the direct erosive impact of rainfall. Erosion would take the form of channelization on barren areas of even slight slopes.

To minimize the soil erosion created by foot traffic, most visitor developments would be constructed on slopes less than 15 percent. Paved trails would be provided where heavy foot traffic was anticipated, and visitors would be encouraged to stay on these maintained trails. Trail construction would include special design methods in areas where the slope was high and soils were easily eroded.

Buildings, roads, and other impervious structures would collect precipitation and divert it to adjacent areas. The runoff not collected and diverted to natural drainages would pour out on adjacent areas, increasing the local soil moisture regime. The increased runoff in these areas might result in localized increases in erosion and changes in soil nutrient transport. Altered vegetative composition could also create slight changes in soil chemistry.

Site-Specific Impacts. The impacts on soils have been divided into two categories: moderate and severe. A moderate impact is defined as the compaction of soils by foot traffic, and a severe impact is defined as the covering of soils by pavement or other impervious structures. A detailed breakdown of the acreage disturbed by each alternative is shown in table 2.

Table 2: Disturbed Acreage, Lake McDonald

Existing Use	No-Action	Preferred	A	B	C
Moderate	2.1	2.1	2.1	2.1	2.1
Severe	7.9	7.9	7.9	7.9	7.9
Total	10.0	10.0	10.0	10.0	10.0
Total Use with Plan					
Moderate	2.6	3.7	3.0	3.3	3.1
Severe	8.8	9.7	10.2	11.7	10.3
Total	11.4	13.4	13.2	15.0	13.4
Net Change with Plan					
Moderate	+0.5	+1.6	+0.9	+1.2	+1.0
Severe	+0.9	+1.8	+2.3	+3.8	+2.4
Total	+1.4	+3.4	+3.2	+5.0	+3.4

Vegetation

Affected Environment. The Lake McDonald developed area is in a cedar/hemlock forest. The grounds surrounding the lodge and cabins have been altered and are largely maintained as lawn. The surrounding area contains western red-cedar, western hemlock, lodgepole and western white pine, subalpine and grand fir, Douglas-fir, western larch, and a diverse understory. There are also scattered black cottonwoods. Both hemlock and red-cedar, the predominant species, are durable and can tolerate moderate development and use.

Numerous exotic plant species inhabit disturbed areas. They were introduced into the area by the mud and snow dropped off railroad cars

and by the topsoil, seed, and sod brought in for landscaping purposes. These exotic species include dandelion, Kentucky bluegrass, common timothy, butter-and-eggs, spotted knapweed, leafy spurge, and Canada thistle. Other species found are St. Johnswort, plantain, yellow and white sweetclover, white and red clover, and common mullien. The resource management plan calls for the exploration of the most effective biocontrol methods now being used to control these exotics and of how they might be adapted to Glacier National Park.

General Effects. Vegetation would be adversely affected in areas occupied by development, in areas adjacent to impervious structures, and in areas subject to foot or vehicle traffic.

Construction of new facilities would completely destroy vegetation. The sites for these structures would be limited to the minimum necessary for construction. All disturbed areas not covered by development would be reseeded with native species to speed the rate of recovery and to minimize the encroachment of invading species.

The precipitation that falls on impervious structures would not be absorbed. To the maximum extent possible, the water runoff from these structures would be directed to natural drainages, minimizing the impact of increased moisture availability. To the extent that runoff poured into adjacent vegetated areas, it could alter the natural composition of vegetation and could encourage the growth of exotic species.

Areas surrounding visitor facilities would be impacted by foot traffic. This would cause soil compaction and change the amount of moisture available to plants, which in turn might alter the relative abundance of some species and affect germination. Plants that invade disturbed areas might become more common. Increased erosion might lead to exposure of root systems and the subsequent death of more mesic plants. The impacts of trampling would range from complete exclusion of vegetation to slight shifts in species composition. Similar impacts would occur along road shoulders, where vegetation would be crushed and soils would be compacted by cars.

Excavation for utility trenches would destroy vegetation and disturb topsoil in areas that would later revegetate. Following the installation of utilities the topsoil would be replaced and reseeded with native species (in accordance with the Natural Resources Management Plan), resulting in more rapid recovery of native vegetation.

Site-Specific Impacts. The impacts on vegetation have been divided into two categories: moderate and severe. A moderate impact is defined as the disturbance of vegetation by foot traffic or installation of utilities, and a severe impact is defined as the exclusion of vegetation by pavement or other impermeable structures. Table 2 shows the amount of acreage disturbed by each alternative. In addition, all of the alternatives would result in the removal of many large trees near Snyder Creek to allow for the relocation of one or more structures.

Wildlife

Affected Environment. Animals most commonly found in the McDonald valley include moose, elk, mule and whitetailed deer, black and grizzly bears, snowshoe hare, coyote, lynx, cougar, and red squirrel. Fish species found in Lake McDonald include kokanee salmon, lake trout, and lake whitefish.

Impacts. There would be few significant long-term impacts on wildlife under any of the alternatives considered for Lake McDonald. The following acreages of wildlife habitat would be destroyed by implementation of each of the alternatives: 0.9 acre, no action; 1.8 acres, preferred alternative; 2.3 acres, alternative A; 3.8 acres, alternative B; 2.4 acres, alternative C. The proposed developments and associated visitor use would destroy the habitat of some resident invertebrates and small mammals and birds, causing their death or relocation. There would be no impacts on unusually sensitive or significant wildlife habitat.

The only actions that would potentially disturb larger wildlife would be the extension of the use season into the fall (alternative A) or the winter (alternatives B and C). These actions might have adverse effects on bald eagles, grizzly bears, or moose. The impacts on eagles and bears are described in the next section, which addresses threatened and endangered species. Moose would be adversely affected if either alternative B or C was implemented. The Lake McDonald area is winter moose range. Flight from human intrusion in winter might stress these animals at a time when they need the greatest protection to avoid depletion of critical energy reserves.

Threatened and Endangered Species

Affected Environment. Threatened and endangered species present in the Lake McDonald area include the endangered bald eagle (Haliaeetus leucocephalus) and the threatened grizzly bear (Ursus arctos horribilis). There are no threatened or endangered plants known in the park.

A substantial number of bald eagles are attracted to lower McDonald Creek each fall to feed on spawning kokanee salmon, which were introduced into the upper Flathead River system in the 1920s. The eagles begin to arrive in the valley in October and they are usually gone by January 1. The majority of the eagles concentrate on lower McDonald Creek and not at Lake McDonald, although some use is made of the lake area. During this critical time most areas are closed to human entry, but designated viewing areas are maintained, and interpretation, research, and public information activities are conducted. The major bald eagle roosts are near the Middle Fork of the Flathead River, along McDonald Creek, and west of Lake McDonald. Roosting eagles are easily disturbed by human intrusion along the creek (McClelland 1973), and the Bald Eagle Management Plan (NPS 1978b) calls for restrictions on human access to these areas during the eagles' stay in the park.

The threatened grizzly bear is an infrequent visitor to the Lake McDonald developed area, although bears have been observed at both the head and

foot of Lake McDonald and also on some of the trails in the area. There is also a potential for grizzly bear/human conflicts during the fall salmon run. The present management policy is to protect and maintain the natural habitat and status of the bears, to minimize the human influences that might lead to conditioning of the park's bear population, and to provide maximum security for park visitors. Bears are removed from developed areas if their behavior indicates habituation to an artificial environment or if there is a safety hazard. People are temporarily excluded from backcountry areas occupied by bears. Current actions include intensive employee training and close monitoring of bear sightings and behavior.

Grizzly bears also use the lower McDonald Creek area in the spring and fall. The western side of the valley in the creek floodplain is critical grizzly bear feeding grounds (NPS 1981a). A grizzly travel corridor crosses the undeveloped area between the park headquarters and the Apgar area, connecting the floodplain to the Apgar Mountains, where huckleberry crops attract seasonally high densities of grizzlies (Martinka 1974).

Impacts. None of the development proposed in the alternatives would be located in the immediate vicinity of lower McDonald Creek or the roost sites. The only actions that would potentially affect bald eagles or grizzly bears would be the extension of the visitor season into the fall (alternative A) or into the winter (alternatives B and C).

Extension of use into the fall and winter seasons would result in an increase in visitors during the season that eagles are congregating in the park. Some areas would have to be closed to avoid adversely affecting the eagle population. The effectiveness of this management strategy would depend on how well the visitors could be controlled. Use in the area would probably be by cross-country skiers, and control of all parties could be difficult. The preferred alternative and the no-action alternative would have the least impact on bald eagles.

Extension of the visitor use season would also increase the risk of bear/human contact. This would increase the potential for grizzly control actions and the possibility of human injury or death. Strict control of human activities would be necessary to minimize bear/human conflicts in the fall. The preferred alternative and the no-action alternative would not create any new impacts on the grizzly population.

Water Resources

Lake McDonald is fed by McDonald Creek, Snyder Creek, Fish Creek, and Sprague Creek. It is the largest lake in Glacier National Park, having a total surface area of 6,823 acres and a maximum depth of 464 feet. Snyder Creek bisects the Lake McDonald developed area. A water pollution survey performed in 1973 (Sinning 1973) showed that oxygen levels are at or near saturation at all depths in Lake McDonald, indicating that the lake is healthy. It is not expected that any of the alternatives would affect the water quality of Lake McDonald or Snyder Creek on a continual basis. The removal of sediment proposed in the preferred

alternative and alternatives A and B would temporarily increase the amount of particulates in the water, but this amount would be minimal in comparison with the yearly effects of spring runoff.

Floodplains and Wetlands

Affected Environment. The slope of Snyder Creek through the Lake McDonald development is 5 to 6 percent, contributing to hydraulic conditions that make flood flows supercritical. Standing vegetation has only a minimal effect in slowing floodwaters. During a flood the stream gains so much force that it can move yards of rock and debris, causing the channel to move back and forth. These conditions defy all standard methods of predicting the channel elevation of floodwaters. The Seattle District of the U.S. Army Corps of Engineers has provided the National Park Service with a map delineating the 100-year floodplain (see Lake McDonald alternative development maps). The floodplain is very large in comparison with the flood flow of Snyder Creek because debris could block the channel and divert the water in an unpredictable manner. The delineated 100-year floodplain does not necessarily mean that all buildings in the area would be destroyed in a 100-year flood, just that there is a possibility of damage. The 100-year flood flow is estimated at 3,000 cubic feet per second, which is not large enough to cause damage to all of the buildings at the same time. Historically the 1964 and 1975 floods were contained in an area relatively near the existing channel. The 1964 flood was estimated at greater than a 100-year flood. (See appendix A for the flood history of this area.)

Facilities within the 100-year floodplain include the Lake McDonald Lodge, auditorium/recreation room building, Snyder Hall, Cobb House, boys' dorms I and II, and Johnson, Hydro, and Gearjammer dorms. Of these structures, the lodge, auditorium/recreation room, Synder Hall, and Cobb House are included in the Lake McDonald historic district listed on the National Register of Historic Places, and these culturally significant resources merit the most intensive efforts to protect them from flood loss. No actions that are classified as critical for flood-protection purposes occur in or are proposed for any area in the 500-year floodplain. No structures or facilities exist in or are proposed for a high-hazard area subject to flooding events that would be so unexpected, violent, or otherwise devastating that human lives would be placed in immediate or grave danger.

The 1964 flood caused the most damage at Lake McDonald. The dining room was inundated and its foundation undermined. Snyder Hall and the auditorium/recreation room were filled with at least 4 feet of debris. Several trailers were floated from their footings and two buildings were destroyed. In addition the foot and horse bridge was destroyed, and the Going-to-the-Sun Road was undercut around the Snyder Creek bridge abutments. Total cost of damages was estimated to be $100,000 to $200,000. Damage to the area would have been much greater if park personnel had not been at work in the stream channel. Their major objectives were to clear the bridges and to push debris at the inlet into the lake. The park's "Flood Damage Control Management Plan" calls for the use of heavy equipment to clear channels to minimize personal hazards and property damage.

Rocks and trees have been important factors in the flooding conditions at Lake McDonald. In previous floods one or both bridges became blocked by debris, causing floodwaters to build up behind them. Debris also collected at restrictions, like the one between the auditorium/recreation room building and Lake McDonald Lodge, or where trees happened to get lodged as they were forced downstream. As water backed up behind the debris, it spread and increased the width of the destruction area.

Several steps could be taken to minimize damage to the Lake McDonald developed area during a flood. Trees could be cleared from along the streambanks. A diversion channel could be constructed to accommodate some of the flood flow. The road could be redesigned to wash out at the bridge abutments, or a low area in the road could be built to divert floodwater away from the developed area. A debris catchment device (trash rack) could be installed to contain trees, or levees or floodwalls could be built. Other possible actions include periodic removal of sediment from the channel, channelization, and enhancement of an existing natural diversion channel. Further explanation of these methods and their costs can be found in "Floodplain Analysis for Lake McDonald and St. Mary Development Concept Plan Areas at Glacier National Park, Montana" (NPS 1983b).

A flood emergency response and evacuation plan will be developed by the park staff for dealing with the Lake McDonald area (as well as other flood-prone areas of the park) under any alternative considered. Warning signs will be posted in flood-hazard areas, and all facilities and structures in the 100-year floodplain will be marked with flood heights. Evacuation routes will be developed, and provisions will be made for emergency water and sewer service.

Impacts. None of the alternatives would affect the water resource values of the floodplain related to the natural moderation of floodwaters, maintenance of water quality, and groundwater recharge. No living resource values would be affected.

The impacts of flooding on people and property would vary by alternative, as described below.

Impacts of No-Action Alternative. The relocation of all the concession employee housing from the floodplain would comply with NPS guidelines for implementing Executive Order 11988, "Floodplain Management," and EO 11990, "Protection of Wetlands" (Federal Register 45:35916, revised 47:36718). The guidelines specify that there will be no overnight occupancy of the 100-year floodplain unless there is no practicable alternative. The lodge and the auditorium/recreation room would remain subject to flood damage, although provisions have been made to protect the lodge, at the expense of other structures if necessary.

Impacts of Preferred Alternative. The preferred alternative would comply with NPS guidelines by replacing all concession employee housing outside the 100-year floodplain and increasing flood protection for the lodge.

This would eliminate all risk to employees and further reduce the risk to visitors. In addition to the lodge, the auditorium/recreation room and a

multipurpose facility (Cobb House) would remain subject to flood damage. No overnight use hazards would be associated with these last two facilities, and their use could be easily restricted if flooding was expected, minimizing the risk to human life.

The risk associated with overnight use of the lodge would be minimized by the following actions. Low spots would be created in the Going-to-the-Sun Road, and the road would be designed to wash out at these locations in the event of a flood, reducing the potential for floodwaters to rise behind the bridges. The washout areas would direct floodwaters toward an existing natural channel to the west of the developed area. The existing overflow channel would be enhanced by periodically removing sediment. Riprap would be placed on the northeast side of Snyder Creek to protect the lodge, and some overhanging trees would be removed from the creekbanks. The flood emergency response and evacuation plan would specify that the primary efforts to reduce flood damage would concentrate on the lodge, and the auditorium/recreation room and the Cobb House would be sacrificed if necessary.

Impacts of Alternatives A and B. The impacts of alternatives A and B would be similar to the impacts of the preferred alternative. Unlike the preferred alternative, the Cobb House would be relocated, leaving only the lodge and the auditorium/recreation room in the 100-year floodplain.

Impacts of Alternative C. Alternative C would provide the most protection from flooding for both people and property. All structures except the lodge would be removed from the floodplain, and the lodge could be easily protected by some of the methods previously described, reducing the risk of damage to this historically significant structure.

Wetlands

No wetlands would be affected by development in the Lake McDonald area.

Air Quality

Affected Environment. Glacier National Park is designated a class I area under the provisions of the Clean Air Act amendments (42 USC s 7401 et seq.), which allows little additional deterioration of air quality. Air pollution is a serious external threat to the park and could potentially affect plants and animals, as well as visibility. Particulate and gaseous pollutants have been found in the park biota. There are few sources of air pollution within the park.

Results of fluoride research and monitoring indicate that prior to 1980 high levels of ambient fluoride occurred in the park and accumulated in soil, plants, and animals above normal levels. However, a significant drop in ambient levels occurred in 1980 and 1981, and fluoride levels in those years averaged well within the state standards. Another major concern for the park is sulfur dioxide pollution from extensive oil, gas, and coal exploration in Montana, North Dakota, and Canada. Sulfur dioxide from Canadian oil and gas fields has been detected within the park by monitoring and by odor on several occasions.

Another potential source of air pollution at the park is particulates. Sources of particulates include emissions from automobiles, forest and agricultural burning, wood stoves, and the forest products industry, and also dust raised by traffic on unpaved roads and by windblown soil. Monitoring studies for total suspended particulates indicate low levels of nitrate and only infrequent violations of the standards. However, the data occasionally show high sulfate levels, indicating pollution by distant sources of sulfur emissions.

Visibility at the park has been periodically affected by high winds and smoke from forest fires. There is a strong possibility that the anticipated operation of the Sage Creek Coal Mine may impair visibility.

Monitoring at the park has shown that the park is receiving acid deposition (average of pH 5.3), but the sources have not been identified.

The Natural Resources Management Plan proposes to expand the present program of air quality monitoring to include a study of the sensitivities of various resources to changes in air quality.

Impacts. No significant impacts on air quality would result from implementation of any of the alternatives considered. Utility and building construction could temporarily increase the amount of particulates. There would be a temporary increase in noise levels due to construction activities.

Visual Quality

Affected Environment. The Lake McDonald developed area is not very visible from the Going-to-the-Sun Road because it is set within a cedar/hemlock forest. The parking of modern vehicles and buses in front of the lodge and cabins is an intrusion on the historic setting of the area. The coffee shop architectural style and color are in marked contrast to the other structures on the site and are considered by some to be intrusive. The site of the old, unused sewage treatment plant intrudes on the landscape visible to hikers and horseback riders. Some employee activities, such as sunbathing, are visually intrusive on the visitor use areas.

Impacts. In all of the alternatives, the visual quality would be enhanced by the redesign of the cabin parking area, vegetative screening and repainting of the coffee shop, and removal of the sewage treatment plant.

The visual impact of the proposed concession employee housing area (included in all of the alternatives) would be mitigated by sensitive design and use of existing vegetation for screening. The new housing area would eliminate the intermix of conflicting employee and visitor activities, which would enhance the visual quality of the visitor use area.

The proposed motel (alternative B) and new interpretive facility (alternative C) could be visually intrusive. The potential for impact would be mitigated by careful selection of building materials, complementary design, and vegetative screening.

Cultural Resources

Affected Environment. The Lake McDonald Lodge historic district, entered in the National Register in 1978, includes all the historic resources in the Lake McDonald developed area. The district is mapped on the No-Action Alternative map. The primary historic structure is the main lodge building, which was built in 1913-1914 by a private owner, John L. Lewis. It is a 3½-story rustic log structure containing a full-height lobby between two parallel wings of guest rooms. The lodge is attached to the northeast side of a log structure that was built in 1910 and that now (greatly altered) serves as the dining room. A more recent kitchen wing adjoins the south side of the dining room. A row of 13 one-story cabins, most of which predate the lodge, extends northeast from the lodge along a path parallel to the lakeshore.

Ancillary structures that contribute to the overall rustic appearance of the district and that date to the Lewis period (prior to 1930) are Garden Court (1927), Cobb House (1918), Snyder Hall (1911), the auditorium/recreation room building, the dispensary (1909), the caretaker's residence (1922), and the carpenter shop (1922). Other historically significant structures that were built after Lewis sold his property to the government include the McDonald cabin (1935), which remained in private ownership until 1975, the lower stone bridge across Snyder Creek, which was built by the CCC in the early 1930s, and the general store, which was built by the Glacier Park Company around 1937.

Seven privately owned residences north of the lodge cabins are included in the National Register district as compatible structures. These lakeshore cabins were all built between 1918 and 1940.

The government-owned coffee shop, caretaker's garage, and sewage lift station are situated within the district but have no architectural significance. The privately owned concession employee dormitories (boys' I and II, girls' I and II, Hydro, Johnson, and Gearjammer), and the gas station are also listed as having no architectural value. The Hydro and Johnson dorms, both built in 1918, have since been moved from their original locations. The Stewart Motel and two miscellaneous structures (GNP 53 and 54) are listed as intrusions within the historic district.

The Going-to-the-Sun Road, which passes through the Lake McDonald Lodge historic district, is identified as a significant historic resource in the National Register of Historic Places.

Given the number and condition of historic resources, the occurrence of historic archeological resources is highly probable, although none have been identified in the several project-specific surveys conducted to date.

There has been no comprehensive survey of Glacier National Park for archeological resources as required by EO 11593, "Protection and Enhancement of the Cultural Environment." None of the archeological sites discovered in the site-specific surveys performed to date would be affected by any of the alternatives proposed. Any unsurveyed areas where land modification is planned would be surveyed prior to disturbance.

General Compliance Considerations. All architectural resources included in the National Register, or potentially eligible for inclusion, are entitled to the protection afforded by section 106 of the National Historic Preservation Act and its implementing regulations, promulgated by the Advisory Council on Historic Preservation (36 CFR, part 800). A programmatic memorandum of agreement (PMOA) executed by the National Park Service, the Advisory Council, and the National Conference of State Historic Preservation Officers eliminated the requirement that the council and the appropriate state officer must review basic planning documents, such as this one, if they have been consulted during the development of the plan. The Advisory Council and the Montana state historic preservation officer have participated in the planning for the DCP areas through consultations and onsite inspections. Consultations will continue throughout the planning process to ensure that the plan is implemented in accordance with applicable NPS policies and guidelines. Completion of this process will satisfy the requirement of section 106 as applicable to the development and subsequent adoption of the DCPs. Evidence of final compliance with section 106 will be included in the final environmental impact statement or the finding of no significant impact prepared for the plans. Undertakings proposed in the DCPs which would affect cultural resources will be subject to the assessment of effect (form XXX) process established in the PMOA prior to implementation.

Many of the potential impacts on archeological and historic resources will be avoided or mitigated through strict adherence to NPS policies and guidelines. The major provisions of these guidelines are described below.

Known archeological resources must be avoided when planning the locations of ground-disturbing facilities. Excavations in areas where underground archeological resources may exist are subject to archeological clearance and must be monitored by a qualified archeologist. Appropriate surveys to comply with EO 11593 must be conducted prior to ground disturbance. If archeological resources are discovered during construction, work must be suspended until a qualified archeologist can evaluate the remains. If human activity occurs in the vicinity of known archeological resources, the risk that resources might be damaged by soil compaction and erosion or by intentional vandalism and theft should be diminished by appropriate protective measures.

Preservation on original sites is the preferred treatment for historic structures. Restoration and rehabilitation of historic buildings in accordance with NPS policies and guidelines are also acceptable treatments and are considered to have no adverse effect. As directed by NPS guidelines, new additions or alterations may not impair a building's essential form, integrity, or structural system. They are acceptable only if they do not destroy significant historical, architectural, or cultural material, and if they are compatible in design with the size, scale, color, material, and character of the existing structure and its neighborhood or environment. Improvements for handicap accessibility, like other building modifications, must be accomplished in accordance with NPS policies and guidelines and also with the Advisory Council's "Handicapped Access to Historic Properties."

Demolition of a historic structure, or destruction of the distinguishing qualities or character of a structure and its environment, constitutes an adverse effect that must be mitigated by a thorough documentation of the structure prior to the adverse action.

Moving a historic structure has the adverse effect of destroying its site integrity and also the integrity of any grouping of buildings or landscape it helps to compose. This effect must be mitigated by one or more of the following means: documentating the original site, maintaining the original orientation of the building, or relocating the building to a site with similar terrain, vegetation, and neighboring buildings.

Abandonment and neglect of historic buildings are considered adverse effects because they eventually result in the loss of the property.

New buildings, roads, trails, or utilities might adversely affect nearby historic structures. Adverse effects must be avoided by designing the new facilities to be compatible with the scale, texture, and continuity of the affected historic structures. As regards these DCPs, all new structures will be designed to be compatible with the historic buildings in their vicinities, even if the new structures would not be directly visible from the historic districts.

Impacts of No-Action Alternative. Relocation of Cobb House and Snyder Hall would have the adverse effect of destroying their site integrity and disturbing the context of nearby buildings in the historic district; however, it would also have the beneficial effect of protecting the structures from potential flood damage. The adverse effects of relocation would be mitigated in accordance with NPS guidelines. Relocation of the remaining dorms would have no adverse effect, since these structures have no architectural significance.

Floodplain protection measures would enhance the safety of the lodge, but they might increase the risk of flood damage to the auditorium/recreation room. Balancing these risks would be carefully considered in the design of flood protection measures.

The remaining actions included in this alternative would avoid adverse effects on cultural resources by strict adherence to NPS policies and guidelines (refer to "General Compliance Considerations," above).

Impacts of Preferred Alternative. Relocating the dispensary would destroy its site integrity and disturb the context of nearby buildings in the historic district (particularly the lodge and the first cabin east of the lodge). This adverse effect would be mitigated in accordance with NPS guidelines.

The significance, if any, of the fire shed would be determined prior to its demolition. If it was found eligible for the National Register, its removal would result in an irretrievable loss of cultural resources. This adverse impact would be mitigated by recording the structure. If the hose reel was not retained for use, it would be preserved as part of the park artifact collection.

Relocating Snyder Hall and converting it to a recreation hall would have the adverse effects of destroying its site integrity and disturbing the context of the historic district; however, this action would also have the beneficial effects of protecting the structure from potential flood damage and returning it to its original use. The adverse effects of relocation would be mitigated in accordance with NPS guidelines; the new site would approximate the shadiness of the historic site and would not adversely affect the remainder of the district.

Floodplain protection measures would enhance the safety of the lodge, but they might increase the risk of flood damage to Cobb House and the auditorium/recreation room. Minimizing these risks would be carefully considered in the design of flood protection measures.

Modifications to the kitchen service and entry areas at the Lake McDonald Lodge should not adversely affect the historic fabric or setting. Most changes would re-create former conditions, prevent further structural damage, and improve accessibility for the disabled visitor. These changes would be designed to be compatible with the historic structures. Careful documentation of changes would ensure the continuity of the historic record.

The remaining actions included in this alternative would avoid adverse effects on cultural resources by strict adherence to NPS policies and guidelines (refer to "General Compliance Considerations," above).

Impacts of Alternative A. The impacts of alternative A would differ from the impacts of the preferred alternative in the following ways. Relocating some of the visitor cabins would destroy their site integrity and also destroy the integrity of the historic district. The linear arrangement of the cabins and their relationship to the lodge are critical elements of the historic scene, and satisfactory mitigation of the disruption of these elements would be very difficult, if not impossible, to achieve.

Removal of the Garden Court dorm would result in the irretrievable loss of cultural resources. This adverse effect would be partially mitigated by documentation.

The floodplain protection measures would enhance the safety of Lake McDonald Lodge, but they might increase the risk of flood damage to Snyder Hall, Cobb House, and the auditorium/recreation room. Minimizing these risks would be carefully considered in the design of the flood protection measures.

This alternative would avoid some of the adverse effects of the preferred alternative, specifically the effects associated with relocating the dispensary and Snyder Hall.

Impacts of Alternative B. The impacts of alternative B would differ from the impacts of the preferred alternative in the following ways. Relocating both Snyder Hall and Cobb House, and converting them to overnight accommodations, would have the adverse effects of destroying their site integrity and disturbing the context of the historic district; however, this action would also have the beneficial effect of protecting these

structures from potential flood damage. Relocation would be preferrable to demolition, but the new sites would be only marginally acceptable. A site with more mature trees would be better for Snyder Hall, and more separation from other structures would be preferred for Cobb House. Cobb House would be oriented with its porch toward the lake. A new lodge or motel southwest of the existing Lake McDonald Lodge would be an intrusion on the historic district. This could be partially mitigated by use of appropriate materials and similar period architecture.

Floodplain protection measures would enhance the safety of the lodge, but they might increase the risk of flood damage to the auditorium/recreation room.

This alternative would avoid some of the adverse effects of the preferred alternative, specifically the effects associated with relocating the dispensary.

Impacts of Alternative C. The impacts of alternative C would differ from the impacts of the preferred alternative in the following ways. Removal of Snyder Hall, Cobb House, Garden Court, and the auditorium/recreation room building would result in the irretrievable loss of cultural resources. This adverse effect would be partially mitigated by documentation.

This alternative would avoid some of the impacts of the preferred alternative, specifically the impacts associated with relocating the dispensary.

Visitor Use

Affected Environment. Total park visitor use has increased 242 percent over the past 20 years (refer to the following graph). This overall growth rate is much higher than that recorded for any of the other large western parks, such as Yellowstone (also shown on the graph). In fact such a high growth rate is normally associated only with new areas and seldom continues for such an extended time. It is assumed that this unusual growth pattern is attributable to an increasing public awareness of Glacier's resources and recreational opportunities, stimulated at least in part by a campaign to promote tourism in Montana.

Parkwide Visitor Use 1964-1983

Also unusual, the park recorded a 32 percent increase in visitation in 1983 alone, a year when almost all other national parks and the tourist industry nationally experienced a lack of growth. The 1983 data are considered to reflect a one-time phenomenon attributable to the publicity the park received about the 50th anniversary of Going-to-the-Sun Road, the external threats to the park, and the grizzly bear situation. Special visits by the vice president, secretary of the interior, and Boy Scout Jamboree also influenced the 1983 visitation. In addition, day visits from local communities probably increased because of the depressed economy in the immediate area (more unemployed residents were free to visit the park that year).

July and August have always been the peak months for Glacier visitation. In the 1960s and early 1970s use in these two months usually accounted for about 70 percent of each year's visitation. Since then there has been some increase in visits during the off-season, primarily the spring and fall, and the relative use in July and August has dropped to 60 percent. This use pattern appears to have stabilized, and there is no reason to expect relative summer use to decrease further.

Total park campground use peaked in 1968 and reached a slightly lower peak in the years 1976 through 1978. Since then camping has not returned to either of these earlier highs.

Parkwide Campground Use

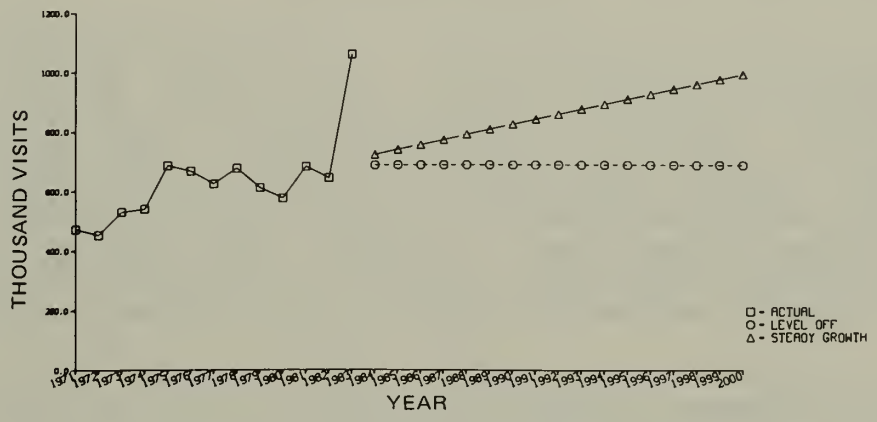
A linear regression analysis of data for the period 1967 through 1982 indicates that campground use has been decreasing by an average annual amount equivalent to about 1 percent of the use reported in 1982. If these data were adjusted for closed and restricted campgrounds (e.g., St. Mary and Avalanche campgrounds were closed in 1980), they would probably show that use was fairly level over this period. The lack of growth is partly due to the capacity of the campgrounds. Most campgrounds fill to capacity during the main season; the only exceptions are the St. Mary, Swiftcurrent, and North Fork campgrounds. Total campground use is not projected to grow significantly in the future.

The data that best reflect day use of the Lake McDonald area are the counts and surveys of incoming traffic at the west entrance station near

Apgar. These data exclude west-bound traffic and include many vehicles which do not go as far as Lake McDonald; overall, however, they are considered fairly reliable for estimating trends in day use of the Lake McDonald area.

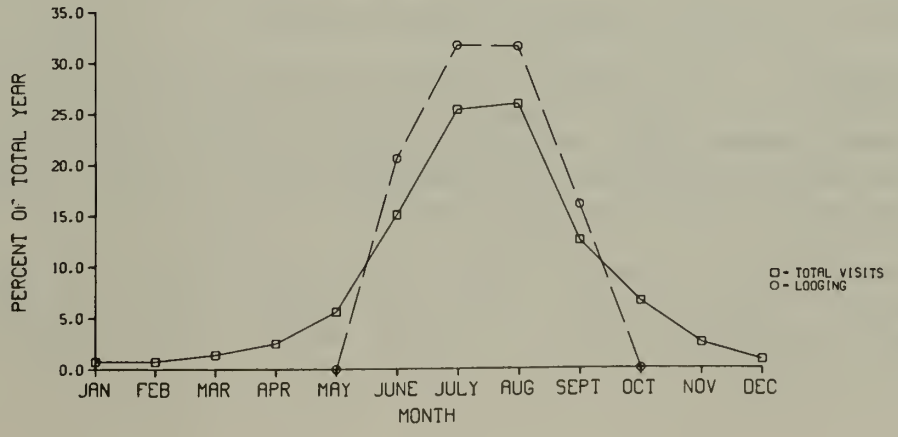
A linear regression analysis of the data from 1970 through 1982 indicates that use in this part of the park has increased by an average of 16,800 visits annually. The 1983 data were not used in determining the annual average because of the assumption that the level of use reported in 1983--which indicated a 64 percent increase over 1982 for this particular part of the park--was a one-time phenomenon due to special visits, publicity, and a depressed local economy. If day use of the Lake McDonald area continues to grow at an average rate of 16,800 visits per year, in the year 2002 it will be 52 percent greater than it was in 1982, but it will still be lower than the level of use reached in 1983 (see the following graph).

Past and Projected Growth, Visitor Use at West Entrance



Use on the west side is less concentrated in July and August than it is for the park as a whole. On the west side, only 50 percent of all use occurs in July and August. This reflects better access during the off-season, increased local day use during this time, and the attraction of eagle viewing during the fall.

Seasonal Use, West Entrance



Impacts of No-Action Alternative. Most of the problems currently experienced at Lake McDonald would continue. Day visitors would continue to feel unwelcome in the area because the majority of the facilities would remain oriented to overnight guests. Access to the lakeshore and Snyder Creek would be improved by relocating the employee dorms, but no facilities would be provided to encourage day visitors to enjoy these areas. Modifications to the entry area would reduce existing visitor confusion in locating the proper entrance to the Lake McDonald Lodge.

The day visitor parking capacity would be retained at the current level. If visitation continued to increase on the west side of the park at the rate it has over the past 20 years, the parking capacity at the lodge complex could be reached during the peak summer months within the next 15-20 years. Visitor demand in excess of this capacity could not be accommodated by the existing development.

Handicap accessibility would be improved.

Impacts of Preferred Alternative. Opportunities for day use would be increased by improving access to the lakeshore and the creek and by providing new facilities. The construction of a public boat dock would enable all visitors to view the head of the lake and benefit private boaters. Walking opportunities for both day and overnight visitors would be increased by the addition of a lakefront path with benches and a new trail along Snyder Creek. Picnickers would benefit from new picnic tables along the lakefront. Motorists would benefit from the provision of towing service and emergency spare parts in this developed area.

The day visitor parking capacity would be reached within the next 15-20 years if visitation continued to increase as it has over the past 20 years. When necessary the parking capacity could be expanded by as much as 30 percent to accommodate more visitors. Access would be further improved by providing a transportation system pick-up point. Handicap accessibility would also be improved.

Information and orientation would be enhanced by the conversion of the Garden Court dormitory to a visitor contact facility, where visitors could receive necessary information and orientation immediately upon entering the developed area, and by improved trail signing. Provision of public restrooms would provide a much needed service for day visitors who are at present reluctant to use the lodge facilities.

The relocation of the concession employees to a new housing area separate from the visitor use area would eliminate the existing conflicts. The conversion of the Cobb House and the auditorium/recreation room would provide more opportunities for interpretation in the area, helping visitors to understand this area and its history.

Additional overnight facilities might become available to visitors if existing inholdings were acquired. The renovation of two of the cabins to increase the space per unit would improve the experience for the overnight guests.

Impacts of Alternative A. The impacts of alternative A would differ from the impacts of the preferred alternative as follows. The relocation of the cabins and the removal of Garden Court would provide better access to the lakeshore and improve it for day visitors. Information and orientation would be enhanced through the provision of a wayside and improved trail signing (unlike the preferred alternative, no contact station would be provided). Picnickers would benefit from new picnic tables along the lakefront and a new picnic area along Snyder Creek. When necessary the day parking capacity could be expanded by as much as 40 percent.

The removal of the service station would preclude motorists from obtaining vehicle service in this area, but such services would remain available at West Glacier, 12 miles south.

The conversion of the caretaker's or winterkeeper's quarters to visitor accommodations would remove additional employees from the visitor use area.

Visitors in the fall would find more facilities available for their use and could extend their length of stay.

Impacts of Alternative B. The impacts of alternative B would differ from those described for the preferred alternative as follows. Lodging opportunities would be increased by the addition of 56-86 overnight units. The addition of lower cost dormitory-style accommodations would benefit those travelers on a tight budget. However, the additional development and higher use level would probably diminish some visitors' enjoyment of the area. Visitors in the winter would find more facilities available for their use and could extend their length of stay.

Day visitors would benefit from all of the improvements described for the preferred alternative plus a new picnic area along Snyder Creek. In addition, the provision of outdoor food service at the lodge would allow visitors to enjoy the view of Lake McDonald while dining. When necessary the day parking capacity could be expanded by as much as 50 percent. With this increase and the increase in overnight capacity, total use of the Lake McDonald area could increase by as much as 75 percent. If this occurred, the access improvements attained by redesigning the parking lots would be negated by increased vehicle traffic and some visitors would perceive the area as overcrowded.

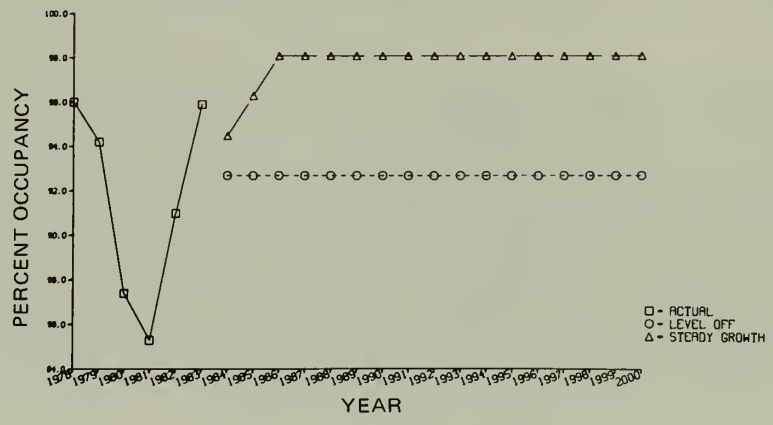
Impacts of Alternative C. The impacts of this alternative would be much the same as those described for the preferred alternative. The construction of a new building to provide information, orientation, restrooms, first aid, and auditorium facilities would allow visitors to attend to most of their needs at a single location. The provision of fast food service would allow more visitors to obtain a meal and would shorten the serving time. The provision of warming huts and vault toilets would encourage and support winter day use activities such as crosscountry skiing, snowshoeing, and sledding.

Concessioners

Affected Environment. Three concessioners operate in the Lake McDonald area. Glacier Park, Incorporated, provides lodging and food service, transportation, gift and gasoline sales, and a camper store. These services are available from late May to early September. The Glacier Park Boat Company provides boat tours on Lake McDonald during June, July, and August. The third concessioner, Rocky Mountain Outfitters, Incorporated, provides trail rides during the three summer months.

The following graph illustrates the current and projected use levels of overnight accommodations at Lake McDonald. Two growth levels are shown, one based on a continuing growth pattern, and the other on a more conservative leveling-off pattern.

Projected Growth, Lake McDonald Lodge



Impacts of No-Action Alternative. No additional sales for GPI would be generated by actions included in this alternative. There would be no financial return on expenditures required to move seven employee dormitories out of the Snyder Creek 100-year floodplain; however, some of the concession employees would benefit from a new dorm and all of the employees would be housed in a safer location. There would be no effects on Glacier Park Boat Company or Rocky Mountain Outfitters, Incorporated.

Impacts of Preferred Alternative. GPI could expect to slightly increase sales at Lake McDonald with the addition of towing services and the sale of emergency spare parts. Sales could further increase if a few lodging units became available due to the acquisition and conversion of some of the adjacent inholdings to guest quarters. However, the concessioner would be required to make a substantial investment to relocate employee housing from the 100-year floodplain and to improve living conditions. This would result in a positive benefit to the concession employees as they would be safely housed away from flooding in new and larger accommodations. The concessioner would also incur expenses for overnight and bus parking improvements, expanding the size of rooms in two guest cabins, and converting the dispensary to overnight facilities.

If the amount of day use increased, the demand for boat and horseback trips should also increase, improving sales for the Glacier Park Boat Company and Rocky Mountain Outfitters, Incorporated.

Impacts of Alternative A. The impacts of alternative A would differ from the impacts of the preferred alternative as follows. GPI's increase in gross sales would be similar to the increase under the preferred alternative. Additional sales from lodging in what is now the winterkeeper's quarters would be offset by the elimination of sales from gas, towing, and emergency spare parts. The concessioner's investment to remove employee housing from the 100-year floodplain and to improve employee living conditions would be less because two of the existing structures would be retained in use at new locations.

Impacts of Alternative B. Impacts of alternative B would differ from the impacts of the preferred alternative as follows. GPI could expect a significant increase in gross sales with the addition of 56 to 86 guest rooms, conversion of Snyder Hall to visitor dormitory-style accommodations, provision of outdoor food service, and winter use of the area. However, the increase in guest rooms would be offset by a decrease in lodging at Rising Sun and/or Swiftcurrent.

Impacts of Alternative C. The investment costs incurred by GPI would be the same as in the preferred alternative, but GPI could expect a significant increase in total gross sales per season with the addition of fast food service and winter food sales.

Adjacent Communities

Affected Environment. Lake McDonald lies in Flathead County, which is one of the largest counties in Montana, comprising 3.4 million acres. Only 824,000 acres are in private ownership. Most of the rest are part of three national forests or Glacier National Park. The state owns 133,000 acres, and there are relatively small tracts of tribal lands and U.S. Fish and Wildlife Service areas. The federal lands are mainly managed for timber harvesting and recreation, and the private areas are used primarily for range and croplands.

The county's population currently exceeds 52,000, following more than four decades of strong growth. Projections indicate that fairly strong growth will continue in the foreseeable future.

The economy of Flathead County is based primarily on wood products, aluminum manufacturing, tourism, and government. (Agriculture is not a major industry in terms of either earnings or personal income, but the many small farms contribute substantially to the rural life-style enjoyed by local residents.) Tourism contributes significantly to employment, but its contribution to total income is much less because of a preponderance of low paying, part-time, and seasonal positions.

In the 1970s Flathead County experienced the third highest unemployment rate in the state. The rapid growth in population is a major factor in keeping the local unemployment rate relatively high. Also, large seasonal

variations in the wood products, tourism, and federal government employment opportunities mean that substantial numbers of workers are unemployed during the winter and spring of each year.

Impacts. There would be little social or economic impact on the local communities, regardless of which alternative was implemented. The local expenditure of some of the construction funds (up to $7.3 million in alternative B) would have a minor short-term effect on economic activity in the county.

The addition of 56-86 lodging units, which would occur under alternative B, and the provision of towing and repair services, which would occur under the preferred alternative and alternatives B and C, would take use away from existing businesses. Conversely, the removal of the service station, which would occur under alternative A, would redistribute such business to other stations outside the park.

There are approximately 458 rooms available in the communities of West Glacier/Apgar, St. Mary, and East Glacier outside the park. During the summer season these areas experience an average occupancy of only 76 percent. With this number of rooms and the relatively low occupancy rate (compared to the overall inside park rate of 82 percent and the Lake McDonald rate of nearly 100 percent) these outside park facilities should be able to accommodate a substantial increase in visitation to Glacier National Park.

No other components of the environment would be appreciably affected by any of the alternatives.

Table 3: Impact Analysis Summary, Lake McDonald

	No-Action	Preferred	A	B	C
Natural Environment					
Soils	-	-	-	-	-
Vegetation	-	-	-	-	-
Wildlife	0	0	-	-	-
Threatened/endangered	0	0	-	-	-
Water resources	0	0	0	0	0
Floodplains	0	0	0	0	0
Air quality	0	0	0	0	0
Visual quality	+	+	+	-	+
Cultural Environment					
Archeological resources	U	U	U	U	U
Historic resources	0*	0*	-	-	-
Visitor Use	-	+	+	+	+
Socioeconomic Environment					
Adjacent communities	0	0	0	-	0
Concessions	-	-	-	+	+

+ Beneficial effect
0 No effect or no net effect
- Adverse effect
U Uncertain

*Historic structures would be adversely affected by relocation from their original sites; however, the structures would be moved outside the 100-year floodplain, where they would be safe from flooding. Thus, the adverse impacts would be offset by the benefits, resulting in no net effect.

SUN POINT/RISING SUN/ST. MARY

OVERVIEW

St. Mary and Rising Sun are the two major developed areas on the east side of the park along Going-to-the-Sun Road. St. Mary lies just inside the east park entrance, and it is separated by Divide Creek from the small town of St. Mary on adjacent Blackfeet Indian Reservation and private land. The National Park Service operates a maintenance/residential area, visitor center, and campground on its lands at St. Mary. No commercial visitor services are provided at these locations inside the park boundary, but lodging, food, gas, and additional camping facilities are available in the adjoining town. Rising Sun is situated 6 miles west of St. Mary near scenic St. Mary Lake. It is a major overnight development offering motel, cabin, and campground accommodations. Sun Point is approximately 4 miles west of Rising Sun, just off Going-to-the-Sun Road. It is the site of a former chalet, but all that remains now at this scenic viewpoint is a large parking lot, vault toilets, a picnic area, and a trail system.

