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NAVAL ENGAGEMENTS OF THE REVOLUTIONARY AND 1812 WARS IN MARYLAND

BY

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AND

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FINAL TECHNICAL REPORT

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ABSTRACT

This study of naval engagements of the Revolutionary and 1812 Wars in Maryland was supported by a grant from the National Park Service American Battlefield Protection Program. New South Associates undertook battlefield analyses related to six naval engagement sites in Maryland: the loss of *Cato* and *Hawk* at Cedar Point (1781); the Battle of Kedges Straits (1782); the raids on Frenchtown and Elkton on the Elk River (1813 & 1814); the raid on Georgetown and Fredericktown on the Sassafras River (1813); the Battles of St. Leonard's Creek (1814); and the Battle of Baltimore (1814). That work utilized the METT-T approach supplemented by consideration of the Principles of War. Battlefield terrain analyses, a component of the METT-T approach, utilized the KOCOA method. New South Associates defined key battlefield features as well as core and secondary areas for each battle. The results of those analyses reveal a better understanding of some of the battles under consideration, and generate new questions related to others.

Their work served as the basis for reconnaissance-level underwater archaeological fieldwork using magnetometer and side scan sonar systems that was undertaken by the Maryland Maritime Archaeology Program (MMAP) related to the loss of *Cato* and *Hawk* , the Battle of Kedges Straits, and the raid on Georgetown and Fredericktown. Fieldwork was intended to identify areas with potential to contain physical evidence of the engagements. In addition to reconnaissance-level fieldwork, MMAP inspected site no. 18CV414, Gunboats 137 and 138 related to the Second Battle of St. Leonard's Creek, and attempted to access site nos. 18CE319 and 18CE331, a shipwreck and a ballast pile possibly related to the 1813 raids on Frenchtown and Elkton, in order to ensure that the sites remain undamaged and to record any observations that might facilitate future surveys or investigations.

Twenty-eight targets were identified during magnetometer and side scan sonar surveys that were recommended for further investigation and inspection of site no. 18CV414 revealed no evidence of intrusion. Site nos. 18CE319 and 18CE331 were not accessible due to sedimentation and channel collapse. Further historical and archaeological research is needed at the six engagement sites to assess their potential eligibility for listing in the National Register of Historic Places.

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1.0 INTRODUCTION

Susan Langley

The American Battlefield Protection Program (ABPP) partially funded two projects within Maryland in 1999 and 2001 that documented Revolutionary War and War of 1812 battlefields, skirmishes and associated historic properties (Eshelman and George 2000; Eshelman, Langley, and Ford 2002). An outgrowth of these and comparable projects in other states engendered an interest within the National Park Service (NPS) and especially within the ABPP in pursuing studies of specific types of historic and archaeological sites from these periods. Naval battle sites were identified as requiring additional consideration in an NPS report to Congress (ABPP 2007). Some naval and maritime sites were referenced specifically; in Maryland the Revolutionary War "Battle of the Barges" site in Kedges Straits was recommended for survey. Discussion with ABPP staff identified other sites meriting additional consideration and investigation. The Maryland Maritime Archaeology Program was encouraged to apply for an ABPP grant to survey or revise information about six battle sites.

On June 22, 2009, the American Battlefield Protection Program announced that the Maryland Maritime Archaeology Program (MMAP) of the Maryland Historical Trust within the Maryland Department of Planning would receive a grant for a project addressing two Revolutionary War-era maritime engagements and four War of 1812 related actions (Figure 1). The Revolutionary War-related work includes electronic remote sensing survey to try to locate State Navy vessels *Cato* and *Hawk* lost in January, 1781 in the Chesapeake Bay in the vicinity of the present-day Patuxent Naval Air Station and a comparable survey of Kedges Straits in the area believed to be the locus of the Battle of the Barges which occurred in November, 1782. While the *Cato* and *Hawk* have been the subject of searches in the past and ongoing interest by Institute of Maritime History volunteers, Kedges Straits had not been surveyed previously. Studies of the four War of 1812 sites were more diverse. With respect to the Battle of Baltimore in September, 1814, ABPP requested a revision of existing documents. The vessels in St. Leonard's Creek (June, 1814) and the Elk River (April, 1813) were included as an opportunity to assess the condition of those sites and ensure that they had sustained no damage subsequent to their archaeological investigation from dredging, vandalism or other negative impacts. Electronic remote sensing survey of the Sassafras River, in the areas involved in the British assault on the towns of Georgetown and Fredericktown (April, 1813) and the destruction of four vessels, provided original data as that area had received only limited attention previously.

The consulting firm New South Associates was hired following the protocols established under the ABPP grant program to direct battlefield analyses to serve as a basis for underwater archaeological fieldwork related to the loss of *Cato* and *Hawk* at Cedar Point (1781), the Battle of Kedges Straits (1782), and the raid on Georgetown and Fredericktown on the Sassafras River (1813), to prepare map sets indicating key battlefield features including the Core and Secondary areas. Their analyses utilized the METT-T approach supplemented by consideration of the Principles of War. Terrain analyses, a vital component of any battlefield analysis and part of the METT-T approach, utilized the KOCOA method. Chapter 2.0 describes these theoretical considerations and Chapter 3.0 provides definitions and discussions of the diverse types of vessels, terrestrial defenses, and weaponry involved in the battles under consideration

here. Chapters 4.0 to 9.0 provide overviews and analyses of each battle, and Chapter 10.0 provides overall conclusions of their battlefield analyses. Chapter 11.0 describes the underwater archaeological fieldwork conducted and Chapter 11.0 provides recommendations for future work related to the areas surveyed and inspected by MMAP as part of the present study.

