
OCOKA Military Terrain Analysis

Vicksburg was, then, rather an entrenched camp than a fortified place, owing much of its strength to the difficult ground, obstructed by fallen trees in its front, which rendered rapidity of movement and ensemble coordination in an assault impossible.²¹⁴

—Report of Capts. Prime and Comstock,
Grant's chief engineers, November 29, 1863

Introduction

The cultural landscape of Vicksburg became the focus of one of the most strategic events of the Civil War: the campaign and siege of Vicksburg, Mississippi. The unique combination of rugged, dissected, elevated terrain and a tortuous turn of the Mississippi River was seized and embellished upon by the Confederate army in their struggle to maintain control of the waterway that served as a lifeline and major artery to their cause. Under the commands of Lt. Gen. John C. Pemberton, Confederate forces constructed a series of artillery batteries along the bluffs overlooking the river to protect against gunboat attacks. Later, they protected the city landward, constructing a horseshoe-shaped system of fortifications and rifle pits around the city between the artillery positions anchored on the river that anticipated potential Union avenues of approach in the placement of strong forts and artillery positions along road and

rail lines and obstacles to troop movement elsewhere. The tactics of Union Maj. Gen. Ulysses S. Grant in attacking and laying siege to the Confederate line were similarly rooted in an understanding of the landform, topography, and water systems of Vicksburg's cultural landscape.

The connection between the terrain and features of the battlefield landscape and the military tactics employed by army commanders has been formalized by U.S. Armed Forces in a military terrain analysis process known as OCOKA. The system is an acronym that stands for

- O – Observation and Fields of Fire
- C – Cover and Concealment
- O – Obstacles
- K – Key Terrain
- A – Avenues of Approach

The OCOKA process is founded on the principle that “terrain has a direct impact on selecting objectives; location, movement, and control of forces; effectiveness of weapons and other systems; and protective measures.”²¹⁵ Based upon the connection between military tactics and battlefield terrain, contemporary U.S. Army officer training involves assessment of terrain and the tactical advantages offered by different landscape conditions. This training also entails field analysis of the role that military terrain played in historic battles. One of the training activities utilized by the U.S. Army for nearly a century is the staff ride. As noted in the *Staff Ride Handbook for the Vicksburg Campaign*, “since the early twentieth century, officers of the U.S. Army have honed their

214. *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies*. Series 1, V. 24, Pt. 2, 170. Reports of Captain Frederick E. Prince and Cyrus B Comstock, S. Corps of Engineers, chief Engineers Army of the Tennessee. New York City, November 29, 1863. Ohio State University Primary Sources Section, <ehistory.osu.edu/osu/sources/recordview.cfm?content=/037/0178>, accessed June 6, 2007.

215. U.S. Army Field Manual No. 6-0, *Mission Command: Command and Control of Army Forces* (Washington, D.C.: Department of the Army, 2003), Appendix B.

professional knowledge and skills by conducting staff rides to historical battlefields. Often, these educational exercises have focused on the tactical level of war, through a detailed examination of a single battle.”²¹⁶ While the OCOKA military terrain analysis system “did not exist in the nineteenth century, the basic concept has been taught at West Point since that time and was in use during the Civil War.”²¹⁷

Today, the OCOKA terrain analysis is being applied to the study of historic battlefields in support of land protection, historic resource preservation, and scene restoration. The American Battlefield Protection Program (ABPP), for example, is currently utilizing OCOKA military terrain analysis to update documentation of the nation’s battlefields initiated in the 1993 Civil War Sites Advisory Commission *Report on the Nation’s Civil War Battlefields*.

Specifically, the OCOKA process assesses natural and man-made features within a prospective battlefield to “provide military commanders with an understanding of the limitations and opportunities of the terrain in which they must operate.”²¹⁸ There is a link between the five aspects of the analysis and terrain features, as noted in the following definitions prepared by ABPP:

Observation and Fields of Fire

Observation is the ability to see friendly and enemy forces and key aspects of the terrain in order to judge strength, prevent surprise, and respond to threats. Examples include fortifications sited on high points with a cleared field of fire, and lookout towers. Some of the variables that can have an effect on observation are topography, vegetation, urban development, and the effects of the battle on conditions.

216. Dr. Chris Gabels, *Staff Ride Handbook for the Vicksburg Campaign; December 1862–July 1863*, 1, <www.cgsc.army.mil/carl/resources/csi/gabel15/gabel15.asp>.

217. National Park Service, Draft “Cultural Landscape Summary; The Battle of Gettysburg,” 1.

218. U.S. Army Corps of Engineers Engineer Research and Development Center, “Terrain Analysis,” <www.erd.usace.army.mil>, accessed May 2006.

Field of Fire is an area with a direct line of sight that weapons may cover/fire upon effectively from a given position. A unit’s field of fire is directly related to Observation. Examples include open land with a clear view within the firing range of available weaponry. The field of fire is related to emplacement suitability, lines of fire for direct-fire weapons, lines of fire for mortar, and the ranges for Civil War era weaponry. This must be qualified by the poor condition and effectiveness of some Confederate weaponry.

Dead Space (ground) is the land within range of weapons that cannot be observed or fired upon.

Cover and Concealment

Concealment is protection from enemy observation and surveillance, including features that protect both horizontally and vertically. Examples include forests, ravines, dense vegetation, and reverse slopes.

Cover is protection against enemy fire, both direct and from shelling. Examples include ditches, river banks, buildings, walls, and entrenchments.

Obstacles

Obstacles are natural or manmade terrain features that prevent, restrict, divert, or delay military movement. There are two categories of obstacles: existing and reinforcing. The presence and difficulty of obstacles determine whether terrain is unrestricted, restricted, or severely restricted. Examples include vegetation, topography, fences, stone walls, fortification features such as parapets and ditches, battle events, urban areas, drainage characteristics (natural and man-made), micro-relief, surface materials (wet and dry), abatis, ravines, and bluffs. The hindrance level of obstacles can be analyzed as “go,” “slow-go,” or “no-go.”

Existing Obstacles are already present on the battlefield. Natural examples include swamps, woods, and rivers. Cultural examples include towns, railroads, bridges, and fences.

Reinforcing Obstacles are placed on the battlefield through military effort to slow, stop, or control

enemy movement. Examples include earthworks, abatis, and log cribs.

Unrestricted Terrain is fairly open and presents no hindrance to ground movement.

Restricted Terrain hinders ground movement. Effort is needed to enhance mobility.

Severely Restricted Terrain is unfavorable terrain. Much effort is needed to improve mobility, if it is possible to improve it at all.

Key Terrain and Decisive Terrain

Key Terrain is any ground that must be controlled in order to achieve military success. Two factors can render an area key terrain: how a commander wants to use it, and whether his enemy can use it to defeat the commander's forces. Key terrain typically offers control of a local objective or an important transportation route. Examples include high ground with good observation and fields of fire; and transportation choke-points such as a water crossing, mountain gap, or road junction. Key terrain also might include dense woods or rivers that anchor the flank of a battle line.

Decisive Terrain (Critical Terrain) is ground that *must* be controlled in order to successfully accomplish the mission. It is relatively rare and not present in every battle. Terrain is identified as decisive when it is recognized that the mission depends upon its seizure or retention. Examples include urban areas, lines of communication and supply, topography, drainage characteristics, bridges, choke points, high ground, key military installations, and supply routes.

Avenues of Approach/Withdrawal

Avenue of Approach is any relatively unobstructed ground route that leads to an objective or key terrain. The size of an attacking unit is limited by the breadth and difficulty of its avenue of approach. Variables that can affect avenues of approach include surface conditions, topography, and drainage characteristics. Examples include lines of communication and supply such as roads, rail lines, and rivers, and areas where movement could occur.

Mobility Corridor is any area where movement is channeled due to terrain constrictions. Examples include a road over a causeway.

Avenue of Withdrawal is any relatively unobstructed ground route that leads away from an objective or key terrain.

The pages that follow convey military terrain analysis information consistent with the OCOKA process for the battles and siege of Vicksburg that occurred between May 19 and July 4, 1863. The analysis indicates how terrain features influenced the battles, the siege, and the outcome of this decisive event in American history.

Historic Context

The Opposing Armies

The campaign and siege of Vicksburg were waged by Confederate forces under the command of Lt. Gen. John C. Pemberton, and the Union Army of the Tennessee commanded by Maj. Gen. Ulysses S. Grant between March 29, and July 4, 1863. The primary objective of the military engagement was control of the Mississippi River, which played a key role in military transportation and supply operations and was pivotal to the geographic cohesion of the Confederate states. By March 29, 1863, Vicksburg had become the last bastion of Confederate command along the river. The campaign to capture Vicksburg that followed had become the focus of Grant's Army of the Tennessee after the General in Chief of the Union armies entrusted Major General Grant with the following important charge: "The great objective on your line now is the opening of the Mississippi River, and everything else must tend to that purpose. The eyes and hopes of the whole country are now directed at your army. In my opinion, the opening of the Mississippi River will be to us of more advantage than the capture of forty Richmonds."²¹⁹

This statement, in late winter 1863, followed several failed efforts on the part of the Union army to reach and overpower Confederate forces at Vicksburg, including a gunboat attack in the spring of 1862; invasion from the north and a coordinated amphibious attack in the winter of 1862; canal construction across De Soto Point in June and July 1862 and January through March 1863; and additional gunboat attacks in April 1863. By late March, however, Grant had set the stage for the campaign after breaking Confederate resistance through a series of engagements over the course of early 1863.

Clashes involving control of the Mississippi began in 1861 in response to a Union blockade of Southern ports, including the mouth of the

Mississippi River where it entered the gulf south of New Orleans. The Confederacy soon began to fortify strategic points along the river where it bordered the Confederate states of Arkansas, Tennessee, and Mississippi, and where the river extended through lower Louisiana. Vicksburg was recognized as the key to control of the Mississippi River, as well as to the Red River in Louisiana and the Arkansas and White Rivers in Arkansas, that provided access for shipping as well as to the rich farmland of the Mississippi delta region.

North of Vicksburg, the Confederates fortified Island No. 10 and New Madrid, Missouri, across the river from the Tennessee-Kentucky state line. On April 7, 1862, both sites fell to Union forces led by Brig. Gen. John Pope, which defeated Confederate forces led by Brig. Gen. William Mackall. This defeat opened the river to Union shipping as far south as Fort Pillow near Memphis, Tennessee.

To the south of Vicksburg, New Orleans was defended by Confederate Fort Jackson and Fort St. Philip, about ninety miles downriver from the city, and by several smaller Confederate forts. Union river forces, led by Flag Officer David G. Farragut and Commodore David Dixon Porter, overcame the Confederate defenses between April 25 and 28, 1862, and Confederate troops led by Mansfield Lovell evacuated New Orleans. Following this victory, Farragut took several cruisers and gunboats upriver to Vicksburg. Brig. Gen. Martin L. Smith, however, refused to surrender the city. Farragut ordered a bombardment that lasted from mid-May through July of 1862, but was unsuccessful.

To the north, in April 1862, Grant's defeat of Johnston and Beauregard at Shiloh opened up the way to inroads into northern Mississippi.

In September 1862, Confederate engineers begin to construct fortifications at Vicksburg to protect against land-based attack of the city. The Confederate fortifications sought to protect the city by controlling key and decisive terrain as well as anticipated avenues of approach along road and rail lines; establishing clear points of observation and fields of fire; taking advantage of existing

219. William C. Everhart, "Vicksburg National Military Park, Mississippi" (Washington, D.C.: U.S. Government Printing Office, 1954), 2.

obstacles and placing reinforcing obstacles; and affording the soldiers the best cover and concealment possible.

Although Union forces appeared unable to reach the city from the river, they remained determined to gain control of the region and began to slowly break down impediments to attack from the landward side. In October 1862, they gained control of Corinth and the critical rail junction. The fighting at Corinth, the last Confederate offensive in Mississippi, weakened the only mobile Southern army defending the Mississippi Valley and permitted Ulysses S. Grant to launch his campaign to capture Vicksburg.

On October 20, 1862, Gen. John McClernand initiated an amphibious operation against Vicksburg that was later taken over by Maj. Gen. William T. Sherman. Sherman's forces included 40,000 men and the support of the Union navy. On December 20, 1862, Union transports began ferrying troops downriver. Union gunboats moving up the Yazoo River withdrew after the U.S.S. *Cairo* hit a Confederate mine and sank. Despite the lack of support from the navy, General Sherman's forces continued moving toward Vicksburg and the Walnut Hills north and northeast of the city. Sherman attacked Confederate forces stationed there on December 27–29. In the ensuing Battle of Chickasaw Bayou, the Union troops outnumbered the Confederates, but the swamps and bayous at the confluence of the Yazoo and Mississippi Rivers made movement extremely difficult and Gen. Martin Smith's Confederate forces held well-fortified high ground. On January 1, 1863, the defeated Sherman retreated to Louisiana.