SUN POINT

EXISTING CONDITIONS AND PROBLEMS

The paved parking area at Sun Point is excessive for the day use activities that occur there. If use is not expanded, some of the area should be returned to natural conditions to improve aesthetic and recreational values. The vault toilets are currently situated along the access road, where they encourage hazardous stopping and parking by incoming vehicles and where they are inconvenient to the trailhead. The loop trail to Sun Point has deteriorated and become cut with numerous side trails, making it difficult for visitors to follow the main alignment. The picnic area is frequently exposed to high winds.

If the transportation plan determines that a transportation staging area is needed on the east side of the park, it could theoretically be established at Sun Point, Rising Sun, or the St. Mary visitor center. A staging area alternative is included for all three areas; however, it is the preferred alternative only for Rising Sun.

ALTERNATIVES

No-Action Alternative

The trail system would be improved by eliminating the side trails and realigning the segment of the trail ascending to the south side of the parking lot. There would be no other changes in the existing conditions.

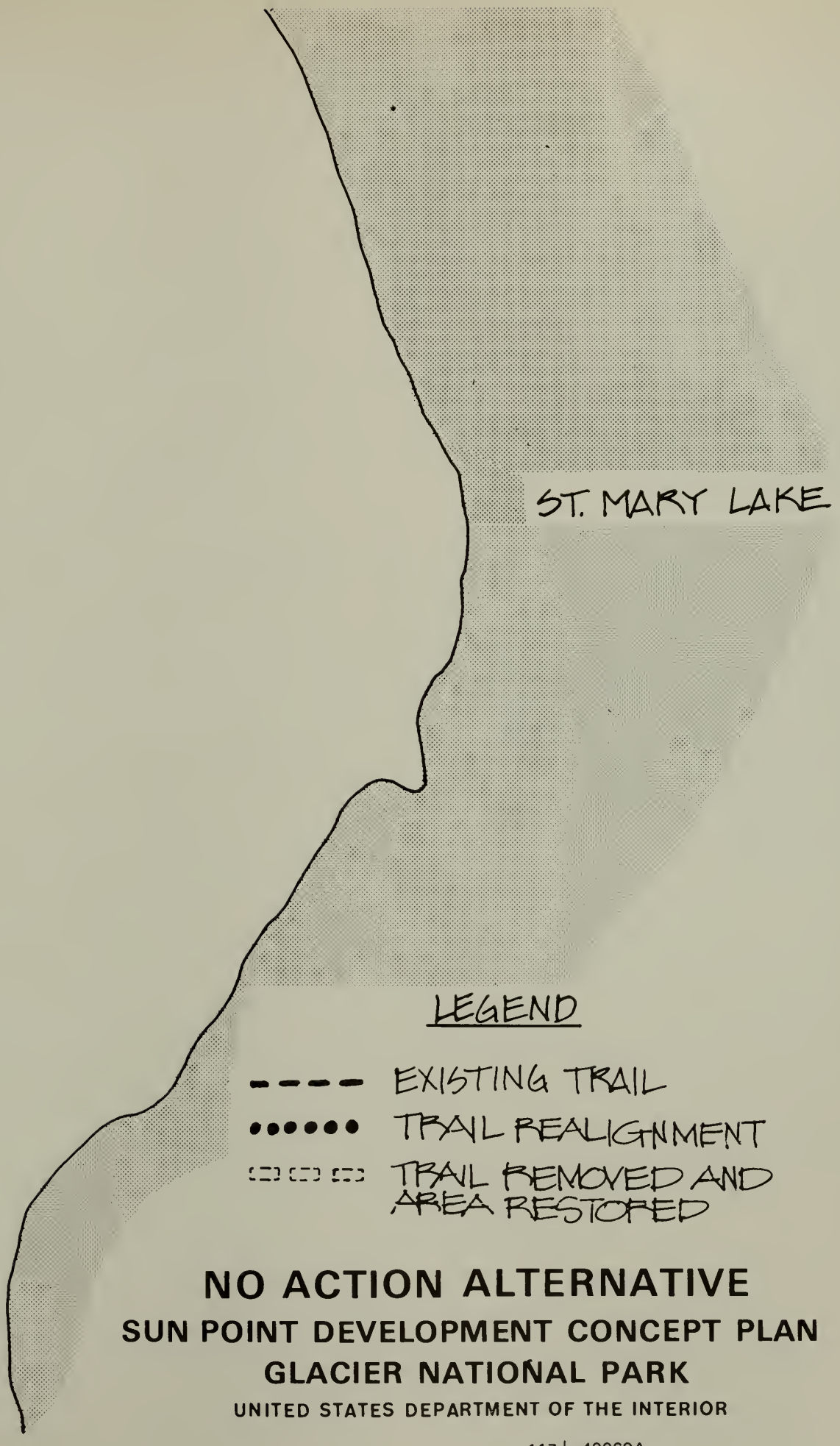
Preferred Alternative

Alternative A was selected as the preferred alternative. Under this alternative the Sun Point area would be improved to enhance opportunities for picnicking and day hiking. The large parking lot would be reduced in size and landscaped. The remaining pavement would be marked to accommodate 50 single and 13 oversize vehicles. An additional picnic site would be provided in the more sheltered northeast portion of the parking area, and the vault toilet would be moved from the entrance road to the south end of the lot near the trailhead. The trail system would be improved by eliminating the side trails and realigning the segment of the trail ascending to the south side of the parking lot. A new trailhead and wayside exhibit would also be installed.

This alternative would have the lowest development costs of all the action alternatives (see table 4). Estimated additional annual costs for operations and maintenance would be $4,000. An interpreter would be stationed in the area during the peak hours of the day.

Alternative A

See preferred alternative.



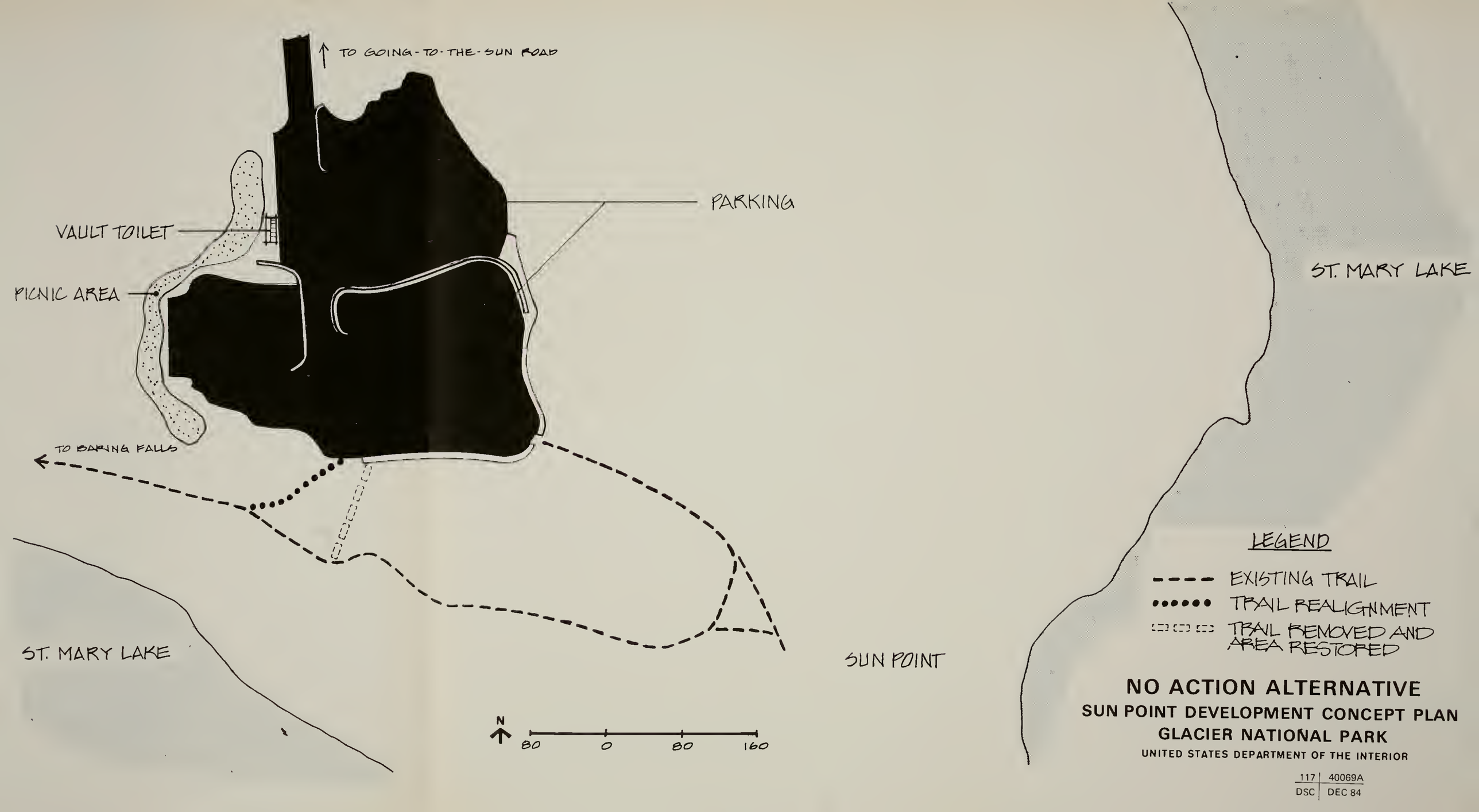
NO ACTION ALTERNATIVE

SUN POINT DEVELOPMENT CONCEPT PLAN

GLACIER NATIONAL PARK

UNITED STATES DEPARTMENT OF THE INTERIOR

117	40069A
DSC	DEC 84



NO ACTION ALTERNATIVE

SUN POINT DEVELOPMENT CONCEPT PLAN

GLACIER NATIONAL PARK

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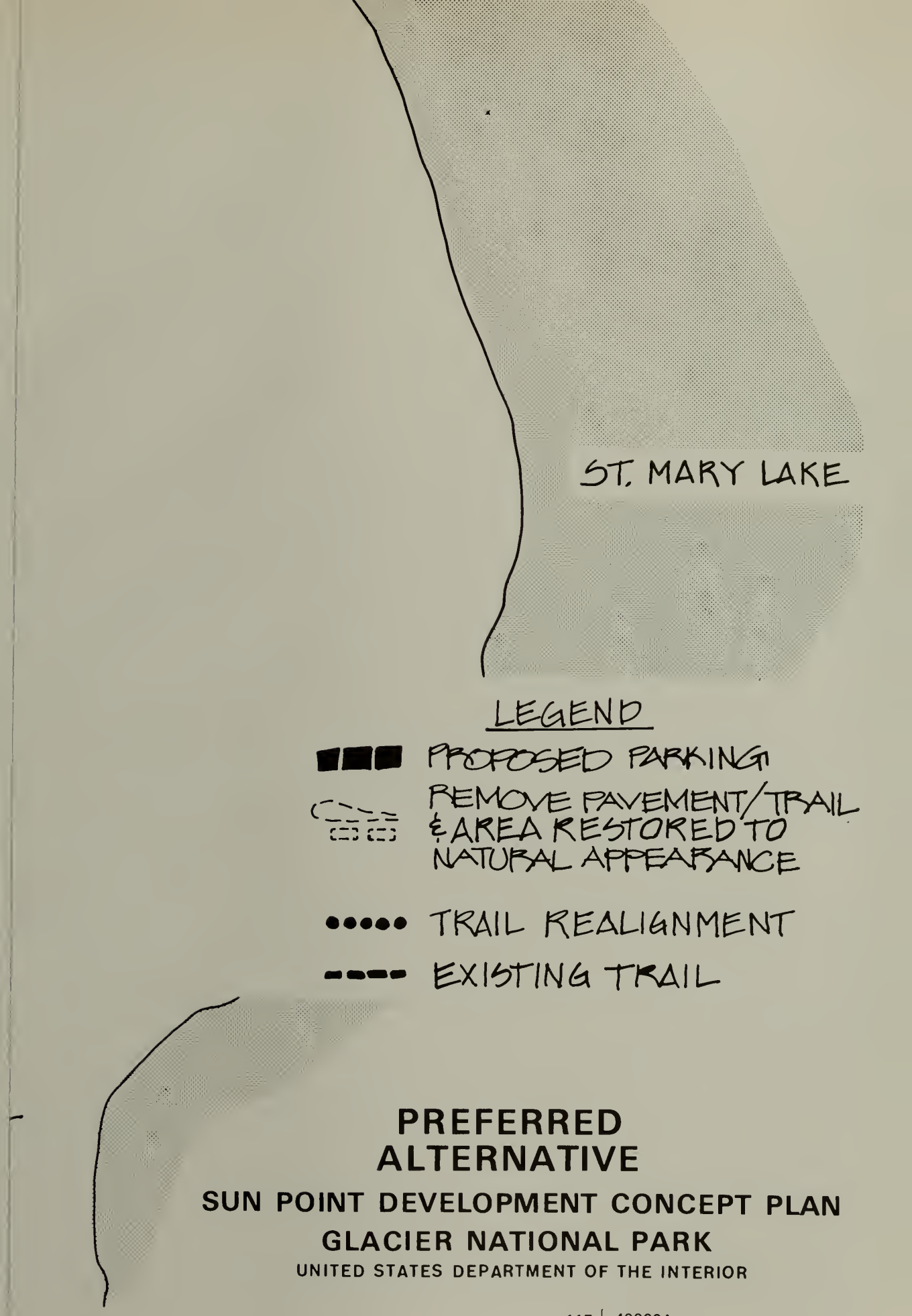
117	40069A
DSC	DEC 84



PREFERRED ALTERNATIVE

SUN POINT DEVELOPMENT CONCEPT PLAN

GLACIER NATIONAL PARK

UNITED STATES DEPARTMENT OF THE INTERIOR

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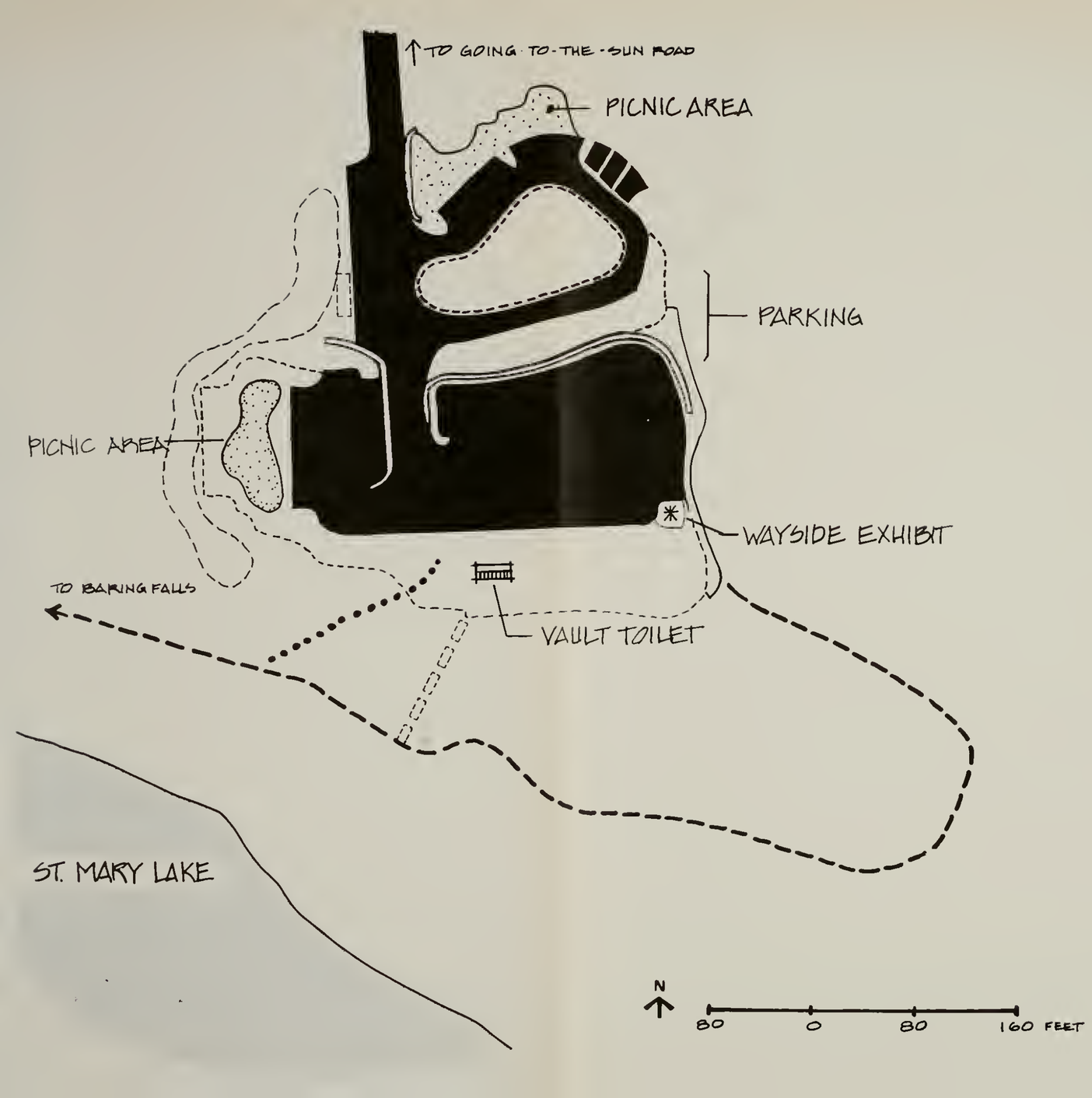
DSC	DEC 84



ST. MARY LAKE

LEGEND

- PROPOSED PARKING
- REMOVE PAVEMENT/TRAIL & AREA RESTORED TO NATURAL APPEARANCE
- TRAIL REALIGNMENT
- EXISTING TRAIL

SUN POINT

PREFERRED ALTERNATIVE

SUN POINT DEVELOPMENT CONCEPT PLAN

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Alternative B

More than half of the existing pavement would be removed, allowing restoration of much of the site to natural conditions. The picnic sites and vault toilet would be relocated closer to the trailhead at the south end of the parking area. The trail system would be improved as in the preferred alternative, and a new trailhead and wayside exhibit would be installed. This option was rejected because it did not provide sufficient parking for projected future use and because the picnic area would still be subject to strong westerly winds.

This alternative would have the second highest development costs (see table 4). Annual costs for operation and maintenance would not change.

Alternative C

Sun Point would become a major visitor contact, parking, and transportation staging area for the east side of the park. All of the existing parking lot would be retained. If the transportation plan determined that a staging area was necessary, it would be developed in the northern part of the parking area. Facilities would include a bus parking area and maintenance building. A shuttle bus pick-up point with a shelter and ticket office would also be provided. A visitor contact station with flush toilets and a wayside exhibit and trailhead would be constructed near the southern portion of the lot. The trail to Sun Point would be improved to make it accessible to handicapped visitors as well as easier for all visitors to follow. Most of the picnic area would be retained, and parking for picnickers would be available in the western portion of the lot. This option was rejected primarily because of concern that the Sun Point parking lot would not adequately accommodate staging for a park transportation system. The amount of developable land at this location would be limited.

This alternative would have the highest development costs (see table 4). Estimated annual costs for operations and maintenance would increase by $14,000. Two additional seasonal NPS employees would be required to staff the visitor contact station, and an extra seasonal maintenance employee would be necessary to service the new facilities.

ENVIRONMENTAL CONSEQUENCES

Soils

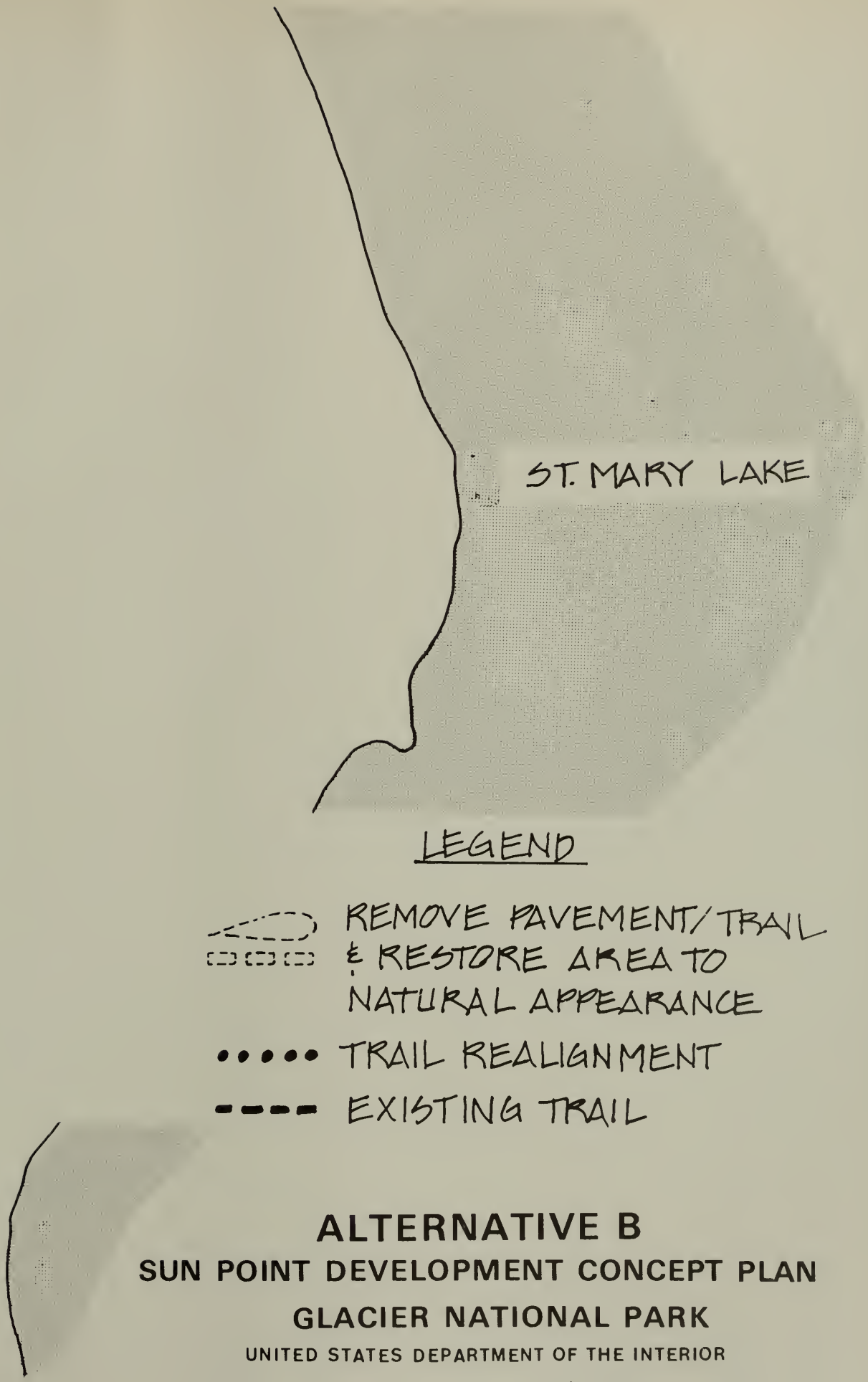
The soils at Sun Point are shallow and poorly developed, with bedrock underlying the thin soil. General effects on soils are discussed in this section for Lake McDonald. The site-specific impacts on soils have been divided into two categories: moderate (compaction by foot traffic) and severe (covering by pavement or other impervious structures). The acreage that would be disturbed by each alternative is shown in table 5.

Table 4: Summary Comparison of Alternatives, Sun Point

	No-Action Alternative	Preferred Alternative (A)	Alternative B	Alternative C
Day Use				
picnic area	retain	add some sites at another location ($12,000)	relocate all sites ($30,000)	retain most sites
vault toilet	retain	relocate ($1,000)	relocate ($1,000)	remove
trails	remove side trails and realign steep section ($1,000)	remove side trails and realign steep section ($1,000)	remove side trails and realign steep section ($1,000)	improve handicap access and signs ($2,000)
Information/Interpretation				
new facilities	none	install wayside exhibit ($2,000)	install wayside exhibit ($2,000)	install wayside exhibit ($2,000)
				construct contact station with flush toilets ($138,000)
Access and Circulation				
parking lot	retain	remove some pavement ($29,000)	remove most of the pavement ($50,000)	retain
new facilities	none	none	none	construct bus shelter/ ticket office and maintenance building ($189,000*)
Development Costs				
concessioner	$ 0	$ 0	$ 0	$ 189,000*
NPS	1,000	45,000	84,000	142,000
total net costs	$ 1,000	$ 45,000	$ 84,000	$ 331,000
total gross costs**	$ 1,460	$ 66,000	$ 123,000	$ 483,000

*Concession-related improvements. The exact funding by Glacier Park, Incorporated, would be determined in contract negotiations between the National Park Service and the concessioner.

**Gross costs include a 46 percent increase in funding to cover project planning, construction supervision and contingency costs.



ALTERNATIVE B

SUN POINT DEVELOPMENT CONCEPT PLAN

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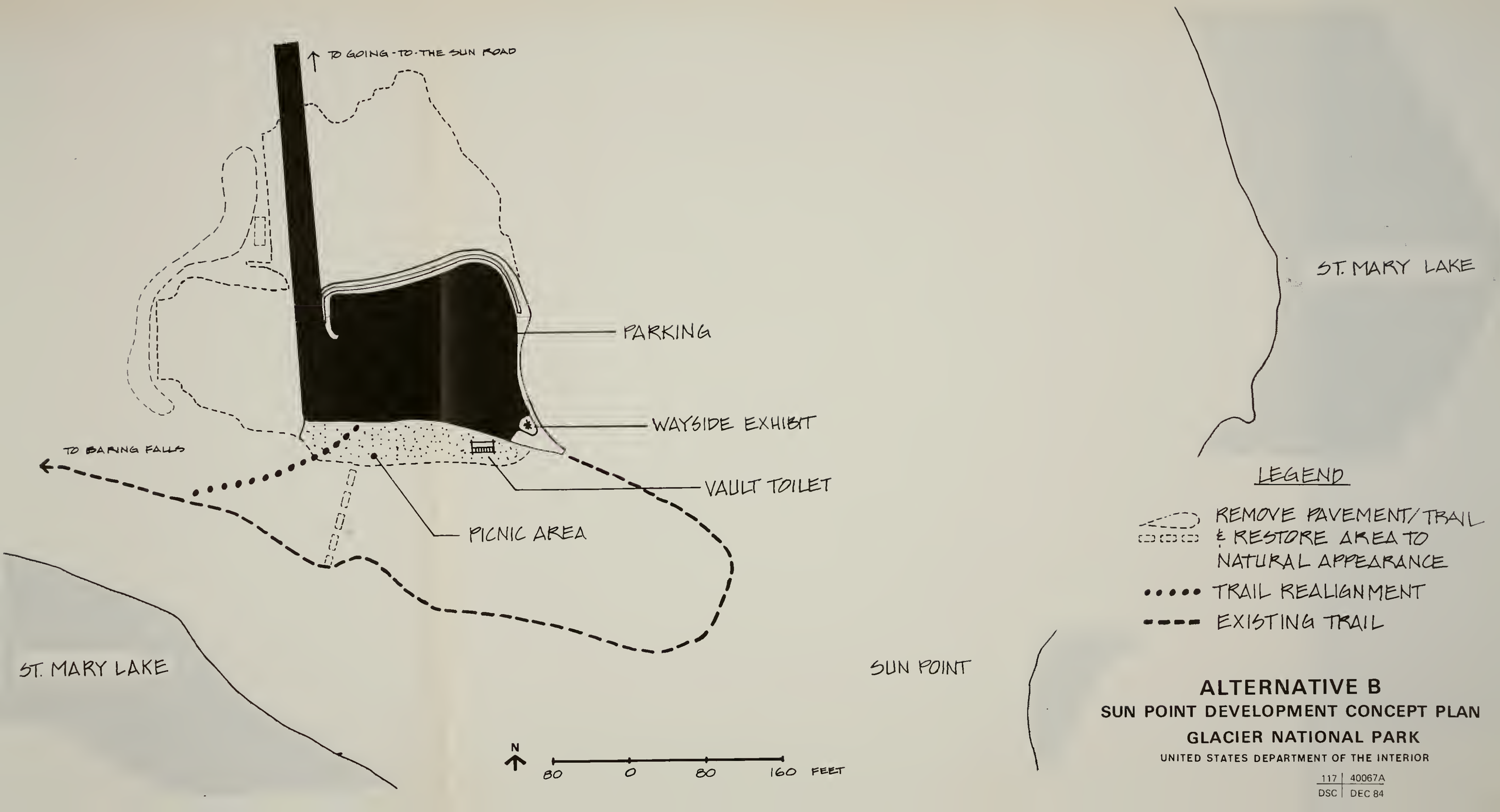

ALTERNATIVE B

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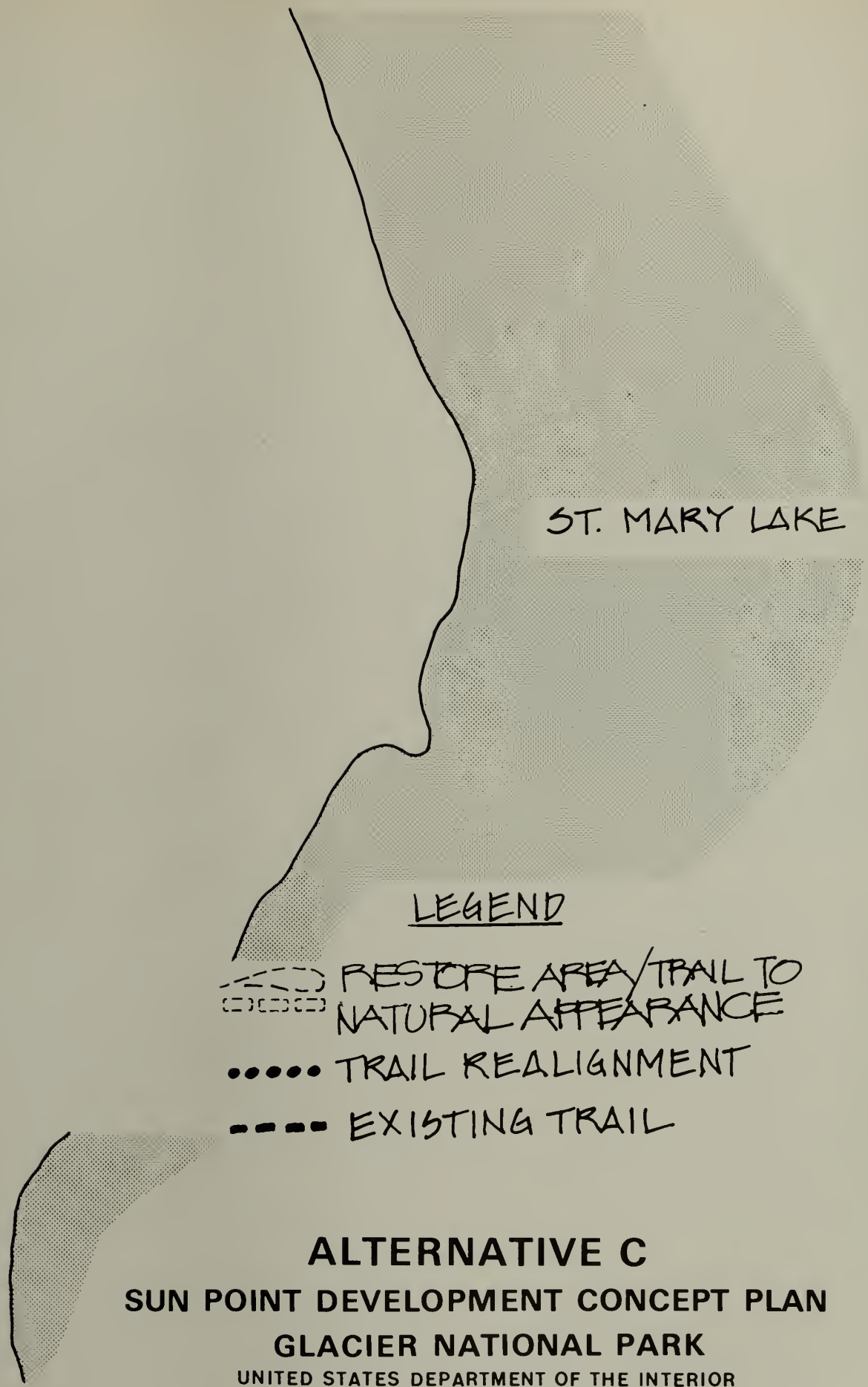

ALTERNATIVE C

SUN POINT DEVELOPMENT CONCEPT PLAN

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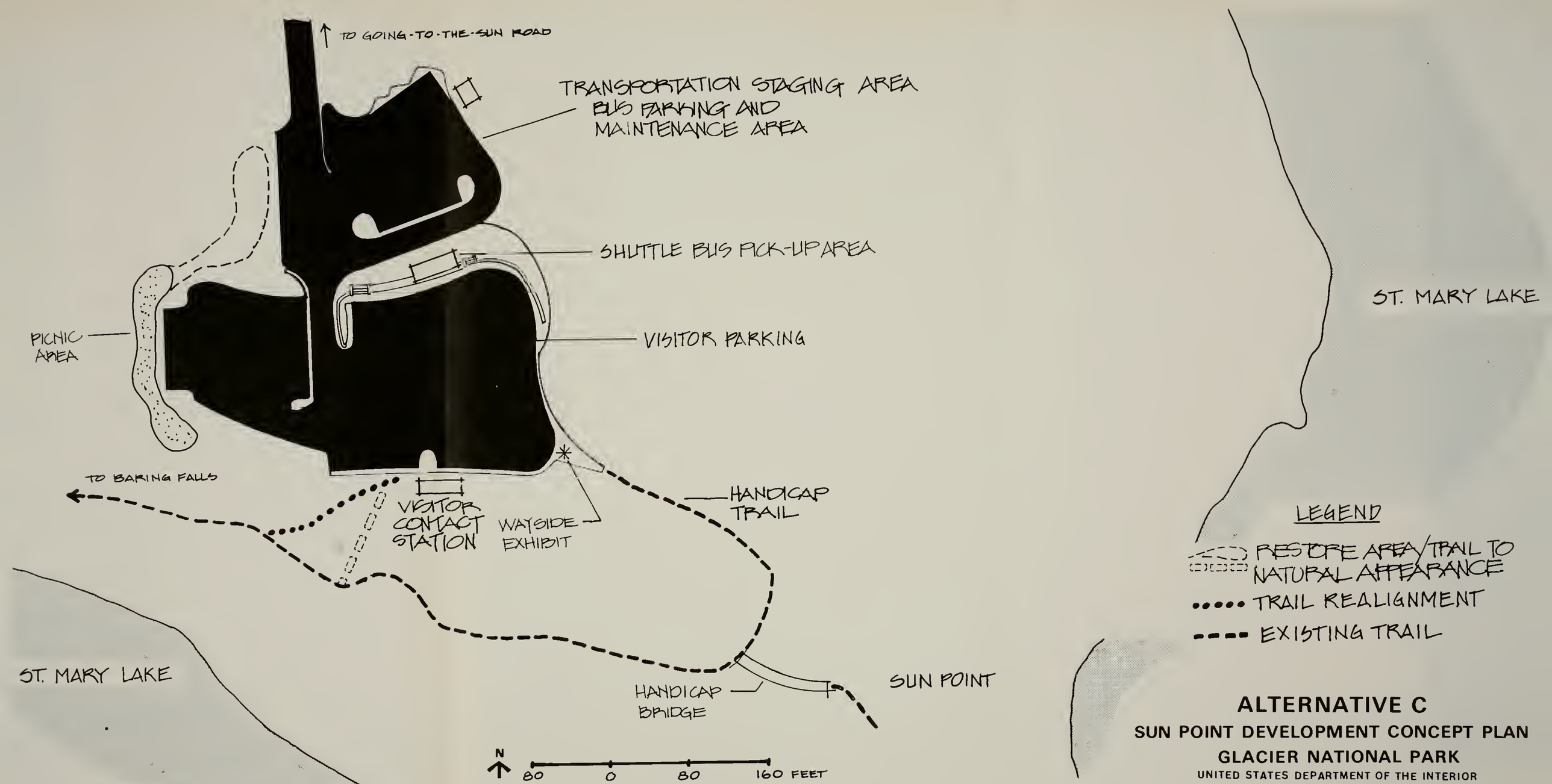

ALTERNATIVE C

SUN POINT DEVELOPMENT CONCEPT PLAN

GLACIER NATIONAL PARK

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Vegetation

Vegetation at Sun Point consists of old-growth forest of Douglas-fir, subalpine fir, and some lodgepole pine. Groundcover is kinnikinnick, strawberry, and bluebunch wheatgrass. The thin soil and the south-facing aspect at Sun Point inhibit revegetation efforts. The general effects on vegetation are discussed in this section for Lake McDonald. The site-specific impacts on vegetation have been divided into two categories: moderate (disturbance by foot traffic or installation of utilities) and severe (exclusion of vegetation by pavement or other impermeable structures). Table 5 shows the acreage that would be disturbed by each alternative.

Table 5: Disturbed Acreage, Sun Point

	No-Action	Preferred (A)	B	C
Existing Use				
Moderate	0.4	0.4	0.4	0.4
Severe	2.6	2.6	2.6	2.6
Total	3.0	3.0	3.0	3.0
Total Use with Plan				
Moderate	0.4	0.4	0.4	0.4
Severe	2.6	1.7	1.4	2.6
Total	3.0	2.1	1.8	3.0
Net Change with Plan				
Moderate	0	0	0	0
Severe	0	-0.9	-1.2	0
Total	0	-0.9	-1.2	0

Wildlife

Affected Environment. Wildlife utilization of this area is not particularly great because of the concentration of visitors in the summer and the severe winter conditions with deep snow. Rodents such as Columbian ground squirrel use the area in the summer, as do perching birds such as gray jays, mountain chickadees, and Clark nutcracker. Wolverine and lynx may pass through on their winter rounds.

Impacts. Alternative B would probably have a beneficial impact on wildlife. Removal of a portion of the existing parking area and rehabilitation with native species would probably favor the reestablishment of grassland, which is good wildlife habitat. The other alternatives would

not be expected to result in new impacts because there would be little difference in the extent of development or the period of human intrusion.

Threatened and Endangered Species

The threatened and endangered species in the Sun Point/Rising Sun/St. Mary area are the threatened grizzly bear, endangered bald eagle, and endangered gray wolf (Canus lupus irremotis). The endangered peregrine falcon (Falco peregrinus anatum), may also visit the area. Use of the area is temporary and amounts to passing through without any known concentrated uses such as denning, nesting, critical food sources, or rendezvous sites. Because the wildlife use of the area is minimal, there would be no impact on these species under any of the alternatives.

Floodplains and Wetlands

There are no floodplains or wetlands in the Sun Point area.

Air Quality

Some differences in air quality on the east and west sides of the park occur seasonally. Occasionally haze from Canadian forest fires can be seen on the east side of the park in the summer, and in winter some pollutant incursions from the Canadian oil fields occur. No significant impacts on air quality would result from implementation of any of the alternatives considered. Construction activity would temporarily increase the amount of particulates and noise levels.

Visual Quality

Affected Environment. Sun Point cannot be seen from the Going-to-the-Sun Road. The existing system of social trails is unattractive, and the large, mostly unused parking lot is intrusive.

Impacts. In all of the alternatives, the defining and revegetating of trails would improve the appearance of the site. Relocation of the vault toilet might increase its visibility, but this would be mitigated by sensitive design and vegetative screening.

Removal of some of the parking area (preferred alternative and alternative A), or most of it (alternative B), and rehabilitation of the site would proportionately lessen the visual impact of large unoccupied spaces of asphalt. New construction (alternative C) would intrude on the amount of open space but would be mitigated by careful site selection and building design.

Cultural Resources

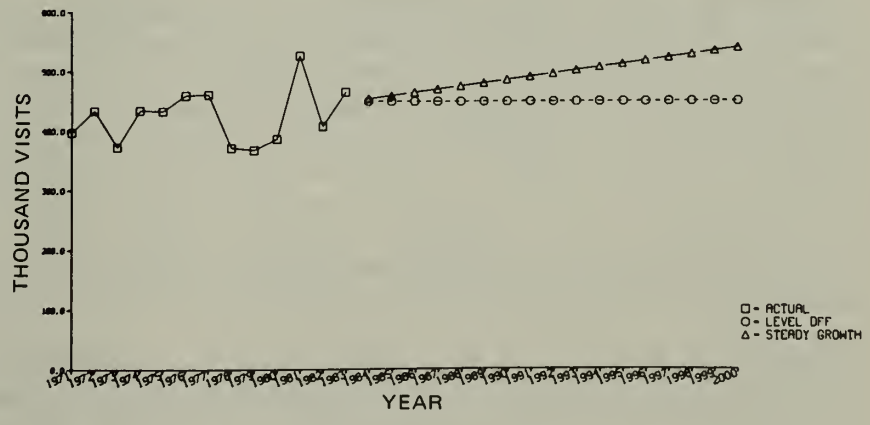
No historic structures remain at Sun Point, but some remnants of the chalet and the boat dock are still visible. There has been no comprehensive survey of Glacier National Park for archeological resources as required by EO 11593. None of the archeological sites discovered in the site-specific surveys performed to date would be affected by any of the alternatives proposed. Any unsurveyed areas where land modification is planned would be surveyed prior to disturbance. No cultural resource impacts would result from any of the alternatives.

Visitor Use

Affected Environment. A general discussion of visitor use can be found in this section for Lake McDonald. The following discussion provides visitor use details more specific to the east side of the park.

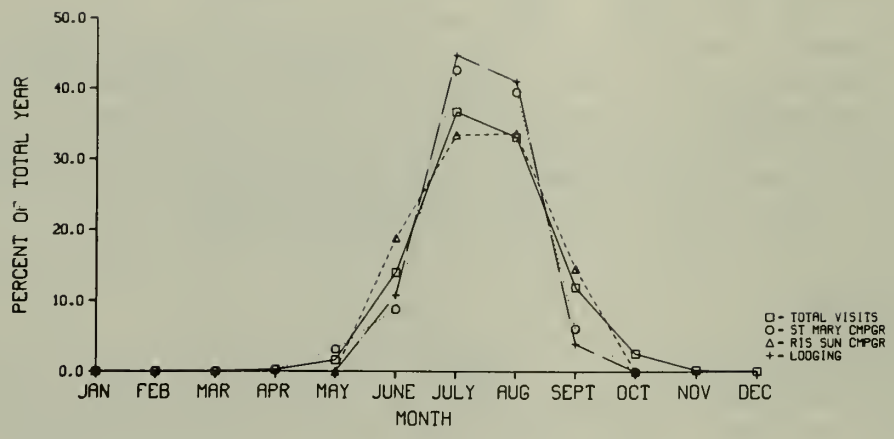
The counts of incoming traffic at the St. Mary entrance station are considered fairly reliable for estimating trends in day use at the individual developed areas on the east side of the park. A linear regression analysis of use between 1970 and 1982 indicates that use of this part of the park has been increasing by an average of 5,300 visits annually. If sustained for 20 years this would result in a 26 percent increase in use over the 1982 level.

Past and Projected Growth, Visitor Use at the East Entrance



Because of weather and associated access problems, most of Glacier's vistation occurs in July and August. Use of areas on the east side of the park is even more concentrated, with 70 percent occurring during these two months.

Seasonal Use, East Entrance



Impacts of No-Action Alternative. Visitors would continue to be confused by the large expanse of parking area and relatively few visitor use facilities. The location of the vault toilet along the entrance road would continue to encourage visitors to park hazardously along the road instead of in the parking area. The visitors using the existing picnic area would continue to be subjected to strong westerly winds.

Impacts of Preferred Alternative (A). Visitors would be able to better utilize the area. The smaller more delineated parking lot would facilitate traffic flow, reduce confusion, and be aesthetically more pleasing. The existing picnic area with scenic views of the lake could be used during calm periods, and the new more sheltered picnic area would provide additional sites and could be available for use on windy days. Visitor safety and convenience would be improved by relocating the vault toilets. The presence of an interpreter during the peak hour of the day and construction of a trailhead wayside exhibit would improve the visitors' understanding of the area and its relationship to Glacier National Park. The improvements to the trail system would make it less confusing.

Impacts of Alternative B. The impacts of alternative B would be similar to the impacts of the preferred alternative (A) except the smaller parking lot might not be able to handle future traffic, and visitors using the new southern picnic area would still be subjected to strong westerly winds.

Impacts of Alternative C. Sun Point would become a more important visitor use area under alternative C. If the transportation system staging area was provided here, it would intrude upon the day use and interpretive experience. Information, orientation, and interpretation would be enhanced with the construction of a visitor contact station. Restroom facilities would be upgraded by the provision of flush toilets, instead of vault toilets. The trail system improvements would be made handicapped accessible. The number of picnic sites would remain inadequate, and the visitors using the existing picnic area would continue to be subjected to strong westerly winds.

Concessioners

The transportation staging area proposed in alternative C might be owned and operated by GPI. If so, there would be an initial investment of approximately $189,000 required of the concessioner. The estimated return on this investment cannot be determined until the parkwide transportation plan is completed.

Adjacent Communities

Affected Environment. The east side of the park is located in western Glacier County. Most of the county is covered by the Blackfeet Indian Reservation. The only consolidated acreage of private land is a fairly narrow strip on the east side. The only private lands near the park are three tracts inside the Blackfeet Indian Reservation, which were purchased prior to the congressional limitations on the sale of Indian lands. According to the Soil Conservation Service in Cut Bank, about half the county is open rangeland. The other major use is cropland, a small but growing portion of which is under irrigation. A growing number of oil and gas wells are interspersed with other land uses.