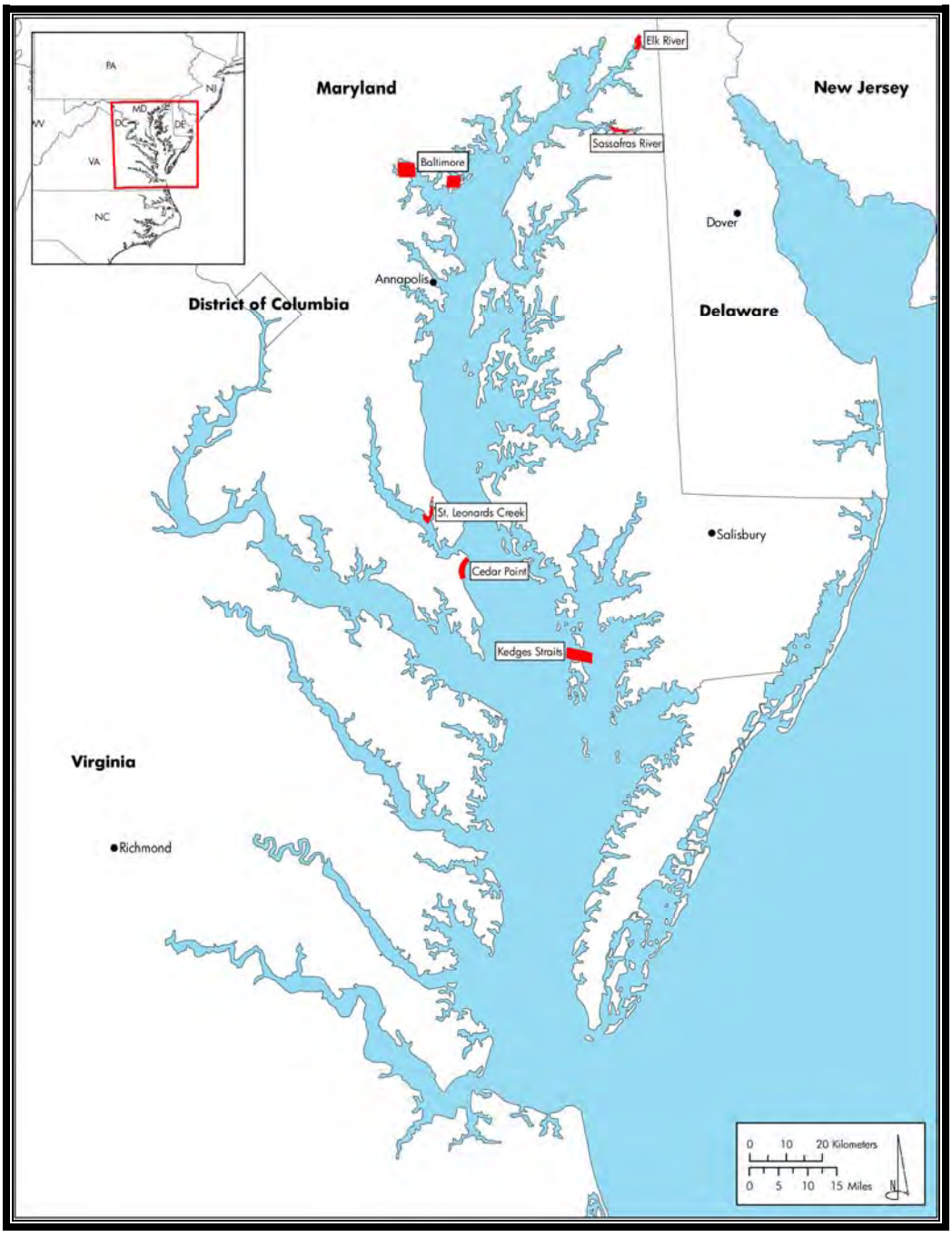

Figure 1. General site locations (*Map by Sarah Lowry, New South Associates*).

