# WAR AND NATURE IN NORTHERN VIRGINIA: AN ENVIRONMENTAL HISTORY OF THE SECOND MANASSAS CAMPAIGN

by

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## List of Abbreviations

AOV–Army of Virginia

GPO–Government Publishing Office

HL–The Huntington Library, San Marino, California

HQ–Headquarters

HSP–Historical Society of Pennsylvania, Philadelphia, Pennsylvania

LC–Library of Congress, Washington, D.C.

MNBPL–Manassas National Battlefield Park Library, Manassas, Virginia

NARA–National Archives and Records Administration, Washington, D.C.

NARA II–National Archives and Records Administration II, College Park, Maryland

*OR–War of the Rebellion: Official Records of the Union and Confederate Armies*, 70 vols. (Washington, D.C.: GPO, 1880-1901)

RG–Record Group

UGA–Hargrett Rare Book and Manuscript Library, University of Georgia Libraries, Athens, Georgia

UM–William L. Clements Library, University of Michigan, Ann Arbor, Michigan

USAHEC–Ridgway Hall, U.S. Army Heritage and Education Center, Carlisle, Pennsylvania

VHS–Virginia Historical Society, Richmond, Virginia

*VMHB–The Virginia Magazine of History and Biography*

## Introduction

On the night of 30 August 1862, the remnants of the Union Army of Virginia under the command of Maj. Gen. John Pope trudged over the fords and a makeshift bridge crossing Bull Run to take up positions in defenses around the small town of Centreville. After fifty hours of intense combat, the bloodied force suffered defeat at the hands of Confederate general Robert E. Lee's Army of Northern Virginia. In the wake of the approximately two days of fighting, the Union force left behind the remnants of battle. Dead and wounded soldiers and dead animals covered the hills and ridges. Disabled cannons and broken caissons marked former positions for the two armies' artillery. Discarded clothes and equipment laid alongside the roads and in the open fields. For the soldiers, the battle took a toll on their morale. The loss at what became known as the Battle of Second Manassas (Bull Run) marked a low point in Union morale. As one Union soldier penned, "This is the darkest hour of our Country's peril."[1]

About two months before that night, the Army of Virginia, a makeshift force of three smaller armies, was seen as the Abraham Lincoln administration's best hope for victory. As it formed in late June, the larger Union Army of the Potomac under Maj. Gen. George B. McClellan suffered a humiliating defeat after months of campaigning in an attempt to

[1] Abial Edwards to Anna, 7 September 1862, Near Rockville, Md, Folder 3, Box 1, Abial Edwards Papers, USAHEC. For a comprehensive study of the Second Battle of Manassas, see John J. Hennessy, *Return to Bull Run: The Campaign and Battle of Second Manassas* (1993; repr. Norman: University of Oklahoma Press, 1999). For individual events in the battle, see Alan D. Gaff, *Brave Men's Tears: The Iron Brigade at Brawner Farm* (Dayton, Ohio: Morningside Press, 1985); and Scott C. Patchan, *Second Manassas: Longstreet's Attack and the Struggle for Chinn Ridge* (Dulles, Va.: Potomac Books, 2011). In the U.S. Civil War, Yankees and Rebels typically gave different names to the same battle. Thus, we have the Battle of Second Manassas or Second Bull Run. For this project, I will predominantly use the name Manassas as that is the designation of the modern National Park Service site that preserves the battlefields of both First and Second Manassas. For more on the reason behind this designation at the park, see Michael Burns, "A Confederate Memorial the 'Equal of Gettysburg': Sectionalism and Memory in the Establishment of Manassas National Battlefield Park, 1890–1940," *VMHB* 123, no. 2 (2015): 140–71.

threaten the Confederate capital of Richmond.[2] Constantly fighting with McClellan over war policies started taking its toll on Lincoln and his cabinet. They looked for fresh blood and found it in Pope. Pope, who had trained at West Point and worked as an engineer before the conflict, came to Virginia from the early campaigns along the Mississippi River. When he arrived in Virginia, he made few friends in the officer corps after publishing an address for his men bragging about his success in the West and criticizing the previous efforts to defeat the Confederates. Many of his foot soldiers, on the other hand, loved what they heard.[3]

Trying to support his tough talk, Pope went to work reforming the war effort in Virginia. Primarily, he wanted to reverse McClellan's policies that many Union soldiers and officers believed treated the Virginia citizens with "kid gloves." On 18 July 1862, Pope delivered general orders based on his previous experience dealing with unfriendly civilians in Missouri: General Orders nos. 5, 6, 7, 11, and 13. The last three garnered the most attention, creating a stir among both armies. In them, Pope targeted the local population directly and provided a framework for his men to address guerrilla activity. Pope declared that any person living in the region near his force was to be held responsible for any damage done to his logistical lines or for any attacks on his army and would be coerced into repairing the damages and paying for the lost supplies. In addition, if any soldier or follower of the army was attacked "from any house[,] the house shall be razed to the ground," and the inhabitants arrested. Any person known to have carried out the attacks "shall be shot, without awaiting

[2] For more on McClellan's failed Peninsula Campaign, see Stephen W. Sears, *To the Gates of Richmond: The Peninsula Campaign* (New York: Ticknor and Fields, 1992).

[3] For a history of the Union Army of Virginia, especially the soldiers' reaction to John Pope, see John H. Matsui, *The First Republican Army: The Army of Virginia and the Radicalization of the Civil War*, A Nation Divided: Studies in the Civil War Era (Charlottesville and London: University of Virginia Press, 2016).

civil process."[4] Following along the same vein, in General Orders, No. 11 Pope ordered his subordinate commanders to arrest "all disloyal male citizens" unless they were willing to take an oath of allegiance. If one of these men then violated it, Pope declared that the person "shall be shot, and his property seized and applied to the public use." General Orders, no. 13 reversed McClellan's practice of having Union soldiers guard the property of Confederate civilians.[5] In response, Lee declared that his army would suppress the "miscreant Pope."[6] No longer dedicated to protecting Virginia's citizens, Pope introduced a new type of warfare to the commonwealth. This trend eventually encompassed all Union campaigns in the last two years of the war.[7]

While General Orders nos. 7, 11, and 13 marked a new turn, his other two orders retained historical traditions. In General Orders nos. 5 and 6, Pope instructed, "the troops of this command will subsist upon the country in which their operations are carried on." He added, "no supply or baggage trains of any description will be used unless so stated specifically in the order for the movement." The army would rely exclusively on local food sources for both the men and horses, forcing the men to turn to local farms for their supplies.[8] A part of the turn to increase the hardships of war on local civilians, Pope's orders emerged

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[4] General Orders, No. 7, July [10?] 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 51.

[5] General Orders, No. 11, July 23, 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 52; and General Orders, No. 13 in Grimsley, *Hard Hand of War*, 88.

[6] Hennessy, *Return to Bull Run*, 21–22, quote on 21.

[7] For more on Pope's orders as a punitive measure and its relationship to the radicalization of the Union war effort, see John H. Matsui, *The First Republican Army: The Army of Virginia and the Radicalization of the Civil War*, A Nation Divided: Studies in the Civil War Era (Charlottesville and London: University of Virginia Press, 2016). Lisa M. Brady also emphasizes its incorporation throughout the conflict after 1862. See Brady, *War Upon the Land: Military Strategy and the Transformation of Southern Landscapes during the American Civil War* (Athens: University of Georgia Press, 2012).

[8] General Orders, No. 5 and No. 6, 18 July 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 50.

from his military education and previous experiences.[9] While at West Point and as an officer along the Mississippi, Pope learned about the concept of *chevauchée* or massive foraging raids. Based on English tactics in the Hundred Years War, *chevauchée* was an attempt to both supply the troops on local agricultural production and undermine "the power and control of the enemy authority or state" in the process.[10] Many historians have marked the U.S. Civil War as the first modern conflict. The use of rifled weapons, the employment of railroads, and the introduction of mass communication through the telegraph contribute to this concept. The Civil War armies in northern Virginia during the first year of the war cast doubt on this idea. Rather than being dependent on new technological innovations to relieve logistical issues, the implementation of these two orders meant Pope's men had more in common with their military predecessors than with their descendants.[11]

By incorporating a limited form of chevauchée, Pope's orders directly tied his men to northern Virginia's landscape. On the other side, Confederate troops also noted environmental factors that affected their lives. On 19 August 1862, John Hampden Chamberlayne, a Confederate officer in Lee's Army of Northern Virginia wrote home describing his experiences in the field so far that summer. At one point, just like many Civil War soldiers did, Chamberlayne turned his attention to the weather while on the campaign.

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[9] For more on Pope's pre-Civil War career, see Peter Cozzens, *General John Pope: A Life for the Nation* (Urbana: University of Illinois Press, 2000), 31–73. For more on Alexander the Great's logistical traditions that extended to the Civil War era, see Donald W. Engels, *Alexander the Great and the Logistics of the Macedonian Army* (Berkeley: University of California Press, 1972).

[10] For more on the education of West Point engineers and the concept of chevauchée in the Civil War, see Brady, *War Upon the Land*, 15–16, 22–23, quote on 22.

[11] Mark Fiege makes a similar point in his innovative work in the published collection *Natural Enemy, Natural Ally*. See Fiege, "Gettysburg and the Organic Nature of the American Civil War" in *Natural Enemy, Natural Ally: Toward an Environmental History of War*, Richard B. Tucker and Edmund Russell, eds. (Corvallis: Oregon State University Press, 2004), 93–109.

"The beautiful fall weather," he wrote to his family, "has come again when the year seems composing itself to a decent death." In the previous days, he noted that "we have had, except the smoky haze, a little of the Indian Summer." He continued, "I sometimes wonder if you in the Capital city, paved and faced and walled and arched with senseless, changeless, brick can perceive the change that comes over the face of nature now with these first cool days." In the countryside as opposed to the city, Chamberlayne believed, it was easier to feel the differences: "You cannot see it there as we do here, but it seems to me that even the smallest cloud, the merest patch of blue, would show the difference between temperate fall and moist, awakening spring or parching summer."[12] The life of a soldier brought him into a new world. Although many of the men in both armies had occasionally spent their times in the outdoors during their time before the war, their enlistments into the two armies placed them in constant contact with the local ecology, something they rarely experienced on such a scale throughout their lifetimes.

As the Second Manassas Campaign progressed, the members of the two forces became more aware of the importance of the local environment. During the first year of the Civil War, northern Virginia, the country between the Potomac and Rappahannock rivers beyond the fall lines of the commonwealth, was the primary focal point of the two main armies. After Confederate forces won a stunning victory in the First Battle of Manassas, they occupied the area until March 1862. After the rebels abandoned northern Virginia, federal forces took over and remained in the vicinity until September. Yet, how their presence in the region influenced and was influenced by the environment remains relatively obscured, which

[12] John Hampden Chamberlayne to "My Dear Friend," 19 August 1862, Near Raccoon Ford, Va., Folder 5, Section 1, Mss1C3552a, John Hampden Chamberlayne papers, 1858–1877, VHS [hereafter cited as fol. no., sec. no., Chamberlayne papers, VHS]

leads to a significant question: how did the human-environmental relationship change in the midst of warfare, an unusual circumstance for Americans? Although conflicts have existed throughout human history, an individual's experience during war is unusual for that person. Thrown into a shocking and significantly new situation can impact human interactions with their local surroundings and lead to both new perceptions of the environment and the physical alteration of the landscape.

Four questions guide this work's attempt to illuminate the changing relationship between humans and the environment in the American Civil War through examination of a specific region. First, what role did the environment play in the outcome of the operation, particularly on the conduct of both the Union and Confederate armies? Second, how did the campaign and the presence of the two armies in the area transform northern Virginia in the summer of 1862 and in the long term? Third, how did Americans, especially those in the two armies, view nature and their relationship to it? Finally, what does the bond between the environment and campaigning armies tell us about the American Civil War and warfare more generally? With two major armies marching and living in northern Virginia during the first thirteen months of the war, the local landscape experienced major transformations.

Taking place between 26 June—the date the Army of Virginia was officially created—and 5 September—when that force was dissolved and reorganized as part of the Union Army of the Potomac—the Second Manassas Campaign brought both Union and Confederate troops into contact with northern Virginia's distinct environment. In the process, the two armies' soldiers altered the local landscape while also facing environmental factors that manipulated their actions. Over the approximately two months of campaigning, the two armies maneuvered and fought over the lands of the five Virginia counties mentioned above,

marching over hundreds of miles of land and occupying at least parts of those counties. The landscape showed the scars of warfare while the soldiers and officers dealt with ecological issues that could impact their fighting abilities, overall health, and the campaign's outcome. The local environment deserves a central place in the larger story of the Second Manassas Campaign.[13]

Throughout the Second Manassas Campaign, the environment and the soldiers in the two armies held a complex, cyclical relationship. Officers and troops attempted to employ the environment to their advantage throughout the summer of 1862. In the pre-mechanized Civil War armies, natural resources were central to an army's ability to operate. The soldiers in the two armies moved based on their own power and the power of horses and mules. With these living organisms requiring energy, the armies required immense amounts of food and water to maintain the men and animals. This reliance on the natural resources of northern Virginia illuminates the way that the environment influenced military operations. Just as ancient armies had done, the officers and troops in the Union and Confederate forces, even in 1862, turned to local natural resources to supplement their supplies. Agriculture, water, and domesticated animals came from the local population, making the two armies reliant on northern Virginia's environment to survive. The members of the two armies also found themselves struggling against the limits of the local landscape. While they thrashed their

[13] The project builds on existing works on the environmental-military history of the U.S. Civil War. For example, see Lisa M. Brady, *War Upon the Land: Military Strategy and the Transformation of Southern Landscapes during the American Civil War* (Athens: University of Georgia Press, 2012); Megan Kate Nelson, *Ruin Nation: Destruction and the American Civil War*, UnCivil War Series (Athens: University of Georgia Press, 2012); and Kathryn Shively Meier, *Nature's Civil War: Common Soldiers and the Environment in 1862 Virginia* Chapel Hill: University of North Carolina Press, 2013. Although the studies of the operations have traditionally been restricted to the approximately two months between 26 June and 5 September, I will slightly expand that timeline. To fully understand the human-environmental relationship, I include actions from before the accepted date of the campaign's beginning. Mainly, this study is restricted to the period between March—when the Confederates abandoned the area around Manassas Junction and Union troops reoccupied it—and 5 September.

ways over northern Virginia, soldiers and officers had to overcome environmental factors beyond their control. Farms provided a finite amount of resources. Animals were only usable if they had reached maturity. Water spoiled quickly and local weather patterns made each day unpredictable. In addition, the landscape already had a population reliant on its resources. The two armies' disruption of the region's environment was a central factor in that summer's operations. Federal and rebel forces attempted to incorporate or manipulate ecological factors to their advantage in 1862, but nature often prevailed over their attempts.

*The Organic Cities of War*

While this project focuses on a single campaign from the American Civil War, it also illuminates two key concepts about the environmental-human relationship during warfare in a broader sense. First, studying the use of natural resources during a conflict highlights a new way to look at armies. Using the concept of energy flows and the power sources that guided them provides an opportunity to further discuss the relationship between the environment and armies as well as the connection between communities and the military. While armies as an institution are inorganic, political entities that typically expand the power of a government, we must recognize that those institutions are filled with living organisms. In order for living organisms to remain alive and maintain proper health, they require resources to sustain their energy levels. Energy, in the most basic sense, is "the capacity to do work." This "occurs when a force acts on a body, causing it to move some distance in that force's direction."[14] Whenever an entity consumes energy, they leave behind waste. Just like living organisms,

[14] Micah Muscolino, *The Ecology of War in China: Henan Province, the Yellow River, and Beyond, 1938–1950* (New York: Cambridge University Press, 2015), 6.

armies need energy to survive.[15] Civil War armies can be considered a type of organisms that required a specific amount of resources to maintain its energy, which made the local landscape the most significant factor in an army's movements in the nineteenth century. As historian Micah Muscolino argues, when an army or armies move through a region they must constantly find new sources of useful energy while leaving behind waste in the process, part of what he terms "military metabolism." As humans and animals metabolize energy and produce waste, armies perform the same cycle. The living organisms within the armies consume resources, especially local foodstuffs and water, which leaves an area in entropy, a region left devoid of its natural resources. By consuming energy from these different sources, that same source is unavailable for other organisms. Thus, when armies take from local farmers, they leave the local population and environment with less energy and increased waste.[16]

An army, especially nineteenth-century armies with its living organisms both fighting and moving material, fought civilians for the resources to maintain its military metabolism. As one historian writes, exploring the relationship between army movements and the environment will "uncover the indirect and hidden, but absolutely essential, links between

[15] Muscolino provides a deeper definition of energy and militarized landscapes in *The Ecology of War*, 4–13. Mark Fiege similarly discusses the relationship between the American Civil War, natural resources, and energy in warfare. See Fiege, "Gettysburg and the Organic Nature of the American Civil War" in *Natural Enemy, Natural Ally: Toward an Environmental History of War*, Richard P. Tucker and Edmund Russell, eds. (Corvallis: Oregon State University Press, 2004), 93–109. Other historians have also defined energy in their studies. See, Richard White, *Organic Machine: The Remaking of the Columbia River* (New York: Hill and Wang, 1995), esp. 4–5; and Edmund Burke III, "The Big Story: Human History, Energy Regimes, and the Environment" in *The Environment and World History*, Edmund Burke III and Kenneth Pomeranz, eds. (Berkeley: University of California Press, 2009), esp. 35.

[16] Muscolino, *The Ecology of War in China*, 7; and Fiege, "Gettysburg and the Organic Nature of the American Civil War," 93–94.

armed forces and civilian, agricultural, and natural systems."[17] The concept of military metabolism is especially pertinent to pre-mechanized armies. While ground forces in the aftermath of World War II became increasingly reliant on vehicles to move men and supplies, nineteenth-century armies required animals to supply their troops. Being centrally dependent on living organisms in every aspect of their movements, the energy of the armies of Second Manassas came from the metabolic process of human and animal bodies. The environmental factors of northern Virginia had a direct impact on those processes throughout the summer of 1862.[18]

In addition to energy being a significant part of the human-environment relationship during the Civil War, the size of the armies had a momentous impact on it as well. During the U.S. Civil War, both the Union and Confederate armies consistently outnumbered the populations of southern cities. Going into the conflict, the largest city in the United States numbered fewer than one million people according to the 1860 census. Out of the ten largest cities, only one, New Orleans, Louisiana, was in what became a Confederate state. In Virginia, Richmond had the largest population with approximately 38,000 people residing there in 1860. By 1862, campaigning forces typically numbered larger than 40,000 frontline soldiers throughout much of the South. The Union Army of the Potomac marked the largest force in North America in 1862, counting almost 100,000 troops in its ranks. Even in northern Virginia, the Army of Virginia numbered between 40,000 and 65,000 throughout its

[17] Muscolino, *The Ecology of War in China*, 7; Edmund Russell quoted in Ibid., 7.

[18] The concepts of energy flows has shown how humans have manipulated their local environment in a number of different situations. Muscolino is the first to show this combination in warfare, but White first discussed energy flows' impact on the human-environment relationship with the Columbia River. See Muscolino, *The Ecology of War in China*; and White, *Organic Machine*. Fiege shows that the changes in northern Virginia's landscape also contributed to Lee's decision to march his army into Pennsylvania in 1863. See Fiege, "Gettysburg and the Organic Nature of the American Civil War," 93–94.

operations in that summer. Similarly, the Army of Northern Virginia had approximately 55,000 soldiers during the Second Manassas Campaign.[19]

As historian William Cronon notes, cities relied on the production of the local countryside to function. Cities required agricultural production from hinterlands to feed the human and animal populations needed to have businesses and governments operate effectively. This relationship allowed American cities, with Cronon using Chicago as his example, to become the centers of regional power throughout the nation. While Cronon bases his analysis in commodities flow, the urban-rural relationship also applies to the energy flows that emerge in the midst of a conflict. The introduction of new populations created strains on the hinterland resources that supplied the local populations. Civilians, soldiers, and animals all competed to maintain access to local resources. Additionally, environmental factors, especially rivers, have influenced the establishment and development of these cities. While we typically believe that cities shape the local landscape, local resources have molded the city. Rivers cut new waterways and flood, pushing the population into specific areas; weather has caused populations to swell and shrink through a city's history; disasters such as earthquakes and volcanic eruptions have completely wiped a number of cities from the map.[20]

Just as cities shaped and were formed by the local environment, so were Civil War

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[19] For additional population statistics for cities in 1860, see "Table 9. Population of the 100 Largest Urban Places: 1860," U.S. Bureau of the Census official website, https://www.census.gov/population/www/documentation/twps0027/tab09.txt, accessed 25 January 2018. For the population of the armies in the field, see Sears, *To the Gates of Richmond*, 34, 57, 71 – 83, 99–102, 195; and Hennessy, *Return to Bull Run*, 6, 80, 456.

[20] For examples of the urban relationship with the environment, see William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: W. W. Norton, 1991); Ted Steinberg, *Acts of God: The Unnatural History of Natural Disasters in America* (New York: Oxford University Press, 2000); and Ari Kelman, *A River and Its City: The Nature of Landscape in New Orleans* (Berkeley: University of California Press, 2003).

armies. By their mere presence, the armies in Virginia increased the stress on the environmental resources of the local countryside. With the combined populations of the Army of Virginia and the Army of Northern Virginia numbering triple the population of Richmond meant the armies were, respectively, the second and third largest cities in the South. Operating in a region where an established population already used the local resources, the two armies added over one hundred thousand humans and hundreds of thousands more animals to the environmental strain on northern Virginia.[21] The two armies in northern Virginia were moving cities that consumed mass amounts of local natural resources while leaving enormous waste in their wake. When combining the concepts of energy and the urban-environmental relationship, we can see armies as both political entities and living cities that overwhelmed the local landscape.

The presence of the two armies and their reliance on the environment increased the struggle between armies and civilians over local resources, which also pushed the Union commanders to incorporate new civil-military policies that comprised the beginning of total war in the conflict. As Muscolino emphasizes, the relationship between armies, civilians, and the environment is a common experience of every conflict. In the Civil War, it became increasingly complicated as Union soldiers dealt with civilians they considered their countrymen. A poor supply system and the need for natural resources led to a growth in more aggressive civil-military relations. Although not something that Union and Confederate officials explicitly mention, the relationship between military operations and the local environment directly sculpted relations between civilians and Union forces specifically.

[21] For more on Richmond in the Civil War era, see Gregg D. Kimball, *American City, Southern Place: A Cultural History of Antebellum Richmond* (Athens: University of Georgia Press, 2003).

Union officers, operating in enemy territories, constantly worried about their logistical lines, making their policies toward southern civilians directly linked with supply.[22]

While the environmental history of warfare illuminates new ways to see armies, it also provides deeper insights into the experience of soldiers in the field. Environmental factors had a direct impact on officers' tactical and strategic thoughts as well as the way soldiers experienced the conflict. Throughout the Civil War, troops were placed in an unusual situation. Whereas some soldiers knew how to survive in the wilderness or had lived within city limits for much of their lives, they suddenly found themselves in a mix of those two worlds. They were both left unprotected to the elements on a daily basis and living within a large population. The soldiers were exposed to increased diseases and new sensations, both connected to illnesses and fighting, they had never witnessed before.[23]

Environmental history enlightens the soldiers' experiences on a deeper level than just what they saw, or believed they saw, in battle. By including ecological factors as a significant

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[22] While Muscolino emphasizes the relationship between armies and civilians explicitly, this project incorporates civil-military relations in an indirect manner, primarily by employing civilians' sources to describe their experiences with the armies in their regions. Multiple Civil War historians have linked John Pope's military policies, many of which are directly related to the availability of agricultural resources in northern Virginia, to the concept of the Civil War as the "first total war." See, Daniel E. Sutherland, "Abraham Lincoln, John Pope, and the Origins of Total War," *Journal of Military History*, 56 (October 1992): 79–97; Mark Grimsley, *The Hard Hand of War: Union Military Policy toward Southern Civilians, 1861–1865* (New York: Cambridge University Press, 1995), 85–95; Lance Janda, "Shutting the Gates of Mercy: The American Origins of Total War, 1860–1880," *Journal of Military History* 59 (January 1995): 7 – 26; Sutherland, *Seasons of War: The Ordeal of a Confederate Community, 1861–1865* (New York: The Free Press, 1995); Noel G. Harrison, "Atop an Anvil: The Civilians' War in Fairfax and Alexandria Counties, April 1861–April 1862," *VMHB* 106 (Spring 1998): 133–64; John H. Matsui, "War in Earnest: The Army of Virginia and the Radicalization of the Union War Effort, 1862," *Civil War History* 58 (June 2012): 180 – 223; and Matsui, *The First Republican Army*.

[23] The study of soldiers' experiences during the U.S. Civil War date back to the seminal works of Bell Irvin Wiley, *The Life of Johnny Reb: The Common Soldier of the Confederacy* (1943; repr., Baton Rouge: Louisiana State University Press, 2008) and *The Life of Billy Yank: The Common Soldier of the Union* (1952; repr. Baton Rouge: Louisiana State University Press, 2008). Few historians have attempted to intertwine the soldiers' experiences with environmental factors. For examples of this relationship, see Earl J. Hess, *The Union Soldier in Battle: Enduring the Ordeal of Combat* (Lawrence: University Press of Kansas, 1997), esp. 45–72; and Meier, *Nature's Civil War*.

part of the troops' time in the armies, we can gain a greater sense of their physical reaction to soldiering. While historians have previously discussed the health of Union and Confederate troops, part of the soldiers' physical experience is directly tied to the natural elements.[24] Illnesses spread through the consumption of poor food and water, while unpredictable ecological factors, especially the weather, killed a number of soldiers. Although most soldiers rarely recorded the senses of suffering from issues such as dehydration or heatstroke, they, at times, provide a description of symptoms. Using modern scientific studies to illuminate what the body does in the process of suffering from different health issues provides the link to understanding the physical sense of the soldiers' experience.[25] To find these links between energy, urban-environmental relationships, and the soldiers' experiences in the Civil War, the environment of northern Virginia during the Second Manassas Campaign provides a key case study.

*Environment, Science, and the Significance of Second Manassas*

Although this project builds on the work of the above histories, incorporating an interdisciplinary approach expands the relationships further. Elements of geology, pedology,

[24] A number of historians have started to discuss Civil War soldiers' physiology. Many of them do not fully link those problems to the environment. For example, see Shauna Devine, *Learning from the Wounded: The Civil War and the Rise of American Medicine Science* (Chapel Hill: University of North Carolina Press, 2014); Megan Kate Nelson, "'The Difficulties and Seductions of the Desert': Landscapes of War in 1861 New Mexico" in *The Blue, the Gray, and the Green: Toward an Environmental History of the Civil War*, Brian Allen Drake, ed. (Athens: University of Georgia Press, 2015), 34–48; and Meier, *Nature's Civil War*.

[25] The incorporation of scientific studies with historical sources is influenced by a number of environmental historians. For example, see William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill and Wang, 1983); Timothy Silver, *A New Face on the Countryside: Indians, Colonists, and Slaves in South Atlantic Forests, 1500–1800* (Cambridge: Cambridge University Press, 1990); Elliott West, *The Contested Plains: Indians, Goldseekers, and the Rush to Colorado* (Lawrence: University of Kansas Press, 1998); and Edmund Russell, *Evolutionary History: Uniting History and Biology to Understand Life on Earth* (New York: Cambridge University Press, 2011). Similarly, this aspect of my project is influenced by the growing field of sensory history, an attempt at understanding how the human senses impacted their understanding of historic events. For example, see Mark M. Smith, *The Smell of Battle, the Taste of Siege: A Sensory History of the Civil War* (New York: Oxford University Press, 2015).

hydrography, biology, and anatomy among other sciences can provide deeper insights into how and why ecological factors have an impact on military campaigns. Since Second Manassas took place in a distinct region within the state of Virginia, it is a perfect opportunity to discuss human interactions with their local environment based on historical and scientific sources. Predominantly, historians have focused on the human dominance over the local ecology. Human action, many argue, directly transforms the local landscape, decreasing natural resources and causing devastating ecological changes in the process.[26] Many of those changes do not occur simply because of human action alone. Naturally occurring phenomena also influences those changes and the way armies operated in the nineteenth century.

Energy flows emerge from the presence of natural resources, which contribute to the needs of the soldiers, officers, and animals in an army. The availability of those resources was directly influenced by the geology of a region. Soil composition, especially in regions with poor soil like northern Virginia, prevents consistent and prominent agricultural production. In the summer of 1862, the additional pressure of hundreds of thousands of soldiers and the unpredictability of the harvest season shaped the logistical planning of both armies. Similarly, the nonporous bedrock of northern Virginia caused water to flow constantly through rivers, streams, and creeks, making potable water difficult to harness. With rainwater constantly flowing into those same waterways, most of which acted as sources of drinking water for the soldiers, human and animal waste was pushed into the

[26] For examples see Avery O. Craven, *Soil Exhaustion as a Factor in the Agricultural History of Virginia and Maryland, 1606 – 1860* (Champaign: University of Illinois Press, 1926) Paul W. Gates, *Agriculture and the Civil War* (New York: Alfred A. Knopf, 1965); R. Douglas Hurt, *Indian Agriculture in America: Prehistory to the Present* (Lawrence: University Press of Kansas, 1987); Cronon, *Changes in the Land*; Andrew C. Isenberg, *The Destruction of the Bison* (New York: Cambridge University Press, 2000); Brady, *War Upon the Land*; and Nelson, *Ruin Nation*.

soldiers' drinking water, making diseases increasingly likely. Climatic conditions also shaped weather patterns of above-average temperatures and caused unpredictable storms in August 1862 and directly manipulated the experiences of the soldiers.

Northern Virginia especially merits special attention when dealing with nature in the Civil War. Although not as heavily fought over as the region around Fredericksburg or Richmond and Petersburg, northern Virginia was heavily touched by the war from early on.[27] Few historians have explored the region in general, but especially during the war years. The counties included in the region experienced either campaigning or occupation for most of the conflict. In the process, civilians became intricately linked with both the Union and Confederate armies. While occupying northern Virginia, both sides relied on the services and resources of local civilians. As early as 1861, the landscape began to transform. Confederate troops cut down trees for winter housing and firewood while farmers attempted to rebuild in the aftermath of the first major battle of the Civil War, First Manassas. With one army already using the landscape to their advantage, the Union and Confederate forces in 1862 operated along, what many would call, a depleted landscape.[28]

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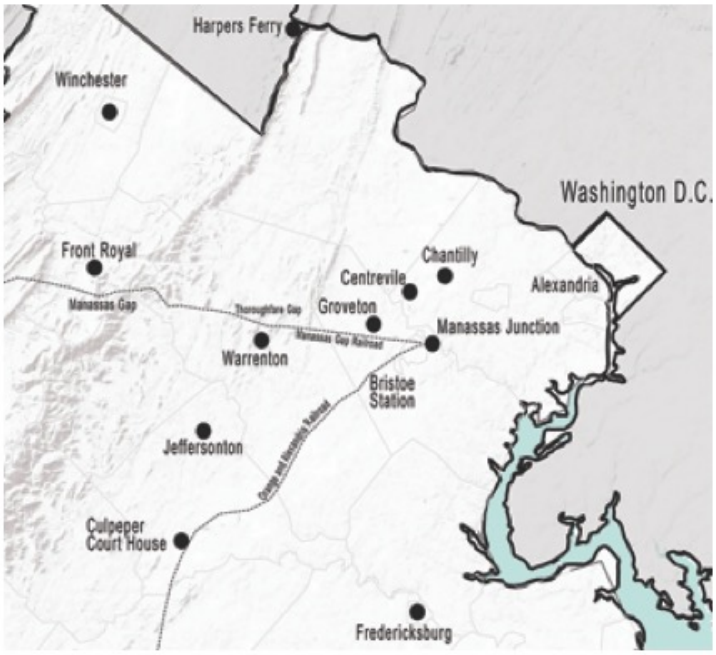
[27] For a study on northern Virginia's civilian experiences during the war, see Harrison, "Atop an Anvil," 133–64. For examples of studies on the region in central Virginia, see Daniel E. Sutherland, *Fredericksburg and Chancellorsville: The Dare Mark Campaign* (Lincoln: University of Nebraska Press, 1998); and George C. Rable, *Fredericksburg! Fredericksburg!* (Chapel Hill: University of North Carolina Press, 2002). For more on the Richmond-Petersburg area during the conflict, see Richard J. Sommers, *Richmond Redeemed: The Siege at Petersburg* (Garden City, N.Y.: Doubleday and Company, 1981); and Mike Wright, *City Under Siege: Richmond in the Civil War* (Lanham, Md.: Madison Books, 1995). For the environment around Richmond during the fighting there, see Meier, *Nature's Civil War*.

[28] For an example of an academic treatment of one of the counties in northern Virginia, see Sutherland, *Seasons of War*. For more on the occupation of the lands near the original Bull Run battlefield, see Don Johnson *Thirteen Months at Manassas/Bull Run: The Two Battles and the Confederate and Union Occupations* (Jefferson, N.C.: McFarland and Company, 2013). For eyewitness descriptions of the landscape, see Sanford Truesdell to his sister, quoted in William G. Thomas, *The Iron Way: Railroads, the Civil War, and the Making of Modern America* (New Haven, Conn.: Yale University Press, 2011), 101; and Melvin Dwinnell and Hamilton Branch, quoted in Warren Wilkinson and Steven E. Woodworth, *A Scythe of Fire: A Civil War Story of the Eighth Georgia Infantry Regiment* (New York: HarperCollins, 2002), 120.


The Counties of Northern Virginia. *Map Courtesy of Joseph M. Phillips.*

*Figure 1*




Cities and Railroads of Northern Virginia. *Map Courtesy of Joseph M. Phillips.*

*Figure 2*

The Second Manassas Campaign took place along a unique geological region in the commonwealth. The Virginia Piedmont primarily runs through the center of the state.

Residing between the more famous regions of the Tidewater and the Blue Ridge Mountains, the Piedmont has been overlooked by historians. Being the remnants of both volcanic activity and the movement of tectonic plates, the region held a unique place in Virginia's environmental history. With bedrock close to the surface and soil compositions that came from the breakdown of the Appalachian range, the region was ill-suited for agricultural production. As a part of the Chesapeake Bay watershed, streams and rivers run throughout the Piedmont in northern Virginia. Instead of the swamps of the Tidewater, the moving waterways provided power for much of the farmers of the region in the nineteenth century. While the Piedmont is a distinct geological region, it also is the prominent range in which the armies of the Civil War's eastern theater marched and fought. From 1862 until 1864, the Union and Confederate forces resided along the Virginia, Maryland, and Pennsylvania Piedmont, making it central to the fighting. Unlike a number of other campaigns in Virginia, which covered a multitude of environmental systems, specifically the Tidewater, flood plains of the rivers, and some of the Piedmont, northern Virginia was exclusively part of that unusual region of the Piedmont.[29]

While most campaigns and battles had at least one environmental factor to influence the operation, the soldiers and officers in Second Manassas faced multiple factors that swayed the officers' decision-making and shaped the soldiers' experiences in the field in the same operation. Specifically, the local agriculture, weather, water and waterways, and the presence of domesticated animals in northern Virginia linked the two armies to the local environment. Although seemingly separate factors, they were all tied together in a way that

[29] Further discussion of the geology and ecology development of the Piedmont takes place in chapter 1. Other discussions about the different environmental elements of the Piedmont is found throughout the rest of this project.

made them central to understanding the summer operations and the unique relationship between the environment and humans in the midst of warfare.[30]

*Second Manassas and the Environment*

By looking at the natural features of the northern Virginia Piedmont, the full role of the environment during Second Manassas emerges. Agriculture played a significant role during operation as the two armies attempted to supplement their supplies during their movements. In addition to local farm production, Virginia's weather, waterways, and the armies' animals had a prominent impact on the development and outcome of the operation. Although all four environmental factors are interrelated when discussing military campaigns in the nineteenth century, they also had distinct differences that contributed to the campaign's progress. When combined, they reflect the true nature of the relationship between humans and the environment. Instead of one side dominating the other, an environmental study of Second Manassas exposes that humans and nature maintained a reciprocal relationship where humans exploited nature to their advantage, but the local environment also swayed human action.

This project explores the environment topically in an attempt to avoid repetitiveness. Chapter one provides a brief outline of Virginia's environmental history to the beginning of the Civil War. This overview provides some background to environmental developments throughout the geological and human history of the region. The environmental processes that

[30] Only Hennessy has written a comprehensive study of the Second Manassas Campaign, see, Hennessy, *Return to Bull Run*. Alan D. Gaff and Scott C. Patchan have explored individual parts of the Battle of Second Manassas, but only apply their studies to how those individual actions influenced the three days of fighting. See, Gaff, *Brave Men's Tears*; and. Patchan, *Second Manassas*. Preeminent historian James M. McPherson has placed Second Manassas in the larger context of the Civil War in two of his studies, see McPherson, *Battle Cry of Freedom: The Civil War Era* (New York: Oxford University Press, 1988), 511–63; and McPherson, *Crossroads of Freedom: Antietam*, Pivotal Moments in American History series (New York: Oxford University Press, 2002), 73–95.

occurred in the millennia before the summer of 1862 had marked the landscape that the soldiers and officers encountered. Even before humans arrived on Earth, the planet went through numerous transformations that constructed the physical natural environment in Virginia. Once humans occupied the area, the populations of indigenous groups immediately began to manipulate their natural surroundings. The arrival of Europeans created another new era of environmental changes and new views of nature. There perceptions and practices most directly contributed to the development of northern Virginia's landscape as they attempted to "civilize" the region. In the process, a sense of white Americans' perceptions of Virginia's environment emerges, which would influence how others saw the relationship between their presence in the region and the state's ecology. Those physical changes and the ever-changing perceptions of local environments created the scenario that the Union and Confederate forces confronted during the Second Manassas Campaign, making the full environmental history of Virginia significant to this study.[31]

Just as most environmental historians have already considered, agriculture, the topic of chapter two, was perhaps the most central ecological factor to nineteenth century white Americans and to armies in the pre-industrial era. Most Americans' livelihood came from farming and fields related to agricultural production, including their perception of the concepts of wilderness and uncivilized societies.[32] These similar attitudes toward land use

[31] Stephen Adams, *The Best and Worst Country in the World: Perspectives on the Early Virginia Landscape* (Charlottesville: University of Virginia Press, 2001) provides a great in-depth study of the concepts Virginians had toward their environment through approximately 1700.

[32] For discussions over early American land use and the transformation of the American landscape in the colonial and early American periods, see Cronon, *Changes in the Land*; R. Douglas Hurt, *Indian Agriculture in America: Prehistory to the Present* (Lawrence: University Press of Kansas, 1987); Steven Stoll, *Larding the Lean Earth: Soil and Society in Nineteenth-Century America* (New York: Hill and Wang, 2002); Richard William Judd, *The Untilled Garden: Natural History and the Spirit of Conservation in America, 1740–1840* (New York: Cambridge University Press, 2009); and Adam Wesley Dean, *An Agrarian Republic: Farming, Antislavery Politics, and Nature Parks in the Civil War Era* (Chapel Hill: University of North Carolina Press, 2015). Mart A. Stewart believes that the development of land use in the South impacted the construction of

and agriculture transferred to the Civil War era as well. As Lisa M. Brady argues, white Southerners were so tied to their agricultural landscape that Union strategy directly assaulted this concept.[33] Before the Civil War, military commanders specifically focused on agricultural production to provide food for their armies and followed the harvesting seasons. For centuries, agricultural production dictated the trajectory of military operations.[34]

Northern Virginia's agricultural production in the summer of 1862 had significant problems that effected the forage available that season.[35] By the mid-nineteenth century, the world's climate had started to emerge from the Little Ice Age, making local weather patterns increasingly erratic. This mini climate shift started in the mid-seventeenth century and finally started to reverse itself by the nineteenth century. A nationwide drought directly impacted crops throughout the nation, but weather on the local scale remained fitful. Virginia primarily

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ethnic and class identities through their relationship with the landscape in the seventeenth, eighteenth, and nineteenth centuries. The South's distinctive nature meant agriculture would take center stage. Thus, southerners established an agrarian relationship with their environment. This agrarian system, reliant on slave labor, was central to the ways southerners constructed perceptions of the landscape as well as cultural and social relationships. The environment in which they lived influenced class structures, power relationships, and race relations in the region. See, Stewart, *"What Nature Suffers to Groe": Life, Labor, and Landscape on the Georgia Coast, 1680–1920* (Athens: University of Georgia Press, 1996), xii–xiv.

[33] Brady, *War Upon the Land*.

[34] Matthew M. Stith illustrates the importance of corn to guerrilla warfare and supplies in Missouri. See, Stith, *Extreme Civil War: Guerrilla Warfare, Environment, and Race on the Trans-Mississippi Frontier*, Conflicting Worlds: New Dimensions of the American Civil War series (Baton Rouge: Louisiana State University Press, 2016). Both Donald W. Engels and Geoffrey Parker address these issues when dealing with logistics in pre-modern central Asia and Europe. See, Engels, *Alexander the Great and the Logistics of the Macedonian Army* (Berkeley: University of California Press, 1972); and Parker, *The Army of Flanders and the Spanish Road, 1567–1659: The Logistics of Spanish Victory and Defeat in the Low Countries' Wars* (Cambridge: Cambridge University Press, 1972). Similarly, Muscolino discusses how the destruction of the dikes on the Yellow River during World War II transformed the supply lines of both the Japanese and Chinese armies. Muscolino, *The Ecology of War in China*. By the Civil War, railroad had also become a central piece of logistical lines, especially for the Union armies. For more on the role of railroads in the Civil War, see Thomas, *The Iron Way*. Muscolino also argues that railroads acted as energy routes for armies in China, see Muscolino, *The Ecology of War in China*.

[35] In this project, forage is used in both its definitions. First, forage is used to describe agricultural resources, specifically grasses like wheat, corn, and hay, that the armies' occupants, both human and non-human, consumed throughout the summer of 1862. Second it is used in the form of "to forage," which describes a soldier's action in taking those foodstuffs produced by local farmers.

saw poor crop yields throughout the state. Some of this materialized from the drought, but areas of Virginia also experienced higher amounts of rain, which led to poor harvests.[36] Still, the men of both armies attempted to supplement their supplies with the local agriculture. Poor logistics for both armies, and Pope's orders for the Union troops, caused the soldiers to look to the fields for additional nutrition.

Related to agricultural requirements for increasing the two armies' logistics, the weather, the topic of chapter three, during a military campaign could wreak havoc on logistics, military maneuvers, and the individual soldiers. Since warfare occurs in nature, the local climate and weather affected the way armies moved and individual soldiers' experiences. As discussed above, the climate more generally had a direct impact on supplies for Civil War armies throughout the conflict. Partly because of the climate shifts during the century, in the Second Manassas Campaign, the weather caused intense suffering for the troops and slowed movements to a crawl. The health of the troops was directly related to the weather since the temperatures and moisture could wreak havoc on their abilities to fight. High temperatures, much like that experienced during the Second Manassas Campaign, sapped soldiers of their energy and increased the likelihood of dehydration. Without a clear understanding of how the human body functioned in the heat, few soldiers and officers recognized the need for water in extreme temperatures until it was too late. Similarly, the

[36] For more on the drought and its impact on agriculture in Virginia, see Noe, "Fateful Lightning: The Significance of Weather and Climate to Civil War History" in *The Blue, the Gray, and the Green: Toward an Environmental History of the Civil War*, Brian Allan Drake, ed. (Athens: University of Georgia Press, 2015), 20–22; and Paul W. Gates, *Agriculture and the Civil War* (New York: Alfred A. Knopf, 1965), 85–90. For an example of the drought's impact on the U.S. more generally, see West, *The Contested Plains*. This concept of the Little Ice Age's impact on civilization has been discussed when dealing with world history as well. Geoffrey Parker argues that the beginning of the short climatic shift in the seventeenth century caused droughts throughout the world and increased tensions between civilians and their governments leading to revolts and conflict in Europe and Asia. See, Parker, *Global Crisis: War, Climate Change and Catastrophe in the Seventeenth Century* (New Haven, Conn.: Yale University Press, 2013).

region's soil types, bedrock, and vegetation of northern Virginia significantly influenced how the rain swayed the movement of both armies. As the armies moved, the weather inflicted mayhem on their abilities to fight, causing some soldiers to argue that the weather was Mother Nature's way of fighting back.[37]

Just as the weather prevented armies from fulfilling the plans of their officers, the waterways of northern Virginia, the subject of chapter four, acted as prominent roadblocks. For pre-mechanized militaries, rivers provided logical routes for supplying and moving armies. These arteries offered the ability to transform natural power into energy for armies maneuvering through regions connected to prominent waterways. As Muscolino argues, an army's "metabolism" relies on strictly limited forms of energy, many of which draw from the same sources of energy as agrarian ecosystems and hydraulic networks. Rivers and the surrounding valleys can provide the energy needed to move an army.[38] Unlike other rivers in the United States, such as the Mississippi, Tennessee, and Cumberland rivers for the Civil War and the Ohio and Missouri rivers for the westward expansion of the nation, the Virginia waterways almost sapped the energy of the Union and Confederate armies as they did not provide the avenues for movement during Second Manassas. Instead of deep waterways, like in Tennessee, the rivers in Virginia had short navigability. For most of the rivers, the fall lines sat within fifty miles of the Atlantic coast, making them almost useless for the movement of armies along the Virginia Piedmont. Additionally, the way the rivers cut

[37] Noe, "Fateful Lightning," 16–33; Meier, *Nature's Civil War*; Robert K. Krick, *Stonewall Jackson at Cedar Mountain* (Chapel Hill: University of North Carolina Press, 1990); and Krick, *Civil War Weather in Virginia* (Tuscaloosa: University of Alabama Press, 2007). For more on the weather's impact on soldiers' health, see Meier, *Nature's Civil War*. For more on the geology of northern Virginia, see E-an Zen and Alta Walker, *Rocks and War: Geology and the Civil War Campaign of Second Manassas* (Shippensburg, Penn.: White Mane Books, 2000).

[38] Muscolino, *The Ecology of War in China*, 7.

through the landscape made military movements difficult for the Union and Confederate armies in northern Virginia. Most of these waterways had cut deep into the landscape. The banks of even the smallest waterways caused problems for the large armies that moved through the region.

During the American Civil War, millions of animals, primarily horses, mules, and oxen, provided the power needed to move artillery pieces and supply wagons, the topic of chapter five. Without these draught animals, the armies could not move. Nothing stalled military maneuvers like sick horses, oxen, or mules. For the artillery and quartermaster units, the death of an animal could completely derail that company until its replacement. While some historians have discussed the role of animals in the midst of battle, few have taken a deeper look on their relationship to army logistics and the environmental chaos warfare causes.[39] The domesticated animals of both armies proved both beneficial and detrimental to the two armies. Having healthy, well-fed horses and mules allowed the artillery to maneuver quickly. Along the same lines, it allowed the quartermaster department to move supplies once they were unloaded from the railways for the Union forces. Local hogs and cattle also

[39] Charles W. Ramsdell deals almost exclusively with how the Army of Northern Virginia dealt with a lack of horses for the army and David J. Gerleman examines the horses of the Union cavalry in Virginia during the conflict, only committing six pages to Pope's force. Engels also discusses the role of domesticated animals in Alexander the Great's army. See Ramsdell, "Robert E. Lee's Horse Supply, 1862–1865," *The American Historical Review* 35 (July 1930): 758–77; Gerleman, "Unchronicled Heroes: A Study of Union Cavalry Horses in the Eastern Theater; Care, Treatment, and Use, 1861–1865" (Doctoral Dissertation: Southern Illinois University Press, 1999), esp. 200–206; and Engels, *Alexander the Great*, esp. 14, 126–29. Nelson discusses the use of lumber to construct stables for horses and mules during the winter in the war and Meier explores the health issues related to the presence of horses in the armies. See, Nelson, *Ruin Nation*, 125–26; and Meier, *Nature's Civil War*, 52 and 54. Similarly, Stith discusses how hogs were consumed in guerrilla warfare throughout his book. See, Stith, *Extreme Civil War*. For domesticated animals, historian Conevery Bolton Valencius argues that western settlers used domesticated animals as a source of acknowledging the wildness of the frontier. See, Valencius, *The Health of the Country: How American Settlers Understood Themselves and Their Land* (New York: Basic Books, 2002). Otherwise, discussions about animals in the Civil War typically surround the presence of disease carrying mosquitoes. For example, see Brady, *War Upon the Land*; Meier, *Nature's Civil War*; and Andrew McIlwaine Bell, *Mosquito Soldiers: Malaria, Yellow Fever, and the Course of the American Civil War* (Baton Rouge: Louisiana State University Press, 2010).

fed both armies, although these were considered primarily a luxury for the troops. Feeding these animals put additional strain on the energy sources of northern Virginia. Supplying the army with horses and mules, as Ramsdell prominently shows, proved difficult, especially for the Union forces. This leads to an important question as well about how the army supplied itself: where did the cavalry, artillery, and quartermaster get these domesticated animals? Just as they did with agricultural produce, they turned to local farmers in most cases. The domesticated animals of both armies played a vital role for both subsistence and movement during the summer of 1862.

In order to fully understand the outcome of Second Manassas, it is necessary to examine the environmental factors that guided it. Although humans made the decisions that contributed to the outcome, understanding their surroundings shows that factors that many Americans believed they could control, but clearly had little actual control over, influenced the progress of those decisions. Many may see this and believe that this simply shows that wars, campaigns, and battles took place outside. Exploring the relationship between the environment and warfare exposes a more nuanced and complex relationship between humans and the environment. In times of war, as seen during Second Bull Run, humans altered or overcame the environment to their advantage, but not without nature's input. To begin understanding the environmental history of Second Manassas, we must begin with the environmental development of northern Virginia's Piedmont before 1862.

## Chapter 1
## Forging the Landscape: The Piedmont's Environment before 1862

While working as an interpretive ranger for Manassas National Battlefield Park, I received a number of interesting questions. Many of these questions go by the wayside as random thoughts of vacation-drunk tourists. Others have inspired different ideas about how we conceive of Civil War history. One of the most common questions comes from well-intentioned visitors who ask if any employees have seen ghosts. Typically, the answer is no when based on the idea that ghosts are ephemeral beings of humans from the past. At the same time, historians at Manassas cannot fully claim that ghosts do not exist at the battlefield.

