

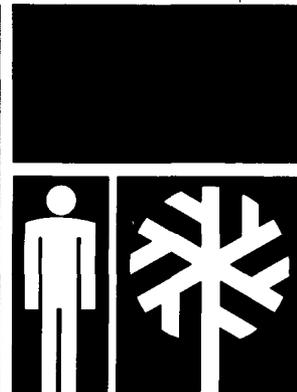
draft development concept plan
environmental assessment
may 1985

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GETTYSBURG
LITTLE ROUND TOP/DEVIL'S DEN

NATIONAL MILITARY PARK / PENNSYLVANIA



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DRAFT DEVELOPMENT CONCEPT PLAN /
ENVIRONMENTAL ASSESSMENT

LITTLE ROUND TOP / DEVILS DEN
GETTYSBURG NATIONAL MILITARY PARK

ALTERNATIVES AND REVIEW MAILBACK SHEET

JUNE-JULY 1985

DRAFT DEVELOPMENT CONCEPT PLAN
ENVIRONMENTAL ASSESSMENT

LITTLE ROUND TOP/DEVIL'S DEN
GETTYSBURG NATIONAL MILITARY PARK
Pennsylvania

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INTRODUCTION

Gettysburg National Military Park commemorates one of the most significant events of the Civil War--a turning point. The battle that was fought at Gettysburg during the first three days of July 1863 has been called by some historians the high water mark of the Confederacy.

In recognition of the area's significance, Congress created the Gettysburg Battlefield Commission in 1892 to mark positions, secure and compile data, purchase land of historical importance, and open and improve avenues along the lines of historic troop positions. The act of February 11, 1895 (28 Stat. 65), incorporated the lands belonging to the Gettysburg Battlefield Memorial Association into Gettysburg National Military Park. The charter that established the battlefield association expresses the purposes of the park:

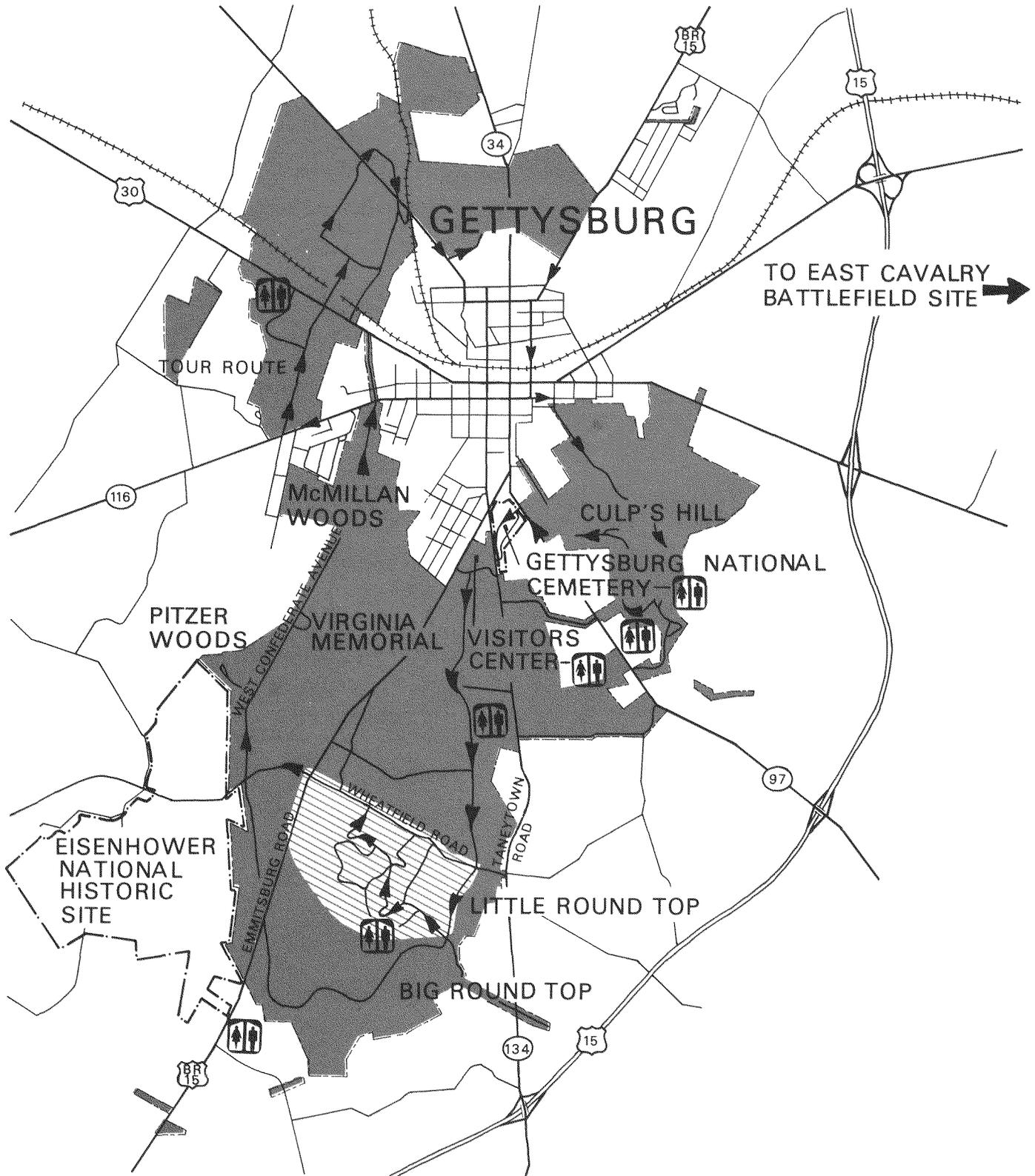
. . . to hold, and preserve, the battlegrounds of Gettysburg on which were fought the actions of the first, second, and third days of July, Anno Domini one thousand eight hundred and sixty-three, with the natural and artificial defenses, as they were at the time of said battle, and by such perpetuation, and such memorial structures as a generous and patriotic people may aid to erect, to commemorate the heroic deeds, the struggles, and the triumphs of their brave defenders.

The General Management Plan for Gettysburg, approved in December 1982, dealt with the recent changes in the park and surrounding communities, particularly those involving visitor use patterns and land uses in adjacent areas. It contained long-range strategies for resource management, visitor use, and development to meet the park's management objectives for the next 10-15 years.

The Little Round Top/Devil's Den area of Gettysburg was one of the significant sites on the second day of battle. To improve visitor access to the area, reduce nonhistoric intrusions on the battlefield, and minimize environmental degradation, the General Management Plan called for the rerouting of traffic on a new road to be built on the electric railroad grade south and west of Devil's Den and removal of Crawford, Ayres, and parts of Sickles avenues within Devil's Den. It proposed that Birney Avenue be removed, and the grade reestablished to allow restoration of the historic peach orchard. Pedestrian circulation, access, and parking on Little Round Top were to be expanded and improved.

The proposed development concept plan for Little Round Top and the south end of the park, which is described in this document as alternative 1, elaborates upon the recommendations in the General Management Plan and provides the necessary information to proceed with design and construction drawings. The proposals included here build on those in the General Management Plan and its environmental assessment, the 1983 "Interpretive Prospectus," the 1981 "Natural and Cultural Resources Management Plan," and various park history reports. The only

modifications to the GMP proposals are the adjustment of a small segment of the Devil's Den bypass so that it is inside the historic tree line (for better screening) and the relocation of the comfort station to West Confederate Avenue. The project area is defined as the south end of the park east of Emmitsburg Road, south of Wheatfield Road, and north of Big Round Top.



LOCATION

GETTYSBURG NATIONAL MILITARY PARK / PENNSYLVANIA

United States Department of the Interior / National Park Service


 NORTH
 NO SCALE

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PURPOSE AND NEED

The Little Round Top development concept plan is intended to provide solutions to the following problems in order to meet the park's management objectives for protection of resources, visitor use, interpretation, and access/ circulation (see appendix B).

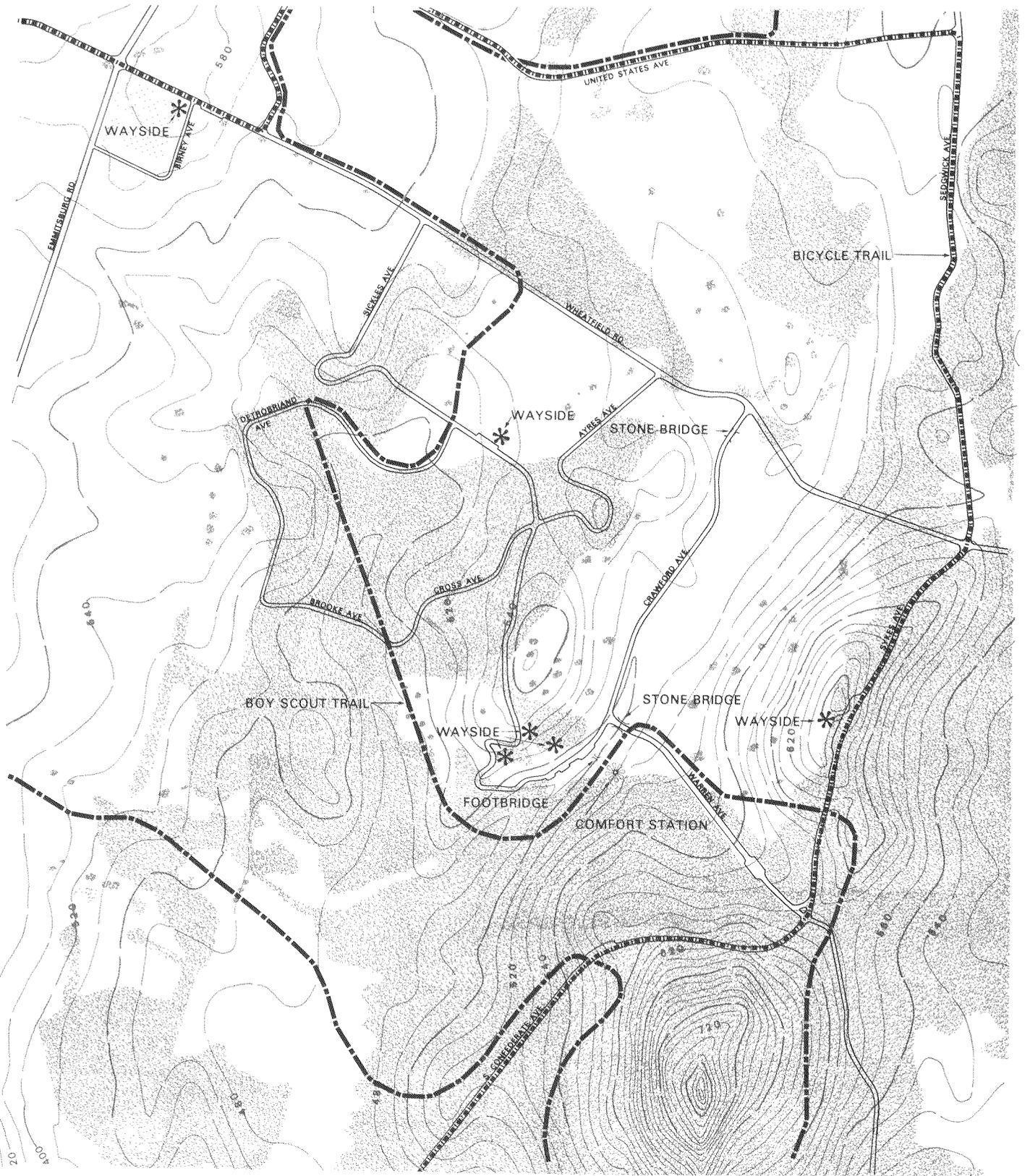
Over the last several years, trees and brush have been removed from the west slope of Little Round Top and Houck's Ridge to re-create the historic scene and vistas. However, because the main tour route along Sickles Avenue is circuitous and difficult for tour buses and large vehicles to maneuver, many people use Crawford Avenue, which cuts directly through the portion of the historic battlefield that can be viewed from Little Round Top. This large amount of traffic defeats the purpose of vista clearing to enhance the historic scene.

In addition to the visual intrusion created by tour buses and large vehicles traveling through the battlefield, the use of Crawford rather than Sickles Avenue means that approximately 200,000 tour visitors a year miss the experience of seeing Devil's Den, where significant events occurred on the second day of battle.

The existing tour road and parking areas at Devil's Den also intrude on the historic scene from the viewing area on Little Round Top and the battlefield in the vicinity of Devil's Den and the "Slaughter Pen," the area that witnessed the heaviest casualties during the second day of battle. Heavy pedestrian use and inadequate walkways have resulted in erosion and safety problems around the large boulders in Devil's Den and on top of Houck's Ridge.

Little Round Top receives heavy pedestrian use, resulting in soil compaction and erosion, vegetation loss, and destruction of the diabase boulders, walls, and other historic features. The existing design of walkways and overlook areas does not encourage visitors to stay on the trails, nor does it provide a safe environment in which to experience historic viewpoints and learn about the battle action. Poor sight distances and inadequate number of parking spaces result in congested and unsafe conditions for pedestrians and motorists.

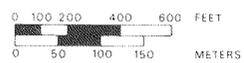
A reorganization of the interpretive program was called for in the General Management Plan and "Interpretive Prospectus," including provisions for reversing the tour route to explain the Battle of Gettysburg in a more chronological order. As proposed, visitors will travel from the first-day battlefield area on the north and west side of the park to the second-day battlefield on the south. In the south they will first encounter the Sherfy peach orchard and Rose farm, followed by the wheatfield, Devil's Den, and the Slaughter Pen, and will finally arrive at the summit of Little Round Top before continuing on to the third-day battlefield. Visitor access, orientation, and interpretation need to be improved and redesigned in each of these areas to allow for better understanding of the significance and activities of the Battle of Gettysburg.



EXISTING CONDITIONS

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DESCRIPTION OF THE ENVIRONMENT

CULTURAL RESOURCES

Events on the Second Day of Battle in the South End of the Park

The battle at Gettysburg on July 2, 1863, took place in three areas: in the vicinity of Culp's Hill in what is now the north end of the park, along Emmitsburg Road, and in the Little Round Top/Devil's Den area in the south end of the park. Battle action encompassed a large area outside the specific Devil's Den or Little Round Top sites, including Sherfy's peach orchard, the wheatfield, the Rose farm, the triangular field and Houck's Ridge, the Plum Run valley, Big Round Top, and the Trostle, Slyder, G.W. Weikert, Snyder, Sherfy, and Bushman farms. More than 30,000 soldiers fought on this ground in one of the most significant areas of one of the most significant battles of the Civil War.

In the late morning of July 2, Union troops moved west from Cemetery Ridge to a new position forming an obtuse angle, with one leg running from Devil's Den/Houck's Ridge through the Rose farm woods and the wheatfield to Sherfy's peach orchard, the other extending from the peach orchard north along Emmitsburg Road. Almost 11,000 3rd Corps troops manned this 1½-mile front; in some places artillery filled empty spaces along the line where units of soldiers did not stand, as at Wheatfield Road. Sharpshooters and skirmishers were deployed in front of the main line, using the stone walls of the Rose, Snyder, and Slyder farms as breastwork defenses.

By late afternoon Confederate troops started their advance east of Emmitsburg Road, traveling through the plowed and farmed fields. They became targets for the four guns of Smith's battery situated on Houck's Ridge just above Devil's Den. Confederate guns opened on Union troops at the peach orchard as the main Confederate assault was being mounted up the Plum Run valley toward Little Round Top.

The first contact took place at Devil's Den and the triangular field where Confederate troops were attempting to silence Smith's battery. Although very effective in slowing the advance, the guns were unable to fire on the troops once they reached the base of the triangular field because they could not be depressed enough to fire down the slope. Charge and counterattack, followed by the same a second time, resulted in a see-saw battle up and down the cleared field until Houck's Ridge and Smith's battery were finally taken by Confederate infantry.

At the same time Confederate troops were emerging from the woods south of Devil's Den to attack Smith's battery from the east. Some Union troops had fallen back east of Houck's Ridge to the two reserve guns from Smith's battery located on a knoll overlooking Plum Run. The emerging Confederate troops received fire from these guns, which momentarily halted their assault and movement up the Plum Run valley. Troops used the intermittent boulders at the base of Devil's Den for protection, firing across Plum Run. Subsequently, the open space between Big Round Top and Devil's Den witnessed some of the greatest

losses on both sides. The struggle for this area rivals all other conflicts in importance, bitterness, individual heroism, and deadliness. The defense made by Ward's brigade of the Union 3rd Corps bought valuable time and allowed the occupation of Little Round Top before it could be taken by the Confederates.

While the attack was underway at the south end of Houck's Ridge, other Confederate troops were advancing toward Little Round Top on the right. Forces clashed near its summit until Confederates were pushed back down the hill. Hazlett's battery fired from the top of Little Round Top to stop Confederate troops from advancing on the hill from the direction of Houck's Ridge. Reinforcements along the crest of Little Round Top and toward Vincent's Spur near the base of Big Round Top stopped repeated charges of Confederate troops in their efforts to take this critical field observation point, a site many believe was the key to the battlefield.

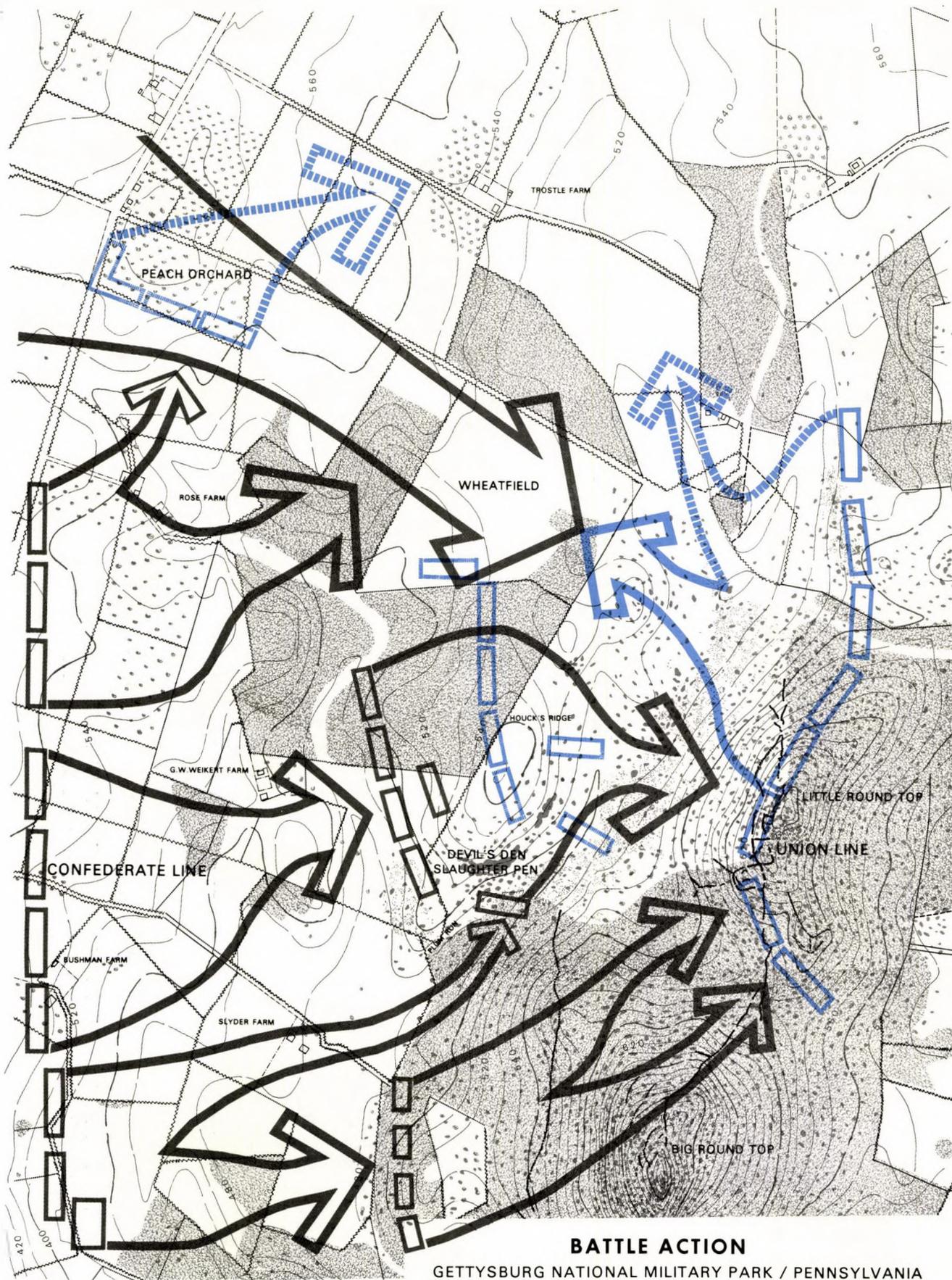
The battle spread to the wheatfield as Confederate brigades advanced in succession. Finally, Sickles' salient at Sherfy's peach orchard was struck in force and broken. Confederate brigades advanced through the peach orchard and the Rose farm, causing a retreat of Union troops in the direction of the Trostle farm. The Rose farm woods were a site of heavy battle action, and the stone walls at the farm and woods became rallying points for Confederate troops as they moved toward the wheatfield. Union troops counterattacked and forced them back across the walls towards the farm buildings. Again they rallied and returned to the edge of the wheatfield. Fighting in and near the Rose farm and this edge of the wheatfield was extremely costly to both sides.

When Confederate troops broke through Union lines, they advanced through the wheatfield, their objective being Little Round Top or Cemetery Ridge. Union forces found their position threatened and had to retire, while Confederate infantry struggled to rally for a final attack against the heights of Little Round Top. A Union counterattack across the Plum Run valley drove the Confederates back to Houck's Ridge and the wheatfield and ended the fighting in the southern part of the battlefield.

At dusk Confederate troops used the shelter of Devil's Den and the stone walls bordering the Rose farm woods and the wheatfield on their left, while additional stone walls were put up west of the Slaughter Pen and on Big Round Top in case of continued fighting the next day.

In the struggle for possession of Houck's Ridge and Little Round Top, casualties were more than 8,500. Those killed and wounded in the struggle for Little Round Top and the elevated ridges and nearby knolls lay thickly strewn among the diabase boulders and outcroppings; the Confederate corpses that lined the base of Big Round Top along Plum Run evoked such emotions that the place would go down in history as the Slaughter Pen.

Confederate troops were withdrawn to Emmitsburg Road the following day, and Union troops took an advanced position on Houck's Ridge and remained in control of the area until they withdrew to pursue retreating Confederate troops south toward Maryland.

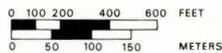


BATTLE ACTION

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LEGEND
 CONFEDERATE ATTACK 
 UNION ATTACK 
 UNION RETREAT 

NOTE: Historic conditions from Warren Survey, 1868



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Historic Scene

Natural and man-caused forces have worked some changes on the vegetation and topography of Gettysburg from what it was before the battle in June 1863. This landscape is particularly important because it gives visual meaning to all of the park's basic interpretive themes.

The farms, fences, roads, woods, and rock-strewn lands in the south end of the park are to a great extent as they were at the time of the battle, except that there are several privately owned parcels and extensive nonhistoric vegetation covers lands that were clear in 1863. On this part of the second-day battlefield are seven historic farms: the Rose, Sherfy, Bushman, Slyder, Snyder, G.W. Weikert, and Trostle farms. Three are essentially as they were in 1863.

In 1863 Big and Little Round Tops constituted a significant woodland area in the vicinity of Gettysburg. The west side of Little Round Top probably provided some saw timber for the town and local farms before the battle; removal of wood on Big Round Top was prohibited by its owner. These areas were important because by 1863 most woodlands had been cleared for farmland or pasture. Most historic farms had a woodlot or woods that provided almost all the needs for timber, firewood, furniture, and tools. There were nine historic wooded areas on the southern part of the second-day battlefield. Farm crops and produce on these 1863 farms provided for most of the needs of farm families.

In 1863 approximately 15½ miles of historic fencing existed in the south end of the park. They were of six different types: stone, stone with a wood rider on top, post-and-rail, Virginia worm, post-and-board, and picket. Today approximately 6 miles of historic fencing remain.

Many of the historic farms included orchards. The largest and most historically significant orchard identified on the battlefield is the Sherfy peach orchard. This orchard was a pioneer orchard where new growing methods were used, and it was the focal point of a small, local canning industry. The original orchard was 13 acres; it is currently undergoing a replanting program to restore it to its original size. Other orchards in the south end of the park included those at the Rose, Bushman, and Trostle farms.