2.0 BATTLEFIELD ANALYSES

Lawrence E. Babits, Christopher T. Espenshade, and Sarah Lowry

Introduction

Understanding the actions of military forces and the outcomes of campaigns and specific engagements involves careful consideration of numerous aspects of the military art. Four major divisions of the military art include Strategy, Tactics, Operations, and Logistics. While strategy, operations, and tactics often overlap during practical application, they are theoretically distinct. Strategy might be regarded at the "prelude to battle" as it "deals with both the preparation for and waging of war and has often been defined as the art of projecting and directing campaigns" (Stewart 2005:12). Tactics is the term used for "executing plans and handling troops in battle" or as the application of the plan, in conjunction with the available weapons and troops and are to a large extent dictated by the weaponry available, the terrain, and the training of the combatants (Stewart 2005:12). Operations connect tactics and strategy as it means "putting one's army into the most favorable position to engage the enemy and depriving the enemy of freedom of movement" (Stewart 2005:13). Strictly speaking, it does not refer to actually engaging the enemy as that is tactics, but operations do include movement to contact as well as generating the material requirements for battle. Logistics is defined as "planning and carrying out the movement and maintenance of forces" (Stewart 2005:13). This term refers, in some ways, to deploying troops but more importantly, it refers to supplying forces in the field with the equipment and materiel needed to wage war. This rubric includes feeding, uniforming, arming, supplying, and housing forces as well as moving both the forces and their equipment to combat. The present study considers these elements as they relate to six maritime/naval engagements from the Revolutionary War and the War of 1812 by applying the METT-T Approach including terrain analyses using the KOCOA method and the Principles of War. Together these analytical formats allow a better junction of military practice with the historical and archaeological record.

The METT-T Approach

The acronym METT-T was created to help ensure that a commander considered essential factors that should be taken into account during the planning process. These include Mission, Enemy, Terrain, Troops, and Time available. The present study uses KOCOA analyses within this framework as the basis for understanding the effects of terrain. KOCOA is an acronym derived from the military OCOKA. Both acronyms stand for the same terms: Key Terrain, Observation and Fields of Fire, Cover and Concealment, Obstacles, and Avenues of Approach.

Mission

The mission is essentially the plan of action taking into account what the unit must do to accomplish it. Many different aspects need to be considered when developing the mission including: what are the objectives and is there a plan to move beyond the initial objective? The analysis starts by examining the mission from the leader's perspective but continues to include the "commander's intent" two levels higher up the chain of command. It should examine specified tasks, those articulated in the orders, as

well as implied activity that must be completed to ensure success. Tasks essential to completing the mission, limiting factors, and specific constraints need to be considered as well (U.S. Army 1992:2-8-9).

Enemy

Enemy refers to opposition forces and their basic threat to friendly forces. For the present study, analyses were undertaken from an American perspective; the British are the enemy.

Analysis must consider the type of enemy being faced, their size, their tactics, and the equipment that can be brought to bear. The way the enemy is organized may have potential meaning as well (U.S. Army 1992:2-8-9). If the enemy is a Royal Navy ship of the line as opposed to a Loyalist flotilla that would affect how a commander should approach the mission. The weaponry is probably the most important equipment factor as it would be essential to know, for example, that an enemy vessel carried long guns as opposed to carronades.

When analyzing the enemy side, it is important to note how they are deployed and what the various components are. Who are the key leaders and how good are they? What is their strength, not only numbers, but a combination of factors such as morale, fitness, leadership, and prior service? The enemy's recent activity leads to questions about how tired they might be or how worn their equipment is. What is the probable course of action the enemy will take in response to this mission? What optional responses might the enemy use? For the Chesapeake, what are British abilities to obtain reinforcements or local support?

Terrain (KOCOA)

Terrain directly affects the planning, execution, and outcome of military engagements. Consideration of the numerous effects terrain had on any battle can be systematically undertaken through the application of KOCOA analyses. KOCOA analyses take into account the various effects of Key Terrain, Observation and Fields of Fire, Cover and Concealment, Obstacles, and Avenues of Approach, plus Weather (U.S. Army 1992:2-8-9). For the six engagements discussed in this report, some of these analytical considerations may seem immaterial, especially cover and concealment when vessels were on the open water. Taken individually, there is considerable overlap between terms because they are interrelated as part of a total package for analyzing engagements. They are all considered in this discussion because they lead to considerations that might otherwise be overlooked.

Key Terrain

Key Terrain is any landform or localized area that would provide an advantage if held by one side or the other. Tree covered high ground protected by a stream with cleared fields to the front would be key terrain. Terrain has to be considered for its impact on routes used for a mission, for supporting forces, the offensive and defensive positioning of troops, and how it can minimize an enemy's strength while maximizing friendly forces fighting power (U.S. Army 1992:2-8-9).

Downstream landforms such as points jutting into waterways and covered by higher ground are key terrain for protecting resources further upstream. A tree covered bluff would be a key terrain feature masking vessels moving just offshore from vessels further away. Narrows, channels, and shallow waters

are not readily visible in many cases but are clearly nautical key terrain as they would restrict vessel movement.

Observation and Fields of Fire

Observation and Fields of Fire are two inter-related terms. The first is viewscape, defined as what can be seen from a position. Observation is especially important when direct fire weaponry is concerned but also of importance when considering how indirect fire was adjusted. Where an observer was located played a major role in what could be seen. A lookout posted high in the cross trees of the main mast could see much further than a gunner on deck or an officer on the bridge. Observation is affected by ground cover, weather (fog), time (night), and other factors. Fields of fire relates to both sides' weapons capabilities, including direct and indirect fire, beaten zones, grazing (ricochet) fire, and the fusing time for explosive shells (U.S. Army 1992:2-8-9).

Cover and Concealment

Cover and Concealment are different: "Cover is protection from enemy fire. Concealment is protection from enemy observation (U.S. Army 1992:2-8). Cover is a protective function while concealment keeps an enemy from learning about a position or plans. Cover can be provided by fortifications or by natural landforms such as ridgelines behind which troops can shelter from direct fire (U.S. Army 1992:2-8).