After the failure of Sherman's December 1862 offensive, Grant moved his troops to the west bank of the Mississippi River and proceeded down the Louisiana side of the river, intending to cross the river south of Vicksburg. In January and February 1863, Grant began work on a bypass canal project initiated in the summer of 1862 by Gen. Thomas Williams to reach the river by crossing De Soto Point south of the hairpin curve in the Mississippi River in front of Vicksburg. While Williams's effort had failed due to low water

and disease, Grant's work would similarly come to naught due to water level fluctuations.

Despite losses and problems with the canal efforts, Grant persevered, either for diversionary purposes or in a genuine attempt to find a route for movement of troops by water. Grant's engineers also attempted to provide access from Lake Providence, seventy-five miles above Vicksburg on the Louisiana side of the river, to streams leading into the Red River, and then to the Mississippi River south of Vicksburg. This effort, which offered the possibility of moving troops south and then north to attack Vicksburg, also did not succeed.

For a week in mid-March, U.S. Navy Rear Admiral David D. Porter led an amphibious expedition up Steele's Bayou in an attempt to gain the Sunflower River, which led to the Yazoo River above Vicksburg. Porter's flotilla included ironclad gunboats, mortar boats, and tugboats. The expedition had great difficulty with obstructions constructed by the Confederates as well such as trees growing in the bayou, and the fleet eventually had to be rescued. The fleet remained in the area, however, and on the night of April 16, 1863, successfully ran the batteries at Vicksburg to meet Grant at Grand Gulf.

Grant's overland campaign for Vicksburg began in earnest in late March 1863. By early May, he had reached the vicinity of Vicksburg, where his army engaged in a series of battles: the Battle of Port Gibson (May 1, 1863); the Battle of Raymond (May 12, 1863); the Battle of Jackson (May 14, 1863); the Battle of Champion Hill (May 16, 1863); and the Battle of Big Black Bridge (May 17, 1863). Attacks on the fortifications at Vicksburg in mid-May followed almost immediately on May 19. Grant's initial strategy was to amass around the Confederate defensive system and seek a weakness that could be exploited. After breaking through the defenses, he planned to work together with Union naval forces to conduct a coordinated attack. Grant believed that a strong show of force would induce surrender.²²⁰ On May 19, Grant's

220. Warren E. Grabau, *Ninety-Eight Days; A Geographer's View of the Vicksburg Campaign*

army fired the first shots of the siege, attacking many of the Confederate strongholds along the roads and rail line leading into the city. The Confederates had engineered their system wisely, however, and it repulsed the attacks as well as a second attempt conducted on May 22. Thereafter, Grant's army established its own system of fieldworks, focusing on the heavily guarded avenues of approach to the city, and began a siege that would last forty-seven days.

Engineers were an integral part of the siege operations that ensued. For both sides, the military tactics of the commanders could not be implemented without the technical expertise afforded by the engineers in the placement, construction, and reinforcement of earthworks and fortifications or the sapping, mining, and occupation of key terrain undertaken by the Union forces.

Engineer missions for both sides included construction of fortifications; repair and construction of roads, bridges, and in some cases, railroads; demolition; limited construction of obstacles; and construction or reduction of siege works. . . . The engineering operations conducted in support of the Vicksburg campaign were perhaps the most diverse and complex of the war. For much of the campaign, Federal engineers focused on mobility operations, while Confederate engineers emphasized counter mobility, particularly in denying the Federals the use of streams and bayous in the swamps north of the city. Confederate engineers also supervised the construction and repair of the fortifications around the city. During the siege phase of the campaign, Grant's engineers focused on the reduction of those works, utilizing procedures such as sapping, mining, and other related tasks, as well as the improvement of roads and landings to enhance logistical support. This wide range of activities, which required engineers on both sides to construct roads, emplace or construct bridges, clear or obstruct waterways, construct field works, emplace batteries, divert the flow of rivers [Grant's Canal], and numerous other tasks, is made even more remarkable by the limited number of

trained engineers available to accomplish them.²²¹

(Knoxville, Tennessee: The University of Tennessee Press, 2000), 355.

221. Gabels, 38–39.

The Confederate Line

Lt. Gen. John C. Pemberton, who led the Confederate forces at Vicksburg, was a Pennsylvania-born West Pointer. His army at Vicksburg comprised

... five infantry divisions with no immediate corps headquarters. Counting two brigades that briefly joined Pemberton's command during the maneuver campaign, he had over 43,000 effectives, many of whom had only limited battle experience. Of Pemberton's subordinates, Brig. Gen. John S. Bowen was an exceptionally able tactical commander. Maj. Gen. Carter L. Stevenson was also West Point trained, and the other division commander in the maneuver force, Maj. Gen. William W. Loring, was a prewar regular colonel who had worked his way up through the ranks. . . . Although Pemberton's five divisions represented the main Confederate force in the Vicksburg campaign, his army came under the jurisdiction of a higher headquarters, Gen. Joseph E. Johnston's Department of the West. . . . When Pemberton became besieged in Vicksburg, Johnston assembled an Army of Relief but never seriously threatened Grant.

The Confederates possessed a sizeable artillery capability but were no match for the Federal firepower amassed at Vicksburg. The Confederate forces . . . possessed a total of about 62 batteries of artillery with some 221 tubes. Pemberton's force besieged in Vicksburg included 172 cannon—approximately 103 field pieces and 69 siege weapons. Thirty-seven of the siege guns, plus thirteen field pieces, occupied positions overlooking the Mississippi. The number of big guns along the river dropped to thirty-one by the end of the siege—apparently some weapons were shifted elsewhere. The thirteen field pieces were distributed along the river to counter amphibious assault. The heavy ordnance was grouped into thirteen distinct river-front batteries. These large river-defense weapons included twenty smoothbores, ranging in size from 32-pounder siege guns to 10-inch Columbiads, and seventeen rifled

pieces, ranging from a 2.75 inch Whitworth to a 7.44 inch Blakely.²²²

In plan view, the Confederate line protecting Vicksburg landward resembled the numeral '7,' with both ends of the figure resting on the Mississippi River.²²³ Along the river, "from Fort Hill, at the northern extremity of the line, along the waterfront to South Fort, was a chain of powerful river batteries that mounted 31 heavy siege cannon and 13 field pieces."²²⁴ Taken together, these systems were so well designed to take advantage of the terrain that they were to prove nearly unassailable.

As far as the river batteries were concerned,

Three major factors made guns placed high on the bluffs relatively ineffective. First, very thick parapets were necessary in order to prevent penetration by the heavy shells of the Union naval artillery, but those thick parapets also made it impossible to depress the guns far enough to bear on the river close into shore. . . . Second, placing the guns on the ridge tops meant increasing the range. The riverfront of Vicksburg is very steep, but a gun atop the ridge still was at least 400 yards from the river bank, and this meant approximately doubling the distance to targets in the river. The greater range reduced the penetrating power of the projectiles, and the increased distance to the river made it much more difficult to see and hit objects in the stream, especially amid the smoke of battle. Third, in order to bear on the river at all, the muzzles of guns on the ridge top had to be deeply depressed. This is a serious handicap in muzzle-loading artillery because great care must be taken in bringing the gun into battery (i.e. running it forward into firing position after loading). With the muzzle below the horizontal, a sudden stop will start the projectile in the bore (i.e. the shot will slide forward in the bore away from contact with the powder charge.) This markedly reduces both accuracy and power. The extreme care

222. *Ibid.*, 10.

223. *Ibid.*, 104.

224. Jim Miles, *A River Unvexed; A History and Tour Guide of the Campaign for the Mississippi River* (Nashville, Tennessee: Rutledge Hill Press, 1994), 411.

required to prevent this from happening automatically reduces the rate of fire, further curtailing the overall effectiveness of such guns.²²⁵

The landward Confederate line occupied a nearly unbroken escarpment composed of ridges and high points along the Loess Bluffs between the high points punctuated by the major fortifications anchored on the river at Fort Hill and South Fort. The Confederates expanded upon the natural opportunity afforded by the terrain by building a system of earthworks. The system was composed of a nearly continuous line of fortifications, rifle pits, trenches, and placed and natural obstacles that extended for eight miles, approximately one mile landward around the city to its north, east, and south. Nine major fortifications—Fort Hill, Stockade Redan, Third Louisiana Redan, Great Redoubt, Second Texas Lunette, Railroad Redoubt, and Fort Garrott, Salient Work, and South Fort—were placed on key terrain in commanding locations along likely avenues of approach. Stretched between them were lines of parapets, six feet thick, studded with artillery positions. These faced the more challenging terrain that was less likely to be assaulted. The land within view of the fortifications was cleared of trees and other obstructions to establish direct lines of sight or the fields of fire necessary for effective use of their artillery and small arms. Because of this, the land fronting the line had little in the way of cover or concealment opportunities for attackers, and was also filled with obstacles that included steep slopes, wet conditions, and abatis described as follows:

The [loess] soil when cut vertically will remain so for years. For this reason the sides of the smaller and newer ravines were often so steep that their ascent was difficult to a footman unless he aided himself with his hands. The sides of the ravines were usually wooded, but near the enemy's lines the trees had been felled, forming in many places entanglements which under fire were absolutely impassable.²²⁶

225. Grabau, 43–44.

226. Leonard Fullenkamp, Stephen Bowman, and Jay Luvaas, eds. *Guide to the Vicksburg Campaign*

Grant's engineers wrote that the Confederate fortifications gained much of their strength from the difficult nature of the terrain and that the intricate network of ravines and gullies, steep ascents, and ridges were challenging. Further, felled trees, undergrowth, and abatis made impassable entanglements.²²⁷ Soldiers involved in the siege wrote that the "ravines where Mint Spring Bayou heads are filled with felled timber,"²²⁸ "man-made obstacles, not to mention dense natural vegetation, obstructed the ravine in front,"²²⁹ and "beyond the works were extensive abatis made of trees felled to clear fields of fire and interlaced with telegraph wire, and the ground was studded with sharpened stakes."²³⁰

Cpts. Fred Prime and Cyrus Comstock, Chief Engineers of the U.S. Army wrote about the obstacles, "The sides of the ravines were usually wooded, but near the enemy's line the trees had been felled, forming in many places entanglements which under fire were absolutely impassable. . . . Vicksburg was, then, rather an intrenched [sic] camp than a fortified place, owing much of its strength to the difficult ground, obstructed by fallen trees in its front, which rendered rapidity of movement and *ensemble* in an assault impossible."²³¹ Significant abatis extended for several hundred yards in front of Stockade Redan, while another large installation was placed between Halls Ferry Road and Stout's Bayou.

Description of the obstacles encountered on May 22 by Grant's men included the following:

On the evening of the 21st, Col. Stone received Gen. Grant's order for a general assault on the enemy's lines at 10 a.m. On the 22nd accordingly about 11 o'clock p.m. the men were

(Lawrence, Kansas: University Press of Kansas, 1998), 315, quoting the Official Reports of Cpts. Frederick E. Prime and Cyrus B. Comstock.

227. Miles, 412.

228. Edwin C. Bearss, *Fields of Honor: Pivotal Battles of the Civil War* (Washington, D.C.: National Geographic, 2006), 235.

229. Gabels, 104.

230. Miles, 411.

231. O.R., Chapter XXXVI "The Siege of Vicksburg, Mississippi," 169–170.

ordered to divest themselves of everything but their guns and accoutrements, and be ready to move. The object was to gain possession of a prominent position midway between the two lines, from which it was thought a successful assault could be made. In the stillness of midnight, the 22nd, being in advance, moved over the brow of the hill and passed noiselessly down the deep ravine, into which the enemy had felled trees in every conceivable manner, crawling cautiously on hands and knees for two or three hours, we succeeded in reaching the desired position without drawing the attention of the enemy's pickets, which were posted but twenty yards distant. The day was dawning when the position was gained, and the men were ordered to lie down and rest on the hillside until the appointed hour should arrive. At half past nine, a.m. the brigade was formed in lines of battalions, the 22nd Iowa in advance, followed by the 21st Iowa and the 11th Wisconsin. . . . The strong work against which the principal attack was directed covered about half an acre of ground, the walls being fifteen feet high, and surrounded by a ditch ten feet wide. A line of rifles connected it with others of the same kind, each of which was so arranged as to enfilade the approach to the other. . . . The regiment succeeded in reaching, under a most falling and concentrated fire of grape and musketry, an almost impenetrable abatis, forty yards from these works, where it was necessary to reform the line, it having become very much scattered in crossing the logs and obstructions which literally covered the ground. Sgt. Joseph E. Griffith, however, with some fifteen or twenty men, by raising one another up the wall entered the fort, driving the enemy, and capturing a number of prisoners. There being a series of rifle pits in rear of the fort, the latter being open, the place was untenable, and they were obliged to withdraw.²³²

In addition to the obstacles created by the Confederate forces, natural features provided protection for those holding the high ground, as described in this account by Grant: "The country in this part of Mississippi stands on edge, the roads running along the ridges except where they

232. Report of the Adjutant General and Acting Quartermaster General of the State of Iowa, F.W. Palmer, Des Moines, 1865. *History of the Regiment*, 1.

occasionally pass from one ridge to another. Where there are no clearings, the sides of the hills are covered with a very heavy growth of timber and with undergrowth, and the ravines are filled with vines and canebrake almost impenetrable."²³³

As anticipated by the Confederates, the generally unfavorable terrain, rendered more challenging by the placement of man-made obstacles, contributed to the interest of the Union army in following existing ridges occupied by road corridors and the rail line to reach the city. These avenues of approach included six roads—Yazoo City Road, Graveyard Road, Jackson Road, Baldwin Ferry Road, Halls Ferry Road, and Warrenton Road—and the Southern Railroad of Mississippi rail line. Thus the Confederates placed their most daunting fortifications to face these approaches, in addition to the river approaches from the north and south. Of the nine major fortifications anchoring the Confederate defenses, all but one—Fort Garrott—covered road corridors and the rail line.