In reality, ghosts can exist outside of supernatural entities. The ghosts of our collective past are found all around us in the real world. When humans look to the sky, ghosts stare back at them in the form of stars, long dead or dying for millions, if not billions, of years. Our physical environment also reflects the existence of ghosts. Trees and certain reptiles have lived for hundreds, if not thousands, of years. The grasses that humans struggle to control reflect the weeds that existed during some of our most important historic moments. Even DNA carries elements of the past. Humans rarely turn to those historical actors, the rivers, grasses, trees, and animals that continue to affect how we live our lives, to explain our past.[1]

Rarely have Americans looked to the contemporaneous or existing landscapes to understand our history. These landscapes retain physical ghosts who can help us with our

[1] The concepts of stars as ghosts is something that has been considered within at least a small sector of the scientific community since the nineteenth century, specifically astronomer William Herschel. See Neil deGrasse Tyson, "A Sky Full of Ghosts," *Cosmos: A Spacetime Odyssey*, directed by Brannon Braga (21st Century Fox, 2014), Netflix.

story. The concept of "witness trees"—organisms that have stood since the historical events they had "witnessed"—for example, have provided us with physical evidence of our past. Changing behaviors and ecological patterns have altered some of these ghosts. To appreciate those physical alterations and their impact on the Civil War, it is important to understand northern Virginia's long environmental history.

Concepts of time and scale for human beings are difficult to comprehend. The written record of human history is relatively recent compared to all of the earth's history. When put on the scale of one calendar year, the arrival of human beings would take place at 11 p.m. on New Year's Eve, with written records emerging in the waning seconds. The existence of human beings is relatively minor in all of earth's history, but significant to environmental developments throughout human history.[2]

While many Americans believed in the nineteenth century, as many do still today, that the environment was a stationary system of resources, local ecologies constantly shift and transform over time. Notably, mountains became shorter and woodlands grew throughout. The atmosphere developed in a way that allowed humans to become the dominant living organism. The climate is always shifting, however slightly, while also contributing to the development of life on earth. Despite the scientific processes that created the environment, human perception of their surroundings also played a significant role in the human-ecological relationship. Societies and cultures are reflected on the landscape through their use of resources and their development of landscapes. Indigenous populations attempted to manipulate the landscape to provide better hunting and farming. Europeans used their own

[2] Cynthia Stokes Brown, *Big History: From the Big Bang to the Present* (New York: The New Press, 2007), 3

idea of proper land use to justify taking lands from Native Americans and to adjust to the new landscape. Eventually, these perceptions of land use, resource management, and the environment in general directly shaped the development of America's ecology. These developments influenced the place of agriculture, weather, water, and animals in northern Virginia. In order to fully comprehend the environmental history of Virginia during the Civil War, it is necessary to have at least a basic understanding of the development of the earth in that region before 1862.[3] It is time to address our ghosts.

*The Geological and Natural Formation of Virginia*

While historians of the U.S. West have dominated the field of environmental history, new concepts from the field of Big History can tell us more about ecological developments throughout the United States. Environmental history does not, and should not, begin with the arrival of human beings, especially humans who left written records. Billions of years of changes along the landscape created the region that became northern Virginia. Therefore, this story of Virginia's environment in the Civil War truly begins almost fourteen billion years before humans first arrived on the Virginia Piedmont.

The environmental history of the earth begins with the Big Bang approximately 13 billion years ago. Little is absolutely known about the creation of our Universe and our planet before four billion years ago. Scientific instruments and testing has provided a strong indication of what happened in the years between the Big Bang and the earth's creation. From a single point in our Universe, a buildup of energy and matter erupted spewing the contents from that single point into a hundred billion galaxies, including our own Milky

[3] Stephen Adams, *The Best and Worst Country in the World: Perspectives on the Early Virginia Landscape* (Charlottesville: University of Virginia Press, 2001), 14.

Way. Since that event, the Universe has continued to expand creating new galaxies, stars, and planets, most of which humans cannot see. It took almost nine billion years for the material distributed in the aftermath of the Big Bang to eventually come together to form the Earth.[4]

Approximately 4.6 billion years ago, our solar system came into being. An exploding supernova sent debris flying through our arm of the Milky Way. Most of that matter created the Sun and planetary bodies. Slightly over four billion years ago, the gravitational pull of the Sun brought together massive amounts of matter still floating in its vicinity that created Earth, a planet with a molten core covered in a hard rock surface. For human life, this new planet was perfectly positioned. It was far enough from the Sun to allow the development of complex organisms; close enough to allow the Sun's heat to help those organisms survive; and in the perfect position for the Sun's gravity to allow the planet to develop with that molten core and hard outer crust.[5] Just as the Sun and other planets did not form in one day, the earth took millions of years to develop into the entity that humans would recognize.

Those same forces that created Earth also prompted the development of the region now known as the commonwealth of Virginia. For most of Earth's history, Virginia's environment was in constant chaos. Initially, approximately four billion years ago—known as the Archean eon—the earth's surface consisted of unstable, volcanic activity. While this started to form the harder crust that eventually turned into the individual continents, large meteorites constantly pelted the planet. Once the surface cooled, the continents fused out of sedimentary and volcanic rocks that built upon an existing surface. Volcanic activity and the constant shifting of continental shelves began to create a number of mountain ranges on the

[4] Brown, *Big History*, 3–10.

[5] Brown, *Big History*, 10–15.

continents. With the intense volcanic activity, the spewing of carbon dioxide made the climate wet and warmer.[6]

This wetter climate put Virginia mostly underwater, leaving massive deposits that formed the commonwealth's mountains and plains. While the continents started to form about 900 million years ago, most of western Virginia, the region around the Shenandoah Valley was almost completely underwater receiving much of the nutrient rich sediments that made that part of the state a significant agricultural producer. Once the continents began to break apart in the Paleozoic era, between 600 and 750 million years ago, the once "megacontinent" of Rodinia split into two large bodies, Laurentia, which developed North America, and Gondwana. Other smaller continents dotted the planet, which also created proto-oceans including the proto-Atlantic Iapetus Ocean that deposited the soils forming the Blue Ridge mountain range and the Virginia plains nearby.[7]

While the continents continued to drift during the Cambrian period, a cooling of the climate caused glaciation that made its way down to southwestern Virginia. Eventually, Gondwana grew to contain most of the modern-day continents, possibly including the southeastern United States. With rising temperatures during this period, the Iapetus Ocean expanded pushing North America further from Europe and Scandinavia. That expansion put much of central and eastern Virginia under water. Frequent tropical storms maintained the water levels for these seas.[8]

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[6] Adams, *The Best and Worst Country in the World*, 15; and Keith Frye, *Roadside Geology of Virginia* (Missoula, Mt.: Mountain Press Publishing, 1986), 6–8.

[7] Adams, *The Best and Worst Country in the World*, 15.

[8] Adams, *The Best and Worst Country in the World*, 17.

As the climate continued to cool and the sea levels rose and fell, the continental plates also pushed together, initiating the creation of the Appalachian range. Eventually, shifting seas and winds eroded the mountains, making them shorter and rounder than during the initial volcanic activity that developed them. Virginia remained mainly underwater for most of the hundreds of millions of years of the early Paleozoic eon. During the Devonian periods, the Iapetus Ocean disappeared when northwestern Eurasia collided with eastern North America forming the supercontinent Laurasia. Similarly, Gondwana's approach pushed Avalonia into North America crumpling much of the continental shelf and pushing much of the bedrock toward the surface along Virginia's Piedmont. Once Gondwana collided with Laurasia, the landmass formed the super-supercontinent of Pangea, leaving Virginia landlocked for most of the end of the Paleozoic era and into the Triassic period. The creation of Pangea marked the apex of Appalachian mountain building. The collisions pushed the mountain range up into "a belt of snow-covered peaks perhaps higher than the Alps or Rocky Mountains are today."[9]

Once Pangea began to break apart, the Appalachian Mountain range underwent significant erosion, depositing much of the minerals in geological rifts in central and eastern Virginia, mixing some nutrient rich deposits among the bedrock of the Piedmont. The continued breakup of Pangea stretched the shelf in the eastern part of the commonwealth forming most of the basins and geological ranges in the region. Further erosion in the Appalachian range led to thick limey deposits in and offshore of eastern Virginia. During the Cretaceous period, rising sea levels reached Virginia's modern-day fall line—the zone where rivers and streams flow "from metamorphic crystalline rocks of the Piedmont to softer, more

[9] Adams, *The Best and Worst Country in the World*, 18.

easily eroded sedimentary rocks of the Coastal Plain," which cuts off river navigation into the commonwealth's interior—anywhere from 10 to 100 miles into the commonwealth's interior.[10] While the climate continued to cool and seas began to fall, Virginia's rivers carried sediments into eastern Virginia establishing the soft Coastal Plains or Tidewater region. Just as the rivers were cutting along the Virginia landscape, the Atlantic Ocean continued to expand widening the gap between North America and Europe. Virginia was now starting to develop its current geographical features.[11]

During the Cenozoic era, modern-day Virginia took its final shapes. While in the Cretaceous period the Appalachians had leveled out, either volcanic uplifting or falling sea levels reestablished their heights. Rivers continued to flow through the commonwealth establishing the gaps in the mountains and creating the multitude of river valleys throughout the region. The rising and falling seas as well as the rivers running through the area removed and deposited many of the wealthy minerals, gold and silver for example, that Europeans eventually looked for into the Chesapeake Bay. A meteor strike pushed many of those deposits further underground and eventually underwater once the Chesapeake formed with rising sea levels after the last ice age. Hundreds of thousands of years before humans first arrived in the region, the work of the water created the broken landscape with which Civil War soldiers eventually dealt.[12]

While the earth went through all of these geological changes, climate shifts caused multiple changes in the Virginia flora. Initially, with higher amounts of carbon dioxide in the

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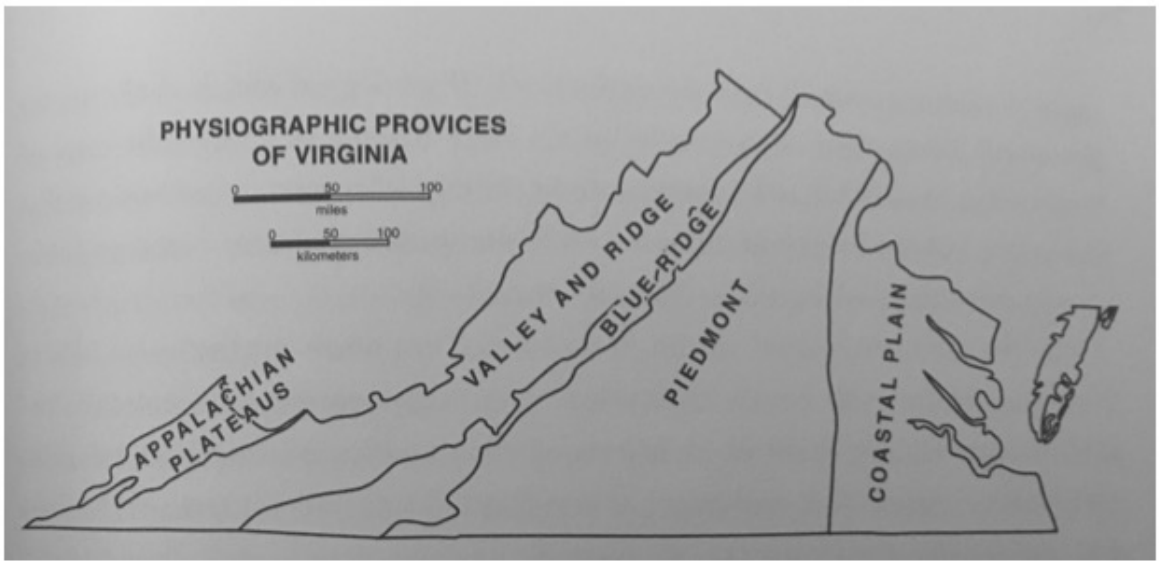
[10] Adams, *The Best and Worst Country in the World*, 18–19; and Frye, *Roadside Geology*, 83–85, 100.

[11] Adams, *The Best and Worst Country in the World*, 18–19; and Frye, *Roadside Geology*, 2.

[12] Frye, *Roadside Geology*, 2; and Adams, *The Best and Worst Country in the World*, 19–20.

atmosphere Virginia initially had a plant life similar to tropical rainforests with large ground plants and trees. When Virginia went underwater, most of these tropical plants did not survive allowing for the reformation of the entire ecosystem. During the time of large reptiles and dinosaurs, large flowering plants dominated the landscape with fewer trees. With the arrival of human beings approximately 14,000 years ago, the more modern plant life of Virginia developed with pine, spruce, and fir trees taking over while smaller berry bushes and other small flowering plants caused evolutions in insect life as well. This ecosystem was the one that indigenous populations in Virginia would try to manipulate before the arrival of Europeans.[13]




Physiographic Provinces of Virginia from the Department of Mines, Minerals and Energy, May 2000. Map found in Stephen Adams, *The Best and Worst Country in the World: Perspectives on the Early Virginia Landscape* (Charlottesville: University of Virginia Press, 2001), 21.

*Figure 3*

[13] Adams, *The Best and Worst Country in the World*, 23–28.

Out of these changes, Virginia developed into five distinct physiographic provinces (see figure 3). Starting in the east, the Coastal Plains or Tidewater sits along the landscape between the Chesapeake Bay and the modern-day fall lines. This province occupies the eastern portion of the state about one hundred miles into the interior at its southern-most point and narrowing to only about ten miles heading into northern Virginia. Holding the rich deposits of soil from the rivers' formations, the Tidewater became a strong agricultural region from early in human history. Beyond the Coastal Plains sits the Blue Ridge region. This narrow band of mountains is made up primarily of Precambrian and Paleozoic crystalline rocks. Just west of the Blue Ridge, heavy deposits of limestone lead into the Valley and Ridge region. The Valley and Ridge consists of younger, rounder forms of the Appalachian Mountains and long river valleys, including the Shenandoah Valley, or what author Stephen Adams calls the "Great Valley of Virginia." Finally, one reaches the Appalachian Plateau Province. In that region, flat sandstone cliffs overlook the coal seams of southwest Virginia.[14]

Between the Coastal Plains and the Blue Ridge resides the quirky Piedmont region where Civil War armies primarily campaigned throughout the war. Extending from Georgia through the Carolinas into Virginia and Maryland before coming to an end in Pennsylvania, the Piedmont was formed out of a mixture of volcanic activity and the movement of the continental crusts. As part of the ancient Appalachians, the Piedmont consists mainly of rolling hills and valleys cut into Precambrian and Paleozoic rocks. Limestone and clay soil mark the cover of the landscape. Running along the central portion of Virginia and into central Maryland, the Piedmont marks the beginning of the fall lines in the state and runs on

[14] Adams, *The Best and Worst Country in the World*, 21; and Frye, *Roadside Geology*, 1–2.

an angle from the southwest to the northeast.[15] The angled geological formation placed almost all of northern Virginia along the Piedmont.

Once these geological features took shape, other animals started to move into the region. Initially, dinosaurs and reptiles dominated the landscape, but after two massive extinctions, ancient fauna, such as woolly mammoths, giant bison, giant ground sloths, and mastodons, became the prominent living beings in Virginia approximately 100,000 years ago. About that period, these animals began to cross the Bering Strait during a time of mass glaciation that trapped most of the sea water in massive glaciers. According to recent studies, Asiatic hunters followed these massive mammals into North America either over the Bering Strait or, more likely, by following the Pacific rim and ice sheets extending from northern Europe, marking the arrival of the first humans in North America. Warming temperatures approximately 9,000 to 12,000 years ago killed off many of these large mammals while overhunting most likely exacerbated their extinction. Eventually, while bison survived and spread throughout the United States, mastodons, woolly mammoths, and giant ground sloths as well as horses and camels disappeared from the continent. The now indigenous population suddenly had to rely on smaller mammals and local flora while also trying to manipulate the environment to survive.[16]

*The Native American Environment in Virginia*

While most pre-European settlement histories of Native Americans come from

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[15] Adams, *The Best and Worst Country in the World*, 21; and Frye, *Roadside Geology*, 1–2, 37–43, 83–85.

[16] Adams, *The Best and Worst Country in the World*, 25–26. Indigenous Americans have challenged the accepted Bering Strait and Pacific Rim theories of their ancestry. Instead of humans migrating to the Americas, they argue that their ancestors originally lived in the Americas and then migrated to Asia, making them truly indigenous to the continent. For more on this concept, see Colin G. Calloway, *First Peoples: A Documentary Survey of American Indian History*, 4th ed. (Boston: Bedford/St. Martin's, 2012), 18–19.

archaeological studies, only a few spots in Virginia have been explored. The Piedmont has not been heavily studied, making the indigenous populations' lives there relatively unknown. Most archaeologists speculate that Piedmont Native Americans had a similar lifestyle as those in the Shenandoah Valley before European colonizers arrived. Thus, most of what is known about Piedmont natives is based on studies of Shenandoah Valley populations. From these early native groups, certain ecological changes arise.[17]

Native Americans settled in Virginia 12,000 years before European contact. The timeline for Native Americans in northern Virginia is typically broken into four periods. The first is the Paleo-Indian era approximately between 14,000 B.C. to 8000 B.C. That is followed by the Eastern Archaic era, approximately 8000 B.C. to 1500 B.C. The Woodland Cultures era comes next between 1500 B.C. until European contact, with post contact being the final part of the timeline.[18]

Paleo Indians along the Piedmont predominantly lived in small nomadic groups focused on hunting and gathering. Their diets were not designed to maintain a high population. They relied primarily on hunting large game, most likely animals like bison. The seasonality of game and plant life forced the population to constantly move. They rarely lingered in one spot and small temporary camps characterized their settlements, typically following the resources as they made their way throughout the region. To supplement their large game diet, they also trapped small animals and caught fish, often using weirs—woven hedges placed under water to trap schools of fish. In addition to their animal produce, Paleo

[17] Kathleen A. Parker and Jacqueline L. Hernigle, *Portici: Portrait of a Middling Plantation in Piedmont Virginia*, Occasional Report no. 3, Regional Archaeology Program (Washington, D.C.: National Capital Region, National Park Service, 1990), 247.

[18] Parker and Hernigle, *Portici*, 247. Summaries for these four time periods in Virginia more generally can be found in Adams, *The Best and Worst Country in the World*, 28–32.

Indians consumed a number of wild plants, nuts, berries, and roots. This was most likely the job of women and children. Due to the mobility of the groups and the small population, very little else is known about Paleo Indians in the Piedmont and their direct involvement with the local environment.[19]

The Archaic Period, typically thought to run between 8000 B.C. and around 1500 B.C., saw a significant change in the lifestyle of local Indian populations. During this period, "foraging was the dominant way of life for a people who were not dependent on any one particular ecosystem."[20] During the early Archaic era, about 8000 B.C. to 6000 B.C., the Paleo Indians settled mainly at campsites on hilltops or terraces near streams. They also had a more diverse geographic setting, which allowed them to incorporate specialized activities into their camp life, such as collecting seasonally available foods. The early Archaic populations incorporated more diverse tools for collecting foods as well, making their diets more flexible than the Paleo Indian population.[21] The progress of indigenous populations on the Piedmont in the early Archaic Era started to tie them to more varieties of resources in the region.

By the middle Archaic Era (between 6000 B.C. and 3000 B.C.), climatic changes had completely altered the Piedmont's landscape once again. Whereas the land along the Piedmont had been primarily open plains, the new climate had turned it into forests with lush vegetation. Smaller, forest-dwelling animals, similar to modern day rabbits and squirrels, replaced the larger grazing animals of old. Changing seasons also altered the peoples' diets

[19] Parker and Hernigle, *Portici*, 248.

[20] Parker and Hernigle, *Portici*, 250.

[21] Parker and Hernigle, *Portici*, 250.

by restricting choices and availability. An abundance of nuts, berries, herbs, and roots transformed the earlier emphasis on hunting. Instead, the middle Archaic Era saw native populations rely primarily on foraging. They continued to hunt deer, trap small animals, and fish to add to their protein intake and maintain food supplies for the winter, but in order to forage efficiently, these groups continued to migrate throughout the Piedmont.[22]

During the late Archaic Era (3000 B.C. to about 1500 B.C.), the Piedmont's environment underwent another change. It had become hotter and drier, which caused a shift in the populations' prime foraging and hunting regions. In these fifteen hundred years, settlements began to arise along floodplains or hills. While parts of the population continued to live in the areas outside of floodplains and hills, they were typically smaller and more temporary than the waterside settlements. Basically, those smaller, temporary settlements between the floodplains provided subsistence for the other camps.[23] Humans have continually adjusted to ecological factors over which they had little or no control. The changing climate that influenced new vegetation and additional changes to the landscape forced the late Archaic Native Americans to completely transform their social structure.

The final period before European contact, the Woodland Era (approximately 1500 B.C. to first contact), saw massive social and cultural changes that included how the population on the Piedmont incorporated the environment. As archeologists Kathleen A. Parker and Jacqueline L. Hernigle contend, "The Woodland Period is typified by continuing cultural adaptations and the efficient exploitation of a variety of environments." They continue, "Horticulture, pottery manufacture, and in some areas, mound building, are the

[22] Parker and Hernigle, *Portici*, 250.

[23] Parker and Hernigle, *Portici*, 251.

hallmarks of this period."[24] These populations continued to hunt, primarily using "darts tipped with rhyolite, quartz, and quartzite projectile points." After tracking and killing their game, they then butchered them at temporary camps. They were then consumed immediately or dried for storage. Foraging continued to remain prominent to help increase their diets. Most likely, the combination of foraging and hunting caused a gendered division of labor with men typically hunting and women typically foraging.[25]

During the early and middle Woodland Period, the Indigenous population on the Piedmont started to show signs of trying to control their local landscape. Late in the early Woodland Period, women, who tended to remain near their homes while foraging, most likely began "the intentional cultivation of wild plants."[26] While this cultivation of wild plants continued in the middle Woodland Period, more permanent settlements started to emerge throughout the region. Instead of permanent base camps with smaller, more mobile camps dispersed elsewhere, the populations established hamlets and small villages. This time period came to an end with another environmental shift. A general cooling trend increased stress on the local environment. The local ecology could no longer support a large stationary population, which caused them to disperse into small hunting and gathering groups.[27]

The late Woodland Period, leading up to the first contact with Europeans, saw a return to larger established villages and a more sedentary lifestyle. During this time, groups along the Piedmont grew corn, beans, and squash while continuing to maintain wild plants to

[24] Parker and Hernigle, *Portici*, 251.

[25] Parker and Hernigle, *Portici*, 252–53.

[26] Parker and Hernigle, *Portici*, 252.

[27] Parker and Hernigle, *Portici*, 253.

"insure an adequate harvest." Compared to modern standards, their yields were relatively small, but still produced enough to sustain the local population.[28] Similarly, their practice of planting and harvesting the crops was a part of the reason for smaller yields. While historically crops were smaller before the twentieth century, the lower yields emerged from the techniques of the population. As Parker and Hernigle note, their manner of cultivation was having "sharpened digging sticks [that] would be used to break large soil clumps, and seeds were planted in small mounds several feet apart."[29] This meant fewer seeds were placed in the ground, which in turn caused fewer plants to grow during the planting seasons.

During this time, it seemed, Native Americans in Virginia initiated an agricultural style that became increasingly productive while also manipulating the ecology. According to historian Edmund S. Morgan, Native Americans in Virginia took up similar practices to "pre-industrial populations throughout the world" that provided higher yields than European practices. Typically, the indigenous men would girdle trees then burn the surrounding brush in order to clear the local fields. Women then worked the ground between the trees to plant corn, beans, squash, and melons. The local population used these same fields until they no longer provided the proper yields and instead cleared a new field allowing the original one to go fallow to regain the nutrients for a new cycle a decade or more later. Morgan estimates that these populations, which he believes lived on five to six hundred acres of land, would have been able to "use a field for several years and then leave it to fallow for thirty or forty and still not have to move the village to find fresh land." The indigenous population most

[28] Parker and Hernigle, *Portici*, 253.

[29] Parker and Hernigle, *Portici*, 253.

likely had more consistent yields than that found in Europe during the early modern period.[30] In either case, being the final period before Europeans arrived, this type of planting and harvesting most likely would have caused many colonists to scratch their heads about the abilities of the indigenous population. In turn, Europeans most likely used these low yielding farming techniques to promote the "uncivilized nature" of Native Americans.

At the same time, the introduction of agricultural practices illuminates the steps human beings took to try to manipulate their environments to their advantage. While agriculture has been an ancient practice that humans used to strengthen their populations in both health and numbers, the technique of planting crops is a direct manipulation of nature and the natural landscape. It ties human beings to their surroundings, causing larger populations, such as cities, to rely on the production of country sides, creating a direct relationship between the two populations.[31] Similarly, during the late Woodland Period, agriculture led to larger populations living together.[32]

These larger populations required supplemental food sources. Hunting continued to garner meat. With more powerful tools and weapons, an increased strain on the environment occurred. This led to more food being available, which increased the population and made acquiring animal and plant resources more difficult due to the need to maintain the nutrients needed for the growing population. Also, by this time in the Woodland Period, another

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[30] Edmund S. Morgan, *American Slavery, American Freedom: The Ordeal of Colonial Virginia* (New York: W. W. Norton, 1975), 52–53. William Cronon makes a similar argument about the agricultural practices of native populations in southern New England. See Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill and Wang, 1983).

[31] The city-environment relationship and how that is connected to Civil War armies and ecology is something I will discuss more thoroughly in the introduction. For more on the strength of the city-countryside relationship and its impact on the American environment and American history, see William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: W. W. Norton, 1991).

[32] Parker and Hernigle, *Portici*, 253.

climatic change caused cooler, drier weather, causing a struggle in producing high crop yields. This in turn created greater strain on the local fauna as the need for more foodstuffs caused the populations to rely more heavily on hunting. The struggle over resources led to conflict between the native populations and caused an increase in fortified villages. By the time European settlers began to arrive in the Virginia Piedmont, warfare had become the common state of affairs between the indigenous populations. Europeans' presence increased both the intensity of the conflicts and the environmental pressures on the Piedmont.[33]

*Europeans Arrive in Virginia*

With the arrival of European settlers, the perception of the environment became directly tied with its transformation. While Native Americans, more generally, manipulated the landscape for their purposes, they tended to use the resources already available and supplement with agricultural production while maintaining stocks of open range animals. Once European colonists arrived, concepts of controlling the environment became central to the development of the local ecology.[34] The Virginia Piedmont would witness a similar change with the arrival of European colonists.

With the Piedmont sitting almost fifty miles from the coast along the Jamestown peninsula and residing beyond the fall lines, the region was not an initial contact point for Europeans and Native Americans. Most English colonists initially resided along the fertile Tidewater. At the time of first contact, there were numerous different tribes residing in Virginia, belonging to three linguistic groups, the Algonquins, Iroquoians, and Siouans.

[33] Parker and Hernigle, *Portici*, 254.

[34] For more on the differences between environmental land use in Native American practices and European practices during early colonial settlement, see Cronon, *Changes in the Land*.

Along the Piedmont in northern Virginia, "Siouan-speaking Manahoac Indians" made up the majority of the population. This group consisted of "seven smaller tribes," including the "Hassinungas, Ouponcas, Shackaconias, Stegarakes, Tauxsnitanias, Tegoneases, and Whonketyaes." Primarily, these groups resided along the headwaters of the Rappahannock River, but spent much of their time hunting in the present-day area of Prince William County.[35]

Just as the previous population had done, the Manahoac relied on both hunting and agriculture to develop their diets. Mainly, women and children tended to "garden plots, with corn, beans, squash, and other vegetables." They also cultivated tobacco for "various ceremonial and religious rites." To supplement these gardens, women continued to gather wild plants, especially nuts, berries, and grains. They garnered protein mainly from fish and fresh-water mussels while they added to those supplies by hunting in the Piedmont's interior where a mixture of wetlands and uplands "provided a dependable source of game animals."[36]

Initially, the Piedmont native groups remained relatively unaffected by the initial English settlements in the early seventeenth century. English colonists first settled at Jamestown along the James River between present day Richmond and Williamsburg. Residing almost eighty miles to the northwest, the Manahoac remained steadfast in their cultural use of the landscape. Almost immediately, European settlers began trying to entice additional settlement in the new colony. While Captain John Smith is most well known as a military commander and explorer, he used his knowledge of the Jamestown settlement to try to provide a description of the landscape for his fellow Englishmen. After providing the

[35] Parker and Hernigle, *Portici*, 254.

[36] Parker and Hernigle, *Portici*, 255.

physical placement of the Virginia colony between New France and Florida, he explained, "The temperature of this countrie doth agree well with English constitutions being once seasoned to the country." Later, he continued, Virginia's climate reflected much of Europe's. "The sommer is hot as in Spaine;" he wrote, "the winter colde as in Fraunce or England." While he believed that the summers were stifling to a certain extent, he argued that "commonly the coole Breeses asswage the vehemencie of the heat." Also, although the cold weather in the winter was "extreame[ly] sharpe," he commented that the extremes were short lived.[37]

Interestingly, Smith's descriptions of the Virginia rivers were significantly different than the reality. While most of the waterways in Virginia limit travel as the fall lines reside close to the Atlantic coast, Smith described them as "large and pleasant navigable rivers." These rivers opened the way for English settlement along some of the best land any Englishman could find, he argued. "Heaven and earth never agreed better," he wrote, "to frame a place for mans habitation being of our constitutions." The only problem was, he believed, the land needed to be "fully manured [cultivated] and inhabited by industrious people."[38] Key to Smith's description is his emphasis on how the climate was conducive to "English constitutions." His main purpose is clearly to drive English settlement as he pushes the thought that the English could survive in the climate and transform the physical landscape into a more productive one.

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[37] John Smith, "The Description of Virginia by Captaine Smith" in *Captain John Smith: A Select Edition of His Writings*, Karen Ordahl Kupperman, ed. (Chapel Hill: University of North Carolina Press, 1988), 211.

[38] Smith, "Description of Virginia," 212. For more information on the restrictions of rivers and waterways in Virginia, especially when approaching northern Virginia, see chapter 4.

His emphasis on "industrious people" working the land reflects Europeans' perceptions of the environment in North America. While the Native groups in Virginia, including the Piedmont, had already established villages and agricultural practices, they did not truly satisfy Smith's European sensibilities. The land was there for the taking, he argued, as the indigenous population was not properly employing the landscape. Instead, he indicates, English settlers could come in and truly fulfill the true purpose of these lush lands.[39]

Smith did not recognize that Native populations already started manipulating the environment to produce abundant food. While the Piedmont may not have provided as significant yields as the Coastal Plains, the style of indigenous agriculture provided higher yields on average than the contemporary European agricultural practices. According to Morgan, the native agricultural practices could "produce more food per man-hour (or woman-hour) of labor than any other form." Additionally, "growing a mixture of crops in the same field tends to prolong its fertility." Similarly, allowing a field to restore itself back to forest land provides additional nutrients for the soil as trees and brushes would drag nutrients from deep in the soil layer to the surface and spread them among the top soil.[40]

Smith and his fellow colonists never found native land use as logical. While Smith made his way all along the Chesapeake, he constantly commented that the local farms he found grew almost exclusively corn. This either means that he came across the fields cultivated only with that product or he refused to acknowledge the presence of other crops.

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[39] Smith, "Description of Virginia," 212; and Parker and Hernigle, *Portici*, 254–55.

[40] Morgan, *American Slavery, American Freedom*, 53–54. For more on the agricultural capabilities and struggles of the Piedmont's farmers, see chapter 2.

Additionally, he projected a fairly negative tone to much of this commentary on the landscape. In one trip in the Virginia interior along the Coastal Plains, he commented that his group had come across one small Indian village in the midst of a violent thunderstorm. When they did, he wrote, all they could see was "two or three little garden plots with their houses." But, he could not observe further because the shore was "overgrown with the greatest Pyne and Firre trees wee ever saw in the Country."[41] To him, the presence of the trees seemed not to make sense. One gets a sense of him asking as he wrote the sentence, why would the Native Americans not clear the trees? His European sensibilities made any of his perceptions of improper land-use or lack of control over the environment an indirect question about the "civility" of the local population.

For Europeans used to the cultivated and fenced fields of Europe, this marked a significant example of the uncivilized nature of indigenous cultures. The concepts of wilderness to Europeans marked the border between cultured and wild civilizations. Civilized cultures, according to these ideals, knew how to control their local surroundings. That control came from the ability to eliminate the wilderness and establish the cultivated lands commonly found throughout the European continent. Without fully understanding the improvements to the soil that emerged when a field went fallow, Europeans assumed that native populations had not been civilized enough to properly use the landscape as it was intended. Instead, they used their own perception of the environment to establish what was

[41] Smith, "Jamestown," 105–106.

proper for the Virginia colony, establishing practices that fashioned the development of the Piedmont until the beginning of the Civil War.[42]

*The Push to the Piedmont*

Although the Piedmont remained relatively unsettled by the English until the early eighteenth century, their influence started taking hold soon after their arrival. Once Jamestown became a viable settlement, European style settlements began to appear all across the Chesapeake Bay and James River. Much of this came out of the Europeans' control over the indigenous population. With more English settlers arriving year to year, the Native Americans along the Tidewater were either killed or pushed into the Piedmont, putting additional pressure on the environment and groups already there. In order to profit from their new land grabs, the English turned to tobacco cultivation. Tobacco became the key crop for the Chesapeake Bay region with most Virginians cultivating the crop. Within the first two decades of European settlement in Virginia, tobacco was the dominant product in the region. This transformation in crop production led to two significant changes. First, smaller plots of land were dedicated to food products. Indian corn made up the majority of those crops. Second, the introduction of African slaves made the commonwealth reliant on the inhumane practice. The first enslaved people arrived in 1619 and quickly became a significant part of Virginia's society. In a cycle between production and labor force, the influx of slaves made tobacco increasingly profitable, at first, which then led to the desire for more slaves throughout the colony. This transformation to a tobacco based agricultural economy pushed

[42] Many of these European concepts of and fear of "wilderness" were passed down to future generations of Americans. For more on ideas of wilderness in American history, see Roderick Nash, *Wilderness and the American Mind* (1967; repr., New Haven, Conn.: Yale University Press, 2014).

Virginia on a path both toward a significant change in its environment and toward Civil War.[43]

Although Europeans greatly criticized Indian agricultural practices throughout the colonial period, English observers of colonial practices noted similar "improper" land use. As John Clayton noted in 1687, Indian and European farms primarily grew corn throughout the colony. While Clayton noted that the indigenous population had their women "plant all their little corn and potatoes," the English colonists still bucked employing the fields in a fully English manner. Instead of the fenced off pastures of New England that Cronon describes, Virginia's colonists planted crops and allowed their cattle to roam free in the same fields. Indeed, Clayton argued, the Tobacco Custom Act of 1658 caused them to turn to cultivating corn and flax rather than the cash crop. To add to their income, Clayton noted, the farmers bought up hogs and sheep to produce meat and wool products. These animals, he wrote, ran free range over an area of "2 or 3 miles" rather than being "pend in pens as our sheep are at nights."[44] Even after eighty years of practice and cultivation in Virginia, English observers of the colony judged the region as a backward landscape. By the 1700s, however, further cultivation and transformations created the commonwealth of Virginia that became familiar to most Civil War soldiers once English settlers reached the Piedmont.

While Virginia became the earliest and one of the most economically viable colonies for England, the Piedmont region remained relatively untouched by English colonists until the late seventeenth and early eighteenth centuries. During that time, the Manahoacs

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[43] For examples of these changes, see Reverend John Clayton, "Another 'Account of Virginia,'" Edmund and Dorothy S. Berkeley, eds., *VMHB* 76 (October 1968): 419; and Morgan, *American Slavery, American Freedom.*

[44] Clayton, "Another 'Account of Virginia,'" 419.

continued to till their fields as they had done for generations and maintain their rotating and multi-crop agricultural practice. Just as most native populations did, the Manahoacs suffered from the spread of disease and encroaching European settlement even before the English first settled the region. Living in larger population densities at this time, the indigenous population suffered from many of the same ailments that naturally occur in large, concentrated populations. Dysentery, syphilis, arthritis, herpes, and tuberculosis were common among this population. Once Europeans arrived and spread new diseases throughout the native populations, the Manahoacs started to witness the horrifying effects among their population. According to Parker and Hernigle, "It is estimated that the Native American population in Virginia dropped from approximately 18,000 to 2,000 individuals between the beginning of the seventeenth century and the first quarter of the eighteenth century," as diseases and warfare took its toll on the indigenous people. Consequently, "The last documented Native American presence in the Piedmont area of northern Virginia was circa 1675."[45] Once the English charter was opened to the Piedmont, most of the marks of native presence on the land most likely had disappeared.

Throughout most of the early colonial period, European settlement took place along the Tidewater region of the commonwealth. Made up of primarily deep, nutrient-rich top soil, the Tidewater was a perfect region for the planting and growing of tobacco. Soon after Jamestown became permanent, within about ten years, enslaved Africans were brought to Virginia in order to work the plantations. For almost one hundred years, the dominant "First Families of Virginia," common names such as the Byrds, Carters, Lees, and Randolphs, established the plantation culture that transformed much of Virginia, making it the dominant

[45] Parker and Hernigle, *Portici*, 255–56.

tobacco producer in British North America. The soils, brought to the region through both oceanic expansion and contraction and the flow of the rivers, were the key to the establishment of Virginia's wealth and production. Increased trade in tobacco began the environmental transformation of Virginia with the arrival of Europeans and African slaves.[46] Within another generation, agricultural production on the Piedmont led to another transition in the region's landscape.

*Cultivating the Piedmont*

In the seventeenth and early eighteenth century, English settlement in Virginia was restricted to specific regions. Before the 1720s, few English planters resided along the Piedmont. Instead, they tended to establish their homes in the Tidewater along the four peninsulas between the four main rivers in the colony: the James, York, Rappahannock, and Potomac rivers. According to one observer, planters, reliant on the planting and trade of tobacco, put themselves within easy access to the rivers in order to stay connected to the ocean and the trade routes back to England and other British colonies. As both the white and enslaved populations continued to grow, due to both higher birth rates to death rates and through the continuation of the African slave trade, land available in the Tidewater became scarcer and pushed the population farther west.[47]

The elimination of the indigenous population and the lack of available land in the Tidewater left the Piedmont completely open to European conversion of the land. Although the indigenous population had practically disappeared from the Piedmont by the end of the

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[46] Robert Beverley, *The History and Present State of Virginia, in Four Parts* (London: R. Parker, 1705), book 2:9; and Rhys Isaac, *The Transformation of Virginia, 1740–1790* (Chapel Hill: University of North Carolina Press, 1982), 11–17.

[47] Beverley, *History and Present State of Virginia*, book 2:4; Hugh Jones, *The Present State of Virginia* (London: J. Clarke, 1724), 33–36; and Isaac, *Transformation of Virginia*, 11–12.

seventeenth century, "The historic settlement of Piedmont Virginia began in the early eighteenth century."[48] Most of this settlement was associated with one man, Robert "King" Carter. Initially, northern Virginia's Piedmont resided in the same land grant for the Northern Neck Proprietary. Consisting of 5,282,000 acres, the proprietary, under the control of Thomas, Fifth Lord of Fairfax, and then his son Thomas, Sixth Lord of Fairfax, extended from the confluence of the Chesapeake Bay and the Rappahannock River and extended north and west through northern Virginia before reaching the Blue Ridge Mountains. After the Glorious Revolution in 1688, the two lords appointed King Carter as their agent for the propriety. He served for them from 1703 to 1712 and again from 1722 to 1728. Eventually, Carter used his business savvy to own a 333,000-acre tract in the region. These acres made up much of the landscape where soldiers campaigned and fought during the Second Manassas Campaign.[49]

The Carter family dominated the region throughout most of the colonial period and into the period of the Early Republic. For much of the seventeenth and eighteenth century, the landscape retained much of its wild origins. Heavy woods with some open plains dotted much of the Piedmont. Under the Carters' propriety, that quickly started to change. Providing leases to small farmers or establishing individual plantations along the acreage, multiple farmsteads began to take hold. Under the control of Robert "Councillor" Carter III, who inherited 70,000 acres of land between his father and grandfather, for instance, the land was divided between sixteen plantations that accounted for about one thousand acres a piece, with the other 54,000 acres being leased out to smaller farmers. Those sixteen plantations

[48] Parker and Hernigle, *Portici*, 3.

[49] Parker and Hernigle, *Portici*, 7–9.

continued the work of the Tidewater plantations, attempting to grow tobacco for distribution in England.[50]

Shortly after attempting to promote tobacco production in the Piedmont, it became apparent to many planters and travelers that the region could not support its cultivation. Due to the geological formation of the Piedmont, with its shallow top soil, hard bedrock near the surface, and a lack of sitting water, tobacco quickly consumed the majority of the soil's nutrients and never truly took hold as the region's main crop. Instead, the new planters turned to other crops, most prominently Indian corn and wheat. Being less harsh on the soil while requiring less top soil to take hold, these crops allowed the fields to maintain its production capabilities for longer than tobacco. Once the fields began to lose their nutrients, farmers rotated their fields to allow the land to regain its nutrients before planting once again.[51]

Although more European settlers arrived along the Piedmont in the early to mid-eighteenth century, most Virginians and visitors still considered the region the backcountry, the old, backward region of the commonwealth. Non-domesticated animals were a predominant part of the local landscape. Deer, geese, and bears roamed the Piedmont, providing much of the meat for the settlers in the region. Those who did possess domesticated animals primarily relied on swine. While farmers owned bovines and fowl on the Piedmont, hogs and pigs were the main domesticated animals. Making, as one traveler noted, pork products, such as ham and bacon, some of the best cuisine coming from the

[50] Parker and Hernigle, *Portici*, 8–11.

[51] Jones, *Present State of Virginia*, 39–41.

Virginia colony. As more people settled the Piedmont, plantations and small farms replaced the old woods and prominent fauna.[52]

While much of the motivation for the settlement of the Piedmont was to try to establish another tobacco producing region to tie into the larger market, the lack of standing water also made the region attractive to English settlement. Residing beyond the fall lines, the Piedmont had few areas of standing water, especially swamps—a common sight in the Tidewater. Instead, the Piedmont's main water sources were the creeks and streams that fed the major rivers eventually pouring over the falls and into the Tidewater. Moving water meant fewer chances of contracting diseases common in swamps, especially mosquito borne diseases. Considered the healthier region, the Piedmont became increasingly attractive to English settlers.[53]

Unlike the Tidewater country, the Piedmont eventually turned to smaller subsistence farming traditions. The European settlement of the area was a long process. Initially, those in charge of the Carter landholdings, among the many proprietors in the region, attempted to replicate the success of tobacco plantations in the Tidewater. The leasers mainly attempted to sustain themselves and their families, growing corn, squash, beans, and other common products, while reserving a small piece of property for growing crops that could provide them a small profit.[54] The second wave of settlers, which included such prominent names as George Washington, George Mason, Patrick Henry, and Thomas Jefferson, started to replace

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[52] Jones, *Present State of Virginia*, 38–39, 41–42.

[53] Isaac, *The Transformation of Virginia*, 11–12; Alan Taylor, *The Internal Enemy: Slavery and War in Virginia* (New York: W. W. Norton, 2013), 17–19, 28–29; and Keith Frye, *Roadside Geology of Virginia* (Missoula, Mont.: Mountain Press Publishing, 1986), 37–62.

[54] Parker and Hernigle, *Portici*, 8–11.

the original "First Families of Virginia" as the leaders in the commonwealth. Building on the same success that the tidewater saw with tobacco production, the plantations initially replaced the wooded landscape of the Piedmont with rows of tobacco. By the mid-eighteenth century, slaves had arrived to support the needed labor. Opening the lands began to transform the Piedmont for much of the next century. With the arrival of tobacco, the Piedmont was beginning to replace the exhausted soils of the Tidewater as the prominent area of production.[55]

As the eighteenth century progressed, the fields of the Piedmont continued to transform. Leading into the Revolution, the new leaders of the state, men like Washington, Jefferson, Henry, and Mason, looked for new crops to cultivate. While political and economic power continued to move from the old families of the Tidewater to the new Piedmont planters, it had become clear that tobacco production was not working well in the region. The planters recognized the need to find different crops for their economic gain. Instead of the tobacco plantations of old, a number of new planters in the region turned to Indian corn and wheat for the growing seasons. No longer would slaves on the Piedmont bring in bundles of tobacco to prepare for trade with the rest of England. Instead, they grew, treated, and harvested the corn and wheat that eventually created a massive alcohol market in the United States.[56]

The Piedmont planters also incorporated one of the region's natural strengths—flowing water—to promote their changing cultivation. By the time of the American

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[55] Taylor, *The Internal Enemy*, 17–19, 28–29.

[56] Taylor, *The Internal Enemy*, 17–19; Isaac, *The Transformation of Virginia*, 11–17; and W. J. Rorabaugh, *The Alcoholic Republic: An American Tradition* (New York: Oxford University Press, 1979), 85–86.

Revolution, Piedmont plantations and farms had reverted to the indigenous practices of rotating their fields. Thomas Jefferson, perhaps the most significant farmer in the commonwealth during the eighteenth century, clearly supported the practice and believed it was the only way to maintain the necessary nutrients in the soil for the continuation of farming on the Piedmont.[57] Becoming increasingly reliant on cultivation of corn and grain, the planters on the Piedmont also required mills to grind their crops, making them easier to transport while also more useful for people purchasing their products. Residing along the fall lines of the majority of northern Virginia's waterways, planters and local communities constructed mills along the creeks and streams. The flowing water provided the power for the mills and reduced a step in selling crops for further production.[58] While Virginians throughout the eighteenth century transformed the physical ground through cultivation, they also recognized the possibility to incorporate the local environment into their economic agenda.

[57] Thomas Jefferson, *Thomas Jefferson's Garden Book, 1766–1824: With Relevant Extracts from His Other Writings*, Edwin M. Betts, ed. (Philadelphia, Penn.: The American Philosophical Society, 1944), 192 quoted in Morgan, *American Slavery, American Freedom*, 142n32.

[58] Taylor, *The Internal Enemy*, 18.

Sudley Mill, named after the pictured ford and one of the many mills constructed in the aftermath of the Revolution to produce wheat and corn flour, once stood near where this photograph was taken in March 1862. That mill led to the establishment of the small hamlet named Sudley only miles from where the two battles were fought. Sudley Church, the only surviving building from that hamlet, stands in the background. *Photo: Sudley Ford and Church, Bull Run, where General McDowell crossed with Hunter's Column, LC-DIG-ppmsca-49627, Library of Congress Prints and Photographs Division, Washington, D.C.*

*Figure 4*

In the aftermath of the Revolution, the region once again changed. While cultivation remained primarily focused on corn and wheat along the Piedmont, especially in northern Virginia, the colonial plantations no longer dominated the landscape. Instead, northern Virginia had become a central area of small family farms. Most of these small farms came from the selling off of land by the proprietors as the Revolution came to a close. Although slavery had taken hold throughout much of the commonwealth, the Piedmont saw a reduction in slave-holding households by the late eighteenth and early nineteenth centuries. Prior to and during the War for Independence, the enslaved population grew throughout the Piedmont. Indeed, between the beginning and end of the conflict, the enslaved population grew from 210,000 to 235,000.[59] Within a few decades, the number of households that had slaves on the Piedmont declined. According to Morgan, the Piedmont region was one of the heaviest areas

[59] Taylor, *The Internal Enemy*, 28–29.

hit by economic transformations that made the rich richer and the poor poorer.[60] While some of those households had multiple slaves working larger plots of land, such as the small plantation in Prince William County known as Portici, the majority had become family operated.[61] Although those who settled the Piedmont were unaware of it, they had little chance at truly establishing the plantations of the tidewater in their counties. The soil did not hold nutrients well, making any type of monoculture practices difficult to maintain. Instead, they needed to retain much of the native practices of allowing fields to go fallow while also planting numerous types of crops.[62]

*The Fields Go Fallow*

By the early nineteenth century, the small farms planting Indian corn, wheat, potatoes, and other common food crops dominated the Piedmont. Virginia's Piedmont farmers produced significant amounts of crops compared to other regions of the United States. Indeed, throughout Virginia, agricultural production was changing. According to the British observer Thomas H. Palmer, Virginians based some of their common phrases on tobacco cultivation. "*The long season*," he observed, "is an expression indicative of a peculiar product of the state." He continued, "I found [it] meant a series of rainy days which generally happens" in May, "which is taken advantage of by the country people for planting their tobacco, which cannot be done but in wet weather." Although tobacco continued to

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[60] Morgan, *American Slavery, American Freedom*, 341–342.

[61] The number of slaves at Portici was between 20 and 50 prior to the 1850s. After 1853, Sarah Ball and Frank Lewis, the two owners of the property between 1853 and 1861 counted as few as 4, but no more than 13 slaves as part of their property. Parker and Hernigle, *Portici*, 275.

[62] Steven Stoll, *Larding the Lean Earth: Soil and Society in Nineteenth-Century America* (New York: Hill and Wang, 2002), 33–35; and Avery O. Craven, *Soil Exhaustion as a Factor in the Agricultural History of Virginia and Mayland, 1606–1860* (Champaign: University of Illinois Press, 1926). For additional discussions about soil quality in the Piedmont, see chapters 2 and 3.

dominate the local consciousness, it was no longer the main crop throughout most of the state. Tobacco had been the "grand staple of Virginia, but its culture has for many years been on the decline." Instead, Palmer continued, "wheat is fast taking its place."[63]

Outside observers quickly recognized the Piedmont's agricultural weakness. One English observer, Morris Birkbeck, provided a number of brief descriptions of the commonwealth's landscape. During his trip between Richmond and Fredericksburg, he noted that the region was "a flat of rich alluvial soil, about a mile in breadth." This part of the state, he continued, was "the only part of the country that appears to be worth cultivating." Additionally, he noted that much of the rest of central Virginia was made up of "a pine forest." The soil in this area, which he termed the "high lands," was "strong and fruitful, forming the most agreeable portion of the state."[64] Once he left the Tidewater, his observations reflected the geological differences between the Tidewater and the Piedmont. After leaving Fredericksburg, Birkbeck noted, his group "took the stage to the River Potowmack." The region, he continued, was "hilly and extremely pleasant," but the soil was "not naturally rich, and seems to be exhausted by severe cropping."[65] Similarly, Thomas Palmer believed that Virginia's farmers did not properly use the fields for cultivation. "The whole system of Virginia agriculture," he noted, "with perhaps a few exceptions, is fundamentally and radically wrong." He argued that the farms were too large, making them "far beyond the means of the cultivator." As a result, "The land consequently in a few years

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[63] Thomas H. Palmer to "My Dear Friend, 30 May 1814, Richmond, Va., in "'Observations Made During a Short Residence in Virginia': In a Letter from Thomas H. Palmer, May 30, 1814," John Cook Wyllie, ed., *VMHB*, 76 (October 1968): 390.

[64] Morris Birkbeck, *Notes on a Journey in America from the Coast of Virginia to the Territory of Illinois* (Philadelphia, Penn.: n.p., 1818), 30.

[65] Birkbeck, *Notes on a Journey*, 31–32.

becomes literally good for nothing, and more woodland must be cleared for future operations."[66] Opening more lands provided additional areas for cultivating the wheat and corn that replaced tobacco as the main crop in the commonwealth. Doing so also exhausted the soil more quickly than any of the farmers expected.