The population of Glacier County is approximately 10,500. Recent decades have seen little growth, and no major population increase is projected for the foreseeable future. The population density is only one-third that of Flathead County.

The economy is based primarily on wood products, a growing oil and gas industry, tourism, and government. There has been little growth in employment, and unemployment remains high. Per capita income in Glacier County is considerably lower than in Flathead County, and it is gradually falling further below the state average. A few Blackfeet Indians are employed by the park, but not in numbers to significantly affect the employment structure.

Impacts. There would be little social or economic impact on the local communities, regardless of which alternative was implemented. The local expenditure of some of the construction funds (up to $483,000 in alternative C) would have a minor short-term effect on some local businesses. The cumulative effects of construction at all of the developed areas on the east side of the park would temporarily stimulate a modest increase in economic activity in adjacent communities.

No other components of the environment would be appreciably impacted by any of the alternatives.

RISING SUN

EXISTING CONDITIONS AND PROBLEMS

Rising Sun is a major overnight area, with an 82-site campground and 75 lodging units. The Rising Sun Motor Inn is comprised of two 14-unit motel buildings, a nine-unit motel attached to the general store, and 19 two-unit cabins, which together accommodate a total pillow count of 223. Other concession services include a coffee shop (114 seats), gas station, curio shop, and public showers.

About 50 concession employees have residences in the Rising Sun development. Six rooms housing nine employees are located in the general store; a women's dorm with 10 rooms and laundry facilities accommodates 24 people; three rooms in the walkout basement of the restaurant accommodate six people; and a two-room men's dorm accommodates seven. The boat concession employees are housed in a cabin near the guest cabins.

A Glacier Park Boat Company boat dock, launch facility, and parking lot are situated across Going-to-the-Sun Road on St. Mary Lake. A picnic area and interpretive overlook with a large parking lot and vault toilets are also situated on the south side of the road.

Rising Sun is on well water for domestic water supply. Wastewater is pumped via force main to the St. Mary wastewater treatment facility.

The principal problems at this site are described below. The visitor rooms and employee quarters in the lodge/general store building are inside the 100-year floodplain. Some of the employee housing is crowded, and the rooms in the restaurant basement are substandard. Also, there is inadequate separation between the visitor lodging and employee residential areas, and guests must pass the dormitories to reach their lodging.

The campground fills up early in the day, but there is very little space available for expansion because of the site topography. The motel and cabin accommodations have a relatively high occupancy rate, but it has been determined by the Master Plan that there should be no overall increase in accommodations within the park. If accommodations were increased at Lake McDonald, they would have to be reduced at Rising Sun, Swiftcurrent, or both.

Facilities for day use are minimal. The Otokomi Lake trailhead is situated at the northern end of the cabin area, and day visitors either park illegally there or park in the main lot at the lodge/general store and hike through the cabin area. Private boating on St. Mary Lake is hazardous but still occurs. Currently private boaters share the tour boat dock, ramp, and parking lot, contributing to some congestion in that area. This is also the only ramp and docking space for the NPS boat, and it is not always adequate to meet park needs. Day visitors are unable to use the dock area for general sightseeing and fishing.

The ranger residence is in the 100-year floodplain and does not provide adequate office or storage space. There are no NPS maintenance or interpreter residences at Rising Sun, which forces all employees to commute from St. Mary; however, there is a ranger on site to handle after-hours emergencies.

The access road to the water reservoir has deteriorated to the point of being hazardous.

ALTERNATIVES

No-Action Alternative

The no-action alternative would involve the changes necessary to remove visitor overnight accommodations and employee quarters from the 100-year floodplain of Rose Creek and other minor improvements. A new wing would be added to one of the motels to replace the visitor rooms in the lodge/general store building, and a new dormitory would be built near the existing women's dormitory to replace the employee quarters. The new dorm would accommodate the GPI employees currently housed in the lodge/general store building, the basement of the restaurant building, and the men's dorm, and also the boat concession employees, who would rent space from GPI. This option was rejected because it did not provide adequate separation between visitors and employees. The general store and the restaurant would be made accessible to handicapped persons. The ranger station would be removed from the floodplain, and a new ranger station would be constructed between the campground loops. The flood damaged Going-to-the Sun Road bridge would be repaired at Rose Creek.

A new trail for day hikers would begin at the northwest corner of the main parking lot (where 5-10 spaces would be reserved for trailhead parking) and follow the east bank of Rose Creek to the north edge of the developed area, where it would connect with the trail from the campground to Otokomi Lake. A new footbridge would cross Rose Creek at the turnoff to the campground. Designating a trailhead parking area in the main lot and informing hikers of its availability would hopefully eliminate illegal trailhead parking in the visitor cabin area and hiker traffic through the guest cabins and motel area.

Preferred Alternative

The following preferred alternative was created by combining elements from each of the other alternatives.

As in the no-action alternative, the lodge/general store building would no longer be used for guest lodging. A new wing would be added to the northernmost motel building to replace the number of visitor rooms displaced from the lodge. A flood diversion levee would be constructed north and west of the general store to help protect it from floodwaters.

However, if the building was heavily damaged by severe flooding in the future, it would be replaced outside the floodplain, immediately east of the restaurant, rather than repairing it at its existing location. The general store and restaurant buildings would be made accessible to handicapped visitors. The loading dock at the restaurant would be screened.

The guest cabins near Rose Creek would be relocated, and this area would be restored to natural conditions. Rose Creek has deeply eroded its banks in this area, and eventually the cabins would be undermined by floodwaters if they were retained on their existing sites.

Camper services would be expanded by installing shower and laundry facilities in the general store building.

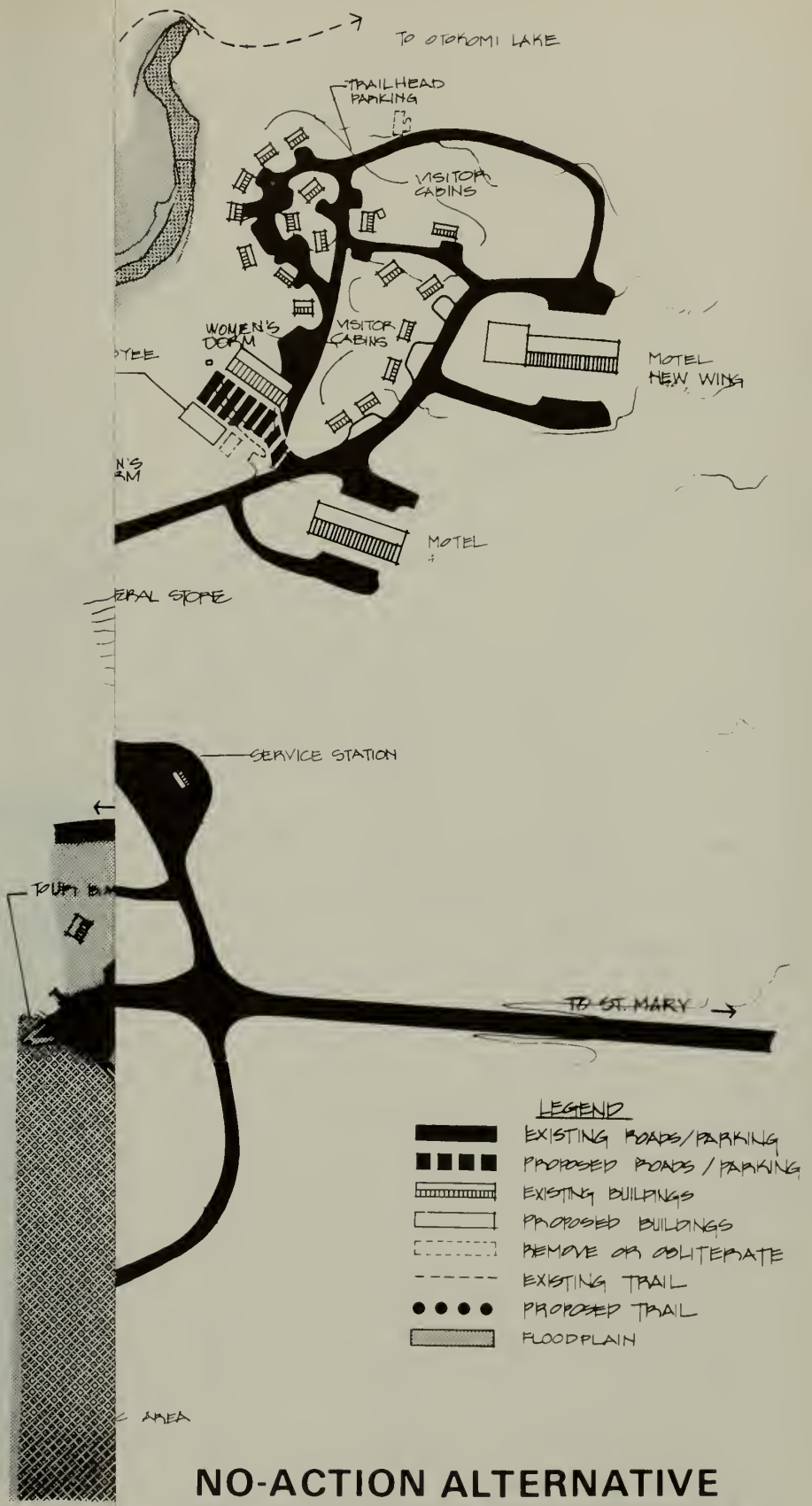
Day use on the shore of St. Mary Lake would be encouraged by installing a separate public dock east of the tour boat dock. A loop access road would be provided, and parking spaces would be defined so that more cars could be accommodated in the lakeshore parking lot. A new dock for the NPS ranger boat would be constructed west of the tour boat dock to facilitate access for park uses. The existing foot trail between the tour boat dock and the picnic area would be made accessible to handicapped people by upgrading it to a 6-foot-wide asphalt trail.

The trailhead parking problem would be resolved as described in the no-action alternative, with a new trail segment leading from the main parking lot to the Otokomi Lake trail. Day hiking opportunities would be expanded by constructing a trail along Rose Creek from the campground to the lakeshore.

If the transportation plan determined that a public transit system was necessary in the park, a staging area for the east side of the park would be established in the main parking lot between the general store and restaurant. The lot could be expanded to the east to accommodate additional car and bus parking, maintenance building, and shuttle pick-up area with a shelter and ticket office. The vehicle service station would be expanded to provide emergency towing and spare parts as a convenience to visitors and an aid in clearing up traffic congestion caused by stalls and accidents on the Going-to-the-Sun Road.

Concession employee housing would be removed from the visitor use area and consolidated at a new site northeast of the motels and cabins. The women's dorm would be relocated to this location. In addition, a new dorm would be constructed to replace the men's dorm, which is inadequately sized and in marginal condition, and the employee rooms to be eliminated from the lodge/general store building and the basement of the restaurant. The boat concessioner's residence would be removed and replaced with an apartment in the new dorm. Recreation facilities would be provided for employees.

The ranger station would be removed from the floodplain, and a larger station with adequate office, storage, and residence space would be constructed on the campground access road.



NO-ACTION ALTERNATIVE

RISING SUN DEVELOPMENT CONCEPT PLAN

GLACIER NATIONAL PARK

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NEW FOOTBRIDGE

TO OTOKOMI LAKE

TRAILHEAD PARKING

VISITOR CABINS

WOMEN'S DORM

VISITOR CABINS

MOTEL NEW WING

NEW EMPLOYEE DORM

MEN'S DORM

MOTEL

CAMP GROUND

RANGER STATION

4530

GENERAL STORE

SERVICE STATION

RESTAURANT

← TO LOGAN PASS

TOUR BOAT DOCK

GOING-TO-THE-SUN ROAD

BOAT PARKING

REPAIR BRIDGE

TO ST MARY →

4490

4480

4480

ST MARY LAKE

TO PICNIC AREA

TO PICNIC AREA

LEGEND

- EXISTING ROADS/PARKING
- PROPOSED ROADS / PARKING
- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- REMOVE OR OBLITERATE
- EXISTING TRAIL
- PROPOSED TRAIL
- FLOODPLAIN

NO-ACTION ALTERNATIVE

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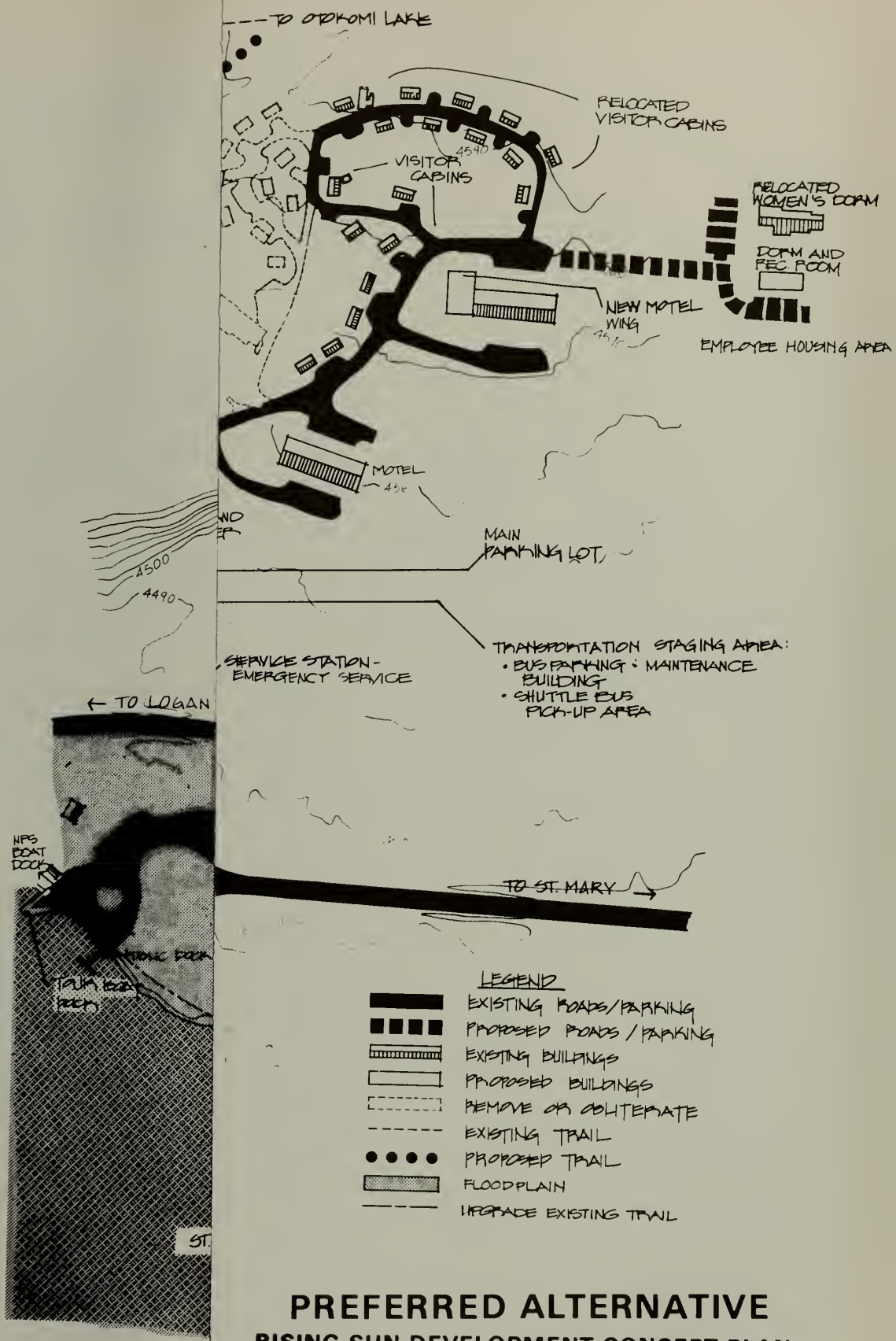

PREFERRED ALTERNATIVE

RISING SUN DEVELOPMENT CONCEPT PLAN

GLACIER NATIONAL PARK

FLATHEAD AND GLACIER COUNTIES

MONTANA

UNITED STATES DEPARTMENT OF THE INTERIOR - NATIONAL PARK SERVICE

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NEW FOOTBRIDGE

TO OTOKOMI LAKE

RELOCATED VISITOR CABINS

VISITOR CABINS

RELOCATED WOMEN'S DORM

DORM AND REC. ROOM

NEW MOTEL WING

EMPLOYEE HOUSING AREA

CAMPGROUND

RANGER STATION

FLOOD PROTECTION LEVEE

MOTEL

TRAILER PUMP STATION

TRAILHEAD PARKING

GENERAL STORE AND LAUNDRY/SHOWER

MAIN PARKING LOT

4500

4490

TRANSPORTATION STAGING AREA:
- BUS PARKING - MAINTENANCE BUILDING
- SHUTTLE BUS PICK-UP AREA

SERVICE STATION - EMERGENCY SERVICE

← TO LOGAN PASS

RESTAURANT

GOING-TO-THE-SUN ROAD

NPS BOAT DOCK

BOAT PARKING

TOUR BOAT DOCK

REPAIR GARAGE

TO ST. MARY →

4440

4430

ST. MARY LAKE

TO PICNIC AREA

TO PICNIC AREA

LEGEND

- EXISTING ROADS/PARKING
- PROPOSED ROADS / PARKING
- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- REMOVE OR OBLITERATE
- EXISTING TRAIL
- PROPOSED TRAIL
- FLOODPLAIN
- UPGRADE EXISTING TRAIL

PREFERRED ALTERNATIVE

RISING SUN DEVELOPMENT CONCEPT PLAN

GLACIER NATIONAL PARK

FLATHEAD AND GLACIER COUNTIES

MONTANA

UNITED STATES DEPARTMENT OF THE INTERIOR - NATIONAL PARK SERVICE

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The flood damaged Going-to-the-Sun Road bridge would be repaired at Rose Creek. The road to the water reservoir would be stabilized to improve its safety and ensure its continued use by maintenance personnel.

This alternative would have the third highest development costs (see table 6). Annual costs for operations and maintenance would not change.

Alternative A

Alternative A would differ from the preferred alternative in the following ways. The lodge/general store building would be removed without waiting for possible future flood damage. A new general store would be constructed outside the 100-year floodplain, immediately east of the restaurant. This option was rejected because it would have adverse effects on wildlife habitat, and the present site is well situated for serving visitors.

This alternative also considered the option of replacing the cabins along Rose Creek with a new motel. This option was rejected because new motel construction would be expensive and the guest cabins are desirable visitor accommodations.

Day hiking opportunities would be expanded by new trails extending north and south along the west side of Rose Creek and along the shore of St. Mary Lake. Trailhead parking for 15 cars would be provided near the ranger station. This trailhead site would have the advantage of being easily monitored from the ranger station; however, it was rejected because of the added expense and its location within the 100-year floodplain.

Concession employee housing would be consolidated in the existing housing area. A new dorm would be constructed to replace the existing men's dorm and the rooms removed from the lodge/general store building and the restaurant. This option was rejected because it would not provide adequate separation between visitor and employee activities. This alternative also considered the option of providing a new residence for NPS interpretive and maintenance personnel. This option was rejected because of the additional cost and because it was determined that with the campground ranger living on site, no additional residential staff was required.

Alternative A would have the highest development costs (see table 6). Annual costs for operations and maintenance would not change.

Alternative B

Alternative B would differ from the preferred alternative in the following ways. The number of overnight accommodations and associated services at Rising Sun would be reduced to offset an increase in accommodations at Lake McDonald. No replacement facilities would be provided for the visitor accommodations removed from the lodge/general store building or

for the cabins removed from the edge of Rose Creek. Visitor overnight accommodations would be reduced to the two existing motel buildings and the five cabins along the motel access road. The general store building would be floodproofed, and it and the restaurant would provide the only commercial services for visitors. Concession employee housing would be consolidated in what is now the women's dormitory. Because fewer employees would be required, all other housing could be removed and not replaced. This option was rejected because it was determined to be more cost-effective to relocate the Rose Creek cabins than to abandon these usable structures and build new structures at Lake McDonald.

Alternative B also considered a new trailhead for day hiking at the northeast corner of the site, near the existing trail to Otokomi Lake. This option was rejected because it would be harder for the ranger to provide adequate protection for vehicles left at this more remote location, and because this proposal could not be implemented without removing most of the visitor cabins.

Alternative B would have relatively low development costs (as shown on table 6, even lower than the no-action alternative). Annual costs for operations and maintenance would be somewhat reduced by the general decrease in operations.

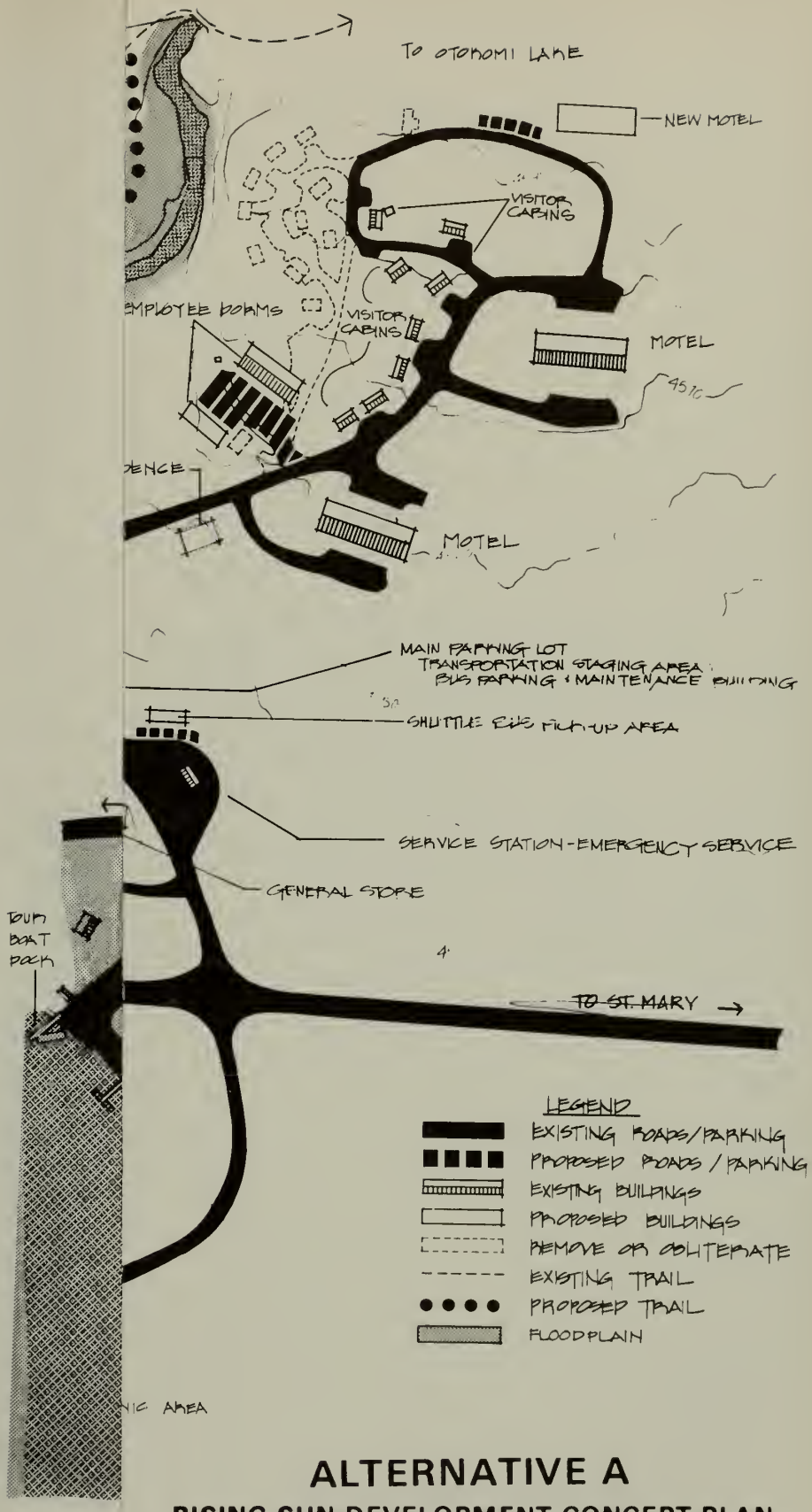
Alternative C

Alternative C would differ from the preferred alternative in the following ways. The range of overnight accommodations would be expanded by converting the women's dormitory to a low-cost visitor dormitory-style accommodation. The women's dorm, as well as the men's dorm and other employee housing, would be replaced in a new employee housing area northeast of the motels. This alternative was rejected because it was not cost-effective.

A transportation staging area, if required, would be built south of Going-to-the-Sun Road. The existing picnic area parking lot would be expanded to accommodate the car and bus parking and maintenance building required by this facility. A shuttle pick-up point with a shelter and ticket office would be established in the main parking lot, between the general store and the restaurant. This option was rejected because the staging area would be inconvenient for visitors and would intrude upon the picnic area.

A new visitor contact station would be constructed adjacent to the main parking lot to provide visitor orientation and information services. This option was rejected on determination that the St. Mary visitor center provides adequate orientation and information services to visitors to this part of the park.

The public dock would not be provided under this alternative.



ALTERNATIVE A

RISING SUN DEVELOPMENT CONCEPT PLAN
GLACIER NATIONAL PARK

UNITED STATES DEPARTMENT OF THE INTERIOR • NATIONAL PARK SERVICE

N

100 0 200 300

117 | 40071A
DSC | DEC 84

NEW FOOTBRIDGE

TO OTOKOMI LAKE

NEW MOTEL

VISITOR CABINS

EMPLOYEE ROOMS

VISITOR CABINS

MOTEL

4510

ROCK CREEK

4500

NPS RESIDENCE

MOTEL

RANGER STATION

4530

TRAILHEAD PARKING

TRAILER DUMP STATION

MAIN PARKING LOT
TRANSPORTATION STAGING AREA
BUS PARKING + MAINTENANCE BUILDING

SHUTTLE BUS PICK-UP AREA

RESTAURANT

SERVICE STATION - EMERGENCY SERVICE

GENERAL STORE

← TO LOGAN PASS

TOUR BOAT DOCK

GOING-TO-THE-SUN ROAD

DOCK PARKING

PUBLIC DOCK

4490

4480

REPAIR BRIDGE

TO ST. MARY →

ST MARY LAKE

TO PICNIC AREA

TO PICNIC AREA

LEGEND

- EXISTING ROADS/PARKING
- PROPOSED ROADS / PARKING
- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- REMOVE OR OBLITERATE
- EXISTING TRAIL
- PROPOSED TRAIL
- FLOODPLAIN

ALTERNATIVE A

RISING SUN DEVELOPMENT CONCEPT PLAN
GLACIER NATIONAL PARK

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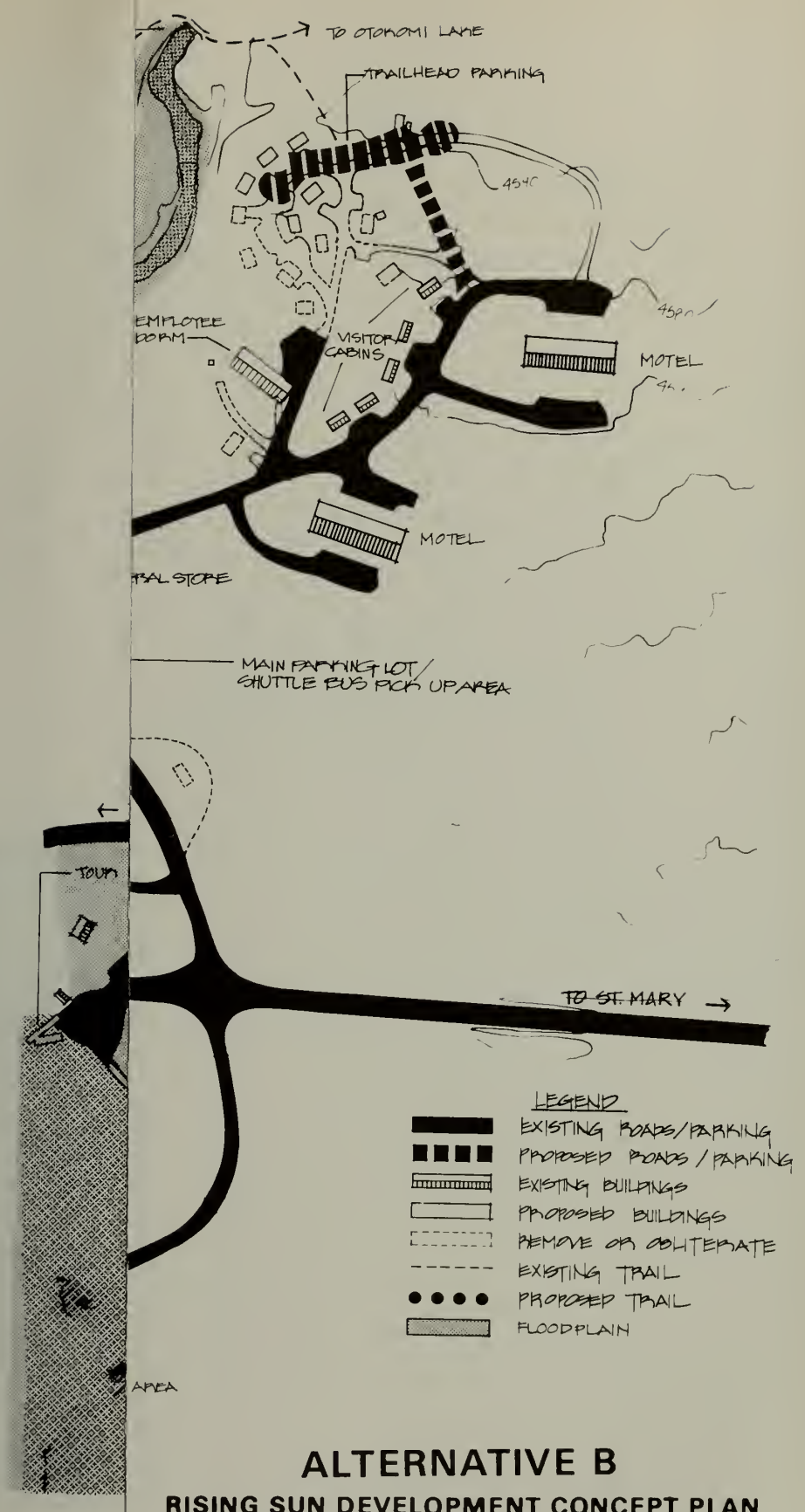

ALTERNATIVE B

RISING SUN DEVELOPMENT CONCEPT PLAN
GLACIER NATIONAL PARK

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117 | 40072A
DSC | DEC 84

NEW FOOTBRIDGE

TO OTOKOMI LAKE

TRAILHEAD PARKING

4540

CAMPGROUND

ROES CREEK

EMPLOYEE DORM

VISITOR CABINS

MOTEL

4520

RANGER STATION

TRAILER DUMP STATION

GENERAL STORE

MOTEL

MAIN PARKING LOT / SHUTTLE BUS PICK UP AREA

← TO LOGAN PASS

TOUR BOAT DOCK

GOING-TO-THE-SUN ROAD

DOCK PARKING

RESTAURANT

REPAIR BRIDGE

TO ST. MARY →

TO PICNIC AREA

ST. MARY LAKE

4480

TO PICNIC AREA

LEGEND

- EXISTING ROADS/PARKING
- PROPOSED ROADS / PARKING
- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- REMOVE OR OBLITERATE
- EXISTING TRAIL
- PROPOSED TRAIL
- FLOODPLAIN

ALTERNATIVE B

RISING SUN DEVELOPMENT CONCEPT PLAN
GLACIER NATIONAL PARK

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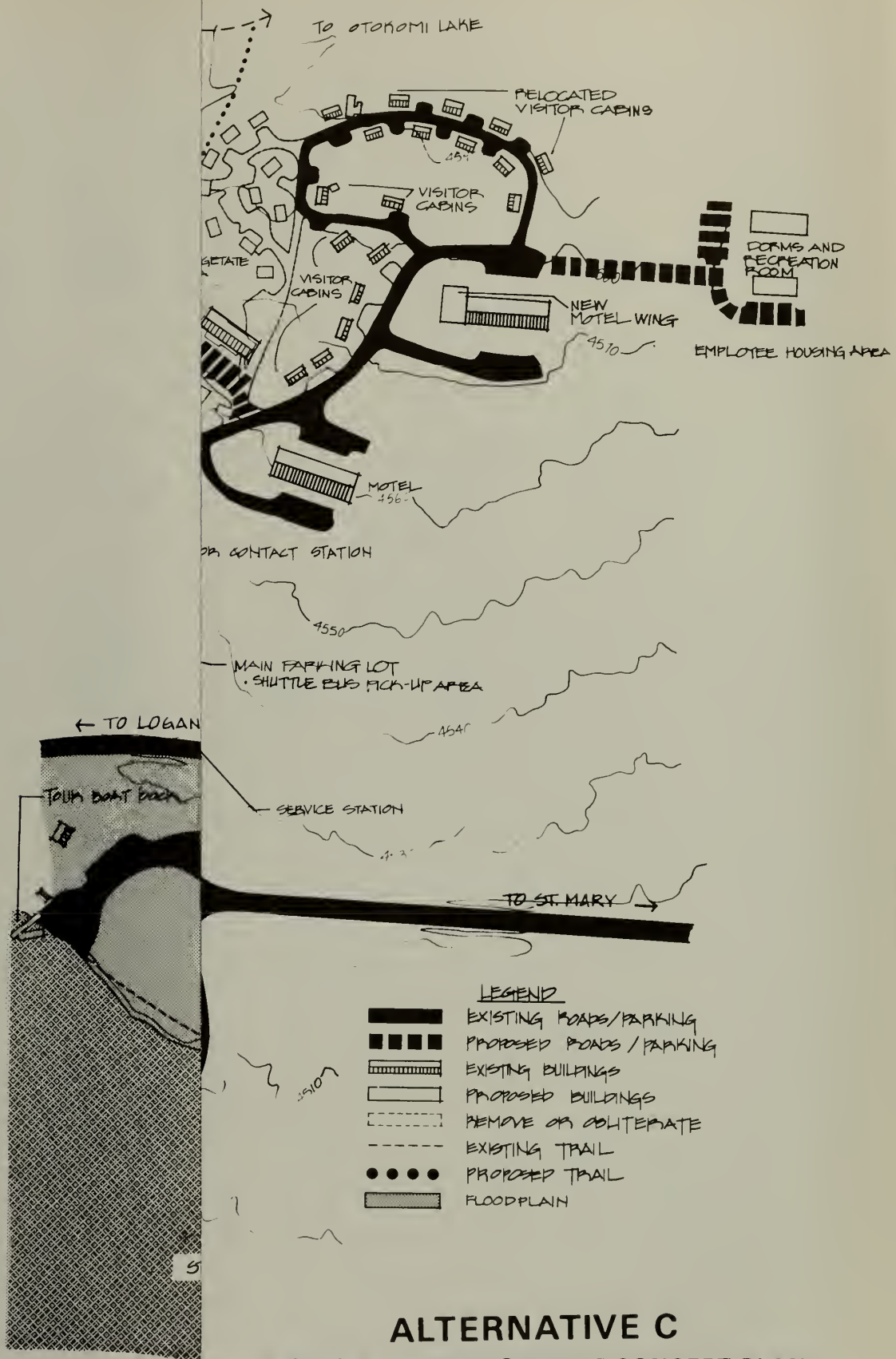
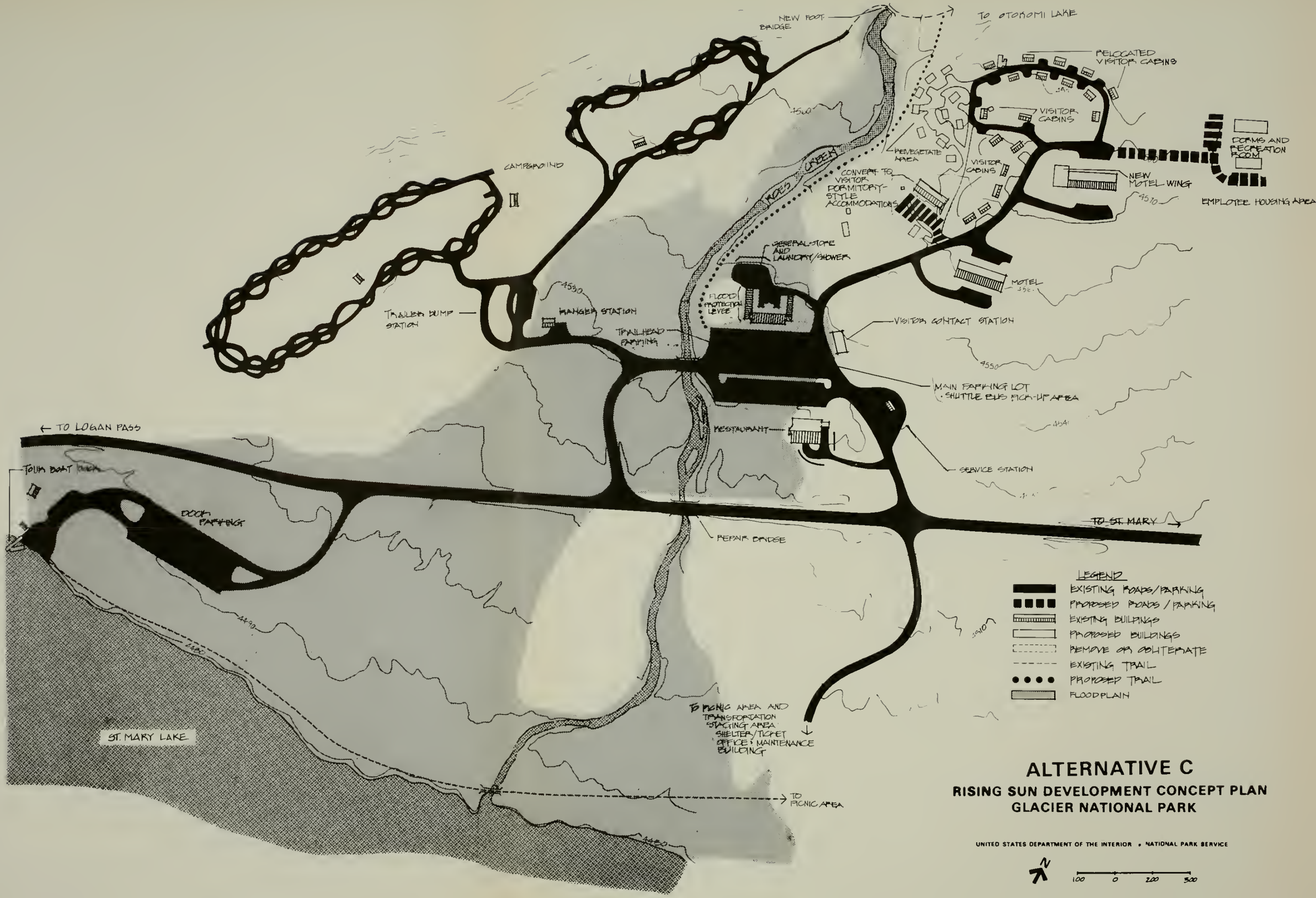


ALTERNATIVE C

RISING SUN DEVELOPMENT CONCEPT PLAN
GLACIER NATIONAL PARK

UNITED STATES DEPARTMENT OF THE INTERIOR • NATIONAL PARK SERVICE



ALTERNATIVE C

RISING SUN DEVELOPMENT CONCEPT PLAN
GLACIER NATIONAL PARK

UNITED STATES DEPARTMENT OF THE INTERIOR • NATIONAL PARK SERVICE

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Table 6: Summary Comparison of Alternatives, Rising Sun

	No-Action Alternative	Preferred Alternative	Alternative A	Alternative B	Alternative C
Concessioner Lodging					
cabins	retain	relocate 10 cabins near Rose Creek, retain others ($50,000*)	remove 10 cabins near Rose Creek, retain others ($20,000*)	remove 14 cabins, retain others ($28,000*)	relocate 10 cabins near Rose Creek, retain others ($50,000*)
motels	retain	retain	retain	retain	retain
rooms in general store/lodge building	close	close	close	close	close
new facilities	add wing to one motel to replace lodge rooms ($180,000*)	add wing to one motel to replace lodge rooms ($180,000*)	construct third motel building to replace cabins and lodge rooms ($580,000*)	none	add wing to one motel to replace lodge rooms ($180,000*) convert women's dorm to visitor dormitory-style accommodations (see below)
Commercial Services					
restaurant	retain, improve handicap access ($1,500*)	retain, improve handicap access ($1,500*), screen loading dock ($5,000*)	retain, improve handicap access ($1,500*), screen loading dock ($5,000*)	retain, improve handicap access ($1,500*), screen loading dock ($5,000*)	retain, improve handicap access ($1,500*), screen loading dock ($5,000*)
general store/ lodge building	retain, eliminate overnight use, improve handicap access ($1,500*)	retain, eliminate overnight use, provide shower/laundry facilities ($40,000*), improve handicap access ($1,500*), construct flood diversion levee ($35,000*)	relocate outside floodplain ($35,000*), eliminate overnight use, improve handicap access ($1,500*)	retain, eliminate overnight use, improve handicap access ($1,500*), floodproof building ($60,000*)	retain, eliminate overnight use, provide shower/laundry facilities ($40,000*), improve handicap access ($1,500*), construct flood diversion levee ($35,000*)
service station	retain	retain, expand service ($82,000*)	retain, expand service ($82,000*)	remove ($12,000*)	retain
Camping					
existing campground	retain	retain	retain	retain	retain
Day Use					
new facilities	provide trailhead in main parking lot and branch trail to Otokomi Lake ($5,000)	provide trailhead in main parking lot and branch trail to Otokomi Lake ($5,000)	provide trailhead east of campground ($23,000) and branch trails to Otokomi and St. Mary lakes	provide trailhead at northeast end of site near existing trail ($23,000)	provide trailhead in main parking lot and branch trail to Otokomi Lake ($5,000)
	provide footbridge at Rose Creek ($5,000)	provide area trail system and footbridge ($49,000)	provide footbridge at Rose Creek ($5,000)	provide footbridge at Rose Creek ($5,000)	provide footbridge at Rose Creek ($5,000)

	No-Action Alternative	Preferred Alternative	Alternative A	Alternative B	Alternative C
Day-Use					
new facilities (con.)	delineate parking for tourboat dock ($2,000)	provide public and NPS docks on St. Mary Lake ($168,000), delineate parking ($2,000)	provide public and NPS docks on St. Mary Lake ($168,000), delineate parking ($2,000)	delineate parking for tour boat dock ($2,000)	delineate parking for tour boat dock ($2,000)
Information/Interpretation					
new facilities	none	none	none	none	provide visitor contact station near main parking lot ($85,000)
Access and Circulation					
road bridge at Rose Creek	repair ($20,000)	repair ($20,000)	repair ($20,000)	repair ($20,000)	repair ($20,000)
reservoir access road	stabilize ($10,000)	stabilize ($10,000)	stabilize ($10,000)	stabilize ($10,000)	stabilize ($10,000)
new facilities	none	establish transportation staging area and shuttle bus pick-up area in main parking lot ($291,000*)	establish transportation staging area and shuttle bus pick-up area in main parking lot ($291,000*)	establish shuttle bus pick-up area in main parking lot ($3,000*)	establish transportation staging area at picnic ground and shuttle bus pick-up area in main parking lot ($291,000*)
NPS Administrative/Residential					
ranger station	remove	remove	remove	remove	remove
new facilities	construct ranger station with residence ($185,000)	construct ranger station with residence ($185,000)	construct ranger station with residence ($185,000)	construct ranger station with residence ($185,000)	construct ranger station with residence ($185,000)
			construct residence for interpretive and maintenance personnel ($110,000)		
Concessioner Housing					
women's dorm	retain	relocate to new housing area ($50,000*)	retain	retain	convert to visitor dormitory-style accommodations ($10,000*)
men's dorm	remove ($1,000*)	remove ($1,000*)	remove ($1,000*)	remove ($1,000*)	remove ($1,000*)
rooms in lodge and restaurant	close	close	close	close	close
boat concessioner's residence	remove ($2,000*)	remove ($2,000*)	remove ($2,000*)	remove ($2,000*)	remove ($2,000*)
new facilities	construct one dorm near existing women's dorm ($276,000*)	construct one dorm in new housing area, provide recreation facilities and access road ($366,000*)	construct one dorm near existing women's dorm ($276,000*)	none	construct two dorms in new housing area, provide recreation facilities and access road ($642,000*)
Development Costs					
concessioner	$ 462,000*	$1,105,000*	$1,295,000*	$ 114,000*	$1,259,000*
NPS	227,000	439,000	523,000	245,000	312,000
total net costs	$ 689,000	$1,544,000	$1,818,000	$ 359,000	$1,571,000
total gross costs**	$1,006,000	$2,254,000	$2,654,000	$ 524,000	$2,294,000

*Concession-related improvements. The exact funding by Glacier Park, Incorporated, would be determined in contract negotiations between the National Park Service and the concessioner.

**Gross costs include a 46 percent contingency to cover planning, design, and construction supervision. They do not include costs of building furnishings or of utility systems.

Alternative C would have the second highest development costs (see table 6). Estimated annual costs for operations and maintenance would increase by $14,000. Two additional seasonal interpreters would be required to staff the visitor contact station during the peak season, and an extra seasonal maintenance employee would be necessary to service the new facilities.

ENVIRONMENTAL CONSEQUENCES

Soils

The soils at Rising Sun consist of relatively dense, poorly sorted gravel and cobbles mixed with sand, and to a lesser extent, clay and silt. General effects on soils are discussed in this section for Lake McDonald. The acreage that would be disturbed by development under each alternative is shown in table 7.