Including cover and concealment in a naval engagement might not seem proper but there are several ways these terms apply. The most obvious is movement during dark lunar periods or in fog. Another way is by using background, such as a shoreline, to conceal movement by masking a ship's outline. Marshy areas provide concealment behind headlands and hummocks. Another mode of concealment would be by flying false colors, that is, a belligerent might hoist a neutral or enemy flag. In all cases, the idea would be to delay or deny recognition.

Obstacles

Obstacles might best be described as restrictive terrain that creates problems for an advance, withdrawal, or the movement of support elements. This sort of terrain feature might best be identified by asking if there are land forms that would hinder or disrupt movements or provide protection to a defending or attacking force (U.S. Army 1992:2-8). Anything that might prevent an enemy from approaching would fit in this category. A boom or a line of sunken vessels in a channel is a typical obstacle that occurs in maritime settings and was employed at various times in the Chesapeake.

Avenues of Approach

Avenues of Approach are the routes by which an enemy can attack a defensive position. Ideally, the best way would be to place the opponents at a disadvantage. Likely avenues of approach should be covered by appropriate weaponry and take advantage of cover and concealment. In considering how to approach a maritime site, use of land and/or water borne forces must be considered by both attackers and defenders. Can the road network or waterways support movements required for the mission (U.S. Army 1992:2-8-9)?

Weather

Weather is a component of terrain. It is especially important for naval warfare as it can obstruct or improve movements, provide concealment, and affect command and control (U.S. Army 1992:2-8). Weather includes the phases of the moon as they affect lighting and tides. Wind and its direction are another weather element that is not usually considered but is of key importance to watercraft. Another key element in the age of flintlock weaponry is humidity because it can affect weapons ignition.

Troops Available

Troops Available refers to friendly forces as opposed to the enemy, but it does not simply mean manpower as much as combat power. In this report, friendly forces are the Americans (U.S. Army 1992:135). In the Chesapeake campaigns, the types of troops and their leaders are essential to the overall understanding of the battles and their outcomes. The key elements of analysis are what types of troops are available. Are they Continentals, or regulars, state troops, militia or volunteers? What sort of weapons do they have and how can they be best employed? Attached groups can provide an important reinforcement to the troops initially available. What is their physical condition and morale? How are they deployed? What have they been doing and what are their weaknesses? What units can be called on for support? In many cases, who are the key leaders and how effective are they?

Time Available

Time Available is an essential component for planning and analysis. In military operations, it refers to the time available to carry out the mission based on the operational plan and any situational changes. In naval operations, time would also be construed as referring to tidal changes and a reading of the weather. How fast can units be ready to move to initiate the mission? How long will it take to complete? Related to time are rest periods for the troops involved (U.S. Army 1992:2-9). For maritime purposes tidal changes and expected/predicted wind conditions are related to time. In evaluating the enemy, how rapidly might they be expected to move to attack or defend? How much time is available to plan an attack or defense? Will there be time for inspecting the forces involved, gaining intelligence of the enemy, and even rehearsing? What are the critical times for initiating the mission, terminating it, or allowing alteration to the basic plan? Analyses of military engagements must also consider the fog of war because once a mission is underway, time is critical, yet it may take more than three times as long due to unforeseen circumstances imposed by nature or humans.

Principles of War

Analysis using the Principles of War provides operational and tactical combat details that enhance our understanding of what happened during each engagement. There are currently nine principles of war identified in modern U.S. Army texts: Objective, Offensive, Maneuver, Mass, Economy of Force, Unity of Command, Security, Surprise, and Simplicity. These terms help guide analyses of what happened during the course of a battle. More importantly, if one side did something, why did they do it, and what was the enemy's response? To some extent, this same approach guided recent studies of Revolutionary War land battles at the Cowpens (Babits 1998) and Guilford Courthouse (Babits and Howard 2009).

Objective

Objective is the goal of a military operation. It should be clearly defined, decisive, and attainable (Stewart 2005:7). At the level considered in this study, it refers to the harassment and defeat of enemy forces operating on the Chesapeake Bay during the Revolutionary War and the War of 1812. Both sides had the same objectives and, aside from the Battle of Baltimore, most of the engagements can be considered small unit actions. While they contributed to wider political objectives, they were not, in and of themselves, more than a very small part of either nation's goals, because the objectives were limited.

Offensive

Offensive might be better stated as initiative as definitions also include the demand that one side must "seize, retain, and exploit the initiative" (Stewart 2005:7). Offensive is making the enemy react to actions by the friendly forces. It is possible to retain initiative by withdrawing as Nathanael Greene did during the "Race to the Dan" in 1781 (Babits and Howard 2009:13-36). In the long run, it is essential that an offensive mindset be employed to make the enemy react to the will of friendly forces (Stewart 2005:7).

Maneuver

Maneuver is placing the enemy at a disadvantage by flexibly applying combat power. The "object of maneuver is to dispose a force in such a manner as to place the enemy at a relative disadvantage and thus achieve results that would otherwise be most costly" (Stewart 2005:7). A key demand for maneuver is flexibility, especially in command and control (Stewart 2005:7).