The fortifications were earthen structures with tall parapet walls fronted by deep ditches. Sometimes the parapet walls were reinforced with gabions or revetments. Gun platforms and embrasures were associated with artillery positions. Headlogs were placed atop the parapet to afford cover for the soldiers manning the artillery inside. Due to the engineering properties of loess soil, which exhibited a lack of compacted strength, the parapet walls were reinforced with various available materials, including wood and bales of cotton.

However, there were several weaknesses associated with the Confederate earthworks:

Use of the correct artillery (smoothbore rifles) led to blow-outs of large masses of earth, which fell back into the parapet and left a ramp of earth in front of the earthwork which served as a highway for the attacking infantry. Rifled shells penetrated very deeply, and their comparatively small bursting charges often were inadequate to displace any significant quantity of earth. Rifled guns were useful in knocking out the artillery pieces of the

233. From Grant's *Memoirs*, as cited in Bearss, 211.

opponent. Their accuracy made it possible to put rounds through embrasures with considerable precision. The field guns that the Confederates had placed within their works were relatively ineffective against the Union saps. Union artillery were stronger and grouped. Confederates followed a procedure of one gun per 250 yards which left them open.²³⁴

The Confederate artillery and infantry positions were placed in such a way as to provide interlocking fields of fire continuously along the lines; each of the elements along the line was designed to provide covering fire to each other and to the infantry positions between them to prevent Union attackers from outflanking them. The artillery was spread out in batteries spaced approximately 150 to 200 yards apart so as to cover the potential lines and avenues of approach yet afford support to neighboring positions.²³⁵ As it turned out, the infantry and small arms fire proved more important to the Confederate forces in the siege warfare that ultimately ensued than the artillery amassed within the fortifications.²³⁶

The Union Line

Grant's army was organized into four infantry corps. However, only three were present on the field during the siege. These included ten divisions and more than 44,000 men, as follows.

Although some recently recruited 'green' regiments participated, the bulk of Grant's army consisted of veteran units, many of which had fought with distinction at Forts Henry and Donelson, Shiloh, and Chickasaw Bayou. Of Grant's senior subordinates, the XV Corps commander, Maj. Gen. William T. Sherman, was his most trusted. Ultimately to prove an exceptional operational commander, Sherman was an adequate tactician with considerable wartime command experience. He and Maj. Gen. James B. McPherson, commander of XVII Corps, were West Pointers. McPherson was young and inexperienced, but both Grant and Sherman felt he held great promise. Grant's other corps commander, Maj. Gen. John A. McClernand, was a prewar Democratic congressman who had raised much of his XIII Corps specifically so that he could command an independent Vicksburg expedition. A self-serving and politically ambitious man who neither enjoyed nor carried Grant's favor, he nonetheless was an able organizer and tactical commander who had served bravely at Shiloh. The division commanders were a mix of trained regular officers and volunteers who formed a better-than-average set of Civil War commanders.²³⁷

In addition, Grant's army at Vicksburg

enjoyed a clear superiority in terms of artillery. When Grant's army closed on Vicksburg to begin siege operations, it held about 180 cannon. At the height of its strength during the siege, the Union force included some forty-seven batteries of artillery for a total of 247 guns—13 'heavy' guns and 234 'field' pieces. Twenty-nine of the Federal batteries contained six guns each; the remaining eighteen were considered four-gun batteries. Smoothbores outnumbered rifles by a ratio of roughly two to one.²³⁸

234. Grabau, 421.

235. Information provided by Rick Martin, Vicksburg National Military Park.

236. *Ibid.*

237. Gabels, 9–10.

238. *Ibid.*, 25–26.

After his numerous successful land-based battle victories in spring 1863 on the outskirts of the Vicksburg region, Grant was encouraged enough to attempt two immediate assaults on the Confederate earthworks around the city on May 19 and 22, 1863.

All three corps spent the morning hours of 19 May moving into positions from which an assault could be launched. The terrain was terrible. . . The ridge tops were so narrow there was little room to deploy, and deep and precipitous ravines made maneuvering very slow and difficult. Good positions for artillery were in especially short supply.²³⁹

The first shots of May 19, 1863, were exchanged from a knoll near Graveyard Road within 900 yards of the Confederate's Stockade Redan. Grant focused on massing his attack against Stockade Redan, while simultaneously launching secondary attacks on the Confederate strongholds to the north and south. In addition to the combat at Stockade Redan, the fighting was particularly intense in several locations, namely the Third Louisiana Redan, Great Redoubt, Second Texas Lunette, and Railroad Redoubt.

On May 22, 1863, Grant attempted a massive assault along the majority of the Confederate line. The Confederate fortifications proved imposing and well sited, however, and Grant's men were able to breach the line only at the Railroad Redoubt for a short time, while suffering a large number of Union casualties. A description of the Union assault of May 22, 1863, indicates the nature of landform and topography in providing cover and concealment:

When we took our position in front of the works we threw up a little earth work in front of what was afterward our main line. We formed for the charge under a ridge and waited for the order. Going over the ridge at 10 a.m. we were raked by the fire from the fort and rifle pits to our right. In passing through Mississippi after the war, I noticed the action of rains on the ridges in cultivated fields. It looked as though furrows had been plowed down the hill. In one of these little gullies, a little over a

foot deep, I sought shelter. There were a few little shrubs or bushes. One was cut off by a bullet.²⁴⁰

After these failed attempts, Grant reasoned that because the ridgeline surrounding Vicksburg was so well fortified, he could not afford to take it by force from any one direction. Rather, he endeavored to wait out the Confederates through a protracted siege and slowly break down the opponent's forces. In support of this approach, the Union army surrounded the city and the Confederate line along an opposing, irregular series of outer ridges, separated from the Confederate earthworks by steep ravines. Throughout, the Union army maintained a line of positions nine miles east of the park with several batteries to the rear of their forward line as an Army of Observation to prevent surprise attacks by Confederate reinforcements.

On the ridges and knolls facing the Confederate line, the Union forces placed several very large and powerful batteries to maintain pressure on the large Confederate works guarding the approaches to the city. At the same time, Grant's men began to slowly approach each of the major works by sapping or digging shallow trench lines. An approach is a zigzag trench with angles laid out so that no section of the trench is exposed to direct enemy fire down its length. During the siege of Vicksburg, Union soldiers dug thirteen separate approaches at various points along their twelve-mile line. The Union approaches extended over diverse terrain elements, including steep ravines filled with abatis, side slopes, wetlands, as well as open, formerly cultivated fields. The saps were dug in a zigzag pattern to prevent being enfiladed. Large cylinders (gabions) made of woven cane, a native plant that grew in the ravines, filled with dirt or cotton, were pushed ahead of sapping operations for cover and concealment to protect the excavators from being hit by artillery fire.²⁴¹ Excavated earth was thrown to the side facing

239. Grabau, 355–356.

240. Letter to Captain William Charleton, Madison Wis., Colorado Springs, Colo., March 26, 1902. Report of the 11th Wisconsin.

241. Miles, 429

fire.²⁴² Between May 24 and July 3, many of the thirteen approaches under active pursuit by the Union army closed in on and threatened numerous Confederate fortifications. By the end of the siege four had reached the parapets of the Confederate works, including Stockade Redan, the Third Louisiana Redan, the Second Texas Lunette; and the Railroad Redoubt.

Saps leading to the Third Louisiana Redan reached the parapet wall in late June 1863. Gun powder was placed in subterranean mines excavated below the parapet wall. The loess was perfect for mining as tunnels required no shoring or revetting. The mine was detonated on June 25. A second mine was detonated on July 1, 1863.²⁴³ While these attempts were foiled by the Confederate forces, the potential threat of numerous additional instances of similar activity at other major works contributed to the July 4, 1863, surrender of Lt. Gen. John C. Pemberton's army at Vicksburg.

Terrain Features

The following pages identify and describe the military terrain features and their related OCOKA aspect or aspects associated with the siege of Vicksburg. The features are presented generally in geographic order, starting along the river north of the city of Vicksburg and moving in a clockwise direction until reaching the river again to the south of the city. An inventory of terrain features by OCOKA aspect follows this section.

Mississippi River

The primary objective of the military engagement at Vicksburg was control of the Mississippi River. As such, the river constituted **key and decisive terrain**. The river was an important **avenue of approach** for the Union army to reach and gain control of Vicksburg. The Loess Bluffs bordering the Mississippi River provided excellent **observation** positions for Confederate artillery to fire upon any enemy approaching via the river, however. Ships were particularly vulnerable to their fire because of an oxbow north of the city's waterfront where ships were forced to slow down to make the treacherous turn. The river approach afforded no opportunities for **cover and concealment**. The Confederate positions at Fort Hill and South Fort had clear fields of fire regarding approaching gunboats that afforded them a great advantage. The oxbow proved a challenging **obstacle** for Union approach, and was considered in the design and placement of artillery positions by the Confederates at Fort Hill and the river batteries along the waterfront. The Confederates placed additional **obstacles** in the form of explosive mines within the waters of the river and canal to the north and south of the city. The U.S.S. *Cairo* sunk in the Yazoo River Canal due to one of these mines during the winter of 1862 while on a mission to clear the river of mines and rid the channel of Confederate batteries. The U.S.S. *Cincinnati* was sunk by Confederate artillery emplaced south of Fort Hill on May 27, 1863.

The Union army made two attempts to bypass the oxbow by constructing a canal across De Soto Point—during June and July 1862 and January through March 1863—through which Union

242. Ibid.

243. Gabels, 111.

gunboats could reach Vicksburg, and engage the Confederate batteries overlooking the river. These canal-building efforts constituted an additional Union **avenue of approach**.

The Confederate line included thirteen batteries of gun emplacements along three miles of the Mississippi River waterfront armed with thirty-seven large-caliber antiship guns. Three of these batteries—Marine Hospital Battery, Wyman’s Hill Battery, and Water Battery—were particularly significant. Each stood thirty to forty feet above river level within close proximity to the river, which simplified aiming and ensured high projectile velocity at the target. The most important of these was Water Battery, which commanded the hairpin turn of the river where vessels faced navigational **obstacles** as well as heavy Confederate artillery. Marine Hospital Battery, located south of downtown Vicksburg, contained three 42-pounder smoothbores, two 32-pounder smoothbores, and two 32-pounder rifles. Wyman’s Hill Battery, located on the northern outskirts of Vicksburg, held three 10-inch Columbiads, one 8-inch Columbiad, one 32-pounder rifle, one 2.71-inch Whitworth rifle, and one 3-inch Armstrong rifle.²⁴⁴

In addition to Grant’s canal-building efforts to reach the city from the Louisiana shore, he instructed his men to destroy a foundry near a railroad depot along the riverfront. The foundry was used to make shells for the Confederate guns. When Grant was unable to reach the foundry by gunboat to destroy it because of the guns placed on Wyman’s Hill and the Marine Hospital batteries, he instead built a fortified position called Fort Adams on De Soto Point. A single 20-pounder Parrott rifle was emplaced within the fort on June 20 that was used to ruin the foundry.

While most of these positions have been lost, the Water Battery is indicated by mounted artillery pieces visible near the highway at the foot of Fort Hill.

City of Vicksburg

As the objective of Union assault, the city of Vicksburg itself was **key** and **decisive terrain** that afforded an opportunity to command not only the Mississippi River but also the rail lines that transported supplies from the river to the rest of the Confederacy. President Lincoln famously quoted that Vicksburg was “key” to winning the war. Its capture would divide the Confederacy, cutting off access to states west of the river that provided supplies and recruits for continuation of the war.

The elevated topography of the Loess Bluffs upon which the city was sited afforded prime locations for **observation**. The Confederate defenses enhanced the potential for observation by establishing an extensive cleared **field of fire** to the north, east, and south of their fieldworks. The fortifications, steep slopes, stream valleys, and the abatis and other felled timber, sometimes entangled with telegraph wire, placed in front of the lines served as **obstacles** to Union movement toward the city.