Road Network

Emmitsburg and Wheatfield roads are the only historic roads in the project area; historic lanes include those to the Bushman, Slyder, and Rose farms. After the war, avenues were constructed to provide access to important battle action areas. In 1895 the 17 miles of park avenues that had been built under the auspices of the Gettysburg Battlefield Memorial Association were transferred to the federal government. These avenues were generally built along battle lines to accommodate early visitation patterns and to allow the story of the Battle of Gettysburg to be told from various locations previously inaccessible by carriage. They have subsequently become an important part of the park because they are examples of early park development efforts. Approximately 31 miles of paved avenues are in the park today.

Monuments

The placing of monuments at Gettysburg began in 1878 and continues to the present; states, organizations, societies, and individuals have placed more than 1,300 monuments on the battlefield and at other nearby locations in Pennsylvania and Maryland. Small markers identifying advance positions and flanks are scattered among the larger monuments and memorials. Seventy-five of the park's larger monuments are in the Little Round Top/Devil's Den project area (see appendix F).

Gettysburg Electric Railroad

During the early 1890s the Gettysburg Electric Railroad Company constructed and operated an electric railroad through what is now Gettysburg National Military Park. The track ran from downtown Gettysburg to Emmitsburg Road, which it followed to Wheatfield Road. It continued east and south through the Rose farm, Slaughter Pen, and Devil's Den, then turned north and went through the middle of the Plum Run valley at the base of Little Round Top and returned to the town of Gettysburg via the Copse of Trees and Ziegler's Grove.

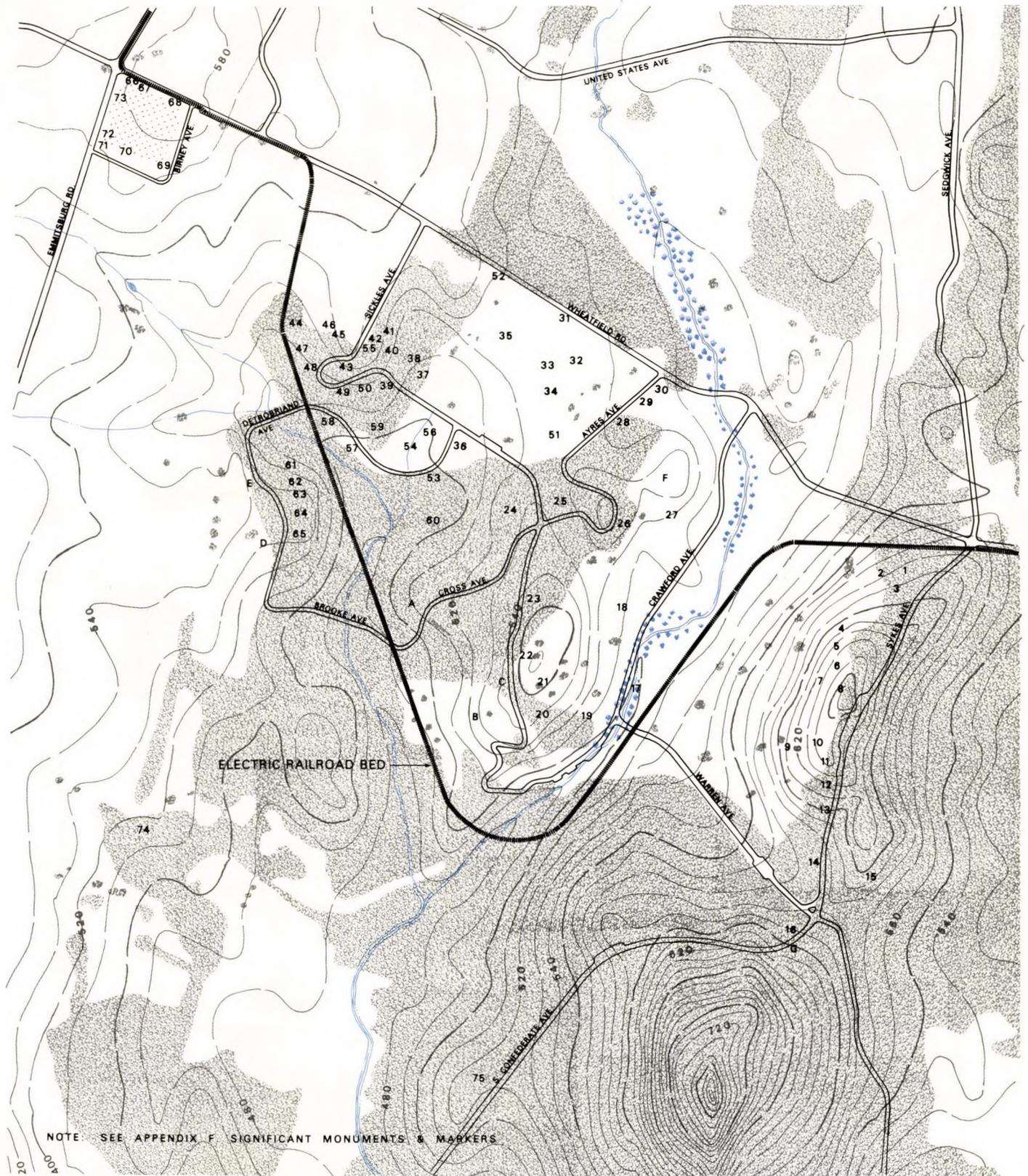
In 1894 the Gettysburg Battlefield Memorial Commission filed suit against the Gettysburg Electric Railroad Company to establish the commission's authority to manage and develop the park. In 1896 the U.S. Supreme Court determined that the United States could, in the exercise of its right of eminent domain, condemn and take the necessary lands of individuals and corporations for the purposes of commemorating the Battle of Gettysburg. Since that time most evidence of the electric railroad has been removed or obliterated. The only remains in the south end of the park are traces of its alignment and path through the Rose farm, Slaughter Pen, Devil's Den, and Plum Run valley.

Archeology

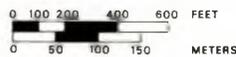
Various archeological surveys and salvage projects have been undertaken in the park. Evidence of prehistoric occupation dating from 4000 B.C. (Middle Archaic) through recent historic contact periods has been found. Some field work has been completed at the Rose and Bushman farms; artifacts discovered are from both prehistoric and historic periods. Because of the park's proximity to the Susquehanna River, most of the recent prehistoric inhabitants of the area were probably related to the Susquehannocks. Their dominance in the region ended during the middle 1600s when disease and warfare diminished their numbers. The area was then occupied by members of the Iroquois Nation until the beginning of European settlement.

NATURAL RESOURCES

Gettysburg National Military Park is in the Piedmont physiographic province in the eastern foothills of the Appalachians. The South Mountains of the Blue Ridge province, outside the park to the west,



POST BATTLE CULTURAL RESOURCES
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provide a visual contrast to the low ridges and shallow valleys of this rolling topography. The valleys are elongated down-fault basins underlain with soft Gettysburg shale and gray and white sandstones. The ridges and knoblike hills are formed from intrusive dike formations and diabase sills. The dikes consist of very dense, fine-grained igneous rocks that resist weathering. Many of the stone fences in the park are composed of these "ironstone" boulders. The Gettysburg sill, including Big Round Top and Little Round Top, is massive, with coarse-grained igneous rocks composed of dark minerals and feldspar, which weathers readily. These are seen in Devil's Den as large rounded boulders.

Three dominant soil associations extending from the northeast to the southwest across the park relate directly to their parent rock formations. The Montalto/Mount Lucas/Watchung soil association covers most of the area of the second-day battlefield. These soils are associated with the prominent ridges and large boulders of the diabase sill. Most of the soils are too stony for farming, but cleared fields on deep, well drained Montalto soils can be productive. The Mount Lucas and Watchung soils are poor for crop production and are best used for pasture, woodland, and recreation. They also have some moderate to severe development limitations because of the high water table and seasonal flooding. Along Plum Run are prime agricultural soils of the Chewacla type.

The park lies in the Potomac River drainage basin. The two major streams, Rock Creek and Marsh Creek, flow south through shallow valleys to form the Monocacy River near the Maryland border. During spring and early summer, streamflow is adequate to provide for local use, but during dry periods the flow in all streams is low. Plum Run, which flows into Rock Creek south of the park, drains part of the area of the second-day battlefield. Meadows along Plum Run below Little Round Top and Big Round Top are virtually never dry, and the stream contains water in all but extremely dry periods. Floodplains have been mapped for Cumberland Township, Adams County, which encompasses the project area, and no floodplains have been identified in that area.

The Triassic shales and sandstones provide the largest and surest source of groundwater in the area. Diabase rock is a poor water bearer, and it is dense and hard to drill. Water obtained from diabase formations generally comes from the weathered zone above the hard rock. Springs were the source of water for early settlers; however, they do not produce sufficient water for current demands. There are palustrine forested wetlands south of the existing railroad grade along Rose Run, on the west side of the grade crossing with Plum Run, and northwest of the existing railroad grade on the east side of Plum Run. Dominant trees include swamp white oak, pin oak, red maple, and yellow birch. Shrub layers include spicebush, ironwood, dogwood, and greenbriar. These wetlands are important as wildlife habitat and as a source of water during dry periods (see appendix E).

An Appalachian oak forest originally covered most of the Gettysburg area, but it has largely disappeared as a result of farming and logging activities in the 18th and 19th centuries. Most of the park acreage remains open and is farmed or grazed under agricultural special use permits. Other open areas are maintained as lawns through periodic

clearing or mowing. Some of the existing woodlands have taken over areas that were cleared lands at the time of the battle. There are extensive old woodlands in the area of Big Round Top and Little Round Top.

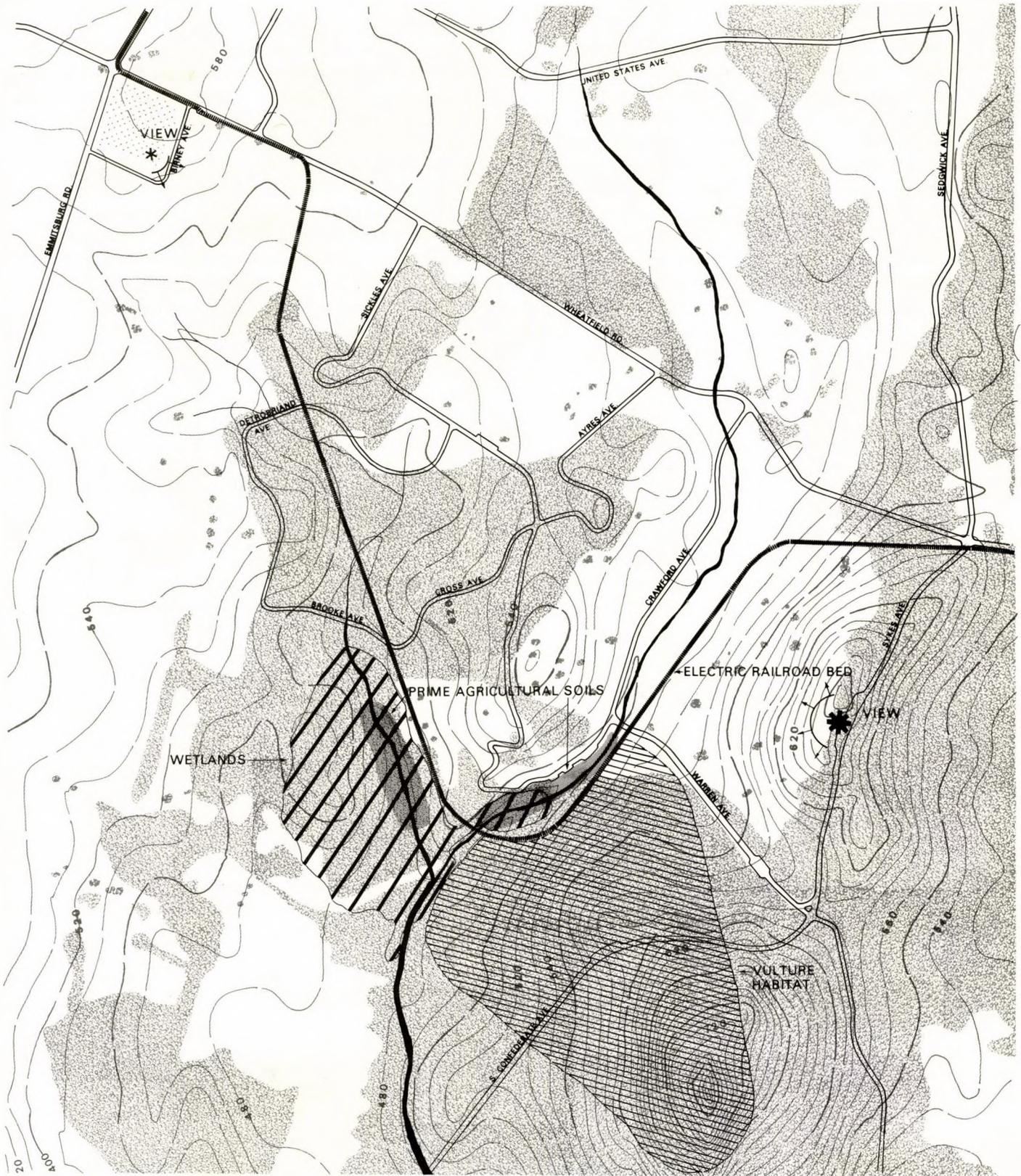
More than 40 species of trees are found at Gettysburg; white, red, and black oaks are the most numerous. The park also has a wide variety of shrubs, herbs and grasses, many of which have been introduced through agricultural and landscaping activities.

Because it supports large and varied populations of plants and indigenous animals and because of its relatively pristine condition, the Big Round Top wooded area is managed as a natural area. This area is adjacent to the project area. It encompasses approximately 200 acres and is covered with a mixed hardwood and white pine forest. The Big Round Top white pine/chestnut/oak forest type has been identified as being of prime importance as the only known example of this woodland type in the Triassic lowland section of the Piedmont province. Big Round Top was never clear cut, so it now contains many large, old trees. Some of the oaks, hickories, and other species appear to be near record size.

The mixed vegetation types in the park provide habitats for a variety of wildlife. Openland wildlife, including quail, pheasants, mourning doves, passerines, raptors, and cottontail rabbits, is found in cropped and overgrown fields, meadows, and pastures. Woodland wildlife includes black and turkey vultures, passerines, deer, squirrels, opossums, and raccoons. Ducks, geese, snipes, and other water birds and muskrat and mink inhabit wetland areas. White-tailed deer and vultures are the most commonly seen animals. The deer herd in the south portion of the park averages about 300 animals. During the fall and winter this number may increase to as many as 400 or more. Their primary feeding and bedding areas include the Big Round Top woods and Bushman and Rose farms. Black and turkey vultures are seen throughout the year, but during spring and summer they are widely dispersed, foraging within a 50-mile radius of the park. During fall and winter more than 800 birds have been counted on almost any given day on the Slyder, Bushman, and Houck's Ridge roosts. Most of their nesting and rearing takes place in the Big and Little Round Top woods and near the Slyder and Bushman farms.

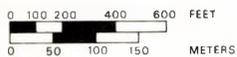
Except for occasional transient species, no federally listed or proposed threatened or endangered plants and animals (50 CFR 17.11-12, 7/27/83) are known to be endemic to Gettysburg National Military Park.

The climate of the park is moderated by the presence of the Appalachian Mountains to the west and north. Since prevailing winds are westerly, the Atlantic Ocean has only a limited influence on the climate. The average monthly temperatures vary from 32°F in January (with occasional lows of 5° to 15°) to 76°F in July (with highs from 90° to 100°). The growing season normally extends from late March to mid-October, but the frost-free period is May 15 to September 15. The annual precipitation in the park varies from 40 to 44 inches, predominantly in spring and during summer thunderstorms. From December to mid-March, snowfalls are frequent and sometimes heavy causing damage to trees and utility lines. The annual snowfall averages 24 inches.



NATURAL RESOURCES

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There has been increased concern in recent years that air pollution and acid rain are having a negative effect on both historic resources and natural ecological systems. This is a particular problem at Gettysburg because of the many monuments on the battlefield. Authorities in the field of outdoor monuments feel that the increase in air pollution, especially the sulfur dioxide content, which has occurred over the past 50-60 years, has been particularly destructive to outdoor bronze and stone. Gettysburg is in the area of highest acid precipitation in the United States. A range of 4.0 to 5.0 pH of precipitation in 1966 continued into the 1970s according to the National Center for Atmospheric Research. Recent information (December 28, 1982, through January 4, 1984) indicates that pH levels measured at the acid precipitation station in the park ranged from 3.31 to 6.39. Acid rain will continue to affect outdoor monuments and buildings as long as it remains at existing levels.

VISITOR USE

Visitor use at Gettysburg in recent years has ranged between 1.1 and 1.8 million; the total for 1983 was 1,273,349. Although the majority of park visitors come in summer (43%), spring and fall account for half of the annual visitation (25% each). Facilities are open throughout the year. Major interpretive programs, including walks, talks, and campfire programs, are scheduled from early June through August, to accommodate the increased numbers of visitors. People who stay more than one day represent about 44 percent of the park's visitors, a high percentage compared to other parks. The town of Gettysburg, with its tourist-oriented economy and abundance of accommodations, makes overnight stays possible.

There are two major types of park visitors: tourists, who visit Gettysburg to see the historic battlefield, and local residents, who use the park for recreation and commuting as well as for its historic values. Organized groups, especially school groups, constitute a relatively large percentage of the users (21%), particularly in spring and fall. Major interpretive activities in the project area include touring the battlefield, hiking, and viewing exhibits and the battlefield from the summit of Little Round Top. Other activities include pleasure driving, walking/hiking, enjoying the environment, and informal uses.

Licensed National Park Service battlefield guides offer two-hour personalized guided tours, which cover the entire park. In 1983 the guides served more than 152,000 park visitors.

The park's self-guided auto tour presents the three days of battle in reverse chronological order. It begins at the battle's climax, and as a result it is difficult to maintain interest in the story. Battlefield guides, and commercial tour guides and tapes have been using a chronological approach to the battlefield tours for many years.

Interpretive facilities along the tour route are primarily waysides. Several waysides on Little Round Top, including one with an audio program, interpret the assault on and defense of the hill. An audio wayside at Devil's Den describes the battle action around the boulders.

Two waysides on Houck's Ridge depict Smith's battery and a representative sharpshooter. Waysides at the wheatfield and peach orchard depict the battle action in those areas.

The natural resources of Big Round Top are interpreted through a self-guiding nature trail. The summit trail on Big Round Top, the trail to the Granite farm, the Boy Scout hiking trail, and a bicycle trail also provide recreational opportunities.

Special events in the park take place primarily in the national cemetery; ceremonies such as wreath layings occur throughout the park on the anniversary days of the battle and at other times.

The summit of Little Round Top is a major stop for all tours because it is historically significant and provides an excellent vantage point to explain the story of the second-day battle action. Based on traffic counts, it is estimated that more than 1.1 million people visit Little Round Top per year. In the peak visitor season as many as seven to nine groups or 350 visitors may be on the summit at one time. The way groups and individual visitors use the Little Round Top and Devil's Den areas--both their circulation patterns and the types of activities they engage in--is not yet clearly understood. Further analysis of use patterns will be necessary before final design of these interpretive areas.

DEVELOPMENT

Because the project area is used mostly for touring, hiking, and interpretive activities, it does not contain much park development. The primary facilities are the avenues associated with the troop positions or locations of the Confederate army lines--Crawford, Sykes, Warren, Ayres, Brooke, Cross, DeTrobriand, Birney, and Sickles avenues. (South Confederate Avenue and Wright Avenue are outside the project area.) This avenue system has caused the most significant changes in the battlefield's appearance compared to that in 1863. Other facilities include the comfort station and water fountain at Devil's Den; the parking area, overlook, and exhibits at Little Round Top; parking at Devil's Den; hiking trails on and around Big Round Top and Devil's Den; wayside exhibits and parking at the wheatfield and peach orchard; and parking on Warren Avenue near Sykes Avenue.

Utilities for the comfort station at Devil's Den consist of well water, on-site sewage disposal (septic), and overhead electrical lines from the Granite farm. Audio waysides at Little Round Top and Devil's Den are powered by battery packs.

The park's bicycle tour route originates at the junction of Wheatfield and Sedgwick avenues. It proceeds south on Sykes Avenue across Little Round Top to South Confederate Avenue and West Confederate Avenue as far as the North Carolina Memorial. The tour then reverses direction, follows West Confederate Avenue south to Wheatfield Road, and heads east, crossing Emmitsburg Road to Sickles Avenue. It proceeds north to United States Avenue, then to Sedgwick Avenue and its place of beginning. Parking racks for bicycles are located on the summit of Little Round Top.

The Boy Scout hiking trail enters the project area at Sickles Avenue and Wheatfield Road and follows Wheatfield Road east to a point where it goes through the wheatfield to DeTrobriand Avenue. It then proceeds west on DeTrobriand Avenue to the electric railroad bed, which it follows south, east, and north around Devil's Den to Warren Avenue. The trail continues up Warren Avenue and the Little Round Top pasture to the parking area and the 20th Maine Monument. It then crosses Wright Avenue and proceeds south to the Big Round Top nature trail and continues to the Slyder farm, where it exits the project area along the Slyder farm lane to Emmitsburg Road.

Trash removal from the heavily used Little Round Top and Devil's Den areas is accomplished through routine maintenance activities by park staff.

Road-closing gates are positioned just off Wheatfield Road on Sickles, Ayres, Crawford, and Sykes avenues. When weather conditions result in unsafe driving conditions, these gates are closed to restrict visitor traffic.

PROPOSED ACTION AND ALTERNATIVES

Alternative 1, the proposed development concept plan for the Little Round Top/Devil's Den area, is essentially the action called for in the General Management Plan for the south end of the park, except for revised alignment of the intersection of the proposed Devil's Den bypass and Warren Avenue and relocation of the Devil's Den comfort station. Minor variations to this alternative are presented here as options. A "no action" alternative is included for the purpose of examining the relative impacts of existing management and operations. An additional alternative to improve the existing network of avenues is presented to analyze its relative impacts on the resource base and visitor use.

ALTERNATIVE 1 - THE PROPOSAL

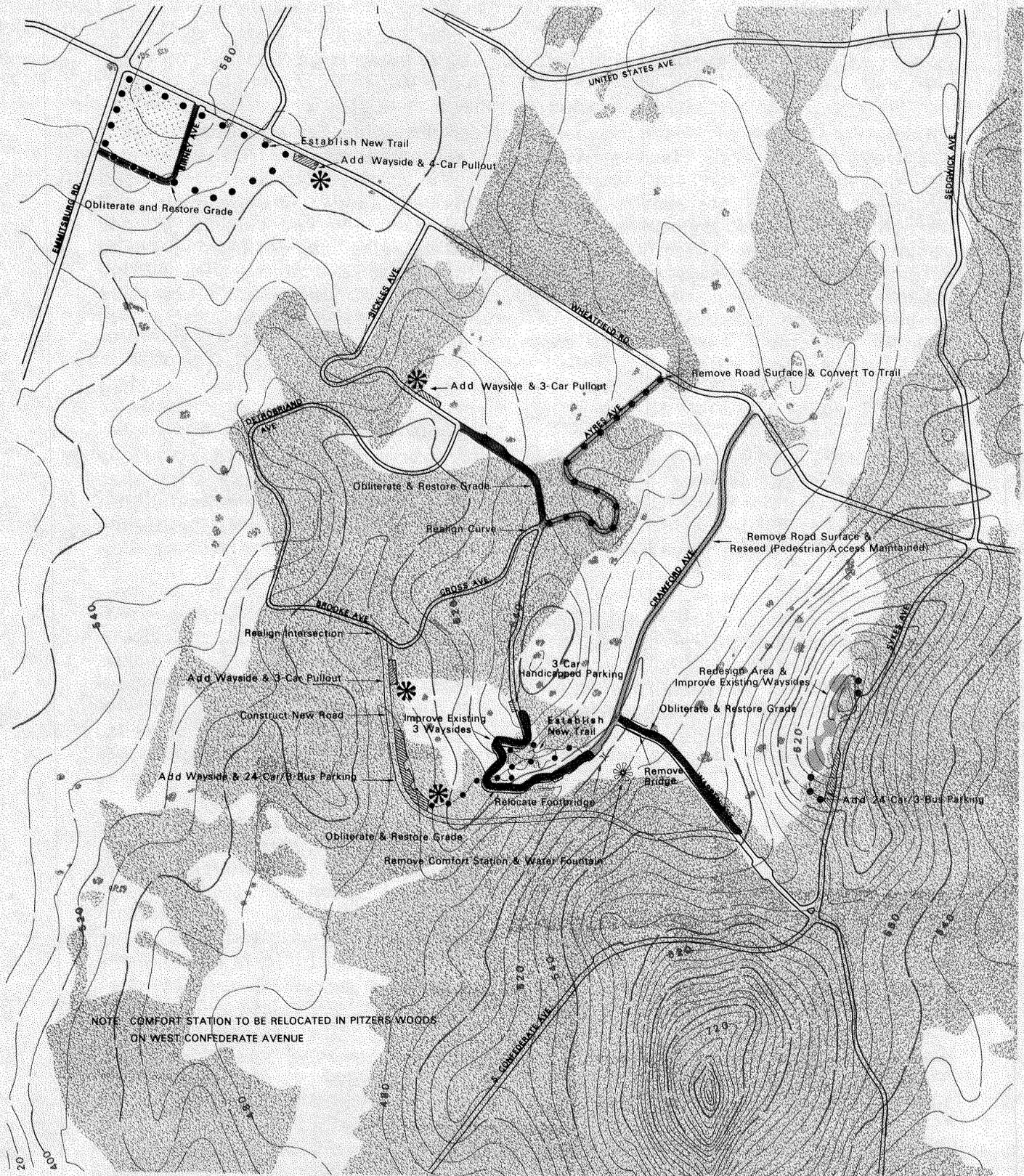
The primary management objective at Gettysburg National Military Park is to provide opportunities for visitors to see the hills, fields, and lanes where the battle was fought, the defense works and farmsteads that existed during the battle, and the monuments erected to commemorate the battle. All of these physical features help visitors to understand the flow of events that took place in and around Gettysburg and the battle's significance in the Civil War and the nation's history. All actions proposed here are intended to restore and perpetuate the historic appearance of the Little Round Top/Devil's Den area.