Vegetation

Vegetation in the Rising Sun area is made up of northern conifer forest, aspen groves, and dry grassland. Most of the lower elevation alluvial fan is grassland characterized by Idaho and rough fescue, bluebunch wheatgrass, junegrass, needlegrass, and kinnikinnick. Aspen groves that also contain cottonwood, willow, snowberry, serviceberry, and wild rose are scattered among the grasslands. The aspen groves are moister than the grassland areas because they retain snow for longer periods. Coniferous forest composed primarily of Douglas-fir and limber pine is the other major vegetative cover. The general effects on vegetation are discussed in this section for Lake McDonald. The acreage that would be disturbed under each alternative is shown in table 7.

Table 7: Disturbed Acreage, Rising Sun

Existing Use	No-Action	Preferred	A	B	C
Moderate	11.0	11.0	11.0	11.0	11.0
Severe	22.8	22.8	22.8	22.8	22.8
Total	33.8	33.8	33.8	33.8	33.8
Total Use with Plan					
Moderate	11.0	12.4	12.6	11.0	10.8
Severe	22.8	23.4	25.7	25.0	23.2
Total	33.8	35.8	38.3	36.0	34.0
Net Change with Plan					
Moderate	0	+1.4	+1.6	0	-0.2
Severe	0	-0.6	+2.9	+2.2	+0.4
Total	0	+0.8	+4.5	+2.2	+0.2

Wildlife

Affected Environment. The diversity of vegetation in the Rising Sun area provides excellent forage and cover for many species of mammals. The Rising Sun/St. Mary grasslands are considered critical winter range for an estimated population of 100 elk. Other mammals including deer, rabbits, ground squirrels, beaver, and muskrats can be found in the area. Black and grizzly bears, mountain lions, bighorn sheep, and mountain goats live in the surrounding mountains.

St. Mary Lake contains several native species of fish, including lake and cutthroat trout, mountain whitefish, and burbot. The lake was stocked prior to 1941, and the nonnative species introduced were brook and rainbow trout and lake whitefish.

Impacts. There would be no winter use of the critical winter elk range under any of the alternatives. However, the transportation staging area proposed in the preferred alternative and alternative A would result in the destruction of ½ to 2 acres (less than 1 percent) of this important elk habitat. The feasibility and extent of this development would be determined by the transportation plan currently underway. No other impacts on wildlife would be anticipated. The new concession employee housing area proposed in the preferred alternative and alternative C would not appreciably affect wildlife because the proposed development would be relatively small and would be near an existing developed area.

Threatened and Endangered Species

Grizzly bears occasionally traverse the Rising Sun area, but there is no evidence of habituation. Although bald eagles have been observed feeding at the St. Mary Lake outlet, there are no known nests in the area. There are no peregrine falcon eyries in the Rising Sun area. Although a gray wolf was sighted near Two Dog Flats six years ago, there is no known activity in this portion of the park. It is not expected that any of the actions in any of the alternatives would affect these threatened and endangered species.

Water Resources

Affected Environment. The St. Mary River gathers its water from the east side of the Continental Divide and flows into Upper St. Mary Lake. The lake is formed by an alluvial fan at the mouth of Divide Creek and has a surface area of 3,928 acres. The total watershed encompasses about 130 square miles. Peak flows take place in June during spring runoff, which carries considerable quantities of rock, gravel, and mud. Cold water and frequent winds restrict swimming and boating on St. Mary Lake.

Impacts. The construction of public and NPS boat docks (proposed in the preferred alternative and alternative A) would temporarily increase the amount of particulates in St. Mary Lake, but this impact would be minimal in comparison with the yearly effects of spring runoff. The

highway bridge repair and new trail footbridge proposed in all of the alternatives would have the same temporary impacts on Rose Creek.

Floodplains

Affected Environment. Both the 100-year and the 500-year floodplains have been mapped by the U.S. Army Corps of Engineers (see the Rising Sun alternative development maps).

The concession store and the NPS ranger station are in the 100-year floodplain of Rose Creek, as is a portion of the Going-to-the-Sun Road. The visitor cabins at Rose Creek are not directly in the 100-year floodplain. However, natural processes are resulting in the erosion of the cliff bank to the west of the cabins, and eventually the cabin sites will be undermined. No critical actions occur in the 500-year floodplain. No structures or facilities exist or are proposed in a high-hazard area subject to flooding events that are so unexpected, violent, or otherwise devastating that human lives would be placed in immediate or grave danger.

A flood emergency response and evacuation plan will be developed by the park staff regardless of which alternative is implemented. Warning signs will be posted in flood-hazard areas, and all facilities and structures will be marked with flood heights. Evacuation routes will be developed, and provisions will be made for emergency water and sewer treatment.

Impacts. NPS developments and facilities currently have few impacts on the floodplain. No proposals have been developed that would affect the water resource values of the floodplain related to the natural moderation of floodwaters, maintenance of water quality, and groundwater recharge. No living resource values would be affected.

Several options for reducing flood damage and risk to human life were considered for the Rising Sun area. The removal of all lodging and employee housing from the floodplain would eliminate the risk of loss of life in all alternatives. The concession store building would remain subject to flood damage in all alternatives except alternative A. The risk would be mitigated by constructing a flood-diversion levee (preferred alternative and alternative C) or by floodproofing the building (alternative B). The preferred alternative calls for the store to be relocated outside the floodplain if it is extensively damaged or destroyed by flooding in the future.

All of the action alternatives would remove the visitor cabins and the guests using them from the bank-erosion area along Rose Creek.

Visitor parking would remain in the 100-year floodplain in all alternatives, but use would be restricted if flooding was expected, minimizing the risk to human life.

Wetlands

No wetlands would be affected by any development proposed for the Rising Sun area.

Air Quality

The air quality and impacts expected for the east side of the park are described in this section for Sun Point.

Visual Quality

Affected Environment. Most of the Rising Sun developed area can be seen from Going-to-the-Sun Road. The coffee shop loading dock faces the road, and delivery operations and materials are visible to visitors. Because of the mix of employee housing and visitor use areas, employee recreational activities sometimes intrude on visitors' enjoyment of their surroundings.

Impacts. The construction of a transportation staging area (additional parking if necessary, bus shelter/ticket office, and maintenance building) in the main parking lot (preferred alternative and alternative A) would add some congestion and a feeling of crowdedness to the area. Placement of these facilities at the picnic area parking lot (alternative C) would make them visible from Going-to-the-Sun Road. This impact could be mitigated by vegetative screening and selection of building materials compatible with the environment.

Separating employee housing from visitor use areas (preferred alternative and alternative C) would eliminate or reduce the intrusion of employee recreational activities on the visitor experience. The new dorms would be constructed in a wooded area that is well removed from Going-to-the-Sun Road as well as from the visitor lodging area.

In all of the alternatives, screening of the loading dock would improve the appearance of the coffee shop.

Cultural Resources

Affected Environment. The Going-to-the-Sun Road is on the National Register of Historic Places. The ranger residence, cabins, and general store may also be eligible for the National Register. No archeological sites have been formally identified, but the remains of a CCC camp are still evident. Any unsurveyed areas where land modification is planned would be surveyed prior to disturbance.

Impacts of No-Action Alternative. The impacts of repairing the Going-to-the-Sun Road bridge would not be significant.

If the ranger residence was determined eligible for the National Register, its demolition would result in an irretrievable loss of cultural resources. This adverse effect would be partially mitigated by documentation.

Impacts of Preferred Alternative. If the ranger residence and cabins were determined eligible for the National Register, their demolition would result in an additional loss of resources. This adverse effect would be partially mitigated by documentation.

The construction of a levee in the vicinity of the lodge/general store would have the adverse effect of creating an intrusion on the historic scene; however, it would also have the beneficial effect of protecting a possibly historic structure from potential flood damage.

The remaining actions included in this alternative would avoid adverse effects by strict conformance to NPS regulations (refer to "General Compliance Considerations" in the cultural resource discussion for Lake McDonald).

Impacts of Alternative A. The impacts of alternative A would differ from the impacts of the preferred alternative in the following ways. If the lodge/general store was determined eligible for the National Register, its relocation would have the adverse effect of destroying the building's site integrity; however, this action would also have the beneficial effect of protecting the building from potential flood damage.

Impacts of Alternative B. The impacts of alternative B would differ from the impacts of the preferred alternative only in that the adverse and beneficial effects of the levee would not be realized.

Impacts of Alternative C. The impacts of alternative C would be the same as the impacts of the preferred alternative.

Visitor Use

Affected Environment. A general discussion of visitor use can be found in this section for Lake McDonald, and information more specific to the east side of the park can be found in this section for Sun Point. The following discussion covers use of the Rising Sun and St. Mary campgrounds.

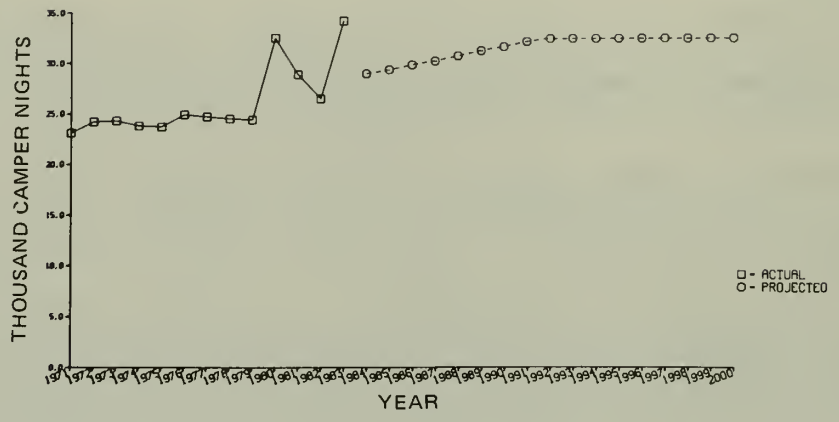
The Rising Sun campground has 82 sites attractively located under relatively large trees. It opens in the spring at approximately the same time as the campground at St. Mary, but it usually closes earlier.

June and September occupancy rates range from 45 percent to 80 percent. During the main season (July and August) the campground operates at capacity nearly every night. Overflow occurs regularly, but it is easily accommodated at St. Mary or in the private and tribal campgrounds east of the park.

A linear regression analysis of data for 1970 through 1982 indicates that use has increased by an average of 450 camper nights annually. As shown on the chart, most of the increase actually occurred in two recent years. Because the campground is already operating at capacity during the peak summer months, no long-term growth could be sustained without adding more campsites or extending the season. The projections in the

following graph are based on the assumption that 1980 use represents the present capacity for this campground.

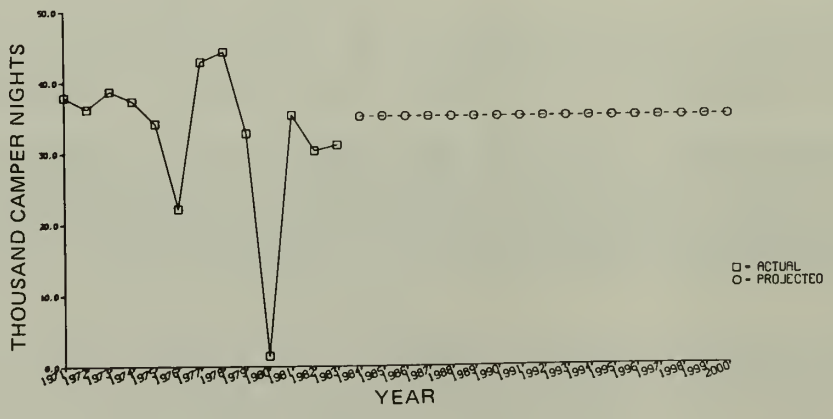
Rising Sun Campground Use



The St. Mary campground is not as attractive as Rising Sun, and much of its use is by visitors turned away from this and other more scenically situated campgrounds. Despite having twice as many sites as the nearby Rising Sun campground, St. Mary receives only 18 percent more use, and occupancy rates are usually below 80 percent even during the peak summer months. The campground was closed for a time in 1976 because of flooding, and it was not opened at all in 1980 as an austerity measure.

A linear regression analysis of data from 1970 through 1982 (excluding 1976 and 1980) indicates an average decrease in use of 200 camper nights annually. This declining trend is expected to level off and eventually reverse, but no growth is projected for the immediate future. The potential for considerable growth exists if overflow from other campgrounds begins to increase.

St. Mary Campground Use



Impacts of No-Action Alternative. The retention of the cabins near Rose Creek might lead to a loss of life and collapse of these cabins due to the encroachment of the creek. The removal of overnight accommodations from the lodge/general store would eliminate the possibility for loss of life due to flooding.

The provision of a new trailhead parking area would remove the conflict of use between hikers and overnight guests and would eliminate confusion. The provision of a new footbridge would eliminate the necessity for hikers to ford Rose Creek.

The repair of the damaged Going-to-the-Sun Road bridge over Rose Creek could prevent loss of life and vehicle damage due to future flooding.

The relocation of the ranger residence would remove the flood risk, and the provision of office space would enhance visitor contact.

Handicapped accessibility to the restaurant and store would be improved, allowing for use of these facilities by all visitors.

Visitors not involved in the concession boat tour would continue to be denied use of the boat dock for recreation purposes.

Employee activities would continue to intrude on visitor use areas.

Impacts of Preferred Alternative. The relocation of the cabins at Rose Creek would remove the potential for these cabins to be lost to the encroachment of the creek. In addition, the cabin circulation route would be simplified, reducing visitor confusion about the locations of their cabins. Discontinuing the use of the lodge/general store for overnight accommodations would eliminate the possibility for loss of life due to flooding.

The provision of a new trailhead parking area would remove the conflict of use between hikers and overnight guests and would eliminate confusion. The replacement of the trail footbridge would eliminate the necessity for hikers to ford Rose Creek. The construction of a foot trail from the campground to the lake would facilitate access to the lakeshore and provide an enjoyable hiking experience.

The repair of the damaged Going-to-the-Sun Road bridge over Rose Creek could prevent loss of life and vehicle damage due to future flooding.

The relocation of the ranger residence would remove the flood risk, and the provision of office space would enhance visitor contact.

Handicapped accessibility to the restaurant and store would be improved, allowing for use of these facilities by all visitors.

The construction of a public boat dock would enhance fishing and visitor viewing and picture taking of St. Mary Lake, as well as benefit private boaters. Delineating the spaces at the boat dock parking lot would increase the efficiency of the lot and reduce confusion and random parking.

If a transportation system was implemented, the use of the main parking lot as a staging area might add to the confusion and congestion in that area, making access more difficult for motorists. This location would be convenient to support facilities such as the general store and restaurant.

Motorists would be able to obtain towing service and emergency spare parts in this developed area.

The provision of a new separate concession housing area would reduce the conflicts between visitors and employees.

Impacts of Alternative A. The impacts of alternative A would differ from the impacts of the preferred alternative as follows. The replacement of the cabins at Rose Creek with a motel situated farther east would remove the potential for these cabins to be lost to the encroachment of Rose Creek and would provide visitors with new lodging facilities. This would have an adverse impact on visitors who preferred the more private and rustic atmosphere afforded by a cabin. The new concession and NPS housing accommodations would not be provided in a separate area and some visitor/employee conflicts would continue.

Construction of a separate trailhead parking area between the campground and lodge/general store would help visitors locate the trailhead. However, cars parked in this area might be subjected to flooding. Construction of a trail from the proposed public dock on St. Mary Lake to the Otokomi Lake trail would provide a nice hiking experience along the creek and lakeshore.

Impacts of Alternative B. The impacts of alternative B would differ from the impacts of the preferred alternative as follows. The reduction in the number of overnight accommodations might mean that some visitors would have to stay at St. Mary or another park area. Providing a better balance of rooms between the east and west sides of the park would allow more visitors to stay on both sides of the park and appreciate the considerable differences in experience.

Visitors not involved in the concession boat tour would continue to be denied use of the boat dock for recreation purposes. Visitors would continue to walk along the roads or create informal trails to gain access to the lakefront from the campground.

The removal of the existing service station would preclude motorists from obtaining such services in this area; however, services would be available at St. Mary, 6 miles east.

Impacts of Alternative C. The impacts of alternative C would differ from the impacts of the preferred alternative as follows. The conversion of the women's dormitory to lower cost dormitory-style accommodations would benefit those travelers on a tight budget. The provision of a laundry/shower building would increase the facilities available for all overnight users, including campers.

The provision of a new visitor contact station would increase opportunities for visitors to receive information, orientation, and interpretation, as well as make restroom facilities available.

Use of the existing picnic parking area as a transportation staging area would intrude on the picnicking experience. Also, the car parking lot would be inconveniently situated away from the main visitor use area.

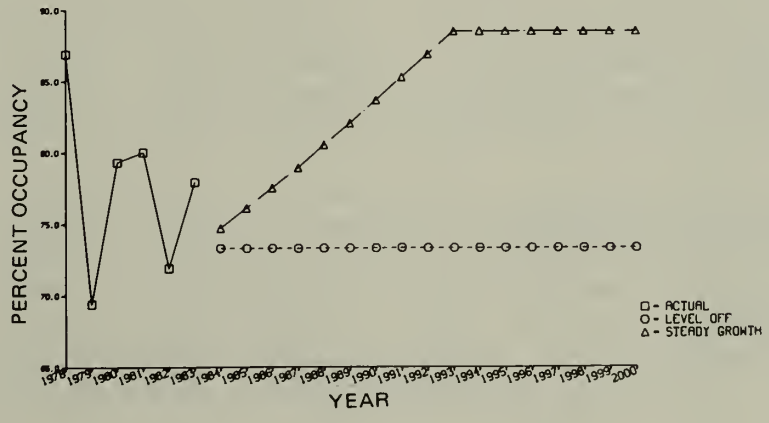
Visitors not involved in the concession boat tour would continue to be denied use of the boat dock for recreation purposes. Visitors would continue to walk along the roads or create informal trails to gain access to the lakefront from the campground.

Concessioners

Affected Environment. Two concessioners operate at Rising Sun. Glacier Park, Incorporated, provides lodging and food service, transportation, gift and gasoline sales, and a camper store. These services are available from late May to early September. The Glacier Park Boat Company provides boat tours on St. Mary Lake during June, July, and August.

The following graph illustrates the current and projected use levels of overnight accommodations at Rising Sun. Two growth levels are shown, one based on a continuing growth pattern and the other on a more conservative leveling-off pattern.

Past and Projected Use of Lodging, Rising Sun



Impacts of No-Action Alternative. GPI could expect a small increase in total gross sales at Rising Sun as a result of replacing the lodge units with new motel rooms. There would be little or no financial return on the expenditures required to replace employee housing outside the 100-year floodplain. However, GPI employees would be safely housed outside the 100-year floodplain in new larger accommodations.

There would be no impacts on the Glacier Park Boat Company in any of the alternatives. Boat concession employees would rent their housing directly from GPI, with no effect on either company.

Impacts of the Preferred Alternative. GPI could expect a nominal return on their investment as a result of replacing the lodge units in the 100-year floodplain with new motel rooms, constructing a shower/laundry facility, and providing auto towing service and emergency spare parts. There would be little or no financial return on the expenditures required to relocate 10 guest cabins away from Rose Creek, construct a flood diversion levee around the general store, and build a separate employee housing and recreation area. However, GPI employees would be safely housed in new larger accommodations, and the guest cabins and general store would be better protected from flood damage.

The possible financial impacts on GPI related to constructing and operating a transportation staging area/shuttle bus pick-up point cannot be determined until the parkwide transportation plan is completed.

Impacts of Alternative A. The impacts of alternative A would differ from the impacts of the preferred alternative in the following ways. An additional investment would be required of GPI for the construction of a 29-unit motel to replace the nine lodge units in the 100-year floodplain and the 10 guest cabins near Rose Creek. However, GPI could expect a slightly greater return on this investment. Lower expenses would be incurred by the concessioner for building new employee housing near the women's dorm and relocating the general store out of the 100-year floodplain.

Impacts of Alternative B. The impacts of alternative B would differ from the impacts of the preferred alternative in the following ways. GPI could expect a decrease in sales at Rising Sun with the reduction in guest lodging, but overall this would be offset by a corresponding increase in gross sales at Lake McDonald. Investment expense would be less because new employee housing and a shower/laundry facility would not be constructed. Floodproofing the general store would be somewhat more expensive than the alternative of constructing a flood-diversion levee.

Impacts of Alternative C. The impacts of alternative C would differ from the impacts of the preferred alternative in the following ways. GPI could expect a greater increase in total gross sales as a result of replacing the lodge units with new motel rooms and converting the women's dormitory to guest lodging. However, the expenditures required to replace the women's dorm and to construct other employee accommodations and recreation facilities in a separate location would be significantly higher, and there would be little or no financial return on this investment.

Adjacent Communities

Affected Environment. The socioeconomic characteristics of the surrounding region are described in this section for Sun Point.

Impacts. There would be little social or economic impact on local communities, regardless of which alternative was implemented. The local expenditure of some of the construction funds (up to $2.7 million in alternative A) would have a minor short-term effect on some local businesses. The cumulative effects of construction at all of the developed

areas on the east side of the park would temporarily stimulate a modest increase in economic activity in adjacent communities.

The provision of towing and repair services, which would occur in the preferred alternative and alternative A, would take use away from existing businesses. Conversely, removal of the service station, as called for in alternative B, would redistribute such business to other stations outside the park.

A decrease of 14 cabin units, which would occur in alternative B, might increase the demand for such units outside the park boundary; however, assuming that any decrease in accommodations at Rising Sun would be offset by an increase at Lake McDonald, the effect on lodging outside the park would probably be minimal.

The addition of low-cost dormitory-style accommodations at Rising Sun, which would occur in alternative C, might take use away from accommodations outside the park.

No other components of the environment would be appreciably affected by any of the alternatives.

ST. MARY VISITOR CENTER AND CAMPGROUND

EXISTING CONDITIONS AND PROBLEMS

The St. Mary entrance station, ranger station, and visitor center are closely grouped along Going-to-the-Sun Road about one-third mile inside the east park boundary. The visitor center attracts a disproportionately low percentage of entering visitors because of inadequate signing and traffic circulation problems at this location. There are currently two access roads leading to two separate parking lots for the visitor center, one immediately on either side of the park entrance station. Many visitors who might otherwise stop at the visitor center either find themselves in the wrong lane to turn onto either access road, or they decide to proceed directly into the park after they have passed the entrance station.

The visitor center adequately houses a variety of visitor services: exhibits, book sales, backcountry permits, restrooms, and auditorium programs. However, interpretive office and storage spaces are inadequate.

The St. Mary campground is a fairly new 156-site campground situated in a willow shrub stand on the north side of the St. Mary River.

ALTERNATIVES

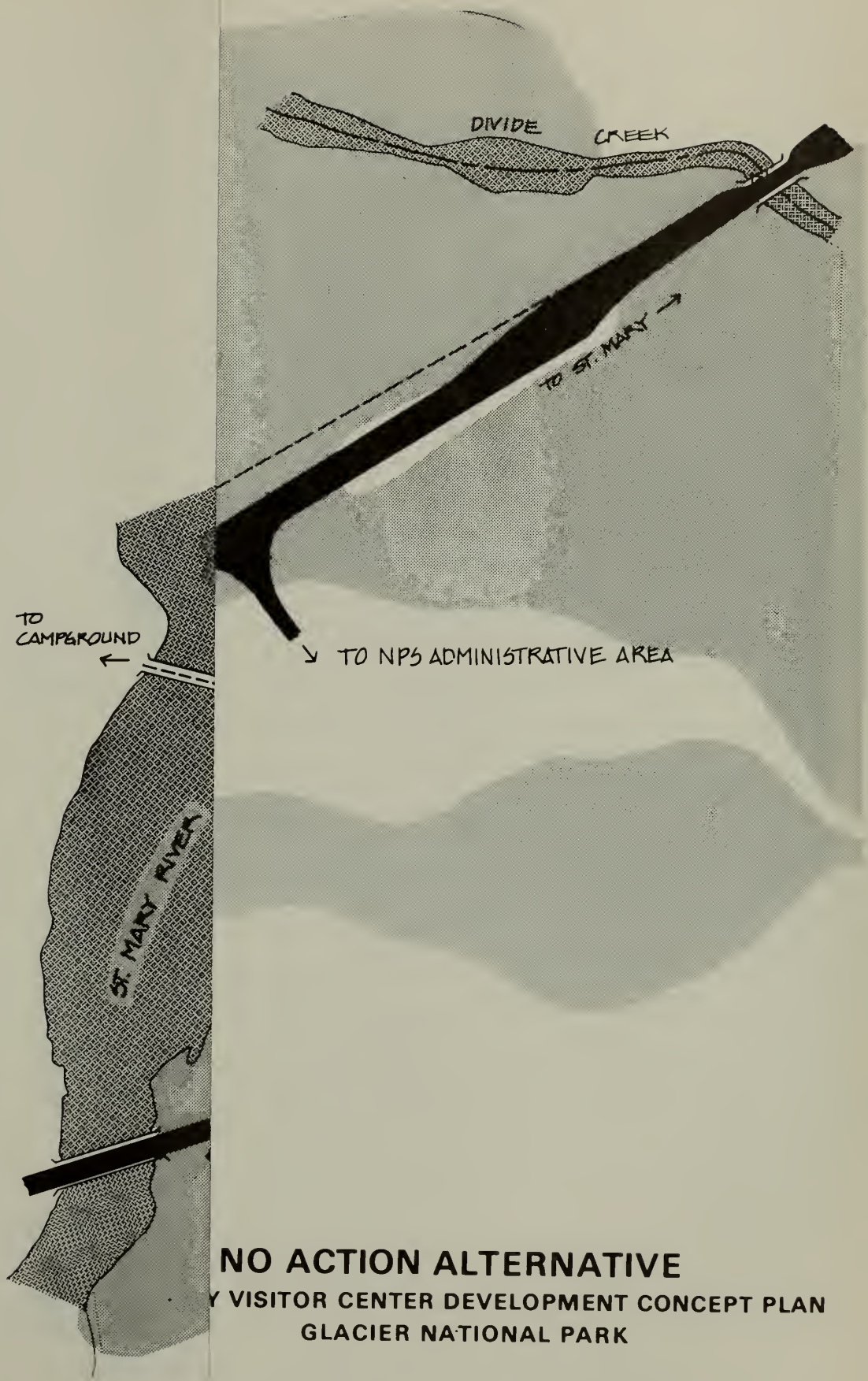
No-Action Alternative

The only change in existing conditions would be that four sites in the St. Mary campground would be made accessible to handicapped people.

Preferred Alternative

Alternative B was selected as the preferred alternative. Visitors would be encouraged to stop at the St. Mary visitor center by improving traffic flow at the turnoffs to the south and north parking lots and by providing better signing. The access road to the south parking lot would be extended to a point farther east from the park entrance station on Going-to-the-Sun Road. A longer turn lane would be added to the highway to provide earlier separation of visitor center traffic from traffic proceeding through the entrance station. The access road into the north parking lot, on the other side of the entrance station, would be widened near its intersection with Going-to-the-Sun Road to allow for smoother turning. The parking lots, which together accommodate 50 single and 23 oversize vehicles, would remain separated.

A new road bridge with foot/bike lanes would be constructed across Divide Creek to facilitate flood flows and to provide access for pedestrians and bicyclers. The trail into the visitor center would also be realigned so that it would not have to cross the access road into the south parking lot. A 1-mile self-guiding handicapped accessible trail



NO ACTION ALTERNATIVE

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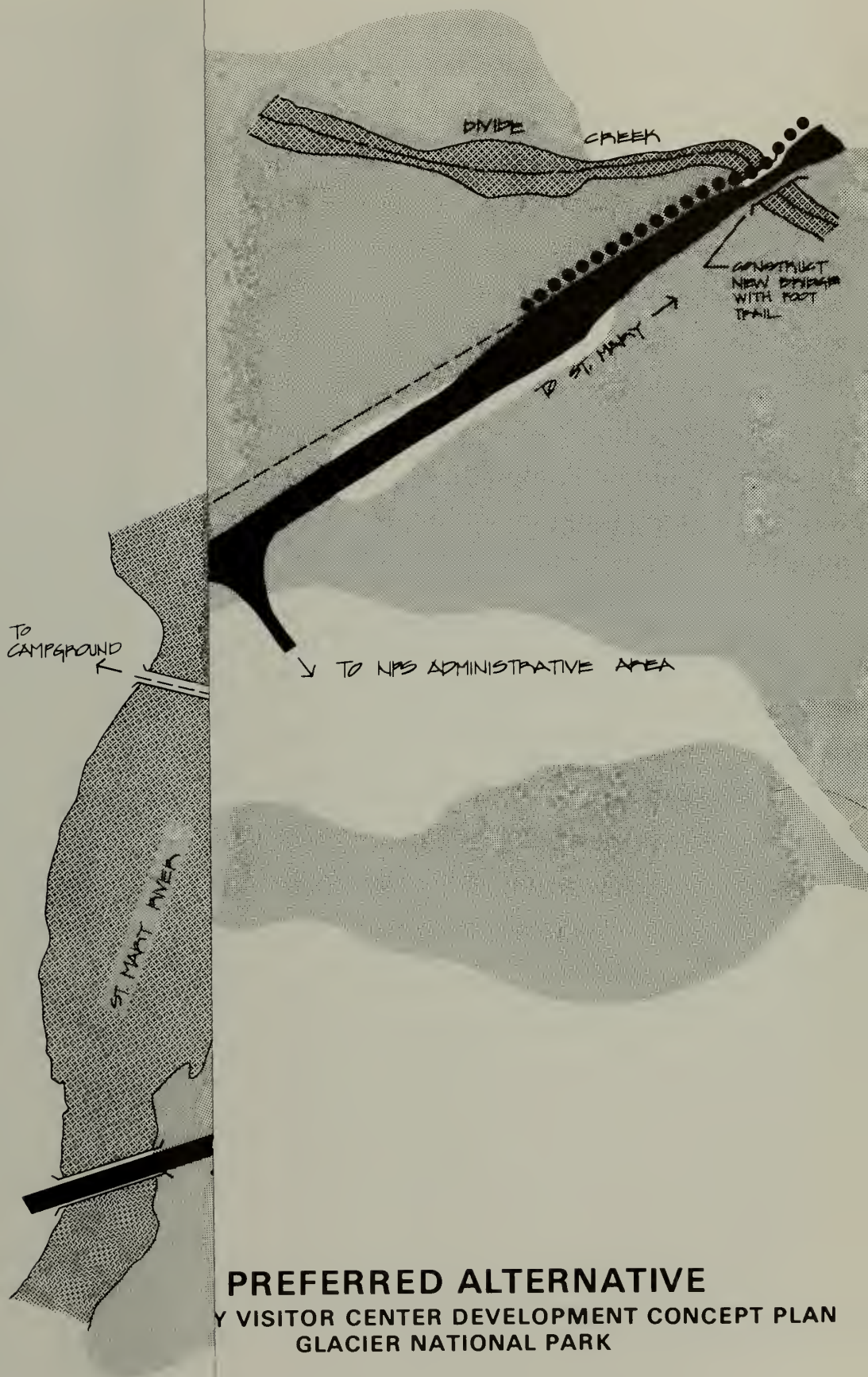

PREFERRED ALTERNATIVE

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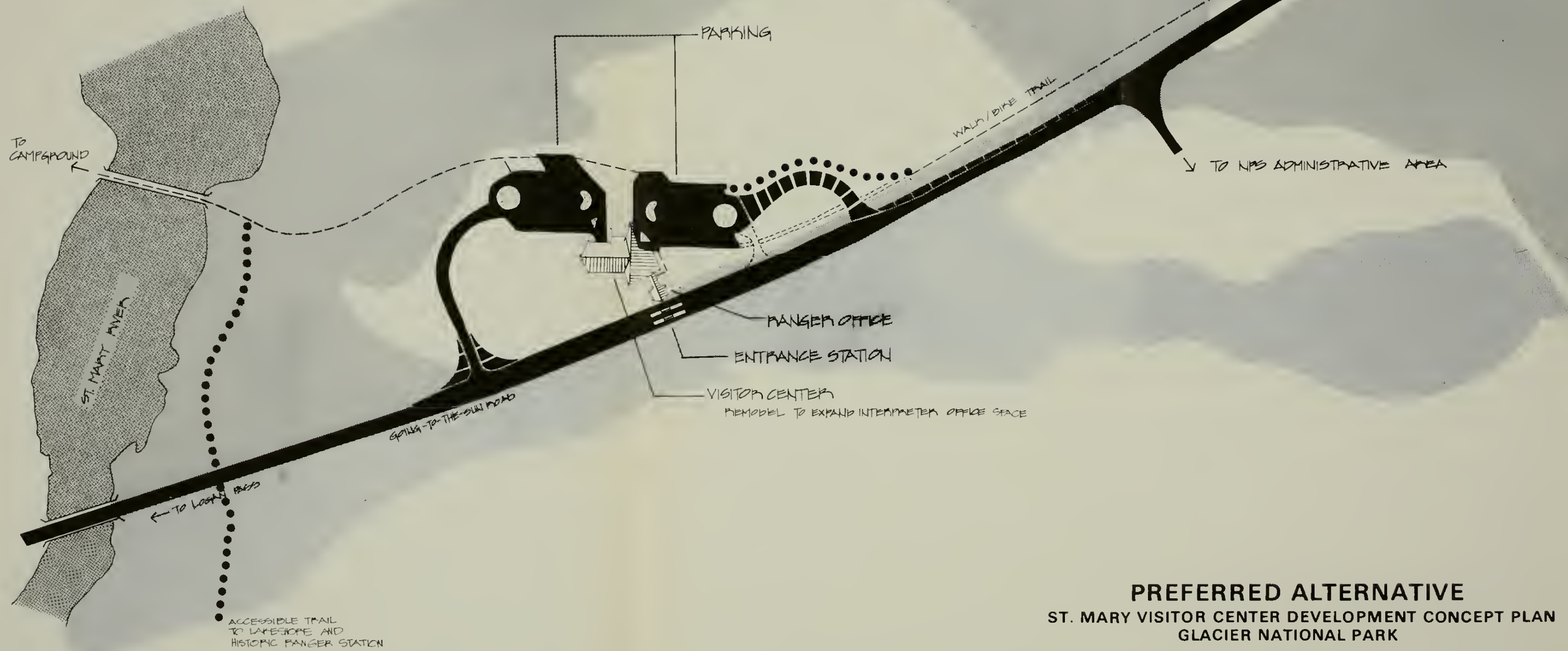

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would be constructed south along the St. Mary River from the existing trail between the campground and visitor center. This trail would form a loop system by connecting with two other existing trails.

The entrance station, ranger office, and visitor center would be retained in their existing locations. The interior of the visitor center would be remodeled to provide adequate park staff office space and storage. A new map would be prepared to improve visitor information and orientation, and signing for visitor facilities, trailheads, and comfort stations would be enhanced throughout the valley.

Four sites in the St. Mary campground would be made accessible to handicapped people.

This alternative would have the second highest development costs (see table 8). Annual costs for operations and maintenance would not change.

Alternative A

Alternative A would differ from the preferred alternative in the following ways. Access to the St. Mary visitor center would be further improved by redesigning the entire access and parking configuration. The entrance station would be removed from in front of the visitor center and replaced with a larger, three-lane station nearer the park boundary. Visitors entering the park would pass through the entrance station before reaching the turnoff to the visitor center. A ranger office would be constructed near the new entrance station, and what is now the ranger office would be converted to interpreter office space.

The south and north parking lots would be joined, creating a loop entrance and exit traffic pattern and making it easier for visitors to find available parking. The north parking lot would be expanded, and together the two lots would accommodate 74 single and 26 oversize vehicles. The foot and bike trail would be realigned to bypass the north and south parking lot access roads. A 1/2-mile handicapped accessible trail would be constructed west of the historic St. Mary ranger station along the St. Mary lakeshore. This option was rejected because it was not considered to be as cost-effective as the preferred design, and the relocation of the entrance station nearer the park boundary would cause traffic to back up outside the park during peak traffic periods.

The enlarged parking lot would accommodate a transportation staging area at the St. Mary visitor center if one was determined necessary by the transportation plan. To construct the staging area, the access road to the north parking lot would be realigned, and a bus turnaround/parking area and a maintenance building would be added to the site. A shelter and ticket office would be provided at the shuttle bus pick-up area. This option was rejected because it was considered unnecessary and less cost effective to extend the transportation system to St. Mary when it could be terminated at Rising Sun.

The turnoff to the NPS administrative area would have to be realigned to avoid a hazardous intersection at the relocated entrance station. This

alternative also considered the installation of a gate on the southern Divide Creek bridge so that visitors could not inadvertently enter the NPS maintenance/residential area. This option was rejected because it would inconvenience NPS employees and their families.

Alternative A would have the highest development costs (see table 8). Estimated additional annual costs for operations and maintenance would be $4,000. Operation of the enlarged entrance station would require one additional NPS employee during peak traffic periods.

Alternative B

See preferred alternative.

Alternative C

Alternative C would differ from the preferred alternative in the following ways. Traffic flow near the park entrance would be facilitated by closing the access road to the south parking lot. Visitors would pass through the entrance station at its existing location before turning off to the visitor center. The access road to the north parking lot would be widened to allow for smoother turns. The north and south parking lots would be connected, making it easier for visitors to find available parking. This option was rejected because it was felt that many visitors would proceed into the park and bypass the visitor center once they had passed the entrance station.

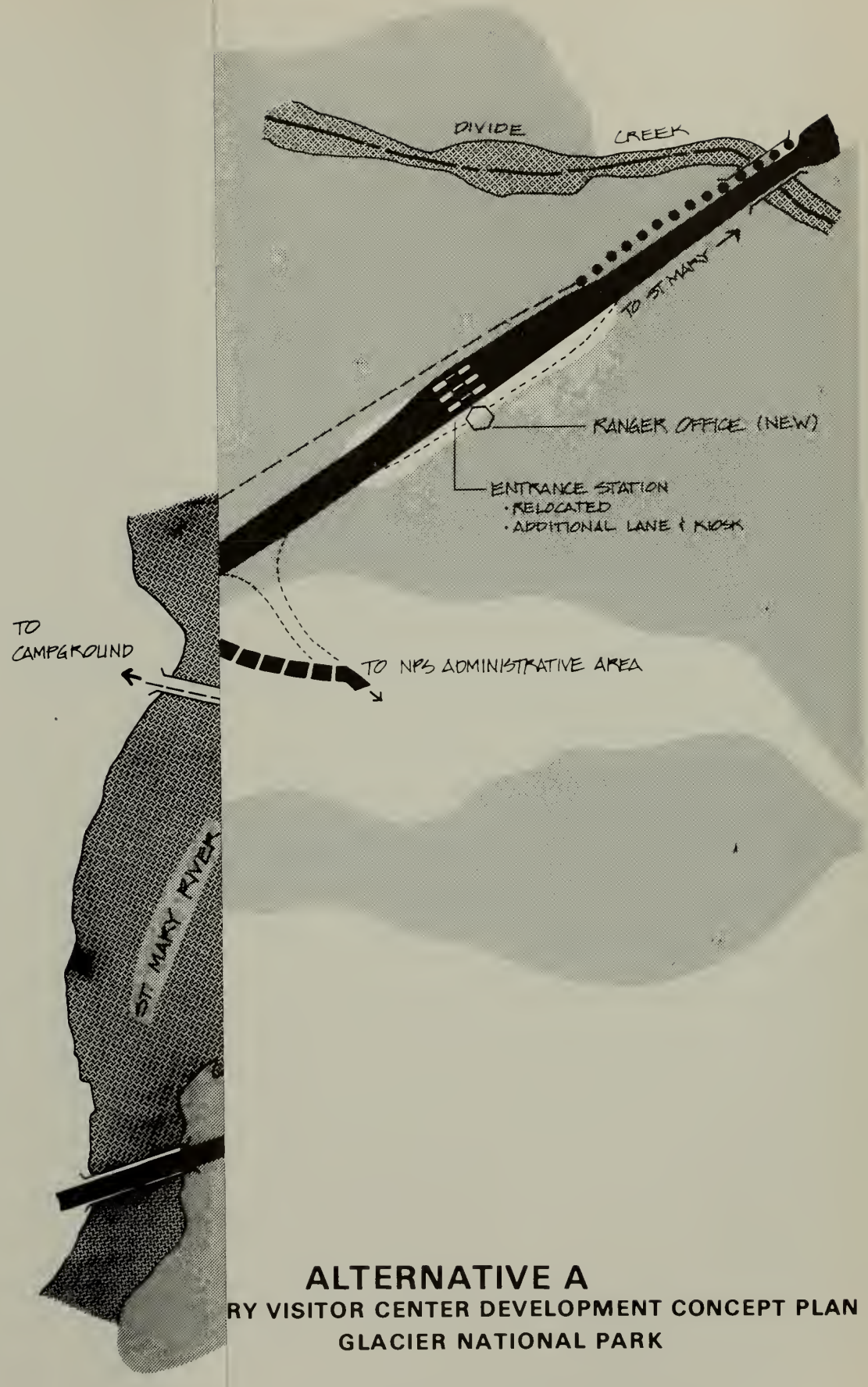
The visitor center and ranger office would both be retained unchanged, and interpretive office and storage space would remain inadequate.

This alternative would have the lowest development costs of the action alternatives (see table 8). Annual costs for operations and maintenance would not change.

ENVIRONMENTAL CONSEQUENCES

Soils

Soils in the St. Mary valley are composed mainly of glacial till interspersed with alluvial deposits. The soils of the valley floor consist mainly of silty loam and sandy loam. The soils are well-drained, and particle size varies from cobbles to very fine particles. The organic soil mantle is thin, and planting must be supported with additional layers of topsoil. Because of these soil conditions and the deep frost penetration, deep structural foundations are necessary for stability. The general effects on soils are discussed in this section for Lake McDonald. Table 9 shows the acreage that would be disturbed under each alternative at the St. Mary visitor center and the maintenance/residential area, combined.