The farms of the Piedmont sapped the soil of its nutrients leading to another significant shift in the regions environment during the mid-nineteenth century. Between 1810 and 1840, the Piedmont was marked with the plantations and farms that first turned it into a prominent political and economic power of the state. Mills throughout the region took advantage of the fall lines that marked the geologic regions eastern boundary while also providing for more significant trade of their products, especially through the alcohol trade.[67] Many farmers began to move away from the concepts of rotating crops in the fields. Rather than follow indigenous practices and Thomas Jefferson's agricultural thoughts, Virginia's farmers listened to a new prominent agriculturalist, Edmund Ruffin. While Ruffin is most famous for his role as a fire-eater in the years leading to the Civil War, he first came to prominence through his publications of his thoughts on agricultural practices. Unlike Jefferson, Ruffin initially promoted practicing monoculture and yearly planting throughout one's property. Farms throughout Virginia, especially in the northern Piedmont, lost their agricultural prominence.[68]

By 1840, most of northern Virginia had become fallow. The monoculture practice of many of the farmers, especially in tobacco and wheat, had sapped most of the soil of its

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[66] Palmer to "My Dear Friend," 30 May 1814, in "Observations Made," Wyllie, ed., *VMHB*, 392.

[67] For more on the Early Republic's alcohol trade and the impact of agricultural production, see Rorhbach, *The Alcoholic Republic*, 85–86.

[68] Edmund Ruffin, quoted in Morgan, *American Slavery, American Freedom*, 132n42.

nutrients. Without the ability to rotate their crops, many of Virginia's farmers on the northern Piedmont left their lands, moving west and leaving many of the fields uncultivated. It was no longer marked with the fields of wheat and corn along the small farms. Instead, travelers saw fields of brush and second-growth woodlots. With most of the fields abandoned, prices plummeted enticing Northern farmers to the region.[69] Those farmers immediately went to work trying to replenish the soil's nutrients. Committing to a decade long transformation, the lands eventually returned to prominence throughout northern Virginia.[70] Even with farms once again returning to form, many of the fields remained fallow or overtaken with woodlots. These farms, woodlands, and streams formed the landscape that Civil War soldiers encountered when they arrived in northern Virginia.

*The War's Transformation*

The physical landscape of Virginia's Piedmont became a central focus of the Civil War armies from the outset of the conflict. From 1861 to the summer of 1862, northern Virginia became the focal point of two prominent armies. Union and Confederate soldiers and officer first confronted the Piedmont environment when they arrived outside of Washington, D.C., in preparation for what became the First Manassas (Bull Run) Campaign in the summer of 1861. Many of the men in the two forces, initially known as the Union Army of Northeast Virginia and the Confederate Army of the Potomac, had never been to nor seen the landscape of northern Virginia prior to the summer of 1861. This first experience in battle blindsided many of the soldiers in a number of ways. With most of the soldiers having

[69] Richard H. Abbott, "Yankee Farmers in Northern Virginia, 1840–1860," *VMHB* 76 (January 1968): 56. For a more extensive discussion about the soil exhaustion prior to the American Civil War, see chapter 2.

[70] Abbott, "Yankee Farmers in Northern Virginia," 56–63.

never been in battle before, the fighting placed them in a new world. Shrieks of dying and wounded men filled the air. The soldiers could barely see through the smoke lingering over the fields. Bullets and shells whizzed and screamed through the air. A number of soldiers on both sides decided it was too much and broke from the field, but the majority of the men stayed and fought along the fields of the Matthew and Henry farms. In the end, after about six hours of fighting the battle came to a close as a Confederate victory.[71]

The battle was not the only new experience for many of the soldiers. Northern and southern troops alike first came into contact with northern Virginia's environment during this initial campaign of the war. July and August are the two worst months of the summer when it comes to temperatures and weather. Hot, humid days mark a trend for those two months, especially for July 1861. Being in this hot and humid climate caused the soldiers to suffer. The weather, according to historian Kenneth W. Noe, influenced the decisions of both the Union and Confederate commanders, Irvin McDowell and P.G.T. Beauregard respectively. Rainstorms slowed the Union push into the region and the Confederate pursuit after their victory. McDowell also attempted to avoid the heat of the day during the battle of 21 July 1861 by ordering the assault against the Confederate position to begin before sunrise. Dry weather for the majority of the week-long campaign caused the soldiers to march through massive dust clouds, making it difficult for them to breathe and slowing their progress further. The dust quickly turned to mud as rain fell in the aftermath of the battle. A number of soldiers suffered dehydration and heatstroke while on the move. To reverse those effects, the

[71] For the sensory experience of the soldiers at First Manassas, see Mark M. Smith, *The Smell of Battle, the Taste of Siege: A Sensory History of the Civil War* (New York: Oxford University Press, 2015), 39–65. For more on the first battle, see John J. Hennessy, *The First Battle of Manassas: An End of Innocence, July 18–21, 1861* (1989; repr., Mechanicsburg, Penn.: Stackpole Books, 2015); and David Detzer, *Donnybrook: The Battle of Bull Run, 1861* (Orlando, Fla.: Harcourt, 2004).

soldiers drank from local waterways and consumed berries for the juice. By the end of the day of fighting, the field of battle was littered with debris from the two armies, completely transforming the landscape in the process. While this first experience in northern Virginia showed the soldiers and officers their vulnerability to their surroundings, they still remained unprepared for the environmental factors that persuaded their actions one year later.[72]

Within the first year of the conflict, northern Virginia's environment started to reflect the reciprocal impact of the human-environment relationship that came with military campaigns. While the newly christened Union Army of the Potomac reorganized and trained in the defenses around Washington, D.C., the continued presence of Confederate troops—at the time also designated as the Army of the Potomac—placed strain on local environmental resources, especially timber, as they prepared for the upcoming winter. One Confederate engineer requested almost thirty thousand yards of timber for constructing platforms for artillery on the defenses near Bull Run.[73] Another Confederate soldier, R. P. Scarborough, wrote to his cousin that the Confederate regiments prepared for the winter by establishing timber constructed lodgings near their defenses. His regiment, more specifically, built solid structures that included fireplaces and protected the men from "the bleak winds that come

[72] Kenneth W. Noe, "Heat of Battle: Climate, Weather, and the First Battle of Manassas," *Civil War Monitor* 5 (Fall 2015): 54–62, 76. For the temperatures during the campaign, see "Register of Meteorological Observations, Under the Direction of the Smithsonian Institution, Adopted by the Commissioner of Patents for His Agricultural Report," Georgetown, D.C., July 1861, microfilm, T907, *Climatological Records of the Weather Bureau*, r. 81, RG 27, Records of the Weather Bureau, NARA II.

[73] David B. Harris, "Special Requisition," David B. Harris 1861 Papers folder, MNBPL. Harris requested a total of 89,544 feet (29,848 yards) of timber for artillery platforms alone for the defenses in northern Virginia.

whistling from the icy mountains of the Yankee possessions."[74] Out of this type of military necessity, the forested areas of northern Virginia quickly became overwhelmed.[75]

Of a similar note, Scarborough reported that the men of his regiment had found relief in going into winter quarters. At this early stage of the war, soldiers on both sides suffered from diseases that typically were associated with urban living in the nineteenth century. After writing to his cousin his relief in hearing that some of his neighbors were recovering from a recent illness, he noted, "Perhaps there has never been such a time of sickness through the south as has been this past summer and fall." He continued, "Many of our gallant soldiers have lost their lives on the soil of Virginia from disease. A great many more have died from disease than have been killed with powder and lead." After having constructed and moved into their winter huts, Scarborough reported, "The health of our company has been improving."[76] Since armies in the nineteenth century basically were large, movable cities, the many rural boys who occupied the ranks became susceptible to diseases from early in the war. As the armies moved, many of these diseases subsided to a certain extent. The continued presence of forces as large as many cities in the United States in the nineteenth century meant the spread of disease had a significant impact on the experience of Civil War soldiers. Many of these diseases were linked to natural features on which they camped, marched, and

[74] R. P. Scarborough to his cousin, 31 December 1861, R. P. Scarborough Ltr 11/22/61 folder [hereafter cited as Scarborough folder], MNBPL.

[75] Historian Megan Kate Nelson more thoroughly describes and tracks the destruction of southern woodlands for military purposes in her work. See Nelson, *Ruin Nation: Destruction and the American Civil War*, UnCivil Wars Series (Athens: University of Georgia Press, 2012) 103–59.

[76] Scarborough to his cousin, 31 December 1861, Scarborough folder, MNBPL.

fought.[77]

While the Confederate forces in northern Virginia consumed most of the natural resources there during the winter of 1861-62, they also managed to destroy some of the constructed environment before retreating to Fredericksburg in March 1862. *Photo: Ruins at Manassas Junction, Va. After its evacuation by Confederates, March, 1862, LC-DIG-ppmsca-33397, Library of Congress Prints and Photographs Division, Washington, D.C.*

*Figure 5*

The Confederate troops remained in northern Virginia until late February and early March 1862. At that point, Maj. Gen. Joseph E. Johnston decided to abandon the position for defenses near Fredericksburg, Virginia, and the war's impact on the landscape already started to appear. Two Georgia soldiers described the region as having a "sort of dissipated look . . . a haggard appearance." Once the Union forces began to move into the region, they reported a similar landscape. Sanford Truesdell of the 122nd New York Infantry portrayed the region to his sister. He found "the surrounding countryside to be 'almost completely deserted' and 'ruined.'" As his regiment approached Culpeper, Virginia, he noted that he "had not seen 'a

[77] Kathryn Shively Meier explores the relationship between nature and soldiers' health in the Peninsula and Shenandoah Valley campaigns in 1862 more specifically. See Meier, *Nature's Civil War: Common Soldiers and the Environment in 1862 Virginia* (Chapel Hill: University of North Carolina Press, 2013).

field of grain of any kind.'"[78] As the Union troops once again took control of northern Virginia, they already believed the landscape had become a wasteland. By the time Maj. Gen. John Pope took command of the newly formed Army of Virginia on 26 June 1862, the concept of the region being a wasteland seems to have been more about the soldiers' perceptions than the reality.

Even early in the summer of 1862, Union officers recognized the need to understand, at least, the geography of Virginia, if not the larger environmental pieces of the state. Col. David Hunter Strother, a Virginia Unionist in Brig. Gen. Franz Sigel's corps, played a key role in Pope's understanding of the commonwealth. Coming from the Mississippi River Valley, Pope had little knowledge of Virginia's environment and terrain before arriving in the field personally. Strother first offered his knowledge of northern Virginia on 30 June when meeting with Pope for breakfast in Washington, D.C. He so impressed Pope with his knowledge that the commander "said he must have me with him" during the operations. On 2 July, he recorded "How singularly and how frequently has the aimless knowledge gathered up in my earlier days been turned to my advantage." His ability to use his "idleness" to study random topics had become a major advantage as it had "turned up trumps."[79] Environmental factors in northern Virginia caught the eye of a number of officers and soldiers even before the beginning of the Second Manassas Campaign. Pope's concern over the region's topography led him to request Strother's presence during the campaign. He recognized the

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[78] Melvin Dwinnell and Hamilton Branch quoted in Warren Wilkinson and Steven E. Woodworth, *A Scythe of Fire: A Civil War Story of the Eighth Georgia Infantry Regiment* (New York: HarperCollins, 2002), 120; and Sanford Truesdell to his sister, quoted in William G. Thomas, *The Iron Way: Railroads, the Civil War, and the Making of Modern America* (New Haven, Conn.: Yale University Press, 2011), 101. For more on Johnston's decision to fall back to Fredericksburg, see chapter 4.

[79] David Hunter Strother, *A Virginia Yankee in the Civil War: The Diaries of David Hunter Strother*, Cecil D. Eby Jr., ed. (Chapel Hill: University of North Carolina Press, 1961), 65–66.

importance of the terrain to the operation. How other environmental factors would impact the campaign remained a mystery for the soldiers and officers.

Virginia's ecology had gone through massive changes for most of the region's history. From the earth's creation through the spring and early summer of 1862, natural and human evolutions directly transformed the landscape that the soldiers of the Army of Virginia and the newly designated Army of Northern Virginia would call home for the three months of the campaign. The campaign in the summer of 1862 would witness an even greater impact on the human-environmental relationship. The two armies, basically two moving cities, both transformed and were challenged by the region's ecology. Four of these environmental factors—agriculture, the weather, water, and animals—became central factors in the experiences of the men and women who fought and lived in the region during the operation. Just as modern Americans can look back at physical remnants of our past, the environmental ghosts of Virginia swayed the Second Manassas Campaign.

## Chapter 2
## The Landscape of Supply: Northern Virginia's Agriculture

In a diary entry on 5 August 1862, one of Confederate cavalry commander Maj. Gen. J.E.B. Stuart's staff officers and relative James Hardeman Stuart recorded his thoughts on the landscape near the house where he had stopped to visit a friend, "Mr. Bernard." While at Bernard's house, Gaymont, Stuart wrote it was "a most charming place on a hill commanding the country," giving him a view that extended for "many miles around." Stuart continued, "It is an Eden if there is one on earth. You could see the Rappahannock winding for miles from N.E. to S.W." He noted that in the distance the "highlands seemed to meet the blue heavens, while around were broad fields and high hills. What a beautiful place. Oh, if only I was the fortunate owner of such a paradise."[1] Despite Stuart's praise for the Virginia landscape, few soldiers and even fewer locals felt the same way about the Piedmont in northern Virginia.

One farmer, Isham Keith of Fauquier County, made sure to record his experience with the "hard hand of war" and chronicled his lost property during the summer of 1862. Primarily, Keith noted, the Union soldiers, who had marched through in May, June, July, and August before returning in November, targeted his crops when ransacking his land. He logged that they had taken fifty barrels of corn from the 1861 yield and 190 barrels from that year's harvest, all totaling about 9,600 pounds. Additionally, the men confiscated seven hundred bushels of wheat, one hundred bushels of potatoes, and seven hundred bushels of oats, totaling almost $3,500 worth of crops throughout the summer, practically clearing his

[1] James Hardeman Stuart, diary entry, 5 August 1862 in *With Pen and Saber: The Letters and Diaries of J.E.B. Stuart's Staff Officers*, ed. Robert J. Trout (Mechanicsburg, Penn.: Stackpole Books, 1995), 86–87. Although the Rappahannock River runs in a general northwest to southeast trajectory, Gaymont sat along the banks of the river where the waterway curled from the northeast to the southwest when looking at it from the northern bank.

farm.[2] Keith's experience would be the common one for northern Virginia's farmers during Second Manassas. With both sides clearing out most Piedmont farms, soldiers and farmers rarely considered the region a paradise. Instead, they saw it as a desolate wasteland.

For most white Americans, control over the environment in the mid-nineteenth century marked progress and civilization. Agriculture was the prominent example of this concept—the ultimate form of environmental manipulation through human action. Prior to the Civil War, armies had consistently relied on this manipulation. The local farmers' abilities to work their land, was central to the soldiers' capacities to maintain and supplement their supplies. As historian Donald W. Engels argues, the logistics of a pre-mechanized army were dependent on the climatic and, especially, agricultural conditions of the regions through which they marched. For many commanders, they made conscious decisions to follow the most agriculturally productive regions and took those conditions into consideration when creating a route for their army. Although Engels applies this theory to Alexander the Great and the Macedonian Army as it moved through the Middle East, these same concepts are present in the movement and logistics of Civil War armies.[3] Union and Confederate soldiers constantly looked to supplement their rations on the agricultural production of local farmers.

Based on locals' and soldiers' accounts of northern Virginia in general, the Piedmont

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[2] Isham Keith, "Losses Sustained by Me and Injuries Done Me by the Federal Army in the Months of May, June, July, August, and November 1862," Mss1K2964a, Section 14, Keith Family papers, VHS [hereafter cited as Keith, "Losses Sustained," Mss1K2964a, Sec. 14, Keith Family papers, VHS]. The weight of the wheat in pounds was 42,000 based on one bushel weighing sixty pounds. The Union troops also took a total of 22,400 pounds of oats (32 lbs./bushel) and 6,000 pounds of, I believe, "Irish potatoes" (60 lbs./bushel). For the weights of the bushels of different crops, see "G4020, Tables for Weights and Measurements: Crops," University of Missouri Extension website, http://extension.missouri.edu/publications/DisplayPub. aspx?P=G4020, and "Bushel/weight table," North Country Organics website, http://norganics.com/index-2/technical-articles/bushelweight-table/, accessed 30 August 2017.. These measurements will act as the basis for all of the weights used throughout this chapter.

[3] Donald W. Engels, *Alexander the Great and the Logistics of the Macedonian Army* (Berkeley: University of California Press, 1972), 9–10.

retained much of its prewar agricultural production in the spring and summer of 1862. Once the Army of Virginia received Pope's infamous general orders, they took the liberty to feed themselves from local produce. Confederate soldiers also turned to local agriculture to maintain their logistical needs as they constantly remained on the move throughout the summer. As the Union and Confederate forces moved through the region that summer, the agricultural production of the region would be almost completely depleted. Primarily, the blame for this type of transformation has fallen on Union forces. Although the Union troops would make the most of northern Virginia's farming in the summer of 1862, they should not receive the full blame for the reduction of the area's agriculture as the Confederates also contributed to the region's depletion.[4] While both sides deserve some blame for the agricultural crisis, the soldiers should not be held entirely culpable. The Piedmont's geology, climate, weather, and soil composition added to the resulting agricultural exhaustion. Crop yields before 1862 had exceeded the true capabilities of the soil. Hundreds of thousands of additional soldiers simply exposed this. In the end, the combination of human and natural elements transformed northern Virginia as the locals knew it after the summer of 1862.[5]

[4] For example, see Mark Grimsley, *The Hard Hand of War: Union Military Policy toward Southern Civilians, 1861–1865* (New York: Cambridge University Press, 1995); and Daniel E. Sutherland, *Seasons of War: The Ordeal of a Confederate Community, 1861–1865* (New York: The Free Press, 1995). Although historians have written about the Confederate and Union occupations of northern Virginia through the first year of the war, few have centered their studies on the relationship between the occupations and campaigns and the environment, especially during the summer of 1862. Typically, these historians believe that the presence of the Union army in northern Virginia caused the majority of the destruction that took place in the region before 1863. These studies still leave gaps in the environmental history of northern Virginia's counties during the conflict. See John J. Hennessy, *Return to Bull Run: The Campaign and Battle of Second Manassas* (1993; repr., Norman: University of Oklahoma Press, 1999); Daniel Sutherland, *Seasons of War: The Ordeal of a Confederate Community, 1861–1865* (New York: The Free Press, 1995); and Don Johnson, *Thirteen Months at Manassas/Bull Run: The Two Battles and the Confederate and Union Occupations* (Jefferson, N.C.: McFarland and Company, 2013).

[5] Micah S. Muscolino, *The Ecology of War in China: Henan Province, the Yellow River, and Beyond, 1938–1950* (New York: Cambridge University Press, 2015), 6–7.

Seen here are the remnants of the farm house of Judith Henry, the 85 year-old civilian killed in the First Battle of Manassas. After being damaged during the battle, Confederate and Union troops employed it for firewood. Notice the barren landscape in the early spring. This was partially a result of the natural cycle, but also a result of the presence of two armies in the first year of the war. *Photo: Bull Run, Va. Ruins of Mrs. Judith Henry's house, LC-DIG-cwpb-00972, Library of Congress Prints and Photographs Division, Washington, D.C.*

*Figure 6*

*The Agricultural Weakness of Northern Virginia before 1862*

The development of agricultural production in northern Virginia that matched the crop yields of 1860 went through multiple difficult transitions from colonial settlement to the mid-nineteenth century. Much of the difficulties resulted from the region's soil. Primarily, the counties of northern Virginia reside along the southern Piedmont, a region that extends from central Alabama through North and South Carolina ending in northern Virginia. The region was, and is, recognized for its rolling landscape, consisting of "frequent hill and sloping ground" and consists of "the Cecil, Helena, and Appling soil series," which were "highly erodible." For those who settled along the Piedmont, the soil "never took well to American food production." Historian Steven Stoll notes that by the "first decade of the

nineteenth century portions of [the Piedmont] had begun to give out."[6] From the beginning of European settlement, farmers who settled the Virginia Piedmont faced an ecological hurdle to becoming a productive region. In reality, the region that the two armies marched and fought over in the summer of 1862 should never have been agriculturally viable purely from its soil.

In conjunction with the poor soil that naturally occurred in northern Virginia, farming practices throughout the eighteenth and early nineteenth centuries also shaped agricultural production. Although the region became relatively productive by the mid-nineteenth century, in the early half of the century, a number of prominent Virginians were concerned with agricultural production in the state. By 1800, many farmers feared the lands of northern Virginia had been exhausted under the existing agricultural practices, which completely depleted the soil's nutrients and failed to restore them in any manner. Typically, Native Americans and many European farmers avoided planting the same crops in the same plots every year. They cycled their crops, placing more nutrient rich seeds in the ground that had been depleted, and used controlled burning of woodlots or other byproducts of agriculture to restore their lands. With the introduction of domesticated animals, manure also helped repair the landscape in a number of regions where European settlers embraced the practice, primarily in the North.[7]

Virginia's farmers in the late eighteenth and early nineteenth centuries refused to

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[6] Steven Stoll, *Larding the Lean Earth: Soil and Society in Nineteenth-Century America* (New York: Hill and Wang, 2002), 136; and James C. Barker, "Part VI-Soils of Virginia," *Agronomy Handbook*, Virginia Cooperative Extension, Virginia Polytechnic Institute and State University, p. 72, https://pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/424/424-100/PDF_part6.pdf, accessed 16 January 2018.

[7] William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill and Wang, 1983), 47–51; and Stoll, *Larding the Lean Earth*, 8–9, 33

embrace these practices. British travelers continually noted the depleted, downtrodden look of the Virginia landscape. One traveler even wrote, "Virginia is in rapid decline."[8] Much of the landscapes ruination emerged from the practice of a "three-crop system" in the region. Even after the turn away from tobacco cultivation—something that already exhausted the soil's nutrients—farmers rarely gave their lands a break to recover after a year of planting. Instead, the farmers would rotate between wheat, corn, and an open field with "no cover crops."[9] The crops continued to sap the nutrients from the already weak Piedmont soil, making farming increasingly difficult in the region through the early nineteenth century.[10]

By the 1840s, northern Virginia had transformed into a true wilderness compared to its eighteenth century agricultural production. As historian Richard Abbott describes, northern Virginia had become "extensive tracts of waste land alternated with patches of timber," the type of landscape many Americans feared indicated a lack of civilization.[11] With this new wilderness, "Land values had dropped to the point where" northern farmers migrating to Virginia in the 1840s could "purchase farms at prices ranging from five dollars to fifteen dollars an acre."[12] The wasted region quickly changed with the arrival of "Yankee farmers" from the mid-Atlantic region and a push from agriculturalists Edmund Ruffin and Willoughby Newton. As Abbott notes, "The arrival of these northern immigrants coincided with a renewed attempt on the part of Virginia planters to revitalize the state's agricultural

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[8] William Strickland quoted in Stoll, *Larding the Lean Earth*, 32.

[9] Stoll, *Larding the Lean Earth*, 33.

[10] Stoll, *Larding the Lean Earth*, 33–35.

[11] Richard H. Abbott, "Yankee Farmers in Northern Virginia, 1840–1860," *VMHB* 76 (January, 1968): 56. For more on perceptions of wilderness and civilization, see Roderick Nash, *Wilderness and the American Mind* (New Haven, Conn.: Yale University Press, 1967).

[12] Abbott, "Yankee Farmers in Northern Virginia," 56.

economy." Once they arrived, in conjunction with Ruffin's and Newton's work, "the more progressive planters were adopting new farming techniques designed to revive the fertility of their soil and halt the decline of land values."[13] The efforts paid off as observers soon reported seeing the landscape returning to its pre-1840s look. One traveler believed that Fairfax County had "improved so much that a traveler who had passed through it ten years earlier would not recognize it."[14] The work of those northern farmers and agriculturalists like Edmund Ruffin returned northern Virginia to a thriving farmland in the mid-nineteenth century.

Despite the problems with the local soil and the poor farming practices of the early nineteenth century, by the beginning of the Civil War, northern Virginia had become a comparatively strong agricultural region. For example, Prince William County, the county where both battles of Manassas occurred, maintained fairly strong agricultural production in 1860. According to the Eighth U.S. Census, the majority of the county's acreage had been "improved for farming." Out of 174,099 acres in the county about fifty-six percent of the lands—97,353 acres—were used for farming.[15] Prince William County matched many of the most agriculturally productive counties in the United States. Using Marion County, Illinois, as a point of comparison—a county occupying land along the same latitude as Prince William, but in a region considered the breadbasket of America in the nineteenth century—the numbers show that the place of agriculture in Virginia was similar to the more agriculturally centered state of Illinois. Marion County also had mostly "improved" the land

[13] Abbott, "Yankee Farmers in Northern Virginia," 56.

[14] Abbott, "Yankee Farmers in Northern Virginia," 58.

[15] Joseph C. G. Kennedy, *Agriculture of the United States in 1860 Compiled from the Original Returns of the Eighth Census, under the Direction of the Secretary of the Interior* (Washington, D.C.: GPO, 1864), 158.

for farming. Marion County consisted of 178,533 acres and about fifty-five percent of the county—97,592 acres—was maintained for agriculture. Prince William and Marion Counties used almost an equal amount of land for agricultural production and, perhaps surprisingly, the results were similar.[16]

The two counties produced comparable crop yields in 1860. For example, although Marion County had a predominantly higher yield of "Indian corn"—911,200 bushels as opposed to 188,270 bushels in Prince William County, wheat and hay production was fairly close—77,879 bushels in Marion County as compared to 54,069 bushels in Prince William County and 6,411 tons versus 4,239 tons, respectively—and Prince William out produced Marion County in rye, oats, both "Irish" and sweet potatoes, barley, and buckwheat.[17] These statistics provide an opportunity to question an assumption about northern Virginia's agriculture and environment, especially in Prince William County, on the eve of the Civil War. Prince William maintained similar yields to those of a county from a state that was considered an agricultural power—primarily due to the nutrient rich soils of the Mississippi River region—in the mid-nineteenth century, making the counties apparently viable for

[16] Kennedy, *Agriculture of the United States in 1860*, 30.

[17] The total weight of the Indian corn production in pounds was 57,405,600 pounds in Marion County and 11,861,010 pounds in Prince William County (63 lbs./bushel). The weight of the wheat production in pounds was 4,672,740 in Marion County and 3,244,140 in Prince William County (60 lbs./bushel). Prince William County yielded 11,403 bushels of rye [638,568 pounds (56 lbs./bushel)]; 96,489 bushels of oats [3,087,648 pounds (32 lbs./bushel); 14,445 bushels of "Irish potatoes" [866,700 pounds (60 lbs./bushel)]; 1,043 bushels of sweet potatoes [52,150 pounds (50 lbs./bushel)]; 87 bushels of barley [4,176 pounds (48 lbs./bushel)]; and 1,970 bushels of buckwheat [98,500 pounds (50 lbs./bushel)], whereas Marion County produced 4,296 bushels of rye [240,576 pounds]; 38,277 bushels of oats [1,224,864 pounds]; 1,487 bushels of "Irish potatoes" [89,220 pounds]; 170 bushels of sweet potatoes [8,500 pounds]; no bushels of barley; and 950 bushels of buckwheat [47,500 pounds]. Statistics for Prince William can be found in Kennedy, *Agriculture of the United States in 1860*, 158–61. Statistics for Marion can be found in Ibid., 30–33.

agricultural production.[18] The concept that the South was not agriculturally strong enough to produce food for its armies starts to become a question of what was farmed rather than what were the problems with soil in the Southern states, something that historians point to as a significant factor in the Confederacy's poor crop yields during the war.[19] Prince William counties' neighbors experienced equal, if not higher, yields in 1860. Leading into the conflict, all five counties seemed to have restored the agricultural viability of the region when compared to other counties in more prominent agricultural states.[20] With the revival of farming in northern Virginia, the agricultural landscape would become central to the movement and supply of the two armies in the region during the Second Manassas Campaign.

Over the summer of 1862, the return of viable farmlands attracted the armies' attention, but the renewal of northern Virginia's agricultural strength quickly came into question with the presence of thousands of hungry soldiers and millions of animals. The crop yields of northern Virginia seemed impressive. Adding extra pressure on the landscape would leave behind immense waste that would transform northern Virginia's agricultural landscape. For the Union and Confederate forces, especially the Union Army of Virginia in the summer of 1862, supplying the armies proved incredibly difficult. By August 1862, as

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[18] For more on the agricultural power of Illinois, among the rest of the Midwestern United States, see R. Douglas Hurt, "The Agricultural Power of the Midwest during the Civil War," *Union Heartland: The Midwestern Home Front during the Civil War* (Carbondale: Southern Illinois University Press, 2013), 68–96.

[19] See, Avery O. Craven, *Soil Exhaustion as a Factor in the Agricultural History of Virginia and Maryland, 1606–1860* (Champaign: University of Illinois Press, 1926); and Andrew F. Smith, *Starving the South: How the North Won the Civil War* (New York: St. Martin's Press, 2011).

[20] In fact, the four counties neighboring Prince William out produced that county in wheat and corn by a substantial amount. Culpeper County produced 191,358 bushels of wheat and 442,191 bushels of Indian corn; Fairfax County produced 123,871 bushels of wheat and 445,527 bushels of Indian corn; Fauquier produced 49,318 and 263,225 bushels respectively; and Loudon produced 396,297 and 931,465 bushels respectively. See Kennedy, *Agriculture of the United States in 1860*, 154–61.

the Army of Virginia maneuvered through northern Virginia in response to the movements of Lee's army, they found the supply of rations hauled out from Washington running low. After taking command and joining the Army of Virginia in June 1862, Pope had transferred control over the local roads and railroads, the lifeline of Union logistics in northern Virginia, from Col. Herman Haupt to Quartermaster General Colonel Robert E. Clary. With this change, Union logistics fell apart, making it difficult for the government to supply the soldiers.[21] In response, Enos B. Vail, an infantryman in the Twentieth New York State Militia, noted, the soldiers attempted to live off the land. The only available food sources, according to Vail, were corn and potatoes. He wrote that the men attempted to sustain themselves solely by roasting these crops once they confiscated them. "The result of that kind of living," Vail continued, "was that we were hungry all of the time."[22] As National Park Service historian John J. Hennessy notes, the soldiers believed that the countryside did not provide the resources to feed the army as it moved through the region.[23] Due to the logistical struggles the Union and Confederate armies faced during the campaign, the local landscape became a focal point in the soldiers' and officers' attempts at maintaining and supplementing their supplies.

*Logistics and the Dietary Needs of Soldiers*

Much of this need for supplementing rations came out of the dietary needs of the soldiers on the march. The human body requires food to maintain its energy and metabolism. According to recent studies on the dietary needs of American soldiers, the typical male

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[21] Herman Haupt, *Reminiscences of General Herman Haupt* . . . (Milwaukee, Wis.: Wright and Joys, 1901), 69–70; and Hennessy, *Return to Bull Run*, 39.

[22] Enos B. Vail, *Reminiscences of a Boy in the Civil War* (New York: The Author, 1915), 74–75.

[23] Hennessy, *Return to Bull Run*, 38–39, 481n2.

soldier should consume around 4,500 calories while in the field during cold-weather operations. While cold weather primarily forces the human body to consume more calories, we can estimate that Civil War soldiers required somewhere around 3,500 to 4,000 calories per day on summer marches. One nutritionist from the nineteenth century estimated that men in "vigorous occupations" needed almost 5,600 calories. When in camp, the soldiers could easily maintain their caloric intake. A lack of movement benefitted the poorly supplied soldiers. For the men in the two armies in northern Virginia, continual movement on both sides meant they required larger amounts of calories to keep up the necessary energy.[24]

In the Second Manassas Campaign, soldiers had far from enough food supplied to them to maintain their energy needs. According to the rations of the U.S. Army in 1860, which both armies based their rationing on during the Civil War, soldiers received enough food to provide 2,500 to 4,000 calories per day, well below the recommended amount both in the late nineteenth century and today for a vigorous lifestyle. Additionally, if the caloric needs are based on the estimation provided above, the rations would barely cover the energy needs of Civil War soldiers when at rest (3,500 to 4,000 calories).[25] The established practice for providing subsistence in the Union forces was problematic as commissary officers relied

[24] Marion Nestle and Malden Nesheim, *Why Calories Count: From Science to Politics* (Berkeley: University of California Press, 2012), 70. For estimates on the amount of calories required to maintain fighting shape in extreme cold weather in the modern army, see Bernadette M. Marriott, et. al., *Not Eating Enough: Overcoming Underconsumption of Military Operational Rations* (Washington, D.C.: National Academy Press, 1995), 94.

[25] For U.S. Army rations in 1860, see Ludwell Lee Montague, "Subsistence in the Army of the Valley," *Military Affairs* 12 (winter 1948): 227. The caloric estimates for this project are based on a general average of different types of meat, meal, and starch. For example, certain cuts of beef average about 50 calories per ounce (about 1,000 calories per allowance). Bacon, a fattier meat, averaged about 150 calories per ounce (approximately 1,800 calories per allowance). Similarly, different types of flour would provide more or less calories for the men. However, based on the rations in the 1860 manual and the average of the different types of food sources for the army, the soldiers were supposed to receive between 2,500 and 4,000 calories. All calorie estimates come from www.CalorieKing.com.

on contractors to supply the necessary fodder and forage. Additionally, once the department's organization solidified, becoming more efficient, the quartermaster department—the entity in charge of moving the supplies—struggled to maintain supply routes, especially for an army on the move.[26] Troops commonly outran their supply lines, accidentally reducing their subsistence in the process.

To maintain maneuverability on the march, Civil War soldiers received rations for them to cook and carry when wagon trains would slow their progress. This limited the amount of available food during an army's movements. The armies tried to maintain viable logistical lines, typically via railroads or roads, as much as possible. Moving supplies over the established lines could take days, especially for those that relied on wagons. According to historian Erna Risch, horse-pulled wagon trains "averaged 2 ½ miles per hour" on well-maintained roads. One quartermaster officer, Risch notes, found that "even with his animals in prime condition and the roads good, it took 6 days to march from Centreville to Falmouth, Va., averaging less than 14 miles a day." Army wagons drawn by four horses "over good roads" had the ability to only carry 2,800 pounds and a six-mule team transported a "total of 4,000 pounds." When moving over poor roads, the wagons could only carry about 3,000 pounds at most.[27] James Gillette, the first brigade's commissary officer with the Army of Virginia's Second Corps, noted that his department required weekly supply runs to Washington, D.C., to maintain the necessary rations for the corps. "It takes about 40 wagon

[26] For issues in Union supply capabilities, see Erna Risch, *Quartermaster Support of the Army: A History of the Corps, 1775 – 1939* (Washington, D.C.: GPO, 1989), 382, 420–26.

[27] Risch, *Quartermaster*, 420, 423.

loads of grub to feed our men [for] one week."[28] Although Gillette indicates that the commissary department could maintain a strong supply line for the Army of Virginia, as mentioned earlier, the Union quartermaster general Clary struggled to bring forward a fraction of the necessary supplies, leaving the Union soldiers struggling to locate the necessary forage to maintain the army's energy.[29]

The Confederate subsistence officers' logistical system had become completely disheveled by August 1862. As they quickly moved against Pope's forces along the Rappahannock, Stonewall Jackson's chief mapmaker, Jedediah Hotchkiss, recorded that they had out marched their supply wagons. While they marched through the Blue Ridge to push toward the river, Hotchkiss and some fellow officers entered "an empty house" where they "slept . . . on the floor, supperless, as our wagon did not come up."[30] Similarly, Lieutenant John Hampden Chamberlayne of the Twenty-first Virginia Infantry Regiment wrote that the soldiers in Jackson's command had "brought no wagons" in their march on Manassas Junction after crossing the Rappahannock River.[31] Instead, they became almost exclusively reliant on the local landscape for the necessary food. Unlike the Union logistical system, the Confederate breakdown resulted almost entirely from their constant movement against the Union forces, first outside of Richmond against Maj. Gen. George B. McClellan and then

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[28] James Gillette to his Mother, 31 July 1862, Warrenton, Va., Correspondence 1862 Folder, Box 1, James Jenkins Gillette papers, 1857–1884, Manuscript Division, LC [hereafter 1862 Folder, Box 1, Gillette papers, LC].

[29] Haupt, *Reminiscences*, 69–70.

[30] Jedediah Hotchkiss, diary entry, 16 July 1862 in *Make Me a Map of the Valley: The Civil War Journal of Stonewall Jackson's Topographer*, ed. Archie P. McDonald (Dallas: Southern Methodist University Press, 1973), 62.

[31] John Hampden Chamberlayne to Martha Burwell Chamberlayne, 6 September 1862, Frederick City, Md., Folder 4, Section 1, Mss1C3552a, John Hampden Chamberlayne papers, 1858–1877, VHS.

along the Rappahannock River against Pope. Due to these quick and massive movements, the Confederates did not even attempt to preserve a traditional logistical line.[32] With the slow movements of the wagons and the constant motion of the two armies, soldiers had to get creative when looking for their subsistence while on the march.

Mostly, the troops themselves became responsible for keeping their rations when maneuvering. Just before making their massive movements against Pope in mid-August, Jackson's corps was ordered to cook three-days rations for their maneuvering. Once those rations ran out, they would turn to the countryside.[33] In another instance, soldiers in the Union Army of the Potomac, while preparing to reinforce the Army of Virginia, received orders to prepare ten days' worth of rations. Robert Knox Sneden of the Fortieth New York Volunteer Infantry Regiment remembered that the orders led to the "camp fires . . . blazing . . . in all directions."[34] As the armies made their way along the Virginia Piedmont, the commissary department and individual soldiers added to the agricultural stress of the region. When they ran out of their rations, they turned to local farms for replenishment.

*The End of the Piedmont's Agricultural Power*

This need for maintaining both humans' and animals' energy as well as the armies' general metabolisms caused the ruination of northern Virginia's agricultural abilities during and after the Second Manassas Campaign. Although most southerners and Confederate

[32] For more on the Confederate logistical issues see, Montague, "Subsistence in the Army of the Valley," 229–31.

[33] Susan Leigh Blackford and Charles M. Blackford, *Letters from Lee's Army; Or Memoirs of Life In and Out of the Army in Virginia during the War Between the States* (1947; repr., New York: A. S. Barnes and Company, 1962), 112.

[34] Robert Knox Sneden, diary entry, 12 August 1862, vol. 3, pt. 2, pg. 358, Robert Knox Sneden Diary, 1861 – 1865 (Mss5:1 Sn237:1), VHS [hereafter entry date, vol. 3, pt. no., pg. no., Sneden Diary, VHS].

soldiers would likely blame this lack of fodder on the presence of the Union soldiers, the perceived depletion of the local landscape started with the Confederate occupation of Fairfax and Prince William counties in the winter and spring of 1861 and 1862. In the aftermath of the First Battle of Manassas, the Confederate forces maintained their positions along Bull Run, causing the army to straddle the border of Fairfax and Prince William counties throughout the winter and early spring of 1861 and 1862.[35]

While maintaining this position, the Confederate units turned to local farmsteads for additional support. One farmer, John Moore, chronicled his experiences with Confederate soldiers and officers who raided his property for hay in November 1861. Moore was informed of the presence of Confederate soldiers on his property without his knowledge. When he arrived, he discovered a number of troops from the "5 or 6th South Carolina Regiment" standing on his two hay stacks, preparing them for loading. Moore went to multiple commanders requesting that they leave his hay for his own livestock. Each one refused, telling him that they "had instructions to take the first hay they came to and had brought forty armed men with them to enforce that order." Despite Moore's protests, the troops and their officers took all the hay, leaving Moore without fodder for his cattle and no compensation.[36] Even before the Union army arrived to occupy northern Virginia, Confederate troops had already shown the ability to clear out a single farm. With hundreds of thousands of additional troops arriving in the area in the spring and summer of 1862, northern Virginia's agricultural production faced even greater strains.

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[35] For a general study on the occupation of Prince William County, especially in the region around where the two battles were fought, see Johnson, *Thirteen Months at Manassas/Bull Run*.

[36] John Moore to M. Harrison, 12 January 1861, Aldie, Va., Mss1B1463, Section 22, George William Bagby Papers, VHS.

Once the Union Army of the Potomac under McClellan's command moved to Fortress Monroe on the southeastern tip of the James Peninsula to initiate the Peninsula Campaign in March 1862, the Confederate force under Gen. Joseph E. Johnston abandoned northern Virginia and moved to protect the Confederate capital of Richmond. Despite living among their own civilian population while occupying northern Virginia it appeared the Confederates had, at least in part, maintained their supply system through the local agriculture, consuming everything in their path and, apparently, transforming the landscape in the process. For example, Lt. Melvin Dwinnell of Company A of the Eighth Georgia Infantry Regiment wrote, "The blighting effects of war are sadly apparent, in this beautiful section where we now are."[37] Even prior to the Union forces entering northern Virginia, the region had seemingly become a depleted wasteland. After the Union army had moved through the area, Confederate soldiers mentioned additionally exhausted resources. When returning to Prince William County in the summer of 1862 during the Second Manassas Campaign, Edgar Warfield, a private in the Seventeenth Virginia, claimed the only food available for soldiers were apples and "green corn." Any other fodder had disappeared.[38]

Indeed, some Union soldiers portrayed a similar landscape when they first entered northern Virginia. When marching through the region with the 122nd New York Infantry, Sanford Truesdell described the destruction of the region to his sister. He found "the surrounding countryside to be 'almost completely deserted' and 'ruined.'" As the unit approached Culpeper, Virginia, almost sixty miles southwest of Washington, D.C., he

[37] Melvin Dwinnell quoted in Warren Wilkinson and Steven E. Woodworth, *A Scythe of Fire: A Civil War Story of the Eighth Georgia Infantry Regiment* (New York: HarperCollins, 2002), 120.

[38] Edgar Warfield, *Manassas to Appomattox: The Civil War Memoirs of Pvt. Edgar Warfield, 17th Virginia Infantry* (McLean, Va.: EPM Publications, 1996), 108.

recorded that he "had not seen 'a field of grain of any kind.'"[39] Another New York soldier observed, "Seed time and harvest have passed; and the planter finds his barns empty," a result, this soldier claimed, of the "famine and pestilence" that follows the "desolating track" of an "unnatural war."[40]

Deeper into the operation, John W. Ames of the Eleventh U.S. Infantry provided the most succinct description. "Such a beastly march and such a vile country! Not a drop of water the whole way," he rued, "clouds of thick red dust, a broiling sun, no air moving and uncertainty ahead." While he described the wasteland in Fauquier County in late August 1862, he had a different perspective as to the cause of the destruction. "Fauquier County is a used up place," he wrote, "not by the war – but by slavery." While unfamiliar with the true composition of the local soil, Ames declared that the Piedmont soil had been "once really excellent." By the time the Union troops arrived, it was "reduced to brick dust, overgrown with thorns" due to the cursed institution. Although cash crops had taken its toll on the local landscape before the Civil War, the soil itself was never meant to produce the amount of agriculture that had been harvested in the early 1860s.[41] With the presence of both Confederate and Union forces in northern Virginia to add to this stress, it seemed the countryside no longer produced the natural resources that added to the existing logistical system of the two armies. According to the soldiers in the field, northern Virginia had become a true wasteland.

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[39] Sanford Truesdell to his sister, quoted in William G. Thomas, *The Iron Way: Railroads, the Civil War, and the Making of Modern America* (New Haven, Conn.: Yale University Press, 2011), 101.

[40] J. Harrison Mills, *Chronicles of the Twenty-first Regiment New York State Volunteers* (Buffalo, N.Y.: Twenty-First Regiment Veterans Association of Buffalo, 1887), 202.

[41] John W. Ames to "My Dear Mother," 5 September 1862, Camp near Chain Bridge, Letters July 5–December 29, 1862 Folder, John W. Ames Papers, 1860–1863, USAHEC.

Despite this perceived depletion of fodder, forage, and other resources, agriculture bounced back enough for Union soldiers to again supplement their supplies by the early summer of 1862. The growing season for northern Virginia lasts approximately 238 days during good harvest seasons.[42] In 1862, this seemed difficult as uncooperative weather and a more general climate shift reduced crops in the United States. Agriculture in the early summer started to attract Union soldiers' attention. One young woman in Fauquier County, Ida Powell Dulany, remembered soldiers coming to her farmhouse in June seeking fodder. While listening to her mother "reading . . . service" on a Sunday morning, Dulany recalled "seeing the wheat field almost alive with Yankees riding some towards the house, some towards the upper end of the farm, trampling the wheat in every direction." Suddenly, she saw "another party escorting a long train of wagons through the wheat towards the house. Of course," she continued, "I knew they were coming for corn." Having encountered the soldiers only days earlier, Dulany attempted to talk the soldiers out of confiscating her corn. Although a number of the troops pushed their officers to take the corn, after a brief conversation, Dulany convinced the officers to leave her fodder. Instead, the regiment moved on to another farm, still looking for food. Clearly, by early summer 1862, agricultural production started to attract the Union soldiers' attention. Wheat was already growing strong. Corn had been harvested. These crops became key to Union and Confederate soldiers as they marched through northern Virginia. Despite her success halting the troops, Dulany's confrontation

[42] 238 days based off the average of days between the first and last freezes between the freeze temperatures of 16 degrees (at the lowest) and 32 degrees (at the warmest) in Culpeper County over thirty years. For the data for this average, see K. A. Rice, "Virginia," *Climates of the States*, Climatography of the United States no. 60-44 (Washington, D.C.: U.S. Weather Bureau, 1959), 4.

with the soldiers would become common throughout the region in the summer of 1862.[43]

Once Pope took command of the Army of Virginia, he issued a number of general orders to his soldiers implementing a new policy of supplying the army through regional production, specifically agricultural production. In General Orders nos. 5 and 6, Pope ordered, "The troops of this command will subsist upon the country in which their operations are carried on." He added, "No supply or baggage trains of any description will be used unless so stated specifically in the order for the movement." The army would rely almost exclusively on local food sources for both the men and horses.[44] Undoubtedly, some of the Confederate and Union soldiers had a different perception from Pope's about the environment of northern Virginia. By the summer of 1862, it would seem from the soldiers' descriptions, the region provided nothing for them. These perceptions do not provide the full story, for the descriptions of the local civilians and other Union solders show a much more productive environment.

According to contemporary accounts, the Army of Virginia relied primarily on the local landscape to supply itself as it moved through northern Virginia. During the conflict, contrary to what some of the Confederate and Union soldiers claimed, the five counties involved in the Second Manassas Campaign maintained a certain level of agricultural production that allowed the troops to live off the land to an extent. Many Prince William County claimants to the Southern Claims Commission noted the amount of wheat, corn, and hay the Union forces took during their movement through the area, showing that the local

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[43] Ida Powell Dulany, diary entry, 2 June 1862 in *In the Shadow of the Enemy: The Civil War Journal of Ida Powell Dulany*, Mary L. Mackall, Stevan F. Meserve, and Anne Mackall Sasscer, eds. (Knoxville: University of Tennessee Press, 2009), 99–100.

[44] General Orders, No. 5 and No. 6, July 18, 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 50.

farms still produced fodder that the Union forces employed. Based on the claims of local farmers, agriculture on the Virginia Piedmont continued with little reduction in crop yields in the first year of the Civil War. Unlike the descriptions of the Union and Confederate soldiers in the spring of 1862 that maintained agriculture had almost disappeared, farmers continued their planting shortly after the Confederate forces under Johnston retreated toward the Confederate capital of Richmond.[45]

The crop yields were fairly typical compared to pre-war numbers. The Union soldiers focused their foraging primarily on corn and wheat. They tended to take as much corn as possible. The Van Pelt family, originally from New Jersey, owned property near the banks of Bull Run. They reported that Union forces took 225 bushels (14,175 pounds) and fifteen barrels of corn in the summer of 1862, the majority of the crop yield that year. Additionally, the soldiers cut down timber around the property for use as fuel and construction material to replace the Stone Bridge over Bull Run.[46] Similarly, Rebecca and Sally Sexsmith testified

[45] Much of the civilian story in the chapter comes from previous research I had completed in the Southern Claims Commission records for Prince William County that emerged after the war. Although useful, one must be careful when employing the Southern Claims Commission when attempting to get a truthful description since many farmers attempted to overestimate their property that was damaged and sectional politics, primarily loyalty to the Union or Confederacy, played a role in whether they were accepted or not. Yet, a careful reading of these sources can provide some insight on the local environment during the war. Due to some of these concerns, I chose twelve approved claims to include in this study. These will be the claims of Daniel Amidon, Julia F. Claggett, Robert M. Clark, George W. Joy, Matthew King, T. Mason Manchester, Alfred Murphy, George W. Robertson, James Robinson, George Roseberry, Rebecca Sexsmith, and Elizabeth A. Van Pelt. Three reasons have led to this decision. First, these twelve claims all report property taken during the spring and summer campaign of 1862, limiting this project and the information used to a time within the first year of the war. Second, these claimants seem to represent the typical size of the farmsteads (between 70 and 270 acres) and the typical crops yields and livestock owned in northern Virginia. Finally, these twelve claimants owned lands throughout Prince William County rather than being clustered in one area. Other accounts from farmers and civilians in the adjoining counties—Culpeper, Fairfax, Fauquier, and Loudon—will be used to supplement the Claims Commission records.

[46] Claim of Elizabeth A. Van Pelt, Claim no. 36994 (1874), p. 2, Prince William County, Settled Case Files for Claims Approved by the Southern Claims Commission, 1871–1880, Virginia, M2094, roll 35, Records of the Accounting Officers of the Department of the Treasury, RG 217, NARA [hereafter cited as Claimant's name (after first citation), Claim no. (Year), p. no., Prince William County, Claims Approved, SCC, Virginia, M2094, r. no.].

that Union troops took twelve bushels (720 pounds) of wheat, twenty barrels of corn, and approximately six thousand pounds of hay.[47] George W. Roseberry also reported the Union forces taking substantial amounts of corn—130 bushels (8,190 pounds).[48]

Although soldiers and civilians maintained conflicting descriptions of the agricultural landscape, the apparent reality fell somewhere in between. In the process of describing his men's movements before the Battle of Cedar Mountain, the first pitched fight of the Second Manassas Campaign, during a presentation in 1882, Confederate lieutenant general Jubal A. Early laid out the landscape that his men marched over to the audience. Many Civil War battles took place on the open farm fields of the South, and northern Virginia experienced the same. During Cedar Mountain, Early's men dealt with small woodlots and streams that cut through the open fields of the nearby farmsteads, forcing them to maneuver around these minor barriers. Once they negotiated the broken fields, the Confederate troops marched into the uncluttered fields near Cedar Run at the base of the mountain. When moving into the open, Early remembered, "The position which I now occupied, was in an uncultivated field in Mrs. Crittenden's farm." To his division's right sat a small clump of trees that marked "the most elevated part of the ground." From there the ground sloped to Cedar Run, which separated the Confederate troops from the cultivated landscape.[49] Beyond Cedar Run and "two small drains," Early recorded, a wheat field and cornfield marked the landscape near the base of Cedar Mountain. Although Early did not provide a specific description of the wheat

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[47] Claim of Rebecca Sexsmith, Claim no. 36650 (1874), p. 2, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 35, RG 217, NARA.