This alternative assumes that the tour route will be reversed, as called for in the General Management Plan. However in case of delay or changes in implementing that proposal, all of the facilities recommended under this alternative could be used in conjunction with the existing tour route.

Along the reversed tour route in the project area, changes would be made at the peach orchard and wheatfield, on Ayres, Brooke, Birney, Crawford, and Sickles avenues, around Devil's Den, and on Little Round Top.

At the peach orchard, Birney Avenue would be obliterated, and the historic grade restored using fill dirt acquired outside the park. The interpretive wayside and four-car pulloff would be moved east beyond the limits of the historic orchard, where the battle action of the Rose farm and peach orchard would be interpreted. New pedestrian trails would be developed from this wayside to the monuments on the south and west sides of the orchard. The peach orchard would be restored to its historic size following the park's vegetation management plan.

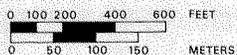
The wheatfield interpretive wayside and three-car pullout would be relocated west on Sickles Avenue before its intersection with DeTrobriand Avenue. Sickles Avenue, between its intersections with DeTrobriand and Cross avenues, would be obliterated, and the historic grade and vegetation restored. The surfacing on Ayres Avenue between Wheatfield Road and Sickles Avenue would be removed, and trail access to monuments would be provided along the old alignment.



ALTERNATIVE 1-THE PROPOSAL

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A bypass around Devil's Den would be developed primarily on the alignment of the Gettysburg Electric Railroad to connect Brooke Avenue and Warren Avenue. This new road would meet National Park Service road standards for a class III special-purpose tour road and would be 12-14 feet wide to accommodate projected traffic volumes.

The intersection of Brooke Avenue and the Devil's Den bypass would be designed to provide for continuous traffic flow around Devil's Den and to create a 90 degree, T intersection at Cross Avenue. Access to Devil's Den for handicapped visitors would be provided by redesigning Cross Avenue and portions of Sickles Avenue and constructing a cul-de-sac with a three-car parking lot atop Houck's Ridge. This cul-de-sac would be kept to a minimum size (approximately 40 feet in diameter) and carefully sited east of the triangular field so as not to intrude on the probable historic location of Smith's battery. The intersection of Cross and Sickles avenues would be redesigned on the same approximate alignment to provide a maximum 35-foot inside turning radius with minimum additional ground disturbance.

An interpretive wayside with a three-car pulloff would be developed along the new Devil's Den bypass near the northwest corner of the triangular field to interpret the battle action.

Parking for 24 cars and three buses would be developed along the new bypass southeast of the triangular field and west of the alignment crossing at Plum Run. These parking spaces would be dispersed along the northeast side of the road among the trees and boulders to minimize its visual impact and disturbance of wetlands. Trails would be developed leading from this parking area to the top of Devil's Den. An interpretive wayside would be installed at the south end of this parking area to interpret the action in the Slaughter Pen. The Boy Scout trail would be rerouted away from the proposed alignment.

The intersection of the Devil's Den bypass and Warren Avenue would be moved to the south within the historic tree line to eliminate the visual intrusion on the Slaughter Pen area. The road would be elevated to cross an intermittent stream and avoid disturbance of the diabase boulders, which are an important battlefield feature. The piers supporting the elevated roadway would also be designed and placed to disturb the boulders as little as possible. The park historian would be consulted during the design phase for the road to minimize any potential impacts. Realignment of the intersection would require removal of the existing comfort station, water fountain, and footbridge and construction of a new footbridge to connect the existing trail system on either side of Plum Run. The existing restroom would be replaced by one at Pitzers Woods on West Confederate Avenue midway along the reversed tour route. Wastewater disposal could be accomplished through on-site disposal methods (see appendix G recommendations).

Existing portions of Sickles Avenue, from the new handicapped parking area on Houck's Ridge through Devil's Den, and Crawford Avenue up to the place where the footbridge crosses Plum Run would be obliterated, and the historic grade and vegetation restored to the extent possible; fill dirt acquired outside the park would be used to restore the grade. The

portion of Warren Avenue from its intersection with the new Devil's Den bypass to Crawford Avenue, including the stone bridge crossing at Plum Run, would receive the same treatment. From the footbridge north to Wheatfield Road, only the surfacing of Crawford Avenue would be removed. The stone bridge on Crawford Avenue just south of Wheatfield Road would be retained. The entire length of this portion of Crawford Avenue would be filled with gravel and topsoil and reseeded. Pedestrian and service access through the valley would be accommodated on the old road bed.

The audio wayside at Devil's Den and the two waysides on top of Houck's Ridge would be improved. New trails from the handicapped parking area on Houck's Ridge and from the Devil's Den bypass parking area would be integrated into the existing trail system and improved to control visitor circulation. These new trails would also be connected with those leading to Big and Little Round Tops.

The small parking area along Warren Avenue at the Strong-Vincent monument near Sykes Avenue would be retained.

A major proposal under this alternative is the redevelopment of the Little Round Top interpretive area. Parking at Little Round Top would be expanded to the south along the existing road to accommodate 24 additional cars, three buses, and bicycles. The interpretive area atop the hill would be formalized in design to keep visitors in the developed area and reduce impacts on the surrounding resources. The development would be large enough to accommodate the projected number of individuals and groups that would use the site at any given time so that people could stay in paved areas rather than spilling over onto the vegetation and rocks. Efforts would also be directed at eliminating erosion problems in areas outside the paved development. High levels of pedestrian use in these areas have resulted in vegetation trampling and soil erosion, particularly next to the narrow pathways, which do not allow for two-way travel. Rainfall runoff has accelerated erosion where vegetation is sparse or lacking. Solutions to these problems would be included in the Little Round Top designs.

Designs for the developed area would take into account existing use patterns. A visitor circulation study is proposed for completion along with specific design actions. The area would have defined spaces where a number of large groups or individuals could stand, and park rangers or battlefield guides could give talks without interfering with one another. Congregating spaces would be separated from the main flow of pedestrian traffic.

The limits of the developed area would be defined using one or more of a number of physical barriers such as mortared and cut stone walls, stone curbs, and wood fences or logs. On the downhill or west side of the development, these barriers would also allow animals to graze right up to the developed area. Topsoil and vegetation cover would be added to areas of heavy erosion.

Interpretive media would be redesigned to encourage the flow of visitors through the complex and to some degree govern the amount of time spent

there. Careful consideration would be given to providing handicap access throughout the complex. Furniture (seating, trash cans, bicycle racks) would be upgraded as part of the new design.

OPTIONS TO ALTERNATIVE 1

The options for the location or design of specific facilities that have been considered during the planning process are presented below in the same order as those in the proposal (alternative 1). Letter designations correspond to locations on the Options map.

In the area of the peach orchard, the surfacing on Birney Avenue could be removed, retaining the road grade to provide trail access to the monuments (A).

The interpretive wayside at the wheatfield could be relocated on the west side of DeTrobriand Avenue beyond its intersection with Sickles Avenue (B).

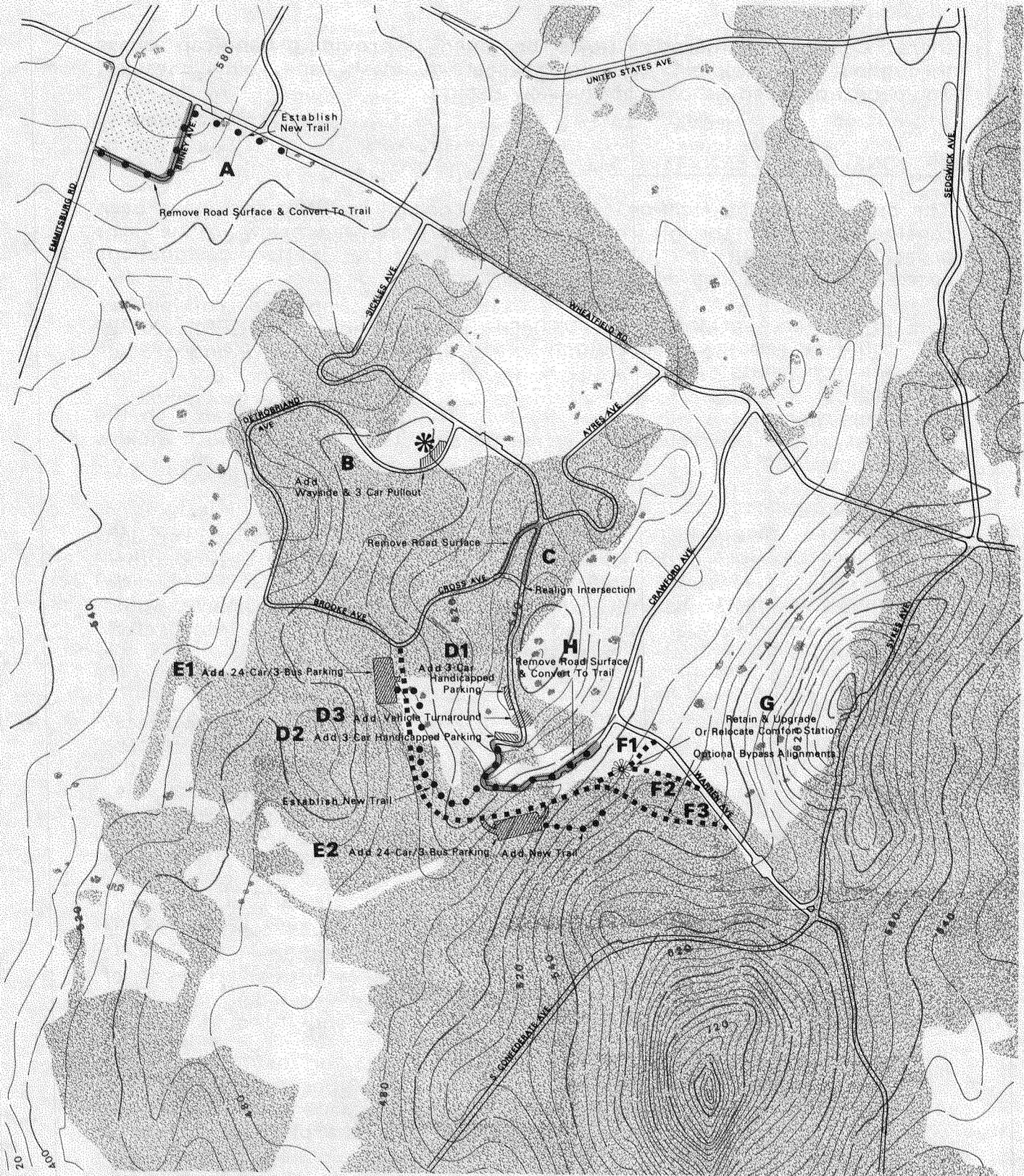
The intersection of Cross and Sickles avenues could be redesigned to increase the turning radius considerably more than under the proposal. Several variations are possible, moving the road south up to 200 feet. Surfacing on excess roadways would be removed, and the subbase retained for trails (C).

The handicapped parking area on Houck's Ridge could be placed just east of the worm fence at the northeast corner of the triangular field (D1), or it could be much farther south near the location of Smith's battery (D2). The cul-de-sac could be made larger (around 80 feet in diameter) to accommodate nonhandicapped visitors who might find their way to the top of the ridge (D3).

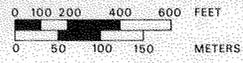
Two possible options for parking along the new Devil's Den bypass are to develop consolidated parking lots west or east of the proposed location. One optional site is due west of the triangular field across Rose Run on higher ground (E1), the other east of Plum Run and the new tour road (bypass) at the base of Big Round Top (E2). Option E1 would require the construction of a new bridge across Rose Run; Option E2 would involve the greatest design and engineering constraints because of steep slopes.

Optional sites for the intersection of the Devil's Den bypass and Warren Avenue are on the existing railroad bed at a right angle (F1), at the edge of the existing woods (F2), or inside the historic woods, (F3) (this would be similar to the proposal except that the bypass alignment would follow the railroad grade until the area of the existing comfort station and then turn sharply east to Warren Avenue).

The comfort station could be moved near the group campground at McMillan Woods and connected into the municipal sewage treatment system serving the Woodcrest subdivision (see appendix G). Locations within the project area--along the Devil's Den bypass and



OPTIONS TO ALTERNATIVE 1
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adjacent to the new parking lot--do not appear to be feasible. If F1 or F2 (but not F3) of the optional intersection alignments at the Devil's Den bypass and Warren Avenue was selected, the comfort station could remain in its present location and be adequately screened from view; an upgraded wastewater disposal system would be required (G).

The road base of Sickles and Crawford avenues through Devil's Den could be retained, and the routes incorporated into the existing trail system (H).

Several options for parking at Little Round Top--constructing an additional parking lot east of the existing lot, cantilevering additional parking over the hillside to the east at the existing grade, or building a two-level parking structure--were considered but rejected because of engineering, cost, and resource preservation constraints.

ALTERNATIVE 2 - NO ACTION

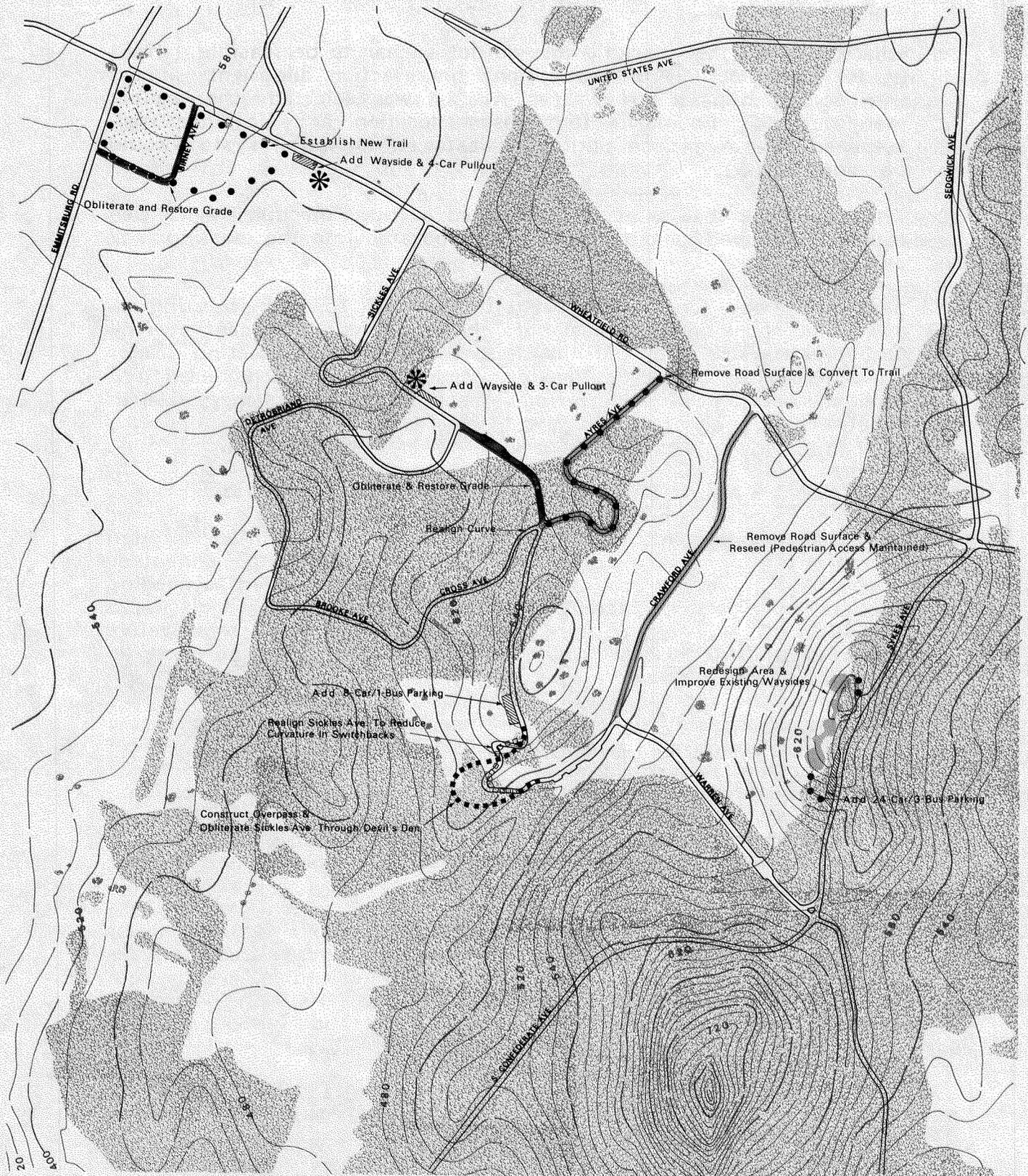
Existing park developments would be maintained and modified through ongoing park programs to improve interpretation of the battle and other park activities. However, conditions that have been identified as needing major action would go uncorrected: Access and circulation patterns would not be improved, visual intrusions would not be reduced, interpretive facilities at Little Round Top would not be upgraded, and erosion on Little Round Top and in Devil's Den would continue.

Nonhistoric park avenues would remain in key historic battle scene areas. Existing interpretive programs and services would continue as is, except that wayside exhibits would gradually be replaced, as called for in the General Management Plan. Tour stops would remain at existing locations. Redevelopment of the Little Round Top and Devil's Den areas would not occur. New pedestrian pathways to redirect foot traffic in these heavily used areas would not be designed and built. Minor patching and other repairs would continue.

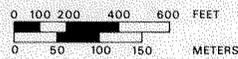
Specific historic features and vegetation patterns would continue to be restored as part of ongoing resource management programs. Stone walls would be protected through cyclic maintenance activities (removal of vegetation). Additional restoration actions for replacing/improving deteriorated walls would only occur when staff and funding allowed additional work.

ALTERNATIVE 3 - IMPROVE EXISTING AVENUES (MINIMUM REQUIREMENTS)

An alternative to establishing the Devil's Den bypass would be to change the alignment of Sickles Avenue through Devil's Den so that it could conveniently carry all traffic through the area. Two methods of improvement are possible: Reduce the degree of curvature in the switchbacks leading up to Houck's Ridge, disturbing the minimum possible



ALTERNATIVE 3-IMPROVE EXISTING AVENUES
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additional ground (this would reduce the length of the road, thereby slightly increasing its grade); or build a bridge from the top of Houck's Ridge to bottom of Devil's Den (the bridge could be designed to extend out over the tip of Houck's Ridge and have gentle curves and grades). With either of these methods portions of Sickles Avenue and all of Ayres Avenue and Crawford Avenue between its intersections with Warren Avenue and Wheatfield Road would be removed. An eight-car, one-bus parking area would be developed on Houck's Ridge in the area of the proposed handicapped parking. The existing Devil's Den parking and restroom would remain. Proposals for the peach orchard, wheatfield, and Little Round Top development would be the same as in alternative 1.

IMPLEMENTATION AND COST ESTIMATES

The proposals described in the previous sections could not all be realized immediately. Existing facilities would be retained until they were replaced. Before any facilities were built, design and construction plans and archeological evaluation and salvage would be completed. The following table summarizes alternative 1 (proposal) actions in priority order. The schedule would be affected by congressional funding and National Park Service priorities.

<u>Implementation Action</u>	<u>Initial Work</u>	<u>Future Work</u>
Complete archeological survey	X	
Complete topographic survey	X	
Complete soils and engineering analysis	X	
Construct new comfort station	X	
Remove existing comfort station	X	
Construct bypass road, parking, waysides	X	
Complete visitor use patterns analysis	X	
* Rehabilitate Little Round Top summit	X	
Construct handicapped parking - Houck's Ridge	X	
Remove Devil's Den roads or road surfaces and restore (Sickles, Crawford, Warren)	X	
* Expand Little Round Top parking	X	
* Move wheatfield wayside		X
* Restore Sickles Avenue in wheatfield		X
* Remove Ayres Avenue surface		X
* Move parking and wayside at peach orchard		X

*These are independent actions, not requiring other actions to occur first.

Summary of costs for the proposal by implementation phases:

Initial Work	\$1,231,000
Future Work	<u>\$ 184,000</u>
	\$1,415,000

Summary of costs by alternatives:

Alternative 1 - Proposal	\$1,415,000
Alternative 2 - No Action	\$ 63,500
Alternative 3 - Improve Existing Avenues	\$ 551,000 or \$3,284,000

Selection of one or several of the options to alternative 1 could result in a maximum decrease in the cost of alternative 1 to \$934,000 (A, F1, E2, retain footbridge and comfort station) or a maximum increase in the cost to \$1,463,000 (C, D3, E1 trails, H).

COST ESTIMATES

<u>Action</u>	<u>Alternative 1 (Proposal)</u>	<u>Options to Alternative 1*</u>	<u>Alternative 2 (No Action)</u>	<u>Alternative 3 (Improve Existing Roads)</u>	<u>Possible Funding Source**</u>
<u>Peach Orchard</u>					
Obliterate Birney Ave.	\$ 9,000	\$ 9,000(A)	--	\$ 9,000	FLHP
Restore grade and vegetation	10,000	--	--	10,000	Line Item
Relocate auto pulloff	2,500	2,500	--	2,500	FLHP
Construct pedestrian trail	10,500	2,000	--	10,500	Line Item
<u>Wheatfield</u>					
Relocate auto pulloff	2,500	2,500(B)	--	2,500	FLHP
Obliterate and restore Sickles Avenue	10,000	--	--	10,000	FLHP
Convert Ayres Avenue to trail	29,000	--	--	29,000	FLHP
<u>Houck's Ridge</u>					
Realign Cross/Sickles intersection	3,000	--	--	3,000	FLHP
Construct new Cross/Sickles intersection and remove excess road	--	22,000(C)	--	--	FLHP
Construct 3-car handicapped parking	4,000	4,000(D1/2)	--	--	FLHP
Construct turnaround	--	15,000(D3)	--	--	FLHP
Construct 8-car, 1-bus parking	--	--	--	15,000	FLHP
<u>Devil's Den</u>					
<u>Bypass Road</u>					
Construct with 200-ft. elevated structure	405,000	400,000(F3)	--	--	FLHP
Construct with 50-ft. elevated structure (bridge)	--	223,000(F1)	--	--	FLHP
Construct with 150-ft. elevated structure (bridge)	--	360,000(F2)	--	--	FLHP
<u>Parking</u>					
Construct new 24-car, 3-bus dispersed parking	45,000	--	--	--	FLHP
Construct new 24-car, 3-bus consolidated parking	--	45,000(E1/2)	--	--	FLHP
Construct triangular field auto pulloff	2,500	--	--	--	FLHP
<u>Trails</u>					
Construct new and realign existing trails	6,000	6,500(E1) 3,500(E2)	--	--	FLHP
Remove Devil's Den footbridge and construct new bridge	1,500	--	--	--	Line Item
<u>Sickles Avenue</u>					
Obliterate through Devil's Den	16,000	--	--	11,500	FLHP
Convert to trail in Devil's Den	--	32,000(H)	--	--	FLHP
Realign through Devil's Den, or	--	--	--	48,000	FLHP
Construct overpass and obliterate road	--	--	--	or 1,800,000	FLHP
<u>Warren Avenue and Stone Bridge</u>					
Obliterate from bypass intersection to Crawford Avenue	40,000	--	--	--	FLHP
<u>Crawford Avenue</u>					
Convert for pedestrian access; remove surface, install turf	58,000	--	--	55,000	FLHP

<u>Action</u>	<u>Alternative 1 (Proposal)</u>	<u>Options to Alternative 1*</u>	<u>Alternative 2 (No Action)</u>	<u>Alternative 3 (Improve Existing Roads)</u>	<u>Possible Funding Source**</u>
<u>Comfort Station</u>					
Remove building and water fountain	10,000	--	--	--	Line Item
Retain existing and upgrade	--	20,000(G)	\$20,000	20,000	Line Item
Construct new comfort station (all locations)	140,000	140,000(G)	--	140,000	Line Item
<u>Little Round Top</u>					
Redesign summit - wall and plaza	82,000	--	--	82,000	Line Item
Construct 24-car, 3-bus parking area extension	45,000	--	--	45,000	FLHP
Install upgraded furniture - 5 garbage cans, 2 bicycle racks, 3 benches	4,000	--	--	4,000	Line Item
<u>Waysides</u>					
Replace/develop new exhibits (7 areas, plus Little Round Top)	<u>20,000</u>	--	<u>20,000</u>	<u>20,000</u>	HFC
Subtotal	\$955,500		\$40,000	\$ 377,000 or 2,249,000	
Archeological survey and salvage	20,000		5,000	20,000	
Indirect Costs***	440,000		18,500	174,000 or <u>1,035,000</u>	
TOTAL	\$1,415,500		\$63,500	\$ 551,000 or 3,284,000	

* If any of these options replaced specific actions in alternative 1, the total costs of that alternative would change accordingly.