ALTERNATIVE A

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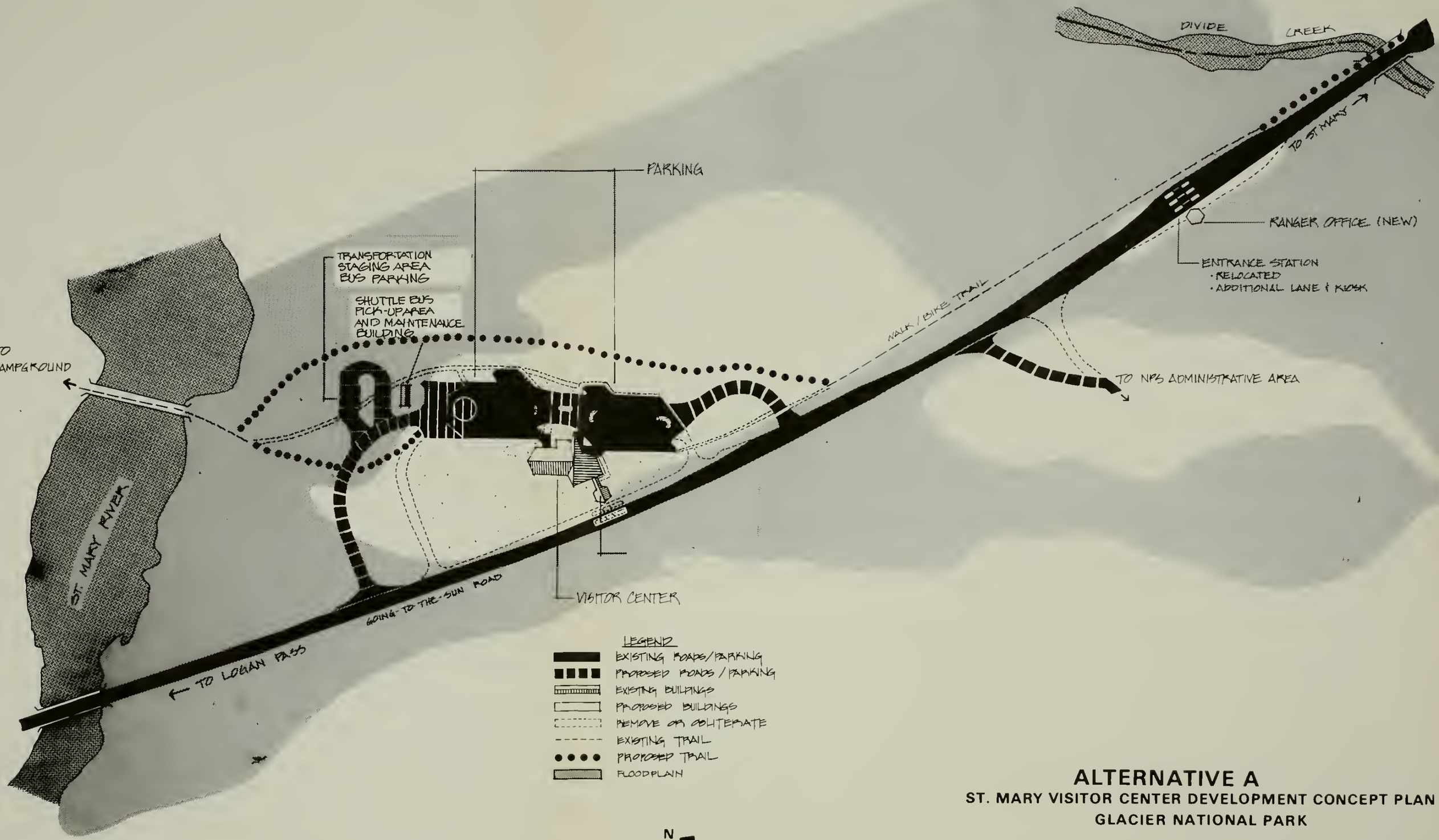

ALTERNATIVE A

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ALTERNATIVE C

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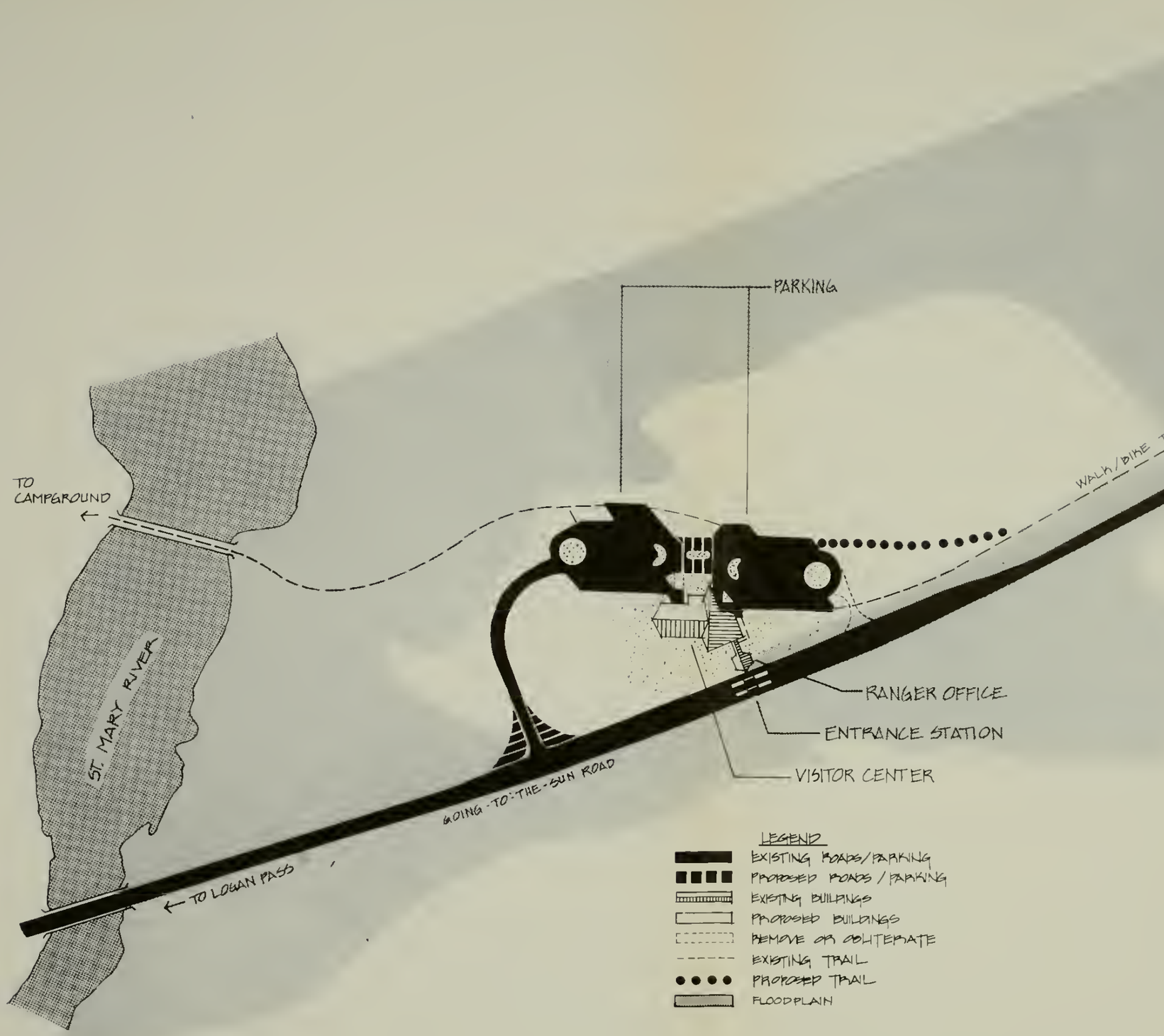

ALTERNATIVE C

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	No-Action Alternative	Preferred Alternative (B)	Alternative A	Alternative C
Information and Interpretation				
visitor center	retain	retain, improve interior storage and office space ($38,000)	retain, convert ranger office to interpreter office ($5,000)	retain
entrance station	retain	retain	relocate and expand to three lanes ($65,000)	retain
new facilities	prepare new map and improve signing ($5,000)	prepare new map and improve signing ($5,000)	prepare new map and improve signing ($5,000)	prepare new map and improve signing ($5,000)
NPS Administration				
ranger office	retain	retain	construct new office near entrance station ($65,000)	retain
Access and Circulation				
visitor center access roads and parking	retain	redesign south access road ($42,000)	redesign south access road ($42,000)	close south access road ($2,000)
		widen north access road ($10,000)	redesign north access road ($30,000)	widen north access road ($10,000)
			connect parking lots	connect parking lots
			expand north parking lot and provide transportation staging area ($137,000)	
road to NPS administrative area	retain	retain	relocate intersection ($31,000), add gate at bridge ($2,000)	retain
foot/bike trail	retain	realign and construct new trails ($87,000)	realign and construct new trail ($53,000)	realign ($20,000)
new facilities	none	construct new road bridge with foot trail ($175,000)	extend trail across existing road bridge	construct new road bridge with foot trail ($175,000)
Camping				
St. Mary campground	Provide four handicapped accessible sites ($2,000)	Provide four handicapped accessible sites ($2,000)	Provide four handicapped accessible sites ($2,000)	Provide four handicapped accessible sites ($2,000)
Development Costs				
NPS	$ 7,000	$ 359,000	$ 437,000	$ 214,000
concessioner	0	0	0	0
total net costs	$ 7,000	$ 359,000	$ 437,000	$ 214,000
total gross costs	$ 10,200	$ 524,000	$ 638,000	$ 312,000

*Gross costs include a 46 percent increase in funding to cover project planning, construction supervision and contingency costs.

Vegetation

The visitor center complex lies in a natural meadow opening of several hundred acres referred to as St. Mary Flats. The vegetation consists of bunchgrass prairie species, such as rough fescue, Idaho fescue, kinnikinnick, antennaria, pasque flower, and shooting star. Spotted knapweed has become established along roadsides and ditches in the area. The general effects on vegetation are discussed in this section for Lake McDonald. Table 9 shows the acreage that would be disturbed under each alternative at the St. Mary visitor center and the maintenance/residential area, combined.

Table 9: Disturbed Acreage, St. Mary Visitor Center

	No-Action	Preferred (B)	A	C
Existing Use				
Moderate	0.2	0.2	0.2	0.2
Severe	4.2	4.2	4.2	4.2
Total	4.4	4.4	4.4	4.4
Total Use with Plan				
Moderate	0.2	0.7	0.5	0.2
Severe	4.2	5.0	6.2	4.3
Total	4.4	5.7	6.7	4.5
Net Change with Plan				
Moderate	0	+0.5	+0.3	0
Severe	0	+0.8	+2.0	+0.1
Total	0	+1.3	+2.3	+0.1

Wildlife

The St. Mary Flats are important wildlife range during the late fall and winter, when Going-to-the-Sun Road is usually closed to visitor traffic. Up to 300 head of elk overwinter on the open wind-blown meadows between St. Mary and Rising Sun. Some whitetail deer use the area on a year-round basis, as do Columbian ground squirrels, badgers, and coyotes. None of the alternatives proposed for the St. Mary visitor center would have long-term impacts on wildlife. In the preferred alternative and alternative A the badgers with their dens near the access road would probably move to the adjacent meadows. There would be short-term construction impacts as described in this section for Lake McDonald.

Threatened and Endangered Species

Threatened and endangered species that may use the general St. Mary area are the grizzly bear, bald eagle, and possibly the peregrine falcon and gray wolf. Use of the area is temporary and amounts to passing through. Grizzly bears are periodically sighted 1 mile away on Red Eagle Trail, and a fatal mauling by a grizzly occurred ½ mile away on Divide Creek in 1980. Several bald eagles are seen in the winter fishing in the open water at the outlet of St. Mary Lake, about ½ mile away. These eagles presumably roost in the vicinity during the winter season, when few visitors are present. There are no known bald eagle or peregrine falcon nests in the area. Peregrine falcons may fly through and have been sighted nearby outside the park. A gray wolf was sighted in the St. Mary area in 1984, and other gray wolves have been sighted several miles from the area, but these sightings are probably of transient individuals, since there is no known breeding population nearby. None of the alternatives would have any adverse effects on these threatened and endangered species.

Floodplains

Affected Environment. A portion of the Going-to-the-Sun Road near the St. Mary visitor center is in the 100-year floodplain of Divide Creek and the St. Mary River. Access and internal circulation roads are excepted from compliance with EO 11988 ("Floodplain Management") under NPS guidelines (Federal Register 45:35916, revised by 47:36718).

Several methods of minimizing flood damage were considered for the St. Mary developed area. These included an upstream diversion structure, debris clearing, levees, and floodproofing. Further analysis of these methods and their costs can be found in the "Floodplain Analysis for Lake McDonald and St. Mary Development Concept Plan Areas, Glacier National Park, Montana" (NPS 1983b).

Impacts. The only impact caused by flooding at the St. Mary visitor center area would be realized under alternative A. This alternative would provide bus parking in the 100-year floodplain, but the potential for damage and loss of life would be reduced by the closure of this area when the flood risk was high.

Wetlands

No wetlands would be affected by any development proposed for the St. Mary visitor center.

Air Quality

The air quality and impacts expected for the east side of the park are described in this section for Sun Point.

Visual Quality

The St. Mary visitor center is highly visible upon first entering the park. The scenic view of St. Mary Flats and St. Mary Lake from the visitor center is partially obstructed by the entrance station and attendant traffic. Relocation of the entrance station (alternative A) would provide an unobstructed view from the visitor center. None of the other alternative actions would appreciably affect visual quality.

Cultural Resources

Affected Environment. The Going-to-the-Sun Road, which passes through St. Mary, is on the National Register of Historic Places. The old St. Mary Village site and old irrigation ditches predating the park are situated in the meadow area west of the Going-to-the-Sun Road between the St. Mary visitor center and the residential/maintenance area. Any additional unsurveyed areas where land modification is planned would be surveyed prior to disturbance.

Impacts. Demolition and replacement of the Going-to-the-Sun Road bridge over Divide Creek (preferred alternative and alternative C) would result in an irretrievable loss of cultural resources. This adverse effect would be mitigated by documentation and by retaining the scale and texture (particularly the rockwork) in the new bridge structure. Realignment of a portion of the residential/ maintenance area access road in alternative A might result in disturbances to archeological resources at the old St. Mary Village and irrigation ditches sites. An archeological survey would be conducted in advance of any construction activities, and any significant cultural resources would be removed and/or documented.

Visitor Use

Affected Environment. A general discussion of visitor use can be found in this section for Lake McDonald, and information more specific to the east side of the park can be found in this section for Sun Point.

Impacts of No-Action Alternative. Under the no-action alternative, circulation problems at the St. Mary visitor center would continue. Because the south access road to the parking lot is close to the entrance station, traffic frequently backs up and blocks the access road, making it difficult for visitors to exit from the parking lot. The existing turning radius is very sharp, making it difficult to enter and exit from the access road.

The provision of a map and the improvement of signing in the entire valley would give visitors more orientation and information on which to base their decisions about what to see in the area. The improvement of signing would reduce visitor confusion and alleviate circulation problems.

The provision of several handicapped accessible campsites would facilitate use of the St. Mary campground by disabled visitors.

Impacts of Preferred Alternative. The realignment of the south access road to the St. Mary visitor center parking lot would reduce confusion and remove the conflict caused by vehicle-stacking at the entrance station, reducing visitor frustration. The widening of the north parking lot access road would make it easier for visitors to enter and exit from this road. The provision of a separate foot/bike trail and a new Divide Creek bridge with a foot trail would allow visitors to travel to the visitor center and the campground from the town of St. Mary without walking along the road shoulders and narrow bridge, increasing visitor safety. Flood hazards would also be reduced slightly by construction of a new bridge that permits greater flood flow. The construction of a self-guiding handicapped accessible trail along the St. Mary River would form a loop trail system with two other existing trails. It would provide an enjoyable interpretive walk for campground and visitor center users. The provision of several handicapped accessible campsites would facilitate use of the St. Mary campground by disabled visitors.

The provision of a map and improvement of signing would help visitors as discussed under the no-action alternative.

Impacts of Alternative A. The relocation of the entrance lanes farther south and connection of the two parking lots would reduce the congestion and confusion and facilitate traffic flow at the visitor center. The amount of time spent in line by visitors would be shortened by adding a third entrance lane and kiosk. The provision of a transportation staging area would increase congestion at the St. Mary visitor center, possibly increasing visitor frustration.

The construction of an accessible trail along the lakeshore west of the historic St. Mary ranger station would provide a scenic hiking experience for visitors.

Other impacts would be the same as described for the preferred alternative.

Impacts of Alternative B. See preferred alternative.

Impacts of Alternative C. The removal of the south parking lot access road would restrict all access to the parking lot to the existing north access road. This would reduce the confusion that occurs prior to the entrance station, but many visitors would probably forego entering the visitor center and proceed directly into the park. These visitors would be deprived the orientation and interpretation available in the visitor center. The widening of the north entrance would improve safety; however, the increase in traffic on this road could cause some congestion problems.

Other impacts would be the same as described for the preferred alternative.

Concessioners

There are no concession operations at St. Mary, and the proposals would not affect the operations at Rising Sun.

Adjacent Communities

The socioeconomic characteristics of the surrounding region are described in this section for Sun Point. There would be little social or economic impact on the local communities, regardless of which alternative was implemented. The local expenditure of some of the construction funds (up to $638,000 in alternative A) would have a minor short-term effect on some local businesses. The cumulative effects of construction at all of the developed areas on the east side of the park would temporarily stimulate a modest increase in economic activity in adjacent communities.

No other components of the environment would be appreciably affected by any of the alternatives.

ST. MARY MAINTENANCE/RESIDENTIAL AREA

EXISTING CONDITIONS AND PROBLEMS

The Hudson Bay District ranger office and maintenance/residential area are situated southeast of the visitor center by way of a private access road. Maintenance functions include plumbing, carpentry, painting, electrical, and vehicle repair. Supplies and equipment from St. Mary are used at all developments on the east side of the park. Housing for approximately 60 NPS employees is provided by a 28-room dormitory, 14 apartment units, six single-family homes, and about 10 trailer sites.

The area is served by well water and a new wastewater treatment facility that incorporates percolation ponds for nondischarge disposal. Electrical power is provided by a combination of overhead and underground lines. The park maintains all lines past the electrical meters in the developed area.

The following problems are addressed by the DCP. The trailer housing in the NPS employee residential area is inadequate. Also, administrative and maintenance needs and operations have outgrown many of the existing facilities, causing crowded office space, vehicle storage, maintenance shops, and warehouse space. The water tank is undersized to provide an adequate fire protection reservoir and flow pressure. The maintenance supply yard and unused incinerator are visual intrusions along US 89.

Until recently it was suspected that much of the NPS maintenance/residential area was inside the 100-year floodplain of Divide Creek and that many of the facilities would have to be relocated. Further analysis has shown that only the horse stable area is inside the 100-year floodplain. However, floodwaters reached the residential area in the 1964 and 1975 floods (both considered greater than 100-year floods), and they damaged buildings and subjected personnel and their families to hazardous conditions. A floodwall has been erected to help protect the complex from similar floods in the future. A study is proposed to analyze the stability and protection the floodwall provides and to determine if the floodwall could potentially have an adverse effect on the adjacent town of St. Mary by channeling additional floodwater into that area.

ALTERNATIVES

No-Action Alternative

There would be no change in existing conditions.

Preferred Alternative

Alternative A was selected as the preferred alternative. Facilities would be improved and expanded at the present site to alleviate crowded, and in some cases substandard, working and living conditions.

The existing trailer housing would be replaced with two 4-unit apartments, two 8-unit apartments, and four single residences. The dormitory would be expanded to 40 rooms by adding wings to each end. The district ranger office would be roughly doubled in size. A new maintenance shop, warehouse, heated ambulance storage and fire station, and vehicle storage building would fill gaps between existing buildings along the road and parking area. This would free some existing structures for additional vehicle storage space. The water tank would be enlarged to provide the necessary reservoir and flow pressure for adequate fire protection, and the sewage treatment plant and maintenance equipment area would be screened with vegetation. The abandoned incinerator would be dismantled and removed. A new corral and associated structures would be built outside the 100-year floodplain if the existing ones were destroyed or severely damaged. The floodwall would be retained unless it was determined that it would be inadequate to protect the maintenance/residential complex or that floodwaters would be sufficiently directed by the floodwall to increase the potential for flooding in the town of St. Mary. If this was the case, the floodwall would be removed.

This alternative would have the lowest development costs of the action alternatives (see table 10). Annual costs for operations and maintenance would not change.

Alternative A

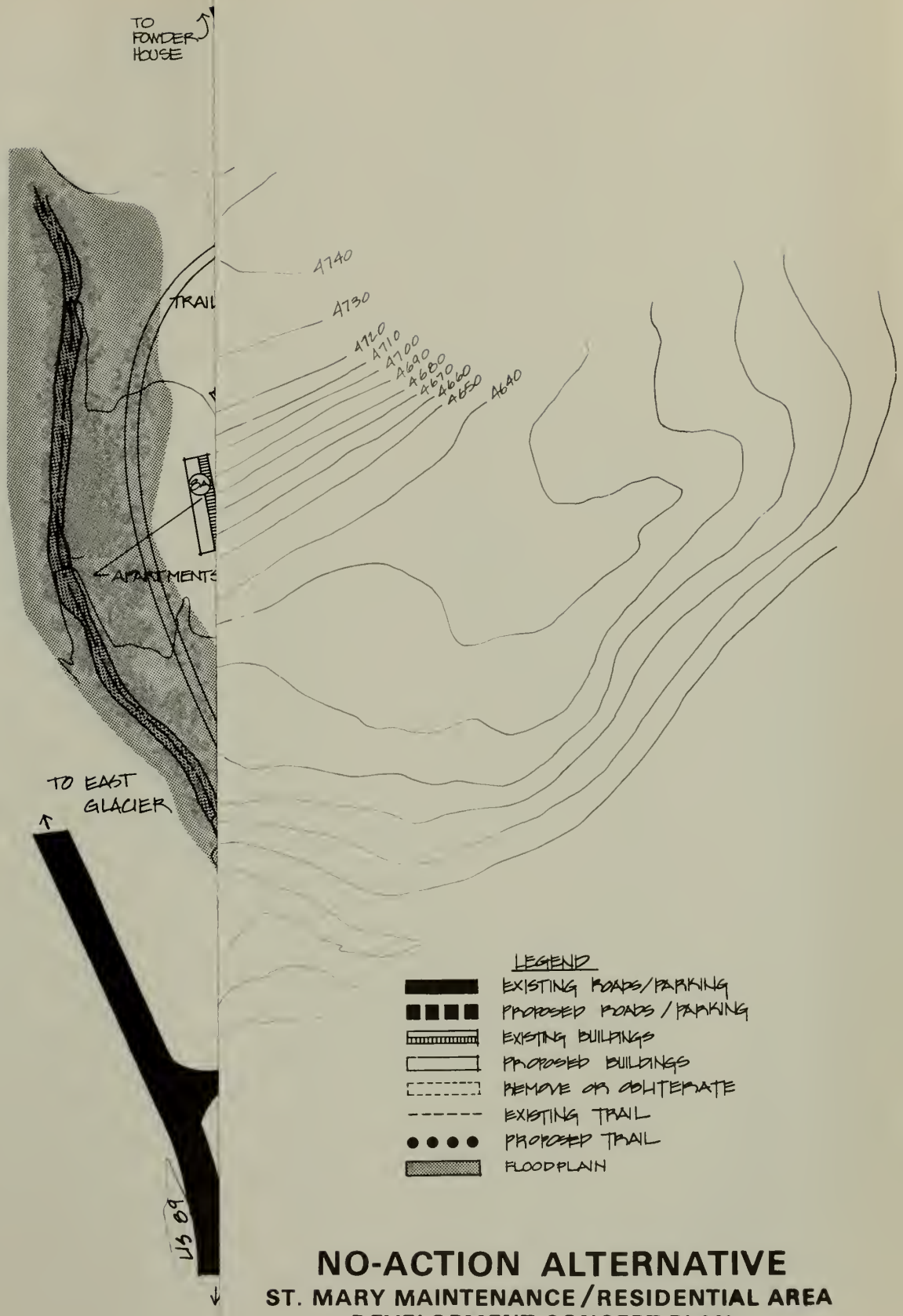
See preferred alternative.

Alternative B

The National Park Service would abandon its St. Mary maintenance/residential area and operate from new maintenance and housing facilities outside the park boundary on leased Blackfeet Indian Reservation property or purchased private property. Either of these options would require congressional approval. This would eliminate any concern over future flood damage and allow the restoration of parkland to natural conditions.

The Blackfeet Tribe, in its 1972 Blackfeet Comprehensive Plan, expressed an interest in developing services and facilities to support NPS operations on tribal lands. If mutually beneficial terms could be agreed to, the National Park Service could lease needed additional maintenance and residential facilities developed by the Blackfeet in the town of St. Mary. NPS specifications would provide for an improvement in working and living conditions over the existing park facilities.

Alternatively, the National Park Service could seek to acquire private land for the construction of additional maintenance and residential facilities outside the park. There are three tracts of private land within the reservation near St. Mary, all purchased in the 1930s and 1940s, prior to the congressional legislation prohibiting such sales of reservation land.



NO-ACTION ALTERNATIVE

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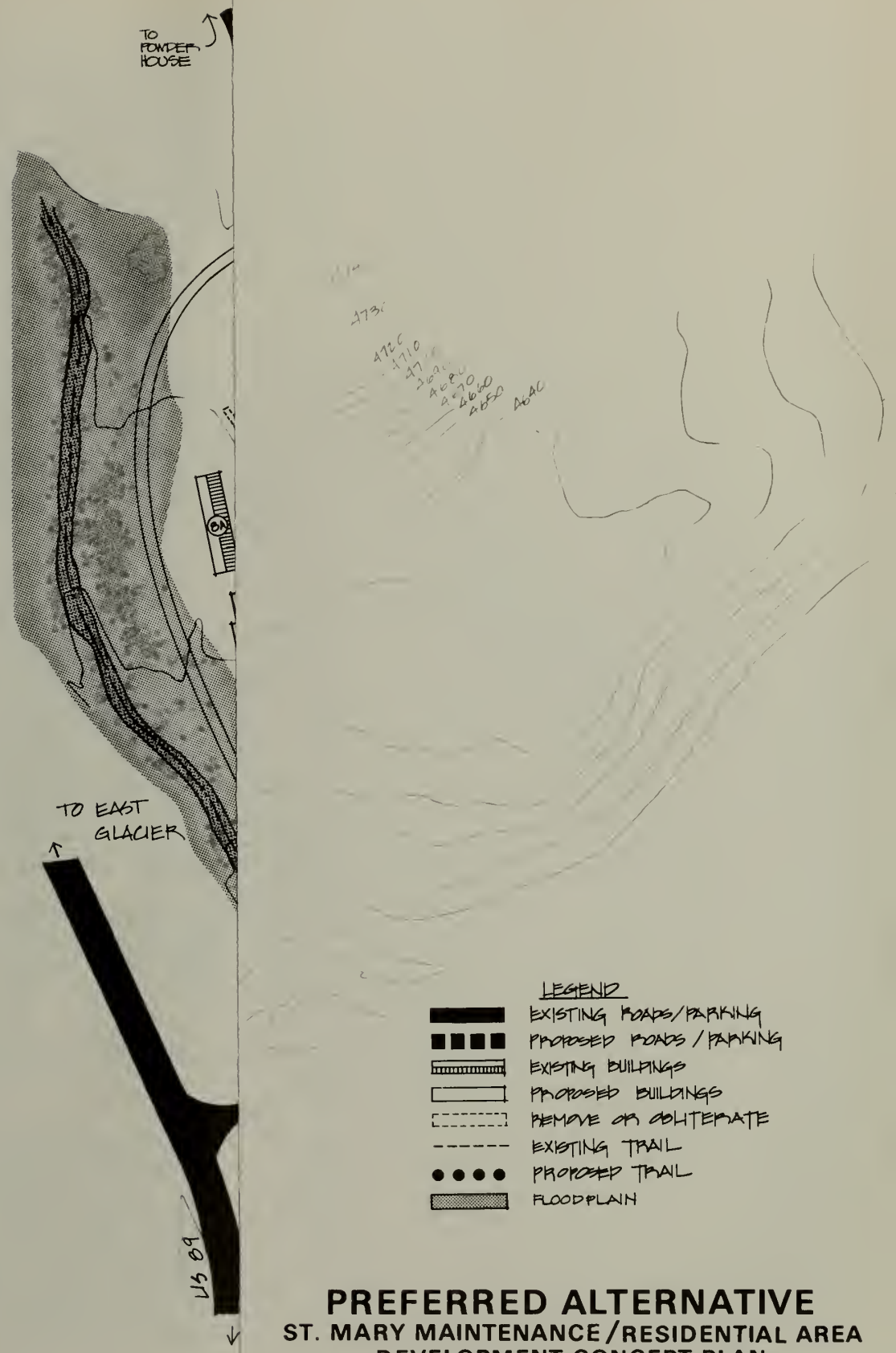

PREFERRED ALTERNATIVE

ST. MARY MAINTENANCE/RESIDENTIAL AREA DEVELOPMENT CONCEPT PLAN

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LEGEND

- EXISTING ROADS/PARKING
- PROPOSED ROADS / PARKING
- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- REMOVE OR OBLITERATE
- EXISTING TRAIL
- PROPOSED TRAIL
- FLOODPLAIN

N

100 0 100 200 300 FEET

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If operations were moved outside the park, the existing NPS housing and maintenance buildings and the floodwall would all be removed, and the park site would be returned to natural conditions. The NPS water tank and sewage treatment plant, which serve the St. Mary visitor center and Rising Sun as well as the maintenance/residential area, would be retained. New NPS facilities outside the park would require on-site water, but they could be tied into the existing sewage treatment plant. Depending on the location, right-of-way clearances for sewerlines might have to be obtained from the Blackfeet Tribe. This option was rejected because the flood threat is less than originally thought and would not warrant the expense of abandoning usable facilities.

This alternative would have relatively high development costs. Actual costs to the National Park Service would depend upon a number of variables, but in table 10 they are estimated as the same as costs of relocating and expanding facilities inside the park. Utility systems are not included in the cost estimate. Annual costs for operations and maintenance would not change unless they were affected by a lease arrangement.

Alternative C

The entire NPS maintenance/residential area would be relocated inside the park to the bench west of Divide Creek. This would eliminate all concern about future flooding. Facilities would be improved and expanded at the new site, as described in the preferred alternative, to alleviate crowded, and in some cases substandard, working and living conditions. The present development site would be returned to natural conditions, and the floodwall would be removed. This option was rejected because the threat of flooding is less than originally thought and would not warrant the expense of relocating the structures.

This alternative, like alternative B, would have relatively high development costs (see table 10). Annual costs for operations and maintenance would not change.

ENVIRONMENTAL CONSEQUENCES

Soils

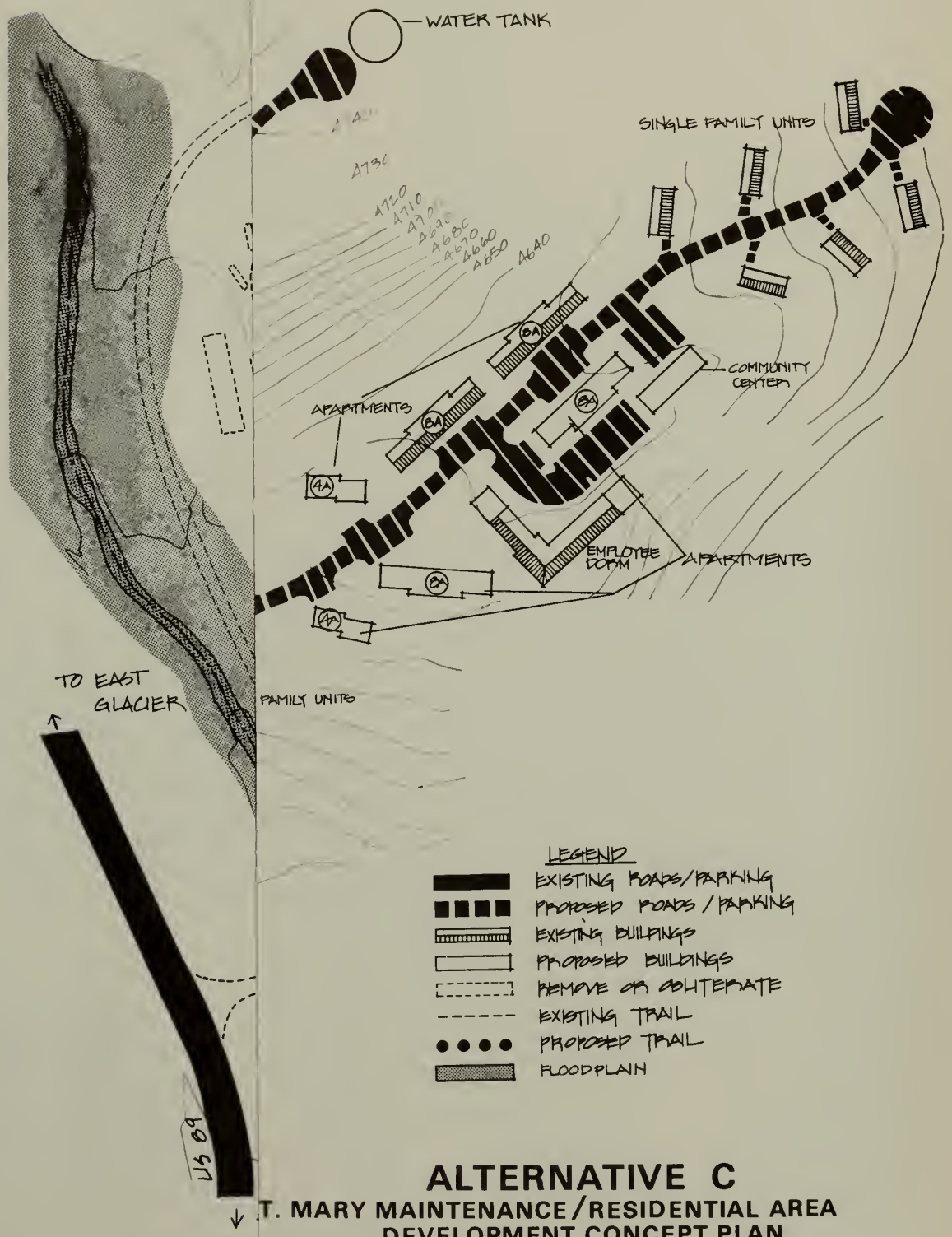
At the St. Mary maintenance/residential area, soils are alluvial floodplain debris, ranging from boulders to fine particles. These soils are well drained, although prone to periodic flooding. The soils on the bench, where a new maintenance/residential area might be located, are well-drained till, with a wide variety of particle size, including cobbles and boulders. The general effects on soils are discussed in this section for Lake McDonald. The acreage that would be disturbed by each alternative is included in the totals listed in table 11.

Table 10: Summary Comparison of Alternatives, St. Mary Maintenance/Residential Area

	No-Action Alternative	Preferred Alternative (A)	Alternative B	Alternative C
NPS Administrative				
district office	retain	retain and expand ($80,000)	relocate and expand ($105,000)	relocate and expand ($105,000)
NPS Residential				
employee housing	retain	remove trailers, retain apartments, residences, and dorm	replace all housing (except trailers) and all maintenance facilities ($2,100,000)	relocate all housing (except trailers) and all maintenance facilities ($2,100,000)
new facilities	none	construct apartments, residences, and dorm units ($1,660,000)	construct apartments, residences, and dorm units ($1,660,000)	construct apartments, residences and dorm units ($1,660,000)
NPS Maintenance				
vehicle storage, maintenance shops and warehouses	retain	retain, change some functions	relocate (see above)	relocate (see above)
floodwall	retain	remove if recommended by study ($36,000)	remove ($36,000)	remove ($36,000)
water tank	enlarge ($300,000)	enlarge ($300,000)	retain	enlarge ($300,000)
sewage treatement plant	retain	retain, screen ($10,000)	retain, screen ($10,000)	retain, screen ($10,000)
equiment storage area	retain	retain, screen ($10,000)	relocate ($10,000)	relocate ($10,000)
corral	retain but relocate outside the 100-year floodplain if flooded	retain but relocate outside the 100-year floodplain if flooded	relocate ($10,000)	relocate ($10,000)
incinerator	retain	remove ($10,000)	remove ($10,000)	remove ($10,000)
new facilities	none	construct vehicle storage, heated fire station and ambulance storage, maintenance shop, and warehouse ($1,019,000)	lease or construct vehicle storage, heated fire station and ambulance storage, maintenance shop, and warehouse ($1,019,000)	construct vehicle storage, heated fire station and ambulance storage, maintenance shop, and warehouse ($1,019,000)
Development Costs				
NPS	$ 300,000	$3,125,000	$4,960,000	$5,260,000
concessioner	0	0	0	0
total net costs	$ 300,000	$3,125,000	$4,960,000	$5,260,000
total gross costs*	$ 438,000	$4,562,000	$7,242,000**	$7,680,000

* Gross costs include a 46 percent increase in funding to cover project planning, construction supervision, and contingency costs. They do not include costs of building furnishings or of utility systems.

**Cost does not include leasing or purchasing of land.



ALTERNATIVE C

T. MARY MAINTENANCE/RESIDENTIAL AREA DEVELOPMENT CONCEPT PLAN

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ALTERNATIVE C

ST. MARY MAINTENANCE/RESIDENTIAL AREA DEVELOPMENT CONCEPT PLAN

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Table 11: Disturbed Acreage, St. Mary Maintenance/Residential Area

	No-Action	Preferred (A)	B	C
Existing Use				
Moderate	0.7	0.7	0.7	0.7
Severe	5.2	5.2	5.2	5.2
Total	5.9	5.9	5.9	5.9
Total Use with Plan				
Moderate	0.7	0.9	0	1.0
Severe	5.2	5.9	0	9.0
Total	5.9	6.8	0	10.0
Net Change with Plan				
Moderate	0	+0.2	-0.7	+0.3
Severe	0	+0.7	-5.2	+3.8
Total	0	+0.9	-5.9	+4.1

Vegetation

Vegetation at the St. Mary maintenance/residential area is Douglas-fir forest with some lodgepole and limber pine. The clearings for the buildings were probably man-made, although the site is a forest/meadow edge habitat. The groundcover is rough fescue bunchgrass and kinnikinnick, with shrubs of wild rose and serviceberry. Vegetation on the bench area is a mixture of small fescue meadows (containing some wildrose, cinquefoil, and serviceberry) and forest (Douglas-fir, lodgepole pine, aspen, and cottonwood). General effects on vegetation are discussed in this section for Lake McDonald. The acreage that would be disturbed by each alternative is included in the totals listed in table 11.

Wildlife

Affected Environment. Elk graze the open St. Mary Flats up to the housing area in the winter. Columbian ground squirrels, badgers, and coyotes use the area throughout the year. Mountain lions are periodically sighted during the winter in the adjacent woods, within one mile of the area. Apparently they prey on the elk and use the forest for cover. Wolverines and lynx are occasionally sighted nearby. The major wildlife use of the bench area is by elk.

Impacts. No appreciable impact on wildlife would be associated with the expansion of facilities in the existing developed area (the preferred alternative).

Relocating the maintenance/residential area to the adjacent benchland (alternative C) would have little net impact on wildlife. Elk would no longer utilize the bench area because of the new development, but the forest edge habitat at the existing developed area would become available for their use. The relocation of the developed area to a site outside the park boundaries (alternative B) would have a beneficial impact on wildlife by restoring the forest/meadow edge habitat for wildlife use.

Threatened and Endangered Species

Threatened and endangered species that may use the general St. Mary area are the grizzly bear, bald eagle, and possibly the peregrine falcon and gray wolf. Their use of the area is described in this section for the St. Mary visitor center. None of the alternatives would have any adverse effects on these threatened and endangered species. The relocation of the maintenance/residential area outside of the park boundary would return the existing developed area to use as wildlife habitat relatively free from human disturbance.

Floodplains

Affected Environment. The blacksmith shop and tack building are in the 100-year floodplain of Divide Creek. Although these structures are historic, they are not significant enough to warrant protection from flood loss. Most of the structures and facilities in the area are within the 500-year floodplain, including oil storage. The U.S. Army Corps of Engineers 100-year floodplain delineation, shown on the alternative development maps, assumes a subcritical flood flow in Divide Creek and debris blockages at both bridges. The nature of the floodplain makes these flood boundaries uncertain. In future floods debris might temporarily block the channel, changing the cross section and causing a surge in the flow. Water escaping the channel will flow overland at elevations independent of the channel. The "Floodplain Analysis for Lake McDonald and St. Mary Development Concept Plan Areas at Glacier National Park, Montana" (NPS 1983b) discussed the probability of movement of the Divide Creek channel and concluded that the channel will remain in its present general location.

The flood levels at St. Mary for the 1964 and 1975 floods were estimated to be about the same by two park personnel who were on site during both floods. (The 1964 flood was greater in terms of total damage and river flows in the entire region; however, because rainfall intensities varied among drainages, the damages in the NPS maintenance/residential area might well have been the same.) Both floods resulted in overland flows of about 3 to 4 feet of water through the developed area. The major volume of the floodwater passed through the main channel, bypassing the buildings. Some of the water escaped the channel and spread out over the entire alluvial fan. The water velocity of this overland flow was not high enough to cause structural damage to most of the buildings, and only one building was destroyed. However, trailers would be destroyed in a similar situation if they were not removed prior to a flood. Several basements filled with silt, and crawlspaces under buildings were filled in. A rough estimate of cleanup cost was approximately $100,000.

Several methods of minimizing flood damage have been considered for the St. Mary developed area. These include an upstream diversion structure, debris clearing, levees, and floodproofing. A discussion of these methods and their costs can be found in the floodplain analysis report (NPS 1983b).

Impacts. Because the boundaries of the floodplain were not known at the outset of planning, several of the alternatives proposed removal of all structures in the maintenance/residential area (alternatives B and C). These alternatives would provide the most protection of structures from flooding. It is possible that damage levels sustained in the 1964 and 1975 floods might again be realized in this area under the preferred or no-action alternatives, but the possibility would be remote according to the Corps of Engineers floodplain delineation.

Wetlands

No wetlands would be affected by any development proposed for the St. Mary maintenance/residential area.

Air Quality

The air quality and impacts expected for the east side of the park are described in the section for Sun Point.

Visual Quality

The NPS maintenance/residential area can be seen from US 89 as it approaches St. Mary from the south. Relocation of the maintenance and residential buildings (alternatives B and C) would result in a natural appearance from US 89. Removal of the incinerator and screening of the equipment storage yard in the preferred alternative would improve the view of the area. It is unlikely that the site outside the park (alternative B) would be visible from the visitor use areas.

Cultural Resources

Affected Environment. The following structures at the St. Mary maintenance/residential area are included in the List of Classified Structures and are potentially eligible for the National Register: district office (1925), dormitory building (1941), paint shop (1940s), plumbing and carpenter shop (1937), district fire cache (1937), district ranger residence (1931), district cap house (1933), powder house and garage (1933), vehicle shop (1952), two equipment sheds (1936), gas and oil building (1939), wood shed (1934), and power house (1949). The incinerator and equipment storage area are considered to be intrusions on the historic scene. No archeological resources have been formally identified. Any unsurveyed areas where land modification is planned would be surveyed prior to disturbance.

Impacts of No-Action Alternative. There would be no impact on historic resources.

Impacts of Preferred Alternative (A). The potential impacts of expanding existing structures and building new structures would be avoided by strict adherence to NPS regulations (see "General Compliance Considerations" in the cultural resource discussion for Lake McDonald).

Dismantling the incinerator and screening the equipment storage area would enhance the historic setting.

Impacts of Alternative B. Demolition of the NPS housing and maintenance facilities would result in the irretrievable loss of cultural resources. This adverse impact would be partially mitigated by documentation.

Impacts of Alternative C. Relocating the NPS housing and maintenance facilities would destroy the site integrity of numerous historic structures and destroy the site planning aspects of the historic ensemble. This adverse effect would be partially mitigated by documentation.

The potential impacts of expanding existing structures and building new structures would be avoided as described for the preferred alternative.

Visitor Use

Because visitors rarely enter the maintenance/residential area at St. Mary, actions proposed for that area would have no effect on visitor use.

Concessioners

There are no concession operations at St. Mary, and the proposals would not affect the operations at Rising Sun.

Adjacent Communities

Affected Environment. The socioeconomic characteristics of the surrounding region are described in this section for Sun Point.

Impacts. There would be little to moderate social or economic impact on local communities under any of the alternatives except alternative B. In all alternatives, the local expenditure of some of the construction funds (up to $7.7 million in alternative C) would have a moderate short-term effect on some local businesses. The cumulative effects of construction at all of the developed areas on the east side of the park would temporarily stimulate a substantial increase in economic activity in adjacent communities.

Alternative B would potentially have greater impacts on the adjacent community of St. Mary. If the National Park Service leased facilities from the Blackfeet Indian Tribe, this would have a long-term beneficial effect on the economy of the town. If the National Park Service purchased land

and constructed facilities with federally appropriated funds, the effects would be similar to the affects of development inside the park.

No other components of the environment would be appreciably affected by any of the alternatives.

Table 12: Impact Analysis Summary, Sun Point/Rising Sun/St. Mary

	No-Action	Preferred	A	B	C
Natural Environment					
Soils	0	-	-	+	-
Vegetation	0	-	-	+	-
Wildlife	0	0*	0*	+	-
Threatened/endangered	0	0	0	0	0
Water resources	0	0	0	0	0
Floodplains	0	0	0	0	0
Air quality	0	0	0	0	0
Visual quality	0	+*	+*	+	+
Cultural Environment					
Archeological resources	U	U	U	U	U
Historic resources	-	-	0	-	-
Visitor Use	0	+	+	-	+
Socioeconomic Environment					
Adjacent communities	0	+	+	+	+
Concessions	-	-	-	-	-

+ Beneficial effect
0 No effect or no net effect
- Adverse effect
U Uncertain

*If the transportation plan proposed a transportation staging area adjacent to the main parking lot at Rising Sun, the overall wildlife impact and visual quality impact would become negative.

MANY GLACIER/SWIFTCURRENT

EXISTING CONDITIONS AND PROBLEMS

Many Glacier is a popular destination for visitors and a major staging area for backcountry use. The historic Many Glacier Hotel, built in 1914 on the shore of Swiftcurrent Lake, is an attraction in and of itself. The hotel contains 221 rooms with a pillow count of 538. The large dining room seats 250 and a smaller snack bar seats 80. A beauty/barber shop, dispensary, cocktail lounge, and curio shops are included in the hotel. A small automobile service station, a horse corral, boat dock, and several small utility buildings are located in the vicinity.

Two historic dormitories near the hotel (Helps and Ray Kinley dorms) provide food and lodging for 168 employees. The fire team and upper management staff live in the hotel. A winterkeeper's quarters and a bunkhouse are situated north of the hotel at Swiftcurrent Falls. The horse concession employees live at Apikuni Flat, and the boat concession employees live ¼ mile south of the hotel in a cabin near the lake.

Across the lake, along Swiftcurrent Creek, additional motel and cabin accommodations are available, and the National Park Service operates a campground. The Swiftcurrent campground has 117 sites designated for hard-sided vehicles only (no tents) in accordance with the bear management plan. Tent campers entering or leaving the backcountry may stay in a small bear exclosure (a bear-proof fenced area). The Swiftcurrent Motor Inn complex includes four 14-room motels and 24 cabins with a total pillow count of about 250. The Swiftcurrent cabins currently provide the only low-cost accommodations in the park. A nearby coffee shop has seating for 107 customers. A general store, curio shop, and lodging registration office are in an adjacent wing of the coffee shop. Concession employees are housed in two cabin circles that are immediately east of the guest cabins.

A historic ranger station serves as administrative headquarters and a center for backcountry permits and visitor information, as well as serving as the ranger residence. The NPS employee residential area contains 15 residences.

A well supplies domestic water, and all wastewater is collected and pumped to the percolation infiltration treatment system located east of the Many Glacier Hotel on Apikuni Flat. Three utility buildings for plumbing supply and equipment storage are located there as well. Electric power in the Many Glacier area is a combination of overhead and underground service. The primary is provided by a private power company (Glacier Electric), and the park maintains the electrical equipment beyond the meters in the developed area.

The major planning problems for this area are as follows. A number of visitors entering the Many Glacier/Swiftcurrent valley fail to obtain orientation and information because the entrance station is poorly located and not always staffed. This results in some visitor confusion when first entering the area, and many visitors travel to the hotel area although this may not be their destination.

There are few opportunities for day use in the vicinity of the hotel. An unattractive service roadway extends along the lakeshore in front of the hotel, reducing its attractiveness for sightseeing and walking. A steep bank from the parking area east of the hotel to the front of the building makes access to the lakeshore difficult for the elderly and handicapped.

Visitors' enjoyment of the historic lakeshore setting is interrupted by a number of visual intrusions, including the utility structures and equipment around the hotel and along the access road near Swiftcurrent Falls (in the vicinity of the winterkeeper's residence).

The hotel parking lot is often congested because of inadequate bus parking spaces. The median curbs make it impossible for buses to park parallel to other vehicles, with the result that they take up many spaces parking randomly. Also, nighttime lighting in the parking lot is inadequate to serve guests' needs.