[48] Claim of George W. Roseberry, Claim no. 41835 (1875), p. 2, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 35, RG 217, NARA.

[49] Jubal A. Early, *Jackson's Campaign Against Pope in August 1862* . . . (Baltimore, Md.: Foley Bros. Printers, 1883), 12.

field, he noted that the "growing corn" concealed his men as it "was more than head-high."[50] Although some of the fields had fallen fallow, the farmlands had not been completely depleted by the beginning of the Second Manassas Campaign. The amount of production coming from the local landscape would be key to supplementing Union and Confederate logistics during the summer of 1862.

Even with the perception of the depleted landscape, Union soldiers connected themselves to the farm fields of northern Virginia throughout the operation. Primarily, they targeted corn while on the march. On multiple occasions, Union troops confiscated more than one hundred bushels of corn. On the farms of Alfred Murphy, Matthew King, and Julia F. Claggett, the soldiers took 150, 500, and 500 bushels of corn, totaling 72,450 pounds from these three farms alone.[51] From other farms, the soldiers took anywhere from twenty to seventy-five bushels of corn, totaling 9,135 pounds.[52] These weights do not include the barreled corn the soldiers confiscated in the process of foraging. As mentioned earlier, between May and November 1862, Union troops took Isham Keith's entire corn crop from 1861 and 1862 from Fauquier County, totaling approximately 9,600 pounds. Although the total is unrecorded, Keith noted that the foragers also took the residual crop in the field.[53] While the Union soldiers consumed all of Keith's corn crops from the previous two years, the

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[50] Early, *Jackson's Campaign*, 12, 14.

[51] Claim of Alfred Murphy, Claim no. 41815 (1875), p. 2; and Claim of Matthew King, Claim no. 48458 (1877), p. 2, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 35, RG 217, NARA; and Claim of Julia F. Claggett, Claim no. 41668 (1875), p. 6, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 34, RG 217, NARA.

[52] Claim of James Robinson, Claim no. blank (1871), p. 8; Claim of T. Mason Manchester, Claim no. 41804 (1875), p. 2, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 35, RG 217, NARA; and Claim of Daniel Amidon, Claim no. 36638 (1874), p. 4, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 34, RG 217, NARA.

[53] Isham Keith, "Losses Sustained by Me," Mss1K2964a, Section 14, Keith Family Papers, VHS.

total amount barely provided enough for one or two days' rations for a single corps. Even if the soldiers used that corn only for their own regiment, they could consume that amount within a week, making it necessary for them to continue foraging quickly after clearing out individual farms.[54]

Wheat was another common crop for the Union soldiers' foraging efforts. For example, the Sexsmiths reported that Union troops grabbed twelve bushels of wheat; James Robinson, a free black man who lived on the grounds of some of the most significant fighting during the First Battle of Manassas, reported losses of sixty bushels, as did Julia Claggett.[55] Although wheat had a significant presence in the army through the consumption of bread and hard tack, Union forces focused on foraging for corn. Using the crops for corn meal or roasting it provided the Union soldiers with an easy, reliable meal. Without the local agricultural production, much of the corn and corn meal that Union soldiers consumed might not have been available to them on the march.

Immediately, these numbers indicate significant agricultural production of corn and wheat, but they do not indicate if the Union and Confederate troops consumed all the available crops in the region. The reports of the claimants provide some insight into the consumption habits of the men in the Union and Confederate forces. While occupying northern Virginia, the Confederates went to David Amidon's farm looking for resources. Amidon reported they took "all my oats from a fifteen acre field, all in oats, harvested and in the shock. At another time," he continued, "they took several loads of corn, wheat, and

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[54] For an idea of the amount of corn necessary to feed a 10,000 man or larger corps, see Montague, "Subsistence of the Army of the Valley," 230.

[55] Sexsmith Claim, Claim no. 36650 (1874), p. 2; Robinson Claim, Claim no. blank (1871), p. 8; and Claggett Claim, Claim no. 41668 (1875), p. 6, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 35, RG 217, NARA.

flour," as well as "hay and straw." Although Amidon complained to one of the Confederate officers, he received no compensation from the Confederates for the produce.[56] Similarly, Julia Claggett and her family lost most of their crops to Union troops. Only two days after Claggett's son Thomas harvested the wheat, Union army wagons arrived at the property. The Federals emptied the barn, taking all the harvested wheat and oats from the Claggetts.[57] Matthew King had a similar experience when Union cavalry arrived on his property from a nearby camp. One witness reported that after the cavalrymen made their way to King's property "4 or 5 army wagons" appeared and were "loaded with hay" and corn. After having filled up the wagons, the Union cavalrymen and the small wagon train returned to their nearby camp, leaving little behind.[58]

When camping on local farms, Union soldiers helped themselves to the property on an even greater scale than when they were on the march. Once the Army of Virginia returned to the fields near where the First Battle of Manassas took place the previous year, James Robinson's property became the camp site for the men in Maj. Gen. Franz Sigel's corps. Arriving on 28 August and remaining there intermittently through 30 August 1862, according to Robinson, the soldiers immediately marched in, "in the night, and settled all around me." After the soldiers settled in on Robinson's property, he recorded that "the first thing they did in the night was . . . run afoul of my house and . . . commenced taking everything they wanted." In the process, some of the men "found my wheat in the barn and they fed their

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[56] Amidon Claim, Claim no. 36638 (1874), p. 11, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 34, RG 217, NARA.

[57] Claggett Claim, Claim no. 41668 (1875), p. 28, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 34, RG 217, NARA.

[58] King Claim, Claim no. 48458 (1877), p. 24, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 35, RG 217, NARA.

horses on it." Additionally, although Robinson wrote that he did not grow corn on his property, he had twenty bushels of corn that became a part of the corps' forage. These bushels, Robinson reported, were "old corn" that he had purchased from a neighbor and the Union troops "took from the corn house."[59] Another unknown farmer, according to Robert Gould Shaw, the future commander of the famed Fifty-fourth Massachusetts Infantry Regiment, mentioned a similar experience. After Union soldiers had brought the Virginian to Shaw's commanding general in an effort to force the farmer to take the oath of allegiance, the farmer told the officers that not only had his slaves been encouraged to run away, but also "all his corn and provisions" had been "eaten up" by the Union soldiers.[60]

The soldiers consumed much of the available food sources in northern Virginia during the 1862 campaign. Many recorded that they took every chance they had to implement Pope's orders to subsist off the land. This was not limited to the region's large farmsteads either. Gillette noted, "Straggling soldiers have been known to rob the farmhouses and even small cottages, the homes of the poor, of every ounce of food or forage contained in them." In fact, he continued, the owners of the farm where he camped, the Robert H. Scott family in Warrenton, Virginia, had "lost all the crops and means of cultivation within" the few months before he arrived in July 1862.[61] In an attempt to deter the unrestricted destruction of local properties, Pope made regimental officers responsible to control their foragers. This did not stop the soldiers from their efforts to scrape the countryside clean of

[59] Robinson Claim, Claim no. blank (1871), p. 22, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 35, RG 217, NARA.

[60] Robert Gould Shaw to his mother, 28 July 1862 in *Blue-Eyed Child of Fortune: The Civil War Letters of Robert Gould Shaw* (Athens: University of Georgia Press, 1992), 222.

[61] Gillette to his mother, 31 July 1862, 1862 Folder, Box 1, Gillette papers, LC.

every available crop. One Union soldier wrote, "Our troops are devouring all they can lay their hands on when out of the sight of commanding officers." To understand the amount of destruction in the region, he urged his readers to "imagine a party of soldiers tramping through his grounds—plucking his fruit, harvesting his green corn . . . and cutting down fences to supply the camp fires, and he will have some idea of the visit of our troops to the horrors of Virginia." With both armies marching through the region and living off the land, the soldier believed the state would "be so reduced that nothing but a miracle can save her from utter ruin."[62]

Seen here is the Hudson farm house. This farm house was employed by Maj. Gen. John Pope as his headquarters during the Battle of Cedar Mountain (the first pitched fight of the campaign) on 9 August 1862. This shows a typical family farm as well as the presence of agricultural produce in the region. Unfortunately for the family and the armies, the soldiers stopped much of the cabbage in the foreground. *Photo: Cedar Mountain, Virginia. Mrs. Hudson's house and cabbage patch on battlefield, LC-DIG-cwpb-01067, Library of Congress Prints and Photographs Division, Washington, D.C.*

*Figure 7*

The Confederacy faced greater struggles than the Union as it had few rail lines to rely on for moving supplies through central and into northern Virginia, which created stronger

[62] "Letter of 44th New York Infantryman," *Rochester Daily Democrat and American*, 5 September 1862.

ties between the Confederate troops and the region's landscape. Hotchkiss remarked that the Piedmont was "a very nice place for our camp," especially since the Confederates were finally "in a region where we can get some fresh supplies."[63] As Chamberlayne noted, after the Confederate troops crossed the Rappahannock on their way to Manassas Junction, they "had been living on roasted corn."[64] Consuming only one type of crop, especially ones that were unripened as the Union soldiers above noted about the green corn, could cause significant health problems, including the deadly disease of dysentery. With food possibly giving the soldiers such a disease as dysentery and diarrhea, both possible results of eating unripened or contaminated food, a number of soldiers experienced the sapping of their energy. Without that energy, the officers faced having to employ ineffective soldiers in the midst of a battle or during a long march.[65]

The soldiers' hunger caused them to confiscate as much as possible. One Confederate soldier, Shepard G. Pryor of the Twelfth Georgia Infantry, wrote to his wife describing the Confederate pillaging. "The corn crops up here are very good," he wrote, "it is now right for eating and the Soldier pay [*sic*] havoc with it." Pryor assured his wife that some soldiers purchased the crops while "other take it." Still, he noted, "there is a great deal destroyed by the army." The officers attempted to control pillaging and foraging by putting out guards. Despite these attempts, Pryor recorded, the soldiers would consume as much as possible

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[63] Hotchkiss, diary entry, 30 July 1862 in *Make Me a Map of the Valley*, 64.

[64] Chamberlayne to Martha Chamberlayne, 6 September 1862, Frederick City, Md., fol. 4, sec. 1, Chamberlayne papers, VHS.

[65] During one bout with dysentery, Charles M. Blackford mentioned experiencing the depletion of his energy on a number of occasions. Since the disease was difficult to control or cure quickly, the soldiers consistently dealt with the disease sapping their energy. For example, see Blackford and Blackford, *Letter's from Lee's Army*, 117. For more on the cause of dysentery, see David Petriello, *Bacteria and Bayonets: The Impact of Disease in American Military History* (Havertown, Penn.: Casemate Publishers, 2016), 154.

before "the guard [was] arranged."[66] Similarly, James Nisbet of the Twenty-first Georgia wrote that during their march from west of the Rappahannock to Manassas Junction, the men had "marched forty miles . . . and had covered one hundred miles in three days, living on roasting-ears and fat bacon."[67] Confederate soldiers took every opportunity to grab food supplies from the local farmers. While the Union armies started to practice the hard hand of war in 1862, Confederate soldiers added to civilians' misery. Despite attempts to control the damage from the army, the Confederate troops had just as negative an effect on local farmers and the landscape as their Union counterparts.

Just as Confederate officers attempted to stem the pillaging of local farms, some Union troops took it upon themselves to prevent the complete consumption of local resources. William Wheeler, a Union infantryman, believed that the Union soldiers interpreted Pope's subsistence orders "in the most liberal manner," causing him to try to prevent his comrades from taking what he believed was unnecessary subsistence. On one occasion when "driving off these self-made 'quartermasters' and 'commissaries of subsistence,'" he recorded that he "interfered in favor of a sheep, some bee-hives, and the [family's] potato patch." He was rewarded "by being invited into the house, where I met the prettiest girl I have seen in Virginia."[68] Although valiant efforts by both armies, attempts at protecting at least some of the local farmers' produce failed.

With both forces consuming the product of the landscape, by the middle of August,

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[66] S. G. Pryor to Penelope, 18 August 1862, Box 1, Folder 3, Shepherd Green Pryor papers, MS 40, UGA.

[67] James Cooper Nisbet, *Four Years on the Firing Line*, ed. Bell Irvin Wiley (1963; repr., Wilmington, N.C.: Broadfoot Publishing Company, 1991), 88.

[68] William Wheeler, *Letters of William Wheeler of the Class of 1866, Y. C.* (Riverside, Cambridge: H. O. Houghton and Company, 1875), 344.

the Piedmont had started to completely lose its agricultural yields. Charles M. Blackford remembered attempting to return to a house that only hours earlier on August 21 had acted as General J.E.B. Stuart's headquarters. Due to a bout with dysentery, Blackford looked to "get the service of a doctor, some medicine and possibly some more nourishing food." By the time he arrived, Stuart had already moved on and Blackford only found an "old woman who was taking care of it," and nothing to eat. When he returned to his company the following day, after failing to find food, he "could eat nothing and only took a hard cracker or two for my day's rations."[69] While the civilians suffered at the hands of the soldiers pillaging, the troops lost the ability to improve their rations. With most of the farms in the region, especially along the Rappahannock River, depleted of their fodder, the soldiers either lived on hardtack or short rations. This lack of available produce indicates the destructive nature of the two armies. Almost as bad as locust, the two forces consumed everything in their paths.

This inability to maintain the necessary rations based on the local landscape is more apparent with the fact that Pope retained a strong supply line between Washington, D.C., and Manassas Junction. Although Pope had ordered his men to live off the land, quickly after arriving in northern Virginia in late July, he realized that the landscape could not keep up with his army's need for food. Instead, he had turned to the local railroad as the main supply artery into the region, leaving his army's logistics vulnerable to the quick moving Confederates. As D. Augustus Dickert noted in his remembrances of the campaign, the Union army had tons of food sitting at Manassas Junction in late August 1862. When describing the campaign, although his brigade had not taken part in Jackson's march on Manassas Junction, he recorded that once the Confederates captured the railroad on the

[69] Blackford and Blackford, *Letter's from Lee's Army*, 117.

afternoon of 26 August they learned about "large quantities of provisions and munitions of war" stored at the junction. In response, "General Trimble, with a small number of brave Alabamians, Georgians, and North Carolinians . . . volunteered to march" to the junction despite having "marched with Jackson thirty miles during the day" in order to "capture the place." Dicker wrote that this "was done in good time, defeating a brigade doing guard duty, and capturing . . . untold quantities of provisions."[70]

Confederate cavalryman Heros von Borcke and Lieutenant John Hampden Chamberlayne also fondly remembered the supply depot at Manassas Junction. At the junction, von Borcke wrote, "were collected stores and provisions, ammunition and equipments for an army of 100,000 men . . . the capture of which was a most important success to our arms." After taking the depot, he recalled, "It was exceedingly amusing to see here a ragged fellow regaling himself with a box of pickled oysters or potted lobster; there another cutting into a cheese of enormous size."[71] Similarly, Chamberlayne marked the capture of Manassas Junction as an opportunity for the hungry soldiers to feast. The Confederates found there two trains containing "probably 200 large cars loaded down with many millions worth of [quarter master] and Commissary stores." In addition, the Union army had basically established a small town around the junction. Near the rail line, according to Chamberlayne, "there were very large sutlers [*sic*] depots full of everything; in short," he continued, "there was collected there in a square mile an amount and variety of property such as I had never conceived (I speak soberly)." Chamberlayne also remembered his "ragged

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[70] D. Augustus Dickert, *History of Kershaw's Brigade, with Complete Roll of Companies, Biographical Sketches, Incidents, Anecdotes, Etc.* (1899; repr., Wilmington, N.C.: Broadfoot Publishing Company, 1990), 140.

[71] Heros von Borcke, *Memoirs of the Confederate War for Independence*, 2 vols. (Edinburgh and London: William Blackwood and Sons, 1866), 1:136–37.

soldiers" helping themselves to "every imaginable article of luxury or necessity," especially food.[72] In spite of Pope's original intentions to have his men live off the land, it is clear that his army was forced to rely on traditional logistical lines instead of local production. Had the agriculture held out on the Piedmont, Pope's supply depot at Manassas Junction would have contained exclusively war material like uniforms and ammunition. Instead, with a lack of food in northern Virginia, Pope's men required additional food sources from Washington, D.C., as well.

With both armies consuming everything in their paths, the landscape played a significant role in the Union and Confederate troops' ability to supplement their supplies. Since the Army of Virginia's quartermaster struggled to maintain a strong supply line with Washington, D.C., the tie between the local environment and the individual solders became stronger. Their dietary needs transformed the region's agricultural landscape into a land of waste. Although they had claimed northern Virginia was desolated by the summer of 1862, it was the presence of these two armies that truly transformed the region. Adding the Confederate soldiers who relied almost exclusively on local produce for supply led to the almost complete destruction of the Piedmont's agricultural capabilities during the war.

*Conclusion*

Clearly a destructive force when marching through northern Virginia, the Army of Virginia and the Army of Northern Virginia consumed most available resources during its campaign in the spring and summer of 1862. Having cleared out many of the farms throughout Prince William County in 1862, according to the claimants, it seemed that little, if

[72] Chamberlayne to Martha Burwell Chamberlayne, 6 September 1862, Frederick City, Md., fol. 4, sec. 1, Chamberlayne papers, VHS.

any, forage remained in the region that fall and into the winter. Indeed, Confederate soldier Samuel Burney, whose division had missed the second battle but eventually made their way through northern Virginia in the weeks after, noted that "the two armies have left nothing to eat in that section."[73] By the following year, as many historians have noted, the Confederates had no resources to sustain themselves, resulting in Lee's push into Pennsylvania.[74] Although the exact numbers of crops grown and consumed are difficult to know as most records are incomplete, all the claimants reported that, at one time or another, either the Confederate or Union army consumed every ounce of fodder grown on their properties. In spite of the lack of clarity about the exact weights and amounts of crops found on the individual farms, it is clear that soldiers took whatever they could. Prince William County farmers described a region swept clean of fodder by Confederate and Union armies. Whether crop yields were greater or less than previous years, the presence of almost 110,000 soldiers from the Union and Confederate forces wiped the region clean.

Although the Virginia Piedmont remained agriculturally viable throughout much of the first year of the war, as historian Mark Fiege notes, the region had changed significantly by the summer of 1863. In the aftermath of the Confederate victory at the Battle of Chancellorsville in May 1863, Lee made the decision once again to invade Union territory due to the lack of forage in central and northern Virginia, among other reasons. Both Confederate and Union commanders and soldiers realized they could not live off the

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[73] Samuel Burney to Sarah Elizabeth Shepherd, 8 September 1862 in *A Southern Soldier's Letters Home: The Civil War Letters of Samuel Burney, Army of Northern Virginia*, ed. Nat S. Turner (Macon, Ga.: Mercer University Press, 2002), 204.

[74] For example, see Fiege, "Gettysburg and the Organic Nature of the American Civil War" in *Natural Enemy, Natural Ally*, 93–109; and Kent Masterson Brown, *Retreat from Gettysburg: Lee, Logistics, and the Pennsylvania Campaign* (Chapel Hill: University of North Carolina Press, 2005).

landscape in northern Virginia by the end of the second year of the conflict.[75] This significant change leads to an important question about the environmental changes in the region. Previously, farmers had rebounded from significant stresses on the landscape, allowing farming to return to the Piedmont in a way that provided a significant amount of crops for Union and Confederate troops in the summer of 1862. Since Union soldiers and local civilians maintained that the local agricultural production initially provided the resources needed for the Union force to maintain and supplement its logistics in 1862, why did production drop in such a substantial way within a year of the campaign during that summer and spring?

One significant reason might come down to the response of local farmers to the presence of Union and Confederate soldiers. By the winter of 1862, a number of Prince William County farmers reported that they had decided either to give up planting their fields or to abandon their houses altogether, leaving the fields uncultivated through the rest of the conflict. Daniel Amidon, for instance, fled his farm in Prince William County in December 1862. Amidon, who assisted Union officers, specifically Maj. Gen. Joseph Hooker, and their scouts while maneuvering through the county, was wanted by Confederate authorities throughout much of the conflict. Due to his assistance with Hooker's Division, Amidon claimed "the rebels were very anxious to catch me, and came here frequently on that account." Because of these constant threats of being arrested, Amidon noted, he and his family "escaped in a settlers wagon and went to Alexandria and from there to New York." Eventually, the Amidons settled in Michigan where they farmed until December 1865 when

[75] Fiege, "Gettysburg and the Organic Nature of the American Civil War" in *Natural Enemy, Natural Ally*, Tucker and Russell, 104–105.

they returned to Prince William County. With no one to continue farming the property, the agricultural production of the Amidon farmstead disappeared.[76]

George Joy also abandoned his farm due to the presence of Confederate forces in Prince William County in 1862. Shortly before the Union defeat at Second Manassas, Joy "retreated within the Federal line . . . and came north." After moving behind the Federal lines, Joy never returned to his property. From 1862 through the submission of his claim, the Southern Claims Commissioner recorded, Joy had remained in the North and "never cultivated the place [in Virginia] since."[77] Just like the Amidon property, with no one to cultivate the fields, the property was left to local wild flora. Without further agricultural production, fewer crops were available to either army in the region. Most likely, although unclear in a number of the claims used here, additional farmers abandoned their properties or decided to leave their fields uncultivated.

On top of farmers abandoning their fields, the decrease of the local work force, both free and enslaved, made harvesting difficult for many farmers. Indeed, one Union soldier noted, "The standing grain has rotted in the field for the want of hands to gather it in."[78] In addition, significant climate changes in the United States, including Virginia, in 1862 further reduced crop yields throughout the South. Although most of the United States experienced a significant drought, most of Virginia faced increased rainfall that caused rust to grow on the crops during the harvest in late 1862. This type of ecological change was difficult for the

[76] Amidon Claim, Claim no. 36638 (1874), p. 10, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 34, RG 217, NARA.

[77] Joy Claim, Claim no. 41791 (1875), p. 2, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 35, RG 217, NARA.

[78] Mills, *Chronicles of the Twenty-First Regiment*, 202.

farmers to overcome quickly.[79] All these factors significantly altered the agricultural landscape in northern Virginia over 1862. When the armies returned in 1863, they no longer had the possibility of employing agriculture in a significant way to relieve some of the soldiers' logistical problems.

Although Confederate and Union soldiers saw a wasteland incapable of providing provisions in early 1862, southern farmers continued cultivating the fields, making it a sustainable region that helped tie the two armies to the local landscape. Struggling to supply the army during the summer of 1862, the Union army's logistical system in northern Virginia provided little subsistence for the Union soldiers, leaving many of the blue-coats hungry and frustrated with their situation. Realizing they were relying on an ineffective system, the Union officers and soldiers, especially after Pope published General Orders No. 5 and 6, turned to the farms along the Virginia Piedmont to maintain and supplement their supplies. Agricultural production maintained crop yields similar to pre-war numbers, which provided tons of corn, wheat, hay, and oats to the Union forces. Union troops helped themselves to these crops as they marched through the region, taking most of the crops individual farmers grew throughout the spring and summer of 1862. Although the logistical supply line based on the railroads that met at Manassas Junction has been a focal point of many histories of Second Manassas, it is unclear exactly how much of Union supplies in the field came via that route. It is significant, though, that Pope maintained this line throughout the campaign. Despite his new hard war orders, Pope's men still relied on traditional logistics for most of

[79] Kenneth Noe, "Fateful Lightning: The Significance of Weather and Climate to Civil War History," in *The Blue, the Gray, and the Green: Toward and Environmental History of the Civil War*, ed. Brian Allen Drake (Athens: University of Georgia Press, 2015), 16–33.

their supplies.[80] Similarly, Confederate soldiers found themselves tied to local agricultural production as they moved through the Piedmont in 1862. Living among loyal civilians, they expected the local farmers' assistance. When they did not, they worked their way across the landscape, consuming as many resources, if not more, than the Union army as they did so. Soldiers on both sides confiscated as much as possible to retain the energy needed to maintain the military metabolism in the summer of 1862.

The Virginia Piedmont was never equipped to handle such pressure on the region's agricultural production. Weak soil and poor farming practices had almost completely depleted the region's soil of nutrients before the beginning of the Civil War. Though the arrival of new practices and northern farmers reversed the problem, the crop yields of 1860 and the crops reported during the Civil War were above what the soil should have yielded. Although the Union and Confederate soldiers supplemented their supplies from the Virginia Piedmont's agricultural production, the region was not strong enough for it to maintain the necessary supplies throughout the summer of 1862, even if months of occupation and military operations had not by then already depleted the crops.

The difficult agricultural conditions in northern Virginia were not the only ecological challenge the soldiers faced during the Second Manassas Campaign. While local farmers and soldiers worked around the depletion of the agricultural landscape in the summer of 1862, Union and Confederate troops faced equally challenging issues from the unpredictable weather of the Virginia summers. Like the farmers who dealt with increased rains, the officers and soldiers of the Army of Virginia and Army of Northern Virginia dealt with

[80] See Hennessy, *Return to Bull Run*; Johnson, *Thirteen Month at Manassas/Bull Run*; and David G. Martin, *The Second Bull Run Campaign, July–August 1862* (Conshohocken, Penn.: Combined Books, 1997), esp. 105–32.

weather conditions throughout the campaign that greatly influenced the outcome of the operation.

## Chapter 3
## The Roll of Thunder, the Heat of Battle: Northern Virginia's Weather

In the aftermath of the Peninsula Campaign, Sarah Emma Edmonds, also known as Franklin Thompson of the Second Michigan Infantry Regiment, recalled the regiment's journey to northern Virginia to reinforce Pope's warriors. After having marched from Harrison's Landing to either Yorktown, Newport News, or Fortress Monroe, Virginia, they embarked on the boats toward Aquia Creek, a tributary of the Potomac River that sits about forty miles south of Washington, D.C. At that point, she recorded, "The troops [of the Army of the Potomac] were literally worn out and discouraged, caring but little where they went, or what they did." On top of their depleted morale, a familiar experience in northern Virginia greeted the soldiers when they landed. Edmonds remembered, "On arriving at Aquia Creek, we found ourselves the victims of another rainstorm." To "escape a severe drenching during the night, for we had not seen our tents yet," Edmonds and four other Union troops "went on board a little steam-tug." Entering the tug boat, Edmonds and her colleagues found some relief from the bitter summer storm.[1] While northern Virginia's agriculture caused havoc for the Union and Confederate soldiers on the move, the armies also struggled against a prominent, everyday environmental factor: the weather.

Throughout human history, especially American history, meteorological phenomena have impacted the outcome of numerous major events. Even before white settlers reached the Atlantic shores, hurricanes harassed sailors and affected exploration. On multiple occasions, drought transformed the United States. Historian Elliott West notes that a nationwide

[1] Sarah Emma Evelyn Edmonds, *Nurse and Spy in the Union Army: Comprising the Adventures and Experiences of a Woman in Hospitals, Camps, and Battle-fields* (Philadelphia, Penn.: Jones Bros., 1865), 258–59.

drought, coming at the end of the misnamed "Little Ice Age," had a significant influence on the Great Plains, where it increased the conflict between northern Plains Indians and white settlers during the Colorado Gold Rush as both populations competed for natural resources. Similarly, the southern plains became covered with dirt during the infamous "Dust Bowl" during another significant drought in the region.[2]

Weather has had a similarly significant impact on military operations in American history. During the American Revolution, two days of heavy rains caused a sudden fog on the morning of 30 August 1776 that allowed George Washington to save his army from the Brooklyn Heights on Long Island, New York. Only about fifty years later, a storm with the power of a hurricane or tornado saved the new U.S. capital of Washington, D.C. After capturing the capital on 14 June 1814, British forces set fire to government buildings and the flames soon engulfed almost the entire city. A sudden deluge dowsed the flames while corresponding winds disrupted the British forces allowing the Americans to escape. And only fifteen years before the Civil War, Lt. Gen. Winfield Scott feared the summer weather and subsequent Yellow Fever epidemics that came with it along the Atlantic Coast of Mexico in his 1846 campaign against Mexico City.[3] For American military men, weather was a consistent concern.

Weather was an environmental factor for Civil War armies on a daily basis and the

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[2] Elliott West, *The Contested Plains: Indians, Goldseekers, and the Rush to Colorado* (Lawrence: University Press of Kansas, 1998); and Patrick Hughes, *American Weather Stories* (Washington, D.C.: U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration, Environmental Data Service, GPO, 1976).

[3] David McCullough, *1776* (New York: Simon and Schuster, 2005), 182–91; Anthony S. Pitch, *The Burning of Washington: The British Invasion of 1814* (Annapolis, Md.: The Naval Institute Press, 1998), 139–42; and Johnson, *A Gallant Little Army: The Mexico City Campaign* (Lawrence: University Press of Kansas, 2007), 55–61.

conflict witnessed numerous significant weather events that shaped the outcome of specific campaigns. Officers and their men, however, rarely prepared themselves for diverse weather patterns. Indeed, both before and after Second Manassas, Civil War operations, especially Union ones, felt the impact of unexpected and irregular meteorological moments.[4] The month of maneuvering that most influenced the Second Manassas Campaign experienced intense and quick changes in weather that included extreme temperatures and massive thunderstorms. These altered every level of military concern, from logistics to tactical deployment and maneuvering. While the army officers attempted to face the issues weather created during the campaign, certain conditions were almost impossible to overcome. Though without the form of agency as humans' exercise in history, the weather is a type of agency for the environment as even some soldiers during the Civil War believed it was a way that Mother Nature fought back against human control over the landscape.[5] These shifting weather patterns played a pivotal role in much of the campaign in August 1862.

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[4] Mainly, the Peninsula and Perryville campaigns in 1862 and the infamous Mud March of the Army of the Potomac in the winter of 1863 had similar moments of intense weather that transformed the operations. For more on the weather's significance in general during the conflict, see Kenneth W. Noe, "Fateful Lightning: The Significance of Weather and Climate to Civil War History," in *The Blue, the Gray, and the Green: Toward an Environmental History of the Civil War*, ed. Brian Allen Drake (Athens: University of Georgia Press, 2015), 16–33. For more on rain and mud in the Peninsula Campaign, see Stephen W. Sears, *To the Gates of Richmond: The Peninsula Campaign* (New York: Ticknor and Fields, 1992), 108–109. For more on the Perryville Campaign, see Noe, *Perryville: This Grand Havoc of Battle* (Lexington: University Press of Kentucky, 2001); and Noe, "The Drought that Changed the War," *New York Times: Disunion Blog*, 12 October 2012, https://opinionator.blogs.nytimes.com/2012/10/12/the-drought-that-changed-the-war (accessed 13 February 2017). For more on the Mud March, see Francis Augustín O'Reilly, *The Fredericksburg Campaign: Winter War on the Rappahannock* (Baton Rouge: Louisiana State University Press, 2003), 478–87.

[5] McHenry Howard, a Confederate Maryland officer, noted that some soldiers thought that heavy battles led to rain storms, using the storm that struck the Peninsula after the Battle of Malvern Hill on July 2, 1862 as an example. Howard, *Recollections of a Maryland Confederate Soldier and Staff Officer under Johnston, Jackson and Lee* (Baltimore, Md.: Williams and Wilkins Company, 1914), 156n14. For more on the tactical abilities of small-units in the Civil War, see Earl J. Hess, *Civil War Infantry Tactics: Training, Combat, and Small-Unit Effectiveness* (Baton Rouge: Louisiana State University Press, 2015). My study will explore the impact of the weather on all the aspects of military concerns on every level. Typically, military studies only focus on one level, such as logistics, strategy, or grand tactics. In an attempt to build further discussions about each of these levels of military concepts, I hope to highlight the way the weather could influence how army officers approached these concepts in the midst of a campaign.

*Climate vs. Weather*

When discussing a military operation like the one in August 1862, weather becomes central to understanding the impact of the environment on the campaign more so than climate. Based on the concepts of the National Oceanic and Atmospheric Administration, weather is the "atmospheric conditions at an exact moment in time," making this definition more significant to the day to day operations of an army during a campaign. Climate, on the other hand, is an "average, long-term pattern created by all of those separate events."[6] More simply put, according to Mark Twain, "climate lasts all the time, and weather only a few days."[7] The climatic conditions impelled the weather patterns that, in turn, impelled the conduct of the operation. These climatic and weather patterns emerge from the climatic zone in which Virginia resides.

The U.S. Department of Energy, in conjunction with modern climatologists, has divided the United States into eight distinct climate zones. Virginia sits primarily in the "Mixed-Humid" zone, which extends from along the Ohio River, including a few of the southern counties of Indiana and Ohio, and continues into the northern halves of Alabama, Georgia, and Mississippi. Just as rainy and humid as the "Hot-Humid" zone to the south during the summers, Virginia and its climatic zone experiences colder weather during the winters, marking its distinction from the "Hot-Humid" zone. This area, the "Hot-Humid" zone, which extends from Washington west to Manassas, experiences high temperatures and frequent, violent thunderstorms during the summers. Many of these storms come due to

[6] Noe, "Heat of Battle: Climate, Weather, and the First Battle of Manassas," *Civil War Monitor* 5 (fall 2015): 59.

[7] Mark Twain quoted in Noe, "Heat of Battle," 59.

winds pushing warm, moist air from the Gulf of Mexico into the eastern portion of the commonwealth. Mainly, the Piedmont and coastal areas receive most of the humidity that creates the conditions for the sudden, violent storms. Most of the precipitation the state experiences in the summer is the result of these types of storms, with northern Virginia facing almost five inches of precipitation in August alone and approximately forty-two inches for the year.[8]

The highest temperatures recorded in Virginia typically occur along the Virginia Piedmont. During the month of August, northern Virginia averages around seventy-four degrees Fahrenheit in normal years. Temperatures could easily hit triple digits in the summer months, especially in July and August. In August 1862, that overall temperature rose as the mercury hit at least ninety degrees on nine days that month. Over the month, the temperature averaged 77.7 degrees Fahrenheit—over three degrees higher than average. Over the three days of actual fighting, the temperature averaged about eighty-two degrees at the hottest point in the day. Many Union soldiers came from the "Cold" and "Very Cold" zones making it likely that they were unprepared for the heat and humidity. The Confederate soldiers also likely were ill prepared for the August heat as the temperatures rose higher than normal. Additionally, the soldiers of both armies had grown up in the tail-end of the Little Ice Age. Being hit with the type of heat and humidity during the Second Manassas Campaign, the two armies struggled against the elements that sapped their energy.[9]

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[8] K. A. Rice, "Virginia," *Climates of the States*, Climatography of the United States no. 60-44 (Washington, D.C.: U.S. Department of Commerce Weather Bureau, 1959), 2, 6.

[9] Rice, "Virginia," *Climates of the States*, 2, 6; and Noe, "Heat of Battle," 59. The average temperatures are based on records taken in Georgetown, Washington, D.C., during the month of August. Although the fields where the campaign took place were as far away from the city as fifty miles, Virginia's climate does not allow for major fluctuations in temperature during the summer. For the month's temperatures see, "Register of Meteorological Observations, Under the Direction of the Smithsonian Institution, Adopted by the Commissioner of Patents for His Agricultural Report," Georgetown, D.C., August 1862, microfilm, T907,

Although the weather played a significant role in the armies' abilities to function, few officers and soldiers fully understood how that occurred. During the campaign, the soldiers typically tracked the weather in their diaries, indicating its significance to their everyday lives on the march. They provided only brief descriptions, such as "hot and cloudy."[10] Being an everyday factor for the officers and soldiers, the weather was the most common environmental factor during the campaign, making it influential on human actions during the operation.

*The Heat in Battle*

Perception of the weather's impact on an army emerged even before Pope's and Lee's troops came into contact. While Pope gathered his forces along the banks of the Rappahannock to confront the wing of Stonewall Jackson, the Lincoln Administration attempted to convince Maj. Gen. George B. McClellan to abandon his position on the peninsula east of Richmond. McClellan believed the best course of action was to have Pope's force join his near Harrison's Landing along the banks of the James River. Conversely, Lincoln, Secretary of War Edwin M. Stanton, and Union general-in-chief Henry W. Halleck thought a merger with Pope's force on the northern bank of the Rappahannock was better suited for any future movements against the Confederate capital. In the process of trying to convince McClellan of this, Halleck employed what he termed the local climate, although he was referencing the summer weather. "To keep your army in its present position until it could

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*Climatological Records of the Weather Bureau*, r. 81, RG 27, Records of the Weather Bureau, NARA II [hereafter cited as T907, r. no., RG 27, NARA II].

[10] For example, see Jedediah Hotchkiss, *Make Me a Map of the Valley: The Civil War Journal of Stonewall Jackson's Topographer*, ed. Archie P. McDonald (Dallas: Southern Methodist University Press, 1973); and David Hunter Strother, *A Virginia Yankee in the Civil War: The Diaries of David Hunter Strother*, ed. Cecil D. Eby, Jr. (Chapel Hill: University of North Carolina Press, 1961).

be so re-enforced," Halleck wrote to McClellan, "would almost destroy it in that climate." He continued, "The months of August and September are almost fatal to whites who live on that part of James River."[11] Obviously, Halleck saw the local weather as a factor in military operations. For the soldiers of the Army of Virginia and the Army of Northern Virginia, meteorological factors created just as much havoc for their operations in northern Virginia.

Starting in early August, Pope's and Lee's forces looked to decimate their opposition along the fields of central and northern Virginia. The first confrontation between the two forces came on 9 August 1862, during the Battle of Cedar Mountain. This initial pitched battle of the campaign became remembered for the bloodshed during the short, but fierce fight as well as the devastating heat.[12] In the days leading up to the fight, the temperatures rose steadily. Between 4 and 11 August, the thermometer read at least ninety degrees in six out of the seven days. 9 August, the day of the Battle of Cedar Mountain, marked the highest recorded temperature for the month.[13] Jedediah Hotchkiss, Stonewall Jackson's chief topographer, provided a succinct understatement of the weather when he recorded that "the day was very warm."[14] In fact, the weather had become almost unbearable. By 8 a.m., temperatures had reached eighty-four degrees while continuing to rise eventually hitting a high of ninety-eight in the mid-afternoon.[15]

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[11] General-in-Chief Henry W. Halleck to Maj. Gen. George B. McClellan, 6 August 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 11.

[12] For more specifics on Cedar Mountain, see Robert K. Krick, *Stonewall Jackson at Cedar Mountain* (Chapel Hill: University of North Carolina Press, 1990).

[13] "Register of Meteorological Observations," Georgetown, D.C., August 1862, T907, r. 81, RG 27, NARA II.

[14] Hotchkiss, *Make Me a Map of the Valley*, 67.

[15] "Register of Meteorological Observations," Georgetown, D.C., August 1862, T907, r. 81, RG 27, NARA II.

The extreme heat increased the human metabolism, which escalated the amount of calories a person burns, especially when undertaking physical exercise. There was not much food to meet the soldiers' needs. Pope's men had been ordered to carry only "two days' cooked rations," but had been on the march for four days.[16] Agricultural production in Culpeper County, near Cedar Mountain, was negligible. The men had little chance to supplement their rations and replenish their caloric intake.[17]

Part of the human body's purpose in increasing an individual's metabolism in hot temperatures is to regulate the body's core temperature. Primarily, the regulation of one's body temperature occurs through sweating. The process of sweating releases fluids and salts vital to pumping blood to the human organs, slowing the bodies' natural progressions for heat regulation. To continue sweating in high temperatures, humans are required to replenish the fluids and salts lost in the process.[18] In the 1870s, one physician summed up the need for water perfectly when he wrote, "Not only is water an essential ingredient in all the tissues of the body, but it serves also as the menstruum of the nutritious elements. It is the vehicle of all food," he continued, "and the medium through which the effete materials of the body are excreted from the system."[19] Water maintains energy as it allows the tissue within the body to function correctly. The majority of officers on both sides were unaware of the

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[16] General Orders, No. 18, 6 August 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 52. For a deeper discussion about rations and caloric intake, see chapter 2.

[17] 1860 rations found in Ludwell Lee Montague, "Subsistence of the Army of the Valley," *Military Affairs* 12 (October 1948): 227.

[18] You-E Yan, Yong-Qi Zhao, Hui Wang, and Ming Fan, "Pathophysiological Factors Underlying Heatstroke," *Medical Hypotheses* 67 (2006): 611.

[19] Thomas O. Summers, "Hunger and Thirst: I.—The Nature of Hunger II.—The Cause of Hunger III.—The Effects of Hunger Thirst," *Nashville Journal of Medicine and Surgery*, vol. 15, no. 3 (1 March 1875): 144.

requirements needed to maintain hydration and prevent heat stroke or death from thirst.[20]

The soldiers faced what modern scientists call "exercise type" heatstroke. Typically, humans can handle hotter temperatures through different forms of heat regulation as well as a natural heat tolerance, which can increase or decrease over time. Even the fittest people can succumb to heat exhaustion, with permanent damage resulting when taking on greater activity in hot temperatures.[21] Civil War soldiers, men who primarily suffered from physical ailments and lack of nutrients throughout campaigns, would become increasingly susceptible to the effects of the heat while on the march. Additionally, dust clouds caused by large amounts of marching men would suck more moisture out of the soldiers as they maneuvered along the roads, more than likely increasing their suffering under high temperatures.

This type of extreme would quickly lead to intense physical suffering for the troops of both armies. When suffering from heat exhaustion, the cardiovascular system cannot properly circulate blood to the vital organs, causing weakness, fatigue, and even delusions. These characteristics would make a soldier practically useless in the midst of a battle or campaign. Over time and with rest, a person can recover from heat exhaustion. Civil War soldiers, especially those about to enter into a battle, had little time to rest and recover from heat exhaustion. Once they hit that stage, if they did not drop out of the march, they could easily move into the effects of heatstroke.[22]

If the core body temperature can be kept below 104 degrees Fahrenheit, the individual

[20] Further discussion of water sources and water quality will come in the next chapter, which will focus specifically on water and waterways. However, to understand the impact of heat on the soldiers, a brief discussion of water's effect on the human body is necessary here.

[21] Yan, et. al., "Pathophysiological Factors Underlying Heatstroke," 610.

[22] Yan, et. al., "Pathophysiological Factors Underlying Heatstroke," 610.

can survive without major consequences. Once the body goes above 104 degrees at its core temperature, the central nervous system, kidneys, intestines, and brain suffer catastrophic damage. If a person survives a heatstroke, he would lose some function and be riddled with damage to most of the major organs. Most people do not survive once they suffer heatstroke. Instead, the major organs shut down and eventually the brain and central nervous system broil inside of the person, eventually killing him.[23] Since most Americans at the time of the Civil War would have little knowledge of this health issue, the soldiers were more likely to suffer from heat exhaustion and heatstroke in the hot Virginia summers. With a limited water supply while on the march in conjunction with the lack of knowledge about hydration and the body's need for salt, the soldiers would quickly become susceptible to ineffectiveness and death in the hot August sun.[24]

The soldiers and other officers saw the impact of these high temperatures and the physical results of heat exhaustion and heatstroke firsthand as they converged on Cedar Mountain.[25] Even before the battle commenced, the heat started to overtake the soldiers. On

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[23] Yan, et. al., "Pathophysiological Factors Underlying Heatstroke," 610.

[24] The lack of knowledge on dehydration during any endurance activity was something that lasted into the late twentieth century. As late as the 1970s, most hydration specialists believed that drinking water in the midst of a physical activity could cause bigger problems for individuals than trying to hydrate in the middle of the activity. For more on the lack of knowledge on rehydration during physical exercise, see Tim Noakes, *Waterlogged: The Serious Problem of Overhydration in Endurance Sports* (Champaign, Ill.: Human Kinetics, 2012), xiii-xviii. Unreliable water sources and limited canteen supplies (U.S. Army canteens typically held less than a quart or 32 ounces of water) made it difficult for soldiers to maintain the necessary hydration. According to the USDA Dietary Reference Intakes, water consumption for men over 18, the minimal age for soldiers on both sides at this time in the war, should be over 3.7 liters (about 125 ounces) of fluid per day. They recommend more if doing physical activities in a warm climate. Dietary Reference Intakes (DRI): Recommend Dietary Allowances and Adequate Intakes, Total Water and Macronutrients, https://fnic.nal.usda.gov/sites/fnic.nal.usda.gov/files/uploads/DRI_RDAs_Adequate_Intakes_Total_Water_Macronutrients.pdf, accessed on 29 July 2016.

[25] Indeed, as Robert K Krick mentions, during the Battle of Cedar Mountain, a number of environmental factors influenced the fighting, including "terrain and ground cover" among other features. Though, he writes, "none of these exceeded in importance the brutal constant verity of the broiling sun." Krick, *Stonewall Jackson at Cedar Mountain*, 17.

5 August, with temperatures reaching a high of ninety-four, Union general Rufus King reported, "The heat was so intense that it was impossible for either horses or men to march fast or far."[26] Over 7 and 8 August, while Jackson and Union corps commander Nathaniel Banks moved their men toward Cedar Mountain, the high temperatures slowed the armies. One Confederate officer noted that the weather in northern Virginia at the time was "scorching." In the heat wave, "The troops seem to feel it mightily." Another Confederate officer recorded, "The weather [was] so hot men faint and die on the march."[27] Samuel Beardsley of the Twenty-fourth New York noted that his regiment tackled an "awful march" of "16 miles" from Fredericksburg to Spotsylvania Court House on 6 August. He explained the heat during the march caused the soldiers to slow to the point that they spent most of the day marching, not reaching Spotsylvania until two o'clock in the morning. George H. Gordon, a Union soldier who chronicled the Army of Virginia's campaign, believed that as many as eight or ten men died in some of the regiments during their maneuvers. Union general Alpheus S. Williams recorded that the men of Banks's corps had experienced a "two days' march, dusty and hot in the extreme."[28] Similarly, Brig. Gen. John Gibbon, who had planned on attacking the Confederate forces along the Rapidan River on 7 August, recounted

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[26] "Register of Meteorological Observations," Georgetown, D.C., August 1862, T907, r. 81, RG 27, NARA II; and Rufus King to Colonel Schriver, 6 August 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 121.

[27] John Hampden Chamberlayne to Lucy Parke (Chamberlayne) Bagby, 7 August 1862, Camp above Rockland, Va., Folder 2, Section 1, Mss1C3552a, John Hampden Chamberlayne papers, 1858–1877, VHS [hereafter cited as fol. no., sec. no., Chamberlayne papers, VHS]; and John D. Summers, diary entry, 7 August 1862, quoted in Krick, *Stonewall Jackson at Cedar Mountain*, 18.

[28] Samuel R. Beardsley to "Did," 7 August 1862, Spotsylvania C. H., Va., Letters April 9, 1862–December 31, 1862 Folder, Samuel R. Beardsley Papers, USAHEC; George H. Gordon, *Brook Farm to Cedar Mountain: In the War of the Great Rebellion, 1861–62* (Boston: Houghton, Mifflin, and Company, 1885), 277; and Alpheus S. Williams to "My Darling Daughter," Culpeper, Va., 17 August 1862 in *From the Cannon's Mouth: The Civil War Letters of General Alpheus S. Williams*, ed. and intro. Milo M. Quaife (Detroit, Mich.: Wayne State University Press, 1959), 99.

that his assault had been delayed due to "the condition of the infantry and the intense heat."[29] Over the two days, the thermometer reached ninety-two and almost ninety-seven degrees at the hottest point, respectively.[30] Both the lack of water and inability to provide the proper rations slowed many of the marchers and even resulted in some men suffering heat stroke.[31]

The day of the battle displayed the true power of the Virginia heat on the two armies. As mentioned earlier, the temperature reached ninety-eight degrees with humidity to match. In fact, by mid-morning, the heat had become so oppressive that H. A. Tripp of the Tenth Maine noted that it began to "oppress us [while] lying still." For those on the march, the experience was more intense. One soldier of the Twenty-seventh Indiana wrote that the air was "as hot as a bake oven."[32] With little rain over the previous week or more and the rising heat, the roads had turned into loose dirt. As many historians have mentioned in their descriptions of battles or in their studies about soldiers' experiences, when marching over dry dirt roads, the troops kicked up massive dust clouds. Mixed with the heat, the dust choked the soldiers as the columns approached the battlefield, making it difficult for many of the troops to breathe. As one Tennessee soldier noted, "The day was remarkably hot and sultry, and the red dust of the dirt-road almost suffocating."[33] Once on the battlefield, the adrenaline rush of fighting pushed the soldiers beyond their limits. One Confederate soldier wrote that in spite of the heat, "the soldiers over exerted themselves." This mixed with the "excitement of the

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[29] John Gibbon to Captain R. Chandler, 9 August 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 123.

[30] "Register of Meteorological Observations," Georgetown, D.C., August 1862, T907, r. 81, RG 27, NARA II.

[31] Howard, *Recollections*, 166.

[32] Krick, *Stonewall Jackson at Cedar Mountain*, 48–49.

[33] J. H. Moore, quoted in Krick, *Stonewall Jackson at Cedar Mountain*, 65.

battle" caused "several [to suffer] sunstroke."[34]

Officers noted after the battle that the heat overtook the soldiers. While trying to move their troops into position, officers on both sides reported men falling to the wayside. Brig. Gen. John W. Geary, the commander of the first brigade in the Army of Virginia's Second Corps, wrote, "The extreme heat caused . . . immense suffering among the men." The high temperatures and lack of water led to "many cases of sunstroke." After marching for "5 or 6 miles," Geary reported, "the road on each side was full of men, who had been compelled to fall out from sheer exhaustion, and many cases of sunstroke terminated fatally."[35] Col. George L. Andrews of the Second Massachusetts also reported that at least one of his privates died from heatstroke while approaching the battlefield on 9 August.[36]

Confederate officers also calculated stragglers and heatstroke victims as part of their casualties for that day. Lt. Col. Edwin G. Lee of the Thirty-third Virginia counted at least ten men lost during the slow march to Cedar Mountain.[37] Lt. Col. Simon T. Walton of the Twenty-third Virginia reported that by time his men reached the battlefield around 4 p.m., they were "distressing on account of the excessive heat" and a lack of water.[38] Even with an adrenaline boost from entering the fight, the men remained fairly ineffective. The sluggish movements and oppressive temperatures prevented both Jackson and Banks from committing all of their forces to the battlefield. The fighting became a straightforward slugfest with only

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[34] James Cooper Nisbet, *Four Years on the Firing Line*, ed. Bell Irvin Wiley (1963; repr., Wilmington, N.C.: Broadfoot Publishing Company, 1991), 85.

[35] John W. Geary to General Augur, n.d. 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 160.

[36] George L. Andrews to Brig. Gen. George H. Gordon, 11 August 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 154.

[37] Edwin G. Lee to Capt. J. H. Fulton, 13 August 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 199.