** FLHP - Federal Lands Highway Project; Line Item - NPS Construction Funds; HFC - Harpers Ferry Center Exhibits

*** These costs cover surveys, design services, preparation of construction documents, contract award and administration, construction supervision, etc.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

	<u>Alternative 1</u>	<u>Options to Alternative 1</u>	<u>Alternative 2</u>	<u>Alternative 3</u>
<u>Emphasis</u>	Restoration of historic scene and reduction of resource degradation by improving visitor facilities	Specific design or location options to components in alternative 1	Continuation of existing park management activities with ongoing maintenance of resources, interpretive programs, and facility repair	Improvement of existing avenues with minimal amount of construction to partially meet needed changes
<u>Impacts</u>				
<u>Cultural Resources</u>	Historic scene would be restored to the greatest degree possible.	Some intrusions might remain in historic scene depending on option chosen.	Intrusions would continue.	Historic scene would be partially restored.
	Ground disturbance would result in loss of some pre-historic and historic resources.	Same as alternative 1	No additional ground disturbance from construction would occur. Resources might be lost because of erosion and heavy use of specific areas.	Ground disturbance would result in loss of some prehistoric and historic resources.
	Redesign of visitor use areas would allow for expansion of livestock grazing for maintenance of historic scene.	Same as alternative 1	Fewer opportunities would exist for expansion of livestock grazing to maintain historic scene.	Same as alternative 1
<u>Natural Resources</u>	Wetland areas would be minimally disturbed by new construction.	Major disturbance of wetlands would occur with construction of parking area E1.	No effect	The new bridge would extend into a wetland area.
	The natural environment would be somewhat enhanced by reduction of paved areas and reestablishment of vegetation.	Same as alternative 1	Ongoing vegetation management activities would continue.	Same as alternative 1
	Erosion would be reduced by redesign of visitor areas.	Same as alternative 1	Erosion would continue, resulting in loss of resources.	Same as alternative 1
<u>Visitor Use</u>	Opportunities for interpretation and visitor understanding of historic events would be greatly improved because of restoration of the historic scene and removal of intrusions.	Opportunities would vary depending on option chosen.	Opportunities for interpretation and visitor understanding of historic events would remain the same except for facility upgrading under ongoing park management programs.	Opportunities for interpretation and visitor understanding of historic events would be partially improved because of restoration of the historic scene and removal of intrusions.
	Improved access and circulation as well as safer conditions would be provided by redesign of areas.	Same as alternative 1	Access and circulation would remain the same and congested areas would continue to exist.	Same as alternative 1
<u>NPS Management</u>	There would be a slight reduction in maintenance by converting roads to trails and replacement of comfort station.	The degree of change in maintenance required would vary depending on the option chosen.	Maintenance requirements would continue at existing levels.	Same as alternative 1

ENVIRONMENTAL CONSEQUENCES

In evaluating the impacts of the proposal (alternative 1), its options, the no-action alternative (alternative 2), and alternative 3 to improve existing avenues, two assumptions have been made: Ongoing resource management activities will continue as planned (vegetation clearance to re-create the historic scene, and continued restoration work on historic features such as defense works, fences, woodlots, orchards, and farm buildings); and the tour route will be reversed.

Impacts on Cultural Resources

Restoring the historic grade of the peach orchard by obliterating Birney Avenue (alternatives 1 and 3) would allow for revegetation and restoration of the historic scene; moving the wayside out of the orchard would permit accurate restoration of the orchard. Some historic ground would have to be disturbed to construct a trail from the orchard wayside parking area to the monuments. Option A, which would retain the Birney Avenue road grade, would require less new ground disturbance for trail construction but would have a greater visual impact on the historic scene.

Relocating the wayside in the wheatfield would disturb additional historic ground and intrude on the historic scene. The preferred location on Sickles Avenue (alternatives 1 and 3) would be somewhat less obvious than the optional location on DeTrobriand (option B).

The alternative 1 proposal for a Devil's Den bypass would remove traffic from the most visible historic area and greatly enhance the historic scene by eliminating Crawford Avenue and a large portion of Sickles Avenue from view at Little Round Top. Constructing the bypass on the Gettysburg Electric Railroad alignment would change the character of the existing corridor. Alternative 2 (no action) would do nothing to reroute traffic or restore the historic scene. Alternative 3 (improving existing avenues) would disturb less historic ground than alternative 1 and would partially achieve the objective of restoring the historic scene by removing Crawford Avenue; however, Sickles and Warren avenues would remain as intrusions on the historic scene in the Devil's Den and Slaughter Pen areas and would be visible from Little Round Top. The method of reducing the degree of curvature at grade would disturb an area of major rock outcrops and could require the removal of several boulders. The method of constructing an elevated bridge would involve the least ground and boulder disturbance; however, the structure itself would be a major visual intrusion on the battlefield.

Major realignment of the intersection of Cross and Sickles avenues leading to the new handicapped parking area on Houck's Ridge (option C) would disturb additional historic and archeological resources. The amount of disturbed ground would depend on the degree to which the road was moved from the present right-angle intersection.

Construction of the Devil's Den handicap parking area on Houck's Ridge would disturb historic ground. Alternative 1, because of its location

and size would be less intrusive on the historic scene than either of the optional locations (D1 and D2).

Construction of Devil's Den parking in scattered locations adjacent to the roadway (alternative 1) would have less visual impact on the historic scene because spaces could be placed in sheltered areas. Consolidated parking areas (options E1 and E2) would have a greater impact on previously undisturbed historic ground. Option E1 on the west side of the bypass would be difficult to screen from view. Option E2 on the east side would be much easier to screen within historic woodlands but would require more ground disturbance and construction of a retaining wall.

Connecting the Devil's Den bypass from the Gettysburg Electric Railroad bed to Warren Avenue within the historic tree line (alternative 1) would allow for the greatest scene restoration in the Slaughter Pen; it would, however, disturb the most new ground because it would be the longest segment of new road (compared to options F1, F2, and F3). Construction of this road would destroy historic ground in some battle areas in the upper part of the Slaughter Pen where heavy casualties occurred. Because it would be elevated, this road would disturb few, if any, of the diabase boulders used as cover by troops during the battle. The options to construct the bypass road entirely on the railroad bed or to move the intersection along the existing tree line (F1 and F2) would only partially achieve the objective of restoring the historic scene because both these alignments would pass through the Slaughter Pen and be visible from Little Round Top. The alignment entirely on the electric railroad bed would disturb the least new ground but would destroy two boulders along its course. The alignment along the existing tree line would disturb less ground than the proposed alignment but would destroy many large boulders in its path.

Construction of a new footbridge near the existing Plum Run bridge (alternative 1) would disturb additional historic ground.

Locating the comfort station on West Confederate Avenue at Pitzers Woods (alternative 1) or McMillan Woods (option G) could potentially disturb cultural resources. With on-site sewage disposal, the above-grade sand mound would have the least physical effect on subsurface resources but would be the most visually intrusive on the historic scene. Connecting to the municipal system by trenching from McMillan Woods would have an effect on subsurface resources but would not be as visually intrusive. A below-grade septic system would have the greatest destructive effect. In any location, including the present site, the comfort station would be an intrusion on the historic scene. Either location on West Confederate Avenue would permit screening.

Improved design on Little Round Top and placement of the Warren Avenue intersection along the existing tree line or within the historic tree line would allow for expansion of open grazing areas, thus enhancing the historic scene.

No actions in any of the alternatives would result in physical changes to historic roads or lanes.

Impacts on Natural Resources

Construction of the proposed wheatfield wayside could result in disturbance of a wet area.

Development of the Devil's Den bypass road and parking (alternative 1) would disturb minimal amounts of prime agricultural soils (Chewacla) in the vicinity of the existing comfort station and remove minimal amounts of Appalachian oak forest.

Construction of the proposed Houck's Ridge handicap parking area (alternative 1), the optional turnaround (D3), or the slightly larger parking area (alternative 3) would require removal of ground vegetation.

Development of a parking area and trails in forested wetland areas along the Devil's Den bypass (alternative 1 and options E1 and E2) could adversely impact minimal amounts of wetland vegetation. Option E2 (a parking area on the east side, with a trail to the existing comfort station, and potential realignment of the Warren Avenue/bypass road to areas in the historic vegetation) would affect turkey and black vulture populations by disturbing and/or removing roosting areas.

Approximately 53,000 square feet of area would be returned to a natural condition by removing the road structure, regrading and reseeding Birney Avenue, Sickles Avenue in the wheatfield, and Devil's Den (alternatives 1 and 3), and removing the Warren Avenue footbridge (alternative 1). Approximately 65,000 square feet would be partially restored by removing the road surfacing and leaving the road base on Ayres Avenue and Crawford Avenue (alternatives 1 and 3).

Improvement of the overlook, trails, and access walkways on Little Round Top and in Devil's Den would keep visitors on walkways, allow for growth of cover vegetation, and reduce soil erosion. Placement of additional parking on Little Round Top would require the disturbance of approximately 10,000 square feet of vegetation, but would reduce the effects of random parking.

There would be a short-term loss of habitat during construction; this loss would be offset by long-term increases in natural areas and habitat through restoration of vegetation in currently paved areas. Disturbance of the vulture population could result because of construction activities; however, these activities would be scheduled when the population is low. Removal of vehicles from some areas of the park would result in decreased disturbance of wildlife and habitats there.

Impacts on Visitor Use

Construction of the new bypass road or improvement of existing roads (alternatives 1 and 3) would permit access to Devil's Den and much of the second-day battlefield. Continued use of existing roadways (alternative 2) would mean that many visitors would not see these important areas.

Redesign of access/circulation routes at Devil's Den, Houck's Ridge, and Little Round Top would reduce safety hazards and allow handicap access, which would have a positive effect on visitors. Redesign of the intersections of the Devil's Den bypass and Brooke and Warren avenues would provide safer traffic flow.

Providing a new comfort station on West Confederate Avenue would temporarily disrupt visitor use patterns; however, it would place the facility closer to the midpoint of the reversed tour route. The preferred location in Pitzers Woods, close to the Virginia monument (alternative 1), would allow visitors to make one stop to see this popular site and have a rest stop. The optional location in the McMillan Woods, although less intrusive and closer to municipal sewer lines, would not be close to any of the tour stops and would therefore be less convenient for visitors; its proximity to the group campground would encourage overuse by campers.

Removal of Crawford Avenue (alternatives 1 and 3) would allow additional restoration of the historic scene, which would increase visitor understanding of the battlefield conditions as viewed from Little Round Top. Alternative 1 would also expand opportunities for interpretation in the Slaughter Pen area. Removing road structures and surfaces would require visitors to walk to some monuments that they previously could drive to.

Interpretive opportunities would increase as new wayside displays were developed to better explain the battle action at the peach orchard/Rose farm, wheatfield, triangular field, and Slaughter Pen and as Little Round Top spaces and facilities were redesigned.

Redesign of Little Round Top would improve site appearance, allow for incorporation of upgraded site furniture (trash receptacles, seating areas, waysides), and enhance visitor comfort and safety. Increasing the size of the parking area at Little Round Top would reduce congestion.

Impacts on National Park Service Management

If no action was taken and visitation increased, park facilities would become more difficult to maintain, congestion in the park and surrounding community would worsen, and disturbance of the natural environment could become more visible. The park's ability to provide interpretive opportunities would become more limited and would likely be restricted to existing uses and programs.

Locating the wheatfield wayside on Sickles Avenue, adjacent to a spring and wet area (alternative 1), could require additional soil stabilization.

Additional trail maintenance would be required if roads were converted to trails (alternatives 1 and 3), but the overall maintenance responsibility would be reduced.

A comfort station on West Confederate Avenue would be more susceptible to vandalism than one in the Devil's Den area because West Confederate remains open at night.

Options for wastewater disposal would have varying impacts on park management. Connection with municipal sewer lines would require the least maintenance of all options. Because of poor soil conditions, on-site disposal through a septic system might require more maintenance than is normally expected. A holding tank and pump would require the park to contract disposal service with a local company. This option would have a high recurring cost but could have a low life-cycle cost because of the small capital investment required.

Further analysis of wastewater disposal, including the probable flow to be generated, suitability of various sites for on-site disposal, and the life-cycle cost of various options is required before a final decision on the best method to be used is determined. Preliminary system and site evaluations have been undertaken (see appendix G).

Consultation and review under section 106 of the National Historic Preservation Act would be necessary prior to implementation of the proposal because the bypass road would be removed from the railroad alignment at Warren Avenue. Other options for the intersection could require consultation if the road was removed from the railroad bed.

Archeological testing would be necessary in all areas prior to disturbance by new construction.

A section 404 permit (U.S. Army Corps of Engineers) would be required for construction of a new bridge over Plum Run and for development of parking areas and trails in wetland areas.

Existing annual maintenance at the Devil's Den comfort station costs approximately \$3,200. Construction of a new comfort station at Pitzers Woods would result in a savings of approximately \$1,200 in these costs. Maintenance costs would increase by about \$1,800 if the comfort station was built at McMillan Woods because of water system requirements. No other savings or additional operations costs are anticipated in implementing any of the alternatives.

APPENDIXES

- A: Legislation
- B: Management Objectives
- C: Survey Needs
- D: Cultural Resource Compliance
- E: Natural Resource Compliance
- F: Significant Monuments and Markers in Project Area
- G: Utility System Site Evaluation

52D CONGRESS,
2D SESSION.

S. 2914.

[Report No. 2188.]

IN THE HOUSE OF REPRESENTATIVES.

JUNE 2, 1892.

Referred to the Committee on Military Affairs.

DECEMBER 21, 1892.

Reported with amendments, committed to the Committee of the Whole House on the state of the Union, and ordered to be printed.

Omit the parts struck through and insert the parts printed in *italics*.

AN ACT

For marking the lines of battle and positions of troops of the Army of Northern Virginia at Gettysburg, Pennsylvania, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*
3 *That for the purpose of preserving the lines of battle at Get-*
4 *tysburg, Pennsylvania, and for properly marking with tablets*
5 *the positions occupied by the various commands of the armies*
6 *of the Potomac and of Northern Virginia on that field, and*
7 *the securing and compiling of additional historical data now*
8 *available beyond that now in possession of the Government,*
9 *and for the purchase or condemnation of land of historical im-*
10 *portance, and for opening and improving avenues along the*
11 *positions occupied by troops upon those lines, and for fenc-*

12 *ing the same, and for determining the leading delineating*
13 *the most important tactical positions of batteries and evo-*
14 *lutions, regiments, brigades, divisions, corps, and other*
15 *organizations with reference to the study and correct*
16 *understanding of the battle, and to mark the same with*
17 *suitable tablets, each bearing a brief historical legend, com-*
18 *piled without praise and without censure, and to be prepared*
19 *by said commission and approved by the Secretary of War,*
20 *the said Secretary is hereby authorized and directed to*
21 *appoint three commissioners, two of whom shall have been*
22 *participants in the battle of Gettysburg, and one of whom*
23 *shall have been an officer of the Army of Northern Virginia,*
24 *and. A commission is hereby created and established under the*
25 *name of "The Gettysburg Battlefield Commission" to con-*
26 *sist of three members, who shall be appointed by the Secre-*
27 *tary of War, one of whom shall be a civilian who is recog-*
28 *nized as the person best informed in the history of the battle,*
29 *possessing the most thorough knowledge of the history of the*
30 *battle, and who shall be chairman of the commission, and its*
31 *historian; one an officer of the Army of the Potomac who*
32 *participated in the battle, and one an officer of the Army of*
33 *Northern Virginia who participated in the battle. Said*
34 *commission shall have a principal office in connection with*
35 *the War Department in the city of Washington. The said*
36 *chairman shall, as soon as possible after his appointment,*

37 *compile historical maps showing not only the general lines of*
 38 *battle of the two armies, but approximately the successive*
 39 *tactical and strategic positions and evolutions of all bodies of*
 40 *troops taking part in said engagement, to the end that all the*
 41 *principal operations of batteries, regiments, brigades, divisions,*
 42 *and corps, and other organizations when acting as such, res-*
 43 *pectively, may be represented upon said maps, and by means*
 44 *of which the said several positions and evolutions of said*
 45 *organizations may be marked upon the field, and for said*
 46 *special service in the preparation of said maps said historian*
 47 *shall be paid a reasonable compensation, not exceeding the sum*
 48 *of twenty-five thousand dollars, to be fixed by the Secretary*
 49 *of War, the same to be paid in such installments accord-*
 50 *ing to the progress of the work as may be determined*
 51 *upon between said historian and the Secretary of War.*
 52 *The said commissioners shall have the general charge of the*
 53 *work aforesaid upon the field, and shall recommend the pur-*
 54 *chase or condemnation of such land as they deem it necessary*
 55 *for the United States to acquire for the purposes aforesaid,*
 56 *and they shall, under the directions and instructions of the*
 57 *Secretary of War, execute the provisions of this act. The*
 58 *said commissioners, in addition to the special services of the*
 59 *historian, shall be paid such compensation, out of the appro-*
 60 *priation provided in this act, as the Secretary of War shall*
 61 *deem reasonable and just, not exceeding ten dollars each per*

62 *day of actual service, and they may employ such surveying*
 63 *parties and clerical assistance as may be necessary, and secure*
 64 *such further historical information as they may need, at com-*
 65 *pensations for these several services to be fixed by the com-*
 66 *mission, subject to the approval of the Secretary of War, and*
 67 *to be paid out of the appropriation provided in this act.*

1 SEC. 2. That the title to such lands as the Secretary of
 2 War may find it necessary to purchase to carry into effect the
 3 provisions of this act may be acquired by purchase, by con-
 4 demnation, under the act of the Pennsylvania legislature pro-
 5 viding for the condemnation of land on said battlefield, ap-
 6 proved the seventh of May, anno Domini eighteen hundred
 7 and eighty-nine, or in accordance with the provisions of the
 8 act of Congress of August first, eighteen hundred and eighty-
 9 eight, entitled "An act to authorize the condemnation of land
 10 for sites of public buildings, and for other purposes;" and all
 11 lands acquired by the United States under this act, whether
 12 by purchase, condemnation, cession, gift, or otherwise, and
 13 all avenues constructed, and all tablets or other structures
 14 erected shall be under the care and supervision of the Secre-
 15 tary of War, whose duty it shall be to make such rules and
 16 regulations for their protection and preservation as he may
 17 deem necessary.

1 SEC. 3. That to enable the Secretary of War to pay for
 2 said historical maps and to begin the other work contemplated by

3 this act, and proceeding to prosecute it to include the acquir-
 4 ing of land, the location of lines of battle and positions and
 5 evolutions of troops, the selection and mapping of such lands
 6 as the commission may deem it necessary to acquire to carry
 7 out the purposes of this act, and to pay the expense of surveys,
 8 the per diem and expenses of commissioners, and the neces-
 9 sary clerical assistance, the sum of twenty-five fifty thousand
 10 dollars, or so much thereof as may be necessary, is hereby
 11 appropriated, out of any moneys in the Treasury not other-
 12 wise appropriated.

1 ~~Sec. 4. That the commission herein provided for shall be~~
 2 ~~known and designated as the Gettysburg Battlefield Commis-~~
 3 ~~sion. One member of said commission shall be an engineer~~
 4 ~~officer, and the commission shall have a principal office in con-~~
 5 ~~nection with the War Department in the city of Washington.~~

1 SEC. 5 4. That upon the acquirement of title by the United
 2 States to the lands described in the first section of this act,
 3 and the cession to the United States by the Gettysburg Bat-
 4 tlefield Memorial Association of the lands and other property
 5 which it holds upon the battlefield of Gettysburg, and the
 6 further cession of jurisdiction over the same to the United
 7 States by the State of Pennsylvania, the whole shall become
 8 a national military park to be established and maintained as
 9 such under the control of the Secretary of War, and under

10 such regulations as he may prescribe, subject to the approval
 11 of Congress.

Passed the Senate June 1, 1892.

Attest: ANSON G. MCCOOK,
Secretary.

Amend the title so as to read: "An act for marking the
 lines of battle and positions of troops of the Army of the Po-
 tomac and the Army of Northern Virginia at Gettysburg,
 Pennsylvania, and for other purposes."

An Act To establish a national military park at Gettysburg, Pennsylvania, approved February 11, 1895 (28 Stat. 651)

**Gettysburg
National Park.**

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of War is hereby authorized to receive from the Gettysburg Battlefield Memorial Association, a corporation chartered by the State of Pennsylvania, a deed of conveyance to the United States of all the lands belonging to said association, embracing about eight hundred acres, more or less, and being a considerable part of the battlefield of Gettysburg, together with all rights of way over avenues through said lands acquired by said association, and all improvements made by it in and upon the same. Upon the due execution and delivery to the Secretary of War of such deed of conveyance, the Secretary of War is authorized to pay to the said Battlefield Memorial Association the sum of two thousand dollars, or so much thereof as may be necessary to discharge the debts of said association, the amount of such debts to be verified by the officers thereof, and the sum of two thousand dollars is hereby appropriated out of any money in the Treasury not otherwise appropriated to meet and defray such charges.

Acceptance of
land from
Battlefield
Memorial
Association.

Appropriation.

Secretary of
War to take
possession, etc.

SEC. 2. That as soon as the lands aforesaid shall be conveyed to the United States the Secretary of War shall take possession of the same, and such other lands on the battlefield as the United States have acquired, or shall hereafter acquire, by purchase or condemnation proceedings; and the lands aforesaid, shall be designated and known as the "Gettysburg National Park."

Designation.

Commissioners
to be
appointed.

SEC. 3. That the Gettysburg national park shall, subject to the supervision and direction of the Secretary of War, be in charge of the commissioners heretofore appointed by the Secretary of War for the location and acquisition of lands at Gettysburg, and their successors; the said commissioners shall have their office at Gettysburg, and while on duty shall be paid such compensation out of the appropriation provided in this Act as the Secretary of War shall deem reasonable and just. And it shall be the duty of the said commissioners, under the direction of the Secretary of War, to superintend the opening of such additional roads as may be necessary for the purposes of the park and for the improvement of the avenues heretofore laid out therein, and to properly mark the boundaries of the said park, and to ascertain and definitely mark the lines of battle of all troops engaged in the battle of Gettysburg, so far as the same shall fall within the limits of the park.

Compensation.

Duty.

SEC. 4. That the Secretary of War is hereby authorized and directed to acquire, at such times and in such manner as he may deem best calculated to serve the public interest, such lands in the vicinity of Gettysburg, Pennsylvania, not exceeding in area the parcels shown on the map prepared by Major-General Daniel E. Sickles, United States Army, and now on file in the office of the Secretary of War, which were occupied by the infantry, cavalry and artillery on the first, second and third days of July, eighteen hundred and sixty-three, and such

Acquiring additional
land,
etc.

Proviso.
Rights not
prejudiced.

Commissioners
to acquire
lands design-
ated.

Condemnation
proceedings.
Vol. 25, p. 357.

Anfe, p. 584.

Regulations,
etc.

Penalty for
destroying
columns, etc.

other adjacent lands as he may deem necessary to preserve the important topographical features of the battlefield: *Provided*, That nothing contained in this Act shall be deemed and held to prejudice the rights acquired by any State or by any military organization to the ground on which its monuments or markers are placed, nor the right of way to the same.