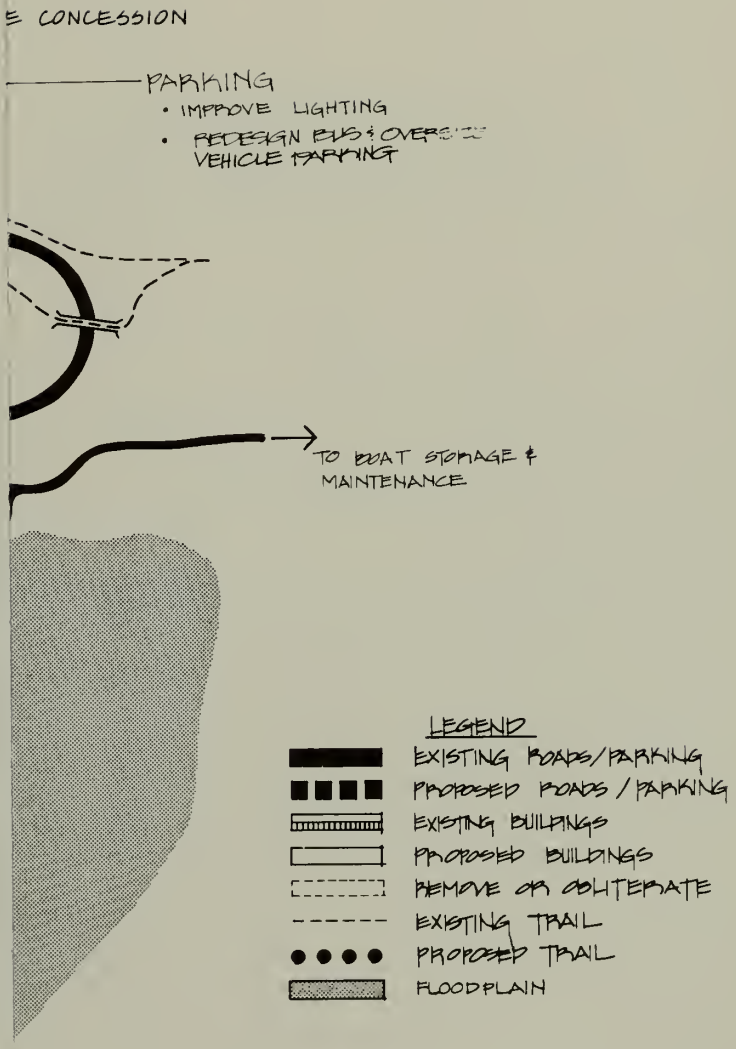
The demand for low-cost overnight accommodations exceeds the capacity of the cabins at Swiftcurrent. Also, the single restroom/shower/laundry facility shared by the cabin occupants is hard to locate, and both the structure and its parking area are undersized for the number of people using them.

There is poor separation between employee and visitor activity areas, with the result that employee activities often intrude on the visitor experience. The Helps dorm is the first thing visitors see when approaching the hotel. Although this dorm and the Ray Kinley dorm have been upgraded, crowding is still a problem. Employee parking is not well delineated, and employee cars are haphazardly parked around the dorms in an unsightly manner. In addition, because the employees have no recreation facilities, they gather in the hotel lobby and the bar, sometimes to the exclusion of some of the guests. The boat concessioner cabin is visible from the lake and from the hiking trail that passes through the cabin's yard.

Some of the NPS housing is substandard, and some employees are living in trailers that were never intended for long-term use. Also, a small maintenance work and storage area is needed to prevent numerous trips to St. Mary to accomplish routine and emergency repairs.

The ranger station is poorly visible and accessible to visitors entering the area, and there is not enough space to adequately serve visitor needs for information and orientation. As a result, a number of visitors are not adequately informed about opportunities and regulations. A particular concern is visitors' misunderstanding of regulations against feeding the bighorn sheep that browse along the main access road. The ranger station also does not provide adequate living space or privacy for the district ranger.

No opportunities for winter use exist in the Many Glacier/Swiftcurrent area. Winterizing the Many Glacier Hotel and operating it during the winter is considered infeasible, but some of the cabins at Swiftcurrent could possibly be opened for winter use.



NO ACTION ALTERNATIVE

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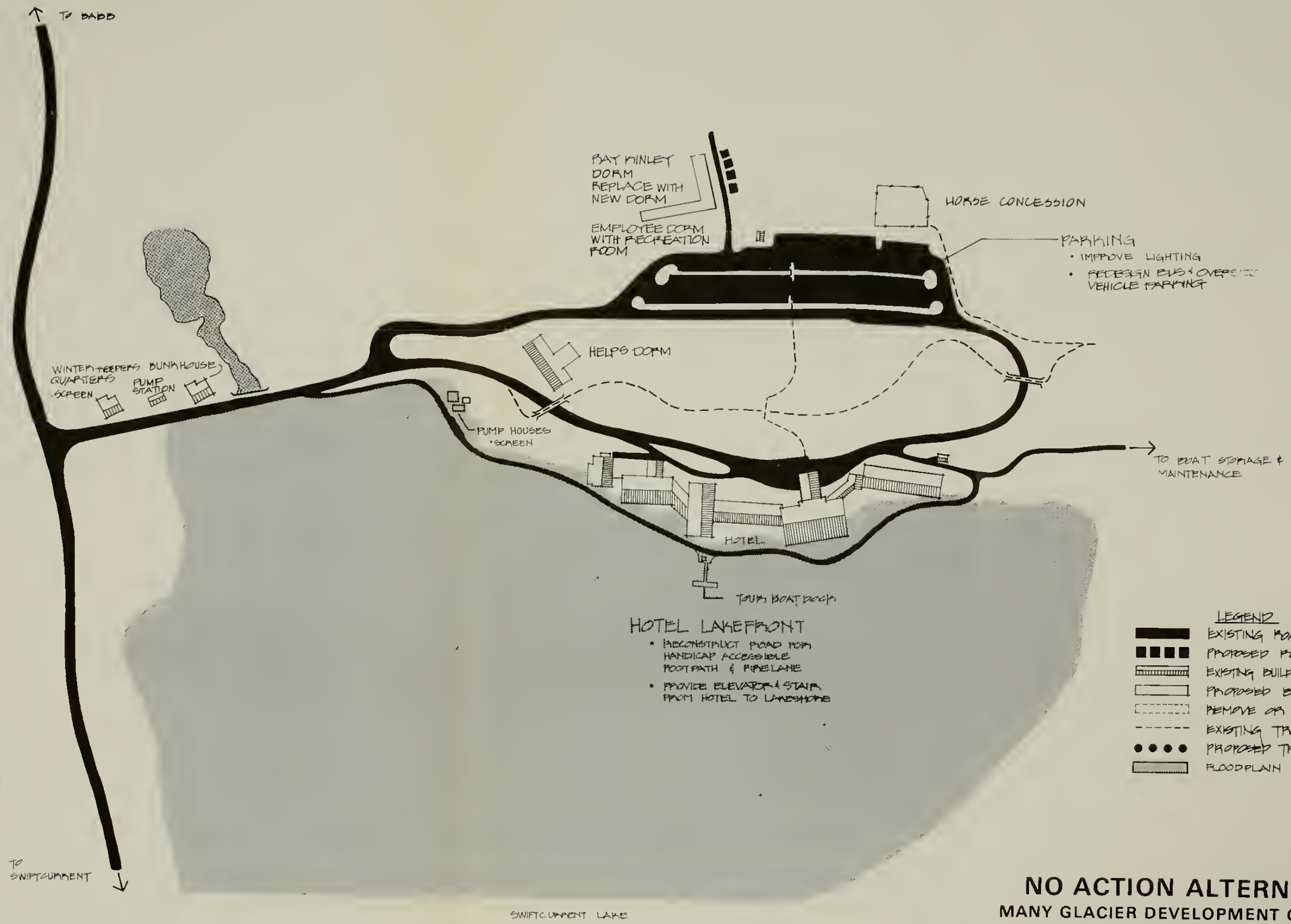

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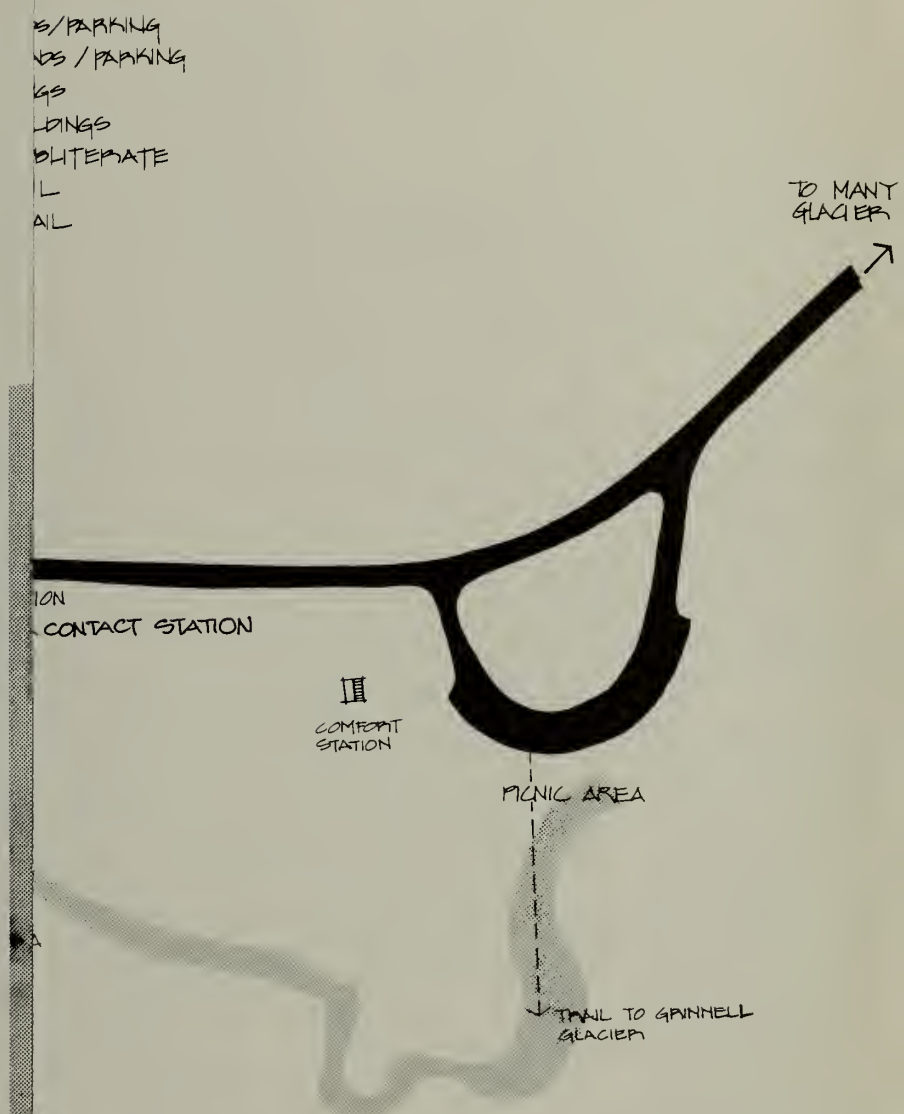

NO ACTION ALTERNATIVE

SWIFTCURRENT DEVELOPMENT CONCEPT PLAN
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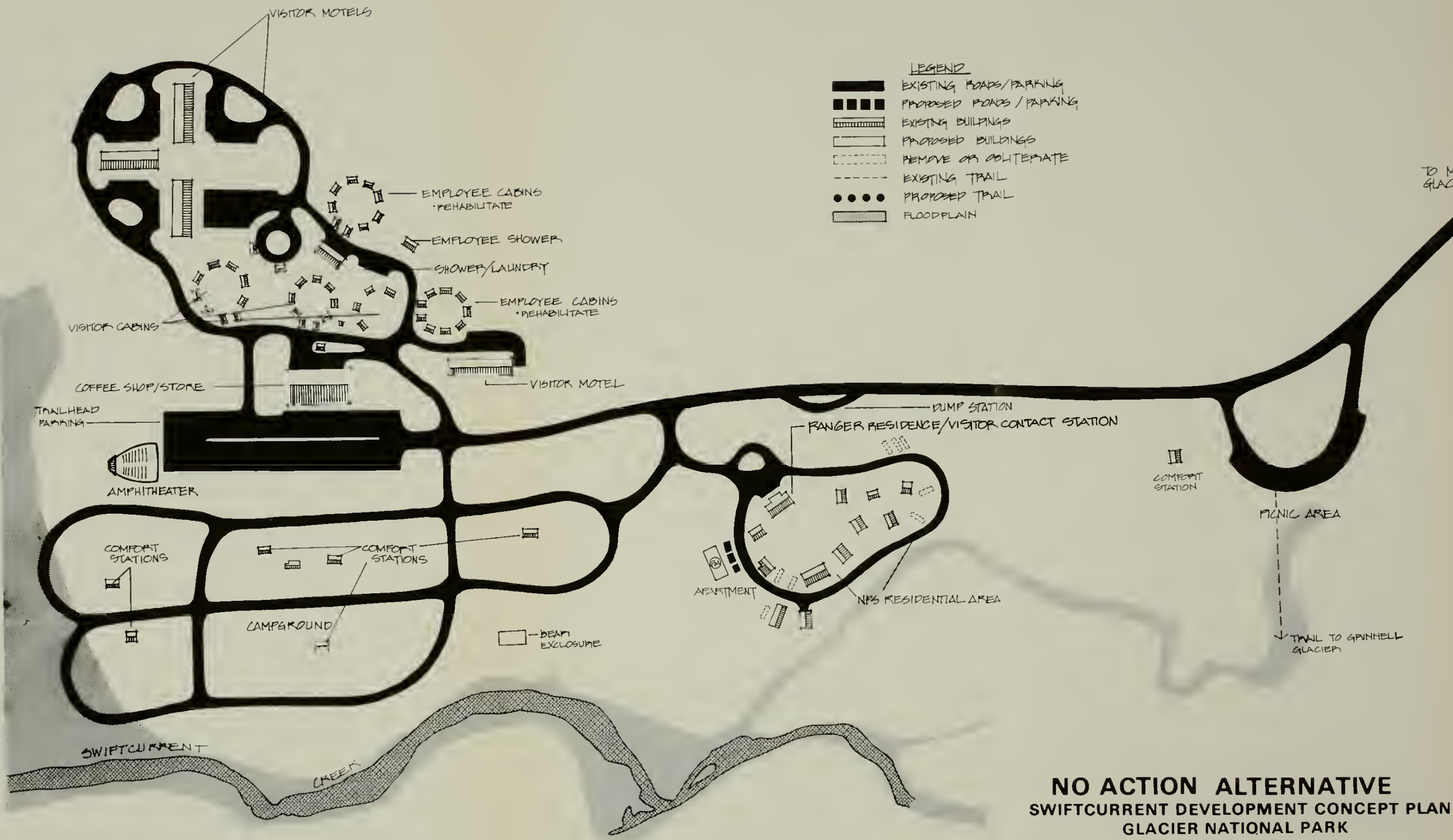

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ALTERNATIVES

No-Action Alternative

New development under this alternative would be limited to that necessary to eliminate substandard and unsafe employee housing and to some minor site improvements. The Ray Kinley dorm would be removed and replaced with a new building that would include a recreation room and accommodations for 85-90 employees. In addition to replacing the rooms in the Ray Kinley dorm, the new dorm would also provide rooms for the employees currently living on the fourth floor of the lodge and for the bus drivers. The new structure would have a low profile and be architecturally compatible with the historic buildings of the district. A new parking area for employees would be provided nearby. The boat concessioner's house along the shore of Swiftcurrent Lake would be acquired and removed to return this portion of the shoreline to a natural state and to enhance the surrounding grizzly bear habitat. A life or term estate would probably be the means of acquisition. This would allow the concessioner continued use of the building for a specified period of time. The deteriorated concession employee cabins at Swiftcurrent would be renovated, and the temporary trailer housing for NPS employees would be replaced with permanent residences.

Several actions that would require only minor site changes to facilitate access and circulation would be accomplished under all of the alternatives, including no action. Handicap access and day use opportunities in general would be improved by converting the roadway between the hotel and the lakeshore into a broad pedestrian walkway with benches. The new pavement would be an adequate width to allow for emergency vehicle access to the hotel. New stairs would lead from the hotel to the walkway, and the existing service elevator would be renovated to provide access from the hotel to this walkway for handicapped visitors, since the walkway would be at the same level as the hotel basement. The parallel bus parking problem would be solved by removing some of the median strips from the hotel parking lot and restriping to delineate parking spaces for buses and oversized vehicles. Lighting for the parking lot would also be improved.

To improve visitor information, a new map of the valley would be prepared and better signing would be installed along roads and trails and at trailheads. Trailhead parking would be consolidated in the main parking lot at Swiftcurrent.

Preferred Alternative

The following preferred alternative was created by combining elements from alternatives A, B, and C. This alternative would solve all of the major problems associated with the existing development with a minimum of new construction. At Swiftcurrent, a major improvement in concession employee housing and better separation of employee and visitor activities would be achieved by moving employees out of the cabin area and converting the motel near the entrance road to employee housing. The cabins currently used by employees would be renovated to provide

low-cost visitor lodging. If a separate concession employee dorm complex was constructed at another location (as discussed below), additional low-cost visitor accommodations would be provided at Many Glacier by converting the Helps dorm to lodging units. The overall increase in lodging units would help to offset the concessioner's loss of higher cost motel units at Swiftcurrent.

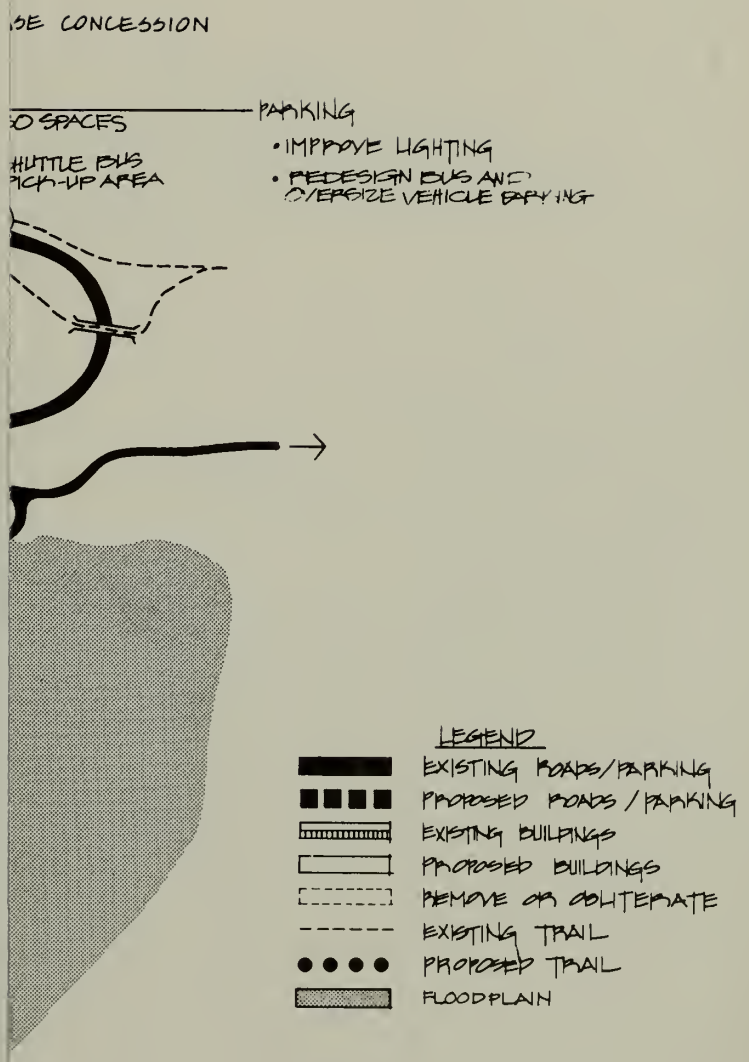
The campground and the bear exclosure for tent campers would be retained, and a new shower/laundry facility and service station would be constructed adjacent to the main Swiftcurrent parking lot. The new shower/laundry would serve the campground and some of the visitor cabins. The existing shower/laundry would be made more accessible by expanding the parking area. The service station at the Many Glacier parking lot would be removed.

Opportunities for day use would be improved in several ways. The pathway along the road would be upgraded and extended from the picnic area to the Swiftcurrent developed area. A new informational map and better signing would be provided.

At the hotel a new pedestrian walkway would be provided along the lakeshore in front of the hotel. The walkway would be accessible by stairs leading down from the hotel, and by the hotel service elevator, which would be renovated to provide access for handicapped visitors, as described in the no-action alternative. As mentioned before, the walkway could be used by emergency vehicles. An NPS interpreter would be stationed in the hotel during peak hours to improve information, orientation, and interpretive services to visitors. The hotel parking lot would be expanded by approximately 50 sites and redesigned to accommodate bus and oversize vehicle parking, and a shuttle bus pick-up area would be provided for the transit system, if one was proposed by the transportation plan. Lighting for the parking lot and walkways would be improved.

Day use opportunities would be further improved by extending the foot trail along the road from the picnic area to the main parking lot at Swiftcurrent and by providing a new trailhead for Grinnell Glacier near the existing picnic area.

The existing ranger station and residence would be renovated to provide better information and interpretation services. The ranger living quarters would be relocated from the building and replaced with a new structure in the NPS housing area, providing improved living space and privacy for the subdistrict ranger and freeing additional space for visitor contact in the existing structure. Continued use of the ranger station as a visitor contact station would perpetuate close communication among staff members because they would continue to be stationed together in one area. It would also provide a continued staff presence near the Swiftcurrent campground and motel/cabin facilities. Access to the enlarged contact station would be improved by realigning the road and parking area. A portion of the lodgepole pine stand in front of the ranger station would be removed to make it easier for visitors to locate. The trailer dump station would have to be relocated to accommodate the new access to the visitor contact station. A radio broadcast would



PREFERRED ALTERNATIVE

MANY GLACIER DEVELOPMENT CONCEPT PLAN

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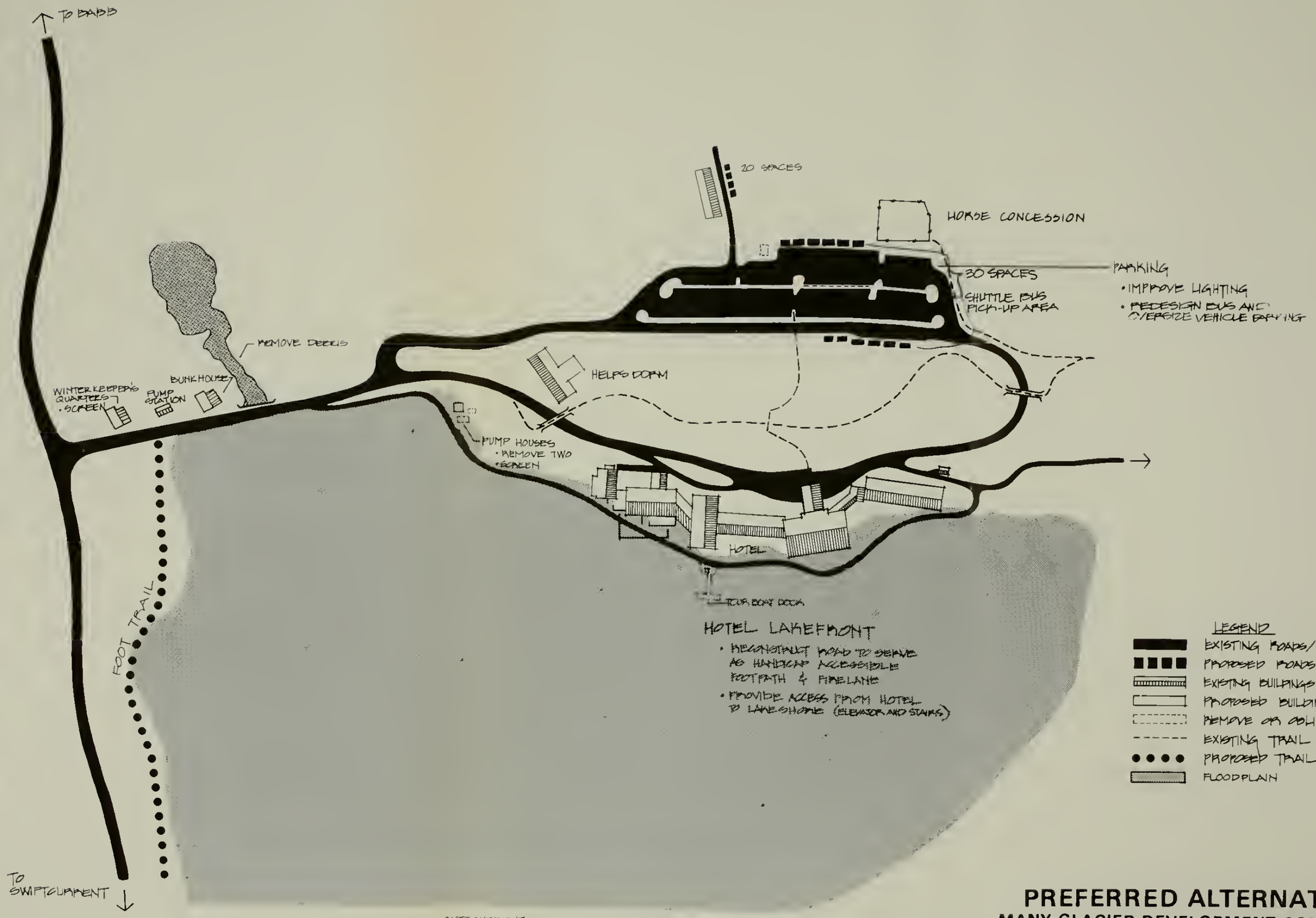

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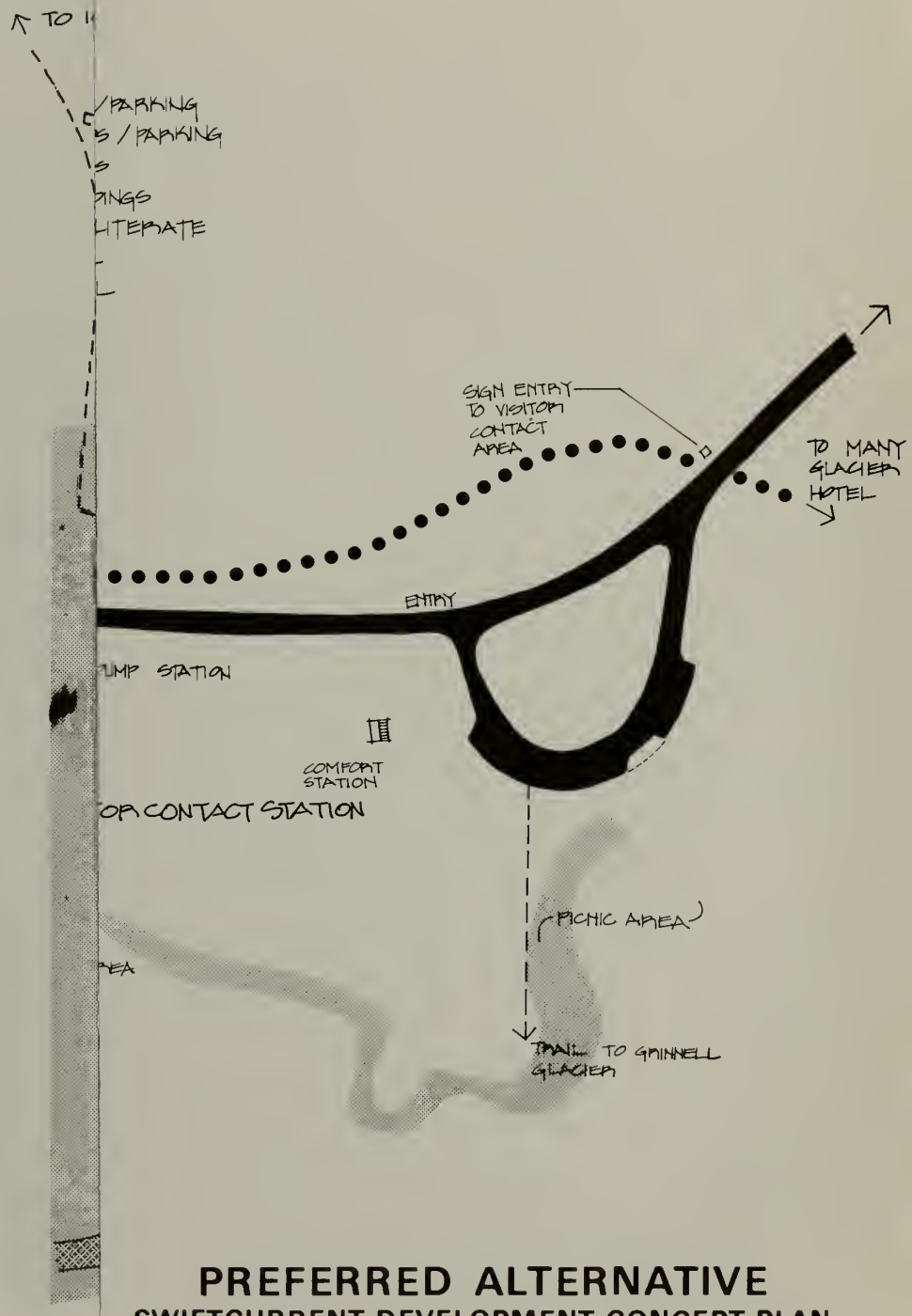

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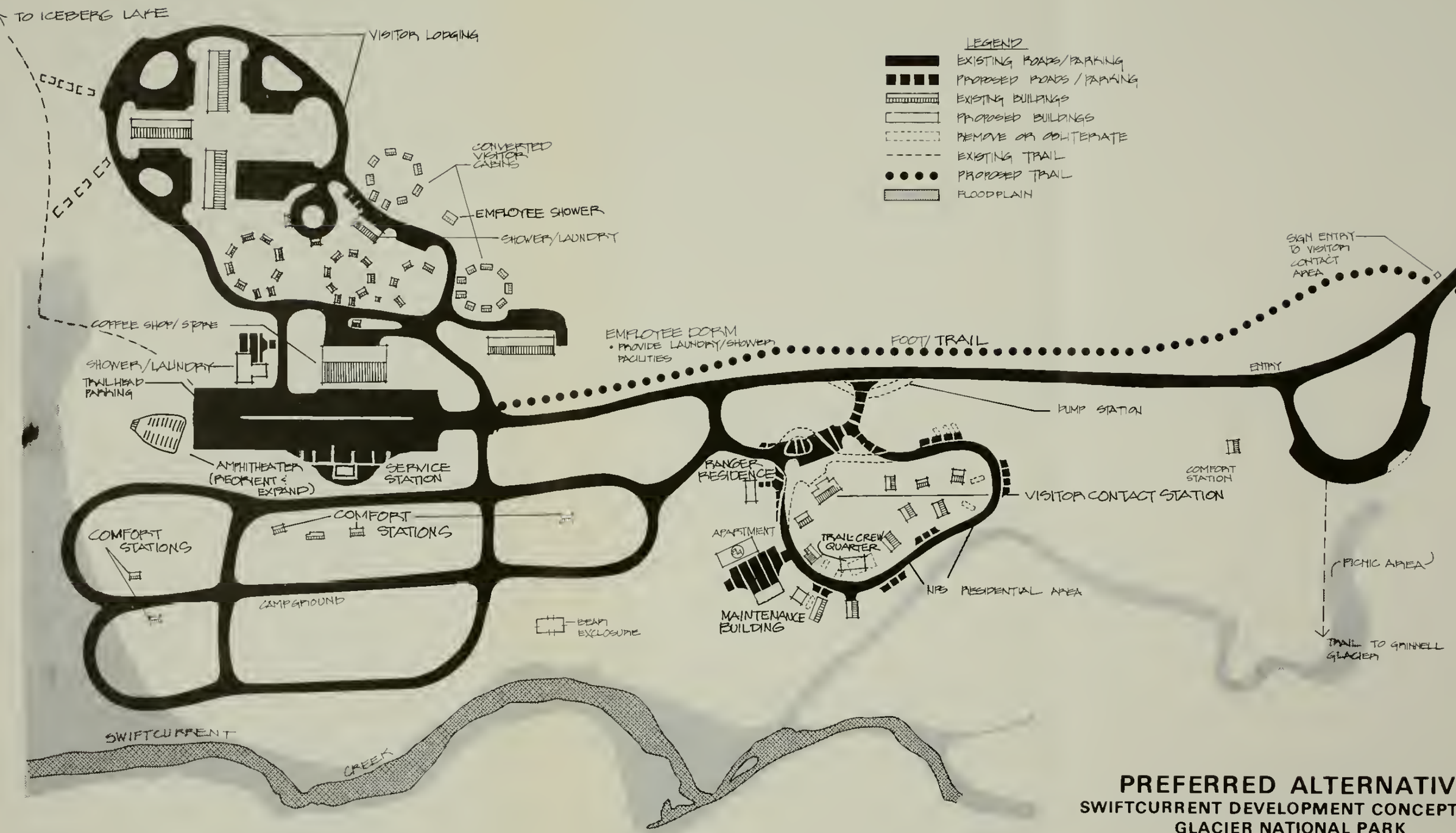

LEGEND

- EXISTING ROADS/PARKING
- PROPOSED ROADS / PARKING
- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- REMOVE OR OBLITERATE
- EXISTING TRAIL
- PROPOSED TRAIL
- FLOODPLAIN

PREFERRED ALTERNATIVE

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explain the regulations against sheep feeding, thus helping to reduce adverse impacts on wildlife in the park.

The NPS trailer housing and trail crew quarters at Swiftcurrent would be replaced with permanent residences and apartments. A small maintenance building would be built near the Swiftcurrent NPS residential area to support routine and emergency repairs so that maintenance personnel would not have to continually travel to St. Mary for equipment and spare parts. The new structures would be designed to be compatible with the historic buildings.

A preferred alternative has not been selected for concession employee housing at Many Glacier. Following public review, an option or combination of options will be selected from the other alternatives to resolve the substandard, and in some cases unsafe, employee housing situation.

The maintenance operation near the Many Glacier Hotel would be screened, the land surrounding the winterkeeper's residence at Swiftcurrent Falls would be cleaned up and landscaped, and the abandoned sewage treatment plant and two of the pumphouses would be removed to improve the aesthetic values of the sites.

The development costs cannot be totaled until a decision is made about concession employee housing. The net development costs would range between $1.5 million and $7.2 million (see table 13). Estimated additional annual operations and maintenance costs would be approximately $21,000. One additional NPS interpreter and one additional ranger would be required to staff the expanded visitor contact station, and several hours a day of an interpreter's time would be necessary to staff the Many Glacier Hotel during peak use periods.

Alternative A

Most of the elements of alternative A were selected for the preferred alternative. However, one change was made at the Swiftcurrent development. In alternative A, the existing employee cabins would be removed. The motel converted to employee housing would be replaced with a new motel in the visitor lodging area. Thus there would be no change in the number or character of overnight accommodations. This option was rejected because it would not help to meet visitor demands for additional low-cost accommodations.

At Many Glacier a new concession employee housing area would be developed 0.2 mile south of the hotel to provide better separation between visitor and employee activities. This new employee housing complex would provide sleeping quarters for 205-210 employees, a recreation room, kitchen, dining room, and 20-car parking lot. The Ray Kinley dorm would be removed and the Helps dorm would be converted to low-cost visitor accommodations.

This alternative would have the second lowest development costs of all the action alternatives (see table 13). Estimated additional annual costs for

operations and maintenance would increase by $12,000. One additional interpreter would be required to staff the enlarged visitor contact station, and another interpreter would be needed part-time at the hotel.

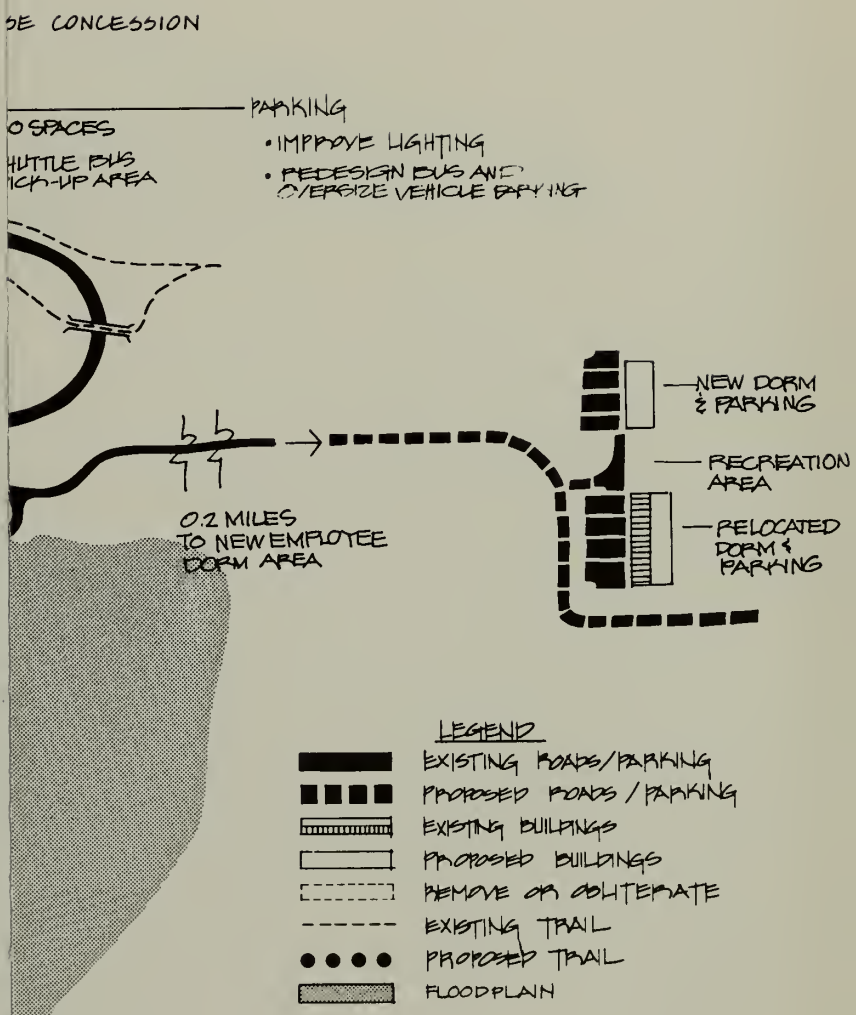
Alternative B

This alternative would differ from the preferred alternative in a number of ways. First, overnight accommodations at Swiftcurrent would be reduced to offset an increase in accommodations at Lake McDonald, and much of the Swiftcurrent area would be returned to natural conditions, providing more wildlife habitat and decreasing the potential for contacts between visitors and grizzly bears. Concession employees would be relocated from cabin housing into the motel near the entrance road, and the vacated cabins would be renovated for low-cost visitor accommodations. The three remaining motels would be removed, leaving only cabin accommodations available to visitors at Swiftcurrent. The campground would also be removed, on the assumption that campsites would be provided by the Blackfeet Indians or other private developers outside the park. This option was rejected because it would not be cost-effective to abandon usable facilities, and because the wildlife do not appear to be significantly affected by the present level of development and visitor activity.

If the National Park Service established an administrative site outside the park boundary, as described in alternative B for the St. Mary maintenance/residential area, it would accommodate most of the maintenance and residential facilities from both the St. Mary and the Swiftcurrent areas. A small amount of housing would be retained at Swiftcurrent to accommodate fire-fighters, trail crew, a ranger, and an interpreter, but all other employees would be housed at the new administrative site. The additional housing needed to replace the employee quarters in the Many Glacier Hotel would also be provided at the new administrative site. All of the other concessioner employee housing at Many Glacier would be retained unchanged. This option was rejected because of the high construction and land purchase costs associated with building such a complex outside the park, and because it would require concession employees to commute a substantial distance to work.

Also unlike the preferred alternative, alternative B would add a new visitor contact station at Many Glacier. For the short term, this function would be accommodated in the winterkeeper's residence. The winterkeeper would be housed in the Helps dorm, and the residence would be renovated for information and interpretive services. The entrance road would be realigned and a visitor parking lot would be provided. Eventually, a new visitor contact station would be constructed in the vicinity of the winterkeeper's quarters. This would require substantial road realignment, site leveling, and a rock retaining wall. This option was rejected because of the associated adverse environmental impacts, visual intrusion upon the historic district, and limited site space.