Mass

Mass refers to superior combat power at the critical, or decisive, time and place (Stewart 2005:7). Mass is not simply more men but more importantly how the men and weapons are employed and when they are employed. British Army successes on Revolutionary War battlefields show this precise feature. Often outnumbered, the British still won battles because they brought superior firepower to the key point.

Economy of Force

Economy of Force is a corollary to Mass in that a commander is encouraged to "allocate minimum essential combat power to secondary efforts" (Stewart 2005:7). Stated another way, leaders should employ enough power to get the job done while maximizing limited resources. This can be done by using interior, or more rapid, lines of communication, defensive works, or delaying forces, to allow superior power at THE critical point and time (Stewart 2005:7-8).

Unity of Command

Unity of Command means that one person is responsible and that all subordinate personnel are working to the same objective. While cooperative efforts may work, "coordination is best achieved by vesting a single commander with the requisite authority to get the job done" (Stewart 2003:8).

Security

Security is denying initiative to the enemy by preventing surprise, not allowing information to the enemy and ensuring freedom of action to friendly forces (Stewart 2005:7). Security is a force multiplier in that it affects imagination and induces fear (Babits 1998:98).

Surprise

Surprise is the corollary to Security. It is desirable to engage an enemy "at a time or place or in a manner for which he is unprepared" (Stewart 2005:9). Surprise means that an enemy learns of an impending situation "too late to react effectively" (Stewart 2005:9). Surprise can be achieved by rapid movement, "deception, effective intelligence and counterintelligence", and changes in tactics and operations prior to a battle and on a battlefield (Stewart 2005:9).

Simplicity

Simplicity is self-explanatory. Plans and instructions must be clear and concise to limit confusion. Subordinates must be able to grasp the commander's intentions and carry them out. All other things considered, the simplest plan is preferred (Stewart 2005:9).

3.0 DEFINING THE TERMS

Lawrence E. Babits, Christopher T. Espenshade, and Sarah Lowry

This chapter provides a brief overview of material culture that might be found at the engagement sites under consideration in this report. Since these terms are heavily nuanced, effort has been expended to make them as comprehensive as possible.

Boats

There has been considerable discussion about small boat sizes and terminology. The term "barge," in particular, meant something very different during the period between 1776 and1815 than it does today. Generally speaking, several boat types appear in the written records relating to the six engagements discussed here. Aside from warships, they include galleys, longboats, launches, pinnaces, barges, sloops, yawls, cutters, and whaleboats. These terms are also image-laden for the eighteenth century, and it is not always clear what the person using a particular term really meant.

For the Royal Navy, some standardization of boat types and their dimensions was present and various sized boats were assigned to vessels based on their rating (May 1999:56-62). The boats were thus formally named. In most cases, size was also regulated, as well as specifications regarding the number of oars. For the Americans, this was not the case during the Revolutionary War and, in some cases, the War of 1812. The nomenclature that follows is derived from British standards augmented by American and British literature. For the most part, there is little difference between terms and craft used in 1781 and 1813-1814, except that during the War of 1812, some boats were larger.

Longboats

The longboat was traditionally "the largest and heaviest boat carried by a ship" (Lavery 1987:218). During the later eighteenth century and early nineteenth century, longboats were being supplemented by other workboats including the launch and smaller craft. In the eighteenth century, longboats seem to have been standardized at circa 36 feet, regardless of the ship they were on. They had bluff bows with some narrowing at the stern. The longboat was wider than the pinnace in keeping with its use as a transport for heavy objects. It could be powered by oars or sail, and was usually single masted with a cutter's rigging and bowsprit, carrying a "mainsail, forestaysail, and jib" (Lavery 1987:218). In 1780, the Navy Board authorized replacement of the longboat with the launch (Lavery 1987:218). While the term longboat may have been mentioned, or even used, during the events reported on here, it is more likely that barges and launches were the preferred watercraft, even though longboats were still acceptable as late as the nineteenth century's first decade (Lavery 1987:219).

Launches

Launches came in various sizes and were originally used in dockyards as something akin to a pickup truck capable of carrying heavy and/or bulky loads. Launches became standard for 20 gun or larger warships in 1780 but they had been in use since the 1740s. Launch size varied with the ship they supported. A sloop carried one that was about 18 to19 feet long while a first rate could have one as large as 34 feet.

Their use was similar to the longboat it was supplanting and often carried a windlass to help raise anchors. The rigging varied depending on the captains who authorized cutter and schooner rigs with "either lug or lateen sails" (Lavery 1987:219). It is likely that the rig changed according to environment, especially when used in light or variable airs when a lug rig would be especially helpful. Lavery (1987:220) reported that, "all launches should be equipped to row double-banked in 1783."

Pinnaces

Lavery introduced his discussion of the pinnace and barge by pointing out that the two "are often confused, even in official records, and to a certain extent the two terms are interchangeable" (Lavery1987:219). The term pinnace, however, did not appear in the records examined for this study. In 1769, the pinnace was described as "exactly resemble barges, only they are somewhat smaller, and never row more than eight oars; whereas a barge properly never rows less than ten" (Falconer 2006:47, 345). This observation clearly distinguishes the two types on the basis of oars.