SEC. 5. That for the purpose of acquiring the lands designated and described in the foregoing section not already acquired and owned by the United States, and such other adjacent land as may be deemed necessary by the Secretary of War for the preservation and marking of the lines of battle of the Union and Confederate armies at Gettysburg, the Secretary of War is authorized to employ the services of the commissioners heretofore appointed by him for the location, who shall proceed, in conformity with his instructions and subject in all things to his approval, to acquire such lands by purchase, or by condemnation proceedings, to be taken by the Attorney-General in behalf of the United States, in any case in which it shall be ascertained that the same can not be purchased at prices deemed reasonable and just by the said commissioners and approved by the Secretary of War. And such condemnation proceedings may be taken pursuant to the Act of Congress approved August first, eighteen hundred and eighty-eight, regulating the condemnation of land for public uses, or the Joint Resolution authorizing the purchase or condemnation of land in the vicinity of Gettysburg, Pennsylvania, approved June fifth, eighteen hundred and ninety-four.

SEC. 6. That it shall be the duty of the Secretary of War to establish and enforce proper regulations for the custody, preservation, and care of the monuments now erected or which may be hereafter erected within the limits of the said national military park; and such rules shall provide for convenient access by visitors to all such monuments within the park, and the ground included therein, on such days and within such hours as may be designated and authorized by the Secretary of War.

SEC. 7. That if any person shall destroy, mutilate, deface, injure, or remove, except by permission of the Secretary of War, any column, statue, memorial structure, or work of art that shall be erected or placed upon the grounds of the park by lawful authority, or shall destroy or remove any fence, railing, inclosure, or other work for the protection or ornament of said park or any portion thereof, or shall destroy, cut, hack, bark, break down, or otherwise injure any tree, bush, or shrubbery that may be growing upon said park, or shall cut down or fell or remove any timber, battle relic, tree or trees, growing or being upon said park, or hunt within the

limits of the park, or shall remove or destroy any breastworks, earthworks, walls, or other defenses or shelter or any part thereof constructed by the armies formerly engaged in the battles on the land or approaches to the park, or shall violate any regulation made and published by the Secretary of War for the government of visitors within the limits of said park, any person so offending and found guilty thereof, before any justice of the peace of the county in which the offense may be committed, shall, for each and every such offense, forfeit and pay a fine, in the discretion of the justice, according to the aggravation of the offense, of not less than five nor more than five hundred dollars, one-half for the use of the park and the other half to the informer, to be enforced and recovered before such justice in like manner as debts of like nature are now by law recoverable in the county where the offense may be committed.

SEC. 8. That the Secretary of War is hereby authorized and directed to cause to be made a suitable bronze tablet, containing on it the address delivered by Abraham Lincoln, President of the United States, at Gettysburg on the nineteenth day of November, eighteen hundred and sixty-three, on the occasion of the dedication of the national cemetery at that place, and such tablet, having on it besides the address a medallion likeness of President Lincoln, shall be erected on the most suitable site within the limits of said park, which said address was in the following words, to wit:

"Four score and seven years ago our fathers brought forth on this continent a new nation, conceived in liberty and dedicated to the proposition that all men are created equal.

"Now we are engaged in a great civil war, testing whether that nation, or any nation so conceived and so dedicated, can long endure. We are met on a great battlefield of that war. We have come to dedicate a portion of that field as a final resting place for those who here gave their lives that that nation might live. It is altogether fitting and proper that we should do this.

"But, in a larger sense, we can not dedicate, we can not consecrate, we can not hallow this ground. The brave men, living and dead, who struggled here, have consecrated it far above our poor power to add or detract. The world will little note, nor long remember, what we say here; but it can never forget what they did here. It is for us, the living, rather to be dedicated here to the unfinished work which they who fought here have thus far so nobly advanced. It is rather for us to be here dedicated to the great task remaining before us; that from these honored dead we take increased devotion to that cause for which they gave the last full measure of devotion; that we here highly resolve that these dead shall

Bronze tablet containing Lincoln's address, etc.

Medallion.

Inscription.

not have died in vain ; that this nation, under God, shall have a new birth of freedom, and that government of the people, by the people, for the people, shall not perish from the earth."

Appropriation
for tablet and
medallion.

And the sum of five thousand dollars, or so much thereof as may be necessary, is hereby appropriated, out of any money in the Treasury not otherwise appropriated, to pay the cost of said tablet and medallion and pedestal.

Appropriation
for expenses,
etc.

SEC. 9. That, to enable the Secretary of War to carry out the purposes of this Act, including the purchase or condemnation of the land described in sections four and five of this Act, opening, improving, and repairing necessary roads and avenues, providing surveys and maps, suitably marking the boundaries of the park, and for the pay and expenses of the commissioners and their assistants, the sum of seventy-five thousand dollars, or so much thereof as may be necessary, is hereby appropriated, out of any money in the Treasury not otherwise appropriated ; and all disbursements made under this Act shall require the approval of the Secretary of War, who shall make annual report of the same to Congress. (16 U.S.C. § 430g as amended.)

B: MANAGEMENT OBJECTIVES

The following Gettysburg National Military Park management objectives are applicable to this project.

To stabilize, preserve, or restore, consistent with National Park Service policies, the park's historic structures and cultural and natural landscape to represent as close as practicable their June 1863 appearance while allowing for the screening of intrusions and for preserving the park's commemorative monumentation.

To eliminate, to the degree possible, physical and visual intrusions into historic settings of the park caused by nonhistoric park avenues, vegetation, development, and utility lines.

To continue the agricultural permit program so that preservation of the park's historic land resources are enhanced.

To protect and perpetuate through vegetation management plans and programs the park's grasses, wild flowers, groves, historic woodlots and vegetative screening.

To provide, if possible and practicable, accessibility to and utilization of the park's physical facilities by handicapped citizens.

To present the battle in chronological and sequential manner, while providing for adequate access to the national cemetery and Eisenhower National Historic Site.

To encourage more use of the park through additional interpretive trails, wayside exhibits, and conducted walks.

To promote efficient access to all park units and to ensure safe uncongested circulation for visitors.

C: SURVEY NEEDS

Archeological

Archeological evaluation, testing, and possibly salvage of prehistoric and historic remains will need to be programmed prior to each action in the final proposal that results in any ground disturbance. It should be programmed in conjunction with all design work to implement the proposal.

Topographic

A topographic survey is required for the selected bypass alignment and in all other areas where roadwork will take place. The survey should encompass a corridor 100 feet wide for new roads and 50 feet wide along existing roads. Also a topographic survey of existing development and trail systems at Devil's Den and Little Round Top is necessary prior to preliminary design. All survey work should identify natural features, rocks, vegetation, and water courses.

Soils and Engineering Analysis

An engineering and site-specific analysis of possible methods of wastewater disposal is needed. This study should estimate probable flow generated by the proposed comfort station to determine if adequate capacity is available in the nearby municipal sewage system or to adequately size an on-site disposal system, if such a method is selected. The study should consider soil suitability for on-site disposal in the various possible locations and undertake site-specific percolation tests and soils investigations for building foundations where needed. A life-cycle cost analysis should be prepared to compare capital cost to operating and maintenance cost over the expected life of the system. Preliminary system and site evaluations have been undertaken and are included in appendix G.

Visitor Use Patterns on Little Round Top

Examination of visitor use patterns is needed for Little Round Top prior to redesign of pedestrian spaces on its summit and connecting to its parking area. Time lapse photography, on-site observation, or other unobtrusive methods of evaluation of the use of the area are necessary to understand how visitors move from their mode of transportation to the summit, where they go and what they do on the summit, and how individuals and groups interact when crowded conditions exist.

D: CULTURAL RESOURCE COMPLIANCE

All of Gettysburg National Military Park is listed on the National Register of Historic Places. Compliance with section 106 of the National Historic Preservation Act was undertaken for the General Management Plan under the programmatic memorandum of agreement with the Pennsylvania historic preservation officer and the Advisory Council on Historic Preservation. The proposal (alternative 1) follows the actions outlined in the GMP except for the location of the Devil's Den bypass/Warren Avenue intersection and the placement of the comfort station. Because of these changes, consultation and 106 review will be required if alternative 1 is chosen as the development concept plan.

E: NATURAL RESOURCE COMPLIANCE

Examination of the Federal Emergency Management Agency floodway map for Cumberland Township, Adams County, Pennsylvania, has revealed that no floodplain areas exist within the project area.



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Suite 322
315 South Allen Street
State College, Pennsylvania 16801

March 26, 1984

Gerald D. Patten, Assistant Manager
U.S. Department of the Interior
National Park Service
755 Parfet Street
P.O. Box 25287
Denver, CO 80225

Dear Mr. Patten:

This responds to your March 5, 1984 letter requesting our review and comments on the proposed improved visitor access and use facilities near the Little Round Top-Devil's Den area of the Gettysburg National Military Park. Your basic concern is the expansion of an existing abandoned railroad grade into wetlands along Plum Run. These comments provide technical assistance only and do not constitute the report of the Secretary of the Interior on the project within the meaning of Section 2(b) of the Fish and Wildlife Coordination Act, nor do they represent the review comments of the Department of the Interior on any forthcoming environmental statement.

A Service biologist visited the site on March 15 and observed the proposed parking area near Devil's Den. The entire bottomland area south of the existing railroad grade and Rose Creek is a palustrine forested wetland. Dominate trees include swamp white oak, pin oak, red maple and yellow birch. The shrub layer includes spice bush, ironwood, dogwood and greenbriar. There are various mosses growing on the forest floor. The land north of the railroad grade is upland forest.

After crossing Plum Creek, the abandoned grade swings north. The area northwest of the railroad grade and Plum Creek in this section is also forested wetland. The area southeast of the railroad grade is all upland forest.

To avoid destroying forested wetlands, we recommend that the expansion of the railroad grade occur on the uphill side away from the forested wetlands. Cutting trees or moving equipment through the wetlands should be avoided. The parking area should be placed on an upland site.

Under new regulations being developed by the U.S. Army Corps of Engineers, filling of these forested wetlands may require a Section 404 permit under the Clean Water Act of 1977. Avoiding the filling of wetlands will eliminate the need for a federal permit from the Corps and a permit from the Pennsylvania Department of Environmental Resources (dam or water obstruction permit).

We appreciate the opportunity to provide these comments. If we can be of further assistance, let us know.

Sincerely,

A handwritten signature in cursive script, appearing to read "Charles J. Kulp".

Charles J. Kulp
Field Supervisor



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Suite 322
315 South Allen Street
State College, Pennsylvania 16801

February 13, 1984

Mr. Gerald D. Patten
National Park Service
Denver Service Center
755 Parfet Street
P.O. Box 25287
Denver, Colorado 80225

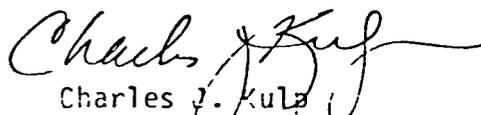
Dear Mr. Patten:

This responds to your January 31, 1984, letter requesting information on the presence of federally listed or proposed endangered and threatened species within the impact area of the Gettysburg National Military Park, Package 273, Development Concept Plan, Little Round Top, in Adams County, Pennsylvania.

Except for occasional transient species, no federally listed or proposed threatened or endangered species under our jurisdiction are known to exist in the project impact area. Therefore, no Biological Assessment or further Section 7 consultation under the Endangered Species Act (87 Stat. 984, as amended; 16 U.S.C. 1531 et seq.) is required with the Fish and Wildlife Service. Should project plans change, or if additional information on listed or proposed species becomes available, this determination may be reconsidered. A compilation of federally listed endangered and threatened species in Pennsylvania is attached for your information.

Your letter does not contain enough information for us to determine if your project will involve activities of concern to the Service under the Fish and Wildlife Coordination Act or other legislation. Such activities include stream channelization, dredging or filling of streams, pipelines crossing streams or wetlands, and any direct or indirect impacts on wetlands. You should be aware that work of this nature may require Federal permits from the U.S. Army Corps of Engineers and state permits from the Pennsylvania Department of Environmental Resources. If you are concerned that your project may involve the alteration of any water body or wetland, or if you would like advice on how to minimize adverse impacts to terrestrial resources, we will need site-specific, detailed information about project plans in order to complete our evaluation.

Sincerely,


Charles J. Kula
Field Supervisor

Attachment

F: SIGNIFICANT MONUMENTS AND MARKERS IN PROJECT AREA

1. 121st New York Infantry
2. 98th Pennsylvania Infantry
3. Gibbs' Ohio Battery L
4. 155th Pennsylvania Infantry
5. U.S. Signal Corps
6. G. K. Warren Statue
7. Hazlett-Weed Marker
8. 91st Pennsylvania Infantry
9. Michigan Sharpshooters
10. 140th New York Infantry
11. 44th and 12th New York Infantry
12. 16th Michigan Infantry
13. Strong Vincent marker
14. 83rd Pennsylvania Infantry
15. 20th Maine Infantry
16. 9th Pennsylvania Reserves
17. 40th New York Infantry
18. 6th New Jersey Infantry
19. 4th Maine Infantry
20. Smith's 4th New York Battery
21. 99th Pennsylvania Infantry
22. 124th New York Infantry
23. 86th New York Infantry
24. 20th Indiana Infantry
25. 5th New Hampshire Infantry
26. 13th Pennsylvania Reserves
27. Col. Fred Taylor marker
28. 2nd Pennsylvania Reserves
29. 1st Pennsylvania Reserves
30. 11th Pennsylvania Reserves
31. Henry Merwin Marker
32. 27th Connecticut Infantry
33. 61st New York Infantry
34. 81st Pennsylvania Infantry
35. Winslow's New York Battery D
36. 4th Michigan Infantry
37. 57th New York Infantry
38. 5th Michigan Infantry
39. Irish Brigade
40. 66th New York Infantry
41. 140th Pennsylvania Infantry
42. 28th Massachusetts Infantry
43. 18th Massachusetts Infantry
44. 118th Pennsylvania Infantry
45. 116th Pennsylvania Infantry
46. 140th Pennsylvania Infantry
47. 1st Michigan Infantry
48. 22nd Massachusetts Infantry
49. 2nd Andrews Massachusetts Sharpshooters
50. 32nd Massachusetts Infantry
51. 148th Pennsylvania Infantry
52. Zook marker

53. 17th Maine Infantry
54. 115th Pennsylvania Infantry
55. 52nd New York Infantry
56. 62nd Pennsylvania Infantry
57. 8th New Jersey Infantry
58. 110th Pennsylvania Infantry
59. Jed Chapman Marker
60. Henry Fuller Marker
61. 145th Pennsylvania Infantry
62. 27th Connecticut Infantry
63. 53rd Pennsylvania Infantry
64. 2nd Delaware Infantry
65. 64th New York Infantry
66. Thompson's Pennsylvania Battery C & F
67. Hampton's Pennsylvania Battery C & F
68. 141st Pennsylvania Infantry
69. 3rd Michigan Infantry
70. 3rd Maine Infantry
71. 2nd New Hampshire Infantry
72. 68th Pennsylvania Infantry
73. Ames' New York Battery G
74. Maine Sharpshooters
75. Vermont Sharpshooters

- A. Anderson's Brigade marker
- B. Benning's Brigade marker
- C. Robertson's Brigade marker
- D. Semmes' Brigade marker
- E. Kershaw's Brigade marker
- F. General location of U.S. Regulars Infantry markers .
- G. Law's Brigade marker

G: UTILITY SYSTEM SITE EVALUATION - COMFORT STATION
RELOCATION (by Michael D. Williams)

1.1 INTRODUCTION

In reversing the tour route and implementing the proposal, the comfort station at Devil's Den would require removal. This existing restroom would be replaced by one along West Confederate Avenue midway along the reversed tour route.

This study will evaluate the two most feasible sites, Pitzer Woods and McMillan Woods, for relocating the comfort station at Devil's Den (see Site Map).

In evaluating the two sites, the various options for the utility systems required for the proposed comfort station (electrical, water and wastewater) are discussed and evaluated.

The onsite investigation did not involve detailed subsurface investigation to determine positively that the soils at the two sites are adequate for onsite wastewater treatment.

2.1 ASSESSMENT OF ALTERNATIVES

The objective of the study is a systematic comparison of all feasible alternatives for providing utilities for the relocation of a new comfort station at either Pitzer Woods or McMillan Woods, which minimize total costs and protect the park environment and resources.

The utility systems required for a comfort station include electrical, water and wastewater. No alternatives were compared for the electrical system. Each site is already supplied with an adequate nearby power supply.

Alternatives for a water supply system are only compared at McMillan Woods site. An eight (8) inch water line already serves Pitzer Woods.

Alternative systems for wastewater treatment and disposal are numerous for each site. To evaluate which method is most cost effective could be a monumental task. However, it has been greatly simplified by selecting the following guidelines:

- Provide wastewater collection and treatment to each study area,
- Locate all new facilities where they will be least intrusive to the historic scene,
- Minimize disturbance to cultural and natural resources due to reconstruction of new facilities,

- Conform to the highest water quality standards which will provide maximum protection to the environment,
- Subordinate all physical facilities to the primary management objectives of the National Park Service,
- Select the most economical alternatives which will achieve these primary objectives.

3.1 DESCRIPTION OF ALTERNATIVES FOR PITZER WOODS SITE

Electrical System

A. Use Existing Electrical Service

Over head electrical power is located along the edge of Pitzer Woods on the boundary of Gettysburg National Military Park and the Eisenhower property. This system provides electrical power to facilities in Pitzer Woods, therefore, no alternatives are required.

Water System

An eight (8) inch water supply line already serves this area. It can be used to supply the new comfort station and no alternatives are required.

Wastewater System

A. Provide On-Site Primary Treatment and Disposal

This alternative would result in the installation of an on-site septic tank and subsurface disposal system. Based on preliminary site investigation and area soil maps the location of an acceptable area may be difficult to find but not impossible. State regulations would require an elevated sand mound system design if adequate permeable soils at a depth of twenty (20) inches can be found.

The sand mound system is a soil absorption system that is elevated above the natural surface in a sand fill material. The purpose of the design is to overcome site restrictions that prohibit the use of conventional soil absorption systems. Such restrictions are: slowly permeable soils, shallow permeable soils over creviced or porous bedrock, and permeable soils with high water tables.

The sand mound system consists of: a septic tank, pump station, sand fill material, absorption area, a pipe distribution network and top soil.

B. Use Incinerating, Composting, Recycling or Chemical Toilets

All of the above systems are designed for small usage and are not capable of handling loadings that are estimated for these sites. Each of these systems require a separate system, either subsurface disposal or holding tank for gray water and liquid waste.

C. Pressure Sewer to an existing Municipal Treatment System

The traditional method of providing public wastewater treatment is to convey the wastewater to a community facility. Both the Township of Cumberland and the City of Gettysburg have collection systems and wastewater treatment facilities. The collection systems for both of the systems are located within two (2) miles of the proposed site for the comfort station at Pitzer Woods.

1. The closest connection to the Township of Cumberland system is a lift station located on Redding Lane. According to town officials this lift station is undersized and therefore not capable of handling additional flow. Before the National Park Service could connect to this system, the lift station would have to be replaced with a larger facility. The treatment facility has recently been expanded and is more than adequate to handle the additional flow.

In order to transport wastewater from the comfort station at Pitzer Woods to the township's system, a pumping station and force main would be required. The pump station would be located at Pitzer Woods and would discharge wastewater through a force main installed along West Confederate Avenue to the township system.

2. The closest connection to the City of Gettysburg system is a manhole located on Red Patch Street. Based on anticipated flows the city's gravity collection lines and treatment facility are more than adequate to handle the additional flows.

In order to transport wastewater from the comfort station at Pitzer Woods to the city of Gettysburg's system, a pumping station and force main would be required. The pump station would be located at Pitzer Woods and would discharge wastewater through a force main installed along West Confederate Avenue to the city's system.

3.2 DESCRIPTION OF ALTERNATIVES FOR MCMILLAN WOODS SITE

Electrical System

A. Use Existing Electrical Service

Overhead electrical power is located at McMillan Woods.

This system provides electrical power to facilities in McMillan Woods, therefore, no alternatives are required.

Water System

A. Use Existing Water Supply

A two (2) inch water supply line is located at the north edge of McMillan Woods. The line supplies city water to developments along West Confederate Avenue south of the city of Gettysburg. Due to its size and length the quantity and pressure of the water is not sufficient to meet the needs of the comfort station without modifications.

1. This alternative would require the installation of a booster pump in the two (2) inch line which would increase the quantity and pressure of the water supply. The feasibility of doing this has not been varified with the city and thus its feasibility remains a question.

2. This alternative would require the replacement of approximately 3000 feet of two (2) inch water line along Confederate Avenue to the city's boundary limits.

Wastewater System

A. Provide On-Site Primary Wastewater Treatment and Disposal

This alternative would result in the installation of an on-site septic tank and subsurface disposal system. Based on preliminary site investigation and area soil maps the location of an acceptable may be difficult to find but not impossible. State regulations would require an elevated sand mound system design if adequate permeable soils at a depth of twenty (20) inches can be found.

The sand mound system is a soil absorption system that is elevated above the natural surface in a sand fill materials. The purpose of the design is to overcome site restrictions that prohibit the use of conventional soil absorption systems. Such restrictions are: slowly permeable soils, shallow permeable soils over creviced or porous bedrock, and permeable soils with high water tables.

The sand mound system consists of a septic tank, pump station, sand fill material, absorption area, a pipe distribution material and top soil.

B. Use Incinerating, Composting, Recycling or Chemical Toilets

All of the above systems are designed for small usage and are not capable of handling loadings that are estimated for

these sites. Each of these systems require a separate system, either subsurface disposal or holding tank for gray water and liquid waste.

C. Gravity or Pressure Sewer to an Existing Municipal Treatment System

The traditional method of providing public wastewater treatment is to convey the wastewater to a community facility. Both the townships of Cumberland and the city of Gettysburg have collection systems and wastewater treatment facilities. The collection systems for both of the systems are located within one (1) mile of the proposed site for the comfort station at McMillan Woods.

1. The closest connection to the township of Cumberland system is a lift station located on Redding Lane. According to town officials this lift station is undersized and therefore not capable of handling additional flow. Before the National Park Service could connect to this system, the lift station would have to be replaced with a larger facility. The treatment facility has recently been expanded and is more than adequate to handle the additional flow.

A gravity sewer line would be required to transport the Wastewater from the comfort station at McMillan Woods to the town's system.

2. The closest connection to the city of Gettysburg system is a manhole located on Red Patch Street. Based on anticipated flows the city's gravity collection lines and treatment facility are more than adequate to handle the additional flows.

In order to transport wastewater from the comfort station at McMillan Woods to the city of Gettysburg's system, a pumping station and force main would be required. The pump station would be located at McMillan Woods and would discharge wastewater through a force main installed along West Confederate Avenue to the city's system.

4.1 EVALUATION OF ALTERNATIVES FOR PITZER WOODS SITE

Electrical System

Site already had electrical service, so no alternatives necessary.

Water System

Site already has water service; no alternatives necessary.

Wastewater System

A. Provide On-Site Primary Treatment and Disposal

Advantages

1. Effective where existing soil conditions make disposal of wastewater into the ground practical.
2. Has only limited operation and maintenance requirements.
3. Minimal excavation required for the system.

Limitations

1. This type of system is restricted to areas with permeable soils and soil depths greater than 20 inches.
2. Requires primary treatment (septic tank) and pump station prior to the sand mound.
3. Solids must be removed from the septic tank on a periodic basis.
4. Pump station is a mechanical system which requires periodic maintenance and energy consumption.
5. Requires a substantial area of land for system.

B. Use Incinerating, Composting, Recycling or Chemical Toilets

Not feasible.

C.-1 Pressure Sewer to Existing Municipal Treatment System (Township of Cumberland)

Advantages

1. Traditional method and requires only minimal pumping because of topography.
2. Does not require any National Park Service-operated treatment facilities; only responsibility for treatment will be on the township operating the treatment system.

Disadvantages

1. Requires a pumping station at the comfort station sites. Pumping station has mechanical and electrical components which require maintenance. Also pump station will not have overflow capability. During power failures, or pumps not working comfort station must be closed.

2. Large area of excavation for force main.
3. National Park Service would have to pay for the cost of the replacement of the township's pump station.
4. Fee charged for using community system.

C.-2 Pressure Sewer to Existing Municipal Treatment System (City of Gettysburg)

Advantages

1. Traditional method and requires only minimal pumping because of topography.
2. Does not require any National Park Service operated treatment facilities; only responsibility for treatment will be on the township operating the treatment system.
3. Would tie into city system at gravity sewer.

Disadvantages

1. Requires a pumping station at the comfort station site. Pumping station has mechanical and electrical components which require maintenance. Also pump station will not have overflow capability. During power failures, or pumps not working comfort station must be closed.
2. Large area of excavation for force main.
3. Fee charged for using community system.

4.2 EVALUATION OF ALTERNATIVES FOR MCMILLAN WOODS SITE

Electrical System

Site already has electrical service; no alternatives necessary.