Throughout the siege, the Confederate soldiers and citizens of Vicksburg were exposed to the continual threat of artillery fire. For **cover and concealment**, the soldiers were stationed behind the protection afforded by the constructed earthworks, in many cases strengthened by wood, cotton bales, and gabions. The citizens of Vicksburg dug caves within the slopes of the loess soil for protection. Union soldiers also used the slopes of loess soil to construct shebangs, or cave-like quarters that faced away from the Confederate artillery.

In addition to the river, the likeliest **avenues of approach** to gaining control of Vicksburg were the six roads leading into the city—the Yazoo City Road, Graveyard Road, Jackson Road, Baldwin Ferry Road, Halls Ferry Road, and Warrenton Road—and the Southern Railroad of Mississippi rail line.

The city of Vicksburg survives today, although it has grown extensively since the mid-nineteenth century. Its relationship to the river was altered

244. Grabau, 42.

when the Mississippi River cut a new channel during a storm in the 1870s. The city and its waterfront, including evidence of the Civil War river batteries, suddenly were no longer connected to the river. Soon thereafter, the U.S. Army Corps of Engineers established the Yazoo River Diversion Canal through a portion of the former river bed.

Yazoo City Road

The Yazoo City Road (also known as the Indian Mound Ridge Road) extended between the city of Vicksburg and Yazoo City, located fifty miles northeast along the Yazoo River. The road was one of the **avenues of approach** to the city of Vicksburg. North of the city, the road crossed Mint Spring Bayou, a stream corridor set within a deep ravine, via a ford. The road, like most in the region, was surfaced with hard-packed earth. When dry, the local roads were dusty. When wet, they turned to mud, making passage difficult, and rendering the road an **obstacle**. Most of the roads leading to the city were established on ridges to avoid the swampy bottomlands. When road corridors were “forced to drop off a ridge crest in order to cross from one ridge to another, the grade quickly became depressed into the hillside, because every drop of rain eroded ruts into the road surface. . . Before long, the roadbed in many places was at the bottom of a small canyon ten to fifteen feet deep, with vertical sides.”²⁴⁵ Portions of the Yazoo City Road, which included incised segments, served as **cover and concealment** for soldiers approaching the battlefield on May 19, 1863.

The Confederate army built a strong fortification atop Fort Hill Ridge that afforded opportunities for **observation** of the Yazoo City Road approach. The strong landform of the ridge and the fortification and its artillery were daunting **obstacles** to Union advance along this route.

During the May 19 battle, Maj. Gen. William Tecumseh Sherman sent Steele’s division, already positioned north of the city, to investigate a county road that appeared to head in the direction of the

Yazoo River. The narrow road—Yazoo City Road—was heavily wooded on both sides to the north of Vicksburg. Anticipating that the Confederate line was located to the south, Steele, with Manter’s and Wood’s brigades, followed the road:

After advancing about 1,000 yards they found themselves on the north rim of the gorge-like valley of Mint Spring Bayou. All of the tributaries to Mint Spring Bayou enter from the north, so the northern line of bluffs is ragged and discontinuous. Not so the southern wall of the valley; Fort Hill Ridge forms an unbroken rampart more than 140 feet high along its entire length. Atop that natural wall, Steele could see a continuous line of rifle pits.²⁴⁶

Along the road, the Union forces found an earthwork constituting an abandoned Confederate forward position atop the Indian Mound Ridge along the Yazoo City Road northeast of Fort Hill. Woods’s brigade took over the position, where they remained throughout the attack. Nearby was a house that had not been destroyed by the Confederates prior to the siege. The Edwards House, atop a high point known as Edwards Heights, became an **obstacle** to the Union forces when Confederate sharpshooters took up positions in the house and fired upon Steele’s position on May 19.

Over the course of the siege, this position was fortified with a Union battery manned by Steele’s XV corps, and additional batteries that afforded **observation** opportunities and had a clear **field of fire** were placed on the ridges near the Yazoo City Road across Mint Spring Bayou from the Confederate line to maintain artillery pressure. The 12-pounder howitzers and James rifles of these batteries were trained on the Water Battery and Fort Hill. However, due to the challenge presented by the steep and rugged terrain in front of them, and the fort atop Fort Hill being so impregnable, the Union army never attacked the Confederate line along the Yazoo City Road.

Today, little evidence of the alignment of the Yazoo City Road survives today, although portions

245. *Ibid.*, 23.

246. *Ibid.*, 350.

of Fort Hill Drive to the south of Fort Hill appear consistent with the alignment of the historic road corridor. This military terrain feature otherwise retains little integrity today.

Mint Spring Bayou

Grant's engineers wrote that the Confederate fortifications gained much of their strength from the difficult nature of the terrain and the intricate network of ravines and gullies, steep ascents, and ridges that were **obstacles** that rendered movement of soldiers and armaments challenging. One of the most challenging of these landforms was the Mint Spring Bayou ravine that sat at the base of Fort Hill Ridge. The main branch is fed by headwaters extending from the northern escarpment, including First and Second Branch that extend down slope in a south/southwest trending direction. As noted above,

All of the tributaries to Mint Spring Bayou enter from the north, so the northern line of bluffs is ragged and discontinuous. Not so the southern wall of the valley; Fort Hill Ridge forms an unbroken rampart more than 140 feet high along its entire length.²⁴⁷

The steep slopes of the ravine, the swampy bottomlands and stream corridor, and the unconsolidated loess soil served as natural **obstacles** to an approaching army. Added to these natural obstacles were felled trees, undergrowth, and abatis and chevaux-de-frise, sometimes cabled with telegraph wire, placed by the Confederates to create additional man-made **obstacles**. These often formed impassable entanglements.²⁴⁸ Soldiers involved in the siege wrote that the "ravines where Mint Spring Bayou heads are filled with felled timber,"²⁴⁹ "man-made obstacles, not to mention dense natural vegetation, obstructed the ravine in front,"²⁵⁰ and "beyond the works were extensive abatis made of trees felled to clear fields of fire and interlaced with telegraph

wire, and the ground was studded with sharpened stakes."²⁵¹

The Union forces placed batteries that included earthen parapets for cover on high points north of and overlooking Mint Spring Bayou that trained four 6-pounder guns and two 12-pounder howitzers on the Confederate positions to the south. One of these was powerful Battery Selfridge, located at the base of the current day U.S. Naval Memorial, which contained two 8-inch Columbiads and two 30-pounder Parrott rifles. These positions afforded opportunities for **observation** of the Confederate activities beyond the ravine and a clear **field of fire** toward the Confederate earthworks.

Like Fort Hill, the Union army avoided assault of the Confederate line atop Fort Hill Ridge via Mint Spring Bayou west of the Twenty-sixth Louisiana Redoubt. Union Gen. John Thayer's brigade was positioned north of Mint Spring Bayou throughout the siege. He commanded troops in attack against Stockade Redan and associated Confederate works on May 19 and 22, and later conducted sapping efforts across the ravine to approach the Twenty-sixth Louisiana Redoubt.

Steele's Advance. On May 19, 1863, General Sherman sent Steele's Division, already positioned north of the city, to investigate a country road that seemed to head in the direction of the Yazoo River. Due to dense woodland cover, they were unable to observe much of the land to their front. But,

After advancing about 1,000 yards they found themselves on the north rim of the gorge-like valley of Mint Spring Bayou. All of the tributaries to Mint Spring Bayou enter from the north, so the northern line of bluffs is ragged and discontinuous. Not so the southern wall of the valley; Fort Hill Ridge forms an unbroken rampart more than 140 feet high along its entire length. Atop that natural wall, Steele could see a continuous line of rifle pits.²⁵²

247. Ibid., 350.

248. Miles, 412.

249. Bearss, 235.

250. Gabels, 104.

251. Miles, 411.

252. Grabau, 350.

Their approach was thus halted by the steepness of the ravine and the intensive and advantageous line of Confederate fortifications.²⁵³

Faced with the incredible escarpment that formed the south wall of Mint Spring Bayou, and the powerful earthworks above, Steele determined to locate an available avenue of approach. One of the opportunities appeared to lie in Mint Spring Bayou's First Branch, which, unlike much of the terrain around Vicksburg, flows through a broad and gentle valley. Upon further inspection, however, the terrain was impassable due to the **obstacles** presented by dense second-growth timber and canebrakes. Manter's brigade, which was sent to investigate this route, made little forward progress and was only able to reach the higher elevations of the small finger ridges surrounding First Branch.

Steele, with Woods's brigade, moved westward along the ridge north of Mint Spring Bayou, but soon discovered that the Yazoo City Road that they had been following continued on down the crest of the ridge where it was completely exposed to the Confederate riflemen and artillery on the escarpment south of Mint Spring Bayou. To avoid the line of fire of the rifle pits, he moved the troops off the road and, **concealed** behind the crest of Indian Mound Ridge, continued on to the southwest. Woods led his men forward and began the construction of a line of rifle pits on the forward face of Indian Mound Ridge. It proved to be dangerous work, however, as the Confederate works were above his position with good **observation** opportunities and the Union infantry was subjected to heavy fire. To diminish the danger, Steele established a counter battery under the direction of Capt. Clemens Landgraeber. However, the position required by the counter battery was exposed from various directions. Landgraeber lined his guns up along the road in the last position offering **cover and concealment** before hurrying them forward. The moment forward movement began, they were shot upon by Confederate sharpshooters **concealed** in the Edwards House 300 yards to the southwest. Steele's men eventually overcame the

sharpshooters and later occupied the house. Steele also took command of a knoll associated with Indian Mound Ridge to the southwest, which he manned with a battery.²⁵⁴

Thayer's Advances and Approach. On May 19, Thayer's brigade was positioned along the broken high ground north of the Mint Spring Bayou. Thayer's regiments prepared for their attack on the Confederate positions near Graveyard Road under the **cover and concealment** afforded by North Ridge that extended west/southwest from Graveyard Road Ridge to the north of Mint Spring Bayou. From there, they moved forward over the top of the ridge and around its western end. The moment they reached the bottom of Mint Spring Bayou, they began receiving intense rifle fire from the Confederate lines. They reached the end of the Second Branch ravine only about 300 yards from the Confederate defense line. They crossed the bayou with a rush and took **cover** in a small area of defilade at the base of the slope where they were forced to remain until nightfall when they could retreat.²⁵⁵

As part of the May 22, 1863, attack on the Confederate line, Thayer used the wetland terrain and vegetation associated with the Mint Spring Bayou ravine for **cover and concealment** to form up his lines, and ready his artillery and **approach** to the Twenty-sixth Louisiana Redoubt. These attacks would prove unsuccessful due to the extent of the obstacles posed by the stream, the slopes of Fort Hill Ridge, and the Confederates abatis. After failure of the May 22 attack, the Union army took a new tack and began a siege that involved maintaining artillery pressure on the Confederates and construction of a series of trench approaches to the major fortifications.

In support of this approach, Thayer's troops began, under the protective **cover** of wetland terrain and vegetation, as well as a tunnel in the area, to dig a series of zigzag trenches as an **avenue of approach** to the Confederate system of gun emplacements located northeast of Fort Hill. They

253. Fullenkamp et al., 318.

254. Grabau, 348-350.

255. *Ibid.*, 347-353.

added to the existing natural forms of concealment by creating sap rollers composed of rolled brush and cane. Along the route Thayer's men continued to encounter various **obstacles**, including the ravine's steep and contorted slopes, the abatis placed by the Confederates, and the steep escarpment of the southern wall of the valley.²⁵⁶

This approach commenced near the crest of a ridge, ran south down the slope toward the salient approach of the Confederate line, and then up the opposite slope of the ravine. Thayer's route proved difficult to protect against fire from above. Additional cover was afforded using fascines and the more traditional sap rollers made of cane that were placed across the six-foot-deep trench. The fascines formed a roof that hid the movements of the men and, where well constructed, were impenetrable to musket balls.²⁵⁷ They had just begun work on a mine beneath the targeted work when Pemberton surrendered.

Ewing's, Lightburn's, and G. A. Smith's Advances. On May 19, Ewing's Brigade approached the Confederate works placed to defend the Graveyard Road. With Lightburn and G. A. Smith, these approaches were the most important in Sherman's front. They were "... directed against the northeast angle of the enemy's line, where that line, bending around the ravines at the head of a small stream, takes the form of a bastion."²⁵⁸ En route, detours had to be made where Confederate mines had already disturbed the soils.

Ewing and G. A. Smith were separated by the deep ravine of Mint Spring Bayou. Ewing's objective was the Twenty-seventh Louisiana Lunette. During the attack, Ewing's brigade crossed over the crest of North Ridge, which edged Second Branch of Mint Spring Bayou, and charged into the Mint Spring Bayou ravine. At the base, two regiments became mired in the **obstacles**, while two other regiments found passage through and continued up the eastern slope of Mint Spring

Bayou to within a few yards of the parapet of the Twenty-seventh Louisiana Lunette. They reached a final obstacle in heavy fire from the fortification.

Today, dense tree cover obscures the ground and terrain of Mint Spring Bayou. Present beneath the woodland are remnants of the Confederate earthworks to the south and Union earthworks to the north.