The important technical distinctions between pinnace and barge were that the pinnace was narrower, especially aft, and "had very small transoms" (Falconer 2006:47). A "backboard is just inside the stern…" "separated the helmsman from the passenger area" (Falconer 2006:47). The helmsman's area was called the "stern sheets" and had fore and aft benches on both sides. Most pinnaces had a plank running down the vessel's centerline. The pinnace was usually rowed single banked. In the nineteenth century, they were "fitted with two masts and lateen-rigged" (Lavery 1987:220).

The pinnace was used for transporting officers, particularly junior officers while barges, being larger, carried senior officers. There was widespread variability in length; by 1780, they were issued in standard lengths of 26, 28, and 30 feet. Lavery references a 1740 directive that might clarify this somewhat by saying that "all eight-oared boats were to be 28 ft long" with a length to beam ratio of 4:1 (Lavery 1987:220). He goes on to state that, by "the 1800s, all ships of the line had a 28 ft pinnace, as did large sloops, while small sloops of 200 tons carried one of 24 ft" with a length to beam ratio of 4.5:1 (Lavery 1987:220). To American eyes, a pinnace could easily be equated with a barge if they did not count the number of oarsmen. They were designed for rowing.

Barges

In the present day, "barge" has the connotation of a towed/pushed scow, but there is a long English history of barges as warships. In the thirteenth century, (1294) royal galleys were to have 120 oars but a barge (1304) would have "24 oars and a crew of 26" (Friel 1995:34). In the fifteenth century, "balingers or barges . . . were usually oared fight craft, and barges may have tended to be larger than balingers" (Friel 1995:147). Since balinger is derived from the French term for whaling boat (Friel 1995:147), the inclusion of whale boats as a Virginia privateering vessel type (Sanchez-Saavedra 1978:272) is significant. Friel goes on to state that the terms were seemingly interchangeable and that balingers ranged from 20-100 oars and were popular with pirates (Friel 1995:171). By the time of the Spanish Armada, balingers seem to be support craft to major English warships (Friel 1995:114, 147-48).

The barge was "larger and more prestigious than the penance [sic]" (Lavery 1987:219). This evaluation applies to ceremonial, rather than operational, usage considered here. Based on Falconer, as a

minimum, barges had at least 12 oarsmen and barges never had less than ten. They could range in size from 28-32 feet with a length to beam ratio of "nearly five to one" (Lavery 1987:220-21). A vessel with at least 10 oars would be classified as a barge. By 1742, the Royal Navy classified all 10 oared boats as barges and stated their length as 32 feet (Lavery 1987:220-21). A vessel only 32 feet long would be too small to carry the *Protector*'s complement and weaponry (Chapter 5.0).

In the eighteenth century, a barge was a large long boat capable of moving under both sails and oars. By Royal Navy dictate as early as 1740, a 10-oared vessel was to be 32 feet long. By 1800, a "barge or ten-oared boat of 32 ft" was carried by all ships of 32 guns or more (Lavery 1987:220-21). It was a highly maneuverable vessel with crews often exceeding 50 men. In the often shallow waters of the Chesapeake, with its variable winds, the barge was an ideal warship. The Chesapeake barges would have been locally built and probably were larger and wider than normal to accommodate their crews and weapons.

During the summer of 1781, the British built five flat bottom boats at Portsmouth, Virginia. These were "70 foot straight, would carry 150 men; four boats went to New York" (Maryland 1973:95). Another vessel "plundering and stealing" was described as "a 6-oared barge" (Maryland 1973:95). If the four boats built at Portsmouth did go to New York, they may have been included in the force used in Kedges Straits because that British flotilla was from New York (*New York Gazette* 1782).

Maryland passed several relevant acts about state boats on the Chesapeake. The first is the October 1780 act authorizing the purchase or building, and fitting with "sails and oars. . . four large barges or row-boats, capable of carrying swivels and twenty five men at least" (Maryland 2000:609).

Later in 1813, Joshua Barney, who later would be appointed by the President of the United States as Acting Master Commandant of the United States Flotilla in the upper part of the Chesapeake Bay, proposed the construction of a flotilla for the defense of the Chesapeake Bay composed of "a Kind of Barge or Row-galley, so constructed, as to draw a small draft of water, to carry Oars, light sails, and One heavy long gun" (Dudley 1992:373-374). Barney's plan suggested that a squadron of twenty barges measuring 100 feet long should be manned by 50 officers and men and 25 soldiers to provide a force of 1500 and if necessary 500 or 1000 additional troops could be added (Dudley 1992:374). None of the 100-foot barges envisioned by Barney were constructed; however, the US Chesapeake flotilla would include a total of more than two dozen 50 and 75-foot barges built following specifications provided by naval architect and Chief Naval Constructor William Doughty (Shomette 2009:60,75-76). Doughty's 50 and 75-foot barges were shallow draft vessels that could be propelled by oars or sail. They carried one and two masts respectively; and each mounted a carronade at the bows and a long gun at the stern. They later were equipped with washboard collars to protect oarsman from heavy seas and it is possible that some carried leeboards as suggested by a sketch of vessels deployed during the defense of Fort McHenry (Shomette 2009:51). As a result of a lack of men to sail them, only 13 barges accompanied other flotilla vessels during the May-August 1814 cruise that ended in the scuttling of the US Chesapeake Flotilla to prevent its capture (Shomette 2009:76).