[38] Simon T. Walton to Col. A. G. Taliferro, 13 August 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 211.

piecemeal movements and attacks taking place throughout the afternoon.[39]

Similarly, in the aftermath of the battle, despite the Union forces having been badly bloodied, the heat kept Jackson, a typically aggressive commander, from pursuing the retreating federals. As Charles M. Blackford reported, Jackson had initially gone to his officers and inquired about their men's condition shortly after the sun had set. Although darkness had fallen over the battlefield, the temperatures held in the mid-eighties. This heat continued to drain the soldiers. Jackson's subordinates noted that the troops were short on ammunition and "too exhausted to go further." Many of them had trudged more than ten miles in the day and then fought in the bloody contest. With the long marching distances and intense combat through the heat, the men were "so tired that [they] were lying about in line of battle dead asleep." Blackford continued, "I do not believe anything short of the enemy could have revived them to action."[40]

The weather during the Battle of Cedar Mountain played a central part in the outcome of the battle as the officers and soldiers struggled through the heat. The soldiers' slow movements and officers' witnessing their men dropping out from exhaustion prevented both forces from positioning themselves to launch an overwhelming assault, turning the battle into a bloody slugfest. Additionally, a lack of water and little knowledge about dehydration continued to exhaust the troops and exposed them to further ramifications from heatstroke. The troops received little relief from the heat for another three days until thunderstorms

[39] For more on the Battle of Cedar Mountain itself, see Krick, *Stonewall Jackson at Cedar Mountain*; and Ethan S. Rafuse, *Manassas: A Battlefield Guide* (Lincoln: University of Nebraska Press, 2014), 162–65.

[40] Susan Leigh Blackford and Charles M. Blackford, *Letters from Lee's Army; Or Memoirs of Life In and Out of the Army in Virginia during the War Between the States* (1947; repr., New York: A. S. Barnes and Company, 1962), 106.

brought down local temperatures.[41]

*The Transformative Rains*

Although tempests in the days after the battle cooled the soldiers, those same types of storms directed the action along the Rappahannock River a couple weeks later. Once Pope took stock of the situation in the aftermath of Cedar Mountain, he made the decision to fall back to the banks of the Rappahannock. Despite being considered a less significant river in the state than the Potomac or James rivers, the Rappahannock could act as a significant barrier for the two armies in Virginia. Pope recognized the river's possibility as a defensive barrier and attempted to exploit it during the campaign.[42] At that moment, George McClellan's Army of the Potomac started to arrive to reinforce the Army of Virginia after the former's evacuation from the Peninsula. Knowing that many of the troops would come up the Rappahannock toward Fredericksburg, Pope hoped to keep the larger Army of Northern Virginia at bay using the river to do so. With the Rappahannock between his and Lee's army, he was able to hold off each Confederate advance to buy further time for the Army of the Potomac. Although the Rappahannock seemed fairly passable throughout the war, while the Army of the Potomac began to strengthen Pope's force, the skies opened to further help Pope's cause as the storms would transform the slow-moving river into a rapid torrent.[43]

The rain could significantly alter the landscape for armies as the officers would

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[41] Kathryn Shiveley Meier, *Nature's Civil War: Common Soldiers and the Environment in 1862 Virginia* (Chapel Hill: University of North Carolina Press, 2013), 111.

[42] Harold A. Winters, *Battling the Elements: Weather and Terrain in the Conduct of War* (Baltimore, Md.: The Johns Hopkins University Press, 1998), 34, 276n7. For more on the Rappahannock acting as a "dare-mark" line between the Union and Confederate forces, see Daniel E. Sutherland, *Fredericksburg and Chancellorsville: The Dare Mark Campaign* (Lincoln: University of Nebraska Press, 1998).

[43] William Ellis Jones, diary entry, 21 August 1862, UM; Winters, *Battling the Elements*, 34; and Hennessy, *Return to Bull Run*, 50–60. Further discussion about the importance of waterways can be found in chapter 4.

attempt to get their men on the roads to take up positions. As historian Harold A. Winters notes, "The mixture of soil and water has been slowing and stopping armies since armies began." When the skies opened, the mixture with the soil could significantly destroy any plans that officers created. "Mud has been a formidable element in every prolonged military campaign," Winters writes, "and sometimes it is the decisive factor in a military operation." This potential for a complete environmental change could bring down an army as soon as the rains start.[44] Intense rains were not unusual in Virginia. Being in line with hot, moist air from the Gulf of Mexico, the state experiences the majority of its rainfall during the summer months. The Virginia Piedmont is frequently hit with thunderstorms that account for most of the annual rainfall. In August, constant threats of hurricanes can add to the precipitation. The rains that could easily transform northern Virginia's landscape came often during those summer months.[45]

These rainstorms had a larger influence than the physical topography as the soldiers also recorded feeling altered mentally in the wet weather. As historian Kathryn Shively Meier notes, the constant exposure to rain and mud led to increased discomfort for the troops. Wearing typically ill-fitting, wool uniforms that soaked up water and allowed dirt and mud to rub up against bare skin, the men in both armies found it difficult from time to time to remain somewhat sane. Additionally, many of the troops linked the Virginia rains to diseases that swept through the armies in the early summer of 1862.[46]

During the Second Manassas Campaign, some soldiers found the rain comforting and

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[44] Winters, *Battling the Elements*, 33.

[45] Rice, "Virginia," *Climates of the States*, 2.

[46] Meier, *Nature's Civil War*, 45–47.

a source of pride in his experiences in the army. George Washington Whitman, the younger brother of famed poet Walt Whitman and a member of the Fifty-first New York Volunteer Infantry Regiment, wrote to his mother about his experiences sleeping outdoors while his corps moved from Fredericksburg to join Pope's army along the Rappahannock. After writing that Virginia's summer weather was "splendid" and that the days were "no hotter than in Brooklyn," he explained that the nights were cool enough to sleep without the protection of even a tent meaning he could "sleep out in the rain and not get the least cold or feel any worse for it." Because of the exposure, he noted, "Mother you must know that I am pretty toughf [*sic*] and hearty."[47] Since many of these young men joined the army in an attempt to prove their manhood to themselves and their neighbors, being able to proclaim his toughness brought a sense of pride to Whitman. Unlike many soldiers who found the rain and the resulting discomfort as a mental nuisance, Whitman found it a test of his manhood and almost rejuvenating.

Just like Whitman, John W. Ames of the Eleventh U.S. Infantry enjoyed the coming rains during late August. After having arrived at Fredericksburg with much of the Army of the Potomac's fifth corps, his regiment marched to reinforce Pope's troops along the Rappahannock River near Warrenton, Virginia. Starting the march around noon, Ames noted, the soldiers dealt with "a ferociously hot day," one that he further described as weather that was "broiling like the torrid zone." Ames continued that the regiment "made a pretty good march for the weather, but at the expense of sunstroke and faintness." After making about six miles into their march, Ames wrote, "a blessed black cloud came up, flashing and rumbling,

[47] George Washington Whitman to his mother, Near Cedar Mountain, Va., 17 August 1862 in *Civil War Letters of George Washington Whitman*, ed. Jerome M. Loving (Durham, N.C.: Duke University Press, 1975), 60.

and blowing a cool breath upon us." It started raining enough to "spoil the sport the dust had been having without getting us uncomfortably wet."[48] Despite primarily having a negative impact on the soldiers, rain also provided relief for soldiers. With the suppressive heat of a Virginia summer, the rain had a cooling effect at times, saving the soldiers from heat exhaustion and, even worse, heat stroke.

Although Whitman and Ames found the rains beneficial, the wet weather caused difficulties for the commanders of both armies as they continued to jostle along the banks of the Rappahannock. Between 20 and 24 August, frequent rain and thunderstorms began to pop up along the Rappahannock. Immediately, the effects started to emerge for both armies. Within a matter of days, the Rappahannock rose multiple feet, one soldier believed it rose six feet within one day, creating an increasingly daunting barrier between the two armies. The rising river made the proposed movements of both armies difficult to fulfill. The rains discouraged Lee from launching his planned attacks on 22 and 23 August. Pope too struggled to complete movements along the river over those days.[49] The rains created poor road conditions that discouraged Lee and Pope from launching their assaults. It also caused problems for some of the army units that attempted to cross the river. At one point, one Confederate brigade under Maj. Gen. Jubal Early found itself trapped on the opposite side of the Rappahannock from the rest of the Confederate force.[50]

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[48] John W. Ames to "My Dear Mother," 25 August 1862, Camp near Deep Run, Va., Letters July 5–December 29, 1862 Folder, John W. Ames Papers, 1860–1863, USAHEC.

[49] E. Porter Alexander, "Fighting for the Confederacy," in *The Civil War: The Second Year Told by Those Who Lived It*, ed. Stephen Sears (New York: Library of America, 2012), 391–93; and George H. Gordon, *History of the Campaign of the Army of Virginia, Under John Pope, Brigadier-General U. S. A.; Late Major-General U.S. Volunteers; From Cedar Mountain to Alexandria, 1862* (Boston: Houghton, Osgood, and Company, 1879), 67.

[50] Chamberlayne to Martha Burwell Chamberlayne, 6 September 1862, Frederick City, Md., fol. 4, sec. 1, Chamberlayne papers, VHS; Blackford, *Letters from Lee's Army*, 124–26; E. R. P. Shurley, "At Rappahannock Station," *National Tribune*, 16 December 1897; Gordon, *Army of Virginia*, 67; Edward A.

While Union and Confederate troops and officers struggled with the rain along the river, the thunderstorms also gave the Confederate cavalry assistance, as well as fits, as they attempted to damage the Union logistical lines. Initially, Maj. Gen. J.E.B. Stuart and his cavalry planned to push across the Rappahannock, strike at Pope's headquarters near Catlett's Station, and destroy the Union logistical line. Just as the cavalrymen moved to cross the river, the skies opened. "We had some heavy showers this afternoon," wrote George M. Neese, a member of Stuart's horse artillery, "and when we got to Warrenton we were as wet as water could make us." At nightfall "it commenced raining again, and shower after shower of the heaviest sort from the blackest clouds I ever saw kept pouring down till nearly midnight."[51] While the rain caused discomfort for the men, it also prevented the cavalry from moving quickly to strike at the Union supply line. As Neese noted, when making this initial movement against Catlett's Station, "On account of the darkness, rain and deep mud we made slow progress in marching for a raid." By midnight, the rain had fallen so heavily that the water and mud sat "half a knee deep."[52] While using the heavy rain and thunderstorms as cover, Stuart made his way around Pope's army and struck at the supply depot at Catlett's Station on 22 August 1862. In the midst of the rain, Stuart and his men captured most of Pope's personal belongings and hoped to eliminate the logistical line through the destruction of the nearby railroad bridge. As the troops initially set out to do so, they soon found that the

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Moore, *The Story of a Cannoneer Under Stonewall Jackson in which is Told the Part Taken by the Rockbridge Artillery in the Army of Northern Virginia* (New York and Washington: The Neale Publishing Company, 1907), 100; Blackford, *Letters from Lee's Army*, 126; and Gordon, *History of the Campaign of the Army of Virginia*, 62–63.

[51] George M. Neese, *Three Years in the Confederate Horse Artillery* (New York and Washington: The Neale Publishing Company, 1911), 100.

[52] Neese, *Three Years*, 101.

saturated ties would not burn. Instead, they turned to axes, which soon proved too time consuming to damage the bridge enough to prevent supplies from coming through. Despite this, Stuart and his troopers successfully captured a significant amount of Union supplies while showing Pope and his army the possibility that the cavalry could cut them off from Washington, D. C. The rain prevented the complete elimination of the Union supply line.[53]

Despite the problems the Confederate's faced with the torrential downpours between 20 and 24 August, the rain also provided a key advantage for Jackson as he planned to strike at Pope's main supply depot at Manassas Junction. As mentioned earlier, the mixture of water and soil produces a key physical component that armies constantly faced in the nineteenth century—mud. Different types of soil have distinctive reactions to the rain. Therefore, the reaction of local soil to the rain would improve or decrease the chances of the army moving with few problems in the region. As Winters writes, "Mud is simply a mixture of water and small fragments of decomposed rock. However, the resulting material may vary greatly in composition, thickness, moisture content, distribution, and duration—characteristics that combine in many different ways to produce an infinite variety of situations."[54] This was especially true in central and northern Virginia.

Indeed, some Union and Confederate soldiers mentioned that the rain had turned the dirt roads into muddy quagmires during the four days of raining. Typically, the soil in central and northern Virginia bogged down armies during heavy rains or, in the winter, snows and freezing and thawing. "Poorly drained and consisting of soil composed largely of red clay," writes historian Ted Steinberg, the roads in Virginia "turned into quagmires when it rained,

[53] Neese, *Three Years*, 100–102.

[54] Winters, *Battling the Elements*, 33.

leaving Union supply trains to slog through muck that at times buried mules up to their ears."[55] This problem became especially pertinent during the winter of 1862–1863. After his defeat at the Battle of Fredericksburg in December 1862, Maj. Gen. Ambrose Burnside attempted a flanking maneuver to force the Confederate's out of their defenses outside of the city. For almost thirty hours after initiating the movement, the rains fell along the Rappahannock and Burnside's army became stuck on the roads. Known as the "Mud March," the Army of the Potomac sank in the mud, including mules and horses drowning in the muck.[56]

With the amount of rain that fell during the three days between 20 and 24 August, it would seem to have been enough of a drenching that the ground would have had a similar effect for the Union and Confederate forces during the Second Bull Run Campaign.[57] Indeed, one Union soldier noted that the rains caused the soil to stick to everything and cause problems for movements along the river's banks. On 23 August, the soldiers were forced to retreat across the Rappahannock in "the heaviest rain storm ever I beheld" remembered John Vautier of the Eighty-eighth Pennsylvania. After having set fire to the bridge in order to prevent a Confederate pursuit, Vautier wrote, "The mud was so thick and stiff that I actually tore my shoe off my foot for I couldn't extract [it] out the mud." He spent the rest of the approximately ten-mile march plodding along in a single shoe. Throughout the long march,

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[55] Ted Steinberg, *Down to Earth: Nature's Role in American History* (New York: Oxford University Press, 2002), 90.

[56] Steinberg, *Down to Earth*, 90–91; and Winters, *Battling the Elements*, 34–39.

[57] Neese also mentioned that Stuart's raid against Catlett's Station had taken place in muddy conditions, but that these could not "stop him when he's on a warm fresh trail of Yankee game." Neese, *Three Years*, 102. For more on the environment's impact on the Mud March, see Steinberg, *Down to Earth*, 90–91; and O'Reilly, *The Fredericksburg Campaign*, 478–80.

he noted, the troops were moving through mud "up to the knees."[58] As Vautier indicates, the rain had transformed the soil into a sticky mess. Similar to the problems with rain and mud during the Peninsula Campaign earlier that summer, the mud itself became a source of struggles for the soldiers on both sides.

Lee's decision to move the operation away from the Rappahannock tested the northern Virginia mud. Having been stuck along the river, Lee desperately wanted to move closer to Washington, D.C., and away from the planned landing spot for the Army of the Potomac. To dislodge Pope's line, Lee ordered Jackson's wing to march around the federal position while Lt. Gen. James Longstreet's wing held the Yankees in place. Over 25 and 26 August, in only thirty-six hours, Jackson's twenty-five thousand warriors marched fifty-four miles from Jeffersonton to Manassas Junction. In conjunction with a false movement to the west, Jackson moved his men quickly enough to reach Manassas before Pope abandoned his river position. With this impressive movement, a question arises about the march: how did the weather impact Jackson's flanking maneuver?[59]

[58] John D. Vautier, diary entry, 23 August 1862, John D. Vautier Papers, 1843–1899, USAHEC.

[59] Hennessy, *Return to Bull Run*, 96–115.

A small group of Union soldiers look over the destroyed rolling stock near Manassas Junction after Lt. Gen. Thomas J. "Stonewall" Jackson's wing of the Confederate forces captured and destroyed the supply depot on 26 August 1862. The weather provided assistance for the Confederate troops on the grueling 54 mile march that occurred to reach the junction, many without wearing shoes similar to the Union soldier in the middle of the photo. *Photo: Manassas Junction, Va. Soldiers beside damaged rolling stock of the Orange and Alexandria Railroad, LC-DIG-cwpb-00260, Library of Congress Prints and Photographs Division, Washington, D.C.*

*Figure 8*

Despite all the rain, a situation that should have bogged down the Confederate troops according to other examples, the downpours assisted Jackson's movement to the junction. Though it had rained in the region immediately after Cedar Mountain, the ground remained fairly dry for the next ten days. Little rain fell after 13 August until the torrential rains between the 20th and 24th. Drought conditions made plants thirst for water more intensely when the rains rarely came. Although Virginia did not experience the same type of drought conditions in 1862 as the Great Plains had at that time, a significant lack of rain did occur during the nineteenth century. Once the rains started coming down in late August, the water fed the plants instead of sitting at the surface. It is most likely that local plants soaked up most of the water that fell during those days.[60]

[60] Both Kenneth Noe and Paul Gates speak to the drought that struck throughout the south in 1862 and its long-lasting ramifications. See, Paul W. Gates, *Agriculture and the Civil War* (New York: Alfred A. Knopf, 1965); and Noe, "The Drought that Changed the War," *New York Times*, 12 October 2012.

Additionally, the ground may have been dry enough to absorb the water without turning the ground into a boggy mess. Instead, the ground possibly remained dry enough to avoid becoming the muddy slop that typically came along with army movements in the aftermath of heavy rains.[61] In addition, few soldiers complained about dirt clouds during the march to Manassas Junction. Unlike during the movements before Cedar Mountain when the dry dirt roads caused suffocating clouds, only two soldiers mentioned any problem with possible dust clouds or dirt of any kind. With twenty-five thousand men marching along the roadways, there would have been immense dust clouds during the movement. Had that happened, Pope's officers and troops could have spotted the route of Jackson's maneuver. Similar to Cedar Mountain, the choking dust would have slowed the soldiers' movement, most likely keeping them from reaching Manassas in the thirty-six-hour timeframe.[62]

Instead, the rain seemed to have become a key advantage for Jackson's movement. According to historian Ted Steinberg, the Virginia mud acted as a defensive weapon for the Confederacy, such as during the Mud March, but Jackson's flank march to Manassas Junction shows how the soil composition and mud could have been an offensive weapon as well. This possibly resulted from the fact that the soil in the Virginia Piedmont was highly erodible. The varying soil patterns in northern Virginia was something that altered the landscape in the aftermath of rain. In the different regions of the state, the soil responded to the rain due to the porosity and permeability of the ground. In northern Virginia, four

[61] Soldier James S. Harris noted that over August 25, Jackson's troops marched almost 35 miles, but never complained about dust, which may have been a result of the compacting nature of rain on the soil. Harris, *Historical Sketches of the Seventh Regiment North Carolina Troops* (Mooresville, N.C.: Mooresville Printing Company, 1893), 17–18.

[62] Philip Francis Brown, *Reminiscences of the War of 1861–1865* (Richmond, Va.: Whittet & Shepperson, 1917), 25; and Gordon, *Army of Virginia*, 101.

different distinct geological areas, what geologists call provinces, make up the landscape. These provinces mark different types of bedrock, which influences the reaction to rain as well as the depth of mud. During the campaign, the armies marched over four different provinces: the Coastal Plain, the Piedmont, Culpeper Basin, and the Blue Ridge. Primarily, the forces would find their way along the Piedmont and the Culpeper Basin.[63]

These differences in provinces had a direct impact on how the soldiers were able to move across the landscape. Both the Piedmont and the Culpeper Basin had shallow topsoil with harder bedrocks underneath. Although the Piedmont consists primarily of a granite bedrock, the minerals were more susceptible to erosion than in the Culpeper Basin. The granite juts up toward the topsoil throughout much of the region leading to the rolling landscape throughout the Piedmont. The Culpeper Basin consists primarily of harder volcanic rock, which forms the majority of high ridges throughout the area along the Appalachian Mountain range. Similar to the granite bedrock of the Piedmont, the Culpeper Basin's volcanic minerals reside close to the surface near Bull Run. The bedrock provides a solid base for dirt roads in the region, even when saturated with rain.[64] As mentioned earlier, the soil series in northern Virginia's Piedmont consisted of highly erodible "Cecil, Helena, and Appling" soils. When the rains fell, it quickly transformed the soils into a loosely formed mud. As historian Steven Stoll notes, "Some of this land is so pliant it has come to be known as 'sugar' soil, for its tendency to melt and gully under rainfall."[65] With this type of sticky

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[63] E-an Zen and Alta Walker, *Rocks and War: Geology and the Civil War Campaign of Second Manassas* (Shippensburg, Penn.: White Maine Books, 2000), 11; and Winters, *Battling the Elements*, 33.

[64] Zen and Walker, *Rocks and War*, 14–15.

[65] Steven Stoll, *Larding the Lean Earth: Soil and Society in Nineteenth-Century America* (New York: Hill and Wang, 2002), 136; and James C. Barker, "Part VI-Soils of Virginia," *Agronomy Handbook*, Virginia

soil, the mud could quickly reduce army movements to a snail's pace. The shallow topsoil meant that even if the mud stuck to the soldiers and military equipment, the bedrock prevented the men and animals from truly sinking in the mud as they would on the Virginia Peninsula east of Richmond and the roads on the Rappahannock near Fredericksburg. Due to its erodible tendencies, rains would constantly expose the strong bedrock underneath. Having the bedrock close to the surface after the rain eroded the topsoil in anyway, the Confederate soldiers did not face the deep mud that could sink an army that would be found closer to the river valleys of the James and Rappahannock, both regions where the Union forces had found themselves literally sinking in mud.[66]

Instead of the mud slowing the march, it compacted the soil enough to keep the dirt from becoming dust clouds while not being wet enough to bog down the soldiers. With few mentions of dust clouds from the soldiers' sources, despite the early troubles, the rain assisted the Confederate forces in achieving Jackson's main objective, the capture and destruction of Manassas Junction before Pope responded.[67] Additionally, the bedrock being close to the surface made the mud less formidable for the army on the march. Whereas the Tidewater region of Virginia had deep, sandy soil from its time under an ancient ocean, the Piedmont retained sandstone and igneous formations only a few feet below the soil. Although this caused some soldiers to suffer while marching, it also prevented the soil from becoming the muddy, sinking slop as found closer to the river banks of the Rappahannock and the

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Cooperative Extension, Virginia Polytechnic Institute and State University, p. 72, https://pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/424/424-100/PDF_part6.pdf, accessed 16 January 2018.

[66] For more on the soil's reaction to rain in the Piedmont, see Stoll, *Larding the Lean Earth*, 136.

[67] Steinberg, *Down to Earth*, 90–91. Only two soldiers remembered any indication of dust clouds during Jackson's flanking maneuver. See, Brown, *Reminiscences of the War*, 25; and Gordon, *Army of Virginia*, 101.

James, for example. The Confederate soldiers did not face the same possibility of having their march slowed by the soil as in other campaigns.[68]

The Confederate officers also possibly understood the problems the soil could cause for the soldiers on the move. Instead of keeping to the roads, the troops were pushed along alternative routes. As Lieutenant John Hampden Chamberlayne of the Twenty-first Virginia Infantry wrote, after crossing the Rappahannock, the Confederates "marched by strange country paths, across open fields and comfortable homesteads" until they reached the Manassas Gap Railroad. From that point, Jackson's corps followed the rail line until arriving at Manassas Junction on 26 August.[69] By avoiding the major roads along their march, the Confederates may have bypassed the negative effects of the mud in northern Virginia. Dirt roads quickly became either muddy quagmires or, as one soldiers claimed, rivers of liquid earth. Instead of keeping the men on the roads themselves, the Confederate officers avoided the mud almost completely. In reality, the officers most likely ordered their men to the alternative routes because it was quicker than taking the circuitous roads between the west bank of the Rappahannock and Manassas Junction. In the process, they unknowingly avoided a key ecological issue that could have ended Jackson's impressive movement as soon as it began. Instead, the grass and other growth in the open fields along the route most likely kept the mud at bay. The plants soaked up the water while also holding the soil in place. Despite the intense rains, the Confederate's overcame the weather to make the impressive march that caused Pope to move from his position on the Rappahannock, setting the stage for another

[68] Zen and Walker, *Rocks and War*, 14–15.

[69] Chamberlayne to Martha Burwell Chamberlayne, 6 September 1862, Frederick City, Md., fol. 4, sec. 1, Chamberlayne papers, VHS.

bloody fight near Bull Run.[70]

*The Dry Conditions*

Between 25 and 30 August, the downpours stopped, allowing the grounds to dry once again. Although the weather cooperated for the battle, having little influence on the fighting overall between 28 and 30 August, the dry roads molded the tactical planning of the Union army during the fighting over 29 and 30 August. Similar to the famed Battle of Gettysburg, the Army of Virginia and the Army of Northern Virginia entered the fighting in a piecemeal fashion. While Jackson had his men set in position in an unfinished railroad bed, Pope had to reunite his forces after chasing Jackson to Manassas Junction. Without a clear perspective on Jackson's position or the situation in general, Pope's officers, typically his division and brigade commanders, committed their forces without devising a larger plan to attack Jackson's position. With Jackson holding part of the Union army at bay, Lt. Gen. James Longstreet's thirty thousand Confederate soldiers started to arrive on the field on the afternoon of 29 August. Just as his men started marching through Gainesville, a small town west of the main field of battle, the Union Fifth Corps under Maj. Gen. Fitz-John Porter put into action Pope's planned flanking attack against Jackson's defensive line.[71]

Lee's Confederates found themselves under a new threat as Porter's corps was in a position to easily march on Jackson's exposed right flank. Luckily for the Confederacy, the maneuvering Union troops telegraphed their arrival. They gave away their route as clouds of dust rose from the roads they followed. Recognizing the sign of an approaching corps,

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[70] No officers in their official reports or available correspondences indicate that they consciously decided to move along the open fields and meadows rather than the established roads because of the rain. Even Jedediah Hotchkiss, Jackson's chief mapmaker, does not mention this as a factor in the route taken during the march. See Hotchkiss, *Make Me a Map of the Valley*, 59–76.

[71] Hennessy, *Return to Bull Run*, 224–42.

Confederate officers were concerned that the fields were open to Jackson's flank. The only Confederate forces between Jackson and Porter were a few companies of Confederate cavalry under Stuart, leaving a small unit against the ten thousand-man corps under Porter.[72]

Thinking quickly, Stuart attempted to slow the fifth corps through the use of deception. Using the movement of the fifth corps as inspiration, Stuart immediately ordered one company of his men to spread out without causing greater danger to themselves in order to make his force seem much larger. While his skirmishers started firing on the Union troops, his other five companies gathered as many branches and as much brush as possible. After doing so, he ordered them to ride back and forth along the roads between the fifth corps and the Warrenton Turnpike, the main macadamized road through the area. In the process, the horse hooves, dragged branches, and brush kicked up massive amounts of dust, making it seem that Longstreet's wing had already arrived on the field. Witnessing the rising clouds, both Porter and third corps commander Maj. Gen. Irvin McDowell came to the conclusion that Longstreet was on the field, making the original plan almost impossible. A report from cavalry commander Brig. Gen. John Buford confirmed Porter's and McDowell's beliefs. With the fifth corps at a standstill, Longstreet's men were able to move into position, blocking the path to Jackson's flank and reuniting the Army of Northern Virginia in the process.[73]

Although a seemingly minor part of the battle, the delay in Porter's actions and eventually his being stalled transformed the situation on the battlefield for Pope. Already

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[72] J.E.B. Stuart to Brig. Gen. R. H. Chilton, 28 February 1863, *OR*, ser. 1, vol. 12, pt. 2, p. 736; W. W. Blackford, *War Years with Jeb Stuart* (New York: Charles Scribner's Sons, 1946), 126; and Hennessey, *Return to Bull Run*, 226–27.

[73] Stuart to Chilton, 28 February 1863, *OR*, ser. 1, vol. 12, pt. 2, p. 736; Blackford, *War Years*, 126–27; and Hennessey, *Return to Bull Run*, 226–27.

dealing with mass confusion, Pope and his officers were working under certain assumptions as the day progressed on 29 August, most of which were wrong. Since Porter saw the rising dust clouds, convincing him that Longstreet's wing was on the field, Pope's initial plan to strike at Jackson's flank quickly fell apart. This entire shift in fortunes came with the shifts in weather during the days after Jackson's flank march. With the roads now dried out after the rains stopped on 25 August, Stuart took advantage of the loose dirt to make his small force seem larger than in reality. Had the roads remained wet and compacted, the opportunity for Stuart's deception would not have existed. Instead, the dry roads, in part, helped slow the Union plans and forced Pope and his officers to adjust their tactical planning for 30 August, eventually setting the stage for a devastating counter attack that almost destroyed the Army of Virginia and ending the Second Battle of Manassas in a Confederate victory.[74]

With no rain occurring during the fighting and daily temperatures remaining around the typical average for August in Virginia, the weather was of greater importance to the Confederate soldiers who had to help clear the battlefield after 30 August. With rising temperatures after 30 August, Confederate soldiers reported the increased decomposition of dead soldiers' and animals' bodies along the battlefield. D. Augustus Dickert remembered, "The hot sun made decomposition rapid." A number of the primarily Union soldiers left to the elements along one of the hills or ridges had become so rotted that "their heads had left the body and rolled several paces away." Additionally, he described, "All the dead had become as black as Africans, the hot rays of the sun changing the features quite

[74] Stuart to Chilton, 28 February 1863, *OR*, ser. 1, vol. 12, pt. 2, p. 736; Blackford, *War Years*, 126–27; and Hennessey, *Return to Bull Run*, 227.

prematurely."[75] Although the weather remained quiet during the Second Battle of Manassas, the elements left a disturbing field of death. The local civilians did not have to handle the rotting corpses as the quick moving Confederates rushed the burial of the dead, an unusual situation during much of the conflict.[76] With the two armies having maneuvered and fought for almost two months straight with few breaks, the soldiers anticipated having a few days rest and some relief from the elements once the battle came to a close.

*The Fateful Thunderstorm*

The unpredictable weather patterns reappeared as the two armies prepared for new maneuvers. On 31 August, rain started to fall once again. The exhausted troops' hopes for repose ended when Lee's aggressive nature took over. Only two days after Second Manassas came to a close, Lee sent Jackson on another flank march against Pope's army, setting the stage for the Battle of Ox Hill.[77]

Fought in the midst of a thunderstorm, Ox Hill had a significant impact on the Army of Virginia's escape to Washington. Once Pope discovered Jackson's movement to cut off his retreat route, he hurried Maj. Gens. Isaac Stevens's and Phil Kearny's divisions toward the crossroads of the Warrenton and Little River Turnpikes to keep the Warrenton Turnpike, the main road to Washington, open. Arriving near Ox Hill around 5 p.m., Stevens's men came into contact with Jackson's wing. Almost immediately, a "driving thunderstorm"

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[75] D. Augustus Dickert, *History of Kershaw's Brigade, with Complete Roll of Companies, Biographical Sketches, Incidents, Anecdotes, Etc.* (1899; repr., Wilmington, N.C.: Broadfoot Publishing Company, 1990), 144.

[76] Typically, civilians living near the battlefields either assisted or completely took care of the dead and wounded soldiers left behind. For an example of civilians having to assist in clearing the battlefield, see Mark M. Smith, *The Smell of Battle, the Taste of Siege: A Sensory History of the Civil War* (New York: Oxford University Press, 2015), 66–83.

[77] Edward Samuel Duffey, diary entry, 31 August 1862, Edward Samuel Duffey Diary, 1861–1864 (Mss 5:1 D8737:1), VHS; and Hennessy, *Return to Bull Run*, 153–455.

opened on the two armies.[78] One reporter noted, "The affair continued through the rainstorm until it was quite dark."[79] Hotchkiss remembered, "The fight took place during a terrific storm of rain, thunder and lightning."[80] In fact, one chronicler reported, most of Jackson's troops complained about "the heavy and blinding rain storm that beat directly into their faces."[81]

The natural elements added to the chaos of the battlefield. The thunderstorm darkened the field to an extent that soldiers and officers had difficulty distinguishing friend from foe. Indeed, Sarah Edmonds remembered being only a "few rods" or about twelve yards from Kearny when he first rode toward the Confederate line. "I saw him ride up to the line," she wrote, "but supposed him to be a rebel officer until the pickets fired at him."[82] Later, she noted, after having stumbled on some Union pickets attempting to bury a comrade, that "there were no 'struggling moonbeams,' or glimmering stars, to shed a ray of light" on the makeshift funeral. The only source of light were the "vivid flashes of lurid flame which the lightning cast upon the sad scene, lightning up for a moment the surrounding forest, and then dying away, leaving the darkness more intolerable."[83]

Elements of Civil War fighting made communication difficult without ecological factors. Black powder weapons, both for the infantry and artillery, altered the ability for

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[78] Chamberlayne to Martha Chamberlayne, 6 September 1862, Frederick City, Md., fol. 4, sec. 1, Chamberlayne papers, VHS.

[79] Anonymous Army Correspondence of *Mobile Tribune*, "From Our Advancing Army—Two Days After the Great Battle," *Mobile* (Ala.) *Tribune*, 24 September 1862, Anonymous (Confederate) Published Letter: 9/1-2, 1862 Folder, MNBPL.

[80] Hotchkiss, *Make Me a Map of the Valley*, 77.

[81] Gordon, *Army of Virginia*, 447.

[82] Edmonds, *Nurse and Spy in the Union Army*, 265.

[83] Edmonds, *Nurse and Spy in the Union Army*, 266.

soldiers and officers to communicate. Depending on the amount of wind and humidity, the smoke caused by black powder weapons tended to hang in the air, obstructing the vision of the troops. Additionally, the miniature explosions that took place when a musket or cannon was discharged increased noise on the battlefield that made verbal communiqué almost impossible. As Henry Kyd Douglas, one of Jackson's staff officers, noted, the fighting at Ox Hill maintained these elements while the storm made it more difficult. He wrote that the thunderstorm's "fierce elements intensified the confusion of the sound and fury." As the fighting commenced in the midst of the storm, Douglas remarked, the rain and thunder continued to act as a detriment to the soldiers. "It was," he wrote, "a beastly, comfortless conflict in the rain and the wood, without glory or any adequate result." While the Union and Confederate troops were struggling through the gale's darkness, according to Douglas, the storm also intensified the terrifying sounds of the battlefield. As the muskets and cannons deafened the soldiers, Douglas remembered, "Loud and repeated peals of thunder replied, superior to the roar of artillery," made worse "by the echoes of forest and ravines, until night came down on the scene."[84]

For the two Union division commanders, Stevens and Kearny, this became a fatal problem. As the fighting commenced, both Stevens and Kearny took up positions among their men. They hoped to encourage the troops and help them maintain their positions in the driving rain. After hearing about the threat of Confederate forces striking vulnerable spots in the Union lines, Stevens and Kearny, at separate times in the battle, pushed forward to get a better grasp on the situation. The obscured landscape created difficulties for the two

[84] Henry Kyd Douglas, "General Phil Kearny, A Confederate Officer's Reminiscences of the Death of that Gallant Soldier," *Philadelphia Weekly Times*, 29 November 1879.

commanders as they looked to understand the positions of the two forces.

In the midst of the thunder and rain, Kearny also rode forward in an attempt to rally his troops and prove to them that they were not vulnerable. Without being able to see the enemy, Kearny suddenly found himself in the middle of the Confederate position. As one reporter noted, Kearny "was leading a regiment to the attack, and came suddenly and unexpectedly upon the 49th Georgia."[85] Neither Kearny nor the Confederates realized that they had become intertwined. Suddenly, according to Douglas, the Confederate troops "called upon" Kearny to surrender "thrice or four times . . . he answered in action."[86] Instead of surrendering, Kearny tried to escape the situation. After turning and spurring his horse to return to the Union lines, he was hit with multiple shots, killing him almost instantly.[87] As the troops struggled to fight through the intense thunderstorm, the weather caused the deaths of these two promising generals. With the elements obscuring vision and sound, neither Kearny nor Stevens had the opportunity to escape their fate.[88]

[85] Anonymous Army Correspondent, "From Our Advancing Army," *Mobile* (Ala.) *Tribune*, 24 September 1862, Anonymous (Confederate) Published Letter Folder, MNBPL.

[86] Douglas, "General Phil Kearny," *Philadelphia Weekly Times*, 29 November 1879.

[87] Douglas, "General Phil Kearny," *Philadelphia Weekly Times*, 29 November 1879; and Edmonds, *Nurse and Spy in the Union Army*, 265.

[88] Gordon, *Army of Virginia*, 444.

An exaggerated print of Union Maj. Gen. Philip Kearney's death at the Battle of Ox Hill (Chantilly) in the midst of a thunderstorm. While an attempt at glorifying his death, the print does attempt to capture the intensity of the thunderstorm in the background. *Photo: General Kearney's gallant charge, at the Battle of Chantilly, Va., 1st of September 1862, LC-USZ62-15634, Library of Congress Prints and Photographs Division, Washington, D.C.*

*Figure 9*

In addition to the storm's obstruction of the soldiers' and officers' vision and hearing, the rain wreaked havoc on the soldiers' ability to physically fight as the rain spoiled their weapons. Black powder, the element used to propel the projectiles in Civil War weapons, typically became spoiled by wet weather. With muskets being muzzle-loaded weapons—the powder and bullet were placed in the mouth of the barrel and rammed down to the end—it directly exposed powder to the elements when the fighting commenced. Since the soldiers could not prevent the water from entering the barrel or touching the powder once opening the cartridge, their muskets soon spoiled. Therefore, with lightning flashing opposite the musket flashes of the muzzles, Douglas noted, the fighting continued through the rain "until guns and ammunition were wet and useless."[89]

With nightfall, the fighting came to a close, allowing Pope's army to escape to

[89] Douglas, "General Phil Kearny," *Philadelphia Weekly Times*, 29 November 1879.

Washington, D.C., thanks, in part, to the unexpected thunderstorm.[90] The tempest's spoiling of the Confederate's weapons and making the roads muddy slop slowed their pursuit of the Union army. As Gordon mentions, "This was the last effort made that night to retard Pope's march, and it had failed." The rain was partly to blame for this failed attempt as Confederate troops struggled through the blinding darkness, but other officers reported that the weapons failed. One brigade officer made it clear to Jackson in the aftermath of the fighting when he noted that "his men could not, on account of the rain, use their muskets."[91] With the thunderstorm ending the pursuit of Pope's men and Lee's new focus on crossing the Potomac River into Maryland, the Second Bull Run Campaign came to a close in early September 1862.[92]

*Conclusion*

Even after the soldiers entered Maryland, weather manipulated the movement and abilities of armies in Virginia throughout the rest of the conflict. The weather patterns in Virginia in August 1862 exemplify the unpredictability of the weather in the region during the Civil War. Other campaigns, such as the Peninsula Campaign and the Mud March in the summer of 1862 and winter of 1863, respectively, witnessed similar patterns.[93] The Second Manassas Campaign also illustrates how different regions in a single state affected the true

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[90] Douglas, "General Phil Kearny," *Philadelphia Weekly Times*, 29 November 1879.

[91] Gordon, *Army of Virginia*, 447.

[92] For more on the Battle of Ox Hill, see David A. Welker, *Tempest at Ox Hill: The Battle of Chantilly* (Cambridge, Mass.: Da Capo Press, 2002); and Paul Taylor, *He Hath Loosed the Fateful Lightning: The Battle of Ox Hill (Chantilly) September 1, 1862* (Shippensburg, Penn.: White Mane Publishing, 2003).

[93] For more on the weather's impact on the Peninsula Campaign and the Mud March, see Judkin Browning and Timothy Silver, "Nature and Human Nature: Environmental Influences on the Union's Failed Peninsula Campaign, 1862," *Journal of the Civil War Era*, forthcoming 8 (September 2018); and O'Reilly, *The Fredericksburg Campaign*, 478–87.

impact of the weather's randomness.

Temperatures fluctuated throughout the campaign making the soldiers' experiences even more uncomfortable than typically experienced. This aspect of the campaign was common during the Civil War. Other campaigns, including the Fort Henry and Donelson and Peninsula campaigns earlier in 1862, witnessed the impact of the changing climate on local temperatures.[94] The above-average mercury readings in August 1862 made heatstroke more common among soldiers in the Second Manassas Campaign than in other campaigns during that year. During the movements surrounding the Battle of Cedar Mountain, the soldiers of both armies suffered under days of intense heat. This heat also created further horror after the battle. After three hard days of fighting, approximately 3,300 men laid dead on the fields. The hot weather caused the bodies' decomposition to increase, making the bodies physically breakdown and releasing a sickening stench throughout the region. While temperatures were more unpredictable in the year of 1862, it was also the one weather factor for which soldiers and officers could have been better prepared. Although potable water was difficult to come by in northern Virginia, officers continued to push their soldiers to their physical limits, never adjusting for how the higher temperatures would cause their bodies to breakdown. Due to the increased prospect of heatstroke and dehydration during August 1862, soldiers were typically incapacitated to a certain point throughout the campaign.

Virginia thunderstorms and rain were harder to predict and, in response, prepare for. The summer rains played the most significant part in derailing officers' plans while on the

[94] For more on the weather in the Fort Henry and Donelson and Peninsula campaigns, respectively, see Michael Burns, "The Environment's Fight: Water and Weather at Forts Henry and Donelson" in *The Tennessee River Campaign* (Tentative Title), Steven E. Woodworth and Charles Greer, eds., Campaigns in the Heartland Series, forthcoming (Carbondale: Southern Illinois University Press); and Browning and Silver, "Nature and Human Nature."

move. Once they moved to the Rappahannock and in the aftermath of the official Second Bull Run battle, the rains took over as the central meteorological factor. Along the river, both Pope and Lee planned to strike a blow, but the rising waters eventually disrupted their intended assaults. Both Confederate and Union regiments were cut off from the main force by the rain and subsequent flooding. The deeper soils of the river bottoms also meant the soldiers found themselves bogged down in mud while along the river's banks. As Confederate troops approached the headwaters of the Rappahannock and moved further along the Piedmont on their flanking march toward Manassas Junction, shallow, thin and compacted top soil provided a solid base for the marching soldiers making mud less of a factor. The typical summer thunderstorms also led to the deaths of two promising Union generals while the soldiers fired blindly into the darkness at the Battle of Ox Hill. Being the most unpredictable, the rain consistently prevented officers and soldiers from fulfilling the intended plans throughout August 1862.

Despite facing unpredictable weather patterns on a daily basis, something that could have allowed the officers and soldiers to prepare for the Virginia summer, they failed to plan for the heat and rain. Instead, these weather-related factors dictated how the campaign progressed throughout the month of August 1862. Although an overlooked factor in the Second Manassas Campaign, the weather played a key role in determining the outcome of the pitched fights and maneuvers of the two armies between 1 August and 1 September 1862. With the unpredictable weather patterns, officers still struggled with significant physical features along the northern Virginia landscape. The local waterways also dictated the movement of the armies while officers attempted to exploit them throughout the month.

## Chapter 4
## The Rivers Ran Through It: Northern Virginia's Water and Waterways

In 1875, physician Thomas O. Summers wrote about the impact of hunger and thirst on the human body. While discussing the impact of thirst, he explained the extreme importance of consuming water. Throughout the day, "The waste of water in the system goes on constantly, through the excretions, respirations, and perspiration." Over twenty-four hours, he continued, "about a pound and a half [of water] is daily discharged by the skin, a little over one pound by exhalation from the lungs, and a little over two pounds by the urine." In order to replenish these losses, Summers argued, a person needed to either ingest liquids through drinking or, possibly, absorb them through the skin. The need to quench one's thirst was the single most significant health issue to maintain the body's ability to function for Summers. "Now not only is water an essential ingredient in all the tissues of the body," he wrote, "but it serves also as the menstruum of the nutritious elements. It is," he continued, "the vehicle of all food, and the medium through which the effete materials of the body are excreted from the system." He concluded, "We thus see how necessary is water to the life and health of the body." Without it, "intense suffering will be the result."[1] Water is essential to human life and no matter the fear that nineteenth-century Americans had about it, this doctor argues, they must consume it.

Military officers from before the Civil War also recognized this and focused on operating along local waterways. For centuries before the mechanization of warfare, water powered armies. River valleys attracted forces for its agricultural production. Rather than

[1] Thomas O. Summers, "Hunger and Thirst: I.—The Nature of Hunger II.—The Cause of Hunger III.—The Effects of Hunger Thirst," *Nashville Journal of Medicine and Surgery*, vol. 15, no. 3 (1 March 1875): 144.

slowly plod over land, generals attempted to employ the rivers to increase and speed up their offensive operations. Humans have attempted to employ the power of water for many purposes, from shipping to powering mills. Military commanders recognized from ancient times that ships moved more men and supplies in a shorter amount of time than soldiers and animals on foot thanks to that energy. Wells, natural springs, ponds, streams, and lakes, they believed kept armies hydrated. In many campaigns during the Civil War, the waterways provided that strength that commanders expected. The Mississippi, Tennessee, and Cumberland rivers gave western Union forces roads deep into the Confederate interior. The blue lines and blotches on the armies' maps became the key to unlocking the offensive capabilities of the landscape.[2]

This was not always the case though. Northern Virginia's water had a much different relationship with the armies than in most other campaigns. Officers and soldiers initially continued the perception of historic armies. They looked to the waterways and water more generally as a positive influence in their operations and attempted to incorporate them into their offensive logistical and strategic plans. Northern Virginia seemed perfect for the continuation of that military tradition. It is between two major waterways and covered in numerous smaller streams, creeks, and runs. The region apparently had both the offensive routes and sources for hydration to maintain the two armies. As the campaign progressed, the water's true role materialized. Intense rain, local geology and geography, and the soldiers'

[2] For an example of an ancient army reliant on rivers and river valleys, see Donald W. Engels, *Alexander the Great and the Logistics of the Macedonian Army* (Berkeley: University of California Press, 1972). For examples of the Army of the Tennessee's and the Army of the Cumberland's uses of rivers, see Lisa M. Brady, *War Upon the Land: Military Strategy and the Transformation of Southern Landscapes during the American Civil War* (Athens: University of Georgia Press, 2012), 31–34; and Steven E. Woodworth, *Nothing But Victory: The Army of the Tennessee, 1861–1865* (New York: Alfred A. Knopf, 2005). Even after the Civil War, militaries continued to employ the power of water to their advantage. For an example, see Micah Muscolino, *The Ecology of War in China: Henan Province, the Yellow River, and Beyond, 1938 – 1950* (New York: Cambridge University Press, 2015).

ignorance of hygiene combined to make the liquid in every form the exact opposite force. Steep banks made all of the waterways difficult to traverse and the impermeability of the bedrock pushed the water into those same sources. Instead of using the region's water effectively as other armies had done, it became a barrier to the two armies, blocking their abilities to operate as the generals hoped in the summer of 1862.

*The Waters of Northern Virginia*

The Chesapeake Bay has held a prominent place in American history since before European colonization efforts. Native groups moved and traded along the bay and the routes created in its watershed. Throughout the colonial period, Virginia and Maryland controlled the waters to the Atlantic in the Mid-Atlantic region. Although a prominent bay, and one that acted as an obvious protective barrier for colonial settlement, the Chesapeake also transformed the physical landscape of northern Virginia. Throughout the region, small creeks, runs, and rivers cut a number of valleys that broke apart the local countryside. All these waterways eventually drain into the Chesapeake. Maryland and northern Virginia were primarily drainage basins for the Chesapeake. With this direct connection to the bay's watershed, Virginia's history has constantly been connected to the waterways that run through it. Following the water in Virginia provides a glimpse into its longer history, including the Civil War era.[3]

[3] E-an Zen and Alta Walker, *Rocks and War: Geology and the Civil War Campaign of Second Manassas* (Shippensburg, Penn.: White Mane Books, 2000), 16.


The Waterways of Northern Virginia. *Map courtesy of Joseph M. Phillips.*

*Figure 10*

In addition to the many small runs and creeks, the waters that eventually drain into the Chesapeake created four prominent rivers in the commonwealth. Running mainly west to east, the Potomac River marks the most significant river in the region. It was the presence of the Potomac that led to the creation of Washington, D.C., as the national capital and pushed some landowners, most notably George Washington, to settle along the Potomac's banks to trade their goods with either Georgetown, D.C., and Alexandria, Virginia, or Europe to the east. Moving into southern Virginia, the York and James Rivers provided the waterways that led to the initial settlement of the colony. Sitting on a peninsula between the two, the village of Jamestown first came to prominence based on the importance of the tobacco trade. Later, the commonwealth's and, eventually, the Confederacy's capital, Richmond, emerged as the central city in the region. Residing along the fall line, the geographical boundary between the Piedmont and the Tidewater, of the James River, Richmond seemed to have a comfortable

position for the Civil War. Resting on a narrow peninsula, the city had natural defenses and a difficult approach. Small rivers and creeks broke up the landscape, while the region's coastal plains could quickly become a muddy quagmire that had the ability to sink wagons and drown mules. With a long history of settlement along the two water routes, Virginia had developed a strong central farming and trading region near the Confederate capital. This both influenced the placement of the Confederate government there and made the city one of the most important in the region.[4] While the Potomac, James, and York rivers are the most famous water features in Virginia, the rivers and streams of northern Virginia could dominate the landscape just as much as their more well-known geographic kin.

Perhaps the most noteworthy water feature in northern Virginia acted as both a divider for northern and central Virginia and a dare-mark between Lee's Army of Northern Virginia and the Union armies throughout much of the conflict after 1862. The Rappahannock River runs on a northwest to southeast trajectory, starting in the Blue Ridge Mountains and eventually pouring into Chesapeake Bay. The most prominent tributary is the Rapidan River, which drains into the Rappahannock about twenty miles northwest of Fredericksburg. About fifty miles south of Washington, D.C., and fifty miles north of Richmond at its fall line, the river became a central focus point for much of the war. Predominantly, from the late fall of 1862 through the spring of 1864, the Confederate and Union armies faced off near Fredericksburg in three major battles. Although a slow moving, fairly shallow river, the Rappahannock acted as a significant geographic feature throughout

[4] For more on the rivers in Virginia, see Thomas Jefferson, *Notes on the State of Virginia*, ed. and intro. Frank Shuffelton (New York: Penguin Books, 1999), 7–18; and .N. C. Grover and R. H. Bolster, *Hydrography of Virginia*, Virginia Geological Survey Bulletin 3 (Richmond, Va.: Board of Agriculture and Immigration, 1906).

the conflict.[5]

These watercourses in northern Virginia developed out of the relation between geology and water. The flow of water in a specific region depends as much on the type of bedrock as it does on the amount of rainfall. While certain areas may possess more water, and experience the creation of streams created from precipitation, the permeability of the minerals under the topsoil also directly impacts the types and amounts of waterways. In northern Virginia, especially in Loudon, Prince William, and Fairfax counties, the bedrock allows for more water flow than in the regions along the James, Rappahannock, and Potomac resulting in more small tributaries. Sitting primarily on granite, greenstone, and schist (Triassic) stones, northern Virginia is less porous than much of the coastal plains to the east near the Chesapeake. Waterways became prominent throughout the region and the availability of water, as well as the way the waters flowed through northern Virginia, molded how the resource influenced the Second Manassas Campaign.[6] The geographical dimensions of Virginia meant the northern Piedmont region consisted almost exclusively of flowing waterways, with little to no stagnant water in the area. For nineteenth-century Americans, the flowing waters also indicated the replenishment of fresh water. Believing that water flow from rivers and streams cleaned out spoiled water, Americans, including those in the armies, believed flowing water was cleaner than any standing water sources. The rivers and streams in the region reflected the exact opposite in 1862.