Water System

A. Add Booster Pump to Existing Water Supply

Advantages

1. Doesn't require replacing water line.

Disadvantages

1. Requires a pump and thus mechanical and electrical components and the maintenance that goes along with them.

2. According to park maintenance staff, there may not be enough water supply available to make the system work during certain periods of time.

B. Replace the Existing Two (2) Inch Water Supply Line

Advantages

1. Mechanical system to maintain.

Disadvantage

1. Extensive excavation required along West Confederate Avenue.

2. Requires primary treatment (septic tank) and pump station prior to the sand mound.

3. Solids must be removed from the septic tank on a periodic basis.

4. Pump station is a mechanical system which requires periodic maintenance and energy consumption.

5. Requires a substantial area of land for system.

Wastewater Treatment

A. Provide On-Site Primary Treatment and Disposal

Advantages

1. Effective where existing soil conditions make disposal of wastewater into the ground practical.

2. Has only limited operation and maintenance requirements.

3. Minimal excavation required for the system.

Limitations

1. This type of system is restricted to area with permeable soils and soil depths greater than 20 inches.

B. Use Incinerating, Composting, Recycling or Chemical Toilets

Not feasible.

C.-1 Gravity Sewer to Existing Municipal Treatment System (Township of Cumberland)

Advantages

1. Traditional method.
2. Doesn't require any pumping to township's system.
3. Does not require any National Park Service operated treatment facilities, only responsibility for treatment will be on the township operating the treatment system.

Disadvantages

1. Large area of excavation for gravity sewer.
2. National Park Service would have to pay for the cost of the replacement of the township's pump station.
3. Fee charged for using community system.

C.-2 Pressure Sewer to Existing Municipal Treatment System (city of Gettysburg)

Advantages

1. Traditional method and requires only minimal pumping because of topography.
2. Does not require any National Park Service operated treatment facilities. Only responsibility of treatment will be on the township operating the treatment system.
3. Would tie into city system at gravity sewer.

Disadvantages

1. Requires a pumping station at the comfort station site. Pumping station has mechanical and electrical components which require maintenance. Also pump station will not have overflow capability. During power failures, or pumps not working comfort station must be closed.
2. Large area of excavation for force main.
3. Fee charge for using community system.

5.1 ECONOMIC ANALYSIS OF ALTERNATIVES

In order to effectively evaluate the various alternatives, economical cost comparisons are made. Engineering cost estimates for the monetary consequences of choosing different alternatives were developed using initial construction costs, annual operation and maintenance costs, and life-cycle costs.

In developing initial construction costs for the various alternatives, 1984 dollars were assumed. Construction costs included all labor, materials and equipment necessary to complete the desired work. It did not include contingencies associated with engineering design and project inspection. Specific cost figures were obtained after sizing the various processes and developing unit quantities for labor, materials and equipment. These quantities were then multiplied by appropriate unit costs using actual suppliers' prices and/or construction estimating references.

Annual operation and maintenance costs were developed based on 1984 dollars and included costs for labor, materials, equipment, and energy to operate and maintain the system.

The salvage value is the residual worth of components at the end of the design period of 20 years.

Life cycle costs are defined as the total present value cost of constructing, operating and maintaining a facility over its useful life, including its fuel and energy costs. The annual discount rate of 8%, without inflation, was used to obtain the uniform present worth factor for all costs. Total life-cycle costs included: initial construction costs, non-fuel operation and maintenance costs, and energy costs.

5.2 COST COMPARISON OF ALTERNATIVES, UTILITY SYSTEMS FOR COMFORT STATION LOCATION

A. Pitzer Woods Location

1. Electrical System

Capital Costs

Primary (Underground)	\$ 2,500
Transformer 15 KVA	2,000
Service	1,000
Total Capital Costs	\$ 5,500

Annual O & M Costs

(included under water and sewer utilities)

Salvage (20-year life) 0

Total Life-Cycle Cost

Capital Costs	\$ 4,500
O & M Costs	-----
	\$ 4,500

2. Water System

Capital Costs

2" Water Line	\$ 3,200.00
Water Meter	800.00
Water Tap	500.00

	Total Capital costs	\$ 4,500.00
	Annual O & M Costs	
	City Water Rates	\$ 1,200.00
	Salvage (20-year life)	0
	Total Life-Cycle Cost (UPW)	
	Capital cost	\$ 4,500.00
	O & M Costs	11,782.00
		\$16,282.00
3.	Wastewater System	
3-1	On-Site Subsurface Treatment and Disposal	
	Capital Costs	
	Elevated Sand Mound	\$ 60,000
	Septic Tank	26,000
	Pump Station	20,000
	Gravity Sewer Line	13,500
	Total Capital costs	\$119,500
	Annual O & M Costs	
	Elevated Sand Mound	0
	Septic Tank	500
	Pump Station	200
	Electrical	150
		850
	Salvage (20-year life)	0
	Total Life-Cycle Costs	
	Capital costs	\$119,500
	O & M Costs	10,286
		\$129,786
3-2	Pump to township system	
	Capital Costs	
	Pump Station @ Comfort Station	25,000
	Transformer	4,000
	Force Main	136,000
	Pump Station @ Redding Lane	50,000
	Total Capital costs	215,000
	Annual O & M Costs	
	Pump Station @ Comfort Station	1,200
	Transformer	100
	Sewer Service Charge	1,500
		2,800
	Salvage (20-year life)	0
	Total Life-Cycle costs	
	Capital Costs	\$215,000

O & M Costs	33,880
	248,880
3-3 Pump to City of Gettysburg System	
Capital Costs	
Pump Station	28,000
Transformer	4,000
Force Main	153,000
Total Capital Costs	185,000
Annual O & M Costs	
Pump Station	1,200
Transformer	100
Sewer Service Charge	1,500
	2,800
Salvage (20-year life)	0
Total Life-Cycle Costs	
Capital Costs	185,000
O & M Costs	33,880
	218,880
B. McMillan Woods Location	
1. Electrical System	
Capital Costs	
Primary	12,000
Transformer	2,000
service	1,000
	15,000
Annual O & M Costs	0
Salvage (20-year life)	0
Total Life-Cycle Costs	
Capital Costs	15,000
O & M Costs	0
	15,000
2. Water System	
2.1 In-Line Booster Pump	
capital costs	
Water Line	5,000
Booster Pump System	2,500
Water Meter	1,000
	8,500
Annual O & M Costs	
Electrical	1,000

City Water Rates	1,200
Salvage (20-year life)	0
Total Life-Cycle Costs	
Capital Costs	8,500
	2,662
	\$35,120
2.2 Water Line Replacement	
Capital Costs	
6" line	65,000
2" line	5,000
Water Main	1,000
Annual O & M Costs	
City Water Rates	1,200
Salvage (20-year life)	0
Total Life-Cycle Costs	
Capital Costs	71,000
O & M Costs	14,520
	85,520
3. Wastewater Treatment System	
3.1 On-Site Subsurface Treatment and Disposal	
Capital Costs	
Elevated Sand Mound	60,000
Septic Tank	26,000
Pump Station	20,000
Gravity Sewer Line	13,500
	119,500
Annual O & M Costs	
Elevated Sand Mound	0
Septic Tank	500
Pump Station	200
Electrical	150
	850
Salvage (20-year life)	0
Total Life-Cycle Costs	
Capital costs	\$119,500
O & M Costs	10,286
	129,786
3.2 Gravity to Township System	
Capital Costs	
Gravity Sewer Line	54,000

Pump Station	50,000
	104,000
Annual O & M Costs	
Sewer Service Charge	1,500
Salvage Value	0
Total Life-Cycle Costs	
Capital Costs	73,000
O & M Costs	33,880
	106,880

5.3 Summary of Cost Comparisons

A. Pitzer Woods

Electrical - Capital Costs	5,500
Annual O & M Costs	0
Life Cycle Costs	5,500
Water - Capital Costs	5,400
Annual O & M Costs	1,200
Life Cycle Costs	16,282

Wastewater System

1. On-site Capital Costs	119,500
Annual O & M Costs	850
Life Cycle Costs	129,786
2. Pump to Township Capital Costs	215,000
Annual O & M Costs	2,800
Life Cycle Costs	248,880
3. Pump to City Capital Costs	185,000
Annual O & M Costs	2,800
Life Cycle Costs	218,880

MOST COST EFFECTIVE SOLUTION FOR PITZER WOODS SITE

On-Site Subsurface Wastewater Treatment and Disposal

Total Capital Costs	\$130,400
Annual O & M Costs	2,050
Life Cycle Costs	155,205

B. McMillan Woods

Electrical Capital Costs	\$ 15,000
Annual O & M Costs	0
Life Cycle Costs	15,000

Water

1.	Capital Costs	\$ 8,500
	Annual O & M Costs	2,200
	Life-Cycle Costs	35,120
2.	Capital Costs	\$ 71,000
	Annual O & M Costs	1,200
	Life Cycle Costs	85,520

Wastewater

1.	Capital Costs	\$119,500
	Annual O & M Costs	850
	Life Cycle Costs	129,786
2.	Capital costs	\$104,000
	Annual O & M costs	1,500
	Life Cycle Costs	122,150
3.	Capital Costs	\$ 73,000
	Annual O & M Costs	2,800
	O & M Costs	106,880

MOST COST EFFECTIVE SOLUTION FOR MCMILLAN WOODS SITE

Booster Pump in Water Line and Pump Wastewater to Gettysburg Wastewater System

Total Capital costs	\$127,500
Annual O & M Costs	5,000
Life Cycle Costs	157,000

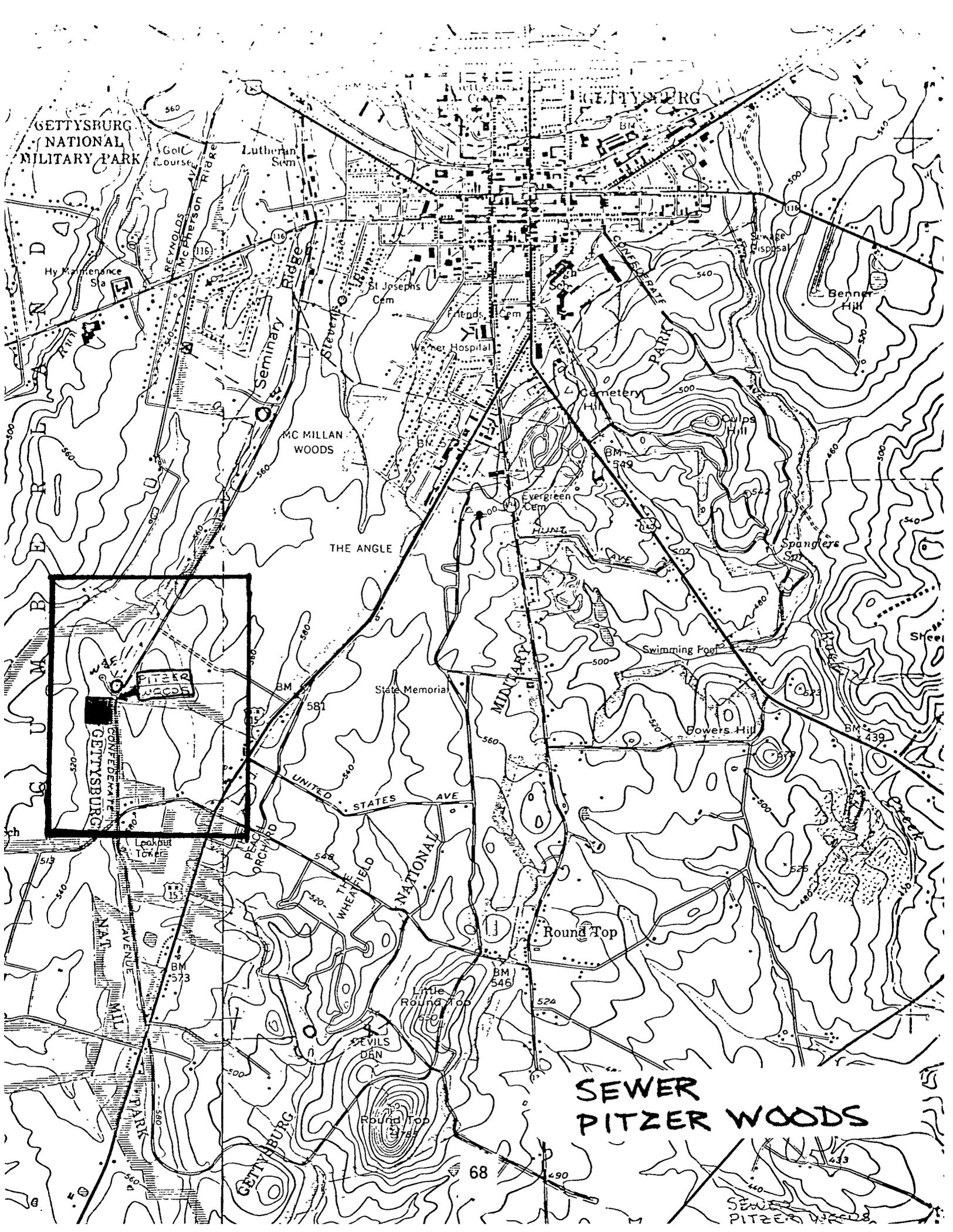
5.4 RECOMMENDATIONS OF THE STUDY

Based upon criteria established in Section 2.1, and the above cost analysis, the following recommendations are made.

It was determined that locating a comfort station at Pitzer Woods and providing on-site subsurface treatment and disposal of wastewater will best serve the needs of Gettysburg National Military Park. The existing onsite water and electrical systems will also service the comfort station.

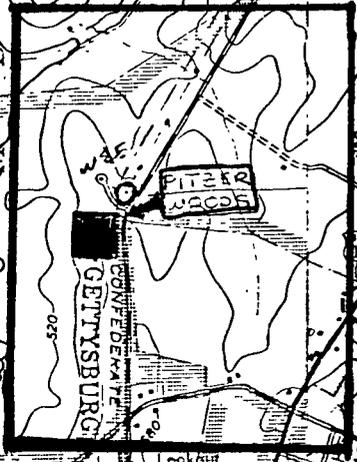
The capital cost for the project is estimated at \$130,400.00, with an annual operation and maintenance cost of \$2,050.00.

Specific site analysis will be required during the design of a new comfort station to determine its exact location and a definite disposal method.

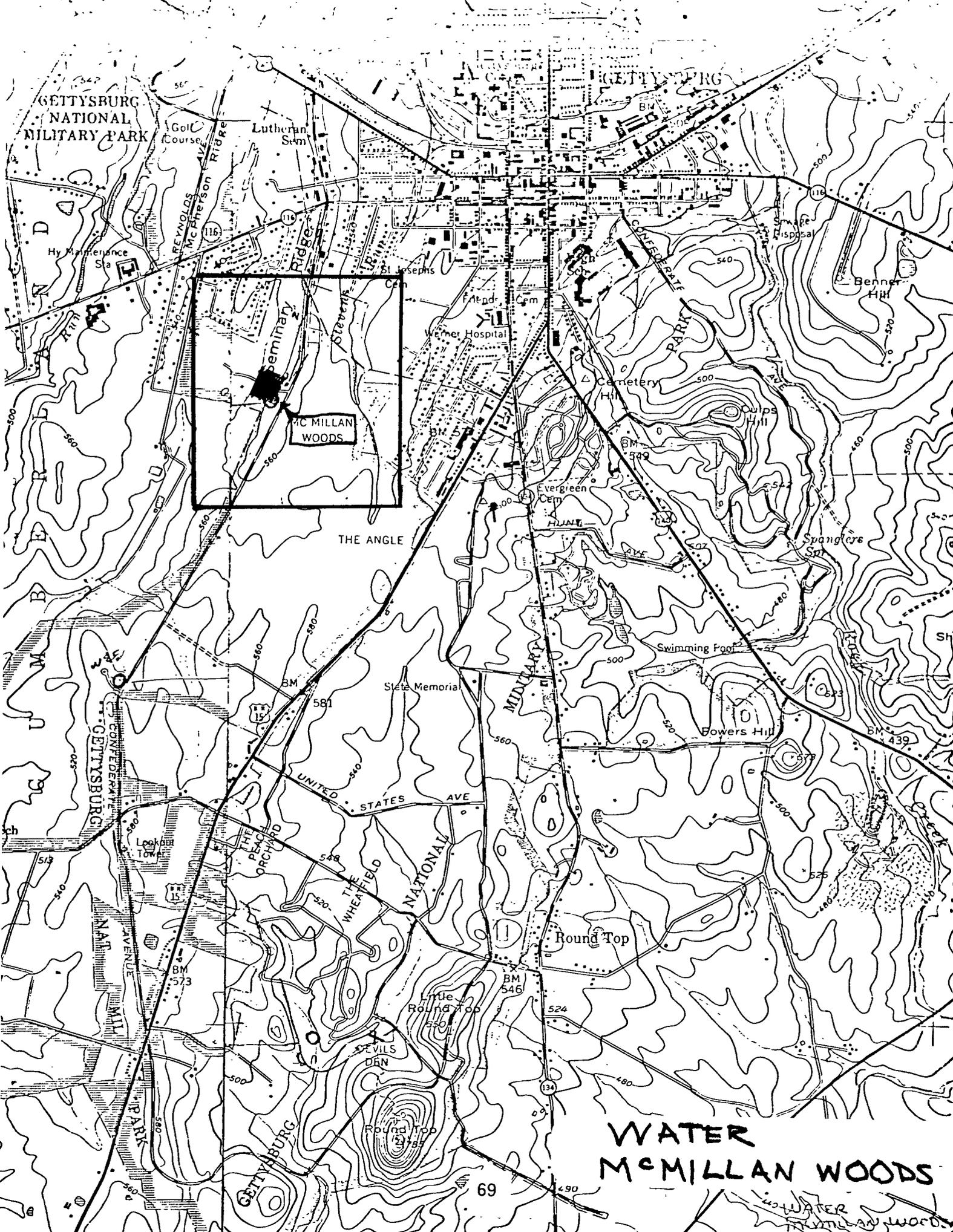


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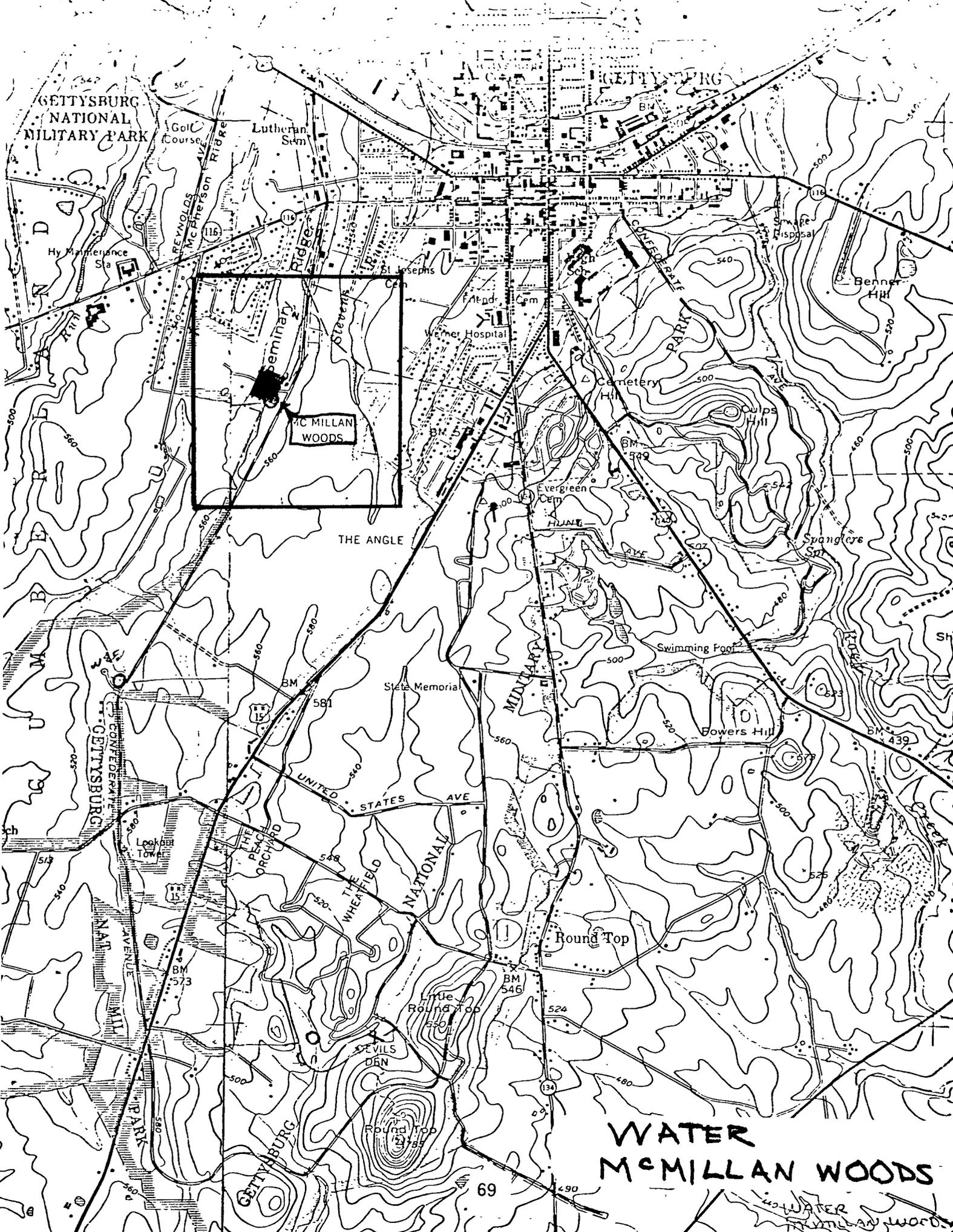
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Werner Hospital