Fort Hill/Fort Hill Ridge

Fort Hill. Fort Hill was one of the nine major fortifications established by the Confederates to anchor **key terrain** along the avenues of approach into the city of Vicksburg. It occupied a dramatic high point formerly referred to as Spanish Fort, where Fort Vigio had once stood. At an elevation of approximately 340 feet above mean sea level (AMSL), Fort Hill rose abruptly from the river terrace directly behind the Water Battery. Although Fort Hill did not constitute the highest elevation along the Confederate line, it formed a dramatic cliff affording a commanding view of the river for **observation** of the surrounding terrain. Fort Hill was used as an officer's headquarters and a signal station. The lack of **cover and concealment** to its fore, and its steep side slopes served as challenging **obstacles** to the movement of assailants. The works on Fort Hill contained gun emplacements for one 24-pound siege gun, two 6-pounder guns, two 12-pounder howitzers, one 3-inch rifle, two 24-pound siege guns, several small field pieces, and a brass signal gun. Clear **fields of fire** for the artillery extended toward the river as well as along Yazoo City Road, Mint Spring Bayou, and the ridges to its north. Fort Hill was never directly assaulted by the Union army.

Fort Hill Ridge. Fort Hill Ridge extends east from Fort Hill along the southern margin of the Mint Spring Bayou ravine. The ridge forms an unbroken escarpment more than 140 feet high along its entire length. With commanding views north and northwest and steep slopes serving as a severe obstacle to movement, the Fort Hill Ridge was **key terrain**.

The escarpment was so high and steep that it could barely be climbed. It proved to be a challenging

256. *Ibid.*, 351.

257. Fullenkamp et al., 320.

258. *Ibid.*, 318.

obstacle to Union movement toward the Confederate positions atop the ridge. The Confederates placed a continuous line of rifle pits composed of nine batteries along the top of the ridge between Fort Hill and the Twenty-seventh Louisiana Lunette, and ensured that the terrain in front of the guns was cleared of tree cover for the **fields of fire** of the artillery. The guns emplaced along the line included two 12-pounder guns, one 3-pounder Parrott gun, five 6-pounder guns, two 12-pounder howitzers, three 3-inch rifles, one 24-pounder howitzer, and a Whitworth rifle.

Because the Confederate artillery could not always be depressed far enough to cover the extent of the north facing slopes of the escarpment below due to the angle of the topography, the Confederates placed additional **obstacles** such as abatis and cheveaux-de-frise, sometimes wrapped with telegraph wire, below the rifle pits to hinder the progress of any potential attack by Union forces.

Fort Hill and Fort Hill Ridge retain good integrity to their original landform and topography. Extensive woodland growth currently obscures visual understanding of the physical relationship between the rifle pits, the Fort Hill fortification, and Mint Spring Bayou below. The abatis and other obstacles are no longer present, and much of the fabric of the earthen works has eroded or been rebuilt. Fort Hill was occupied by Union forces after the siege and was modified from its Confederate layout.

Graveyard Road/Graveyard Road Ridge/North Ridge

Graveyard Road. Graveyard Road was one of the six roads constituting important **avenues of approach** to the city of Vicksburg. It followed one of the primary east/west trending ridges—Graveyard Road Ridge—that provided an opportunity to avoid ravines and other rugged landforms and as such constituted **key terrain**. The ridge forms the watershed between Mint Spring and Glass Bayous. Additional ridges extend from Graveyard Road Ridge to the northwest and southeast. Short Spur branches south from Graveyard Road Ridge to the south approximately 180 yards northeast of the face of the Stockade

Redan, while Long Spur extends south/southwest 350 yards from the redan. Northwest Spur edges the road to the northwest and extends into Mint Spring Bayou nearly across from Long Spur. North Ridge arises from Graveyard Road Ridge nearly 900 yards from the redan to its northeast. North Ridge edges much of Mint Spring Bayou to its north. Graveyard Road Ridge eventually turns eastward and joins the ridge upon which Jackson Road is sited approximately 1,800 yards east of the Stockade Redan. To the south of the ridge, the landscape is comprised of a series of ravines that form the headwaters of Glass Bayou.²⁵⁹

To protect against attack along the ridge, the Confederates concentrated their forces to either side of the road, establishing a complex of three earthworks that included the Twenty-seventh Louisiana Lunette, Stockade Redan, and Green's Redan. The earthen parapet walls of the earthworks provided **cover and concealment** for the soldiers manning the works. The ravines edging Graveyard Road Ridge were heavily studded with **obstacles** in the form of abatis and cheveaux-de-frise to avoid attack from these directions. During the May 22 assault on Stockade Redan, Union regiments took **cover** in the Graveyard Road cut approximately 100 yards from the redan.²⁶⁰

North Ridge. North Ridge is a southwestward extension of the Graveyard Road Ridge. Steep side slopes extend from the ridge to Second Branch to the west and the main stem of Mint Spring Bayou to the south. The western nose of the ridge was used for **cover and concealment** by Union attackers of the Graveyard Road fortifications during the May 19, 1863, battle.

Twenty-seventh Louisiana Lunette, Stockade Redan, and Green's Redan. This Confederate earthwork complex was designed and sited to defend the Graveyard Road approach to the city of Vicksburg. The lunette and redans were fortified with various artillery pieces.

259. Grabau, *need page number*.

260. Gabels, 106

The Twenty-seventh Louisiana Lunette, located to the west of the road, was manned by McNally's Arkansas Battery and a 12-pounder howitzer. It occupied a high point and **key terrain** with a clear view of the road corridor for **observation** and its margins, and included a long forward extension that provided angles for enfilade fire over the ground in front of the work.

The Stockade Redan, a V-shaped fortification with a prominent ditch, was open to the rear. It was constructed east of and adjacent to the Twenty-seventh Louisiana Lunette. Within the overall form of the Confederate line shaped like the numeral '7', Stockade Redan sits at the forward projecting apex.²⁶¹ The work was armed with a 12-pounder gun. Stockade Redan included a traverse to aid in retreat or retrenching if the parapet were breached, as well as various **obstacles**, including a six-foot deep ditch, abatis, and a stockade wall of poles with sharpened tops. Dense vegetation obstructed the ravine in front.²⁶² Other obstacles included wire entanglements and grass mats concealing the ditch. Soldiers noted that during attacks on the redan ". . . as they plunged into the ravine . . . abatis, wire entanglements, and pits covered with grass mats further broke up the Union formations."²⁶³

Green's Redan sat seventy-five yards east of Stockade Redan on a broad plateau affording a key point of **observation** of the terrain along the eastern margins of Graveyard Road. This small crescent-shaped outwork provided cross fire for Stockade Redan. Lowe's Missouri Battery manned a 12-pounder howitzer at the redan.

The Stockade Redan was a principle focus of both May 1863 Union attacks. The May 19, 1863, battle ensued from the high ground fronting Stockade Redan along the Graveyard Road Ridge. During the attack, Grant ordered the massing of various brigades against Stockade Redan, while simultaneously launching secondary attacks on

Confederate strongholds to the north and south ranging from the Yazoo City Road to Fort Garrott.

During the May 19 battle, General Sherman's XV Corps was assigned to the approach along Graveyard Road. Upon reviewing the Confederate fortifications, he determined that the only true **avenue of approach** for direct assault lay along the high ground of the ridge. Unfortunately, he also recognized that this route would provide no **cover** and his men would be exposed to heavy direct fire from the parapets of Stockade Redan, and additional fire from Twenty-seventh Louisiana Lunette and Green's Redan to either side. One of the difficulties faced by the Union commanders was the narrowness of the ridge top, which allowed little room to deploy the regiments and thus reduced the area from which to fire upon the enemy earthworks. They established their own batteries on the ridges facing the triad of works to provide artillery fire during the battle.

During both the May 19, and 22, 1863, attacks, the Union forces also used the ravines to either side of the road for **cover and concealment**. Within these areas, the Union army was able to mass their artillery pieces used to try and break down the parapet walls. In general, however, they realized that the steeply-sloped ravines and the abatis posed too great an **obstacle** due to the disorganization caused by attempted movement through the layers of abatis, and that potential success may lay in a direct assault from the ridge. For the May 22 battle, General Sherman planned to support an infantry attack with artillery. On May 20–21, he concentrated twenty guns along the Graveyard Road, and placed large numbers of sharpshooters on Long Ridge, North Ridge, and in the ravines in front of the works. His plan was to reach the parapet with a storming party and reach the interior via the salient angle of the redan.²⁶⁴ While the Union forces were able to reach the parapet wall of Stockade Redan from the road corridor, and a storming party of 150 men carrying scaling ladders also reached the parapet, they found the fortification walls too high for their

261. *Ibid.*, 104.

262. *Ibid.*, 104.

263. *Ibid.*, 104.

264. Grabau, 368–370.

ladders, and they were eventually forced to retreat.²⁶⁵

Graveyard Road Batteries. During the siege, the Union army established a line of batteries to be trained on the three Confederate fortifications protecting the Graveyard Road approach, including the Twenty-seventh Louisiana Lunette, Stockade Redan, and Green's Redan. These batteries were manned by the First Illinois Artillery and the Second Iowa Battery, and were emplaced with 10- and 20-pounder Parrotts, 6- and 12-pounder guns, 12-pounder howitzers, and James rifles. One of these was known as Battery Powell.

These field batteries were repositioned within the large, level, and open area northeast of Graveyard Road to maintain pressure on the different Confederate fortifications. From these batteries, Union cannons were trained on this work and blasted the Confederate defenders relentlessly. Today, Graveyard Road, the ridge, and Stockade Redan remain in evidence. Land along this corridor is maintained in low-growing ground cover, which aids visitors in understanding the assaults by Union forces. Much of the detail of both lines has been lost over time to erosion, however.

G. A. Smith's Approach. G. A. Smith's Approach was a sapping effort that extended from the Graveyard Road batteries toward the north face of the Stockade Redan. His **avenue of approach** "pushed forward from a ravine parallel at this point to the enemy's line, which gave cover near that line. It was directed on a salient of the enemy's line, and was close to it when the city surrendered. . . ."²⁶⁶

Glass Bayou

Graveyard Road Ridge forms the watershed line between Mint Spring and Glass Bayous. To the south of the ridge, the land is comprised of a series of ravines within which the headwaters of Glass Bayou arise, including the North and South Forks. Glass Bayou is deeply incised within a ravine to the

south. It served as **key terrain** for Union troops, providing **critical cover and concealment** opportunities for massing and staging attacks.²⁶⁷ As with most of the swales and gullies in the area of the siege, the wetland and riparian areas along these unnamed tributaries of Glass Bayou contained abatis and other debris **obstacles** that were intended to interfere with the advance of Union troops towards Confederate earthworks.²⁶⁸

Along the 1,250-yard Confederate line that extended between Green's Redan and the Third Louisiana Redan were five batteries. In addition to the abatis, the Confederates generally relied on the unfriendly terrain of Glass Bayou to deter Union troops from utilizing it as an **avenue of approach**. The position was unsuccessfully assaulted on May 19 by Brig. Gen. Thomas Ransom's brigade:

In response to Grant's directive to get into assault position as quickly as possible, during the morning of 19 May, Ransom's [brigade] of McArthur's [division] had pushed slowly westward along a huge, irregular ridge separating the north and south forks of Glass Bayou. The terrain was frightful—nothing but tangled cane breaks filling deep ravines that seemed to go nowhere.²⁶⁹

[Ransom] . . . worked his way westward along his ridge until about 1300, when he came out on a commanding nose that overlooked the gorge like valley of the North Fork of Glass Bayou. Only 400 yards away, on the far side of the abatis-choked ravine, he could see the Confederate earthworks. He had only an hour before the time specified for the beginning of the assault. . . . One regiment never got through the abatis, but one of them found an easy passage and stormed the hill ahead of them.²⁷⁰

Later, Ransom approached this section of the line overland during the siege in a bold move. In June 1863, he brought forward artillery pieces over rough terrain to establish a new battery nearly 100 yards from the Confederate line. Col. G. A. Smith's

267. Information provided by Terry Winschel, Vicksburg National Military Park.

268. *Ibid.*.

269. Grabau, 358.

270. *Ibid.*, 360.

265. Gables, 106.

266. Fullenkamp, et al. 322.

brigade also approached this portion of the line by taking advantage of ridges to move the infantry into firing position.

The ravine is currently wooded, which obscures the way that this landform served as cover and concealment, avenues of approach, and key terrain for the Union army during the battles and siege for Vicksburg.

Ransom's Gun Path. One avenue of approach utilized by the Union army was an overland route through rough terrain near modern Jackson Road. Known as Ransom's Gun Path, this approach was conducted by the men of the Second Illinois Artillery, with the help of Ransom's infantrymen, who, in late June 1863, dismantled and dragged their 12-pounder guns across the steep slopes of a ravine to reach a parapet only 100 yards away from the Confederate line. These artillery pieces were utilized to support the infantry stationed along this segment of the Union line.