[5] Daniel Sutherland, *Fredericksburg and Chancellorsville: The Dare Mark Campaign* (Lincoln: University of Nebraska Press, 1998); and Jefferson, *Notes on the State of Virginia*, 7–18.

[6] Cady, *Ground-water Resources of Northern Virginia*, 2–3.

Fleeing African American refugees cross the Rappahannock River at one of the fords beyond the fall line in August 1862. Much of the river during the campaign, however, flowed above those fords, making impassable. *Photo: Rappahannock River, Va. Fugitive African Americans fording the Rappahannock, LC-DIG-cwpb-00218, Library of Congress Prints and Photographs Division, Washington, D.C.*

*Figure 11*

*Water, Water Everywhere, But Not a Drop to Drink*

By August 1862, it became apparent that the armies in Virginia would struggle with maintaining water supplies. This created a crisis in sustaining the soldiers' energy and health. As mentioned earlier, by the 1870s, some physicians recognized the importance of water to both quenching thirst as well as the human bodies' ability to function properly. The majority of Americans did not fully understand the important properties of consuming water.[7] This became especially important to soldiers on the campaign. A lack of water constantly plagued the armies. Small canteens and the ignorance of water's impact on the human body tended to cause soldiers and officers to go days without water supplies. The men substituted other liquids, primarily tea and coffee, to quench their thirst. They remained unaware that replacing water with tea and coffee caused a negative effect as well. The need for water had a greater

[7] Summers, "Hunger and Thirst," *Nashville Journal of Medicine and Surgery*, 144.

purpose beyond preventing dehydration. Consuming water directly affects the ability to replenish energy, especially when individuals find themselves taking part in increased activities. Attempting to consume other liquids might not provide the same type of replenishment. This is especially true when consuming liquids that contain caffeine—found both in tea and coffee—due to the diuretic effect of caffeine. The stimulant can increase dehydration while seemingly quenching thirst. When left without water, the soldiers found themselves suffering from decreased energy levels. In the process, the troops became progressively ineffective as they suffered from further bouts of dehydration. The lack of knowledge when dealing with dehydration and the problems with finding clean water sources created a vicious cycle of energy depletion in Civil War armies.[8]

Dehydration has a dangerous effect on the human body but is also a complicated health issue. Hot weather, like that experienced during the Second Manassas Campaign, had a substantial impact on the illnesses the troops bore during the operation. Some of the issues they faced, mainly heatstroke, had little relation to dehydration. Indeed, an individual can be completely hydrated and still suffer heatstroke. Suffering from thirst impacts the performance of an individual, especially when related to increased activity and stress. While some people can suffer a level of dehydration and continue to perform at their peak energy levels, constant lack of hydration and high temperatures increased the likelihood of experiencing

[8] Limited canteen supplies (U.S. Army canteens typically held less than a quart or 32 ounces of water) left soldiers well below the recommended amount of water to maintain proper hydration. According to the USDA Dietary Reference Intakes, water consumption for men over 18, the minimal age for soldiers on both sides at this time in the war, should be over 3.7 liters (about 125 ounces) of fluid per day. They recommend more if doing physical activities in a warm climate. Dietary Reference Intakes (DRI): Recommend Dietary Allowances and Adequate Intakes, Total Water and Macronutrients, https://fnic.nal.usda.gov/sites/fnic.nal.usda.gov/files/uploads/DRI_RDAs_Adequate_Intakes_Total_Water_Macronutrients.pdf, accessed on 29 July 2016.

dehydration's devastating impact.[9]

Heat is the central factor to influence a person's hydration. Since the Confederate and Union forces in northern Virginia experienced higher than usual temperatures, dehydration became common. Its symptoms arise quickly. Within a matter of hours, an individual develops an insatiable thirst. Next, a person feels a "vague discomfort" that includes "the flushing of the skin, heat oppression, weariness, sleepiness, impatience, anorexia and dizziness." Eventually, the individual develops shortness of breath, tingling, and even the discoloration of their skin. They might also start suffering from involuntary muscle contractions, convulsions, and cramps. Finally, they become exceedingly lethargic. Typically, only stopping to sit or lie down relieve these symptoms until one can rehydrate.[10]

Even after finding a source of water, an individual can continue to suffer the effects of dehydration in a devastating way. Troops undergoing extreme dehydration received little relief from consuming large amounts of water. As one army medic discovered in 1877, the effects of severe dehydration were not immediately cured through the consumption of water. In fact, the troopers in his study initially could not keep the water in their system. "As they kept filling themselves with water," he wrote, "it was vomited up." Warm coffee, according to the doctor, was the "only thing they had that revived them at all." Thus, even when trying to relieve the problem, an individual soldier could continue to endure physiological problems until, as the medic explained, "the remote tissues were supplied" with water."[11] Civil War

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[9] Tim Noakes, *Waterlogged: The Serious Problem of Overhydration in Endurance Sports* (Champaign, Ill.: Human Kinetics, 2012), 335–36. For more on heatstroke and hydration, see chapter 3.

[10] Noakes, *Waterlogged*, 47.

[11] J. H. T. King, "Brief Account of the Suffering of a Detachment of United States Cavalry . . ." *American Journal of Medical Science* (1878): 404–8, quoted in Noakes, *Waterlogged*, 49.

soldiers and officers ignored the relationship or were ignorant to the problem of hydration.[12] The possibility of experiencing dehydration was extremely likely for the troops in northern Virginia. Since the symptoms of dehydration attacked the soldiers' energy, they became more ineffective when lacking the necessary water.

On the battlefield, the struggle to find suitable drinking water soon exposed the negative impact of dehydration on soldiers' abilities on the battlefield. As discussed earlier, the August heat of 1862 weakened the troops through exposure, especially during the excessively hot days like 9 August. While on the verge of initiating the Battle of Cedar Mountain, the two forces struggled to supply water to their soldiers. In the midst of fighting, this became a greater concern leaving the men vulnerable to dehydration. On the march to the battle, one Union officer reported already witnessing the impact of thirst on the soldiers. Brig. Gen. John Geary reported that as early as nine or ten in the morning cases of heatstroke hit some of the men. As his brigade continued along the road, "the scarcity of water [caused] immense suffering." After about six miles, "the road on each side was full of men, who had been compelled to fall out from sheer exhaustion."[13] Once the battle commenced, trying to supply water became dangerous. Most troops never replenished their canteens during the battle. With amplified activity, the soldiers' sweating increased, making dehydration more likely.

In the aftermath of the battle, the armies struggled to find water. Union general

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[12] Kathryn Shively Meier, *Nature's Civil War: Common Soldiers and the Environment in 1862 Virginia* (Chapel Hill: University of North Carolina Press, 2013), 111–12. In reality, the majority of Americans did not fully embrace the importance of hydration during a physical activity, such as campaigning or fighting in a battle or, later, running a marathon, until the 1970s. For more on the lack of understanding in human hydration, see Noakes, *Waterlogged*, xiii-xviii.

[13] Brig. Gen. John W. Geary to General Augur, n.d., *OR*, ser. 1, vol. 12, pt. 2, p. 160.

Alpheus S. Williams recounted his actions on the night of 9 August where he joined his corps commander, Nathaniel Banks, to "the river [most likely Cedar Run] after water." Eventually, he fell asleep while feeding his horse. Much of the exhaustion that the troops experienced after the fighting came from the lack of hydration. Without water, the human body attempts to replenish its energy with rest or food. It is impossible for a person to survive without replenishing liquids. Williams awoke, most likely due to his thirst, "after an hour or so" and continued his exploration for water. That night, he implied that he did not find it only discovering "two bareheaded[?] staff officers of General Banks['s]" corps. After abandoning his search, he returned to his "old stand and dozed till daylight."[14] He went to sleep thirsty and had to wait until morning to rehydrate. Since the officers had no water in the aftermath of the battle, the foot soldiers most likely suffered similar fates.

After Cedar Mountain, Wyman Silas White, a sergeant in the Second U.S. Sharpshooters, and Samuel Beardsley of the Twenty-fourth New York, both part of the same brigade, noted the complete lack of water throughout the region. Having marched from Falmouth, directly across the Rappahannock from Fredericksburg, the unit arrived near the battlefield two days later. Throughout the day's march "through a level country," White wrote, the regiment found "no springs where we could get water." According to Beardsley, the "dry weather had dried up all the small streams and springs." Both men mentioned the only available water came from local wells, which was also limited since many had been drawn dry. Many of the soldiers near Cedar Mountain started to fight over the access to these wells. White, who was ill at the time, was "obliged to go without from eight o'clock in the

[14] Alpheus S. Williams to "My Darling Daughter," Culpeper, Va., 17 August 1862 in *From the Cannon's Mouth: The Civil War Letters of General Alpheus S. Williams*, ed. and intro. Milo M. Quaife (Detroit, Mich.: Wayne State University Press, 1959), 102.

morning to ten o'clock at night." With it being a "hot and sunny day," White suffered dehydration. He wrote that his "tongue would stick to the roof of my mouth and the thought of water was torture." Due to his dehydration, White said that during this difficult time "if I could only get to some good spring water and have all I wanted to drink that I would willingly lie down and die." Beardsley believed, "To tell how we all, officers and men, suffered for water, is impossible. . . . It was awful, and it is a wonder that more were not used up."[15] Even with the accessibility of water sources, such as wells, in the region, the soldiers desperately looked for drinkable water.

Similarly, during the Battle of Second Manassas, the soldiers were unable to maintain their hydration. A number of officers reported having men straggle from exhaustion, a sure sign of dehydration. Additionally, commanders complained about lacking water sources for their troops. One officer reported to Maj. Gen. Fitz-John Porter that he was willing to abandon his position due to the lack of water. "If left to me," he wrote, "I shall have to retire for food and water, which I cannot get here."[16] John Pope cited the shortage of supplies for his men as part of his purpose in retreating first to Centreville then to Alexandria in the aftermath of his defeat on 30 August. As he reported, his army was already short on provisions by the night of 29 August. Neither his men nor his animals had been fed for two or three days. The ignorance of dehydration also emerges in Pope's report. He constantly complained about his soldiers and animals possibly starving due to the missing provisions.

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[15] Wyman Silas White, "The Civil War Diary of Wyman S. White First Sergeant of Company 'F' of the 2nd U.S. Sharpshooter Regiment (New Hampshire Men) in the Army of the Potomac, 1861–1865," ed. Russel C. White, Manuscript Copy, p. 42, MNBPL; and Beardsley to "Did," 13 August 1862, Near Culpeper Court House, Letters 1862 Folder, Beardsley Papers, USAHEC.

[16] Maj. Gen. Irving McDowell or Brig. Gen. Rufus King to Maj. Gen. Fitz-John Porter, 29 August 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 524.

Not once does he mention the lack of water for his army. Since he complained about a general lack of provisions, water was most likely included in his deficiencies. By 31 August, he described his force as "broken and exhausted." Much of that exhaustion probably came from the immense dehydration they suffered over the three days of fighting even if Pope was unaware of it.[17]

Their desperation from thirst, at times, forced their hands when necessary. As historian Kathryn Shivley Meier has shown, the biggest issue that most soldiers faced was drinking from polluted water sources. Nonetheless, they consumed whatever water they could find.[18] To make matters worse for the soldiers in northern Virginia, the region itself held little potable water for them. Principally, the Piedmont resides along hard bedrocks dating back to the Triassic Period. The minerals under the top soil in the region rarely trapped water. One twentieth-century study of northern Virginia's ground water mentions that to find drinking water in the region, one had to dig no deeper than one-hundred to one-hundred fifty feet. The "trap or diabase" zones maintained "shallow wells" that possibly provided "moderate supplies in some places." Otherwise, little suitable ground water for the soldiers existed in northern Virginia, especially since the process of digging and maintaining wells was reserved for those troops who mainly remained stationary, such as in the forts surrounding Washington, D.C.[19]

When the government did attempt to supply water, it too failed to hydrate the soldiers. Alfred Bellard of the Fifth New Jersey Infantry Regiment noted the lack of potable

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[17] Maj. Gen. John Pope to general-in-chief Henry W. Halleck, 3 September 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 15–16.

[18] Meier, *Nature's Civil War*, 54–55, 111–12.

[19] Cady, *Ground-water Resources of Northern Virginia*, 2; and Meier, *Nature's Civil War*, 111–12.

water during his regiment's transfer from the Virginia Peninsula to Alexandria. Stuck on boats making their way up the Chesapeake, the soldiers had no natural fresh drinking water. While food shortages on the boats frustrated Bellard and his comrades, he believed that "the worst feature of our sail was the scarcity of good water." Instead of clean drinking water, the Union troops had only "condensed sea water." Already an unhealthy choice, Bellard noticed that the water "was very warm and brackish nearly making us sick to drink it." Eventually, the condenser "gave out" and was unable to "make it fast enough." After the equipment's breakdown, Bellard witnessed "from morning till night a string of men were waiting their turn for a cup of water."[20]

The need to remain hydrated meant campaigning armies looked to any available water. For those soldiers who marched along the Peninsula in McClellan's campaign, this made additional problems for their health as they had to deal with mosquitoes, which carried Yellow Fever and Malaria, as well as the waterborne diseases that tended to exist near large populations.[21] Northern Virginia had different health problems. Due to the impermeability of the northern Virginia bedrock, little standing water was present. Even if soldiers had the ability to dig wells in the region, as one geologist notes, the water in the "Triassic rock [most of northern Virginia's bedrock] is hard and contains much iron," which makes the water almost undrinkable. Additionally, few swamps and lakes were in northern Virginia at the time of the Civil War. The troops in the region had scarcer fights with Yellow Fever and Malaria. With few standing water sources, the soldiers relied on the streams and rivers of the

[20] Alfred Bellard, *Gone for a Soldier: The Civil War Memoirs of Private Alfred Bellard*, ed. David Herbert Donald (Boston: Little, Brown and Company, 1975), 128.

[21] Meier, *Nature's Civil War*, 111–12.

region. These running waters became the central focus for soldiers and officers for both hydration and hygiene.[22]

Although northern Virginia had a large amount of water, primarily sitting in the banks of the many creeks, runs, and rivers, finding fresh water sources were problematic even when dealing with moving water. As historian Margaret Humphreys notes, human contamination did not require direct contact with a water source. Civil War armies attempted to prevent the spread of certain diseases by requiring camps to have latrines, also known as sinks, dug away from the clean water source for drinking. Accordingly, soldiers were supposed to cover the sinks once the day finished to prevent any contamination from taking place. "These standards were rarely met," Humpreys writes, forcing the soldiers to live "amid a soup of fecal organisms."[23] Since Civil War armies rarely took the proper precautions to prevent water contamination when in a stationary position let alone while on the move, they created no effective way to keep sources of drinking water clean. Humphreys writes that, in camp warriors suffering from dysentery "were particularly likely to soil the ground near their tents, as the urgency of their evacuations prevented travel to the distant sinks." With basically open-air latrines, the organisms left from both animals and humans easily washed into near-by water sources after even a moderate rain.[24]

The members of both armies quickly found the problems that limited water sources mixed with both armies' ignorance of proper protection from water pollution had on

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[22] Cady, *Ground-water Resources of Northern Virginia*, 2–3; and E-an Zen and Alta Walker, *Rocks and War: Geology and the Civil War Campaign of Second Manassas* (Shippensburg, Penn.: White Mane Books, 2000), 14–16.

[23] Margaret Humphreys, *Marrow of Tragedy: The Health Crisis of the American Civil War* (Baltimore, Md.: The Johns Hopkins University Press, 2013), 98.

[24] Humphreys, *Marrow of Tragedy*, 98.

campaigning forces. Although the soldiers had little awareness of health issues associated with water, they could identify when they drank from tainted sources. One Virginia cavalry officer, Charles M. Blackford, found himself searching for water in the middle of the night after the Battle of Cedar Mountain, just as Jackson's corps had established a new position along the Rapidan. After feasting on a box of sardines with Brig. Gen. William N. Pendleton, the two men "crawled down to the marshy ground below us to get some water." Instead of finding a pond, lake, or stream, Blackford drank some water from "a horse track sunk into the mud." In the dark, both Blackford and Pendleton returned to the hillside where they ate their sardines and fell asleep with Blackford believing he had laid down next to a sleeping Confederate soldier. When he awoke, Blackford discovered to his horror that his sleeping partner was in fact a "dead yankee soldier." After realizing the situation, Blackford returned to his water-filled horse track. There he "found the water left in the track was much discolored by the blood which flowed from the dead yankee who was lying some two or three feet above it." He continued, "The thought that I had slaked my thirst on such water made me very sick," but that quickly passed.[25] Without standard water supplies, polluted water commonly made its way into the soldiers' systems.

That contamination created a major health crisis for the troops in 1862 and the rest of the conflict more generally. Dysentery—the most common affliction to strike Civil War soldiers—resulted primarily from contaminated water sources. Those who suffered from

[25] Susan Leigh Blackford and Charles M. Blackford, *Letter's from Lee's Army; Or Memoirs of Life In and Out of the Army in Virginia during the War Between the States* (1947; repr., New York: A. S. Barnes and Company, 1962), 108. Cavalry troopers in Company A of the Tenth U.S. Cavalry experienced a similar desperation while on patrol in Texas in 1877. Pursuing a "band of hostile Indians" in July, the troopers went almost three and a half days without water. Eventually, they became so desperate that they started to drink the blood of their dead horses as well as the horses' and their own urine. Thus, the desperation of finding sources for hydration was a common problem throughout American military history. See, King, "Brief Account," 406, quoted in Noakes, *Waterlogged*, 49.

dysentery could develop a lifelong ailment, but primarily the disease is treatable. The cure revolved around treatment with antibiotics, which was unavailable in mid-nineteenth century America. Dysentery easily transferred from an infected person to a healthy one. For the men in northern Virginia in 1862, they most likely caught the illness from contaminated food or water that came into contact another diseased man. The infected person suffered nausea, cramps, and fevers along with diarrhea—the biggest transmitter of the disease in 1862.[26] With so many soldiers suffering from the disease and a general absence of personal hygiene, dysentery quickly spread through the two forces, creating a greater crisis through indirect contamination of local water supplies.

The spread of dysentery ruined the energy required for operating against the enemy. The soldiers soon recognized the problems the disease created for them on the march. As Blackford reported to his wife, while stalking the Union troops along the Rappahannock, he was forced to take frequent breaks as "my old enemy dysentery set upon me very badly."[27] A few days later, the disease returned. He wrote, "I was very sick, having been all day and much of the night before in the saddle, suffering so much from dysentery that I could not keep my sword belt buckled without great pain." He requested leave to find a doctor, but he was not in the area. Blackford tried to rest, but he "suffered so much I could not sleep." His horse broke away from his tether, which forced him to chase the animal down that night. Then, he again attempted to sleep, but that night was "one of pain and suffering and if I live a thousand years I shall never forget it, for its agonies, both of body and mind, will ever haunt

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[26] Michael Kent, "Dysentery," *Food and Fitness: A Dictionary of Diet and Exercise*, 2d ed. (Oxford: Oxford University Press, 2016), http://www.oxfordreference.com.ezproxy.tcu.edu/view/10.1093/acref/9780191803239.001.0001/acref-9780191803239-e-549, accessed 11 May 2017; and Humphreys, *Marrow of Tragedy*, 98.

[27] Blackford, *Letters from Lee's Army*, 114.

me."[28] His experience was a common one for Civil War soldiers.

While Blackford's bout with dysentery exemplifies the impact of the illness on an individual, his response also represents the ignorance of soldiers and officers to causes of diseases, especially those related to water. During his battle with the illness in northern Virginia, Blackford emphasized trying to find "more nourishing food" in the hopes of overcoming his dysentery. Although clean, nourishing food can prevent the illness, it meant nothing without access to a clean water supply.[29] Along with Blackford, hundreds, if not thousands, of soldiers suffered from dysentery during the Second Manassas Campaign.

By extrapolating Humphreys's point about sinks and the ignorance of army regulations in camp, it is sufficient to say that soldiers were not using any type of latrines while on the march. So, although Blackford may have been infected due to contaminated food, it would have been moot as most of the water sources along the campaign route or near the battlefield were probably contaminated by the marching legions. What Blackford also exposes is that troops infected with dysentery, in addition to experiencing the symptoms that depleted their energy, found themselves lacking sleep due to the pain associated with the illness.[30] These unhealthy troops rarely replenished their energy through sleep as completely healthy individuals could do. With desperate troops constantly consuming polluted water filled with disease causing organisms, Union and Confederate soldiers were never fully healthy while in the field.[31] Their effectiveness as fighters never truly emerged through the

[28] Blackford, *Letters from Lee's Army*, 116–17.

[29] Blackford, *Letters from Lee's Army*, 116.

[30] Blackford, *Letters from Lee's Army*, 116–17.

[31] Indeed, Humphreys emphasizes the full effect of this cycle of disease and contamination on the soldiers even after the fighting came to a close: "Many soldiers suffered the consequences in bouts of acute or

four years of conflict, let alone during the operations in northern Virginia.

While the soldiers rarely understood the need for personal hygiene and its association with the spread or prevention of disease, they at times took the opportunity to wash up when not under fire. Since bath tubs were difficult to move, the soldiers typically employed natural water sources for cleansings. This included the famed Bull Run during the summer of 1862. After marching on Manassas Junction then toward Centerville on the opposite side of Bull Run, Lt. John Hampden Chamberlayne took advantage of the brief break from marching and fighting to clean up. When telling his mother about visiting a wounded friend in one of the local field hospitals, Chamberlayne mentioned that he provided his injured comrade with a clean shirt. After receiving leave, he found his friend covered in "dust and blood but in good hands." In an attempt to provide his comrade some relief, Chamberlayne "took off my shirt and gave it to him," since he "happened by good luck to have a clean shirt on, having bathed in Bull Run on friday [*sic*] morning and changed my clothes."[32] While the water provided relief for Chamberlayne, in the process, he also contaminated the creek. Until the water cycled through the region, any contaminants on his clothes or his person remained in the run. Similar to how troops, especially in camp, tended to use the closest available source as latrines, employing any water that other soldiers possibly drank for hygienic purposes added to the existing health crisis in Civil War armies.

Human contamination was not the only problem with polluted drinking water. As the two armies marched through the region, they needed to dispose of dead animals. The federals

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chronic diarrhea; one study found that a quarter of the veterans sampled had persistent disabling diarrhea after the war was over." Humphreys, *Marrow of Tragedy*, 98.

[32] John Hampden Chamberlayne to Martha Burwell Chamberlayne, 6 September 1862, Frederick City, Md., Folder 4, Section 1, Mss1C3552a, John Hampden Chamberlayne papers, 1858–1877, VHS.

and rebels grappled with keeping their animals well-fed and alive. Their animals were worked to exhaustion and lacked the nutrients necessary to remain strong. Typically, in the aftermath of a battle, the forces tapped to clean up the battlefield burned the animal carcasses. In northern Virginia, before the battle began on 28 August, Confederate forces used their dead horses to prevent Union troops from keeping hydrated. Union officer Jason V. Lawrence of the Second New York Artillery reported that his unit moved from Accotink, Virginia, just about nine miles south of Alexandria, to the remnants of the Stone Bridge that crossed Bull Run along the Warrenton Turnpike. In the process, the soldiers stopped to eat dinner, but continued a six-hour march until 10 p.m. when they arrived at the creek. Despite the troops needing water while on the march, Lawrence reported that they could not halt in Centreville. When they arrived at the hamlet, Lawrence wrote, "The water at Centreville was so bad, on account of dead horses being thrown in it, that we could not halt there." Instead, Lawrence continued, the artillery unit had to "march on to Bull Run before reaching good water."[33] Just as Blackford feared the blood of the dead Unionist could cause him to become sick and Chamberlayne's bathing left behind contaminants, Lawrence recognized that dead horses tossed into the waters could, and most likely did, foul the water. The mixture of human and animal contaminants added to the unpotable water in northern Virginia exposing the water's negative role in maintaining the soldiers' health. That problem was a difficult one to overcome, leaving soldiers and officers ineffective. While the two forces attempted to overpower the health issues, the two armies' commanders looked to exploit the waterways in

[33] Lt. James V. Lawrence to Gen. Samuel D. Sturgis, 28 August 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 402–403.

another fashion—avenues of offense.[34]

*The False Routes*

Before 1862, the Rappahannock River held little prominence for most officers and soldiers. The slow-moving stream seemed little more than a nuisance for the two armies. Officers, especially from the north, soon discovered the impossibility of the waterways as routes of movement. The rivers of Virginia in general caused problems for the Union forces as they moved through the state. While the major waterways' east-west direction in the commonwealth already made progress difficult, the short navigability of them increased these issues. Initially, the officers attempted to follow the tradition of employing the rivers offensively.

Those routes had limits though. Even the mighty James River, the waterway that allowed Europeans to first settle Virginia, lacked the depth to allow the Union armies to employ it for offensive purposes. In the immediate aftermath of the Peninsula Campaign, Union general-in-chief Henry W. Halleck received a memorandum about the need to change fronts in Virginia. By 5 July 1862, the move up the Peninsula had clearly failed and Lee planned on moving toward Washington, D.C. The fear that Lee could cross the Potomac to cut off Washington from the administration's armies made a move into northern Virginia to reinforce Pope's troops the utmost priority for McClellan's Army of the Potomac. Part of the reason that McClellan should abandon his position and move into northern Virginia, the memorandum argued, was the inability to employ the James in the Union logistical and communication lines. "We can rise the James no higher," the author wrote. "It is even

[34] For a comparative look at the waterways in the west during the Civil War era, see Stephen D. Engle, *Struggle for the Heartland: The Campaigns from Fort Henry to Corinth* (Lincoln: University of Nebraska Press, 2001), 1–26.

doubtful whether we can use it this high [Harrison's Landing]." Wagons were the only option for McClellan to maintain his communication and supplies along the Peninsula. Without the river, the author asked, "How can we keep up our communications if we could not keep them up from White House by rail?"[35] The difficulty of using the waterways for military purposes influenced Union officers throughout the state.

The lack of navigable rivers created a major controversy in the aftermath of the Second Manassas Campaign. Instead of continuing his fighting along the coastal plains of the lands east of Richmond, McClellan was ordered into northern Virginia. Many of his men fought with Pope's Army of Virginia, but the local geography of northern Virginia made their movements slow and, with a few exceptions, left Pope without much of the manpower he expected. The majority of the waterways in Virginia generally were un-navigable beyond fifty miles into the interior. The fall lines swayed the settlement of the state as the major cities, Richmond, Fredericksburg, and Alexandria for example, emerged along that geographic feature. As the armies moved further into northern Virginia and closer to the Union capital, those fall lines resided closer to the coast. The streams in northern Virginia did little for Union and Confederate logistics and movement.[36]

It seems few of the officers in the Union army recognized the problems of the rivers' navigability at first. Much of the purpose behind Pope's movements in late July and early

[35] White House Landing acted as the main supply depot for the Union forces during their approach to Richmond in the late spring and early summer of 1862. Harrison's Landing was the final base of supply and communication for the Army of the Potomac between 2 July and 5 August 1862. Brig. Gen. J. G. Barnard to Maj. Gen. Henry W. Halleck, 5 July 1862, Harrison's Landing, Va., Letters Received, March–July 1862 Folder, Box 1, Henry W. Halleck Generals' Papers, Entry 159N, Records of the Adjutant General's Office, 1780s–1917, RG 94, NARA.

[36] Charles A. Grymes, "Geology of the Fall Line," *Virginia Places*, http://www.virginiaplaces.org/regions/fallshape.html, accessed 26 April 2017.

August 1862 was to block the route of Stonewall Jackson's twenty-five thousand men into northern Virginia. Indeed, Beardsley noted that many soldiers and officers in the federal army "think [Jackson] intends to make a real or feigned attack on Washington." Since Jackson was reportedly near Gordonsville, he could have moved, according to Beardsley either "by the way of Fredericksburgh [*sic*] or Warrenton." From Gordonsville, Warrenton was the more logical choice of the two, forcing Pope to defend the route to that small town.[37]

In the process of guarding those paths, Pope placed his men well out of reach of the river route to link with the Army of the Potomac. Primarily, Pope's army operated in the region between the Rappahannock and the Rapidan rivers, almost twenty miles beyond the Rappahannock's fall line. In that position, the Army of the Potomac's troops were forced to land closer to the Chesapeake then move overland through the region. Sarah Edmonds also noted the problems of waterways and movement in northern Virginia. After landing along Aquia Creek, the soldiers of the Army of the Potomac received new orders. Instead of disembarking there, the majority of the Union force was placed back on the ships and sent to Alexandria. Once they landed, they were "ordered to Pope's assistance; one portion in one direction, and another in another direction" until McClellan was "left . . . without an army or anything to command except his staff."[38] Having arrived along Aquia Creek shortly after heading to northern Virginia from the Peninsula, Edmonds and her comrades were allowed to disembark at the small river. Any further movement up the waterway was not opportunistic for the Union forces.

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[37] Beardsley to "Did," 27 July 1862, Falmouth, Va., Letters 1862 Folder, Beardsley Papers, USAHEC.

[38] Sarah Emma Evelyn Edmonds, *Nurse and Spy in the Union Army: Comprising the Adventures and Experiences of a Woman in Hospitals, Camps, and Battle-fields* (Philadelphia, Penn.: Jones Bros., 1865), 260.

Aquia Creek acted as the main gathering point for many of the troops coming from McClellan's failed campaign. Branching off from the Rappahannock, the deep creek provided a solid landing spot for the men. Once they disembarked, the overland route became their main form of movement. As the operation progressed, a group of engineers established a new base for the federals at Alexandria, almost thirty-five miles from the Aquia Creek landing and at least fifty miles from the Army of Virginia's original position near the Rappahannock.[39] This change of base and being forced to take the overland route created issues between Pope and McClellan as Pope awaited McClellan's troops. Although most of the Army of the Potomac had arrived either with the Army of Virginia or in Washington, D.C., by the start of Second Manassas, only a small fraction of Pope's expected reinforcements arrived.[40] According to Samuel Beardsley, an infantryman of the Twenty-fourth New York, he made a trip between Fredericksburg and Alexandria in just over five hours. After noting the time he took, he rhetorically asked his father, "Pretty quick, wasn't it?"[41] Moving with only a handful of men, Beardsley and his men moved at the overly quick pace of ten miles per hour. Adding tens of thousands of men to the movement, as linking McClellan's and Pope's armies would have done, the overland maneuvers were even slower. The shallow level and short navigability left the streams of northern Virginia lacking for helping the military movements of the Union army in the region. Instead the Union command

[39] Brig. Gen. D. P. Woodbury to Col. R. Ingalls, 26 August 1862, Orrin E. Hine Papers, Miscellaneous Manuscript Collection, Manuscript Division, LC.

[40] Woodbury to Ingalls, 26 August 1862, Orinn E. Hine Papers, Miscellaneous Manuscript Collection, Manuscript Division, LC.

[41] Samuel R. Beardsley to "Did," 23 June 1862, Falmouth, Va., Letters April 9, 1862–December 31, 1862 Folder, Samuel R. Beardsley Papers, USAHEC [hereafter cited as Letters 1862 Folder, Beardsley Papers, USAHEC].

looked for a different way to take advantage of the rivers.

A photograph of the Union depot at Aquia Creek. This depot was basically the last place soldiers could disembark before having to move overland to reach Pope's army near Fredericksburg in August 1862. *Photo: Aquia Creek Landing, Virginia. Distant view of Federal supply depot, LC-DIG-cwpb-01164, Library of Congress Prints and Photographs Division, Washington, D.C.*

*Figure 12*

*The Natural Defensive Barriers*

The restrictive nature of northern Virginia's waters led Pope and his subordinates to try to employ the rivers and creeks as part of their defensive positions rather than as routes of movement. Some officers recognized quickly how northern Virginia's streams could increase defensive capabilities in the region. By March 1862, the Army of Northern Virginia—at the time under Maj. Gen. Joseph Johnston's command—continued to occupy the area around Manassas Junction and Bull Run. During this time, the Lincoln Administration and McClellan had started to formulate a new strategic vision for attacking the Confederate army in Virginia. To keep his supply and communication lines short and well protected, Johnston decided to abandon his position in Centreville, Virginia, and fall back toward the

Confederate capital of Richmond.[42]

Johnston positioned his troops along the southern banks of the Rappahannock partly in response to predicting the Union movements that spring. By late February 1862, the Confederate command had determined that McClellan had four options for attacking the Confederate forces in Virginia. The first followed the same route the Union army took for the First Manassas, an unlikely choice since the federals had already been defeated on that approach. The second line threatened Fredericksburg by allowing the Army of the Potomac to move in behind the Confederates' position near Bull Run. The final two routes caused the most worry. Johnston believed that McClellan's last two options would have the army move "by water." One had the Union forces landing along "the Lower Rappahannock." The other would see the Army of the Potomac land at "Fort Monroe" on the York Peninsula. These two options, Johnston argued, provided "direct roads" to Richmond with no opportunity to protect the capital if his troops remained in northern Virginia.[43]

Johnston decided the best option was to fall back to Fredericksburg. Doing so, he argued, could strengthen their position by holding existing defensive works on the Rappahannock's southern bank. In addition, they had an increased possibility of moving to defend Richmond from that spot. Holding the Rappahannock would both keep McClellan's army in front of Johnston's rebels and eliminate McClellan's option of landing on the lower Rappahannock. Instead, McClellan's only possible movement to directly threaten Richmond was to land at Fortress Monroe and then march overland on the Confederate capital. Even

[42] Joseph E. Johnston, *Narrative of Military Operations Directed, during the Late War Between the States*, Frank E. Vandiver, intro. (Bloomington: Indiana University Press, 1959), 96–102.

[43] Johnston, *Narrative of Military Operations*, 101.

then, Johnston wrote, his men were now closer to Richmond, which meant they could quickly position outside the capital to block any campaign along the York Peninsula.[44]

Much of Johnston's purpose in believing that he could place his men in a strong defensive position along the Rappahannock arose out of the river's physical geography. Water has a substantial impact on the physical environment outside of providing routes of movement. Just as rivers can act as avenues for travel, they also form the landscape in a way that overpowered geological features throughout time. Historians have discussed the power of water in a number of ways, including political power and its relationship to waterways.[45] Water provides physical power as well. Throughout history, humans have harnessed hydropower for their benefits. Primarily, the construction of mills and dams exemplify water's energy and its potential. The combination of energy and power also scars the landscape. Water flows, in association with glacial cuts and tectonic movements, cut deep into the landscape, mostly creating deep, wide rivers like the Mississippi River that, for the most part, remain within its banks until heavy rains cause flooding along their wide floodplains.[46] Over time, even small creeks and runs can cut deep into the landscape, leaving significant crevices and canyons. In northern Virginia, in fact throughout much of the Piedmont region in the mid-Atlantic, these small waterways created the famed hills and valleys that Civil War armies occupied while fighting, creating the networks of battlefields throughout the region.

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[44] Johnston, *Narrative of Military Operations*, 101–106.

[45] For example, see Donald Worster, *Rivers of Empire: Water, Aridity, and the Growth of the American West* (New York: Pantheon Books, 1985).

[46] Christopher Morris, *The Big Muddy: An Environmental History of the Mississippi and Its People from Hernando de Soto to Hurricane Katrina* (New York: Oxford University Press, 2012), 1–3.

In northern Virginia, waterways consistently forced Union officers and soldiers to overcome the physical landscape. The banks of even the smallest waterways restricted the movement of troops. For example, the steep banks of Pimmit Run, a small creek outside of Washington, D.C., which empties into the Potomac River, made it formidable to cross. To overcome that feature, local engineers had extended the Chain Bridge out of the nation's capital for people to traverse the stream there. For Union soldiers placed on guard duty in two of the forts that surrounded Washington, D.C.—Fort Marcy and Fort Ethan Allen—they had to move between the two bases on foot while not having access to Chain Bridge when crossing Pimmit Run. This required the troops to have to climb down one side and then scale the other (fig. 13). By the summer of 1862, federal commanders recognized their folly in believing they could employ the waterways for offensive purposes.

Both the north (left) and south (right) banks of Pimmit Run, Arlington County, Virginia. Pimmit Run is a small creek that ran between Fort Marcy and Fort Ethan Allen outside of Washington, D.C. Although a small waterway, Pimmit Run provides an example of how difficult these waterways were to cross in northern Virginia. Steep banks like the ones in the pictures were common throughout the region. *Photo: courtesy of the author.*

*Figure 13*

Just as Johnston had done, other officers started to see the waterways as barriers and

incorporated them for defensive rather than offensive purposes. Similar to how armies cut down trees along major roads in order to slow their enemies, the two forces destroyed bridges and attempted to block fords to prevent easy crossings. Indeed, after Johnston decided to abandon his position in northern Virginia, his subordinates demolished the Stone Bridge on the Warrenton Turnpike over Bull Run. Although a small, slow moving creek, Bull Run's steep banks make it almost impossible to cross without using a ford or bridge. The Union troops in the region were forced to piece together a makeshift bridge along the turnpike to ease their movements toward Manassas Junction and points south.[47]

As Confederate forces responded to McClellan's move to the Peninsula and reports of mass Union armies marching on Fredericksburg arose, the rebels decided to annihilate bridges across the Rappahannock. As early as March 1862, according to John M. Washington, a former slave who had fled to Union lines, there had been discussions about abandoning the city before the federal troops arrived, which "was soon after, commenced. by the 15th of April." Between 15 and 18 April, Washington remembered, the Confederate forces had, for all intents and purposes, evacuated the town leaving behind civilians and their slaves to deal with the Yankees. On 18 April, reports came that Union troops were at Falmouth, a small community on the north banks of the Rappahannock across from Fredericksburg. With the rumors swirling around the city, Washington wrote, "No one could be seen on the streets but the colord [*sic*] people. and every one of them seemed to be in the best of humors." The only remaining Confederates "hid in the woods west of the town

[47] Don Johnson, *Thirteen Months at Manassas/Bull Run: The Two Battles and the Confederate and Union Occupation* (Jefferson, N.C.: McFarland, 2013), 104.

watching."[48]

With this panic and the arrival of the first brigade of Brig. Gen. Rufus King's division, the rebels hoped to delay their crossing of the river. Although sitting near the river's fall line, the Rappahannock is a fairly wide, deep at that point. Recognizing this, the Confederates tried to leave behind a barrier to slow the Union soldiers. "By this time," Washington wrote, "the Two Bridges crossing the River was on fire[.] The match having been applied by the retreating rebels." Additionally, Washington witnessed the retreating rebels burning "18 Vessels and 2 steamers at the wharf" to guard against King's advance. While the brigade, under Brig. Gen. Christopher Columbus Augur, had halted at Falmouth to overlook Fredericksburg from a nearby hill, he "discovered a rebel Artillery on the oppisite Side of the river who, after setting fire to the Bridge was fireing at the Piers trying to knock them down." Obliterating the pillars would prevent the Union forces from constructing makeshift crossings. Eventually, the brigade chased the Confederate artillery away and the rebels fled the city at "a break neck speed as if the 'Yankees,' was at their heels Instead of across the river without a Ford, and all the Bridges burnt."[49] The Confederates' actions exemplify how officers and soldiers recognized the defensive capabilities of the Virginia waterways. By the summer of 1862, more officers and soldiers accepted the defensive power of northern Virginia's waterways.

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[48] John M. Washington, "Memorys of the Past" in David W. Blight, *A Slave No More: Two Men Who Escaped to Freedom Including Their Own Narratives of Emancipation* (Orland, Fla.: Harcourt, Inc., 2007), 188–190. For purposes of accuracy, I have kept Washington's original spelling, even when wrong, in his quotes.

[49] Washington, "Memorys of the Past" in Blight, *A Slave No More*, 190.

Print depicting Maj. Gen. Irvin McDowell's corps entering Fredericksburg via pontoon bridges on 5 May 1862. Notice the remnants of the bridge on the left edge of the drawing, the remnants of Confederate attempts at slowing any Union progress beyond northern Virginia. *Photo: Occupation of Fredericksburg. General McDowell's corps crossing the Rappahannock River on pontoon bridge, LC-DIG-ppmsca-20489, Library of Congress Prints and Photographs Division, Washington, D.C.*

*Figure 14*

The restrictive routes for crossing the waters also caused many officers to fear for their positions. Maj. Gen. Nathaniel Banks, commander of the Army of Virginia's second corps, discovered this problem quickly that summer. When setting up his position after Pope took command and in response to rumors of Stonewall Jackson's movements toward the Rappahannock, Banks complained about the lack of quality roads between Sperryville and Amissville, Virginia—the supposed route of Jackson's soldiers to cut off the Army of Virginia. Instead, he placed his troops on the path to Warrenton, Virginia. This road was "a good pike road all the way," he reported, "and not subject to any interruptions unless it be at Hedgeman's [the Rappahannock] River." He believed, "The Ford may become impassable at any time and the bridge we have just constructed, supported by piers and trestles may be

carried away by fueslets. This is to be feared," he concluded.[50]

Banks was not the only Union officer to have legitimate concerns about their position between the Rapidan and Rappahannock rivers. While Union forces started making their way upriver from Fredericksburg toward the fords north of Culpeper Court House, the Rappahannock displayed its power against the men involved in the armies. On 10 August, a day after the Battle of Cedar Mountain, the Second U.S. Sharpshooters made their way up the river to join the rest of the Army of Virginia. While they marched, they were soaked by a "heavy shower in the afternoon" and the river was "swollen considerably." Once they arrived at the local ford, Barnett's Ford, they were ordered to cross there despite the higher waters. During the crossing, the soldiers were forced to remove their ammunition boxes since the water was up to their waists. The high waters and strong current resulted in an unfortunate incident for the regiment. "The current was quite strong and one soldier lost his footing and drowned," wrote Wyman White.[51] These experiences indicated to officers the power of the local waterways. With the waterways cutting through the landscape, officers were forced to examine the terrain more carefully to understand the lines of movement. In order to make their way across the region, they needed to protect and occupy the fords over the majority of the waterways. When the rivers sat to the rear of their positions, some officers felt trapped.

In the weeks after Cedar Mountain, concerns about the position between the Rapidan and Rappahannock rivers caused larger fears in the Union high command. The threat of Confederate movements against federal communication and logistical lines caused Pope to

[50] Maj. Gen. Nathaniel P. Banks to Maj. Gen. Irwin McDowell, 21 July 1862, HQ, 2d Army Corps near Washington, D.C., Letters Received, March–August 1862 Folder, Box 1, Irwin McDowell Generals' Papers, Entry 159T, Records of the Adjutant General's Office, 1780s–1917, RG 94, NARA.

[51] White, "Civil War Diary," p. 42, MNBPL.

shift his force to protect against the operation. After claiming victory at Cedar Mountain, Pope and Henry W. Halleck wished to assault the Confederate forces. In the days after the fighting, the plan changed. Once the Union forces discovered the rebel plans to trap them between the Rapidan and Rappahannock, Halleck swiftly ordered Pope back across the larger river. "On the 16th," Halleck reported, "I telegraphed to Pope not to cross the Rapidan." Instead, Halleck wrote, he ordered Pope to "take position in rear of the Rappahannock." By doing so, he hoped that the Army of the Potomac could "more easily" enforce Pope's troops.[52] While Halleck wanted the position to provide a better linking point with the Army of the Potomac, he also had a secondary motivation. Halleck, just as Johnston had done earlier in 1862, believed Pope could retain a defensive position using the river as a barrier to assist in preventing rebel movements. According to Halleck, Pope initiated the movements on 17 August and by the following day "had most of his forces behind that river, prepared to hold its passes as long as possible."[53] Clearly, Halleck saw the river as a key part of Union tactical planning while Lee advanced on their position. With Banks's corps badly bloodied in the fighting along Cedar Run, Pope's force prepared for a larger fight. The commander and his superiors planned to incorporate the river into that battle.

Pope agreed with Halleck's assessment and instead, just as Johnston had done, made the Rappahannock part of his defensive posture. It became quickly clear the waterways made their position tenuous. Prior to the fighting on 9 August, Pope hoped to cut Lee, Jackson, and the rest of the Confederate forces from their main supply line that ran through Gordonsville,

[52] Gen.-in-Chief Henry W. Halleck to Sec. of War Edwin M. Stanton, 25 November 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 6.

[53] Halleck to Stanton, 25 November 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 6.

Virginia, while marching along the rail line between the two rivers. Despite coming out with a minor victory, Pope received notice about rebel movement that could destroy his connection with Washington. Lee wanted to push his forces behind Pope's line, which had moved closer to the Rapidan, and occupy the fords along the Rappahannock. Fortunately for Pope's troops, Union cavalry had captured some of the Confederate cavalry scouting this maneuver and discovered Lee's initial design.[54]

Pope immediately ordered the army to move north and east of the river to tie their positions to the Rappahannock. By 20 August, after a few days of hot, dusty movements near the banks of the river, the majority of the Army of Virginia had made its way across. In order to keep the Confederate forces in check, Pope extended the line from Fredericksburg—most likely to maintain a line of communication with arriving troops from the Army of the Potomac—north and west to Warrenton, Virginia. Although spread thin, the position on the opposite bank of the Rappahannock from Lee's Confederates placed the Army of Virginia in a stronger spot than their original line near Cedar Mountain between the Rapidan and Rappahannock.[55] These barriers of movement worked in both directions. The waterways of northern Virginia restricted both the offensive operations and the possibility of retreats. The fact that the rivers prevented both forward and backward movements set the stage for the rest of the campaign as Pope and his subordinates embraced a defensive stance.

*The Fortunate Flooding*

The defensive barriers increased as the rains came in the month of August. While

[54] John S. Mosby, *The Memoirs of Colonel John S. Mosby*, J. O. Tate, foreword (1918; repr., J. S. Sanders and Company, 1995), 138–42.

[55] John Gibbon to his wife, 20 August 1862, Box 1, John Gibbon Papers, HSP; and Letter of Lt. George Breck, *Rochester (N.Y.) Union and Advertiser*, 5 September 1862.

most Americans in the nineteenth century believed they had the ability to control the environment, one natural act dispelled this notion time and again. Flooding constantly destroyed farm fields and caused havoc on entire regions. Indeed, throughout American history prominent floods have been blamed for or proven to have caused significant changes in different regions. The Mississippian culture that constructed the famed mounds at Cahokia, Illinois, most likely experienced their decline from increased flooding in the Mississippi and its tributaries in the fourteenth century.[56] In the twentieth century, the great flood of the Mississippi in 1927 killed hundreds of black and white southerners, "inundated 26,000 square miles" of land, "and displaced over 1 million refugees."[57] During the Civil War, increased rains in the South made flooding a common occurrence throughout much of the Confederacy. It changed the course of numerous battles, such as the capture of Fort Henry and the Union collapse during the first day of fighting at the Battle of Shiloh. Floods also caused officers to try to employ the rising water levels to their advantage when possible.[58]

The floods in August 1862 provided some relief for the Union army. Shortly after receiving orders to fall back behind the Rappahannock, Pope at first did not believe the river was the strong defensive barrier it became that summer. Initially, Halleck ordered Pope to hold the upper Rappahannock fords near the far-right flank of his line. At the same time,

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[56] Samuel E. Munoz, et. al., "Cahokia's Emergence and Decline Coincided with Shifts of Flood Frequency on the Mississippi River," *Proceedings of the National Academy of Sciences of the United States of America*, vol. 112, no. 20 (May 2015): 6319.

[57] Morris, *The Big Muddy*, 165.

[58] For another example of a Civil War battle impacted by flooding, see Steven E. Woodworth, *Nothing But Victory: The Army of the Tennessee, 1861–1865* (New York: Alfred A. Knopf, 2005), 75–78; and Phillip R. Kemmerly, "Environment and the Course of Battle: Flooding at Shiloh (6–7 April, 1862)," *Journal of Military History* 79 (October 2015): 1079–1108.

Halleck wanted the Army of Virginia to maintain a connection with Fredericksburg to keep the link with the elements of the Army of the Potomac marching there. According to Pope, Halleck believed this would delay the rebels "long enough in his advance upon Washington to enable the forces from the Peninsula to land and effect a junction with me." Pope saw it differently arguing the position "was very weak." Primarily, Pope feared the rebels could move further north and cross at some "good fords" at points above his own line.[59] With his army already spread thin along the river banks, he had little hope to strengthen his line further upstream where the shallower waters made a crossing easier than directly in front of his position.

Despite Pope's perception, the rains of late August turned the Rappahannock into a beneficial and formidable defensive position. According to Halleck, in the week after Pope established the new position, "The enemy made several attempts to cross at different points on the Rappahannock, but was always repulsed, and our troops succeeded in holding the line of this river for eight days."[60] The turbulent weather during that month contributed to the successful stand against Lee's warriors. On 22 August the skies opened and "a heavy rain fell." The storms "rendered the fords of the river impassable for twenty-four hours." This gave Pope a chance to push the small Confederate forces that had already crossed back to the opposite bank and to secure the bridges at Sulpher Springs and Waterloo Bridge. Now, Pope truly established the Rappahannock as a defensive barrier. The continued deluges between 22 and 24 August soon created problems for both armies.[61]

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[59] Maj. Gen. John Pope to Halleck, 3 September 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 13.

[60] Halleck to Stanton, 25 November 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 6.

[61] Pope to Halleck, 3 September 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 13. For more on the importance of the weather during the campaign specifically, see chapter 3.

As the showers fell, the Union and Confederate forces maneuvered for their planned strikes at the enemy. The two armies snaked back and forth along the riverbanks, crossing and re-crossing the river. Although Pope successfully incorporated the river into his position, it became quickly apparent that the federal's greatest defensive weapon could also turn against them. Initially, the Thirteenth Massachusetts had moved to the southern bank of the Rappahannock, but quickly returned to its original position, "Owning to the great rise in the river." Having left behind "two Parrott guns, and three companies of the 11th Penn. [*sic*]," the Confederates opened fire on them. Luckily, the remaining Unionists crossed the river just before "the upper bridge, just built, gave way, carrying the R. R. bridge with it."[62] Just as the troops purposefully destroyed bridges to increase the rivers' defensive capabilities, the natural flooding resulting from heavy rain threatened the crossing points for the soldiers as well.

While the downpours continued on 24 August, part of Confederate general Jubal Early's division found itself trapped on the opposite side of the river. Initially, Jackson believed that Early could push across with another division following to threaten the Union position. Immediately after Early's men crossed the Rappahannock, a sudden downpour caused the river to rise quickly, destroying the bridge that Early's troops used to cross the river while also making the fords impassible. The division's troops found themselves stranded.[63] Although the Union Army had an opportunity to strike a massive blow to Lee's force, Pope found his hopes to attack Early dashed as the muddy roads that formed during the

[62] Samuel D. Webster, diary entry, 23 August 1862, Samuel Derrick Webster collection, HL.