Cemetery Hill

Evergreen Cem

Benner Hill

Spangler's

Swimming Pool

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THE WHEATFIELD NATIONAL

Round Top

Little Round Top

SEVILS DUN

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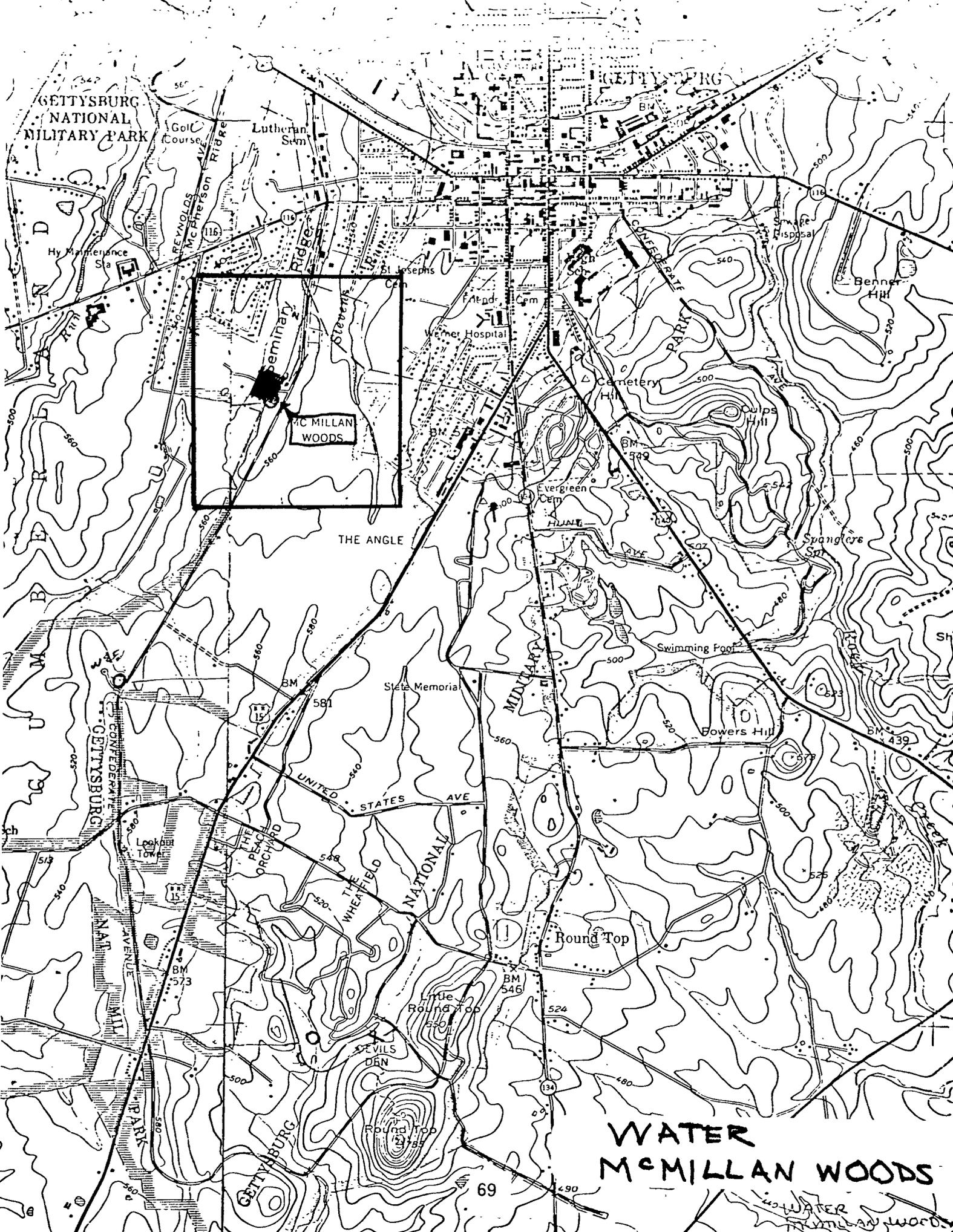
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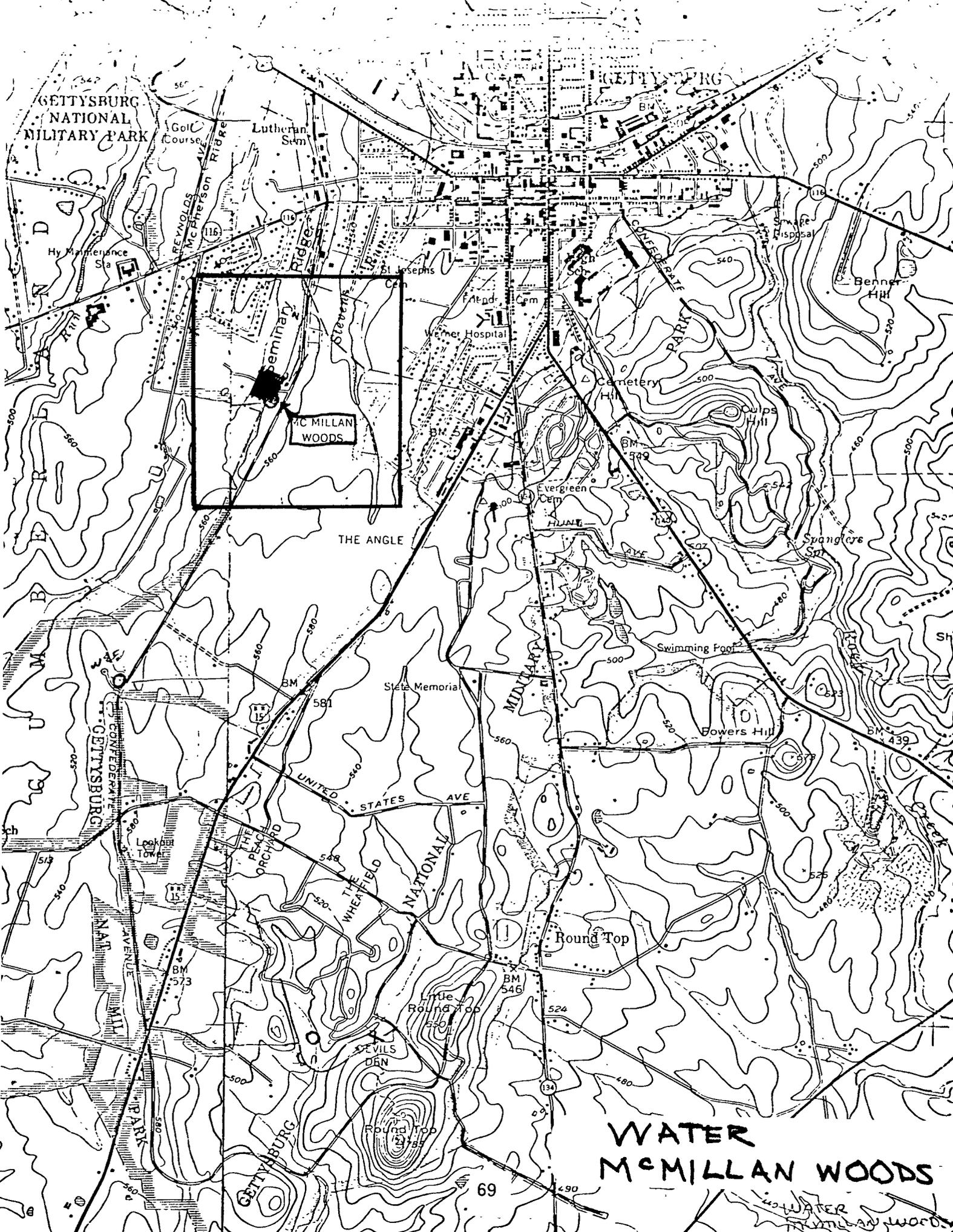
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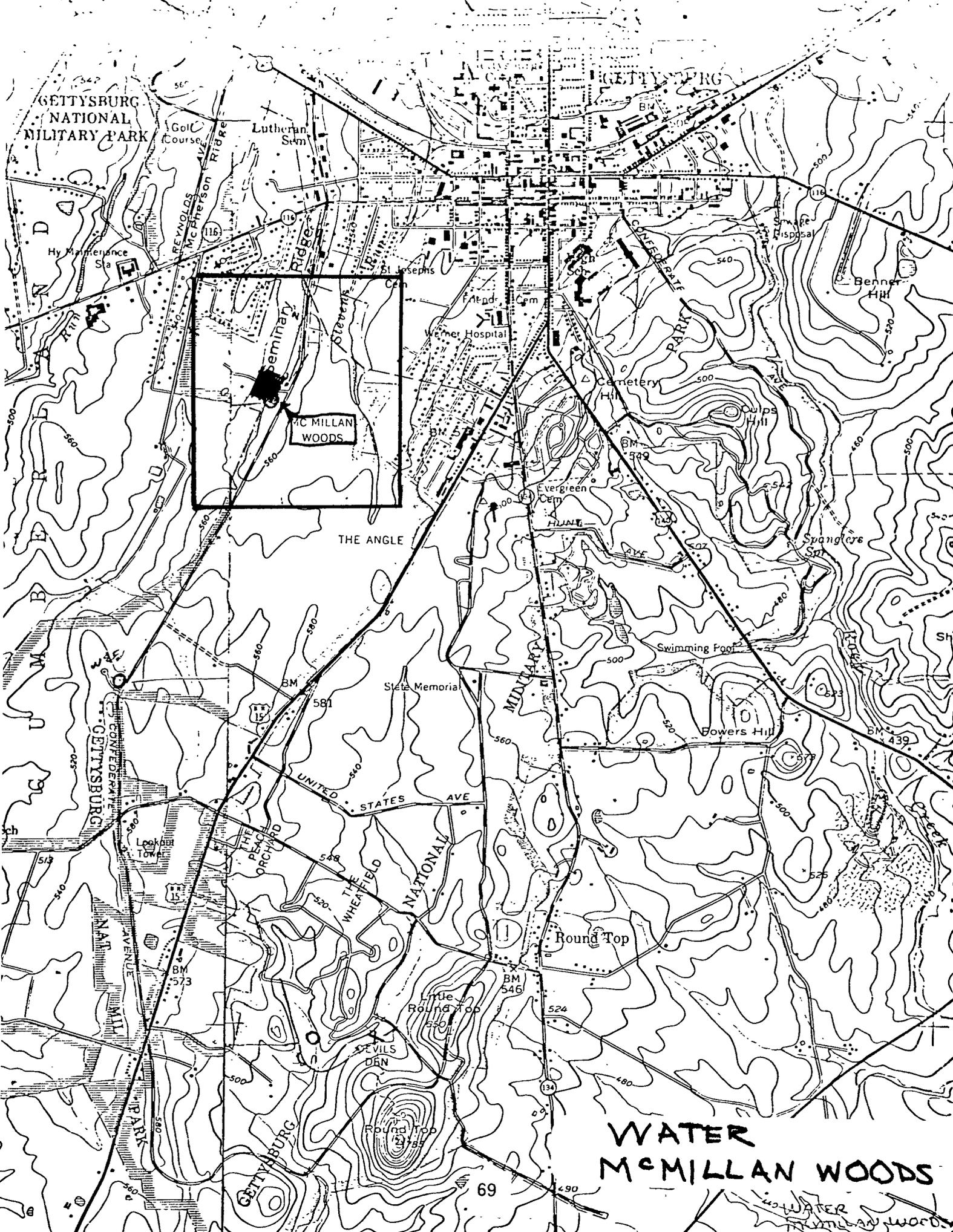
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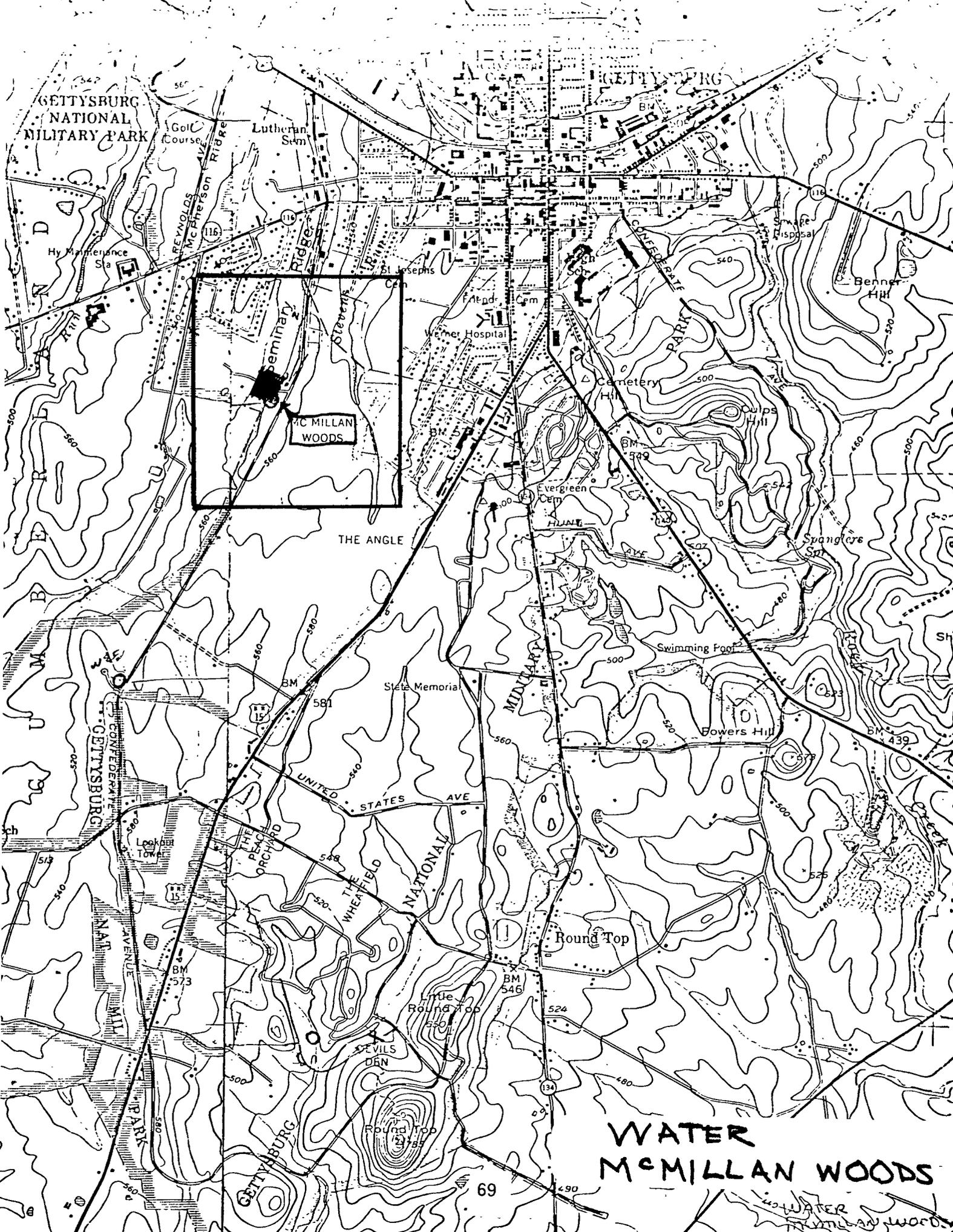
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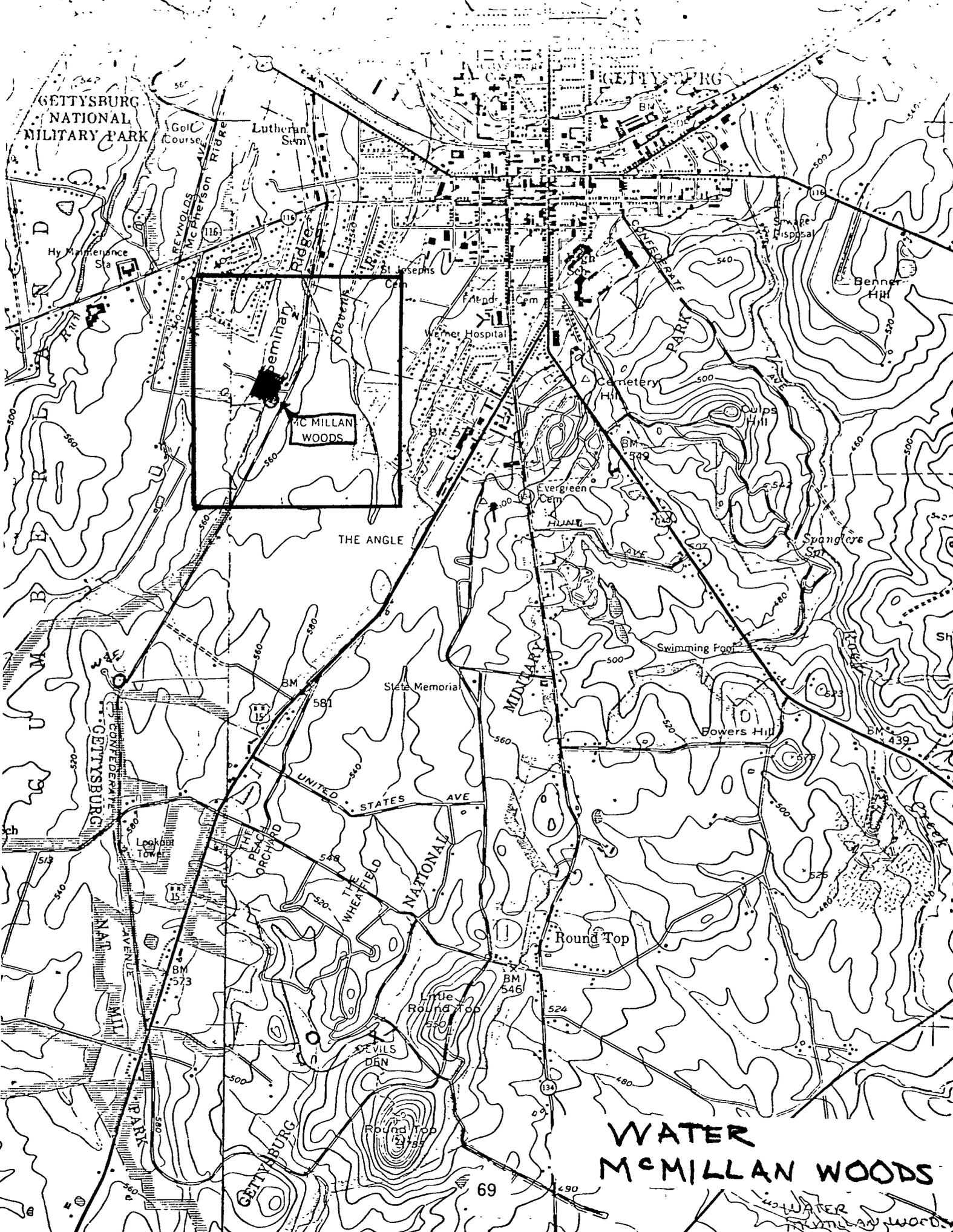
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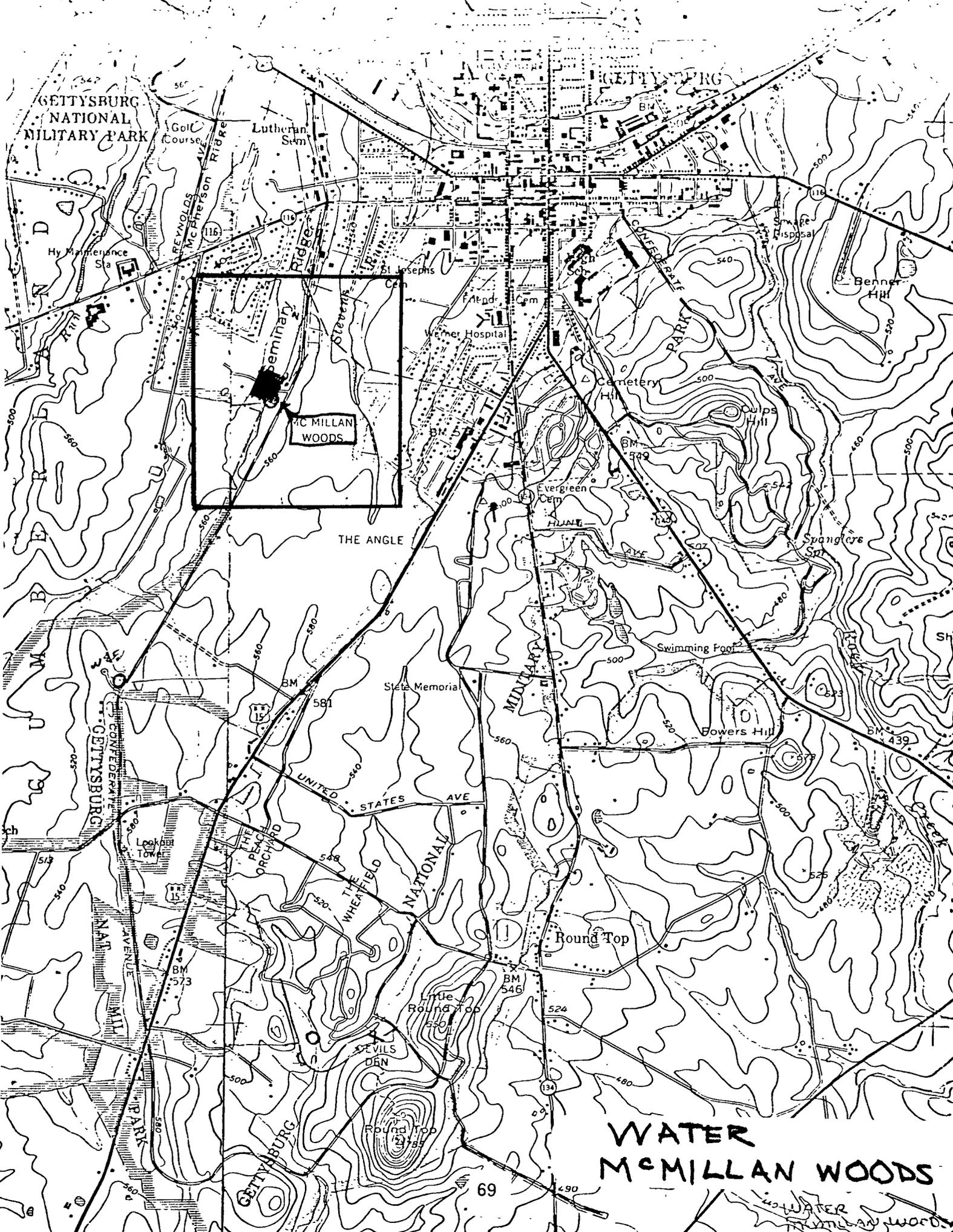
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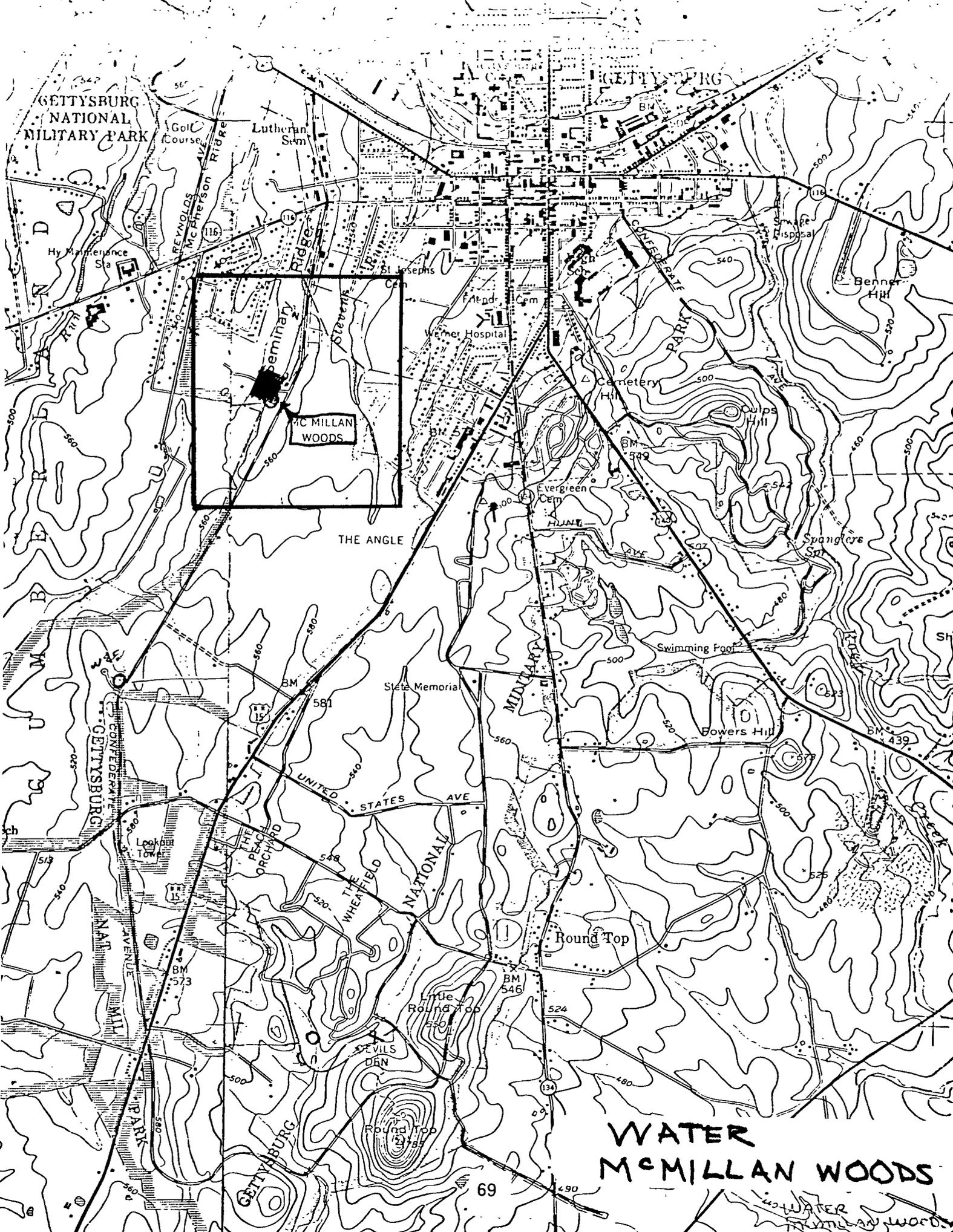
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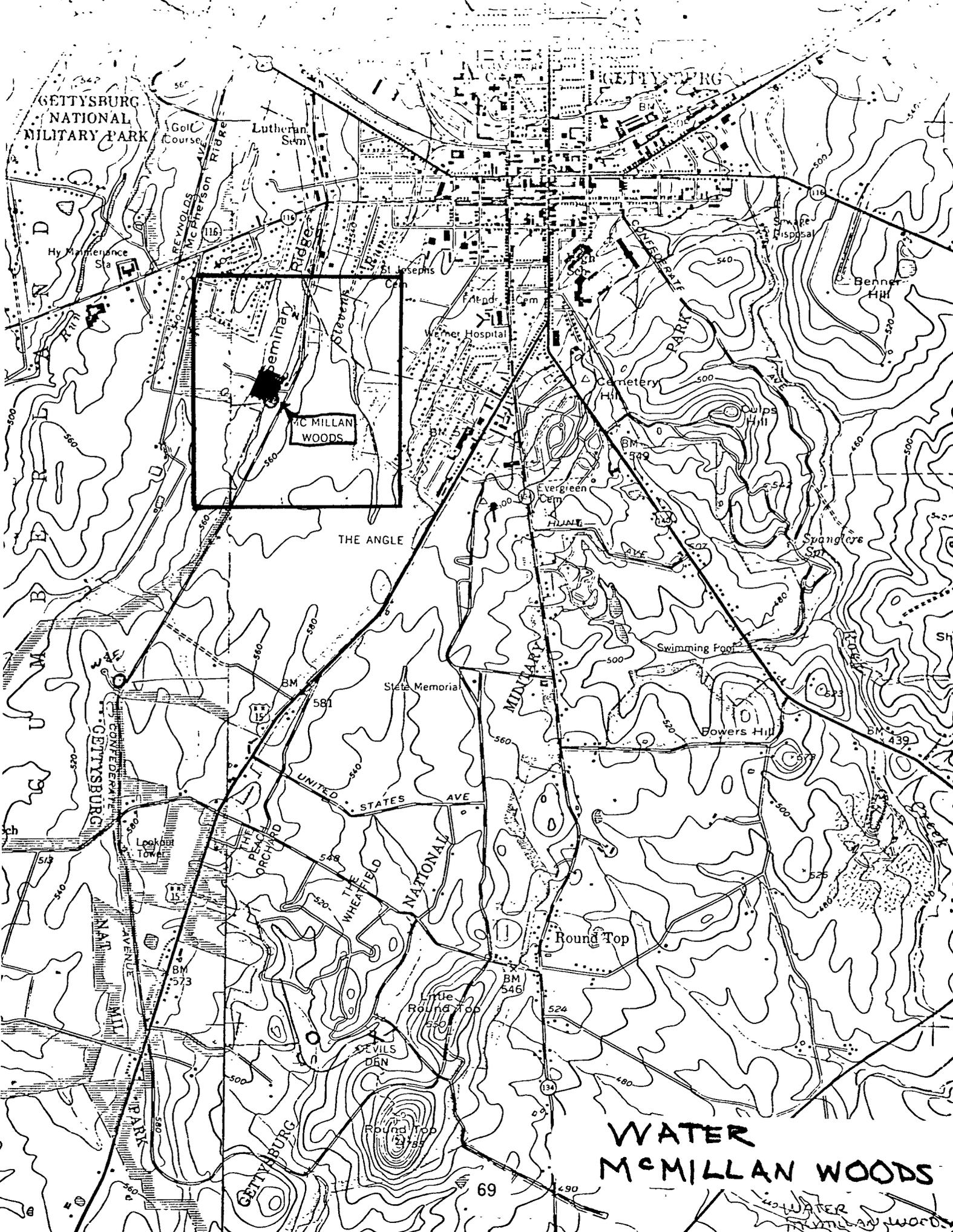