In 1814, the *Neufchatel* was attacked by the *Endymion*. The British frigate "armed her boats and sent them in to cut out the American schooner. There were five of these boats carrying between 111 and 120 men" (Chapelle 1935:148). The Americans successfully repulsed the British inflicting over 70 casualties in about 20 minutes while suffering 31 casualties of their own. This small action demonstrates how many men could be carried by a ship's boat, something that might be represented by Figure 2.

Figure 2 provides a detail of the painting "The Occupation of Newport, Rhode Island" that actually shows Kip's Bay, New York in 1776, not Newport, Rhode Island. It includes a depiction of a barge with 12 oars that may show what the British vessels might have looked like that were used during raids on the Elk and Sassafras Rivers (Chapters 6.0 and 7.0). The stern sheets have the fore and aft bench typical of a pinnace. A count of the soldiers suggests that at least 20 men are being carried in addition to the 12 oarsmen, helmsman and one officer. It seems cramped with some 32 men onboard. The 1782 Maryland barge *Protector* went into action with 25 "Gentlemen volunteers," at least three cannon, and its regular crew of over 40 men. Obviously, the *Protector* had to be much larger and the Loyalists referred to it as a galley.

Figure 2. Detail of "The Occupation of Newport, Rhode Island, December 9, 1776" showing a British barge. (*Rijksmuseum, Amsterdam*)

Galleys

According to Parry (2000:492), row galleys were:

> An important type . . . built on both the Maryland and Virginia shores of the Chesapeake Bay in the late 1770's. Their shallow draft made them suitable for retreat into tributary rivers to evade larger naval ships, but they were seaworthy for action in the Bay. . . . Most schooner rigged. Oarports were set between the gunports. Rowed double-banked with 2 men to a sweep. Reported lengths 12-24.7m on keel, beam 4.3-7.6m, depth of hold 1-2.3m.

Parry (2000:238-239) further described galleys as "flat or round bottom, sharp or square stern, and generally had a poop deck. Many set 2 lateen sails." Chapelle (1935:54) added:

> The American galley, however, rarely showed a greater number of pairs of sweeps than a schooner, sloop or cutter not so classed. In fact, the distinguishing feature of these galleys was often nothing more than light draft, though all of them showed sweeps.

The key is that galleys were larger and more heavily built than ships' boats. They were both rowed and sailed and could be fairly heavily armed.

A Maryland act for defending the Chesapeake called for "one galley, capable of carrying two eighteen and two nine pounders, with swivels" (Maryland 2000:609). The act went on to stipulate that 100 marines were to be raised for the galley and sloop, including two sergeants and two corporals. In May 1781, the act was supplemented by authorizing purchase of a "galley now in Baltimore-town" and to build a second galley, "both of which gallies to be employed in such manner as the governor and council" shall direct (Maryland 2000:609).

More information can be seen in the description of a Virginia State Navy galley:

> 75 feet straight rabit [sic] (keel measurement);
> 27 feet beam;
> 10 feet [depth of] hold;
> 26 inches dead rise;
> A Long Floor, good entrance, very clean abaft, a full harping;
> Bottom 22 Inch plank. Floor heads 3 Inch plank, one Strea [Strake] 3 Inch under the Wales & above them –3 Wales—Waste [Waist] 22 Inch;
> plan, scantling large—strongly built forward & abaft—;
> Beams 14 Inches deep, well kneed, one horizontal & 1 dogger [dagger];
> knee—at each end. Slides fited [sic] at each end for 24 pound Cannon,;
> two in the Bow & two in the Stern—;
> Six parts [ports?] of a side for 9 pounders—;
> Waste 3 feet 10 Inches, to rise forward to five feet—;
> A quarter deck, sufficient to hole [hold] the officers—;
> A spar deck, below for the men—;
> Long grating hatches—24 row ports of a side—;
> The Rigg to be fixed hereafter, at present it is intended to rig after the Miditerranian [sic] Gallies (Sanchez-Saavedra 1978:156).

This description indicates a craft that was probably at least 80 feet long on deck and had a crew of at least 48 men, just for the oars, plus gun crewmen and officers. The armament would have been impressive with four, 24-pounder guns fore and aft, plus another 12, 9-pounders mounted as broadside guns.

Over the summer of 1776, Brigadier General Benedict Arnold caused several galleys and gundalows to be built on Lake Champlain (Figure 3). These are important because one gundalow (flat bottom gunboat) survived on the bottom and is now in the Smithsonian Institution. More importantly, a British officer made a watercolor of the American flotilla that shows galleys, some four of which were apparently built to a standard plan.

In the battle at Kedges Straits, the *Protector* is described as a galley by the New York correspondent, but is called a barge by Americans (Cropper 1782; Handy 1782; *New York Gazette* 1782). The terms may be interchangeable, depending on size, rig, and armament. Certainly, it was a well-manned and heavily armed ship. The different terms, and the American confusion about whether or not the Loyalists also had a galley suggested that the main distinction between barge and galley may have been armament, rig, and the number of men aboard.