Jackson Road/Jackson Road Ridge

Jackson Road was one of the six roads that constituted **avenues of approach** to the city of Vicksburg. It followed a broad east/west trending ridge that commanded the highest elevation within the area and facilitated passage across the rugged terrain. As such Jackson Road constituted **key terrain**. The Confederate line included two massive earthworks to protect against attack along the Jackson Road: the Third Louisiana Redan, with the Great Redoubt to its southwest.

Two powerful Confederate earthworks guarded the point where the Jackson Road passed through the defense line. To the south of the road, crowning the highest hill on the defense line, was the Great Redoubt. The redoubt was difficult to approach from the Union siege lines, because it was fronted by long open slopes dropping into deep ravines. To the north of the Jackson Road, the Third Louisiana Redan crowned the ridge along which the Jackson Road ran, and thus it could be approached along a terrain feature not notably lower in elevation than the redan itself. Both the Great Redoubt and the Third

Louisiana Redan were in the sector of responsibility of McPherson's XVII Corps.²⁷¹

The Third Louisiana Redan sat upon Pemberton Ridge, a north/south trending ridge. To the east was the Shirley House sited atop Shirley House Ridge, another north/south trending ridge. The Union army occupied the high ground along Shirley House Ridge. Here they placed Coonskin tower, which they used as an **observation** point for their sharpshooters. They also amassed several batteries—Hickenlooper, White House, McPherson, Logan, and the powerful De Golyer—on the high points facing the Third Louisiana Redan and Great Redoubt within range of their artillery. During the siege, they initiated sapping efforts as **avenues of approach** to the Third Louisiana Redan.

While these Confederate positions were attacked during the battles of May 19 and 22, 1863, the Union forces made little headway against the fortifications, and suffered heavy casualties.

In reviewing the events of the May 19 and 22 battles, Pemberton realized that the Great Redoubt, Third Louisiana Redan, Railroad Redoubt, and Second Texas Lunette had all been targets of attacks. These efforts had been so ineffectual, however, that the invaders had been stopped almost before the defending infantry fired a shot.²⁷²

Third Louisiana Redan. The Third Louisiana Redan occupied **key terrain** along the Jackson Road as a strong **observation** point reinforced with **cover** afforded by the fieldworks. The redan was placed atop high ground just north of the road and overlooked the road cut. Batteries placed within the earthwork were armed with 6-pounder guns, 3-inch rifles, and a 20-pounder Parrott. There were also rifle pits located outside the parapet walls. The redan was attacked on May 22 but successfully defended. This position was later **approached** by zigzag saps excavated by Maj. Gen. John Logan's division. Logan's Approach included mines dug beneath the parapet to set

271. *Ibid.*, 428.

272. *Ibid.*, 365.

gunpowder charges. On June 25, 2,200 pounds of gunpowder placed beneath the parapet were exploded. The Union infantry entered the earthwork through a crater created by the blast, but were unsuccessful in gaining command of the fort due to defense on the part of the Confederates manning the work. Another mine was detonated a week later, with similar results.

The Great Redoubt. As its name connotes, the Great Redoubt was the largest fortification along the Confederate line at Vicksburg. Enclosed on three sides by a tall parapet wall, the Great Redoubt occupied the highest point along the line at 397 feet AMSL and afforded broad opportunities for **observation**. The redoubt was sited to take advantage of **key terrain**, and faced potential **avenues of approach** to the south and east. It was armed with a 12-pounder howitzer and four 3-inch rifles. In addition to Jackson Road, the Great Redoubt also guarded the high ground of a nearby ridgeline, another potential Union **avenue of approach**. The redoubt itself was the primary **obstacle** to attack; there were no abatis established in the immediate front of this fieldwork, although **obstacles** were placed to its southeast. This redoubt was unsuccessfully attacked on May 22, 1863. The Union army later established Battery De Golyer to the east to maintain pressure on the commanding fortification.

Battery Hickenlooper, White House Battery, Battery McPherson, Battery Logan, and Battery De Golyer. By June 11, the Third Louisiana Redan was opposed by four major Union batteries sited along Jackson Road Ridge. These positions were sited on high points for **observation**. Most included parapets for **cover**. Closest to the redan was Battery Hickenlooper, which sat atop a knoll associated with the Jackson Road Ridge to the east. The White House battery stood on a small rise 50 yards to the south of the Shirley House. Battery McPherson stood just south of Jackson Road, some 620 yards east of the Third Louisiana Redan, in a position from which the guns could bear on both the redan and the Great Redoubt. Battery Logan stood on the ridge 100 yards south of Battery McPherson, and was

sited so that its guns could fire on both works. In addition, Battery De Golyer sat southeast of Jackson Road. Earthworks were constructed at this field position in front of the artillery to help protect the gunners. While the battery was first occupied by Capt. Samuel De Golyer and his Eighth Michigan Light Artillery with six guns, over time the battery amassed twenty-two guns, the most of position along the Union lines. Over the course of the siege, Grant had determined that Battery De Golyer was the most strategic site for maintaining artillery pressure on the Great Redoubt. Captain De Golyer was mortally wounded 600 yards to the north of here while directing the fire of some of his guns.

On June 11, two giant 9-inch Dahlgren smoothbores borrowed from the Navy were emplaced in Battery McPherson. These guns were able to blast a hole in the redan, but it was patched before the Union army could take advantage of the breach, and the Confederates built a new line of rifle pits across the base of the redan.²⁷³

Field Batteries. Union forces also established batteries on the other knolls facing the Confederate Great Redoubt and Third Louisiana Redan. These were manned by the Eighth Michigan, the Third Ohio Battery, Battery L of the Second Illinois, the Sixth Wisconsin Battery, First Ohio Battery, Twelfth Wisconsin Battery, First Illinois Battery, First Missouri Light Artillery, and Yost's Independent Battery. They were generally separated from the Confederate line by steep ravines.

Coonskin Tower. Sited to overlook the Third Louisiana Redan, Coonskin Tower was erected by the Union army several hundred yards north of Battery De Golyer. It was used for **observation** and to allow sharpshooter Henry C. Foster to maintain pressure on the Confederate line.²⁷⁴

Shebangs. On the slopes of a ravine east of the Shirley House, which served as the headquarters

273. *Ibid.*, 422–423.

274. Henry Woodhead, ed. *Illustrated Atlas of the Civil War* (Alexandria, Virginia: Time Life Books, 1998), 229.

of the Forty-fifth Illinois Infantry, Union forces established a series of bombproof shelters for cover. The hillside afforded concealment for this position.

Logan's Approach. Logan's Approach extended from the Shirley House toward the Third Louisiana Redan. The prominent knoll used to site the advance breaching Battery Hickenlooper, along Jackson Road, afforded the men an important degree of cover for their sapping effort.

Captain Andrew Hickenlooper, McPherson's chief engineer, supervised the work. Logan's division of McPherson's corps dug one of these approaches. The zigzag trench was angled back and forth across the Jackson Road Ridge, aimed at the salient angle of Third Louisiana Redan. It was eight feet wide and seven feet deep and designed to accommodate passage of artillery. A railroad car loaded with bales of cotton served as moveable cover for the digging parties rather than the usual sap roller.²⁷⁵

Logan's men began digging on May 26, 1863. Work parties numbered 300 men at the outset but diminished in size as the approach neared the enemy. The approach began at the battery opposite the Shirley House and ran up to the front porch of the house. There, it angled left, along the front of the house, to the high point to the west. Logan's men constructed an artillery battery position at this angle. From the battery, the approach ran left across the Jackson Road. At the road, the small knoll described earlier in front provided cover from the Third Louisiana Redan, so the men were able to dig straight ahead to the base of the knoll. They reached the knoll on June 3, 1863, where they established Battery Hickenlooper emplaced with two 30-pounder Parrott guns situated less than 150 yards from the parapet of the Third Louisiana Redan. They also dug a parallel extending from the knoll. The approach then continued from the right-hand side of the knoll.²⁷⁶

Things went well until June 13, when the head of the sap was only forty yards from the parapet of the redan. At this point, life in the sap suddenly became very dangerous as the Confederates began to drop ninety-pound shells into the sap from a 10-inch mortar newly emplaced southwest of the Great Redoubt. Union sapping continued, however, and by June 16 the head of the sap was within twenty-five yards of the scarp of the redan. This brought it within grenade range of the Confederate lines, another obstacle to their progress. Here, the Union troops established another parallel to the right and left of the approach. By June 21, they stalled at ten yards from the parapet due to the grenades and shells raining down on the sap. Hickenlooper tried to suppress some of the Rebel fire by extending two parallels to the south of the head of the sap, so that the southeast face of the Third Louisiana Redan could be covered by close-range rifle fire, but this effort had little effect.²⁷⁷

Driving the approach forward, Logan's men reached the base of the enemy redan on June 22, 1863. On June 23, Hickenlooper and Logan began work on a mine beneath the parapet. They excavated a tunnel forty-five feet long, which branched at the end into three galleries, each fifteen feet long. By June 25, a gallery seventy-eight-feet long had been created beneath the parapet of the works. Two side galleries had also been constructed. Within these subterranean spaces, Logan's men placed 2,200 pounds of black powder.²⁷⁸ After the blast, the resulting crater was thirty to forty feet wide, twelve feet deep, and shaped like a washbowl. The Union forces moved quickly into the breach. Once they reached the crater, the assailants were shot upon by Confederates stationed in a secondary line of defensive rifle pits that afforded them cover. They had moved to the position upon hearing the sounds of mining beneath the parapet and subsequently the unnatural hush that preceded the first explosion. While the Union's Forty-fifth Illinois, under the command of Jasper Maltby, used surviving Confederate parapets for cover, firing over the top to command the crater, and

275. Gabels, 111–112.

276. Grabau, 429.

277. *Ibid.*

278. Gabels, 112.

built additional **cover** by extending their sap and using heavy cypress timbers for protection, the Confederate rifle positions could ultimately not be taken.²⁷⁹

Through June 26–27, McPherson and his men tried to break through a thin barrier of Confederate rifle positions unsuccessfully. They then determined to excavate a new mine to reach the junction of the second Confederate line and the original parapet of the 3rd Louisiana Redan 50 yards to the west. This worried the Confederates who did not have another fallback line. Confederates began countermining operations. By July 1st, the Union officers had determined to explode their mine. They breached the works, but did not attack at once, waiting for Grant's order for the final assault, as they could now breach the Confederate defenses more or less at will.²⁸⁰

Today, evidence of the Third Louisiana Redan and Great Redoubt survive within the park, and are maintained in open vegetative cover for visual accessibility. Battery De Golyer is interpreted through earthen parapets and emplaced cannon. Many of the Union features around the Shirley House are also interpreted by the park.

Mount Ararat

Shortly after daylight on May 19, Grant visited Sherman's position in front of the Stockade Redan complex. When he knew that most of Sherman's men were in position, he moved to Mount Ararat to the east along the Jackson Road. The location afforded Grant **observation** of most of the Confederate line between Stockade Redan and Fort Garrott. He could not, however, see the Union troops, since they were mostly sheltered in the ravine bottoms.

This landscape feature is located outside of current park boundaries.

Durden Creek

The headwaters of Durden Creek form south of the Jackson Road, with branches separated by the

north/south trending Pemberton and Shirley House Ridges. The stream corridor sits in a deep valley that served as an **obstacle** to Union troop movements, but also an opportunity for **cover and concealment** when amassing for an attack.

Overlooking the ravine to the west was the Confederate line to the south of the Great Redoubt and north of the Second Texas Lunette. Within this area were six gun emplacements armed with various field artillery pieces that faced the stream valley of Durden Creek, a natural **obstacle**. To strengthen the obstacle posed by Durden Creek, the Confederates placed abatis and debris within the ravine's low-lying areas.

The Durden Creek ravine is currently shrouded in woodland cover. Union earthworks and trench lines and battlefield terrain that served as both an obstacle and cover and concealment are not visible due to the trees.

Baldwin Ferry Road

Baldwin Ferry Road was one of the six road corridors that constituted **avenues of approach** into the city of Vicksburg during the siege. It was defended by the Second Texas Lunette, manned by the Second Texas Infantry Regiment. The fort occupied a high point along the road margin and constituted **key terrain**. The varied topography of ridges and ravines provided **avenues of approach**, as well as **obstacles and cover and concealment** for Union efforts during the battles of May 19 and 22, 1863, as well as the siege. During the events of May 19, the road corridor was used by Maj. Gen. John A. McClernand to approach the Confederate line. During a fierce battle waged on May 22, the Union offensive nearly succeeded in capturing the Second Texas Lunette. The lunette was later approached by a Union sapping enterprise conducted by A. J. Smith's division.

Second Texas Lunette. The Second Texas Lunette guarded against potential Union approach along Baldwin Ferry Road. Occupying **key terrain**, comprised of a high point that afforded good opportunities for **observation** and long views of forces approaching along the road, the Second Texas Lunette had a clear field of fire for its guns.

279. Grabau, 431–432.

280. *Ibid.*, 438.

A 100-yard gap existed in the parapet along the road. This gap was covered by the field of fire of the various artillery pieces. This lunette was later approached by a Union sapping enterprise conducted by A. J. Smith's division.