In addition to the improvements for access and day use common to all of the alternatives, a courtesy dock on Swiftcurrent Lake would be provided near the hotel to serve private boaters visiting the area. This option



ALTERNATIVE A

MANY GLACIER DEVELOPMENT CONCEPT PLAN
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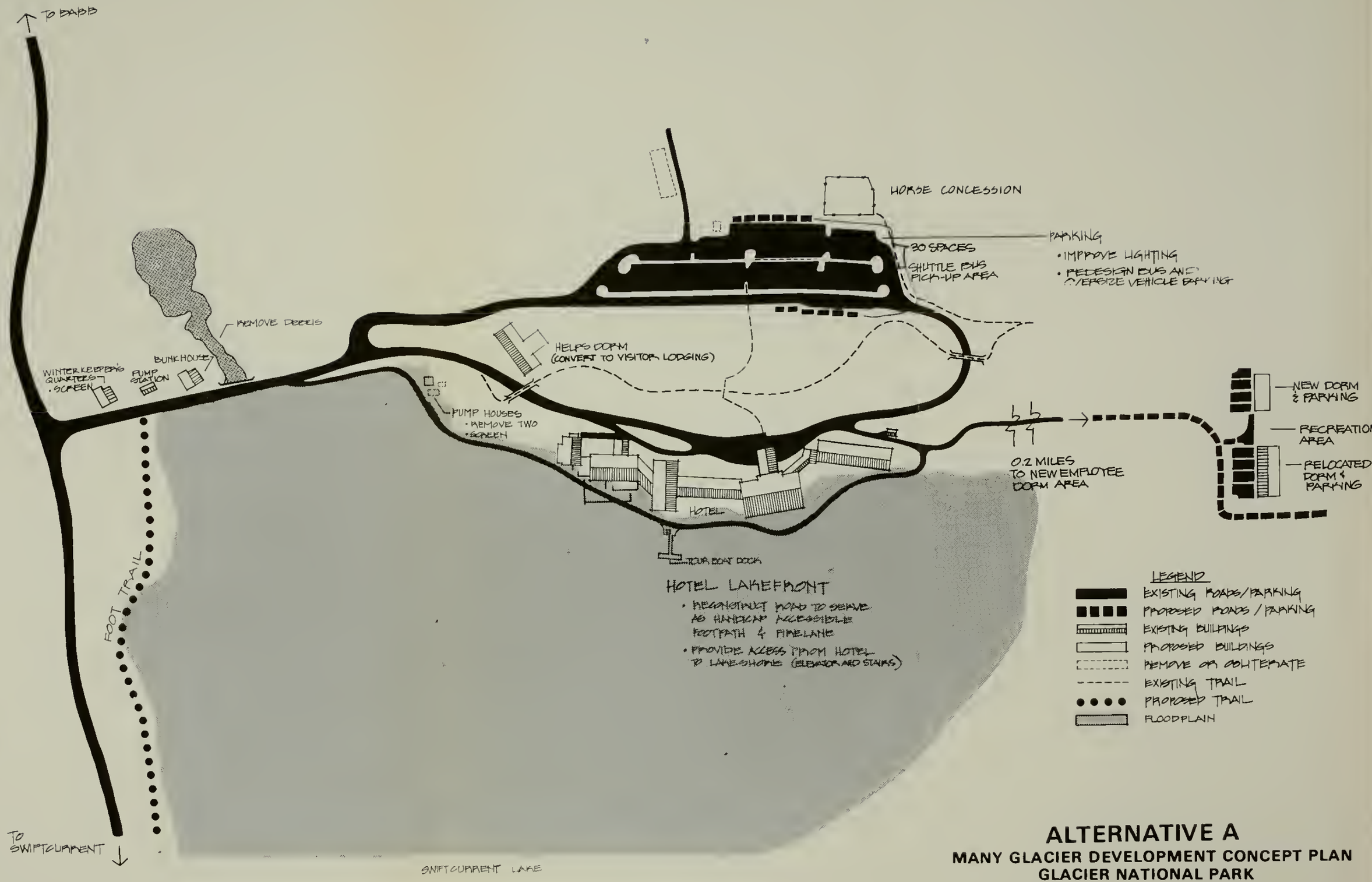

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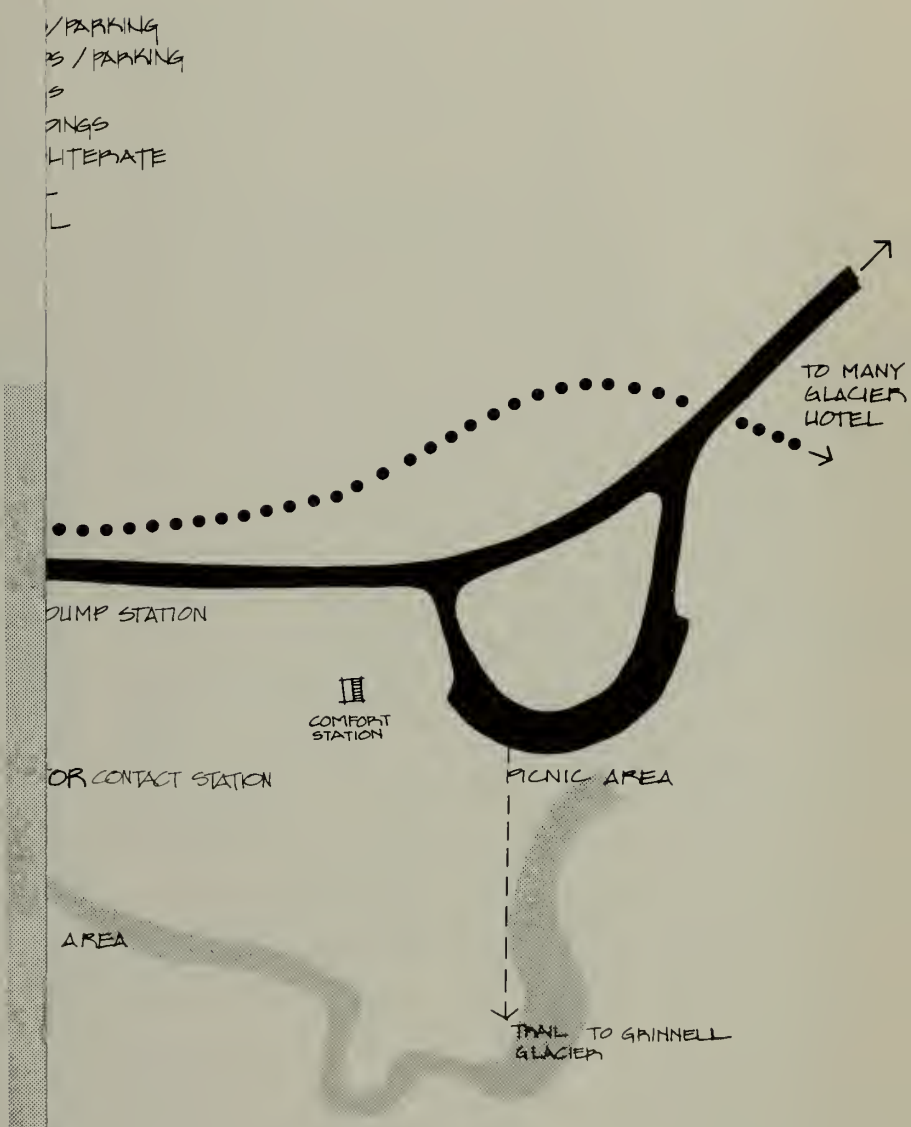

ALTERNATIVE A
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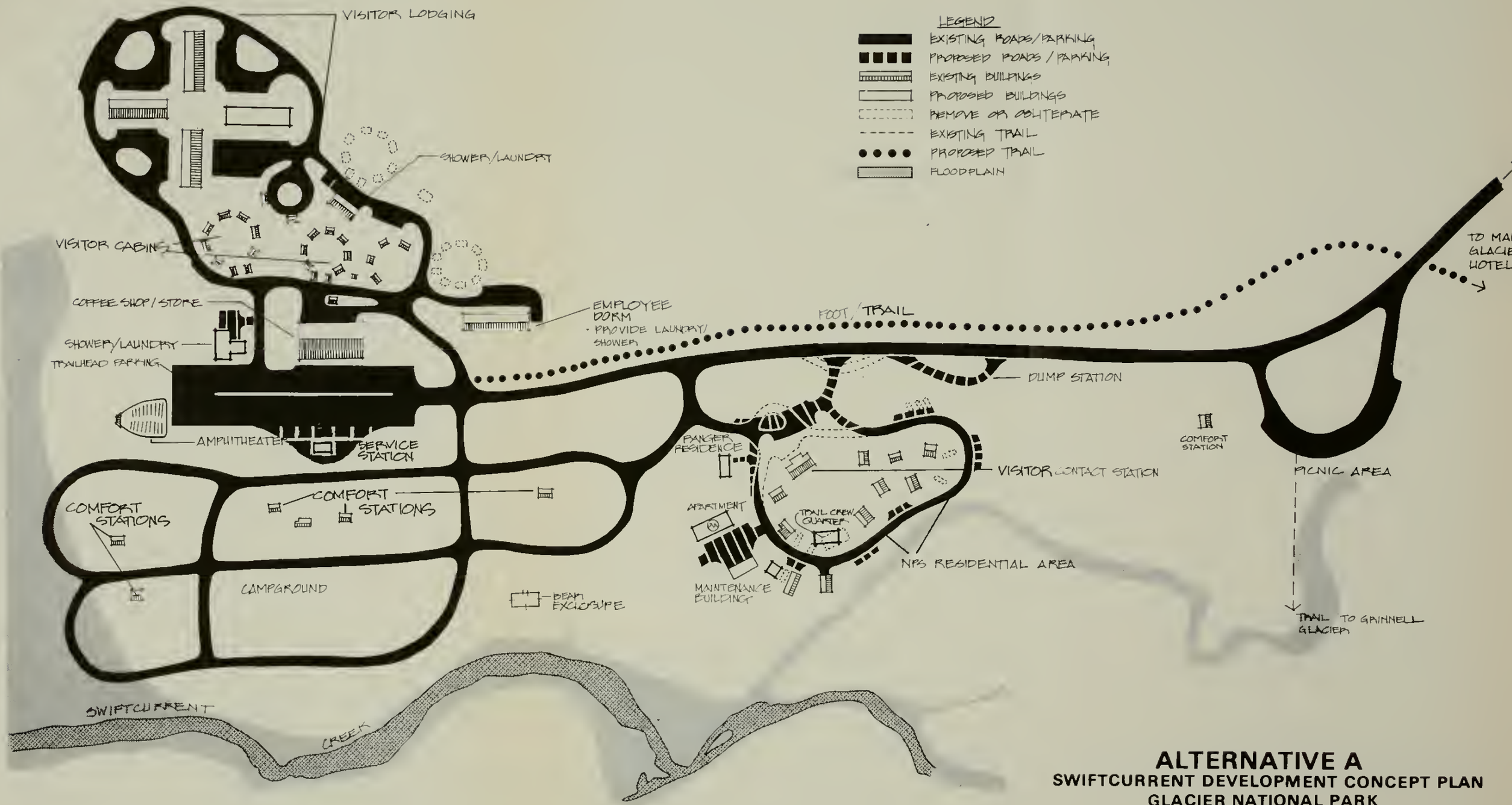

ALTERNATIVE A
SWIFTCURRENT DEVELOPMENT CONCEPT PLAN
GLACIER NATIONAL PARK

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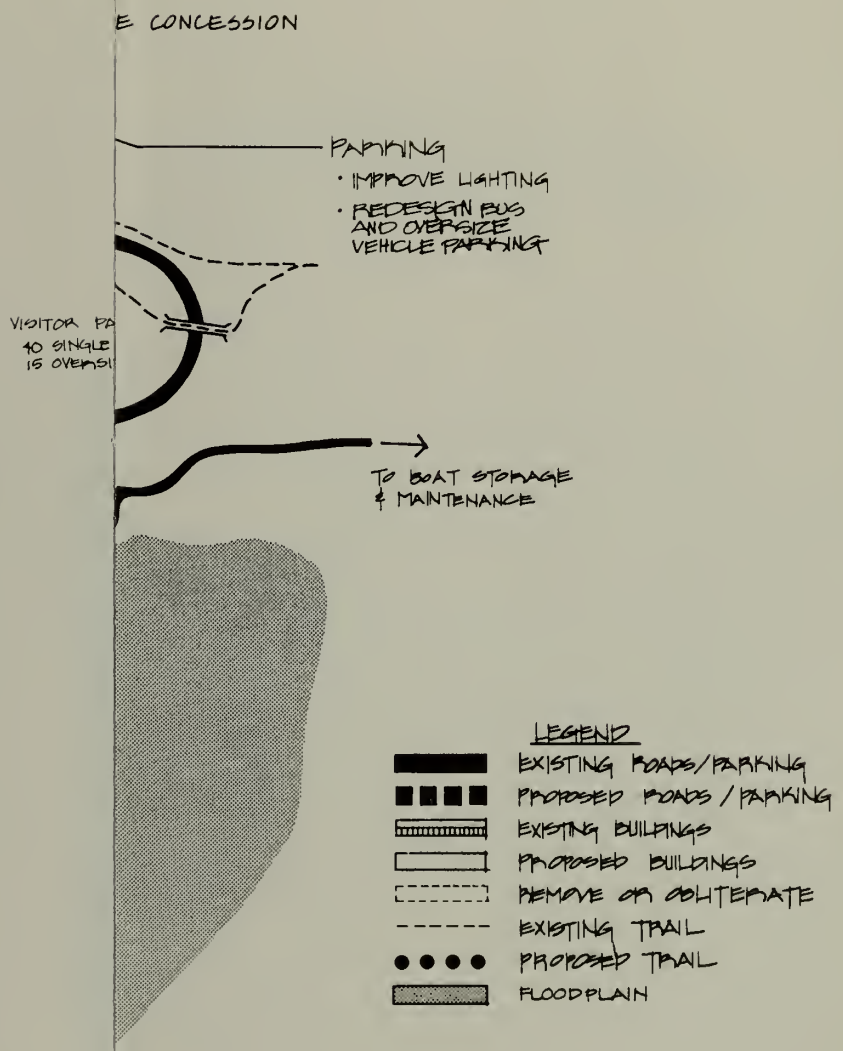

ALTERNATIVE B

MANY GLACIER DEVELOPMENT CONCEPT PLAN
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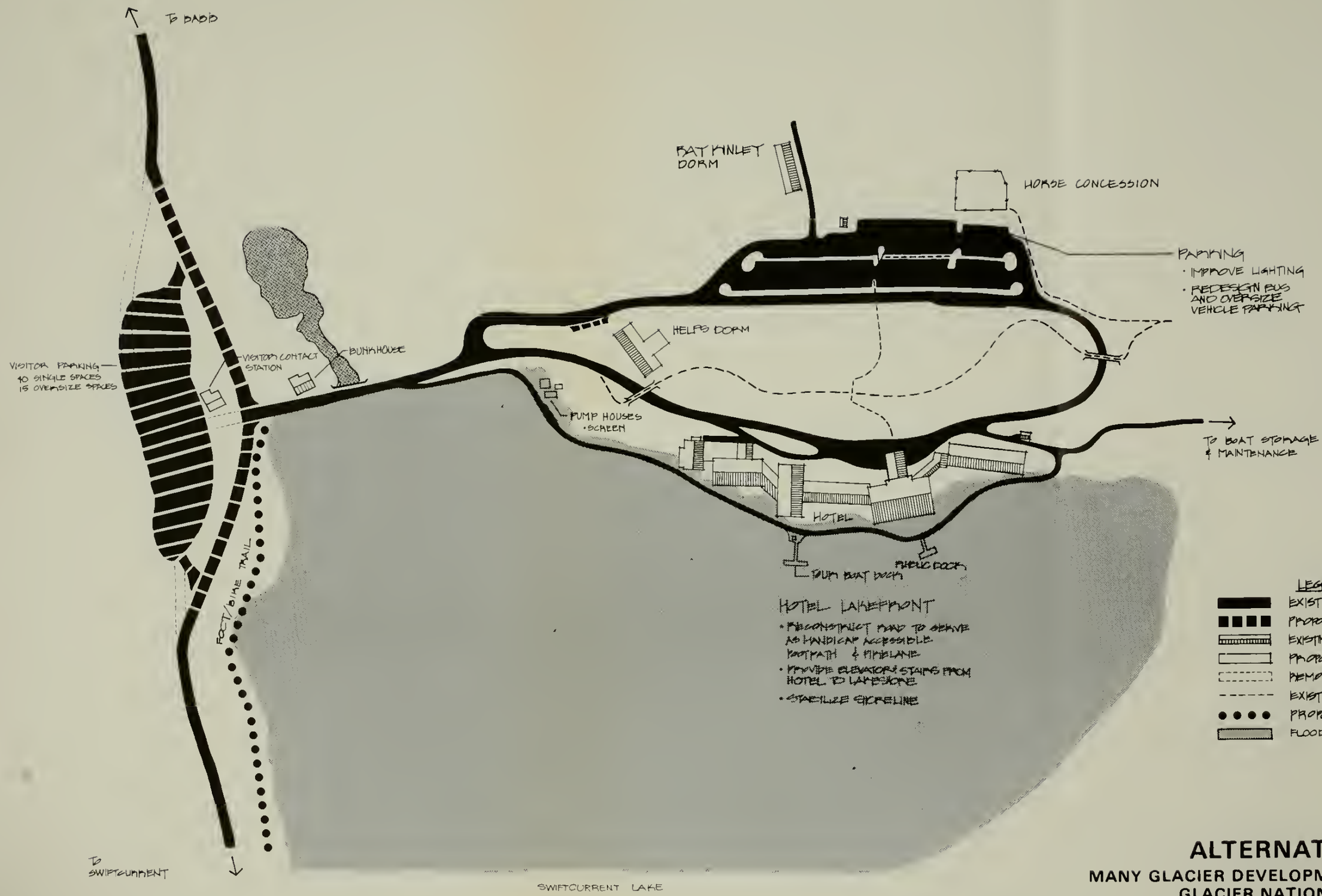

LEGEND

- EXISTING ROADS/PARKING
- PROPOSED ROADS / PARKING
- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- REMOVE OR OBLITERATE
- EXISTING TRAIL
- PROPOSED TRAIL
- FLOODPLAIN

ALTERNATIVE B

MANY GLACIER DEVELOPMENT CONCEPT PLAN
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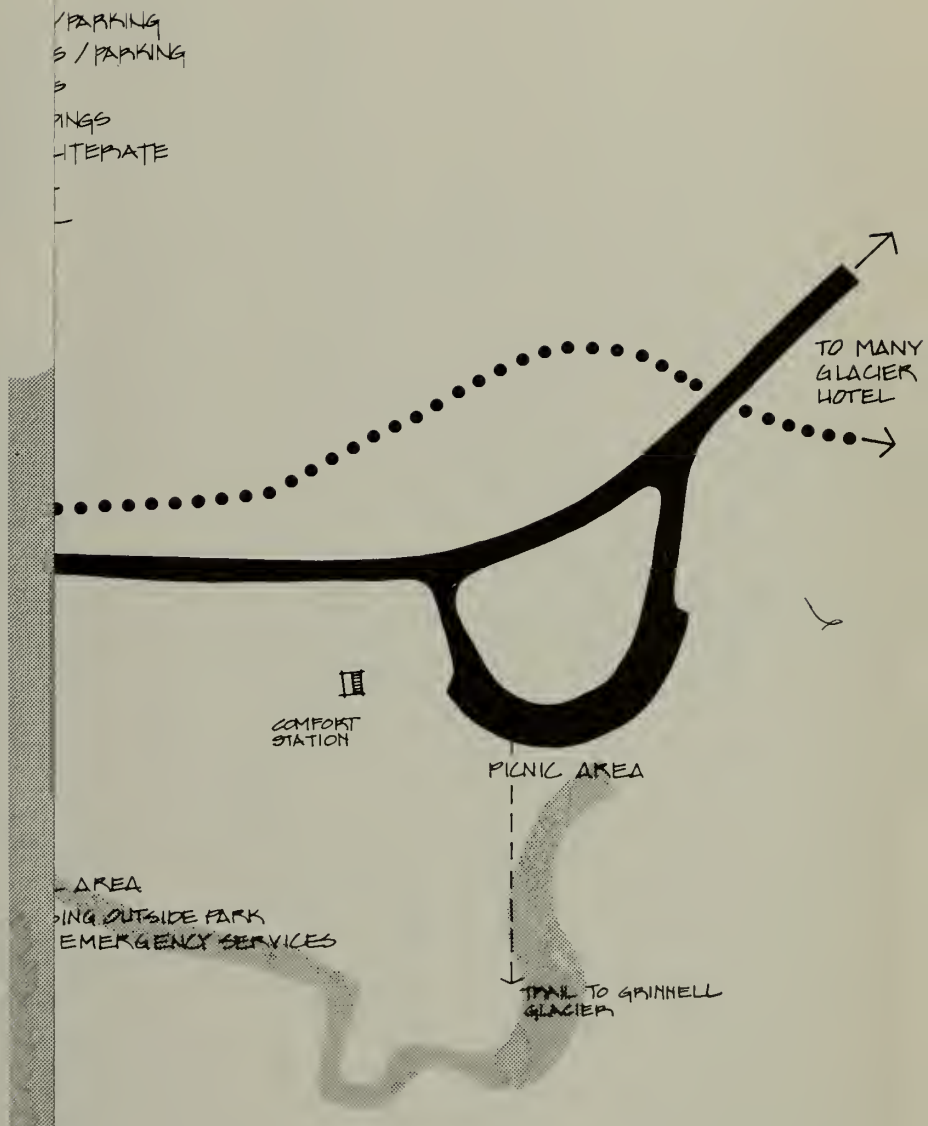

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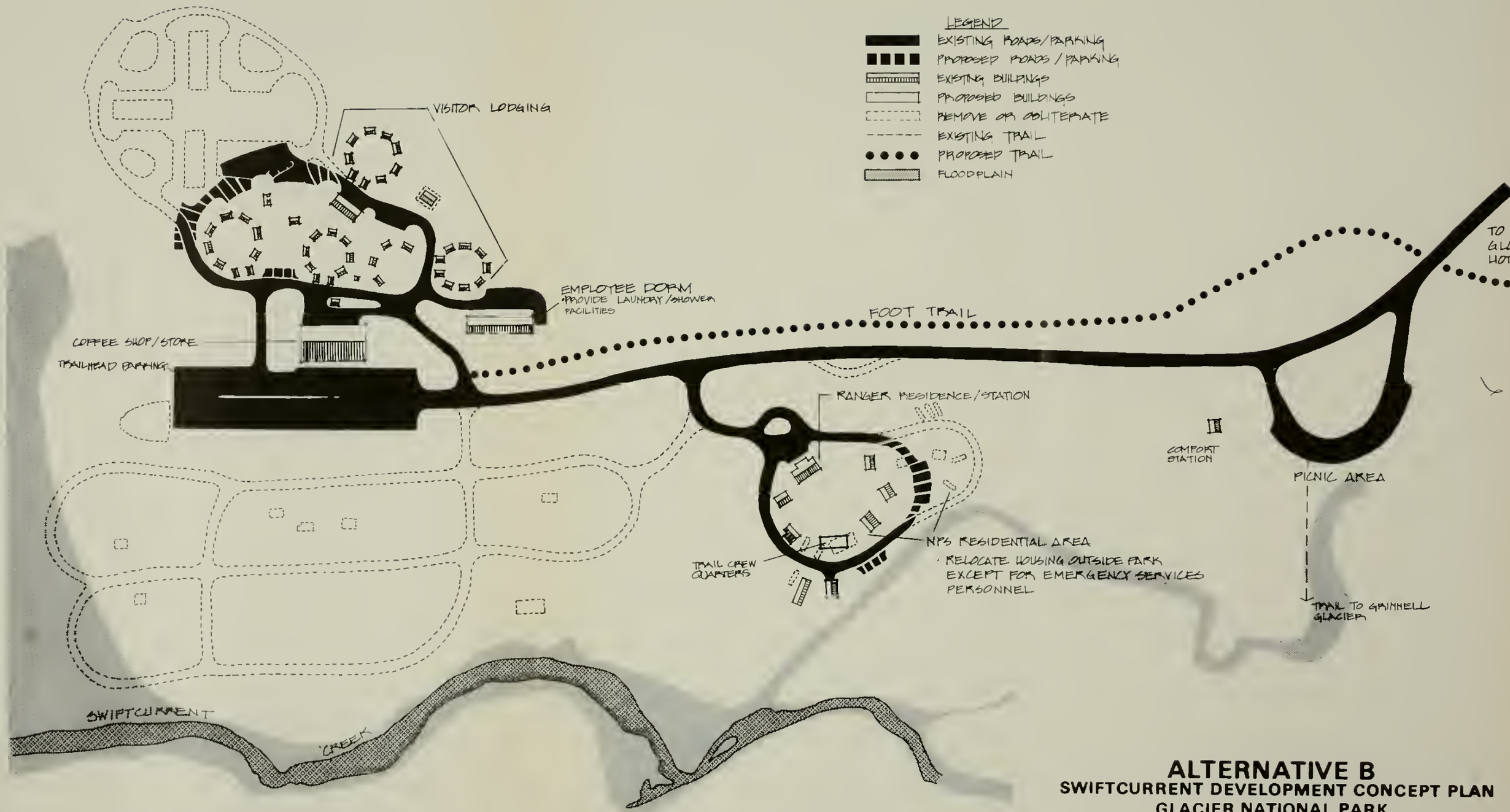

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was rejected because the limited private boat use on the lake would not justify the expense.

Alternative B also considered the options of establishing a ranger station in the town of Babb and relocating the entrance station to the park boundary. These actions would help inform visitors of their activity options before they arrived at Many Glacier. They were rejected in favor of retaining the site-integrity of the historic ranger station/entrance station facilities and improving information services with a new map and better signing.

Alternative B would have the lowest development costs of all the action alternatives (see table 13). Estimated costs for operations and maintenance would be reduced by $8,000. Removal of the campground and three motels would reduce the need for several NPS personnel in the area, for an estimated annual savings of $15,000. This savings would be partially offset by the cost of staffing a new ranger station in Babb.

Alternative C

This alternative would differ from the preferred alternative in the following ways. The range of overnight accommodations at Swiftcurrent would be expanded by constructing a new 50-bed dormitory-style structure with shower/laundry and kitchen facilities and quarters for a live-in manager. The concession employee cabins would be renovated for additional low-cost visitor lodging once the employees were relocated to one of the motels. Two of the visitor motels would be removed, leaving only one motel available to visitors. Overall, there would be a decrease in visitor lodging units, with a significantly greater proportion in the low-cost range. This option was rejected because it would not be cost-effective to abandon usable facilities.

This alternative also considered extending concession operations into the fall and winter seasons. This option was rejected to avoid visitor intrusions into critical winter wildlife habitat, the expense of keeping the main access road open year-round, and an adverse impact on the concessioner.

This alternative also considered relocating the campground to Apikuni Flat, which would become a major developed area. In addition to the campground, this area would provide housing for most NPS employees assigned to this part of the park. NPS housing at Swiftcurrent would be reduced to that necessary to accommodate fire-fighters, trail crew, a ranger, and an interpreter. Concessioner housing at Many Glacier would also be reduced to what could be accommodated in the Ray Kinley dorm. The entrance station would also be relocated to Apikuni Flat. This option was rejected because further analysis indicated that Apikuni Flat has greater wildlife habitat values than the Many Glacier and Swiftcurrent development areas. In addition, new development costs would be high and concession employees would be required to commute to work.

This alternative also considered providing a courtesy dock for private boaters near the existing launch ramp. This option was rejected because the limited private boat use on the lake would not justify the expense.

Finally, this alternative considered the underground placement of the power lines from the treatment plant to the park boundary. This option would eliminate an intrusion along the roadway, but it was rejected because of the high costs and adverse environmental impacts.

This alternative would have the highest development costs (see table 13). Estimated additional annual costs for operations and maintenance would increase by approximately $10,000. One additional NPS interpreter would be required to staff the new visitor contact station. Expansion of concession operations into the fall and winter seasons would require a three- to four-week extension of one seasonal ranger and one seasonal interpreter. Several additional maintenance personnel would be required to operate snow-clearing equipment for the Many Glacier access road during the winter months.

ENVIRONMENTAL CONSEQUENCES

Soils

The Many Glacier Valley floor is covered by alluvial soils, mainly sandy and silty loams, underlain with glacial till. These soils are highly erodible and sensitive to disturbance because of their sparse and immature nature. Also, because the organic soil mantle is very thin and underlain with solid rock, additional layers of topsoil are needed for planting and stabilization after disturbance. The general effects on soils are discussed in this section for Lake McDonald. The site-specific impacts on soils have been divided into two categories: moderate (compaction by foot traffic) and severe (covering by pavement or other impervious structures). A detailed breakdown of the acreage disturbed by each alternative is shown in table 14.

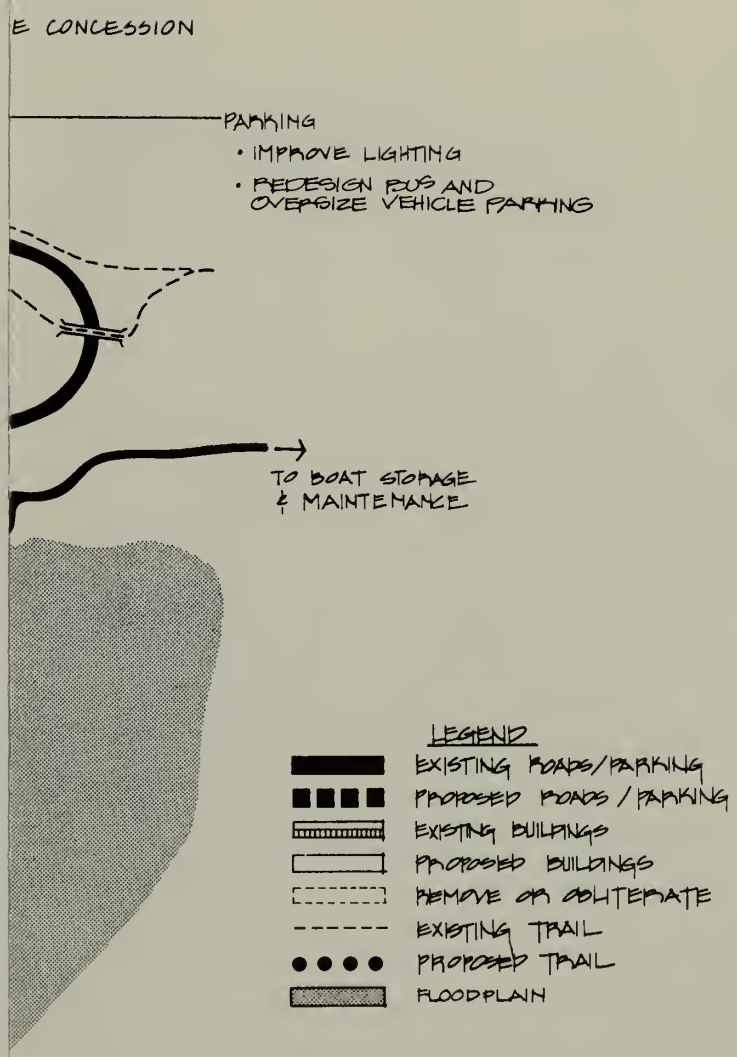
Vegetation

Affected Environment. The Many Glacier and Swiftcurrent developed areas lie within the park's east-slope forest/bunchgrass ecosystem, which ranges from 4,500 feet at the eastern boundary to about 6,000 feet near timberline, where the alpine ecosystem begins.

The 1936 Heavens Peak fire burned the upper portion of the Swiftcurrent Valley, which is now dominated by lodgepole pine, shrubs, and beargrass. After the burn, the ranger station/residence was highly visible and easy to locate from the entrance road, but subsequent regrowth of lodgepole has now screened this facility from the road.

The grasslands are dominated by rough fescue where undisturbed. Other grassland species include wheatgrass, sedges, needlegrass, and serviceberry. The grassland areas in the park are critical habitat for elk, mountain goat, deer, and bighorn sheep herds.

Aspen groves contain both quaking aspen and black cottonwood. Other species such as Englemann spruce, Douglas-fir, and ponderosa and lodgepole pine may also be found in the area. More detailed information may be found in Vegetation of Glacier National Park (Habeck 1970).



ALTERNATIVE C

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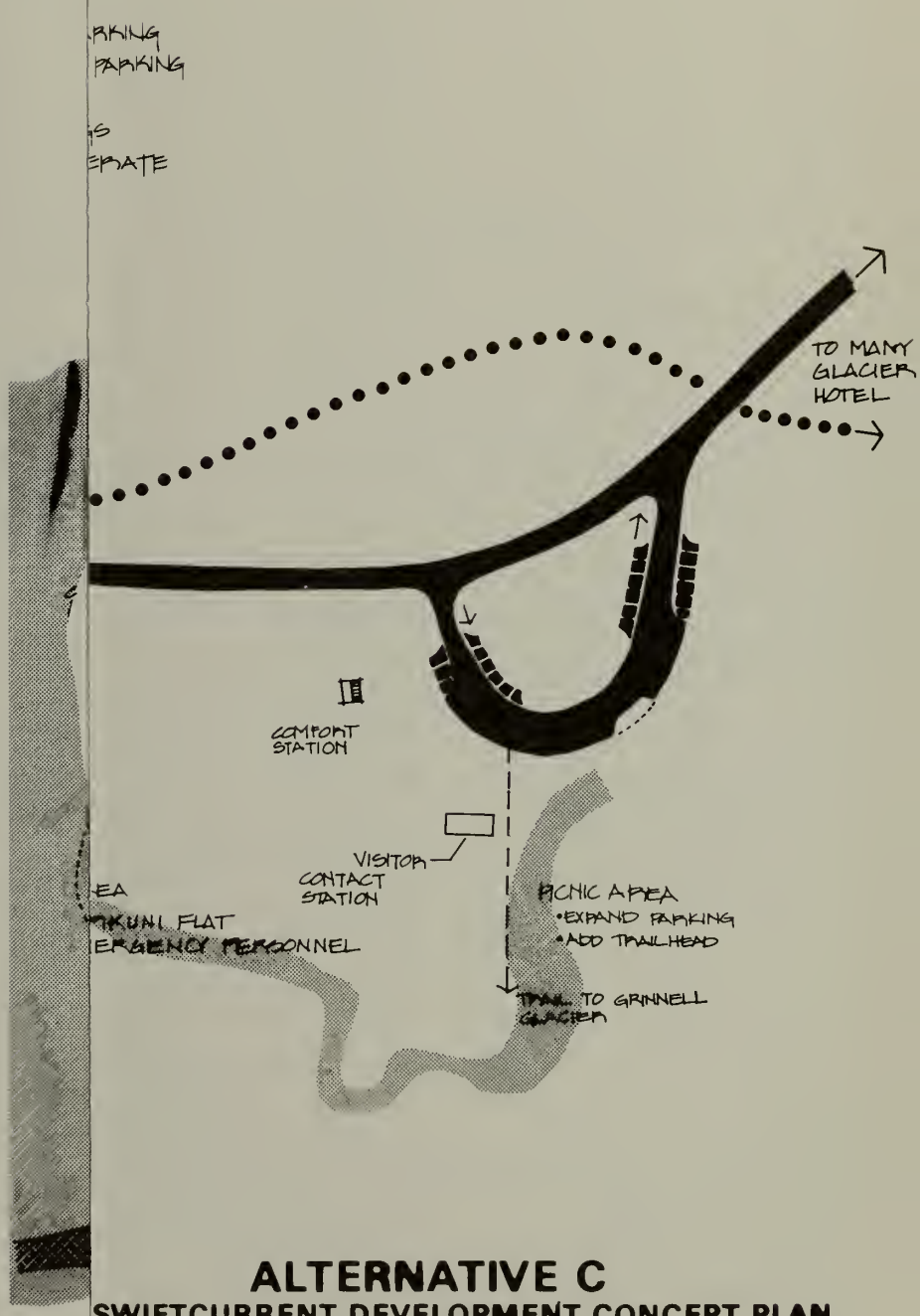

ALTERNATIVE C
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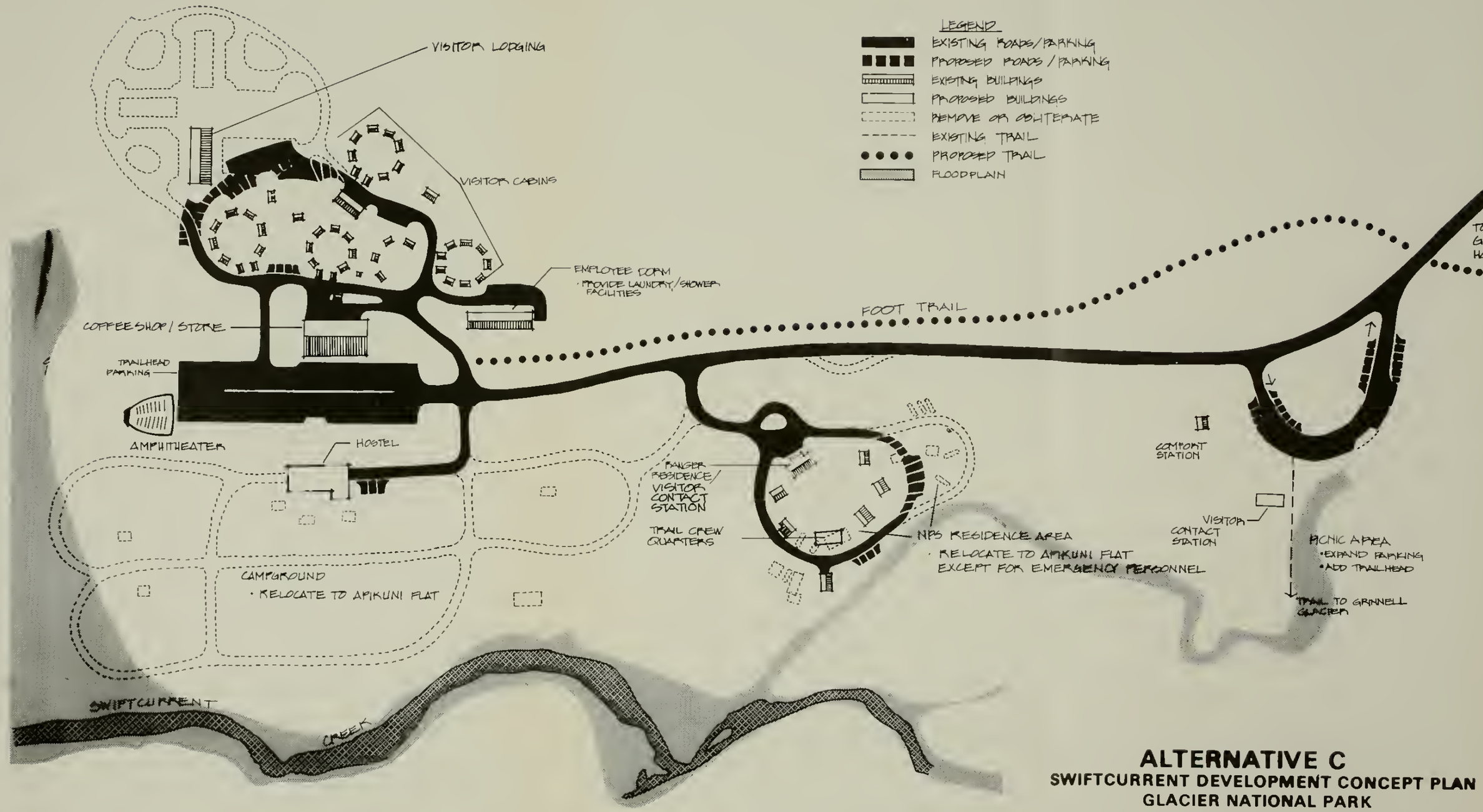

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Table 13: Summary Comparison of Alternatives, Many Glacier/Swiftcurrent

	No-Action Alternative	Preferred Alternative	Alternative A	Alternative B	Alternative C
Concession Lodging					
Many Glacier Hotel	retain, eliminate employee housing	retain, eliminate employee housing	retain, eliminate employee housing	retain, eliminate employee housing	retain, eliminate employee housing
Swiftcurrent cabins (25)	retain	retain	retain	retain	retain, winterize some cabins
Swiftcurrent motels (4)	retain	retain 3, convert motel near entrance to employee housing (no cost)	retain 3, convert motel near entrance to employee housing (no cost)	remove 3 ($84,000*), convert motel near entrance to employee housing (no cost)	retain 1, remove 2 ($56,000*), convert motel near entrance to employee housing (no cost)
new facilities	none	convert employee cabins at Swiftcurrent to visitor lodging (see below)	construct new motel at Swiftcurrent ($298,000*)	convert employee cabins at Swift-current to visitor lodging (see below)	convert employee cabins at Swiftcurrent to visitor lodging (see below)
			convert Helps dorm at Many Glacier to low-cost visitor lodging (see below)		convert Helps dorm at Many Glacier to low-cost visitor lodging (see below)
					construct 50-bed dormitory-style lodging with shower/laundry and kitchen facilities at Swiftcurrent ($600,000*)
Camping					
Swiftcurrent campground	retain	retain	retain	remove ($103,000)	relocate to Apikuni Flat ($600,000)
bear exclosure	retain	retain	retain	remove ($1,000)	remove ($1,000)
dump station	retain	relocate in same general area ($49,000)	relocate in same general area ($49,000)	remove ($5,000)	relocate to Apikuni Flat ($49,000)
amphitheater	retain	reorient and expand ($30,000)	reorient and expand ($30,000)	remove	remove
Commercial Services					
Swiftcurrent coffee shop/store	retain	retain	retain	retain	retain
Swiftcurrent shower/laundry	retain	retain, expand parking ($10,000*), construct second facility ($219,000*)	retain, expand parking ($10,000*), construct second facility ($219,000*)	retain, expand parking ($10,000*)	retain, expand parking ($10,000*)
service station	retain	relocate to Swift-current and expand ($154,000*)	relocate to Swift-current and expand ($154,000*)	retain	retain
Day Use					
trailhead parking at Swiftcurrent	consolidate in large parking lot	consolidate in large parking lot	consolidate in large parking lot	consolidate in large parking lot	consolidate in large parking lot

	No-Action Alternative	Preferred Alternative	Alternative A	Alternative B	Alternative C
new facilities	provide stairs and handicapped accessible elevator from hotel to lakeshore ($30,000*)	provide stairs and handicapped accessible elevator from hotel to lakeshore ($30,000*)	provide stairs and handicapped accessible elevator from hotel to lakeshore ($30,000*)	provide stairs and handicapped accessible elevator from hotel to lakeshore ($30,000*)	provide stairs and handicapped accessible elevator from hotel to lakeshore ($30,000*)
	convert road in front of hotel to handicapped accessible walkway with benches (emergency vehicle route) ($25,000*)	convert road in front of hotel to handicapped accessible walkway with benches (emergency vehicle route) ($25,000*)	convert road in front of hotel to handicapped accessible walkway with benches (emergency vehicle route) ($25,000*)	convert road in front of hotel to handicapped accessible walkway with benches (emergency vehicle route) ($25,000*)	convert road in front of hotel to handicapped accessible walkway with benches (emergency vehicle route) ($25,000*)
		upgrade and extend foot trail along main road ($17,000)	upgrade and extend foot trail along main road ($17,000)	upgrade and extend foot trail along main road ($17,000)	upgrade and extend foot trail along main road ($17,000)
				provide courtesy dock at hotel ($36,000)	provide courtesy dock near launch ramp ($36,000)
Information/Interpretation					
hotel	continue evening programs	augment evening programs with peak-hours interpretive service	augment evening programs with peak-hours interpretive service	augment evening programs with peak-hours interpretive service	augment evening programs with peak-hours interpretive service
new facilities	provide new map, improve signing for roads, trails, trailheads, and bulletin boards ($6,000)	provide new map, improve signing for roads, trails, trailheads, and bulletin boards ($6,000)	provide new map, improve signing for roads, trails, trailheads, and bulletin boards ($6,000)	provide new map, improve signing for roads, trails, trailheads, and bulletin boards ($6,000)	provide new map, improve signing for roads, trails, trailheads, and bulletin boards ($6,000)
		convert ranger station/residence to visitor contact station, improve access ($15,000)	convert ranger station/residence to visitor contact station, improve access ($15,000)	eventually construct new visitor contact station and parking near entrance road ($564,000); convert winterkeeper's residence to temporary contact station (see below)	construct new contact station at the picnic area and provide trailhead for Grinnell Glacier ($627,000)
				provide new ranger/contact station at Babb ($60,000)	
		provide radio transmission capability ($5,000)		provide radio transmission capability ($5,000)	
Access and Circulation					
entrance station	retain	retain	retain	relocate east to park boundary ($20,000)	relocate west to Apikuni Flat ($20,000)
hotel access road	retain	retain	retain	retain	redesign intersection ($33,000)

	No Action Alternative	Preferred Alternative	Alternative A	Alternative B	Alternative C
hotel parking lot	retain, improve lighting ($3,000), redesign bus and oversize vehicle parking ($5,000)	retain, improve lighting ($3,000), redesign bus and oversize vehicle parking ($5,000) and add 50 spaces ($50,000)	retain, improve lighting ($3,000), redesign bus and oversize vehicle parking ($5,000) and add 50 spaces ($50,000)	retain, improve lighting ($3,000), redesign bus and oversize vehicle parking ($5,000)	retain, improve lighting ($3,000), redesign bus and oversize vehicle parking ($5,000)
				designate employee parking near dorm	designate employee parking near dorm
new facilities	none	provide shuttle bus pick-up point at hotel parking lot ($3,000)	provide shuttle bus pick-up point at hotel parking lot ($3,000)	none	none
NPS Operations and Housing					
houses	retain	retain	retain	retain housing for fire-fighters, trail crew, ranger, and interpreter; remove additional housing	retain housing for fire-fighters, trail crew, ranger, and interpreter; remove additional housing
trailers	remove	remove	remove	remove	remove
new facilities	construct apartments to replace trailers ($300,000)	construct ranger residence and apartments to replace trailers and housing for trail crew ($494,000)	construct ranger residence and apartments to replace trailers and housing for trail crew ($494,000)	replace most housing outside park ($1,844,000)	replace most housing at Apikuni Flat ($1,844,000)
		construct maintenance building ($219,000)	construct maintenance building ($219,000)		
Concession Housing					
Ray Kinley dorm (Many Glacier)	remove	decision deferred	relocate to new housing area or remove ($35,000*)	retain	retain
Helps dorm (Many Glacier)	retain	decision deferred	convert to low-cost visitor lodging ($266,000*)	retain	convert to low-cost visitor lodging ($266,000*)
bunkhouse (Swiftcurrent Falls)	retain	decision deferred	remove	retain	retain
rooms in hotel	close	close	close	close	close
winterkeeper's quarters (Swiftcurrent Falls)	retain	retain	retain	convert to temporary contact station and house winterkeeper in dorm ($94,000)	retain
cabins (Swiftcurrent)	rehabilitate	convert to visitor lodging ($144,000*)	remove ($36,000*)	convert to visitor lodging ($144,000*)	convert to visitor lodging ($144,000*)
boat concessioner's cabin	remove ($20,000*)	retain, reroute hiking trail away from cabin ($5,000), or remove	retain, reroute hiking trail away from cabin ($5,000)	retain, reroute hiking trail away from cabin ($5,000)	retain, reroute hiking trail away from cabin ($5,000)

	No-Action Alternative	Preferred Alternative	Alternative A	Alternative B	Alternative C
new facilities	construct new dorm, recreation room, and employee parking area near Ray Kinley dorm ($1,294,000*)	decision deferred	construct new housing area south of hotel ($2,623,000*)	provide additional housing outside park ($246,000*)	provide additional housing at Apikuni Flat ($1,801,000*)
		convert one motel at Swiftcurrent to housing (see above)	convert one motel at Swiftcurrent to housing (see above)	convert one motel at Swiftcurrent to housing (see above)	convert one motel at Swiftcurrent to housing (see above)
Miscellaneous					
abandoned sewage treatment plant	retain	remove ($25,000)	remove ($25,000)	remove ($25,000)	remove ($25,000)
maintenance at hotel and Swiftcurrent Falls	clean up and screen ($24,000)	clean up and screen ($24,000)	clean up and screen ($24,000)	clean up and screen ($24,000)	clean up and screen ($24,000)
pumphouses	screen	remove two, screen	remove two, screen	screen	screen
power lines (treatment plant to park boundary)	retain	retain	retain	retain	place underground ($950,000)
shoreline stabilization	none	none	none	stabilize segment in front of hotel ($14,000)	none
Development Costs					
concessioner	$1,369,000*	$ 582,000*	$3,696,000*	$ 539,000*	$ 2,932,000*
NPS	$ 338,000	$ 950,000	$ 945,000	$2,831,000	$ 4,245,000
total net costs	$1,707,000	$1,532,000***	$4,641,000	$3,370,000	$ 7,177,000
total gross costs**	$2,492,000	$2,237,000***	$6,776,000	$4,920,000	$10,478,000

* Concession-related improvements. The exact funding by Glacier Park, Incorporated, would be determined in contract negotiations between the National Park Service and the concessioner.

** Gross costs include a 46 percent increase in funding to cover project planning, construction supervision, and contingency costs. They do not include costs of building furnishings or of utility systems.

***Totals for the preferred alternative do not include the costs of improvements to concession employee housing, since that decision has been deferred. The costs of the options under consideration range from $246,000 to $2,623,000, which would result in increased net costs of $1,778,000 to $4,155,000. If the most expensive option was selected the total gross cost of the preferred alternative would be $6,066,000.

The Apikuni Flat area is mixed meadow and forest, with meadow predominating at the north end near the Many Glacier road. Meadow vegetation is fescue bunchgrass, plus fireweed, cinquefoil, kinnikinnick, serviceberry, wildrose, and chokecherry. Forest species include lodgepole pine, subalpine fir, aspen, and cottonwood.

The area 0.2 mile south of the Many Glacier Hotel that is proposed as a new concession employee housing area in alternative A is lodgepole pine forest with an understory of beargrass, false huckleberry, forbs, and some grass. This area was previously disturbed, and a road to the site already exists.

Impacts. The general effects on vegetation are discussed in this section for Lake McDonald. The impacts on vegetation have been divided into two categories: moderate (disturbance by foot traffic or installation of utilities), and severe (exclusion of vegetation by pavement or other impermeable structures). Table 14 shows the acreage disturbed by each alternative.

Wildlife

Affected Environment. The Many Glacier/Swiftcurrent area is an important crossroads for wildlife because it lies at the confluence of three valleys. Significant populations of bighorn sheep, mountain goat, and elk all find valuable winter habitat in the area. The meadows area at Apikuni Flat are of critical importance as bighorn sheep winter range. A resident herd of about 100 bighorn sheep also frequent the valley in spring and autumn. Other animals including mule deer, badger, weasel, moose, and black and grizzly bears can also be found in the valley. The Many Glacier/Swiftcurrent drainage was historically barren of fish, but kokanee salmon and brook trout have been introduced.

General Impacts. In general, there would be few significant long-term impacts on wildlife under most of the alternatives considered for Many Glacier/Swiftcurrent. The acres of wildlife habitat that would be destroyed by implementation of any of the alternatives is as follows: no-action alternative, 0.2; preferred alternative, 0.8; alternative A, 1.8; alternative B, -4.7; alternative C, 2.5. The proposed developments and associated visitor use would result in the displacement and destruction of resident invertebrates and small vertebrates, including small mammals and birds.

Impacts of No-Action Alternative. Development of a new concession employee housing complex just east of the Ray Kinley dorm would not affect wildlife habitat since the immediate area is already developed.