[63] Blackford, *Letters from Lee's Army*, 124–26.

rains delayed his maneuvers.[64] With the rains slowing the federal movements, their advantage over the isolated Confederate division disappeared and a brief break in the rain gave the rebels a chance to cross the slowing river, allowing Early's men to escape.[65] Although the storms during the week around 20 August caused issues for the two armies, it also became a key component of the Confederates' offensive operation, specifically Jackson's flank march.[66] As it showed for the four days between 20 and 24 August, the Rappahannock could act as a formidable defensive barrier when the rains came.

Just like the Rappahannock, the smaller runs of the region were recognized as an important piece to defensive operations. As mentioned earlier, Johnston's forces destroyed the stone bridge along the Warrenton Turnpike at Bull Run before retreating to the Rappahannock. Likewise, Pope employed the steep banks of Bull Run to prevent his army's destruction after his defeat at Second Manassas. After many of the Union troops used the makeshift bridge that replaced the stone bridge to make their way back to Centreville on the night of 30 August, the final federal elements to cross the structure dismantled it, leaving only the stone tresses behind. This, they hoped, would prevent a Confederate crossing along the Warrenton Turnpike, giving the Union forces additional time to establish a new defensive line. Pope reported using this as part of his reasoning for abandoning the fields in Prince William County on that night. In addition to his men being exhausted and lacking food, he

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[64] E. R. P. Shurley, "At Rappahannock Station," *National Tribune*, 16 December 1897; and Gordon, *History of the Campaign of the Army of Virginia*, 67.

[65] Edward A. Moore, *The Story of a Cannoneer Under Stonewall Jackson in which is Told the Part Taken by the Rockbridge Artillery in the Army of Northern Virginia* (New York and Washington: The Neale Publishing Company, 1907), 100; Blackford, *Letters from Lee's Army*, 126; and Gordon, *History of the Campaign of the Army of Virginia*, 62–63.

[66] For more on the impact of the rain on the Confederates' offensive against Manassas Junction, see chapter 3.

believed Bull Run itself would slow any Confederate pursuit. The existing defenses outside of Centreville provided a strong position, but the addition of the waterway restricted the rebel movements. He argued that the Confederates would have to approach Centreville along the turnpike, throwing them directly in front of Pope's new line.[67] Just as the Rappahannock had done for him the week before, Pope hoped Bull Run could help him defend against the rebel movements. Lee and his subordinates found their way around Pope's position, setting the stage for the Battle of Ox Hill.[68] Even in the midst of defeat, Pope looked to the local waterway to help defend against the victorious Confederates. Despite the original beliefs of Union officers that the waterways would provide routes for the invasion of Virginia, they soon recognized the streams' defensive uses. While the Confederates eventually overcame these barriers, both sides understood after Second Manassas the waterways' abilities to limit their movements through the region.[69]

*Conclusion*

In northern Virginia, the crisis over water became increasingly important to the outcome of the Second Manassas Campaign. From the beginning, the high temperatures meant the troops were more susceptible to dehydration, sapping their energy. Without the necessary water to maintain their health, soldiers quickly fell out of ranks or became ineffective as they suffered from exhaustion, an early indicator of the condition. Although a

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[67] Maj. Gen. John Pope to Halleck, 3 September 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 16.

[68] For more on the Battle of Ox Hill, see David A. Welker, *Tempest at Ox Hill: The Battle of Chantilly* (Cambridge, Mass.: Da Capo Press, 2002); and Paul Taylor, *He Hath Loosed the Fateful Lightning: The Battle of Ox Hill (Chantilly) September 1, 1862* (Shippensburg, Penn.: White Mane Publishing, 2003).

[69] The Mine Run Campaign in the late fall of 1863 provides an example of this lesson for officers on both sides. For more on Mine Run, see Earl J. Hess, *Field Armies and Fortifications in the Civil War: The Eastern Campaigns, 1861–1864* (Chapel Hill: University of North Carolina Press, 2005), 293–300; and Adam H. Petty, "Wilderness, Weather, and Waging War in the Mine Run Campaign," *Civil War History* 63, no. 1 (March 2017): 7–35.

clear problem from early in the campaign, if not from even earlier in the war, the need for local water sources rarely became a high priority for officers until it was too late. Instead, many of the individual soldiers relied on their own ability to find water to keep themselves hydrated. The existing water supplies provided little relief. Most of the water tables in the region were already contaminated with minerals that made the water difficult to consume. With additional contamination coming from soldiers and animals, few potable sources existed in the area. Soldiers suffered from debilitating illnesses, primarily dysentery and diarrhea, that further sapped their strength. The drinking water available to the soldiers in northern Virginia was more detrimental than beneficial to their overall abilities to carry out their duties.

While spoiled water supplies depleted the individuals' energy, the geographic cuts of the local waterways created issues for the larger strategic picture. Officers on both sides hoped to employ the rivers, creeks, and runs of northern Virginia for offensive operations. It became clear quickly that little benefit came from incorporating the waterways as routes of movement. The lack of navigability of the waterways made it almost impossible for the Union armies to cut deep into the heart of the commonwealth. As Halleck, Pope, and McClellan discovered in early August, the limited navigability of Virginia's waterways created a troubling situation for moving men rapidly. Most of McClellan's army eventually landed in northern Virginia by the time Second Manassas commenced on 28 August 1862. Their landing points placed them tens of miles from Pope's army—a significant distance for a non-mechanized army to make up—making the reinforcements almost useless. The waterways of northern Virginia, if not Virginia in general, were almost completely impractical for offensive operations.

In response, officers in both armies recognized the defensive capabilities of the streams. Possessing steep, high banks, most of the rivers and runs of northern Virginia restricted movement throughout the region. Holding fords and bridges, as well as the roads connected to them, became central to strategic planning from early in the war. As early as March 1862, both federals and rebels realized the importance of these different points. The two armies destroyed bridges and defended fords at every opportunity. To make this complicated, the rivers acted as barriers in both directions. While the Union army clearly benefitted from holding the Rappahannock as a defensive line, especially after the heavy rains led to flooding that turned it into an even stronger barrier, the commanders feared being trapped by the river. Acting in such a manner, the rivers and creeks forced the officers to adjust their larger strategic plans to incorporate the streams in a way that increased their advantages rather than creating their own disadvantages in the process.

The presence of the waterways shows the direct influence the physical environment had on Civil War campaigning. Although the physical directions of the waterways remained stationary, it directly caused soldiers to suffer from illnesses while forcing the hands of officers in the process. The men in the two armies attempted to overcome these natural barriers by adjusting to the natural situation. Water has a major hold on human action as it was and is a necessary part of human lives. Throughout the summer of 1862, northern Virginia's water created substantial barriers to both soldiers' health and the armies' movements. The water sources and the waterways did not only impact the humans in the two forces. The animals that traveled with both armies relied on or contaminated the same sources of water throughout northern Virginia. These domesticated animals were as much a part of Civil War armies as their human compatriots while also being a key source of energy.

## Chapter 5
## One Million Horsepower: Northern Virginia and Domesticated Animals

In March 1862, Anne S. Frobel, a young Virginian living in Alexandria during the conflict, wrote that federal soldiers started clearing out the countryside outside of Washington, D.C., well before Pope took command of the Army of Virginia. "The Lincoln cavalry," as she referred to one group of Union troopers, at one point raided the region about twelve miles south of Alexandria at the expense of "some-poor citizen." The Confederate cavalry quickly ran the Unionists out of the area to score an assist protecting their civilians, but those Union cavalrymen did not leave empty handed.[1] Shortly after hearing news about the Union raid, Frobel ran into a local neighbor, Mr. Fairfax, who proceeded to tell Frobel "a great deal about the army doing[s]." He informed her that "the Sedgwick brigade that was camped so long on [our property], were the most-notorious gang of horse thieves." One regiment, the Fourth Maine commanded by "Col. Berry," occupied Fairfax's stable while camping on his farm, allowing him to "go among them." According to Fairfax, "Col. Berry made horse stealing a regular business." Every night, Berry's men went outside the picket lines to plunder the local farms, primarily for horses. Once they got the material they desired, they "secret them in [Fairfax's] stables until a sufficient number is collected together" and the means to ship them north was available. At times, Frobel recorded, "Mr. F says he recognizes the horses and knows where they came from." Although he knew whose animals the troops grabbed, he never found out if, "after there was a *hue-and cry* about them," they were returned to the owners or "sent north."[2] While farmers throughout Virginia had their

[1] Anne S. Frobel, *The Civil War Diary of Anne S. Frobel of Wilton Hill in Virginia*, intro. and append. Mary H. and Dallas M. Lancaster (McLean, Va.: EPM Publications, 1992), 84.

[2] Frobel, *Civil War Diary*, 84–85 (emphasis in original).

property stolen, draft animals had a special place for both locals and the armies.

All animals have been central to human's ecological relationship with their surroundings and have had a direct hand in transforming local landscapes. Pests have forced humans to develop new ways for fighting insects and rodents. Wild animals have supplied humans with food through hunting since before humans established agriculture as a viable system of living. Once humans settled into static populations, domestication of certain species became the norm. Early efforts at domestication occurred to provide protein for those populations, but some domestication took place to develop animals that can protect and comfort humans, even as the relationship spread diseases between the two populations. Other domestication efforts created work animals that could reduce the work load of their human owners. Throughout the nineteenth century, those animals became central to American industrialization. They were considered the engines of the movement. While improvements in transportation tend to receive the majority of attention when pointing to increased industry, the increase of railroads and steamships, among other modern transports, augmented the need for horses and mules to move goods from train stations and ports to the cities and farms near them.[3]

When the Civil War began, the animals created a complex relationship between the

[3] For more on the intricate relationship between animals, humans, and the environment outside of the Civil War, see Alfred W. Crosby Jr., *The Columbian Exchange: Biological and Cultural Consequences of 1492* (Westport, Conn.: Greenwood Press, 1972); William H. McNeill, *Plagues and Peoples* (New York: Anchor Books, 1977); William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill and Wang, 1983), 127–56; Joshua Blu Buhs, *The Fire Ant Wars: Nature, Science, and Public Policy in Twentieth-Century America* (Chicago: University of Chicago Press, 2004); and Edmund Russell, *Evolutionary History: Uniting History and Biology to Understand Life on Earth* (New York: Cambridge University Press, 2011). For an example of the impact of animals, insects specifically, in the Civil War, see Andrew McIlwaine Bell, *Mosquito Soldiers: Malaria, Yellow Fever, and the Course of the American Civil War* (Baton Rouge: Louisiana State University Press, 2010). For more on horses as engines of industrialization, see Ann Norton Greene, *Horses at Work: Harnessing Power in Industrial America* (Cambridge, Mass.: Harvard University Press, 2008), 1–42.

armies, the environment, and their beasts of burden. First, the conflict increased the role of animals to relieve logistical issues. Horses and mules acted as the engines of transportation. The importance of mobility for artillery, cavalry, and supply wagons made horses and mules a significant part of the logistics for both armies. The two forces turned to livestock and, when that failed, salted meats to increase the protein in their diets. Domesticated animals, similar to local crops, were seen as commodities within the two forces—they were a resource for use, even to the point of death. While being treated as a commodity, horses, mules, and livestock, were also *living beings* that required energy like the soldiers, placing additional pressure on agricultural and water resources. Additionally, the increased population of horses and mules made the spread of terrible diseases more commonplace as they experienced the impact of an epizootic. The role of animals in the two armies exemplifies the reciprocal relationship between humans and ecological factors during Second Manassas. While they used animals to maintain the armies' energy, the animals also affected the soldiers' lives and the physical environment in northern Virginia.

*Working Animals in the Army*

For centuries before the U.S. Civil War, draft animals had established a significant role within military forces. Other than using flowing water, the energy of beasts of burdens primarily moved supplies and equipment for the soldiers.[4] Despite the growth of railroads and steamships, the Civil War armies in Virginia continued this tradition. In the summer of 1862, both sides struggled to employ trains effectively to move supplies and, as discussed

[4] For more on animals in earlier armies, see Donald W. Engels, *Alexander the Great and the Logistics of the Macedonian Army* (Berkeley: University of California Press, 1972); Geoffrey Parker, *The Army of Flanders and the Spanish Road, 1567–1659: The Logistics of Spanish Victory and Defeat in the Low Countries' Wars* (Cambridge: Cambridge University Press, 1972); and Martin L. Van Creveld, *Supplying War: Logistics from Wallenstein to Patton* (New York: Cambridge University Press, 1977).

earlier, the waterways in the region did not support the movement of steamboats.[5] Instead, both the Army of Virginia and the Army of Northern Virginia required enormous amounts of domesticated draft animals to maintain their logistical capabilities. Horses, mules—a horse-donkey hybrid, and oxen provided the most significant power for moving supplies and men throughout northern Virginia. For example, a small group of Union engineers were ordered to move from Aquia Creek to Alexandria, Virginia, with fourteen wagons over a distance of more than twenty miles. In order to move that distance, their superior officer ordered them to use "52 horses, 8 mules," and "60 mere[s]." With only a handful of men, around ten to fifteen, extrapolating the necessary numbers for a large regiment or brigade increases the number of animals almost tenfold.[6]

Each arm of the army required a specific number of beasts, mainly horses, to maintain their ability to move men, equipment, and food. Within the infantry regiments, the animals involved primarily belonged to the officers and their staffs. Every officer possessed at least one horse and each member of their staff required a horse to keep pace. Indeed, officers tended to maintain close relationships with their personal animals.[7] Generals' mounts were the most famous in the two armies. Multiple stories about Lee's favorite horse Traveller, buried beside the general at Washington and Lee University in Lexington, Virginia, abound

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[5] For more on railroads in the Civil War, see William G. Thomas, *The Iron Way: Railroads, the Civil War, and the Making of Modern America* (New Haven, Conn.: Yale University Press, 2011). For more on the struggles of the quartermasters in the Second Manassas Campaign, see John J. Hennessy, *Return to Bull Run: The Campaign and Battle of Second Manassas* (1993; repr., Norman: University of Oklahoma Press, 1999), 38–39.

[6] Brig. Gen. D. P. Woodbury to Col. R. Ingalls, 26 August 1862, Orrin E. Hine Papers, Miscellaneous Manuscript Collection, Manuscript Division, LC.

[7] One of Lt. Col. Samuel R. Beardsley's correspondences requested a photograph of Beardsley and his horse, making it seem that even family and friends considered the officer's horses a part of their identity. Beardsley to "My Dear Sam," 29 June 1862, Falmouth, Va., Letters April 9, 1862–December 31, 1862 Folder, Samuel R. Beardsley Papers, USAHEC [hereafter cited as Letters 1862 Folder, Beardsley Papers, USAHEC].

from the campaigns along the Piedmont, including being the horse he rode during the Second Manassas Campaign. Less well-known than the rebel commanders' favorite mount, Lee obtained another mare named Ajax shortly after Second Manassas. Ajax is also buried near Lee at Washington and Lee University. Jackson's mount, Fancy but better known as "Little Sorrel," perhaps holds just as significant a place in the Civil War narrative, especially since he was the horse Jackson rode when he received his mortal wound at Chancellorsville. Eventually, most of Fancy's body was buried near the parade ground at the Virginia Military Institute (VMI) in Lexington, Virginia, where Jackson had taught before the war, while the rest of him was taxidermied and put on display at the VMI museum.[8]

Union officers' horses would find a place in the story too. George G. Meade, a division commander at Second Manassas, found his favorite mount, Old Baldy, after the first battle of the war. After Old Baldy's wounding at First Manassas, Meade nursed him back to health and rode the animal throughout the rest of the conflict. Kearny died during the Battle of Chantilly on the back of one of his secondary horses, Bayard. And John Reynolds, another division commander at Second Manassas, sat astride his favorite horse, also named Fancy, for much of his service before his death at the Battle of Gettysburg.[9] In addition to these already famous animals, thousands of secondary commanders, staff members, and other soldiers rode horses into battle and while on the campaign. Extending out among the officer corps alone, the horse population in either of the two armies would have counted in the thousands.[10]

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[8] Gene C. Armistead, *Horses and Mules in the Civil War: A Complete History with a Roster of More than 700 War Horses* (Jefferson, N.C.: McFarland, 2013), 108, 130, 177–80.

[9] Armistead, *Horses and Mules in the Civil War*, 110–11, 132.

[10] Greene, *Horses at Work*, 1.

More significantly but less well known than the officers' horses were the nameless horses, mules, and oxen that allowed the artillery, cavalry, and quartermaster arms to function properly. Once the Civil War started, using more railroads caused the armies to employ more horses, mules, and other draft animals making them a form of transportation technology.[11] The upsurge in industrial technology use was not the only reason for the increased presence of draft animals in the two armies. Prior to the conflict, the U.S. Army never had more than sixteen thousand men enlisted in its ranks in peacetime, while perhaps the largest forces were raised during the Second Seminole War when thirty thousand volunteers joined the forces in Florida.[12] With individual armies numbering as many as one hundred thousand troops at any one time, the amount of necessary supplies greatly increased, which created the need for additional animals to move the tons of food and equipment throughout the South. Between the two armies in northern Virginia during the Second Manassas Campaign, almost 110,000 soldiers required supplies, making draft animals central to their livelihood.[13]

The physical requirements of the army, primarily speed and endurance, caused the two forces to turn to specific draft animals in the field. The beasts required for service

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[11] Greene, *Horses at Work*, 1–9, 120–22.

[12] While an increase of the amount of soldiers in the U.S. Army before the Civil War most likely increased the number of horses, artillery and cavalry units typically remained the same, making the increase in horses only in the quartermaster department, meaning an increase in the number of troops did not necessarily mark a correlation in a similar increase in the horse populations. For more on the increase in soldiers during the Second Seminole War, see Lida Mayo, "The Thirty Years' Peace" in *American Military History*, Army Historical Series (Washington, D.C.: Center of Military History, United States Army, 1989), 161, https://history.army.mil/books/AMH/AMH-07.htm, accessed 24 January 2018. For more on the structure of the U.S. Army's cavalry and artillery in the lead up to the Civil War, see Robert M. Utley, *Frontiersmen in Blue: The United States Army and the Indian, 1848–1865* (1967; repr., Lincoln: University of Nebraska Press, 1981), 18–58, esp. 19; and Durwood Ball, *Army Regulars on the Western Frontier, 1848–1861* (Norman: University of Oklahoma Press, 2001), xix–xxxi.

[13] For the total population of the two armies during the Second Manassas Campaign, see Hennessy, *Return to Bull Run*, 6, 80, 456.

depended on the role of the individual animal within the specific arm of the military. Horses were commonplace throughout both armies, but most prominently featured in the cavalry and as rides for officers. Mules tended to serve as draft animals in the artillery and quartermaster corps. Oxen were rarely employed with a field army due to their slow speed as well as their reputation as primarily being used for farm field work, especially sod busting in the West. But oxen did some rare work as quartermaster animals dragging heavy supply wagons.[14] In the field, the two armies primarily relied on horses and mules. The large animal population with the armies truly brought an urban sense with the two forces. Hundreds of thousands, if not millions, of animals were employed at any one time by the federals and rebels.[15]

Despite the need for such immense amounts of animals, the armies tried to follow a certain set of guidelines to find the best animals for the field. While each arm had their own manuals and requirements, their standards for horses were similar. These details were intended to provide officers, troopers, and quartermaster generals with a system for acquiring horses when necessary. According to the 1861 artillery manual, officers needed to "make themselves thoroughly acquainted with the natural history of the horse" and how changes to their elements impacted their health. The best horses weighed between "1100 and 1200 pounds when in good condition." The horses' weight was especially important according to the manual's authors. They believed that a heavier horse was less likely to breakdown under the stress of being harnessed to the equipment than a faster animal. Also, the horses were to

[14] Neither Ann Norton Greene in her study of horses nor Erna Risch in his extensive study of the quartermaster department mention the use of oxen in the field armies during the Civil War. See Greene, *Horses at Work*, 119–163; and Risch, *Quartermaster Support of the Army: A History of the Corps, 1775–1939* (Washington, D.C.: GPO, 1989), 333–87. Greene does emphasize that, due to cultural prominence of assigning animals to certain classes, genders, and races, oxen were considered specifically draft animals for western farmers and sod busting. See Greene, *Horses at Work*, 10–42.

[15] Greene, *Horses at Work*, 128–130.

be "5 to 7 years" of age at the time of purchase and stand "15 to 16 hands high" with a variation of one inch. Most importantly, the "purchaser" needed to pay special attention to the condition of the horses' hooves to make sure they could handle the struggles of pulling equipment in the field.[16] According to John Gibbon, commander of the famed Union Black Hat Brigade at Second Manassas, mules should have similar standards, but they could stand from "13½ to 15 hands high."[17] While the manual provided an average requirement for horse and mule sizes, once in the field, these requirements became less significant.

According to the artillery manual, horses mainly pulled field artillery pieces, the lightest weapons in the branch. Mules were employed to move mountain howitzers—smaller, but denser guns meant for siege use—and field pieces. Oxen typically pulled siege guns, the largest and heaviest guns, but they were rarely used during the conflict.[18] In Second Manassas, the two armies mainly employed field artillery, which required fewer animals. The need just to move the artillery meant an enormous amount of horses and mules. In 1861, the artillery manual established that a single battery should consist of six guns each. Each battery also included six extra caissons, one wagon, one "travelling forge," and one set of spare equipment. Every piece involved required six horses for movements on the field. In addition, the individual officers also needed horses, adding to the total. A single battery of twelve-

[16] John Gibbon, *The Artillerist's Manual: Compiled from Various Sources, and Adapted to the Service of the United States* (1860; repr., Westport, Conn.: Greenwood Press, 1971), 27; and William H. French, William F. Barry, and Henry J. Hunt, *Instruction for Field Artillery* (1861; repr. New York: Greenwood Press, 1968), 46. According to Greene, a horse standing fifteen to sixteen hands (five to six feet) was right about average size for equines. Horses typically stand "four to six feet in height." Greene, *Horses at Work*, 14.

[17] Gibbon, *The Artillerist's Manual*, 410.

[18] Gibbon, *The Artillerist's Manual*, 409–10; and Risch, *Quartermaster Support of the Army*, 374–79. Typically, mules and oxen were employed for areas that were considered too rough for horses.

pound "light" artillery was supposed to maintain 149 horses in their batteries.[19]

An Union artillery battery fords one of the Rappahannock's tributaries on 9 August 1862. At least eight horses are visible in the photograph. *Photo: Cedar Mountain, Va. Federal battery fording a tributary of the Rappahannock on the day of battle, LC-DIG-cwpb-00211, Library of Congress Prints and Photographs Division, Washington, D.C.*

*Figure 15*

The Army of Virginia followed these regulations almost to the letter. Each of the batteries, with one or two exceptions, maintained six guns, plus most of the required equipment. The Union artillery primarily consisted of 3-inch ordnance and 10-pound Parrot rifles. Forged from wrought iron, these barrels were lighter than the older model 12-pound Napoleons—a smoothbore model made popular by the French Army under Napoleon III in the 1830s and 1840s—made from bronze.[20] In order to move the ordnance and Parrot rifles efficiently, the Union forces employed the full amount of horses listed in the manual. With

[19] French, Barry, and Hunt, *Instruction for Field Artillery*, 36.

[20] Civil War artillery pieces were named either for the muzzle diameter or the weight of the shell they fired. The 3-inch ordnance rifle barrel weighed 820 pounds and the 10-pound Parrot rifle weighed 900 pounds. The 12-pound Napoleon barrel weighed 2,600 pounds. "Artillery in the Civil War," U.S. Army Ordnance Corps official website, http://www.goordnance.army.mil/history/Staff%20Ride/STAND%203%20ARTILLERY%20AND%20SMALL%20ARMS/ARTILLERY%20IN%20THE%20CIVIL%20WAR.pdf, accessed 24 January 2018.

forty-three batteries in the force, some including heavy artillery which called for additional animals, the Union long arms alone required at least 6,500 horses while on the campaign.[21]

Confederate forces held a mix of guns but relied primarily on the twelve-pound Napoleon cannon. Being a heavier variety of cannon, it required at least six animals to maneuver efficiently. The fewer animals in the Confederate forces caused additional struggles for their forces as they rarely had the necessary supply of draft animals throughout the war. The Confederates' regularly employed only four animals to move the guns, putting additional pressure on their animals. Using numbers based on the 1861 artillery manual, it is most likely that every battery in the Confederate army, at least, required 107 horses for its equipment and officers. The Confederate artillery had around four thousand horses in its ranks during Second Manassas.[22] The need for fewer animals could have been a benefit for the Confederate forces as they could survive on the march without maintaining the initially required six horses per gun per battery. Even with fewer numbers in the Confederate ranks, the requirements in the artillery manuals made draft animals a major portion of the Union and Confederate ranks.

The cavalry similarly required a significant number of horses for their operations. According to one Union soldier, cavalry regiments held "twelve hundred horses" at the beginning of the war. Just as infantry regiments became reduced in size throughout the conflict, by 1862 it was clear that, even if the cavalry tried to maintain 1,200 horses in each

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[21] Gibbon, *The Artillerist's Manual*, 395; and French, Barry, and Hunt, *Instruction*, 36. For the total numbers I used the chart of required animals from French, Barry, and Hunt, *Instruction*, 36 and added them with the total number of artillery batteries listed in the Order of Battle found in John J. Hennessy, *Return to Bull Run: The Campaign and the Battle of Second Manassas* (1993; repr., Norman: University of Oklahoma Press, 1999), 551–69.

[22] Gibbon, *The Artillerist's Manual*, 395; and French, Barry, and Hunt, *Instruction*, 36. For more on the total number of animals in the Confederate artillery, see note 5 above.

regiment, they failed at doing so.[23] With similar measurement requirements to the artillery, the cavalry competed for the same mounts as the artillery and the quartermaster. At the beginning of the war, most states hoped to raise cavalry units, but the lack of experience with cavalry tactics in the United States made them wildly unpopular with officers. As the war progressed, the two armies started employing the horse soldiers in new ways that included reconnaissance, raiding, and supply protection. While the artillery arm was willing to employ mules, cavalrymen attempted to avoid those animals. Most nineteenth century Americans considered riding a mule undignified. Since prestige played as much a part of a soldier's image as their actions in battle, Union and Confederate troopers preferred majestic looking horses to the downtrodden mule.[24]

During the Second Manassas Campaign, the Union forces struggled to employ their cavalry properly, making them less prominent within the federal army. John Pope noted that his cavalry was in poor shape throughout the operation. He estimated that the army contained around four thousand cavalrymen and horses. In the midst of the operation, Pope complained that "their horses were completely broken down and there were not 500 men, all told, capable of doing much service as should be expected from cavalry." The rebels more than likely contained a smaller number of cavalry troops, but probably consisted of a few thousand men and horses.[25] While the cavalry played a less prominent role than the artillery that summer,

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[23] John D. Billings, *Hard Tack and Coffee; Or the Unwritten Story of Army Life* (Boston: George M. Smith and Co., 1887), 281.

[24] Greene, *Horses at Work*, 123–24.

[25] Maj. Gen. John Pope to Brig. Gen. G. W. Cullum, 27 January 1863, *OR*, ser. 1, vol. 12, pt. 2, pp. 34–35. John J. Hennessy estimated that Pope's army at the beginning of the campaign consisted of fifty-one thousand troops, including 5,800 cavalry. His estimates for Lee's army, which he put at about fifty-five thousand at the beginning of the operation, did not contain a separate count for cavalry specifically and no Confederate reports even provided an estimate of those numbers. For the total numbers in the two armies during

their presence alone added thousands of horses to the army even if they were not in a serviceable condition.

The quartermaster department had the most eclectic number of draft animals while also the arm of the army most reliant on them. The quartermaster tended to rely on mules over horses due to availability issues. Field officers preferred having horses accessible for the artillery to mules. Forcing the quartermasters to use mule power over horse power. For a number of quartermasters, they preferred mules due to their stouter character. It was thought that mules were designed to drag wagons about while horses, being more fragile and susceptible to injury in their perceptions, broke down quickly.[26] Indeed, Samuel Beardsley wrote, "There are thousands of [mules] employed in the army, as they are very strong and tough." On top of that, "their keeping does not cost much." In his regiment alone, there were "four or five trains of them," with a single train consisting of six mules.[27] If each regiment held similar numbers in the Army of Virginia, with at least thirty mules to every regiment and ninety-three regiments in the force, the mule population, at least before Pope's general orders to live off local produce, would have reached approximately 2,790 animals, not counting the animals moving supplies between Washington, D.C., and the Army of Virginia.[28]

While necessary, the employment of animals held a number of problems for the two

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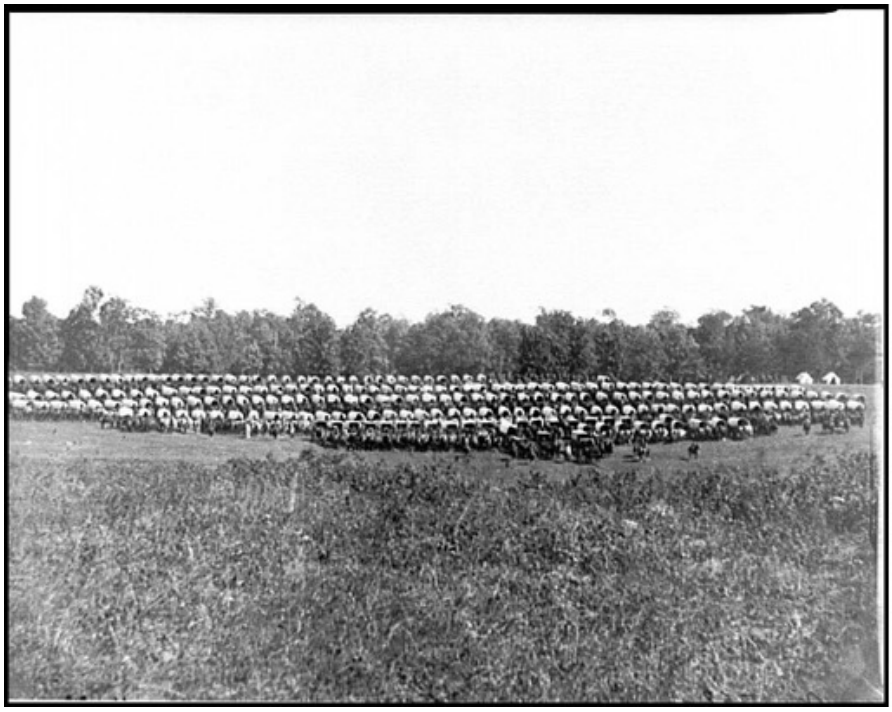
Second Manassas, see Hennessy, *Return to Bull Run*, 6, 456. For his estimate on the Union cavalry, see Ibid., 474n10.

[26] Risch, *Quartermaster Support of the Army*, 374.

[27] Beardsley to "My Dear Sam," 29 June 1862, Falmouth, Va., Letters 1862 Folder, Beardsley Papers, USAHEC.

[28] For the estimated number I used Beardsley's comment from his letter to "My Dear Sam," 29 June 1862, Falmouth, Va., Letters 1862 Folder, Beardsley Papers, USAHEC and added them with the total number of infantry regiments listed in the Order of Battle found in Hennessy, *Return to Bull Run*, 551–69

armies. The need for animals in the quartermaster department perhaps most highlighted the biggest issue with the use of animal power. Animals were required to move the necessary wagons and goods to the armies in the field. Those same animals consumed a similar amount, if not more, forage to the horses and mules already with the army, creating a vicious cycle of supply and demand within the forces themselves. Additionally, the presence of wagon trains could easily slow an army's movement. Greene writes that one surgeon "described a train eight miles long." Based on the basic measurements of supply wagons, "twelve feet long, forty-three inches wide, and twenty-two inches deep," the train would have possessed approximately "850 wagons and 3,000 to 6,000 horses and mules."[29] These types of trains clogged up the roads. More importantly, it added thousands of living being to the region. The local ecological transformation was not solely resulting from human action.



A Federal wagon train sits waiting to move with the Army of the Potomac in May 1863. Although later in the war and part of a much larger force, the Army of Virginia would have had a similar amount of wagons moving through the region during the operation in August 1862. Each wagon would have had six horses or mules connected when on the march. *Photo: Brandy Station, Va., vicinity. Large wagon park, LC-DIG-cwpb-03936, Library of Congress Prints and Photographs Division, Washington, D.C.*

*Figure 16*

[29] Greene, *Horses at Work*, 124.

*Caring for Draft Animals*

Working animals as a factor in foraging attempts extended beyond the need to feed the armies' fauna. Although Pope's orders did not specifically address the seizure of animals, local horses, at least, became part of the action. One Union soldier noted that his regiment quickly jumped on those opportunities. "Among the general orders of the new commander," George F. Noyes, an infantryman in the Seventy-sixth New York, wrote, "was one requiring the seizure of rebel horses and forage when needed for the public service." He continued, "Our quarter-master availed himself of the opportunity to exchange some of our worn out animals for the more serviceable stock of the wealthy planters in the vicinity."[30] These living commodities required attention beyond the consumption of the army. Unlike the other ecological factors the two sides dealt with, animals with the armies needed to receive special care in order for the two forces to employ them effectively. This care for the horses and the turn to local farms for draft animals emerged from logistical requirements and the need to keep their animals fresh while operating through northern Virginia.

The ability to remain mobile through horse and mule power was why officers on both sides constantly worried about maintaining the amount of draft animals necessary to continue their movements. When those animals were not available it was duly noted. Pope explained that the lack of horses in his army caused him to delay when moving on Manassas Junction. After Jackson made his flanking march, Pope attempted to consolidate his forces before marching on the junction. When some of his men arrived, they were unprepared for the movements. In fact, Pope declared, when Maj. Gen. Samuel Heintzelman's corps arrived

[30] George F. Noyes, *The Bivouac and the Battlefield: Or, Campaign Sketches in Virginia and Maryland* (New York: Hapers and Brothers Publishers, 1864), 49–50.

from the Army of the Potomac, they "came without artillery, with only 40 rounds of ammunition to the man, without wagons, and" most significantly "without horses" for the "field and general officers."[31]

Supplying animals for the army became increasingly difficult as the Union forces moved further away from their supply-bases in the north. According to one Union soldier, the equine supply came primarily from Kentucky and Missouri. Confederate forces held a number of posts between Kentucky and Missouri and Virginia blocking any routes to maintain a steady flow of fresh horses and mules.[32] The rebels had an even greater problem without an established governmental system for animals. Confederate officers and cavalry relied primarily on either their own animals—as the rebel government required them to provide their own horses—or the horses and cattle of their fellow citizens. Rebel officers and troopers found it difficult to replace their worn-out animals. In fact, historian Charles W. Ramsdell argues that Robert E. Lee's horse supply, primarily his lack of one, increasingly caused struggles for the Confederate forces from 1862 through the end of the war.[33] John Hampden Chamberlayne exemplified the trouble while trying to plan on getting some fresh horses for himself. "How I missed the colt," Chamberlayne wrote to his sister. But, "If bro. Ed. is willing, I wish to keep him as I need two horses." The question, according to Chamberlayne, was "how to get him here." Instead of getting to grab a fresh colt from a

[31] Pope to general-in-chief Henry W. Halleck, 3 September 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 13.

[32] Billings, *Hard Tack and Coffee*, 279–80

[33] Charles W. Ramsdell, "General Robert E. Lee's Horse Supply, 1862–1865," *The American Historical Review* 35 (July 1930): 758–77.

nearby farm, Chamberlayne provided multiple plans for receiving his own animal.[34]

The lack of supply meant keeping the existing animals healthy became a priority. The Confederates' personal connection to most of their animals made this concern especially prominent. Later in the campaign, Chamberlayne changed his tune over receiving his horse for the field. About a month after first scheming to get his colt, Chamberlayne wrote that leaving his horse behind was a good decision. As he told his mother, "It was right not to send the horse." He continued, "I am glad now that he is not here."[35] Chamberlayne's relief in leaving his horse behind resulted from one key similarity between the soldiers and animals in the two armies. Just like their human counterparts, animals became increasingly susceptible to diseases while in the service of the Union and Confederacy. Indeed, transmittable viruses ran rampant through the armies' fauna.[36]

With an immense number of animals in the army's ranks, their treatment became a growing concern during the campaign. A primary anxiety for veterinary care was the transference of the disease glanders, creating an epizootic.[37] While glanders was eradicated from the United States in 1934, it was prominent in the United States throughout the nineteenth century. Having been a problem since at least the Second Seminole War (1835–

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[34] John Hampden Chamberlayne to Lucy Parke Chamberlayne Bagby, 7 August 1862, Gordonsville, Va., Folder 2, Section 1, Mss1C3552a, John Hampden Chamberlayne papers, 1858–1877, VHS [hereafter cited as fol. no., sec. no., Chamberlayne papers, VHS].

[35] Chamberlayne to Martha Burwell Chamberlayne, 6 September 1862, Frederick City, Md., fol. 4, sec. 1, Chamberlayne papers, VHS.

[36] Veterinarians, officers, and even soldiers could transfer the germs for a number of animal diseases without their knowledge. For glanders, the most prominent disease in the Civil War, humans could carry the disease if they came in any contact with mucus, either directly from the animals or in the water and soil, to their own animals. G. Terry Sharrer, "The Great Glanders Epizootic, 1861–1866: A Civil War Legacy," *Agricultural History* 69 (winter 1995): 79–80.

[37] An epizootic is the scientific term for a disease that is temporarily prevalent and widespread in an animal population, similar to human epidemics. See, Sharrer, "The Great Glanders Epizootic," 79–97.

42), U.S. horses even introduced the disease to Mexico during the U.S.-Mexican War fifteen years before the Civil War. Glanders was a significant infection for military horses and mules since "at least the fourth century reign of Constantine the Great."[38]

Despite the commonness of glanders among military animals, it was difficult for many veterinarians to diagnose. It had similar symptoms to another common equine virus called "equine distemper" or, more commonly, "strangles." Both were indicated through swollen lymph nodes and an increased presence of mucus with high fevers and signs of depression or sluggish behavior. Both illnesses possessed a low mortality rate, having light death tolls. But both also had a high morbidity rate, making them common among certain horse populations and draining their health in the process.[39] The two armies feared the rise of glanders and strangles in the equine population.

Glanders became the most prominent zoonosis in the South during the conflict, even creating an epidemic within equine populations that lasted through 1866.[40] Northern Virginia was not immune. The Confederates quickly found glanders spreading through the ranks of

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[38] Sharrer, "Great Glanders Epizootic," 79–80.

[39] Mortality rates typically count the scale of death from a single disease or cause in a population. Morbidity rate counts the frequency of a single disease in a population. Therefore, glanders was common throughout the two armies, but had few deaths occur from it. Sharrer, "Great Glanders Epizootic," 82; and "Strangles: Understanding Equine Distemper and Purpura Haemorrhagica," Texas A&M University Veterinary Medicine and Biomedical Sciences official website, http://vetmed.tamu.edu/news/pet-talk/strangles-understanding-equine-distemper-and-purpura-haemorrhagica, accessed 19 September 2017.

[40] Zoonosis is the proper scientific term for any diseases that can be spread from an animal to human population. Rabies and anthrax are the most well-known, but glander was another zoonosis and one that had a direct impact on both animal and human populations during the Civil War. It was especially dangerous for veterinarians in the two armies as the disease typically is transmitted through contact with tissues or fluids from an infected animal, primarily entering through cuts or abrasions in the skin. Usually, humans would experience flu like symptoms with only the infection of the bloodstream being particularly fatal for humans. For more on glanders's impact on humans, see "Glanders, Transmission" and "Glanders, Signs and Symptoms," Centers for Disease Control and Prevention official website, https://www.cdc.gov/glanders/symptoms/index.html, accessed 24 January 2018. For more on the overall impact of glanders on the Civil War populations in general, see Sharrer, "Great Glanders Epizootic," 79–97.

horses and mules throughout the commonwealth. One rebel veterinarian noted that a number of animals suffered from distemper as early as 1861 when gathered on the York Peninsula outside of Richmond. Although one Confederate veterinarian, Dr. John R. Price, believed distemper, with its higher fatality rate, could eventually lead to glanders, he argued that it was rare.[41]

By March 1862, glanders emerged in the rebel ranks in northern Virginia. When they retreated from around Manassas Junction, Price noted they had captured a number of federal horses and mules. The first instance of glanders the veterinarian found was one of those horses. Due to exposure to this horse, he wrote, "I have reason to believe that this animal spread the disease far and wide among the horses of the Confederate army."[42] An Union officer, however, argued that while leaving Manassas the Confederates had "carefully left behind . . . a number of horses infected with that horrible and contagious disease, the glanders."[43] Glanders contaminated anything that came into contact with either the horses' mucus or the fluids that built up in the glands, including clothing, food, and even soil. This contamination lasted for weeks and made the exchange of the disease fairly easy and common. With an increased population of humans and animals in a fairly confined space, it easily and quickly spread through a number of populations. Although few reports of glanders or strangles emerged during the Second Manassas Campaign, the presence of the disease in northern Virginia and the simplicity of its spread made it dangerous throughout the war.

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[41] Sharrer, "Great Glanders Epizootic," 83.

[42] John R. Price, "Glanders and Farcy in Horses" in *Contagious Diseases of Domesticated Animals*, U.S. Department of Agriculture, Report No. 22 (Washington, D.C.: GPO, 1880), 203; and Sharrer, "Great Glanders Epizootic," 83.

[43] Samuel Ringwalt quoted in Sharrer, "Great Glanders Epizootic," 83–84.

While constantly looking for signs of disease, the two forces also kept a close eye on issues of fatigue and injury that could prevent the animals from performing their duties. As mentioned earlier, Pope noted that his cavalry was almost useless due to the condition of their animals.[44] Some of the soldiers and lower ranking officers also noticed the toils of the animals while on the move. One unnamed soldier of the Forty-fourth New York noted that while he wrote from inside a local farmhouse, he was surrounded by a "body of dragoons and their horses, while in the adjacent field our baggage wagons are parked." The small break allowed "the poor horses [to] enjoy a little rest."[45] Beardsley wrote that his horse in late June also struggled with the hard riding of the campaign. After arriving at Haymarket, Virginia, only about four miles from the same fields his regiment would fight in about two months later, his mount, Prince, "began . . . to limp. We examined his [front] foot, but could find no cause for it." Eventually, he wrote, the unknown injury "got so bad that he could hardly walk." Beardsley ultimately discovered a small rock that made its way between Prince's horseshoe and his hoof. Although Beardsley "dug it out," by that point, "the mischief had already been done." Once he had returned to Falmouth, Virginia, to rejoin his regiment, he recorded "it was pitiful to see how lame he was." Beardsley had not realized that Prince's hoof had broken in that spot and became infected. His mount eventually recovered. The horses' fragility reflected the problem of working with a living commodity. Their care was part of the deal after purchase.[46]

Union cavalrymen also noted the results of the stressful marches during the heat of

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[44] Pope to Callum, 27 January 1863, *OR*, ser. 1, vol. 12, pt. 2, pp. 34–35.

[45] Letter of 44th New York Infantryman, *Rochester Daily Democrat and American*, 5 September 1862.

[46] Beardsley to "My Dear Sam," 29 June 1862, Falmouth, Va., Letters 1862 Folder, Beardsley Papers, USAHEC.

that August. While the animals suffered from both fatigue and malnourishment, cavalry horses also experienced health issues with their backs from being under saddle throughout most of the movements. One trooper described having to abandon his mount due to poor health. After removing his saddle, he attempted to take off the "decayed saddle-blanket, which had been wet with rain and sweat for weeks." When he did, the horse's "skin came with it, leaving the ribs bare."[47] Charles Francis Adams Jr., the great grandson of President John Adams and a cavalryman with the First Massachusetts Cavalry, also remembered that the summer heat caused the animals' backs to swell. Their "backs soon get feverish under the saddle" causing the inflammation. Once it began, "No care can stop it." The horse's "withers" enlarged "to three times the natural size, and with a volcanic, running sore pouring matter down each side." This was something that "every cavalry officer is daily called upon to deal."[48] Although Adams's description comes from later in the war, he mentioned that it was a typical daily experience for the cavalry troopers. The additional weight of carrying the cavalry troopers and saddles made the horses' health even more imperative. Few horses would have been useful in the aftermath of experiencing these types of injuries.

By the end of the campaign, Pope further noted the breakdown of his animals. Between 27 and 29 August, Pope's army had been chasing Jackson's wing. With the continuous movements throughout those days, Pope reported, his men were short on provisions and exhausted while his horses "had had no forage for two days." To rectify this, Pope requested fresh rations and "forage" as quickly as possible. McClellan responded that

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[47] Isaac Gause quoted in David J. Gerlman, "Unchornicled Heroes: A Study of Union Cavalry Horses in the Eastern Theater; Care, Treatment, and Use, 1861–1865" (Doctoral Dissertation, Southern Illinois University, 1999), 202.

[48] Charles Francis Adams Jr. to his Mother, 12 May 1863 in *A Cycle of Adams Letters, 1861–1865*, Worthington Chuncey Ford, ed., 2 vols. (Boston: Houghton Mifflin, 1920), 2: 4–5 .

he would only send the requested items when Pope provided a "cavalry escort to Alexandria" to protect the wagons. Frustrated with McClellan's non-responsiveness for his men and animals, Pope pointed to this reply as the turning point of the battle against the Army of Virginia. "All hope of being able to maintain my position, whether victorious or not, vanished with this letter," Pope wrote. He continued, "My cavalry was utterly broken down by long and constant service in the face of the enemy." Although Pope argued that the central problem with providing the escort was the need for the cavalry to remain on the battlefield, he noted that the cavalry was in poor shape to act as an escort for the supplies.[49] Without the required forage, the horses were too exhausted to provide the necessary power to move with the supplies. Union soldiers worked to reverse this problem based on Pope's general orders.

*Foraging for Draft Animals*

With additional mouths to feed, the presence of domestic animals required additional forage. Mainly, the Union army relied on hay, wheat, and oats to feed the mules and horses during the campaign. Each horse within the federal army was "to be supplied daily with 14 pounds of hay and 12 pounds of oats, corn, or barley; each mule's ration consisted of the same amount of hay and 9 pounds of oats, corn, or barley." Over the winter before the Second Manassas Campaign, Union horses and mules required "about 400 tons of forage daily."[50] By the summer of 1862, the federal government struggled to provide the necessary forage for those animals. Pope complained to Brig. Gen. Montgomery Meigs, the commander of the Union quartermaster department, about the inability to provide forage. "There has been," he wrote, "the greatest possible carelessness somewhere in the Quarter Master's

[49] Pope to Halleck, 3 September 1862, *OR*, ser. 1, vol. 12, pt. 2, p. 15.

[50] Risch, *Quartermaster Support of the Army*, 379.

Department in the matter of furnishing forage for my army." Stemming from the "neglect of some Quarter Master" and despite being "only seventy or eighty miles from Alexandria," Pope argued, "I cannot get forage for my cavalry, and now at the moment when I most need it."[51] Just as the Union and Confederate quartermasters struggled to provide produce and working animals for their men, they wrestled with providing the forage necessary for the animals to continue working at full strength.

Similar to feeding the soldiers, the armies turned to the local farms to provide their animals with food. Soon, the local farmers witnessed the continued depletion of their agricultural work. James Robinson noted that immediately after the Union corps under Maj. Gen. Franz Sigel arrived at his farm in August 1862, some of them had "found my wheat in the barn and they fed their horses on it."[52] According to other local civilians, Union troops confiscated multiple tons of hay throughout that spring and summer. Multiple farms had their hay production reduced by two or three tons at a time. Others saw significantly larger amounts disappear from their farms. Robert M. Clark recorded that the Army of Virginia eventually confiscated forty tons of hay during the campaign.[53] Robinson claimed the Union troops grabbed twenty-five tons (approximately 50,000 pounds); Alfred Murphy lost twelve

[51] Pope to Brig. Gen. Montgomery Meigs, 19 August 1862, Cedar Mountain, Va., AOV HQ, Letters and Telegrams Sent, AOV 1862, General Records, Entry 5799, Records of the U.S. Army Continental Commands, 1821–1920, RG 393, part 1, NARA.

[52] Claim of James Robinson, Claim no. blank (1871), p. 18, Prince William County, Settled Case Files for Claims Approved by the Southern Claims Commission, 1871–1880, Virginia, M2094, roll 35, Records of the Accounting Officers of the Department of the Treasury, RG 217, NARA [hereafter cited as Claimant's name (after first citation), Claim no. (Year), p. no., Prince William County, Claims Approved, SCC, Virginia, M2094, r. no.].

[53] Claim of Robert M. Clark, Claim no. 36678 (1874), p. 4, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 34, RG 217, NARA.

tons (24,000 pounds); and T. Mason Manchester lost ten tons (20,000 pounds).[54]

Thomas Claggett made it clear that the Union soldiers primarily used the hay and oats for feeding the horses in their possession. In one instance, Claggett reported, "The oats were taken from our grainery and fed out to the horses on the pace. . . . There were 100 bushels," he recorded, "measured in to the grainery but a few days before the army came there and they were all fed out by these troops."[55] Feeding the horses was not limited to harvested crops. George Joy made a claim for 15 acres of clover that Union cavalrymen used to feed their horses. When the "several hundred cavalrymen" settled around his farm, their horses "were turned on a field of clover and grass belonging to [Joy] which they completely fed down and used."[56]

Beardsley reported that mules seemed to enjoy consuming everything in their path. He described the mules with his regiment as "the funniest things you ever saw or heard." Part of the reason for this description was that they "will eat anything, old jackets and caps, or anything they can get a hold of." They did this "not because they are hungry, but because they are mules and nothing else."[57] For local farmers, it would have been a nightmare to find a mule train making their way through the region.

Just as disease was a concern for both animal and human members of the Union and

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[54] Robinson Claim, Claim no. blank (1871), p. 8; Claim of Alfred Murphy, Claim no. 41815 (1875), p. 2; and Claim of T. Mason Manchester, Claim no. 41804 (1875), p. 2, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 35, RG 217, NARA.

[55] Claim of Julia F. Claggett, Claim no. 41668 (1875), p. 30, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 34, RG 217, NARA.

[56] Claim of George W. Joy, Claim no. 41791 (1875), p. 2, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 35, RG 217, NARA.

[57] Beardsley to "My Dear Sam," 29 June 1862, Falmouth, Va., Letters 1862 Folder, Beardsley Papers, USAHEC.

Confederate forces, the two groups also competed for another important resource. Water was essential for animals to stay healthy, just like for humans. In northern Virginia, this put additional pressure on the lack of rain and water in early August 1862. As noted earlier, most of the natural springs and streams of the region had dried up, according to multiple Union officers. While that created major problems for the soldiers in the field, it also caused the animals to suffer. Beardsley noted that while his division marched toward Culpeper Court House to join the forces that had fought in the Battle of Cedar Mountain, the hottest day of the month increased the need to water the beasts. "Our horses," he wrote, "were almost crazy for water." With a "nearly 6 mile" long wagon train following the division, his force most likely had around three to four thousand horses and mules. "With 6 mules or horses to each waggon [*sic*]" in the train, Beardsley continued, the quartermasters "could not get water for their animals."[58] The animals involved in pulling the wagons and cannons and carrying cavalry soldiers added pressure to local resources, making them even scarcer for the humans associated with the operation.