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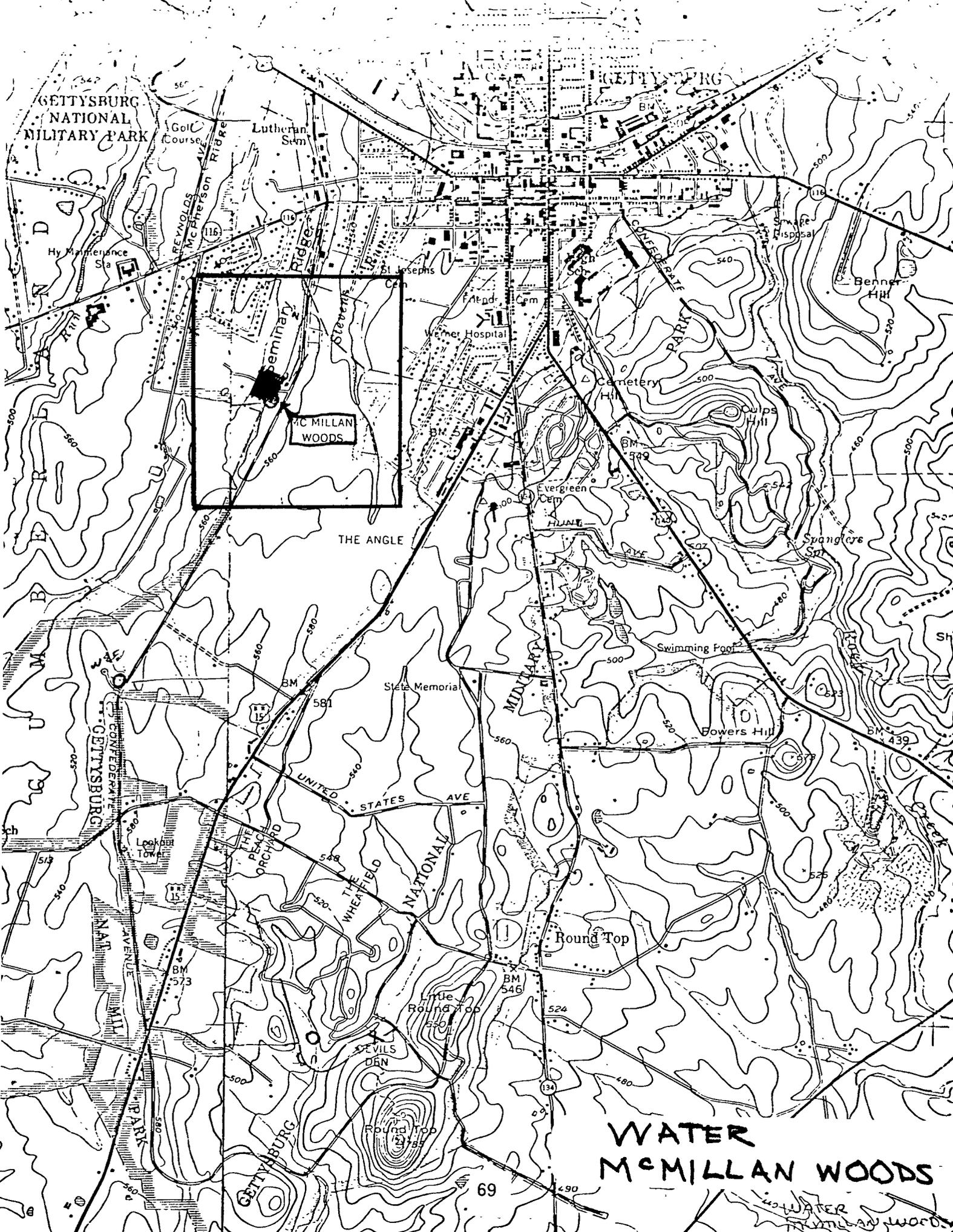
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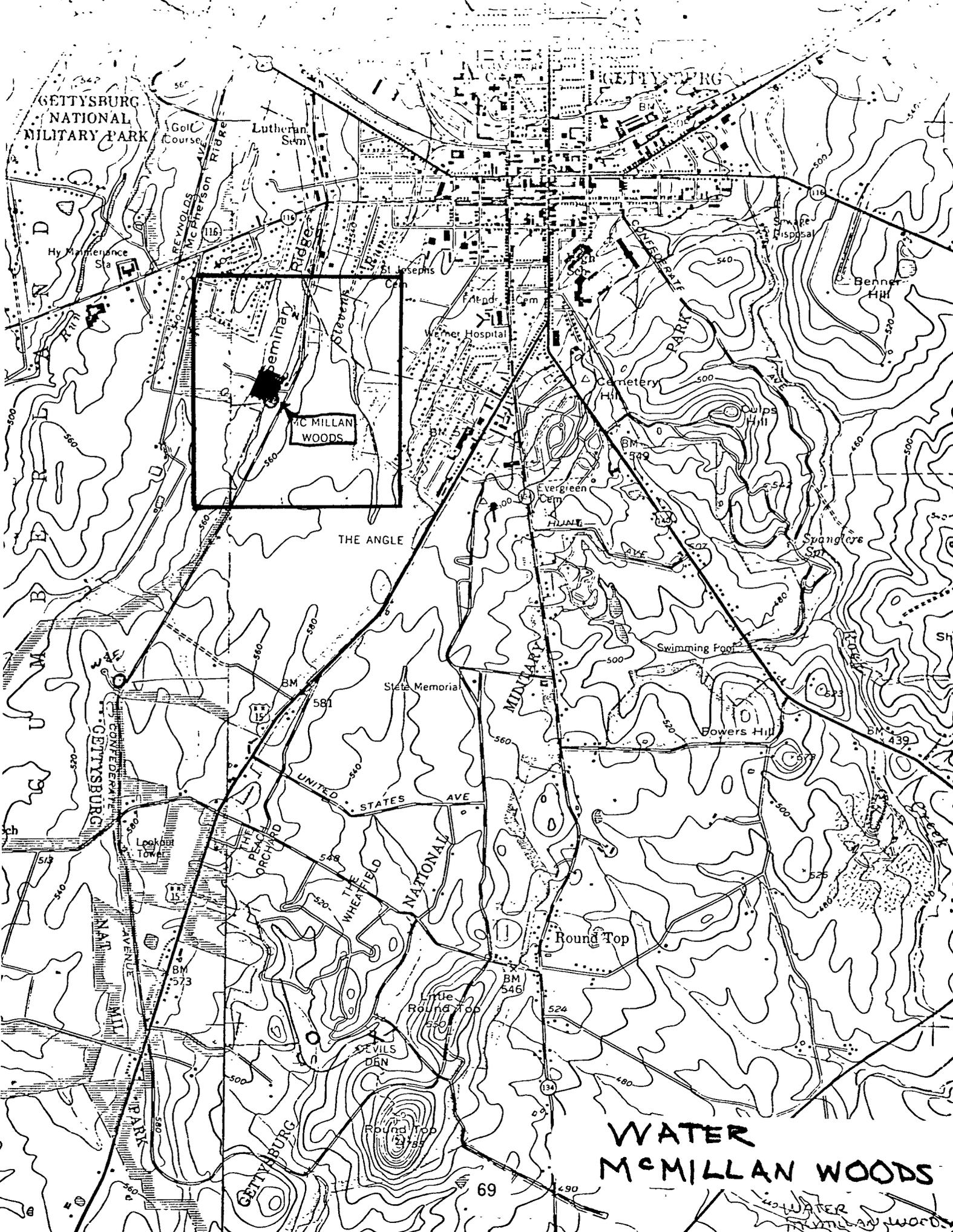
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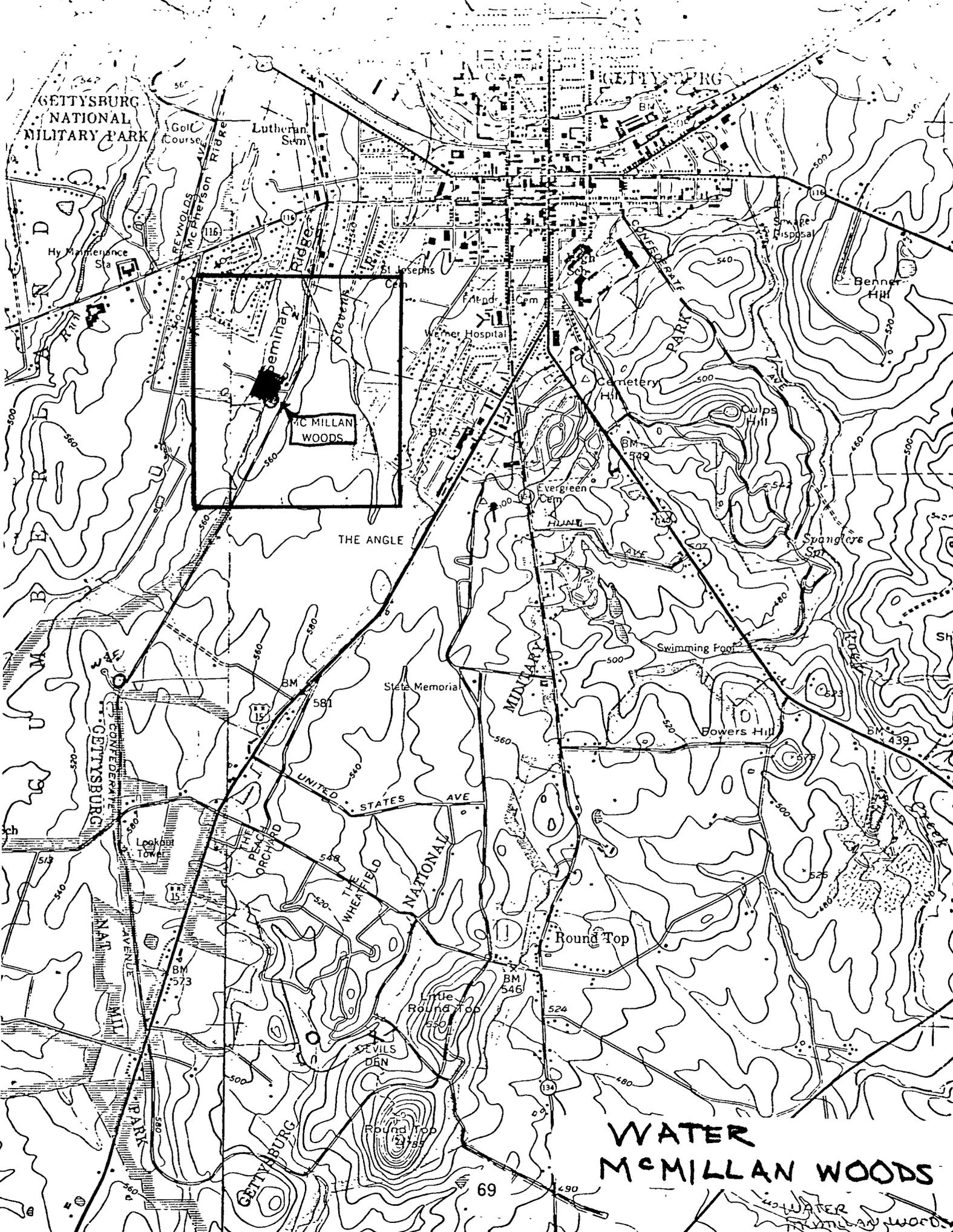
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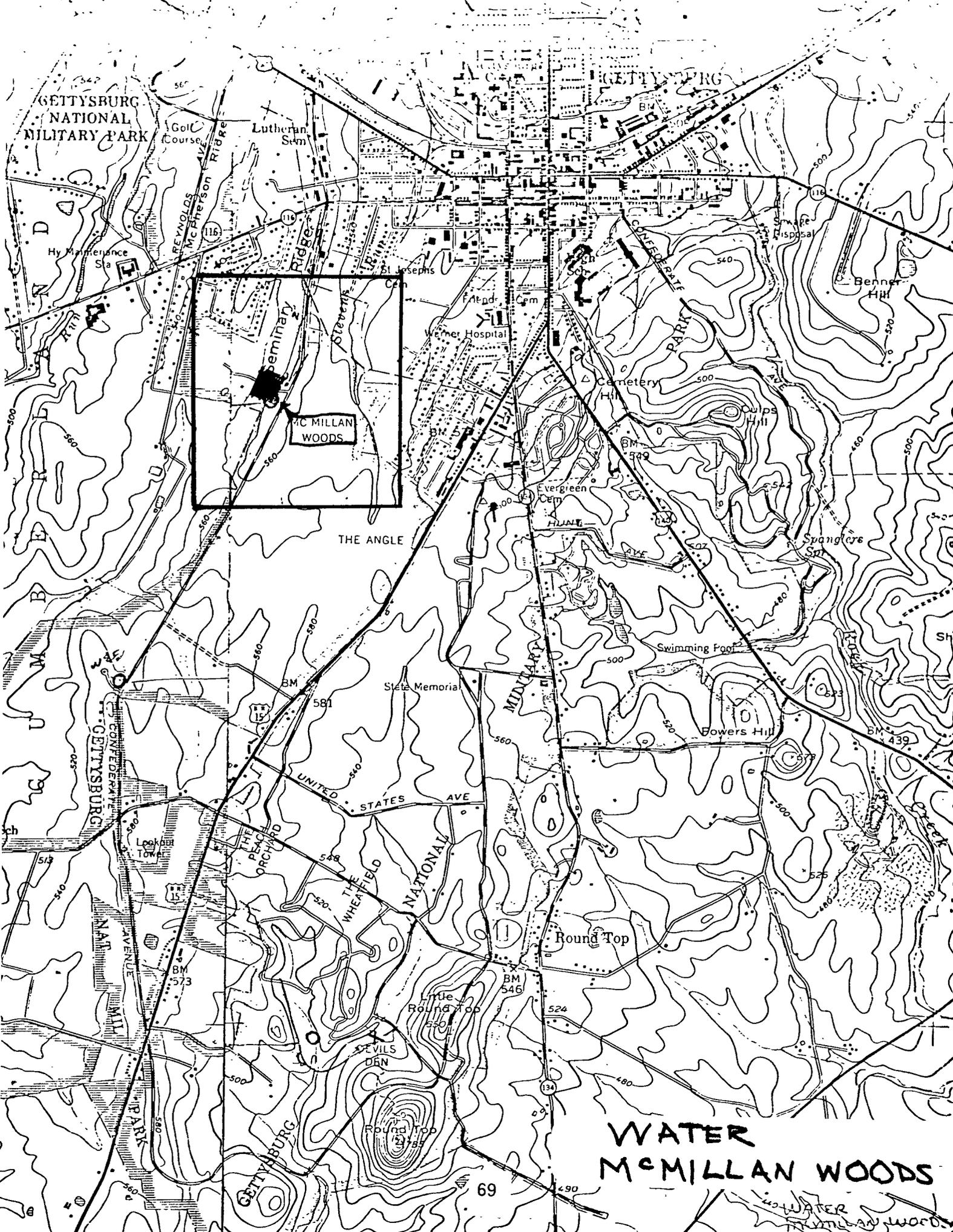
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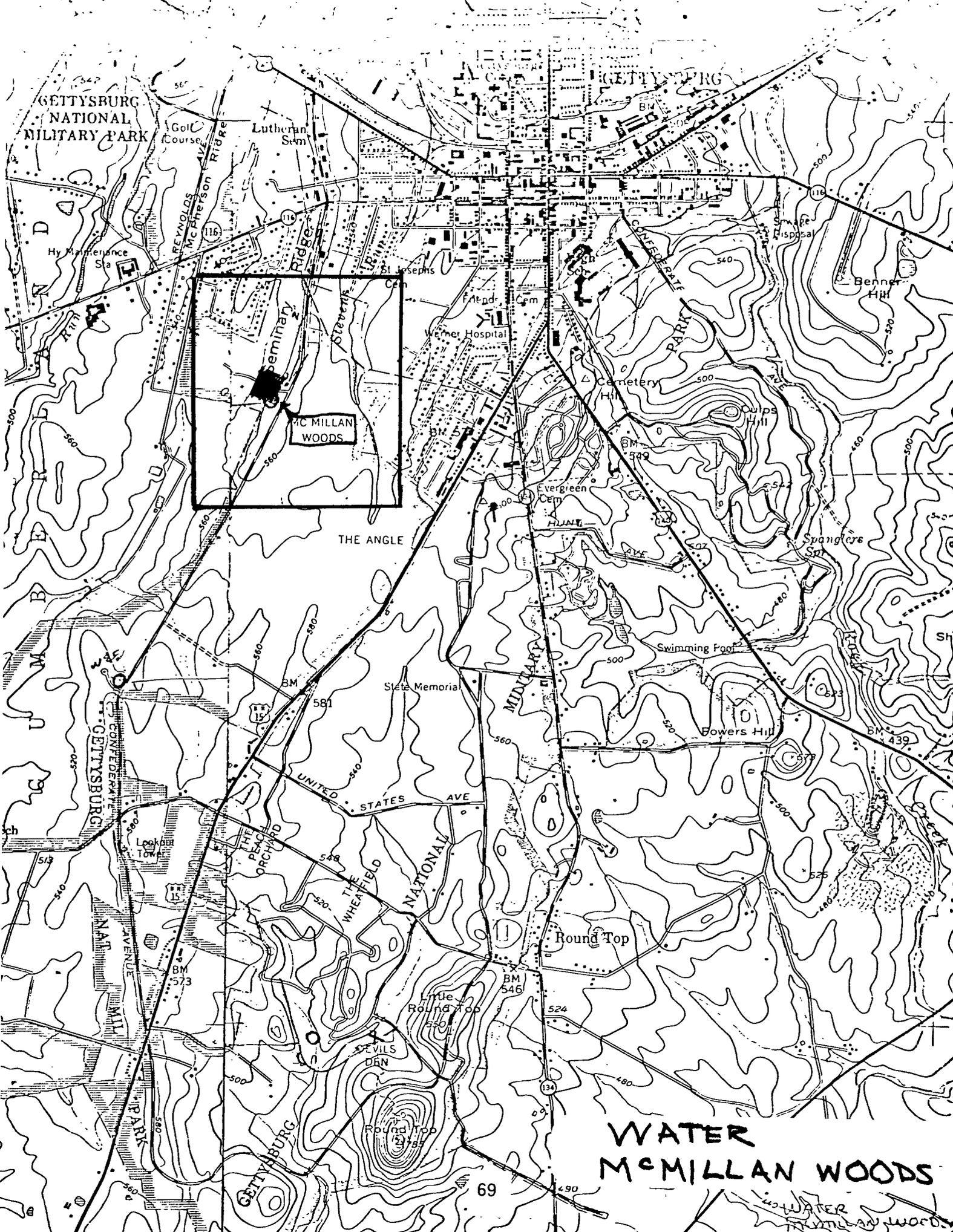
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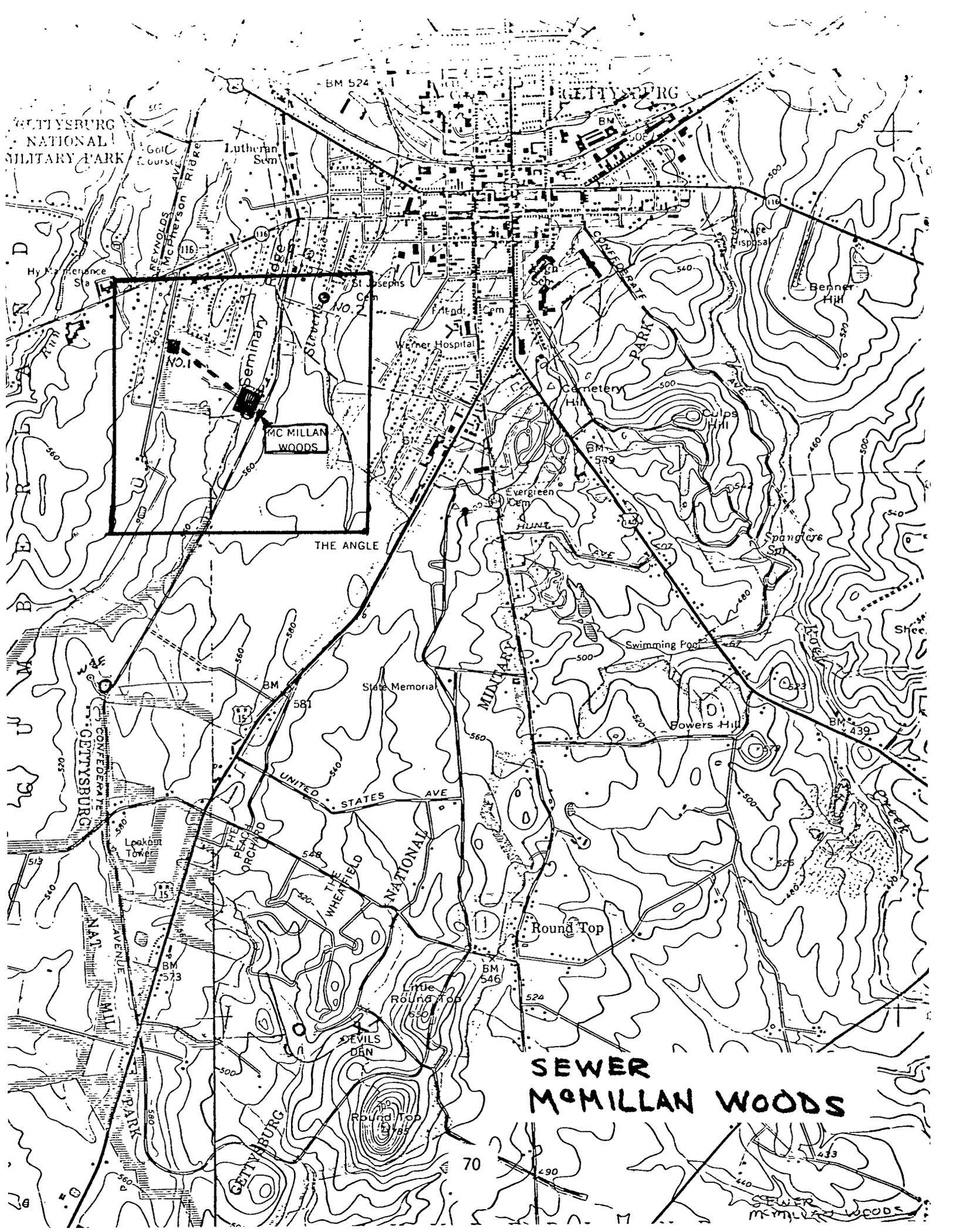
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As the nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, parks and recreation areas, and to ensure the wise use of all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

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