Impacts of the Preferred Alternative. Impacts associated with concession employee housing would depend on which option was selected. No other development would affect wildlife habitat. Radio transmission of the regulation against sheep feeding might reduce the extent to which sheep beg food from people as an unnatural food source.

Table 14: Disturbed Acreage, Many Glacier/Swiftcurrent and Apikuni Flat

	No-Action	Preferred	A	B	C
	Many Glacier				
Existing Use					
Moderate	1.8	1.8	1.8	1.8	1.8
Severe	8.2	8.2	8.2	8.2	8.2
Total	10.0	10.0	10.0	10.0	10.0
Total Use with Plan					
Moderate	1.7	2.8	2.8	3.8	27.8
Severe	8.3	8.3	9.5	9.7	7.7
Total	10.0	11.1	12.3	13.5	35.5
Net Change with Plan					
Moderate	-0.1	+1.0	+1.0	+2.0	+26.0
Severe	+0.1	+0.1	+1.3	+1.5	-0.5
Total	0	1.1*	+2.3	+3.5	+25.5
	Swiftcurrent				
Existing Use					
Moderate	11.6	11.6	11.6	11.6	11.6
Severe	12.8	13.1	13.1	12.8	12.8
Total	24.4	24.7	24.7	24.4	24.4
Total Use with Plan					
Moderate	11.6	11.9	11.7	2.8	2.8
Severe	12.9	13.5	13.4	6.6	7.0
Total	24.5	25.4	25.1	9.4	9.8
Net Change with Plan					
Moderate	0	+0.3	+0.1	-8.8	-8.8
Severe	+0.1	+0.7	+0.6	-6.2	-5.8
Total	+0.1	+1.0	+0.7	-15.0	-14.6
	Apikuni Flat				
Existing Use					
Moderate	1.8	1.8	1.8	1.8	1.8
Severe	6.3	6.3	6.3	6.3	6.3
Total	8.1	8.1	8.1	8.1	8.1
Total Use with Plan					
Moderate	1.8	1.8	1.8	1.8	11.7
Severe	6.3	6.3	6.3	6.3	14.1
Total	8.1	8.1	8.1	8.1	25.8
Net Change with Plan					
Moderate	0	0	0	0	+9.9
Severe	0	0	0	0	+7.8
Total	0	0	0	0	+17.7

*The acreage disturbed at Many Glacier under the preferred alternative will increase by an unknown amount, depending upon the option selected from one of the other alternatives for the concession employee housing.

Impacts of Alternative A. The development of a new concession employee housing area 0.2 mile south of the Many Glacier Hotel would displace some wildlife. This forested site provides cover for the threatened grizzly bear (see following section).

Impacts of Alternative B. Alternative B would be the most beneficial to wildlife. Removal of the campground, motel circle, and NPS housing area would leave Swiftcurrent relatively undisturbed and increase the amount of habitat available for wildlife use.

Placement of a new visitor contact station along the entrance road might have a beneficial effect on bighorn sheep. Their success in begging food would decrease if the new management presence on the entrance road resulted in a better explanation and enforcement of regulations.

Impacts of Alternative C. Alternative C would have the most impact on wildlife. Proposals to move the Swiftcurrent campground and the NPS and concession employee housing areas to Apikuni Flat would result in the transfer of impacts from a less important habitat to a critical winter range for bighorn sheep. Winter winds strip snow from the open meadows at Apikuni Flat, exposing grass and browse that comprise critical bighorn sheep winter range. New construction and employee and visitor activities would result in the loss of much of this habitat. The current housing and campground area at Swiftcurrent is not as high quality a habitat as Apikuni Flat because it is forested. Most wildlife use of the existing developed area is in the spring and fall and not during the summer when visitors are in the area, which lessens the impacts on wildlife.

Wildlife would also be adversely affected by winter use of the area. Opening the road to winter travel would stress wildlife by disturbing their solitude and causing them to flee from human intrusion at the time when they need greatest protection to avoid depletion of energy reserves (NPS 1979). Also, plowed roads create unnatural travel routes that pose a hazard to both wildlife and visitors. Increased skiing could cause some changes in distribution and activities of wildlife. The potential for illegal hunting would increase. Sheep would beg food from people as an unnatural food source during the winter as well as the summer months. The magnitude of all these impacts would depend on the length of time the area remained open.

Threatened and Endangered Species

Affected Environment. The endangered American peregrine falcon may occasionally utilize the project area, but no eyries have been observed.

The threatened grizzly bear is frequently seen in the area. The bear management actions discussed in the Lake McDonald section apply to Many Glacier/Swiftcurrent as well. In addition, the campground at Swiftcurrent has been designated for use by hard-sided vehicles only, and campers are required to take special precautions with food preparation and storage in order to prevent human/bear encounters.

Grizzly and black bears wander through Apikuni Flat and are frequently sighted by sewage plant operators. The bears use the aspen parkland border in the spring, and the area may serve as a travel corridor between Cracker Lake and the main valley. The area south of the hotel proposed for employee housing in alternative A is utilized by grizzlies in the spring and fall. Both black and grizzly bears are drawn to the lower elevations in the east end of the Many Glacier Valley by the spring green-up and then gradually move into the developed area.

Impacts. There would be no impacts on the endangered peregrine falcon. Grizzly bears would probably be adversely affected by development of areas not presently used, such as Apikuni Flat (alternative C) and the area south of the hotel (alternative A). Increased use of these areas by humans might lead to increased human/bear conflicts, which would trigger management actions to relocate or eventually destroy problem bears, and which would also increase the potential for human injury or death.

Water Resources

Affected Environment. Swiftcurrent Creek is the major stream draining the Many Glacier Valley. Swiftcurrent Lake is located on the creek at an elevation of 4,878 feet, and its surface area is about 99 acres. Swiftcurrent Lake flows into Lake Sherburne, which was augmented by an earthfill dam completed in 1921. Lake Sherburne is an irrigation reservoir operated by the Bureau of Reclamation.

Impacts. Stabilization of the Swiftcurrent lakeshore in front of Many Glacier Lodge (alternative C) and construction of a new visitor contact station and installation of a public dock (alternatives B and C) would temporarily increase the amount of particulates in the water, but this impact would be minimal.

Floodplains and Wetlands

Affected Environment. The portion of the watershed above Many Glacier annually discharges approximately 6.5 inches of precipitation as surface water. The rising temperatures in April and May increase runoff, and the high discharges of the year can be expected in June. The highest flow at Many Glacier occurred during the June 1964 flood, when a peak of 6,700 cfs was observed. A floodplain based on the extent of this flood, which has been rated as a 500-year flood, is shown on the alternative development maps. A flood emergency response and evacuation plan will be developed by the park staff for dealing with the Many Glacier/Swiftcurrent area under any alternative considered. Warning signs will be posted in flood hazard areas, and all facilities and structures in the 100-year floodplain will be marked with flood heights. Evacuation routes will be developed and provisions will be made for emergency water and sewer treatment.

Impacts. NPS developments and facilities currently have few impacts on the floodplain. None of the alternatives would affect the water resource values of the floodplain related to the natural moderation of floodwaters,

maintenance of water quality, and groundwater recharge. No living resource values would be affected.

A flood at the park could affect some existing facilities and the visitors using them. Access to the Many Glacier Hotel might be cut off by a flood, and floodwaters might enter the first floor of the hotel again, but there should be no threat of loss of life. The southwestern edge of the Swiftcurrent campground might be flooded, but use could be controlled if necessary at this area so that it would be unoccupied during the times of high spring runoff. All other facilities in the Many Glacier/Swiftcurrent area would be out of the floodplain. The new modification on Sherburne Dam pursuant to the Reclamation Safety of Dams Act of 1978 (92 Stat. 2471, 43 USC, sec. 506) could cause inundation of the lower forested area at Apikuni Flat in the event of another 1964 magnitude flood.

Wetlands

No wetlands would be affected by any of the developments proposed in this plan.

Air Quality

The air quality for this area of Glacier National Park is discussed in this section for Sun Point. No significant impacts on air quality would result from implementation of any of the alternatives considered. Utility, building, and road construction could temporarily increase the amount of particulates and noise levels.

Visual Quality

Affected Environment. The focal point of the Many Glacier area is the Many Glacier Hotel, which presents a pleasing image to visitors. A highly visible concession employee dormitory and the accumulation of debris around the two residences at Swiftcurrent Falls detracts from the visual quality of the area.

Most of the Swiftcurrent development is screened by vegetation. The motels stand out because of the newer architectural style, but the recent repainting of the buildings has helped, and the range of visibility is relatively small. The NPS administrative/residential area is well screened by vegetation and is not noticeable from the main road.

Impacts of No-Action Alternative. Cleanup of the Swiftcurrent Falls area and screening of the maintenance activities at the hotel would greatly improve the appearance of these sites. Construction of a new employee dormitory east of the parking lot and the removal of the Ray Kinley Dorm would also enhance the visual quality of the area.

Impacts of Preferred Alternative. Visual qualities would be improved by cleanup work at Swiftcurrent Falls and by screening the maintenance facilities at the hotel. If a new concession dormitory complex was

constructed in the Many Glacier area, the new facilities would be designed to be less intrusive on the setting than the facilities being replaced. At Swiftcurrent, the service station would be designed to be architecturally compatible with existing facilities.

Impacts of Alternative A. Visual quality at Many Glacier would be improved by the removal of the Ray Kinley dorm and the formalization of parking associated with the conversion of the Helps dorm to low-cost visitor accommodations. However, the lighted trail between the Many Glacier Hotel and the new employee housing area could be visually intrusive at night.

Impacts of Alternative B. In addition to the impacts of the preferred alternative, alternative B would have the additional beneficial effect of eliminating the visual intrusion of three of the motels at Swiftcurrent. The proposed new visitor contact station north of Many Glacier would be a visual intrusion. The visual impact would be mitigated by making the structure compatible with the setting.

Impacts of Alternative C. Alternative C would have the most effects on visual quality, some beneficial and some adverse. In addition to the impacts of the preferred alternative, the relocation of NPS and concession employee housing to Apikuni Flat would create a visual intrusion on a site that is now undeveloped. The upper meadow area would be visible from the entrance road. Sensitive design and vegetative screening would mitigate this impact. Beneficial effects would be created by removing some of the motels at Swiftcurrent and by burying the power lines which currently intrude upon the views enjoyed by visitors traveling the road into Many Glacier. The proposed new visitor contact station would create a visual intrusion. One of the design objectives would be to make the facility clearly visible to visitors seeking information. The visual impact would be mitigated by making the facility compatible with the setting.

Impacts on Cultural Resources

Affected Environment. The Many Glacier historic district as currently listed on the National Register includes the main hotel building (1914) and two caretaker residences. The hotel is a rambling four-story rustic-style structure with 233 guest rooms and a four-story skylighted lobby. A pending National Register nomination would add the chalet-style Helps dorm and Ray Kinley dorm and the two pedestrian/equestrian bridges to the historic district (refer to the Many Glacier No-Action Alternative map for the historic district boundary). The boat concession buildings south of the hotel (residence, boathouse, and shop building) are also compatible with the National Register historic district buildings and might be considered for inclusion in the district.

The Sherburne ranger station, situated near the shore of Sherburne Lake about 4 miles east of Many Glacier, is included on a pending National Register nomination. In addition to the ranger cabin (1925), the nomination includes the entrance station (1928), garage (1928), barn (1926), and mess hall (1931).

The Swiftcurrent ranger station also is included in a pending National Register nomination. The significant structures are the office and residence (one structure), six cabins now used as NPS employee residences, three wood sheds, a garage, and a fire cache, all built in 1938.

The only known archeological site in the area is a small, badly disturbed Middle Prehistoric period campsite. It is the only recorded site of this time period in Glacier, and it will be tested to determine its eligibility for the National Register. None of the archeological sites discovered in the site-specific surveys performed to date would be affected by any of the alternatives proposed. Any unsurveyed areas where land modification is planned would be surveyed prior to disturbance.

Impacts of No-Action Alternative. Removal of the intrusive trailers at Swiftcurrent and their replacement with compatible structures would enhance the historic scene. The eventual demolition of the Ray Kinley dorm and the removal of the concession boat buildings would result in an irretrievable loss of cultural resources. The visual intrusion of new employee housing facilities in the historic district would be mitigated by compatible design. Other adverse effects on cultural resources would be avoided by strict adherence to NPS guidelines (refer to "General Compliance Considerations" in the cultural resource discussion for Lake McDonald).

Impacts of Preferred Alternative. If a decision was made to demolish the Ray Kinley dorm, there would be an irretrievable loss of cultural resources. This adverse effect would be mitigated somewhat by documentation.

Removal of the intrusive NPS employee trailers at Swiftcurrent and their replacement with compatible structures would enhance the historic scene.

The other actions in this alternative would avoid adverse effects on cultural resources by strict adherance to NPS guidelines (refer to "General Compliance Considerations" in the cultural resource discussion for Lake McDonald).

Impacts of Alternative A. In addition to the impacts of the preferred alternative, removal of the 18 concession employee cabins at Swiftcurrent would result in an irretrievable loss of cultural resources. This adverse effect would be mitigated somewhat by documentation.

Impacts of Alternative B. The impacts of alternative B would differ from the impacts of the preferred alternative in the following ways. Moving the historic Sherburne entrance station to the park boundary would have a serious adverse effect of destroying its site integrity and its historic relationship with the ranger station. This effect would be mitigated by continuing the structure's historic use and siting it in a similar landscape context.

Realignment of the entrance road and construction of a new parking lot would have serious adverse effects on the winterkeeper's quarters. Surrounding it with pavement would disturb its relationship to the environment.

Removing several historic NPS residences and maintenance structures at Swiftcurrent would result in an irretrievable loss of cultural resources. These adverse effects would be mitigated somewhat by documentation.

This alternative would avoid some of the impacts of the preferred alternative, specifically impacts associated with relocating or demolishing the Ray Kinley dorm.

Impacts of Alternative C. The impacts of alternative C would differ from the impacts of the preferred alternative in the following ways. Moving the historic Sherburne entrance station to Apikuni Flat would have a serious adverse effect of destroying its site integrity and its historic relationship with the ranger station. This effect would be mitigated by continuing the structure's historic use and siting it in a similar landscape context.

Work to place power lines underground might disturb archeological resources. The work would be preceded by archeological surveys, and the excavation would be monitored.

Realigning the entrance road would have a small adverse effect on the winterkeeper's quarters by changing its historic relationship to the hotel access road. The proposed vegetative screening would have the adverse effect of changing the historic relationship between the building and its environment.

Moving several historic NPS employee residences and maintenance structures to a site near Apikuni Flat would have adverse effects.

This alternative would avoid some of the impacts of the preferred alternative, specifically impacts associated with relocating or demolishing the Ray Kinley dorm.

Impacts on Visitors

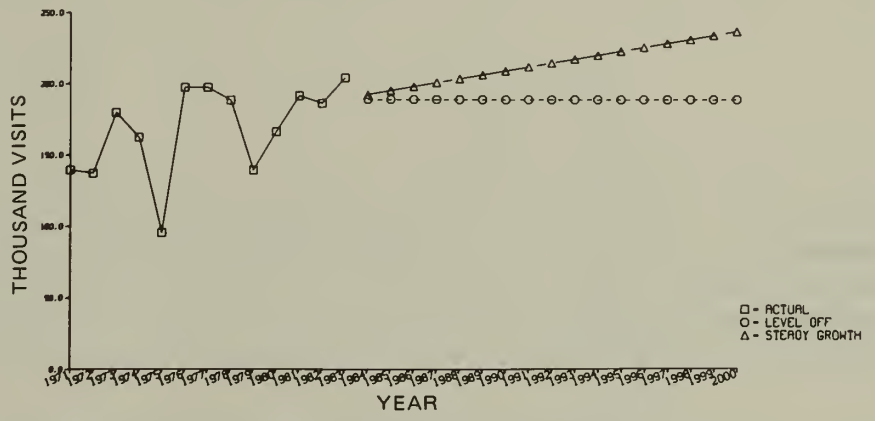
Affected Environment. The following discussion provides visitor use details specific to the Many Glacier/Swiftcurrent area. Parkwide visitor use is described in this section for Lake McDonald.

The available data about the use of the Many Glacier area includes only those visitors arriving at Many Glacier who have not yet visited any other area of the park. Thus, the reported use of this area is lower than the actual use.

A linear regression analysis of the data from 1970 to 1982 (excluding 1975) indicates that use has been increasing by an average of 2,760 visits annually. If sustained for 20 years this would result in a 30 percent increase between 1982 and 2002. However, as the following graph illustrates, most of the increase in use occurred in 1973, and the rate of increase has declined in subsequent years. After recovering from the 1975 and 1979 lows, use has tended to level off where it was in previous years. This indicates that the projected 20-year 30 percent growth rate is probably unrealistically high. The stalled growth may be closely

related to closing the campground at Swiftcurrent to tenters, but it may be independent of that factor, since it is typical of growth rates observed at similar areas throughout the national park system.

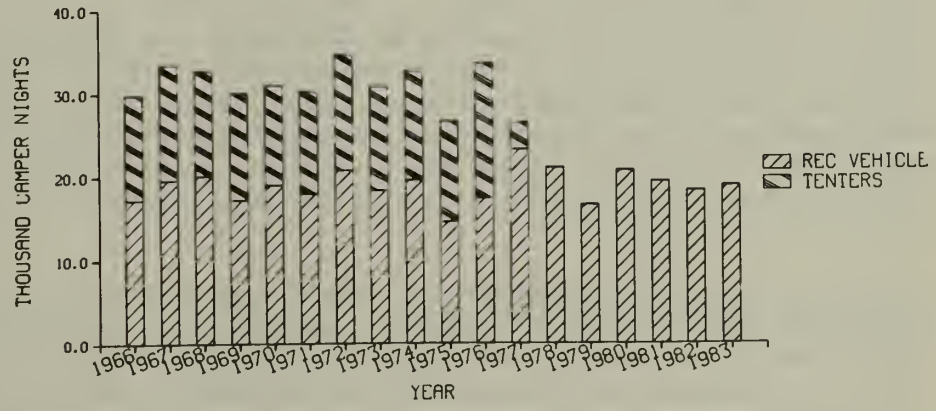
Past and Projected Growth, Visitor Use at Many Glacier



Because of weather and access problems, Glacier receives most of its visitation in July and August. Use of the Many Glacier area is even more concentrated, with about 72 percent of total use occurring during those two months. Over 89 percent of the campers come during that period.

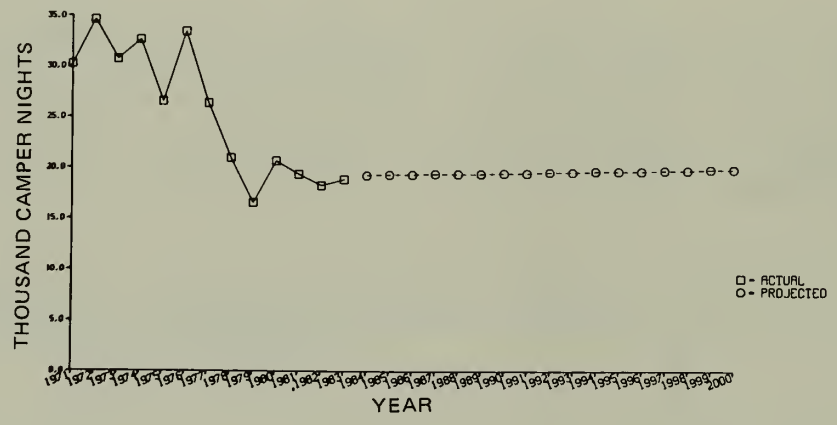
The 117 sites in the Swiftcurrent campground are well laid out under an attractive stand of pines. Despite this, campground occupancy is under 70 percent, even during the peak months, which is by far the lowest occupancy rate of the six largest campgrounds in the park. This low rate results from the exclusion of tenters since 1977 in accordance with the bear management policy. As shown in the following graph, use by hard-sided recreational vehicles has not increased significantly despite the availability of these additional campsites.

Swiftcurrent Campground Use



A linear regression analysis of just the recreational vehicle use for the period 1970 through 1982 indicates an annual increase of only 42 camper nights per year, which is equivalent to 0.2 percent of 1982 use. This is the basis for the growth projection shown in the following graph. Use in 1983 was up 3 percent over the previous year.

Projected Growth, Swiftcurrent Campground



Impacts of No-Action Alternative. Improvement of signing would make it easier for visitors to locate the visitor contact/ranger station at Swiftcurrent, decreasing some visitor confusion. However, the station would still remain difficult to locate for a sizeable portion of the first time visitors, and the contact space would remain limited. Information and orientation would be enhanced by the provision of a map of the entire valley and improvements in the bulletin boards and signing throughout the valley. Consolidating the trailhead parking at the west end of the main parking lot at Swiftcurrent would make it easier to locate and reduce hiker traffic through the cabin area.

The redesign of the Many Glacier Hotel parking lot would provide for more efficient use of the parking space, and improved lighting would result in greater visitor safety. Visitors staying in the hotel could safely use the new stairs to reach the lakeshore, and handicapped individuals would have easy access to the lakefront via the hotel elevator. Lakeshore use would be encouraged through construction of a pedestrian walkway with benches. Removal of 20 concession employees from the Many Glacier Hotel by replacing the Ray Kinley dorm with a new larger dormitory/recreation building would reduce some of the visitor/employee conflicts at the lodge.

Impacts of Preferred Alternative. With the possible exception of impacts associated with concession employee housing, all of the beneficial impacts described for the no-action alternative would occur in this alternative, also. In addition, the conversion of the employee cabins at Swiftcurrent to low-cost visitor accommodations would benefit those travelers on a tight budget. The addition of 50 parking spaces at Many Glacier would improve visitor parking. The relocation of the service station to Swiftcurrent and improved access would enhance use of the facility. The

relocation of Swiftcurrent employee housing would reduce conflicts between visitors and employees.

The construction of a second laundry/shower at Swiftcurrent and enlargement of the parking lot at the existing shower building would allow more campground and cabin guests to benefit from these facilities. The new building would be centrally located between the campground and cabins for ease of location and use. The additional facility would relieve the overcrowded condition at the existing laundry/shower.

The expansion and modification of the Swiftcurrent visitor contact station would make it more visible upon entering the developed area and would allow better service to visitors, helping to reduce visitor confusion. The modified structure would provide more space for information/orientation activities, and the expanded parking lot would allow more visitors to use the facility at one time. Information and interpretive services would also be increased at Many Glacier by stationing an interpreter at the hotel during peak hours.

Walking opportunities would be improved by the extension of the foot trail along the road from the picnic area to Swiftcurrent and by the development of a new trailhead for Grinnell Glacier.

The reorientation of the campground amphitheater would decrease the disturbance to evening programs caused by car headlights. Expansion of the facility would allow all visitors who wished to attend interpretive programs to do so.

Impacts of Alternative A. The impacts of alternative A would be similar to those described for the preferred alternative, with the possible exception of the impacts associated with concession employee housing. Under alternative A the construction of a separate employee dorm complex 0.2 mile south of the hotel would reduce the visitor/employee conflicts, although it is conceivable that employee traffic through the southern portion of the hotel complex might increase. The conversion of the Helps dorm to low-cost visitor accommodations would increase these facilities by approximately 50 units, which would benefit travelers on a tight budget.

Impacts of Alternative B. The impacts of alternative B would differ from the impacts of the preferred alternative as follows. A shift in the number of overnight accommodations in the Many Glacier Valley would be coupled with an increase in facilities at Lake McDonald. The removal of the Swiftcurrent motels would mean that some visitors would be turned away during peak use months, reducing their length of stay in this part of the park.

The removal of the existing campground would force visitors with recreational vehicles to use facilities outside the park, diminishing the visitor experience for this group of travelers. With the campground removed, the single laundry/shower facility would adequately serve the cabin guests, and the building's parking lot would be expanded to solve the access problem.

The relocation of NPS employees (except those needed for emergency services) from Swiftcurrent to an area outside the park would reduce the intrusion of structures on the visitor experience.

Visitor contact and orientation would be improved by construction of a visitor contact station near the winterkeeper's quarters north of the Many Glacier Hotel and by the construction of a ranger station in Babb. The improvement of signing would make it easier for visitors to locate the Swiftcurrent ranger station. A new courtesy dock in front of the hotel would provide some private boat docking and allow visitor use of the dock for other recreation purposes.

Alternative C. The impacts of alternative C would differ from the impacts of the preferred alternative as follows. The conversion of the concession employee cabins at Swiftcurrent to low-cost visitor accommodations and the replacement of two motels with a 50-bed dormitory-style accommodation would greatly change the character of lodging and benefit those travelers on a tight budget.

The relocation of the Swiftcurrent campground to Apikuni Flat would separate campers from visitors using the concession overnight facilities. Campers would be somewhat inconvenienced by being a couple of miles away from the camper store, restaurant, and laundry/shower.

The relocation of most NPS employee housing from Swiftcurrent to Apikuni Flat would reduce the intrusion of residential structures on the visitor experience.

The construction of a new visitor contact station that would be visible immediately upon entering the developed area would reduce visitor confusion and promote orientation to the developed area and the valley. The new structure and expanded picnic area parking lot would provide greater visitor contact space, improved access, and increased parking capacity.

Extension of the visitor season into the fall and winter months would provide an enjoyable experience for some visitors.

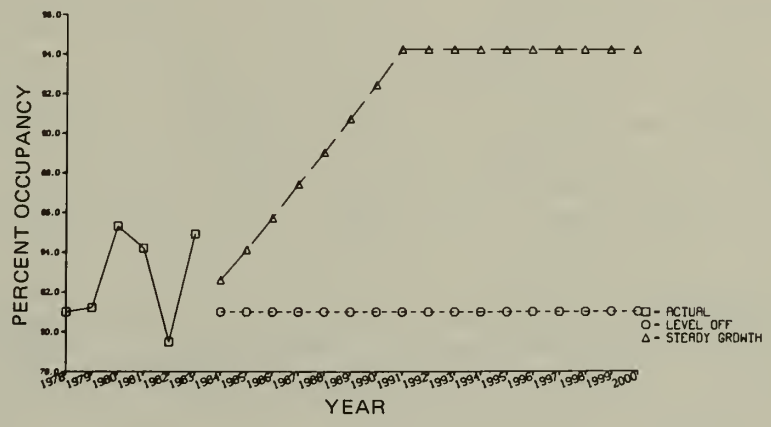
Constructing a courtesy dock at the launch ramp site would provide limited private boat docking and allow visitor use of the pier for other recreation purposes.

Impacts on Concessioners

Affected Environment. Three concessioners provide visitor services at Many Glacier. Glacier Park, Incorporated, provides lodging and food service, transportation, and gift and gasoline sales from late May to early September. Glacier Park Boat Company provides boat tours on Swiftcurrent Lake during June, July, and August, and Rocky Mountain Outfitters, Incorporated, supplies horseback rides during the same period.

The following graph illustrates the current and projected use levels of overnight accommodations at Many Glacier and Swiftcurrent. Two growth levels are shown, one based on a continuing growth pattern and the other on a more conservative leveling-off pattern.

Past and Projected Use of Lodging, Many Glacier and Swiftcurrent



Impacts of No-Action Alternative. There would be no financial impacts on Rocky Mountain Outfitters or the Glacier Park Boat Company under the no-action alternative. The actions under this alternative would not affect the gross sales for GPI. However, this alternative would require a considerable investment by the concessioner to improve the handicapped accessibility of facilities, improve parking at the Many Glacier Hotel parking lot, construct a new employee dorm at the Ray Kinley dorm site, and upgrade the employee cabins at Swiftcurrent. GPI employees would benefit from renovated housing at Swiftcurrent and a new dorm at Many Glacier.

Impacts of Preferred Alternative. This alternative would have no significant economic impact on Rocky Mountain Outfitters or the Glacier Park Boat Company.

GPI could expect a minor loss on their investments to convert the Swiftcurrent employee cabins to low-cost visitor accommodations and the motel along the entrance road to employee quarters. However, the concession employees would benefit substantially from these new lodging accommodations. Those concession employees residing in the Ray Kinley dorm at Many Glacier would continue to be subjected to substandard and crowded conditions unless the decision was made to replace this dorm with a new building. The concessioner would also incur expenses to provide a walkway in front of the Many Glacier Hotel, rehabilitate the Swiftcurrent shower/laundry facility, improve handicapped accessibility, and enhance the Many Glacier Hotel parking lot.

Impacts of Alternative A. The impacts of alternative A would differ from the impacts of the preferred alternative in the following ways. GPI could expect an increase in lodge sales because of the replacement of cabins with a new 17-unit motel and the conversion of the Helps Dorm to

low-cost visitor accommodations. There would be no financial return on the expenditures required to provide a new employee housing area south of the Many Glacier Hotel, but the concession employees would benefit from new separate accommodations.

Impacts of Alternative B. The impacts of alternative B would differ from the impacts of the preferred alternative in the following ways. GPI could expect a significant decrease in gross sales as a result of removing the Swiftcurrent campground and three motels. Most of the loss in gross sales would be offset by a corresponding increase in sales at Lake McDonald. There would be no financial return on the expenditures required to provide new dorms outside the park, but most of the concession employees would benefit from new separate accommodations.

Impacts of Alternative C. The impacts of alternative C would differ from the impacts of the preferred alternative in the following ways. GPI could expect a significant decrease in gross sales as a result of the removal of two motels. This loss in gross sales would be offset by a corresponding increase in sales at Lake McDonald and by sales from a new 50-bed dormitory-style accommodation at Swiftcurrent. There would be no financial return on the expenditures required to construct a supplemental employee dorm complex at Apikuni Flat, but most of the concession employees would benefit from new separate accommodations. The concession employees staying in the Ray Kinley dorm would still be subjected to crowded and substandard conditions.

Impacts on Adjacent Communities

Affected Environment. A description of the socioeconomic characteristics of the region can be found in this section for Sun Point.

Impacts. There would be little to moderate economic impact on local communities, depending on which alternative was implemented. The local expenditure of some of the construction funds (up to $10.5 million in alternative C) would have a short-term effect on some local businesses. The cumulative effects of construction at all of the developed areas on the east side of the park would temporarily stimulate a modest increase in economic activity in adjacent communities.

The provision of additional low-cost visitor lodging, which would occur in the preferred alternative and alternatives A and C, would take away from existing businesses outside the park.

Under alternative B, removal of the campground would increase use of neighboring tribal or other private campgrounds. Removal of motel units might increase use of similar units outside the park; however, since the decrease in units at Swiftcurrent would be accompanied by an increase in units at Lake McDonald, there would probably be little or no effect outside the park. Relocation of most of the employee housing outside the park would contribute to potentially long-term impacts on the town of St. Mary, as described for alternative B for the St. Mary maintenance/ residential area.

No other components of the environment would be appreciably affected by any of the alternatives.

Table 15: Impact Analysis Summary, Many Glacier/Swiftcurrent

	No-Action	Preferred	A	B	C
Natural Environment					
Soils	0	-	-	+	-
Vegetation	0	-	-	+	-
Wildlife	0	0	0	+	-
Threatened/endangered	0	0	-	+	-
Water resources	0	0	0	0	0
Floodplains	0	0	0	0	0
Air quality	0	0	0	0	0
Visual quality	+	+	+	+	-
Cultural Environment					
Archeological resources	0	U	U	U	U
Historic resources	0	0	-	-	-
Visitor Use	0	+	+	0	+
Socioeconomic Environment					
Adjacent communities	0	+	+	+	+
Concessions	-	-	-	-	-

+ Beneficial effect
0 No effect or no net effect
- Adverse effect
U Uncertain

SUMMARY OF PUBLIC INVOLVEMENT

Scoping and public involvement meetings, newsletters, questionnaires and brochures were an integral part of the planning process. Their purpose was to gain information that would aid in planning and to keep government agencies and the public informed throughout plan formulation.

SCOPING MEETINGS

Meetings were held with federal, state, and local agencies and the park concessioners to identify and discuss planning issues that might affect or be affected by those agencies and organizations. The following meetings were held:

Date	Place	Agency
June 28, 1982	West Glacier, MT	U.S. Forest Service (Glacier View District of Flathead National Forest)
August 6, 1982	East Glacier, MT	Glacier Park, Inc.
November 16, 1982	Columbia Falls, MT	Chamber of Commerce (Kalispell, Whitefish and Columbia Falls)
November 17, 1982	West Glacier, MT	U.S. Forest Service (Flathead National Forest), Montana Department of Lands, Montana Department of Fish, Wildlife and Parks
November 18, 1982	Helena, MT	Montana state officials representing the Governor's Office, Department of Agriculture, Department of Natural Resources, and Department of Fish, Wildlife and Parks
November 19, 1982	Helena, MT	Montana Department of Health and Environmental Sciences, State Historic Preservation Officer
December 22, 1982	Denver, CO	Advisory Council on Historic Preservation
June 6, 1983	East Glacier, MT	Belton Chalets, Inc., Glacier Park Boat Company, Glacier Park, Inc., Glacier Wilderness Guides, Rocky Mountain Outfitters, Inc.

PUBLIC INVOLVEMENT

In July 1982 questionnaires were distributed at entrance stations and visitor contact stations in the park. These questionnaires were intended to elicit concerns and issues from park visitors for consideration during the development of alternatives. There were 190 responses received. In August and September 1982 brochures were distributed that described preliminary planning alternatives for each of the four study areas. A total of 320 individuals responded to one or more of the four brochures. A summary of comments for each area follows.

Lake McDonald (77 respondents)

Major support was expressed for
- expanded day use opportunities (picnic area, public dock, shoreline trail)
- additional interpretation and information
- no change to overnight lodging

Moderate support was indicated for
- winter day use and interpretation
- improved and expanded concession employee housing

Little support was expressed for
- additional visitor lodging
- redesign or relocation of some cabins
- conversion of employee recreation room to interpretation room or ranger office
- outdoor food service or fast food service
- a wayside exhibit on surrey transportation story

Sun Point/Rising Sun/St. Mary (60 respondents)

Major support was expressed for
- no change in camping
- additional interpretation and information
- existing lodging facilities
- picnic area at Sun Point

Moderate support was indicated for
- improved visitor center access
- public boat dock
- upgrading Rising Sun visitor cabin road
- retaining Sun Point parking for future transit staging area

Little support was expressed for
- reducing visitor lodging and/or conversion of visitor lodging to concession employee housing
- roving interpreter at Sun Point and interpretation by the concessioner
- removal of Sun Point parking

group campground
relocating trailhead parking at Rising Sun to the former cabin sites or service station
shifting emphasis of orientation and information to a small new facility at Sun Point or Rising Sun

Many Glacier/Swiftcurrent (110 respondents)

Major support was expressed for
additional interpretation and information
bike/hike trail between Many Glacier and Swiftcurrent
no change to Swiftcurrent campground
winter hostel
transportation system within the valley

Moderate support was expressed for
expanded day use opportunities at Many Glacier Hotel
no change to visitor lodging
no change in winter use
redesign of the Many Glacier Hotel parking area to accommodate a bus transit stop

Little support was expressed for
shifting or building new facilities
reducing visitor lodging

November 17, 1982, a public workshop was held in Columbia Falls, Montana, to present the preliminary DCP alternatives. Thirty-five people attended the workshop along with park staff and news media representatives. For Lake McDonald, participants expressed concern about a possible increase in lodging facilities and who would provide the funding, a fast food operation, buildings in the Snyder Creek floodplain and options to protect these facilities, the planning process and who ultimately selects the preferred alternative, the total cost of the alternatives, and visitor/employee conflicts.

The major area of concern in the Sun Point/Rising Sun/St. Mary DCP area centered on the NPS residential and maintenance yard complex adjacent to Divide Creek. Several individuals wanted to know the repair costs as a result of previous floods and how often serious flooding occurred. Protection alternatives were felt to be unnecessary by some participants.

For the Many Glacier/Swiftcurrent area, interest was expressed in the hostel option, consolidation of trailheads, and whether the Swiftcurrent campground would be reopened to tent camping.

The overall message was that the park has been developed in an outstanding way, people like the park the way it is now, and the National Park Service should not overplay problems and overplan for the park.

A newsletter summarizing all public comment and future planning steps was distributed in February 1983.

AGENCIES AND ORGANIZATIONS CONTACTED

The following agencies and organizations were contacted over the course of this study:

Federal Agencies

Advisory Council on Historic Preservation
Department of Agriculture
  Forest Service
Department of Defense
  Army Corps of Engineers
Department of the Interior
  Bureau of Indian Affairs
  Fish and Wildlife Service
Environmental Protection Agency

State, Local, and Other Agencies

Blackfeet Tribal Council
Flathead County Commission
Flathead River Basin Study
Flathead Regional Development Office
Glacier County Commission
Montana Department of Fish, Wildlife and Parks
Montana Environmental Information Center
Regional Development Office

Organizations

Audubon Society
Bigfork Eagle
Border Grizzly Project
Canyon Coalition
Cross Country Ski Club
Daily Interlake
Defenders of Wildlife
Flathead Backcountry
Flathead Courier
Flathead Snowmobile Association
Flathead Wildlife
Glacier Reporter
Great Falls Tribune
Hungry Horse News
Kalispell Weekly News
Kalispell Chamber of Commerce
KALS Radio
KCFW TV
KERR Radio
KGEZ Radio
KJJR Radio

KOFI Radio
KTXX Radio
The Missoulian
Montana Outfitters
Montana Wilderness Association
North Fork Landowners
Northern Continental Conservation Committee
Professional Wilderness Outfitters Association
Skyline Outfitters
Whitefish Pilot
Wolf Ecology

APPENDIX A: FLOOD HISTORY AND FREQUENCY

Major floods occurred in the Flathead Valley during June 7 through 9, 1964, and June 17 through 19, 1975. The floods were caused by intense rainstorms and accelerated melting of the snowpack. These are the only two known occurrences of this particular type of weather pattern in this region of the country. (A similar event may have occurred in the late 1930s, but satellite tracking was not developed yet.) These rainstorms developed from a deep trough of low pressure air that lingered over the western states. Warm moist air from the Gulf of Mexico was pulled up in a north to northeasterly direction, resulting in a strong upslope flow. Both storms resulted in two to three days of moderate and intense rain. The estimated average rainfall for the Middle Fork Basin was 4 to 5 inches in 1975. The rainfall intensity varied depending on elevation, location, and time, but the recorded precipitation at Summit, Montana, was between 6 and 7 inches during the 1964 and 1975 storms. In some areas rainfall exceeded 14 inches, and rainfall rates were as high or higher than 1 inch in six hours during these storms.

Both storms occurred during the normal period of peak snowmelt runoff. The snowpack coverage for the Flathead Basin was estimated to be 50 percent in 1975 and the snowmelt in this area was 4 to 5 inches. The 1964 storm occurred during a year of higher than average snowpack.

The major cause of the 1964 and 1975 floods was intense rain. Storms that cause these floods are most likely to occur from mid-May to mid-July and are completely independent of snowpack. If the storm happens to take place during a season of very high snowmelt runoff, then the flood intensity will be much higher. Prior to 1964 the recorded peak flow of the Flathead River at Columbia Falls was 19.7 feet (1894), and 40,000-50,000 cfs was considered a heavy flow. The 1964 peak was 26 feet and 150,000 cfs.

The recurrence intervals of the 1964 and 1975 floods are not known, but they are considerably greater than 100-year events. In 1964 the flood interval was estimated at over 500 years, and in 1975 the flood interval was tentatively estimated to be 200 years or more. The estimates are based on the likelihood of certain weather patterns developing as opposed to a straight projection of yearly streamflow records. An exact recurrence interval for the entire storm is difficult to calculate because the storm intensity varied from drainage to drainage and because flow recording stations are sparse in the area.

The data available indicate that the 1964 flood was larger than the 1975 flood. The peak flow of the Flathead River at Columbia Falls was 77,000 cfs in 1975 and it was 150,000 cfs in 1964. Total flood damages in the area were $3 million to $4 million ($300,000-$400,000 for Glacier National Park) in 1975 and $23 million to $24 million ($5 million to $6 million for Glacier National Park) in 1964. The park staff reported that the flow in 1975 was much less than it was in 1964, when the Lake McDonald Lodge was damaged.

APPENDIX B: CULTURAL RESOURCES

HISTORICAL SIGNIFICANCE

The significance of historic resources at Glacier National Park is their relationship to prominent themes in park history: early exploration and settlement, creation and expansion of tourism, and extension of administrative control. Homestead structures and the remains of early 20th century oil exploration enterprises reflect the prepark (1910) period of settlement in the North Fork of the Flathead River valley. The distinctive hotels and chalets of Glacier and the unique engineering resources of the Going-to-the-Sun Road evidence the park's primary attraction as a tourist retreat. Park officials have minimized the intrusion on the beauty of Glacier by their use of rustic architecture and the placement of administrative buildings. The structures included in the multiple resource nomination for Glacier National Park exemplify the development of these major historical themes.

ARCHITECTURAL SIGNIFICANCE

The architectural style of many structures in Glacier National Park represents what has been termed the rustic style. This term has been given to a style of architecture that uses natural materials, such as logs and stone, and allows the structure to blend with the environment.

Rustic architecture is a style that can be applied to most of the structures within the Glacier National Park boundary. Early pioneer and regional building techniques used by the homesteaders of the North Fork of the Flathead River were later used by private individuals, the Great Northern Railway, and the National Park Service in the construction of park buildings. The Great Northern Railway Company used a rustic style in the construction of the Glacier Park Hotel, Many Glacier Hotel, and nine mountain chalets. Most of the structures were built of cedar logs.

Two factors in the period 1900-1927 influenced the development of the many structures in Glacier National Park. First, the American arts and crafts movement greatly influenced the architects and builders of the period in the use of natural materials to blend the structures into the beauty of the natural environment. Elements of the architecture and furnishings in the craftsman homes of the arts and crafts movement can be seen in the structures built during this period in Glacier. The use of stone foundations, stone courtyards, shingles on the walls and roofs, log columns, decorative (carved) brackets under the eaves with exposed rafters, interior courtyards, huge stone fireplaces, and the use of wood elements to break up large wall surfaces, which was typical of the craftsman homes, can also be seen in the cabins, lodges, and chalets of the period.

Establishment of a viable transportation network in Glacier National Park continued through the 1930s. Between 1921 and 1936, deep-gravel and macadam roads brought automobiles to and through the park. The Going-to-the-Sun Road, through the heart of Glacier, represented one of

the more ambitious engineering feats in the park's history. Begun in 1921, the road extended from Lake McDonald on Glacier's west side, across Logan Pass, to St. Mary on the east side. Completion of the Going-to-the-Sun Road in 1933 resulted in increased visitation to Glacier and initiated the new era of automobile travel through the park.

A Columbia Falls fur trader and hotel owner, John E. Lewis, purchased property on the east side of Lake McDonald in 1909 and constructed several cabins. After Glacier was designated a national park in 1910, the growing tourist population prompted Lewis to build the Glacier Hotel, now known as Lake McDonald Lodge. Lewis's three-story hotel with its surrounding cabins represented the most ambitious and impressive private hotel venture within the park.

Louis Hill, son of the president of the Great Northern Railway Company, also focused his attention on hotel development in Glacier. With the park's establishment in 1910, the Great Northern Hotel Company, a subsidiary of the railroad, expanded into an extensive tourist business. The company constructed a complex of 11 chalets and two grand hotels between 1911 and 1917. Use of locally available and compatible materials in a European chalet/alpine mode produced a unique architecture which was sympathetic to the mountainous environment.

SUMMARY OF ARCHEOLOGICAL RESOURCES

Based on several researchers' designations of site types, the sites in Glacier can be grouped into the following categories: campsites (7), isolated finds (4), lithic scatter, tipi ring, depression in ground, Indian trail, scarred tree, and historic (2). It is difficult to determine the cultural and temporal sequence of these sites due to a very limited amount of diagnostic material. One recovered projectile point was tentatively assigned to the McKean complex. Based on radiocarbon dating, the McKean complex had been dated at 3000-4000 B.P. (Mulloy 1954). The two historic sites located are thought to have been occupied between the late 1800s and early 1900s (St. Mary townsite) and the 1920s to 1930s (homestead ranch).

HISTORY OF ARCHEOLOGICAL RESEARCH

The first known archeological work in Glacier National Park was conducted by Carling Malouf in 1963. In 1965 Malouf surveyed the vicinities of Lake McDonald, the North Fork of the Flathead River, and West Glacier. He also conducted a preconstruction survey of the Camas Creek cutoff. Nine sites were located. In the summer of 1970, the University of Montana Statewide Archeological Survey investigated the north and middle forks of the Flathead River in Glacier. Four previously unrecorded sites along the North Fork of the Flathead were located. The remaining archeological work in Glacier has been done in the form of preconstruction surveys. In 1974 R.K. Nickel surveyed the Lake McDonald and Many Glacier sewer systems and Floyd W. Sharrock surveyed the reconstruction route of the Montana Forest Highway in Glacier (NPS 1974b, 1974c). No sites were located. In 1975 R.K. Nickel surveyed the proposed location of the

Rising Sun sewer system and located no sites (NPS 1976b). Zalucha and Thompson (NPS 1976c) conducted surveys in three areas where utility improvements were planned, the Waterton ranger station, St. Mary sewer system additions, and Many Glacier water tank. No archeological sites were located. In 1978, Mark Guthrie (NPS 1978f) conducted preconstruction surveys in connection with 11 proposed developments and recorded five new sites. To date archeological investigations within Glacier National Park have yielded a total of 27 sites.

ARCHEOLOGY AND MANAGEMENT RECOMMENDATIONS

Glacier National Park, as a federally owned and managed area, has not received the 100 percent intensive and extensive archeological survey that is mandated by EO 11593. Consequently, the most pressing archeological need for the park is the completion of this survey, which was designed to completely examine land in Glacier National Park for the presence or absence of prehistoric and early historical cultural resources. At the present time, no prehistoric archeological sites within Glacier are listed on the National Register of Historic Places. As per NPS policy, any unsurveyed areas for which land modification is planned must receive preconstruction surveys before the disturbance takes place.

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