A. J. Smith's Approach. Utilizing sap-rollers for protection, A. J. Smith's men constructed a sap leading toward the Second Texas Lunette during the siege. This **avenue of approach** was subjected to intense Confederate fire. Smith's men had begun construction of a mine by the time of surrender, however.²⁸¹

Union Battery. Between the Second Texas Lunette and the Railroad Redoubt stood a Union battery armed with two artillery pieces. It was sited atop a high point that allowed **observation** of the general terrain associated with the Baldwin Ferry Road and the **avenue of approach** it afforded.

Today, these features retain little integrity within the park.

Southern Railroad of Mississippi Rail Line

In addition to the six road corridors that entered the city, there was also a rail line maintained by the Southern Railroad of Mississippi. This corridor was a potential **avenue of approach** for the Union army, and **key terrain** for both armies. Railroad Redoubt was the major Confederate fortification that guarded the rail line. Union forces placed various batteries within range of the Railroad Redoubt on knolls that afforded opportunities for **observation** and a clear field of fire. The parapet walls and ditch of the fort, and abatis in the low-lying ravines of the nearby stream, served as **obstacles** to Union assault on the position.

Railroad Redoubt. Railroad Redoubt was a large fortification that guarded the city from approach by the rail line. Control of the avenue of approach posed by the rail line was critical, and the Railroad Redoubt thus occupied **key terrain**.

Railroad Redoubt was semi enclosed, and open only at the rear, with the main body projected forward, well ahead of the remainder of the line. The interior was divided into three compartments by lateral traverses. It was within site of the Second Texas Lunette. Fire from their parapets could sweep the head of the ravine which lay to the east. The bottom of the ravine was less than 100 yards from the ditch of the Railroad Redoubt. It was filled with abatis made by cutting down the trees and binding them together with telegraph wire. Beyond the ravine was Two Mile Ridge, nearly as high as the defense line ridge. Its summit, which trended almost straight south from a point 300 yards southeast of the Second Texas Lunette, is about 300 yards from the ditch of the Railroad Redoubt.²⁸²

During the attack on the redoubt on May 22, the Union infantry briefly gained a foothold inside the fortification, but were unable to break through the Confederate defenses.

The redoubt was later approached during the siege through a sapping enterprise conducted by Carr's division.

Carr's Approach. Brig. Gen. Eugene A. Carr was in command of a sapping enterprise used as an **avenue of approach** to the Railroad Redoubt and the Second Texas Lunette. At the time of surrender, the approach was within ten yards of the Confederate line.

Two-mile Creek

Two-mile Creek flows south from headwaters near the Railroad Redoubt. Trench lines extended within the creek ravine associated with Brig. Gen. Lawler's Second Brigade, Fourteenth Division, and Col. Lindsey's Second Brigade, Ninth Division under the XIII Army Corps and General McClernand. As with most of the swales and gullies in the area of the siege, the wetland and riparian areas along the creek contained abatis and other debris in an attempt to interfere with the advance of Union troops towards Confederate earthworks.

281. Fullenkamp et al., 323.

282. Grabau, 375–376.

Five Union artillery positions existed between Railroad Redoubt and Fort Garrott along Two-mile Ridge and other high points overlooking the creek during the siege.

Fort Garrott (Square Fort). This square Confederate fortification was sited on an elevated ridgeline that constituted **key terrain**. Col. Isham W. Garrott, who commanded the Confederate troops in this immediate area, was killed inside the fort by a Union sharpshooter who fired from a tree. Fort Garrott sat on a plateau surrounded by three radiating spur ridges that overlooked the city. To the east is a ravine. The head of the ravine forms a half-bowl, concave side outward. The rim of the bowl was guarded by Confederate rifle pits. The end of the system was a salient located 300 yards northeast of the fortification. At 340 feet AMSL, the ridge has a steep slope along its western margin. It was designed to guard an angle or naturally-weak point in the line between the rail line approach and the Halls Ferry Road approach guarded by the Salient Work. Armed with three artillery pieces, including a 12-pounder howitzer, Fort Garrott was the only completely enclosed work on the Vicksburg perimeter, and was entered via a drawbridge.

Fort Garrott is the only Confederate work that today retains clear traces of approaches, parallels, saps, and other features associated with the siege operations.

Batteries Sited to Attack Fort Garrott.

Additional Union batteries were sited on the hillside overlooking Fort Garrott, with clear fields of fire and points of **observation**. Three **avenues of approach** were established by Osterhaus's, Hovey's, and Slack's divisions. Their saps led toward the fortification, and they were intended to be used to mine beneath the parapet walls, the cavities filled with gunpowder, and the parapet walls breached by the explosion.

Osterhaus/Hovey's Approach. Another **avenue of approach** utilized by the Union forces to reach Confederate Fort Garrott during the siege was Hovey's Approach. It was begun relatively late, in mid-June, as compared with other efforts, despite the fact that the ground afforded good

cover to within a short range of the Confederate line due to a lack of intelligence collected about this portion of the Confederate line. It followed initial work conducted by Osterhaus's infantrymen who established a line of rifle pits after the defeat of May 22. Hovey's division took over the position a few days later.

Thereafter, Gen. Alvin Hovey's troops dug two parallel zigzag approach trenches leading toward Fort Garrott. They were based on the work of engineer Tweeddale. One was to start from a sheltered spot in the ravine near the left of the second parallel, and the other from a small ravine between Short and Middle Spurs. They would eventually converge on the plateau thirty yards from the ditch of the fort.²⁸³ Work on the saps was conducted at night, precluding the need for sap-rollers.

Woodlands and wetlands were cleared in 1998 to reveal the military terrain from Fort Garrott and along Hovey's Approach.

Slack's Approach. Aimed at the relatively unguarded Confederate rifle pits 100 yards north of Fort Garrott, work on this sap continued so close to the Confederate line that casual conversation was possible between the enemies. Ultimately the sap reached to within 10 yards of the rifle pits. The subsequent concentrated volley of fire was interrupted by the pre-surrender truce.²⁸⁴

Additional gun emplacements between Fort Garrott and Salient Work (five positions).

Five artillery positions extended along the Confederate line between Fort Garrott and the Salient Work that protected Halls Ferry Road. The line of works was manned by the Thirty-fourth, Thirty-sixth, Twenty-ninth, Fifty-sixth, and Fifty-seventh Georgia regiments. These positions were placed on high points with good opportunities for **observation** and clear fields of fire.

283. *Ibid.*, 414.

284. *Ibid.*, 416.

Halls Ferry Road. The Halls Ferry Road was one of the six roads extending into the city of Vicksburg along ridgelines that constituted potential Union **avenues of approach**. It is located outside of current park boundaries, but survives today.

Salient Work. This major Confederate fortification, located outside of the park's current boundaries, was sited to protect the Halls Ferry Road **avenue of approach**. The earthwork was diamond shaped and extended forward of the line to the east to establish a line of fire along the ridgeline followed by the road, and an adjacent broad knoll. The Fifty-seventh Georgia regiment manned this position. It was located outside of current park boundaries.

Lauman's Approach. This approach line is also located outside of current park boundaries. The sap began on a ridge extending out from the Confederate line 300 yards east of the Halls Ferry Road. A good deal of work had been expended on the trench, when Grant decided to abandon it for an approach through the ravines adjacent to the road that afforded better **cover**.²⁸⁵

Gun emplacements between Halls Ferry Road and South Fort. Between Halls Ferry Road and South Fort were twelve Confederate batteries. The line was manned by men from the Forty-third, Third, Thirty-first, and Fifty-ninth Tennessee, and the Fifty-second, Forty-third, Forty-second, Forty-first, and Fortieth Georgia regiments. The batteries formed a linear system along the undulating ridge line that was broken periodically by deep ravines. Abatis were used as **obstacles** to further strengthen the line.

Battery Barnes

Battery Barnes guarded the Mississippi River south of the city of Vicksburg and north of South Fort, the southern anchor of the Confederate line. Both of these heavily fortified anchor positions were located on the bluffs overlooking the river. Battery Barnes, located approximately one-quarter mile to the north of South Fort, was one of the river

defense batteries protecting against naval attack, and part of a mile-long line of rifle pits that edged the Warrenton Road to protect against river side attack. The position included earthen parapet walls and a ditch to provide **cover** for the soldiers of Mark's Company, Twenty-second Louisiana Infantry, stationed there between May 26 and the end of the siege. The battery was armed with a 10-inch Columbiad, a long-range weapon powerful enough to reach the river.

One of the challenges associated with defending this portion was the distance between the bluffs, which afforded the best opportunities for **observation**, and the river, which was too far away to render artillery fire on naval vessels effective:

South of the Widow Blakely, geography conspired to create a problem because the river begins to trend away from the bluff line, leaving a wedge of often flooded plain at the base of the bluff. Thus a mile below the Widow Blakely battery, the only battery site safely above flood level was 1,200 yards from the river bank, a distance so great that the effectiveness of even a big gun would be questionable.²⁸⁶

Battery Barnes therefore also defended the swampy bottomlands between the bluff and the river that might have served as an avenue of approach by the Union army. Both South Fort to the south and additional rifle pits tied to its flank also defended Battery Barnes from attack via the Warrenton Road. The bluffs and the battery served as an **obstacle** to Union attack.

Today, The Louisiana Circle unit of Vicksburg National Military Park protects surviving evidence of Battery Barnes, and the relationship between the river and the defensive position remain clear and understandable. The link between Battery Barnes and associated works is no longer in evidence, however, as the Louisiana Circle parcel is a small protected remnant of a larger system that has been lost to commercial development.

285. Fullenkamp et al., 325.

286. Grabau, 42–43.

South Fort

South Fort was a **key terrain** feature within the Confederate system. Like Fort Hill to the north, South Fort guarded the river as the primary **avenue of approach** by the Union army. The fortification was later retrofitted to accommodate artillery that could aim along Warrenton Road and defended against land-based attacks from the south. South Fort was a substantial U-shaped earthwork with thick parapet walls that provided **cover** for the soldiers stationed therein and served as an **obstacle** to attackers. Rifle pits connected the eastern flank of the fortification with the western margin of Stout's Bayou across Warrenton Road.

South Fort was one of the river defense batteries, a series of heavily armed positions that faced river approaches, and were intended to protect against naval attack. The southern river batteries extended between a railroad depot and South Fort and were served by the 1st Louisiana Artillery under the command of Lt. Col. Daniel Beltzhoover.²⁸⁷ The Widow Blakely gun currently exhibited at Louisiana Circle was originally emplaced at one of the southern river batteries a quarter mile southeast of the Marine Hospital.

The engineers who designed the River Defenses would have preferred to terminate the array of anti-ship batteries with the Widow Blakely position, but the configuration of land defenses made it necessary to defend the bluff line for a distance of 1,800 yards to the south. The reason was the Maj. Samuel A. Lockett, the engineer who selected the alignment of the land defenses, had chosen a prominent ridge that circled the southeastern half of the city for his main defensive line, and that ridge terminated just across the deep ravine of Stout's Bayou at a point 1,800 yards south of the Widow Blakely position. The fortress engineers had little choice but to construct a strongpoint on the bluff at that point, 170 feet above the level of the floodplain, to provide a secure anchor for the land defenses. The result was South Fort, in which were emplaced three long-range guns: one 10-in. Columbiad, a 30-pounder Parrott rifle, and a 10-in mortar. No

one had any illusions about the effectiveness of the South Fort guns in an anti-ship role, so South Fort was a part of the River Defenses only by courtesy.²⁸⁸

The 10-inch Columbiad and 10-inch mortar mounted at South Fort were powerful weapons that helped to anchor the southern end of the line. These guns were originally intended, however, to aim only on the river approach to the south and the design of the gun platforms and embrasures reflected this. After the siege began, the Confederates determined that protection from an infantry attack along the Warrenton Road was needed. By mid-June, they had modified the fortification to allow the guns to aim along the ridge south of the fort. Two additional 12-pounder howitzers were also added to the fort to guard Warrenton Road as an **avenue of approach**. The road itself followed a very narrow ridge edged by steeply-sloped ravines, potentially affording **cover**, to either side. The howitzers were served by Company A, Fourteenth Mississippi Light Artillery, while a detachment of Company G, First Louisiana Heavy Artillery manned the 10-inch Columbiad and mortar. Infantrymen of the Fortieth Georgia Infantry were also stationed in the fort throughout the siege.

South Fort experienced artillery fire during the latter part of June and early July 1863. Herron's Division of the Union army began to assault the position on June 14, 1863. Herron's men first established a gun emplacement, which they armed with two 10-pounder Parrott rifles. The guns were no match for the heavy artillery of the 10-inch mortar, however, and Herron was forced to abandon his attack until more substantial fire power could be secured or risk the loss of his company to the Confederate's superior weaponry. Over the course of the coming weeks, the Union army began to assemble additional guns south of South Fort along the ridge, bringing weaponry up the bluffs from the Union naval vessel *Benton* anchored at Warrenton landing along the river. Exchanges continued through the month of June as the Union position continued to test the various weaponry dragged up to the ridge.