With the additional mouths of horses and mules, foraging became more than feeding the soldiers. Horses and mules required thousands of pounds of forage in order to maintain a healthy weight, especially those used as draft animals. In the process, the animals contributed to the consumption of local natural resources and to the wasteland left in the two armies' wake. These beasts ate both human controlled natural resources, grasses like wheat and oats, and natural flora, like clover. With pressure previously emerging from the human members of the Union and Confederate armies, the presence of animals added to the consumption of

[58] Beardsley to "Did," 13 August 1862, Culpeper C. H., Va., Letters 1862 Folders, Beardsley Papers, USAHEC.

and the pressure on the landscape's production. Similar to the soldiers that they assisted, the animals had a limited amount of energy to continue to function. The commanders rarely recognized these limits. Usually, horses and other draft animals were pushed to their limitations leading to exhaustion, illness, and injury.

With a lack of fresh draft animals from the governments, the two forces expanded their foraging efforts beyond the foodstuff needed for the soldiers and animals. As mentioned earlier, both armies found difficulty in maintaining their draft animal supply. Unlike agricultural produce, which was available in a matter of months, draft animals needed years to grow into an effective resource. Typically, horses and mules were unfit to work until they reached the age of two, but the armies preferred waiting until the animal turned at least four. Even if the two sides wanted to have a constant supply of new serviceable horses and mules, the necessary growth periods for them made that amount limited.[59]

Local farms were the best supply for those mature horses and both forces took full advantage.[60] Julia Claggett and her family lost six of their horses to the Yankees. Taken at different times, each group confiscating the horses used them for different purposes. For example, the first two horses, Thomas Claggett reported, were "taken by some artillery who passed on towards Warrenton." Immediately after taking them, "the horses were hitched directly to the guns and driven off with the army."[61] Rebecca Sexsmith also noted one of her horses taken in 1862. In Sexsmith's case, Union cavalry confiscated the mare, taking it

[59] Greene, *Horses at Work*, 29.

[60] Ramsdell, "Lee's Horse Supply," 758–77

[61] Claggett Claim, Claim no. 41668 (1875), p. 30, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 34, RG 217, NARA.

directly from her brother and immediately placing it into service.[62]

Similarly, Isham Keith of Fauquier County kept a running list of his property lost during the summer of 1862. It is telling that the first items he listed for future consideration were the animals lost to the Union forces between May and August. Keith's family lost the majority of their animals. The Union forces confiscated thirteen horses and mules from Keith, which he estimated at eighteen hundred dollars. Additionally, Union troops took almost four hundred heads of livestock, totaling 4,570 dollars. Since Keith kept the running tab in order to make sure the federal government would pay him back, the Union forces grabbed the animals without compensation.[63]

While most of the Confederate army struggled to find fresh horses, Stuart's cavalry and Jackson's wing took advantage of the federal supplies for new animals. During Stuart's raid on Catlett's Station, his men had "destroyed 15 wagons and took about 200 prisoners." In addition, they had grabbed "400 or 500 of our mules and horses."[64] Only days later, Jackson's men captured Manassas Junction and went about consuming every possible piece of food available, including bacon, corned beef, and salt pork. Despite relying mainly on local farms for new animals, the federals had a number of horses at Manassas Junction, which attracted the attention of the rebel commander when they arrived. Even before getting to the depot, Jackson's brigade under Isaac R. Trimble captured two artillery batteries that contained "four field pieces, horses, equipments, and ammunition, complete." Based on the

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[62] Claim of Rebecca Sexsmith, Claim no. 36650 (1874), p. 29–30, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 35, RG 217, NARA.

[63] Isham Keith, "Losses Sustained by Me and Injuries Done Me by the Federal Army in the Months of May June July August and November 1862," Mss1K2694a, Section 14, Keith Family Papers, VHS.

[64] Beardsley to "Dear Did," 27 August 1862, In the Woods near Warrenton Springs, Va., Letters 1862 Folder, Beardsley Papers, USAHEC.

U.S. requirements for artillery batteries, Trimble's troops captured around seventy-five horses, a massive cache for the rebels since Lee struggled to maintain a supply of horses throughout his time in command.[65] Trimble's men added to this total once he took Manassas Junction. His warriors had taken seventy-two "artillery horses and harnesses" and 175 draft horses. Added to the horses already in Confederate possession, this single brigade had grabbed 322 total animals from capturing the federal depot.[66] With government supply sending few horses forward, Confederate farmers, including those in the armies, saw the complete reduction of their draft animals. Foraging for animals highlighted another purpose behind having animals with the armies.

*Foraging for Animal Protein*

Horses and mules were not the only animals with the two forces. While food preservation was becoming more common during the conflict, officers on both sides attempted to maintain a supply of fresh meat for the soldiers. In the nineteenth century, Americans' diets were centered around meat consumption. While many ate corn, potatoes—both Irish and sweet, and grain in the form of bread, their tables at mealtime had multiple meats available for people to consume, with the most popular being pork. A number of members of the temperance movement and health reformers from the 1830s and 1840s pushed for vegetarian diets throughout the nation, though the impact was limited. Americans did attempt to increase their consumption of vegetables by the 1860s, but by the time of the

[65] Isaac R. Trimble to C. J. Faulkner, 10 April 1863, *OR*, ser. 1, vol. 12, pt. 2, pg. 721; and French, Barry, and Hunt, *Instruction*, 36. For more on Lee's struggles with his horse supply, see Ramsdell, "Lee's Horse Supply," 758–77.

[66] Trimble to Faulkner, 10 April 1863, *OR*, ser. 1, vol. 12, pt. 2, pg. 723.

Civil War, meat had become the central aspect of the American diet.[67] Civil War soldiers in the summer of 1862 would expect to maintain that tradition.

Army ration regulations reflected this reliance on meat. According to the 1860 guidelines, the soldiers were to receive either twenty ounces of beef or twelve ounces of either bacon or pork every day while in camp. Preferring to provide as fresh of meat as possible, this required having cattle moved with the armies themselves.[68] When on the march, like the soldiers in the Second Manassas Campaign, those rations were significantly reduced. According to one Union soldier, the army did not hand out any vegetable rations while on the move and cut down the amount of meat. Primarily, their marching ration consisted of "one pound of hard bread; three-fourths of a pound of salt pork, or one and one-fourth pounds of fresh meat; sugar, coffee, and salt."[69] Even with the reduced rations, meat was still central to the troops diets.

Initially, both the rebels and federals attempted to maintain a strong presence of rolling stock, making swine, cattle, and sheep a common site for both armies early in the conflict. As early as late 1861 and into 1862, Confederate forces near Manassas Junction possessed a large quantity of livestock for slaughtering. On multiple occasions, Pope prepared his cavalry to protect a train of "beef cattle" and worked to pay for livestock for his divisions in the field.[70] While having fresh meat for the troops would maintain a sense of

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[67] Matthew Brennan, "The Civil War Diet," (master's thesis, Virginia Polytechnic Institute and State University, 2000), 1–30.

[68] Ludwell Lee Montague, "Subsistence of the Army of the Valley," *Military Affairs* 12 (October 1948): 227.

[69] Billings, *Hard Tack and Coffee*, 112.

[70] Joseph E. Johnston, *Narrative of Military Operations Directed, during the Late War Between the States*, Frank E. Vandiver, intro. (Bloomington: Indiana University Press, 1959), 99; and Pope to Maj. Gen. Nathanial P. Banks, 5 July 1862, Washington, D.C.; Pope to Lt. Col. Copeland, 5 July 1862, Washington, D.C.;

home for them, it became quickly apparent that maintaining an available supply of livestock would negatively impact the armies.

With the presence of cattle, the armies struggled to efficiently operate with the presence of those animals. In 1862, the large amount of livestock gave Joseph Johnston headaches while trying to evacuate the defenses around Manassas. When Johnston first wanted to retreat to the Rappahannock River, he hoped to limit the amount of supplies with his army to about one and a half million pounds. Without his knowledge, the Confederates had "located a meat-curing establishment for the . . . armies at Thoroughfare Gap, on the Manassas Gap Railroad." At that place, "there were more than two million pounds of meat, cured and in the process, besides large herds of cattle and hogs." So, instead of the one and a half million pounds he expressly wanted to move, the meat-curing plant had left him with "above five million pounds of its property."[71] Although most men later in the war would have enjoyed their commanders possessing an overabundance of meat like the Confederates did in March 1862, the amount of meat and living animals under Johnston's control increased the time needed to evacuate northern Virginia. The governments and commanders quickly learned that less was more when it came to providing meat for their soldiers.

In the summer of 1862, instead of relying on fresh meat due to the strain it caused logistically, the two forces became reliant mainly on preserved meats—salt pork and salt beef. Salt pork and beef were a relatively recent development for military forces. Food preservatives were becoming increasingly necessary for nineteenth century armies. Without

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Pope to Col. Pierce, 4 August 1862, Sperryville, Va.; and Pope to Col. S. G. Beckwith, 13 August 1862, near Cedar Mountain, Va., Letters and Telegrams Sent, Entry 5799, RG 393, NARA.

[71] Johnston, *Narrative of Military Operations*, 99.

preservatives, it was difficult for governments to get enough food to their soldiers when in the field. Many times, unpreserved foods spoiled within only a few days.[72]

By the Civil War, preserving food became more commonplace. The French forces during the Napoleonic War were the first to carry their own preserved rations with canned foods. Canning made its way over to the United States by the mid-nineteenth century but was in its infancy. Livestock was still a key part of military supplies. Moving livestock was time consuming and difficult. Salt had been a major preservative for centuries before the conflict. Once the war began, both the federals and rebels preserved their meats by soaking them in salt and placing them in barrels thinking that the salt would prevent the meat from spoiling for long enough to get it to the soldiers in the field. Although the concept was legitimate, the execution was poor. The meat still spoiled by time it reached the troops, making it almost inedible.[73]

Despite the meat being spoiled, the soldiers, typically desperate to consume some kind of animal protein, cooked and consumed salt pork and beef in the field. In order to fight off any illnesses the spoiled meat could pass on, the soldiers charred it in grease, making it rubbery and difficult to consume. Troops constantly complained about salt pork and beef, even when it was considered "fresh." It was primarily the only meat available throughout most of Virginia. Confederate troops and government agents confiscated much of the local livestock leaving little livestock behind.[74]

Soldiers in northern Virginia also suffered from the poor meat the government

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[72] For more on these early difficulties, see Engels, *Alexander the Great*; Parker, *The Army of Flanders and the Spanish Road*; and Van Creveld, *Supplying War*.

[73] Brennan, "The Civil War Diet," 62.

[74] Brennan, "The Civil War Diet," 42–43.

provided them. Beardsley noted that one morning, only days before retreating to Manassas Junction, he attempted to cook himself breakfast to have a decent meal for the first time in days. After checking his haversack, he put together a substantial plate. In addition to an ear of "green corn, some hard bread, coffee and sugar," he fried a piece of salt pork and "a piece of veal" that was a rarity for the soldiers. A cannon shot knocked him to the ground destroying his entire breakfast except for the corn he kept in his pocket.[75] Since the soldiers primarily sustained themselves on salted meat and hardtack, fresh meat in any form became a treat. Beardsley and his fellow New Yorkers were a unique case for having fresh meat from a wild animal like a deer. As the soldiers in the Forty-fourth New York discovered, the local farms had plenty of protein available.

By the time the Confederates started to return to northern Virginia in the summer of 1862, it became clear that both they and their federal opponents had openly embraced foraging for both produce and protein. One soldier in the Forty-fourth New York Infantry, one of the regiments on loan to Pope from the Army of the Potomac, described northern Virginia as an "Eden" compared to the area around Harrison's Landing outside of Richmond. "With such temptation to forage," the soldier asked, "what is a poor soldier to do? [H]ow shall he resist the demands of flesh and blood?" Especially, he added, "[H]ow can his mouth avoid watering for something better than pork or hard tack?" With this apparent abundance of food, including animal protein, the troops in his regiment gladly took advantage. He attempted to describe it to his readers through their own imagination. He told them to imagine a "party of soldiers tramping" over the farmer's property. The party then helped

[75] Beardsley to "Dear Did," 27 August 1862, Woods near Warrenton Springs, Va., Letters 1862 Folder, Beardsley Papers, USAHEC.

itself to all the produce available. They grabbed his fruit and corn then they helped themselves to the farmer's animals by "hunting down his poultry, sticking his pigs, [and] milking his cows" before turning the fences into firewood.[76]

Similar to the efforts to take crops from local farmers, hogs, sheep, and fowl provided the best opportunity to add some meat to their diets while on the march. One soldier, Fred Burritt of the Twenty-third New York Infantry, wrote that his lieutenant, Hiram T. Smith, took twenty men to "inspect a large flock of fat sheep owned by a rebel in arms." After doing so, Smith "carried into effect the true intent and meaning of John Pope's general order No. 6." He continued, "It grew dark before any of the mutton could be dressed and cooked."[77] Another soldier wrote that since "there was no 'beef on the hoof' to be seen . . . and no prospect of getting anything on reaching camp excepting those inevitable hard crackers . . . it is not surprising that a few fowls were taken on the wing and a few turkeys were made to gobble their last farewell."[78]

Union soldiers, according to Anne Frobel, found chicken especially satisfying. In one instance, a New Jersey regiment camped near her house, and seemingly composed of "mean boys," overran her farm taking everything in sight including picking "up the chickens." Later, she wondered how her family survived most of that first year. By the time August 1862 rolled around, the family could barely feed themselves, particularly when soldiers and officers came around to confiscate their crops and animals. The Yankee soldiers were exceptionally difficult to please. They were consistently "as hungry as hounds." She also

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[76] Letter of 44th New York Infantryman, *Rochester Daily Democrat and American*, 5 September 1862.

[77] Fred Burritt to unknown recipient, 29 July 1862, *Elmira Weekly Advertiser and Chemung County Republican*, 9 August 1862.

[78] Lt. George Breck to unknown, 6 July 1862 in the *Rochester Union and Advertiser*, 18 July 1862.

declared they were "such chicken eaters- so fond of chicken." She believed "they never tasted chicken until they came to 'Ole Virginny.'"[79] While most animals were probably attractive sources of protein to soldiers on both sides, chickens, most likely, were easiest to handle. Smaller than cows, hogs, and sheep, soldiers could easily grab multiple chickens with a single hand and march off without adding a significant amount of weight.

This did not stop federal soldiers from helping themselves to any domestic farm animals. Matthew King reported that Union troops stole thirty hogs that King had "fattened and was about to kill." After the Union soldiers under Sigel arrived, they drove the animals "to the pines and killed" them. Each hog, King estimated, weighed at least "150 lbs."[80] T. Mason Manchester reported Yankee troops taking four hogs totaling 800 pounds from his property.[81] And James Robinson recorded Sigel's men slaughtering most of his hogs. Only owning eight hogs at the time of the operation, Robinson reported that Sigel's troops "killed 7 of them and the 8th hog I got away from them and put it in a pen," most of them weighing "from 100 pounds upwards." The day after arriving on Robinson's property, he recalled, the solders started "killing and slaying the hogs." When asked, "The soldiers were shooting them down?" Robinson responded, "Yes sir, and cooking them."[82] One Confederate soldier also noted the strain on local farmers' livestock. When Samuel Burney, a soldier in Thomas Cobb's Georgia Legion, arrived in northern Virginia after the campaign's conclusion, he

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[79] Frobel, *Civil War Diary*, 87, 92–93.

[80] Claim of Matthew King, Claim no. 48458 (1877), p. 34, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 35, RG 217, NARA.

[81] Manchester Claim, Claim no. 41804 (1875), p. 2, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 35, RG 217, NARA.

[82] Robinson Claim, Claim no. blank (1871), p. 25, Prince William County, Claims Approved, SCC, Virginia, M2094, r. 35, RG 217, NARA.

described the actions of "the Yankees." Burney had "heard of some, indeed . . . saw some that lost over 200 head of cattle, all their corn & meat, & even setting hens."[83] Having a dietary tradition that centered on meat consumption, animal protein was central to the soldiers remaining connected to their civilian lives. Adding to their protein intake and giving additional needed calories, the slaughtering and consumption of domesticated animals became another key aspect of federal and rebel foraging efforts in northern Virginia.

*Conclusion*

After almost a year of war, the armies were becoming stronger organizations through their experiences while on campaign as well as on the battlefield. While the time in the army improved the abilities of the Union and Confederate soldiers, it took a massive toll on the other beings contributing to the war effort: domesticated animals. Domesticated animals, especially horses and mules, were central to the mobility needs of Civil War armies. All of their supplies and equipment required the use of draft animals to take stress off the soldiers. Instead of carrying most of their own gear on their own shoulders, Civil War officers and soldiers relied on the pack and draft animal-pulled wagons to move effectively. At the same time, animal protein played a role in maintaining soldiers' energy. In addition to the produce the soldiers consumed from the local farms, meat added to the troops' energy by increasing the calories they consumed while in the field. Animals were a central piece to army logistics in the Civil War.

Fauna in the two forces had a complex position within the campaign. Soldiers and officers saw them primarily as a commodity. The animals came under the control of the two

[83] Samuel Burney to Sarah Elizabeth Shepherd, 12 September 1862 in *A Southern Soldier's Letters Home: The Civil War Letters of Samuel Burney, Army of Northern Virginia*, ed. Nat S. Turner (Macon, Ga.: Mercer University Press, 2002), 205.

sides' quartermasters. They attempted to set standards for their animals' sizes and care in order to prevent them from breaking down. Just like the produce and equipment the quartermasters tried to supply, they also struggled to provide the beasts needed to move the armies through northern Virginia. Horses, mules, and livestock were goods for the local farmers and for the officers. They were primarily considered on the same level as the vegetables, water, ammunition, and uniforms given to the troops—insentient things that supported the purposes of the officers and troops. Unlike modern-day ideas about the protection of animals, horses, mules, and livestock in the nineteenth century were considered the engines behind supplying people.[84]

The animals in the two armies *were* living beings, however. They needed food, water, and care just like the soldiers and officers. Ecologically, as William Cronon, who explores colonial southern New England, writes, domesticated animals have had some of the greatest impacts on local environments.[85] This was especially true for Civil War armies in northern Virginia. Animals in the Civil War both transformed the landscape and were an important piece of military foraging. Where farmers changed the lands to cut their landscape between crops and pasture in colonial New England, Civil War armies stormed the local farms to feed their animals. At the same time, they looked to the local farms to find fresh beasts when their animals broke down or died. By 1862, animals, both for draft and food purposes, were rarely coming from the respective capitals. This added to the pressure on local farmers as their forage and animals disappeared throughout the summer of 1862. Without that food, their

[84] For more on the concepts of animals as the engines of industry in the nineteenth century, see Greene, *Horses at Work*.

[85] William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill and Wang, 1983), 127–56.

energy levels quickly dissipated under the stress of lugging cannons, caissons, and wagons. The energy requirements of the armies were directly connected to the ability to employ animals properly and keep them cared for in Civil War armies. While the need for animals was rarely met for either army in the summer of 1862, the armies' officers recognized the importance of animals, especially horses and mules.[86]

The two forms of animals in the army, both a commodity and a living organism, also pushed troops' foraging beyond the vegetables and grains they initially targeted for their own consumption. The stress placed on these animals as the engines of the armies meant finding replacements on the occasions of them getting sick or injured. Where these replacements came from has been something that historians never truly exposed. Union forces throughout much of the conflict relied on horse supplies from northern states. When on the march, armies necessitated immediate, quick replacements. Truly, the loss of one horse or mule could bring operations to a complete halt. With that in mind, officers and troops looked to local farmers for animals with the loss of a draft animal, taking much of the required power they needed for agricultural work with them in the process. Not only did animal requirements significantly impact the operations in northern Virginia, it also added to the conflict over resources between the military and civilians.[87]

Just as local agricultural production provided the food supply for much of the summer of 1862, the domesticated animals of local farmers added to the soldiers' capacity to feed themselves. Many Civil War armies, including those in northern Virginia, had rolling stock with them when in camp and, at times, while on the move. This provided some fresh meat for

[86] Greene, *Horses at Work*, 119–22.

[87] See, Ramsdell, "Lee's Horse Supply," 758–77.

those troops, but, primarily, the governments sent salted meats—nineteenth century versions of preserved meat—to the men in the field. The disgusting result of salted meats, especially since most spoiled by the time they reached the fields, caused many soldiers to look for cattle and other animals to supplement their diets. Once again, local farmers faced the armies directly. Soldiers constantly raided local farms and houses to find as many domestic animals as possible. During the summer of 1862, those animals provided the freshest meat for the men.

Primarily seen as a commodity—a resource that relieved stress on the soldiers themselves—horses, mules, and livestock were considered similar to agricultural production from the local farms. Officers worried about paying for their animals; farmers kept track of the cost of their fauna; and soldiers freely grabbed them. Being living organisms, the animals required food and water in order to remain effective. Farmers saw their crops depleted further with animals needing grains and oats to survive; soldiers and officers became attached to many of their horses and mules as they marched; and they also worried about caring for their horses, mules, and livestock for both their own sake and the sake of the animals. That dual place, commodity and living organism, of the armies' animals reflects the complexities of the larger cyclical relationship between human actors and their environment.

## Conclusion

By 5 September, John Pope no longer commanded a Union force in Virginia. His men had returned to Maj. Gen. George B. McClellan's Army of the Potomac, following Lee's rebels into Maryland. In his time in Virginia, Pope initiated policies that directly shaped the next three years of conflict as many of them were the model for future campaigns in Mississippi, Tennessee, Georgia, and Virginia. Similarly, although Pope had been exiled to Minnesota to fight the Sioux after his defeat, he brought elements of his war policies with him. Back in Virginia, the civilians of the northern region who remained there received a short break from the conflict. Despite receiving that break, the scars of the war remained through the next decade. Soldiers' graves and dead animals pockmarked the landscape around the battlefield. Farms never fully recovered. Through the 1870s, the lands were left uncultivated, allowing wild grasses, brush, and animals to return to northern Virginia, making it seem as if the wilderness that Americans feared returned to take over the Piedmont. By the early twentieth century, Union and Confederate veterans supported the preservation of the battlefields in order to allow future Americans to walk the same ground where so much blood had spilled. Over time, monuments marked the landscape of battle rather than the physical blemishes the fighting left behind in 1862.[1]

In addition to highlighting the transformation of the landscape that results from a military campaign, the Second Manassas Campaign is a microcosm of a larger legacy of the U.S. Civil War on the American environment. Just as the operation in the summer of 1862

[1] For a description of the Virginia landscape in the aftermath of the conflict, see Unidentified author, "Journal of Ten Days Travel on Board the Steamer 'Frances,' Left Bridgeport, [Conn.], September 7, 1875," Mss5:1Un3:15, VHS. For more on the preservation of the Manassas Battlefields specifically, see Michael Burns, "A Memorial the 'Equal of Gettysburg': Sectionalism and Memory in the Establishment of Manassas National Battlefield Park, 1890–1940," *VMHB* 123 (spring 2015): 140–71.

completely altered northern Virginia, the larger conflict also caused massive changes in both the physical environment and Americans' larger attitudes toward their natural surroundings. In the aftermath of the war, those who lived through the conflict, both veterans and non-combatants, pushed for the implementation of environmental conservation. From the 1860s through the Progressive Era, Americans with direct connections to the conflict supported the creation of National Parks and Forests to protect the nation's natural resources. John Muir, who fled the country during the conflict to avoid conscription, became the father of the National Park and Forest Service. Fredrick Law Olmstead initiated the steps toward the preservation of Yosemite National Park and completed New York's famed Central Park, leaving behind open spaces for Americans to enjoy in the aftermath of the brutal conflict.[2] These actions acted as the first step toward the conservation movement initiated in the Progressive Era. This conservation movement eventually took on new challenges that were also related to the actions of the American military, another legacy of the U.S. Civil War.

The war's legacy was not solely in preservation. During the war, Abraham Lincoln's administration supported Congress's passing of the Homestead Act, leading to increased farming of the Great Plains using unsustainable techniques. Within seventy-five years, the legacy of the Homestead Act initiated one of the greatest natural disasters in American History—the Dust Bowl. Similarly, many of the Civil War commanders who ended the conflict as a Union victory took their understandings of the relationship between the environment and military campaigns with them when fighting indigenous populations in the

[2] Lisa M. Brady and Adam Wesley Dean also argue that the veterans' witnessing of destruction on the battlefield motivated their support for the creation of national parks to conserve the American environment. See, Lisa M. Brady, *War Upon the Land: Military Strategy and the Transformation of Southern Landscapes during the American Civil War* (Athens: University of Georgia Press, 2012), 134–39; and Dean, *An Agrarian Republic: Farming, Antislavery Politics, and Nature Parks in the Civil War Era* (Chapel Hill: University of North Carolina Press, 2015), 108–34.

U.S. West. Army officers decided to target both Natives' natural resources, especially Bison, believing it would eliminate their ability to fight. Eventually, their policies led to the army putting the torch to the plains and the near extinction of American Bison populations by the end of the nineteenth century.[3] As the technology of warfare continued to progress, the U.S. military began to experiment with herbicides and pesticides, resulting in their more prominent use in the civilian population. While the Civil War's legacy of environmental transformation created the conservation movement that grew in the Progressive Era, the legacy of continued military relationships with the environment led to the publication of Rachel Carson's significant book *Silent Spring* and the creation of the Environmental Protection Agency, both of which continue to impact Americans' relationship with their environment today.[4]

Despite the Civil War era's legacy on the American environment, the study of the environment during that period, especially during military campaigns, is a new field for historians. They have begun to challenge common concepts of the American Civil War. The

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[3] Donald Worster, *Dust Bowl: The Southern Plains in the 1930s* (New York: Oxford University Press, 1979), 6–8, 87; Andrew C. Isenberg, *The Destruction of the Bison: An Environmental History, 1750–1920* (New York: Cambridge University Press, 2000), 129–30; Elliott West, *The Contested Plains: Indians, Goldseekers, and the Rush to Colorado* (Lawrence: University Press of Kansas, 1998); Mark Grimsley, "'Rebels' and 'Redskins': U.S. Military Conduct toward White Southerners and Native Americans in Comparative Perspective" in *Civilians in the Path of War*, Mark Grimsley and Clifford J. Rogers, eds. (Lincoln: University of Nebraska Press, 2002), 137–162; Mark Neely, *The Civil War and the Limits of Destruction* (Cambridge, Mass.: Harvard University Press, 2007); Ari Kelman, *A Misplaced Massacre: Struggling over the Memory of Sand Creek* (Cambridge, Mass.: Harvard University Press, 2013); and Paul N. Beck, *Columns of Vengeance: Soldiers, Sioux, and the Punitive Expeditions, 1863–1864* (Norman: University of Oklahoma Press, 2013).

[4] Rachel Carson, *Silent Spring*, 40th Anniversary Edition (1962; repr., New York: Houghton Mifflin, 2002). For more on the twentieth century relationship between the environment and the American military, see Edmund Russell, *War and Nature: Fighting Humans and Insects with Chemicals from World War I to* Silent Spring (New York: Cambridge University Press, 2001); and David Zierler, *The Invention of Ecocide: Agent Orange, Vietnam, and the Scientists Who Changed the Way We Think about the Environment* (Athens: University of Georgia Press, 2011). The environmental legacy of the conflict, especially how it relates to the Second Manassas Campaign, is something I plan on expanding on in the near future.

purpose behind the destruction of the conflict, the experiences of Civil War soldiers, and the growth of new agricultural powers during the era have been common topics of discussion for the environmental history of the conflict. In the process of exploring these larger subjects, historians have created new avenues of constructing histories of Civil War campaigns like Second Manassas.

*The Environment in the Civil War*

In the summer of 1862, northern Virginia's environment was front and center during the Second Manassas Campaign. Soldiers and officers dealt with ecological factors on a daily basis, specifically agricultural production, the local weather, water and waterways, and domesticated animals. The overall progress of the operation between June and September 1862 cannot be fully understood without examining the local environment. While environmental factors molded the conduct of Union and Confederate armies throughout the Civil War, the members of both the Army of Virginia and the Army of Northern Virginia experienced the impact of those factors on a heightened level compared to a number of Civil War operations. Although Second Manassas had some distinctions from other Civil War campaigns with its relationship to environmental factors, using it as a case study provides broader insights about the environment in the Civil War.

The connection between the environment and warfare in the United States has primarily been focused on the American Civil War, perhaps due to the significant impact of the Civil War on American history or possibly because of the abundance of primary source material available. While being the prominent conflict used for the relationship between Americans and the environment, the current state of the field still leaves openings for contributions. Initially, historians inadvertently explored the relationship between the

environment and the Civil War. Some like Charles Ramsdell and Ella Lonn attempted to explore more traditional military topics, mainly logistical issues during the conflict. Similarly, numerous campaign studies indirectly discussed the environment, focusing mainly on the importance of geographical features on the outcome of a battle. In the process, these historians introduced some elements of environmental history into the era.[5]

Once historians began to center their studies on the environment during the Civil War, they primarily emphasized the role of agriculture. Agriculture was central to the United States in the antebellum years as well as to the Union and Confederate armies. Agricultural forage fed both the animals and soldiers that moved and fought the conflict. In the four years, key changes occurred that transformed agriculture in the United States after the 1860s.[6] The U.S. Midwest became the epicenter of American agrarian economy. Indeed, the economic transition from urban centers in the east in the years directly before the war to the agricultural kingdom of the Midwest led to increased political and economic power for the region.[7] Feeding the soldiers and draft animals required tons of forage at a time, which meant the diversified crops—primarily wheat, corn, and hay—in the North provided the necessary nutrition for the Union forces between 1861 and 1865. King Corn, Gates argues, quickly

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[5] See Charles W. Ramsdell, "General Robert E. Lee's Horse Supply, 1862–1865," *The American Historical Review* 35 (July 1930): 758–77; and Ella Lonn, *Salt as a Factor in the Confederacy* (1933; repr., Tuscaloosa: University of Alabama Press, 1965). For examples of Civil War campaign studies that incorporate some elements of the environment, see Robert K. Krick, *Stonewall Jackson at Cedar Mountain* (Chapel Hill: University of North Carolina Press, 1990); John J. Hennessy, *Return to Bull Run: The Campaign and Battle of Second Manassas* (1993; repr., Norman: University of Oklahoma Press, 1999); and Kenneth Noe, *Perryville: This Grand Havoc of Battle* (Lexington: University Press of Kentucky, 2001).

[6] Paul W. Gates, *Agriculture and the Civil War* (New York: Alfred A. Knopf, 1965); and John Solomon Otto, *Southern Agriculture during the Civil War Era, 1860–1880* (Westport, Conn.: Greenwood Press, 1994).

[7] R. Douglas Hurt, "The Agricultural Power of the Midwest during the Civil War" in *Union Heartland: The Midwestern Home Front during the Civil War*, Ginette Aley and J. L. Anderson, eds. (Carbondale: Southern Illinois University Press, 2013), 68–96.

replaced King Cotton during the Civil War and in the years after. Industrialization in the North also introduced new, stronger farming implements to the region, which allowed farmers to increase their production. The diversified farms of the North survived the sudden and violent upheaval and found themselves stronger than before the conflict.[8]

Strategically, the environment manipulated the operations of Union armies as they marched through the Confederacy. Primarily, the strategic importance of food supplies factored into how armies moved. As Ted Steinberg argues, the war could be seen as a violent food fight. Although the conflict had disrupted much of the normal routines of daily lives in the nineteenth century, civilians and soldiers alike had to find a way to feed themselves and the animals on which they depended. The philosophies of northerners and southerners, which eventually caused the war, also "helped to shape the outcome in the battle."[9] The Confederate's dependence, Steinberg argues, on a single staple crop, cotton, put the nation at a disadvantage from the beginning of the war. Once the Union blockade closed southern ports to imported foodstuffs, on the one hand, southern agriculture, being so dependent on cotton production, was ill-prepared for growing wheat and corn—the main staple of the army's diet. Northern agriculture, on the other hand, was diversified well before the conflict, making the Union states ready for the demands placed on them for supplying the armies. Resulting from the social perceptions of the two regions—northerners emphasized diversified

[8] Gates, *Agriculture and the Civil War*, 129–247. For additional examples of the relationship between the emphasis on agriculture in the environmental history of the Civil War era, see Drew A. Swanson, "War is Hell, So Have a Chew: The Persistence of Agroenvironmental Ideas in the Civil War Piedmont" in *The Blue, the Gray, and the Green: Toward an Environmental History of the Civil War*, Brian Allen Drake, ed. (Athens: University of Georgia Press, 2015), 163–90; and Timothy Johnson, "Reconstructing the Soil: Emancipation and the Roots of Chemical-Dependent Agriculture in America" in *The Blue, the Gray, and the Green*, 191–208.

[9] Ted Steinberg, *Down to Earth: Nature's Role in American History* (New York: Oxford University Press, 2002), 89–90.

small farming with paid labor; southerners depended on a single staple crop with slave labor—the environment had a direct impact on the outcome of the Civil War.[10]

Similarly, Union commanders Ulysses S. Grant, William T. Sherman, and Phillip H. Sheridan built their strategies around changing the natural landscape of the Mississippi River Valley, the Shenandoah Valley, and Georgia and the Carolinas. As the war progressed, these three commanders started to incorporate the practice of *chevauchée*, the custom of destroying the environment in order to reduce the ability of the enemy to fight. Lisa M. Brady argues, "The operations led by Grant, Sheridan, and Sherman in the final two years of the war reveal an underlying assumption that humans could exert control over nature and frequently incorporated attempts to reshape the environment in order to gain control over key pieces of territory."[11] The Union strategic thinking intended to "undermine" the control of Southerners over their environment as well as the environments control over the Union armies' movements. "What became clear in each case," Brady argues, "was that nature had a power of its own and that Union forces had to contend with the southern environment as much as they did with Confederate troops."[12] Once the Union commanders "added destruction of the Confederate landscape" to their strategic goals, "there were ecological and cultural consequences."[13] Using engineering techniques to change the landscape, employing the

[10] Steinberg, *Down to Earth*, 98. R. Douglas Hurt has also examined the role of agriculture for political power in the Confederacy. See, Hurt, *Agriculture and the Confederacy: Policy, Productivity, and Power in the Civil War South* (Chapel Hill: University of North Carolina Press, 2015).

[11] Brady, *War Upon the Land*, 23.

[12] Brady, *War Upon the Land*, 9.

[13] Brady, *War Upon the Land*, 13. Andrew F. Smith also believes that Union forces targeted Southern agriculture in an attempt to deplete morale and eliminate the food sources of the Southern "breadbaskets." For example, see Smith, *Starving the South: How the North Won the Civil War* (New York: St. Martin's Press, 2011), 129–144.

agricultural ecosystem to supplement supplies, and, in the process, destroying the entire basis of the southern economic system, Union strategy had a direct connection to the local environment.

Megan Kate Nelson also emphasizes the destruction of the environment during the Civil War. Employing mainly the concept of the built environment, Nelson illustrates the relationship between the concepts of ruin and the southern environment during the conflict. "Out of the destruction of their own landscape," she writes, "northerners and southerners alike created a new national narrative." Indeed, she argues, Americans used the destruction of the Civil War to incorporate the ruins it created into their own perspectives of their nation. "Americans read these ruins," she continues, "in different ways depending on who they were, where they lived, the type of object destroyed, the moment in time, and who had done the destroying."[14] The destruction of the local built and natural environment led Americans to incorporate the physical effects of the Civil War, whether it was a ruined city, depleted forest, or veterans missing limbs, into their perspectives of the United States. The Civil War's destruction, therefore, transformed the national narrative for most Americans.

More recently, the study of the environment during the Civil War has seen additional ecological concerns emerge as the focus. The weather and other natural phenomena had similar effects on the battles and the soldiers involved as agriculture. Climatic changes, both short and long term, directly influenced individual battles as well as longer campaigns. Rain and snow in Virginia, for example, completely derailed the Union campaign under Maj. Gen. Ambrose E. Burnside in the winter of 1862. Commonly referred to as the Mud March, the

[14] Megan Kate Nelson, *Ruin Nation: Destruction and the American Civil War* (Athens: University of Georgia Press, 2012), 3.

movement along the Rappahannock River churned the freshly moistened clay soil of northern Virginia, turning it into a quagmire that even resulted in mules and wagons sinking into the earth.[15] Similarly, rain and mud caused the soldiers' morale to suffer during campaigns through Virginia as well. Facing sleepless, wet nights and sticking mud that made marching difficult and caked the soldiers clothes, soldiers' spirits were drained quickly. This resulted in the soldiers deserting for short periods of time in order to employ what Kathryn Shively Meier calls "self-care."[16] During certain battles, the natural phenomena of acoustic shadow—the inability to hear nearby sounds over natural barriers like a hill or forest—altered the outcome of the fighting and, in the process, even ended the careers of some Civil War generals. Acoustic shadows, Brady argues, "created uncertainty, thereby causing the battle to diverge from plans and testing the leadership skills of the officers in charge." The impact of this phenomenon on battle plans and outcomes, Brady notes, shows the "concept of nature's agency" during the conflict.[17] Through explorations of the weather and natural phenomena during the conflict, the environment's impact on military actions become clearer as soldiers and officers had to deal with the problems that arose out of environmental changes and natural barriers.

Despite the restrictive nature of rain on military movements, a lack of rain shaped the conflict in a different way. As the conflict took place at the tail end of the Little Ice Age, the

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[15] Steinberg, *Down to Earth*, 90–92; and Kenneth Noe, "Fateful Lightning: The Significance of Weather and Climate to Civil War History" in *The Blue, the Gray, and the Green*, 18. Megan Kate Nelson similarly explores the role of weather and the desert environment during the New Mexico Campaign in the Civil War and its impact on soldiers' effectiveness. Nelson, "'The Difficulties and Seductions of the Desert': Landscapes of War in 1861 New Mexico" in *The Blue, the Gray, and the Green*, 34–51.

[16] Kathryn Shively Meier, *Nature's Civil War: Common Soldiers and the Environment in 1862 Virginia* (Chapel Hill: University of North Carolina Press, 2013), 126–46.

[17] Brady, "Nature as Friction: Integrating Clausewitz into Environmental Histories of the Civil War" in *The Blue, the Gray, and the Green*, Drake, ed., 147.

worldwide climatic changes had a significant influence on the American environment during the mid-nineteenth century. Primarily, the United States faced a national drought that drastically transformed the Confederate states' agricultural production. Over three summers, the South received little rain. When it did rain, too much precipitation caused rust to develop on wheat crops, which destroyed them in Georgia and Virginia in 1862 and 1863. Additionally, the significant climatic shifts caused strange weather patterns throughout the nation. Both northerners and southerners experienced late or early frosts that killed the existing agricultural production. Even during summer months, some states faced freezing temperatures.[18] These ecological factors were a central reason for Confederate defeat during the war. The reduction of food production in the South between 1861 and 1865 left the Confederacy with an inability to feed its people and armies.[19] While these studies have initiated a conversation about the environmental history of the American Civil War, the environmental history of the Civil War requires further inquiries to enlighten the true extent of the environmental-human relationship during the conflict.

*New Direction in the Environmental History of the Civil War*

Although previous environmental histories of the Civil War have touched on a number of diverse topics related to warfare and the American environment, all of them tend to focus on one central question that emerges in much of environmental history. Historian Linda Nash provided that question in the title of her important article in *Environmental History*: "the agency of nature or the nature of agency?" "What underpins the study of history is the notion of human agency," she writes "the ability of people to act intentionally

[18] Noe, "Fateful Lightning," 20–22; and Gates, *Agriculture and the Civil War*, 85–90.

[19] Hurt, *Agriculture and the Confederacy*, 2.

to shape their worlds." The rise of social history initiated a new turn for the study of the environment as well. As Nash notes, since the introduction of social history—a subfield that emphasizes "the belief that agency resides in all human beings . . . not only elite European men"—"environmental historians have argued that nature too has agency."[20] Most of the published environmental histories of the Civil War tackle that same question. Were humans the only ones who held agency in the campaigns between 1861 and 1865 or did the environment control the actions of those human actors? Those historians mentioned above have tried to display one of the two answers: either human dominance over their surroundings or the nature's control over human actors.

Typically, historians have emphasized the overwhelming impact of human actions on the local environment. Indeed, the Civil War is a perfect example of this element of environmental history. Conflicts always lead to destruction. The Civil War left cities in ruin. Forests were wiped out in a number of regions. Farm fields were left uncultivated for the rest of the conflict, allowing the feared wilderness to return to the U.S. South.

This project initiates a new perspective on the remnants of the campaigns in the Civil War in relation to the southern environment. The majority of environmental histories center on the destruction left by the two armies. The term destruction marks the extreme of the human-environmental relationship in warfare. The Second Manassas Campaign highlights the limits of utilizing the term destruction when focused on the Virginia Piedmont's environment. Rather than the region's *destruction*, the operations in the summer of 1862 underscored the results of the *consumption* of the area's natural resources. While a fine line,

[20] Linda Nash, "The Agency of Nature or the Nature of Agency?," *Environmental History* 10 (January 2005), 67.

the difference between the two concepts is immense. Indeed, the two armies in Second Manassas left many barren fields in their wake and left behind the remnants of artillery and musket fire as well as the graves of fallen comrades. That level of destruction throughout most of the south was restricted to the areas of battle or siege. Regions left depleted of natural resources resulting from the armies' consumption, such as the northern Virginia Piedmont, regained them within a generation in areas where farmers returned to cultivate the land. The barren lands, primarily, were the result of the consumption, not destruction, of those resources.[21]

The concept of consumption versus destruction when dealing with the natural environment is clearer when compared to other contemporary conflicts. Outside of the destruction of the built environment, such as cities and railroads, Civil War armies had a purposeful use for the natural resources they consumed during their campaigns. Although they depleted forests of their trees, those trees returned in time. Farmers still cultivated lands, such as those in the Shenandoah Valley, throughout much of the conflict. Domesticated animals were available in many of the regions where the desperate armies marched through. The only truly spoiled resource was water, which, for the most part, came out of the inadvertent addition of human and animal waste. During the nineteenth century, the U.S. Army employed the purposeful destruction of natural resources on a number of occasions when fighting Native Americans in the West. Indeed, John Pope himself allowed his soldiers in the Department of the Northwest from late 1862 through 1865 to use fire as a weapon

[21] Megan Kate Nelson also emphasizes that the ruins of the Civil War were replaced, for the most part, in the generations after the conflict ended. Nelson, *Ruin Nation*, 4. Mark Grimsley, Nelson, Brady, Meier, and Adam Wesley Dean all primarily focus on the concept of destruction resulting from Civil War campaigns in the South. See Mark Grimsley, *The Hard Hand of War: Union Military Policy toward Southern Civilians, 1861 – 1865* (New York: Cambridge University Press, 1995); Nelson, *Ruin Nation*; Brady, *War Upon the Land*; and Meier, *Nature's Civil War*.

against the Sioux, burning prairie grasses and forests and destroying blankets, meat, and hides to deprive the Sioux of their use. Officers later in the nineteenth century even promoted the overhunting of the bison population not to feed their own soldiers but in the hopes of eliminating a major source of food for Plains Indians.[22] These actions illustrate the *destruction* of the natural environment during nineteenth-century military operations. In the Civil War, armies throughout the South, especially during Second Manassas, targeted natural resources to *consume*, not solely to remove them as an option for their enemies.

More significantly, this project also complicates the understanding of the human-environmental relationship in history. While the majority of historians have attempted to highlight either the dominance of humans over their surroundings or the environment's influence over human action, this work demonstrates the cyclical relationship between the two actors. During and after the operations in the summer of 1862, the presence of the Army of Virginia and the Army of Northern Virginia marked changes to the local landscape reflecting the human impact on the local landscape. Farm fields were left with no produce. Some farmers even decided to abandon their fields for safer regions in Virginia or in the north. Waterways were spoiled with human and animal waste and fluids while the two armies drained the majority of wells in the region. The domesticated animal population in northern Virginia could no longer fully sustain the civilians. In addition, the increased presence of

[22] For more on the use of destructive tactics against Native Americans in the U.S. West during the nineteenth century, see Mark Grimsley, "'Rebels' and 'Redskins': U.S. Military Conduct toward White Southerners and Native Americans in a Comparative Perspective" in *Civilians in the Path of War*, Mark Grimsley and Clifford J. Rogers, eds. (Lincoln: University of Nebraska Press, 2002), 137–62; Mark E. Neely Jr., *The Civil War and the Limits of Destruction* (Cambridge, Mass.: Harvard University Press, 2007), 140–69; and Paul N. Beck, *Columns of Vengeance: Soldiers, Sioux, and the Punitive Expeditions, 1863–1864* (Norman: University of Oklahoma Press, 2013). For more on the military policy of overhunting the Bison, see Andrew C. Isenberg, *The Destruction of the Bison: An Environmental History, 1750 – 1920* (New York: Cambridge University Press, 2000), 129–30.

horses and mules added to the depletion of local produce.

The consumption of local natural resources and the unpredictability of many of the other natural forces also shaped the conduct of the operations in the summer of 1862. The Virginia Piedmont's inability to consistently produce significant quantities of crops left both soldiers and civilians scrambling to feed themselves. Above-average temperatures throughout the summer caused the soldiers to suffer from increased cases of heatstroke and dehydration. Sudden and fierce thunderstorms would drench the troops and transform the landscape, slowing the progress that both commanders wanted during the operation. Similarly, with intense storms came swelling rivers. Flooding in the region pushed the two sides to constantly adapt to the changing environment. The inability for ships to go beyond the fall lines of Virginia's rivers prevented the quick and efficient movement of reinforcements, especially for the Union forces. Although humans typically have a greater impact on their surroundings, the environment also alters their actions.

An interdisciplinary approach to the environmental-human relationship in warfare illustrates those conditions. Local geology, climate and weather, soil compositions, and the human body reactions to many of those elements all molded the conduct and outcome of the Second Manassas Campaign. Agricultural yields, for example, relied on proper amounts of rainfall, the nutrients available in the soils, and the human pressure placed on the landscape. Adding armies to regions that were already strained under regular conditions, such as the Virginia Piedmont, pushed those regions over the edge. The human and animal actors in the Second Manassas Campaign suffered from malnutrition and ill health throughout the operation. Poor weather, at the most extreme, caused the deaths of many Civil War soldiers and domesticated animals. Poor water contributed further to their ineffectiveness and ill

health. While the previous arguments have centered on human versus environmental agency, this project, hopefully, illustrates that both can occur in certain circumstances, such as a military campaign.

While Americans believed they could control their surroundings in the nineteenth century, the Second Manassas Campaign reveals the weakness in that perspective. Instead of the one-sided relationship of human dominance over the environment or the environment's control over humans, the environmental-human relationship that summer exposes a cyclical bond where human action contributed to the changing landscape while ecological factors placed restrictions on the same human actors. Although soldiers and officers in the summer of 1862 directly altered the local landscape in northern Virginia, no human could fully overcome those existing elements.

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## EDUCATION

Ph.D. History, Texas Christian University, 2018.
M.A. History, University of New Mexico, 2013.
B.S. History, Grand Valley State University, 2010.

## EMPLOYMENT

2010–18 Seasonal Ranger, Interpretation, Manassas National Battlefield Park.
2017 Graduate Student Assistant, *Civil Rights in Black and Brown Oral History Project*.
2015–16 Graduate Instructor, Texas Christian University.
2011–13 *New Mexico Historical Review*, Assistant Editor.

## SELECTED PUBLICATIONS

"The Civil War on the Northern Plains: John Pope's Military Policies against the Sioux in the Department of the Northwest, 1862–1865," *Great Plains Quarterly*, 38 (winter 2018): 77–104.

"A Confederate Memorial the 'Equal of Gettysburg': Sectionalism and Memory in the Establishment of Manassas National Battlefield Park, 1890–1940," *Virginia Magazine of History and Biography*, vol. 123, no. 2 (2015): 140–71.

## SELECTED AWARDS, GRANTS, AND FELLOWSHIPS

2017–18 The Benjamin W. Schmidt Memorial Dissertation Fellowship, Department of History, TCU.
2016 Andrew W. Mellon Research Fellowship, Virginia Historical Society.
2016 General and Mrs. Matthew B. Ridgway Grant, U.S. Army Heritage and Education Center.
2015 Graduate Research Award for Best Graduate Student Research Paper in 2014, Department of History, TCU.

## SELECTED PRESENTATIONS

2018 "The Liquid Landscape: A Water History of the Second Manassas Campaign," Society for Military History Annual Conference, Louisville, KY. 7 April.
2017 "Routes and Roadblocks: A Comparison of Rivers in Tennessee and Virginia in the American Civil War," International Water History Association Conference, Grand Rapids, MI. 16 June.
2016 "The Roll of Thunder, the Heat of Battle: Weather in the Second Bull Run Campaign," Society for Civil War Historians Biannual Conference, Chattanooga, TN. 3 June.
2013 "Civil War Policy Goes West: A Comparative Study of John Pope's Military Policy in Virginia and on the Plains," Western History Association Annual Conference, Tucson, AZ. 11 October.

ABSTRACT

WAR AND NATURE IN NORTHERN VIRGINIA: AN ENVIRONMENTAL HISTORY OF THE SECOND MANASSAS CAMPAIGN

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On 18 July 1862, after taking command of the Union Army of Virginia, Maj. Gen. John Pope delivered General Orders nos. 5 and 6. In them, he instructed his soldiers to live off of local resources. Supply wagons, he continued, would not provide the necessary produce for the troops in that part of the commonwealth. Instead, he wrote, local farmers would provide those supplies. The army would rely exclusively on local resources, which tied the Union forces, and the Confederate army that had similar orders, to local landscape. Between 26 June and 5 September 1862, two major armies, the Union Army of Virginia under Maj. Gen. John Pope and the Confederate Army of Northern Virginia under Gen. Robert E. Lee, maneuvered and fought over five counties in northern Virginia—Culpeper, Fauquier, Loudon, Prince William, and Fairfax counties. During those three months, the soldiers and officers in the two forces attempted to manipulate the local environment to their advantage. Local agriculture, water sources, and domesticated animals became part of the Union and Confederate efforts at foraging for supplies. Water, weather, and local geology prevented the soldiers from fully exploiting their local surroundings during the campaign in

the summer of 1862. Previously environmental historians of the Civil War era have illustrated either the human dominance over the environment or nature's power over human actions. An environmental history of the Second Manassas Campaign illustrates the cyclical relationship between the two. Human actors during the operations attempted to manipulate, control, and transform their local surroundings, but existing environmental components sculpted the actions of the soldiers and officers during the campaign. Although human behaviors in the summer of 1862 directly impacted the local landscape, those same environmental factors had its input on the operation.