287. *Ibid.*, 41.

288. *Ibid.*, 42–43.

Eventually, they established Battery Benton, from which they initiated a coordinated assault on South Fort in conjunction with artillery remaining on the ship below. To counter the enhanced power of the Union effort at Battery Benton, the Confederates were forced to return the 10-inch mortar, which had been moved to a position along Jackson Road, to South Fort. The two sides engaged in more heavy exchanges on June 30, 1863, when Union 42-pounder guns fired directly on the parapets of South Fort from relatively close range. The Union artillery began to breach the parapets of South Fort before the 10-inch mortar struck, killing two and wounding four. By early July, the Union had established several batteries of field artillery, and coordinated their assault with the navy and the artillery in Battery Benton. The assault proved highly successful and may likely have threatened the viability of the Confederate position of South Fort if not for the surrender the next day, July 4, 1863.

Today, the relationship between the river, the road corridor, and the defensive position are obscured by dense vegetation, the realignment of the former Warrenton Road corridor, and the degree to which the surrounding landscape has been altered through grading. The parapet and ditch system of the fortification retain a good degree of integrity, however.

Battery Benton

Union Battery Benton, one of the offensive field positions established by Grant's army during the siege of Vicksburg was completed at the end of June 1863. Construction of the battery culminated various efforts conducted by the Union army to probe the vulnerability of South Fort beginning in mid-June. On June 13, Union forces gained their first position on the Warrenton Ridge 900 yards directly to the south of the fort.²⁸⁹ By late June, the battery was manned by a detachment of Battery E, First Missouri Light Artillery, and a detail of enlisted men of the Thirty-fourth Iowa Infantry, all under the command of Acting Master J. Frank Reed of the gunboat *Benton*.

The Union army then began the arduous task of bringing larger guns to the ridgeline from the gunboat *Benton* anchored below. The first guns to be brought 150 feet up the side of the bluff were 32-pounder smoothbore guns with tubes that weighed 7,200 pounds and naval gun carriages that weighed 1,000 pounds. These were firing by June 25, 1863 within a gun emplacement located to the south of South Fort. These guns proved too weak to challenge the Columbiad and mortar emplaced at South Fort, and the Union forces returned to the *Benton* for larger guns. They eventually secured two 42-pounder rifles from the *Benton*. Reed was sent along to supervise the use of these large guns. He also directed "the construction of a massive emplacement on a knoll 900 yards south of South Fort," which became known as Battery Benton.²⁹⁰ On June 30, the Union troops began to use the 42 pounders against South Fort. Troops from the Thirty-seventh Illinois and Twenty-sixth Indiana Infantry were positioned in the nearby area to form a sharpshooter line. The primary **avenues of approach** probed by the Union army as part of this offensive were the Mississippi River and the Warrenton Road.

This extreme southern sector of the lines was relatively inactive until Federal BG Francis Herron's Division arrived on the scene on 13 June. Herron took one look at the massive parapets of South Fort and realized that nothing could be done without artillery. All he had was field guns. Nevertheless, on the night of 14 June, his artillerymen threw up a gun emplacement and mounted two 10-pounder Parrott rifles, the biggest pieces he had available.

At dawn the next morning, the Federal artillerymen opened fire, confident in the power of their weapons. The two shells screamed along the ridge and exploded deep inside the parapet of the Confederate earthwork. Almost like an echo, a gun replied from the fort with a deep toned bellow. When its shell exploded in front of the artillery emplacement, the roar shook the earth, and huge iron fragments went shrieking by on all sides. One came to rest in the Union emplacement and the shocked artillerymen

289. *Ibid.*, 424.

290. *Ibid.*, 425.

realized it was from a 10 incher. The next round was closer and the next closer still. A hit from one of those shells could kill every man in a gun crew so the Union artillerymen limbered up and got out before the bolt fell.

That night, the Union gunners strengthened their parapets and put the two Parrotts back into position. The next morning, at first light, the Confederate Columbiad fired one round. It made a direct hit on one of the Parrotts and sent it flying away, a complete ruin. The Confederates had made their point, don't try to fight heavy artillery with field guns.²⁹¹

From the very first shots, it was evident that the almost point blank fire soon would breach the parapets. That gave Herron license to start planning an infantry assault. Then there was a dull report from inside the walls of South Fort and a 10-inch mortar sailed overhead and burst just to the rear. The fourth round dropped squarely into Battery Benton, killing two men, wounding four, and silencing the guns. It took two days to get the Union guns back into operation, but when they were ready their fire was coordinated with that of the navy. . . . The combined fire of Battery Benton and the gunboats in the river kept the Rebel mortar operators so off-balance that they no longer could hit Battery Benton. The walls of South Fort began to erode quickly under the combined fire. In vain, Herron matured his plans for an assault; the next day, 4 July 1863, the guns of both blue and grey fell silent in the pre-surrender truce.²⁹²

The Navy Circle unit of Vicksburg National Military Park protects the surviving evidence of Battery Benton. Today, the relationship between Battery Benton and South Fort to the north is obscured by changes to the road corridor, surrounding development, and vegetative growth. The role of the battery in the Civil War offensive line is not immediately apparent to the casual visitor. The pedestrian bridge anchored in the knoll and the surrounding casino buildings and parking areas, as well as the degree to which the Warrenton Ridge has been regraded, have diminished the integrity of the site.

291. *Ibid.*, 424.

292. *Ibid.*, 425–426.

Inventory of Features

Observation and Fields of Fire.

- Loess bluffs
- Clearing of woodlands for artillery fields of fire
- Siting of fortifications, batteries, signal and lookout towers, and commander's headquarters
- Mount Ararat
- Fort Hill/Fort Hill Ridge
- Water Battery
- Twenty-seventh Louisiana Lunette
- Stockade Redan
- Green's Redan
- Third Louisiana Redan
- Great Redoubt
- Second Texas Lunette
- Railroad Redoubt
- Fort Garrott
- Salient Work
- South Fort
- Battery Selfridge
- Union batteries north of Mint Spring Bayou
- Indian Mound Ridge
- Union batteries facing Graveyard Road
- Knoll along Jackson Road
- Battery Powell
- Battery De Golyer

- Union batteries sited on the Second Texas Lunette and Railroad Redoubt
- Union batteries sited on Fort Garrott
- Coonskin Tower

Cover and Concealment.

- Bluffs and ridges (North Ridge)
- Knolls (Indian Ridge Mound, Knoll near Shirley House)
- Ravines including Mint Spring and Glass Bayous
- Earthwork parapets, head logs, ditch system
- Shebangs along the slope east of the Shirley House
- Small gullies and berms resulting from cultivation and erosion
- Incised road corridors and Graveyard Road cut
- Sap rollers and fascines
- Tunnel near Thayer's Approach
- Edwards House
- Caves excavated by city dwellers

Obstacles.

- Mississippi River oxbow
- Mines placed in the river
- Mint Spring and Glass Bayous
- Durden Creek
- Two-mile Creek
- Steeply sloped landform

- Tall parapet walls and deep ditches associated with fortifications
- Stockade fence/wall at Stockade Redan
- Abatis and cheveaux-de-frise interlaced with telegraph wire and felled timber
- Large pits with sharpened stakes covered with mats of dried grass
- Dense vegetation and debris
- Edwards House

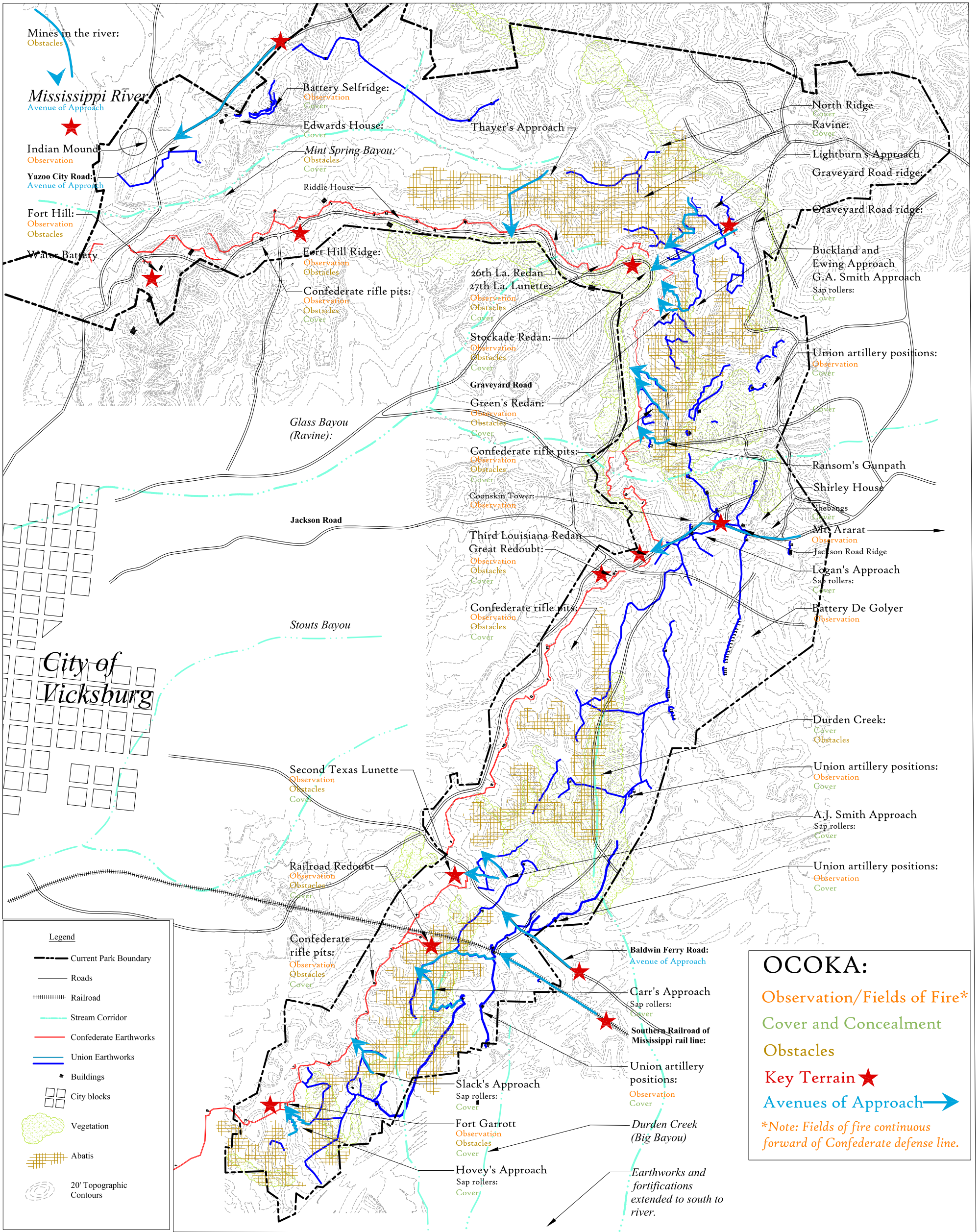
Key Terrain.

- Mississippi River
- Water Battery
- City of Vicksburg
- Yazoo City Road
- Fort Hill
- Graveyard Road
- Twenty-seventh Louisiana Lunette, Stockade Redan, Green's Redan
- Glass Bayou ravine
- Jackson Road
- Third Louisiana Redan
- Great Redoubt
- Shirley House Ridge
- Baldwin Ferry Road
- Second Texas Lunette
- Southern Mississippi Railroad rail line
- Railroad Redoubt
- Fort Garrott

- Salient Work
- Halls Ferry Road
- Warrenton Road
- South Fort
- Battery Benton

Avenues of Approach.

- Mississippi River
- Yazoo City Road
- Graveyard Road
- Jackson Road
- Baldwin Ferry Road
- Halls Ferry Road
- Warrenton Road
- Southern Railroad of Mississippi rail line
- Mint Spring Bayou and Glass Bayou ravines
- Saps including Thayer's Approach, G. A. Smith's Approach, Logan's Approach, A. J. Smith's Approach, Carr's Approach, Osterhaus/Hovey's Approach, Slack's Approach, and Lauman's Approach
- Ransom's Gun Path



Sources: Autocad Base Map
 War Department Park Commission Maps
 NPS "Historic Map Showing Conditions at the End of Siege" 1938
 Approaches to Vicksburg, Miss. & Rebel defences / traced by James H. Logan, Oct. 14, 1863

Notes:

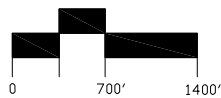
Darker modeling represents areas of low and steep topography.

Cultural Landscape Report
 Vicksburg National Military Park

OCOKA Diagram
 Figure 273

JMA
 John Milner Associates, Inc.

300 West Main Street Suite 201
 Charlottesville, Virginia 22903
 t: 434 979 1617
 f: 434 979 3645
 johnmilnerassociates.com



SCALE IN FEET
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