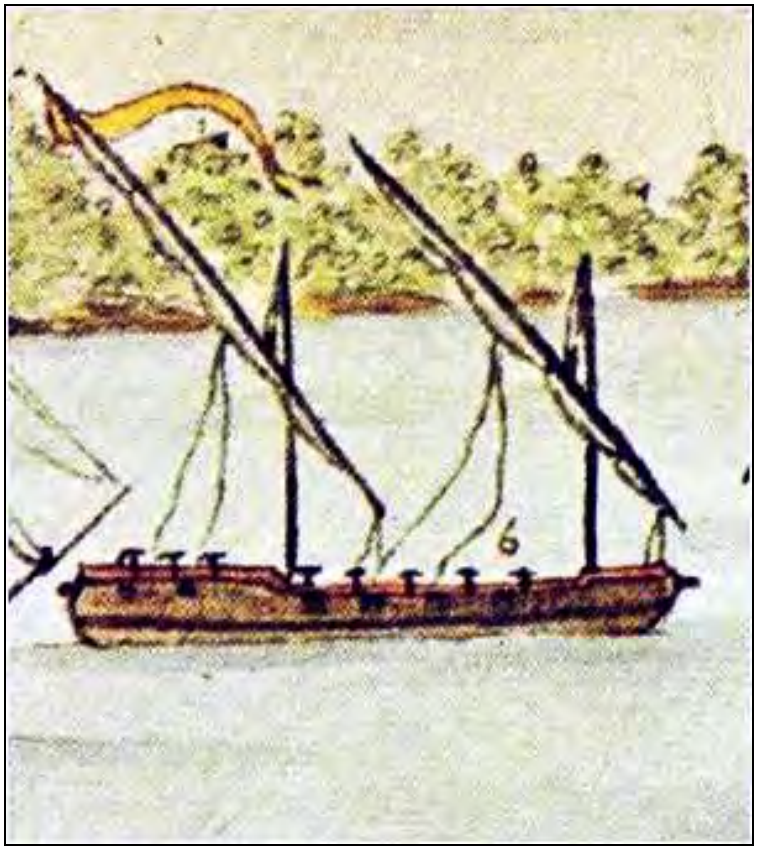

Figure 3. Galley *Lee*, Lake Champlain 1776 (*detail from Lundeberg 1966:centerpiece*).

Yawls

Yawls were basically tenders to another, larger vessel. By 1800, the standard was that they should be some 26 feet long. Lyon (1993) reported that yawls were unusual for ships' boats in that they were fully decked. Usually two-masted, they could carry different rigs and rowed four, six, or eight oars (Lavery 1987:222). Yawls do not commonly appear in the Chesapeake during the period under consideration, something suggested when Lavery reported that they were issued only to ships in Channel service. Lavery illustrated a 1798 yawl as being 26 feet long, 6.5 feet in beam, with a depth of 2 feet, 11 inches (Lavery 1987:222).

Cutters

A cutter had a specific definition in the Royal Navy. They tended to be larger than a yawl with a straight sternpost, sharp bow but were "broader, deeper and shorter" than barges and pinnaces, so that they were "fitter for sailing" (Lavery 1987:222-23). In 1771, a 74 gun-gun ship would carry two different sized

cutters but “after 1781 all ships of 20 guns and more carried an 18 ft cutter, which later became known as a jolly boat” After 1800, ships of 36 guns or more had “two 25 ft cutters (Lavery 1987:223). Arming these vessels depended on the captain and the mission. Illustrations of cutters show them as being 27 feet long, 6 feet, 11 inches wide, with a depth of 2 feet, 5.25 inches (Lavery 1987:223).

Compared with Virginia examples, British cutters were remarkably standardized, but this may not be entirely accurate as the Virginia cutters are reported in terms of name, guns, and men. The 1781 cutter *Lincoln* had two carriage guns and 22 men, the same as the 1781 *Sincola* (Sanchez-Saavedra 1978:167,171). A British cutter of 25 feet could have easily carried the same crew and armament as the Virginia craft if one considers eight oarsmen on each side, a helmsman, a captain, and two gunners. This is all the more important when carriage gun did not necessarily mean a cannon mounted on a truck with wheels but a sliding carriage mounted in the bow or on a pivoting table amidships.

Whaleboats

The Virginia navy used whaleboats as privateers and patrol boats. A number of names and their complements have survived that allow some idea of their size. For example, in 1781, the whaleboat *Intrepid* carried one carriage gun, and six swivels for a crew of 35. That same year, the *Liberty* was armed with one swivel gun and 20 “musket men”, while the *Swift* had one carriage gun and 30 men (Sanchez-Saavedra 1978:167, 171). Whaleboats were different from “boats” such as the 1781 *Capitol Landing’s Revenge* that had 20 carriage guns and 40 men; or the 1778 boat *Revenge* with two swivel guns and 45 men (Sanchez-Saavedra 1978:164, 169). Boats and whaleboats were obviously manned for rowing and fighting; hence, the large numbers of men. In the case of the *Revenge* and its 20 carriage guns, it may well be that these were fairly small cannons and that only one side of the vessel would be fought while one or two guns would have been larger and mounted in bow.

Jeffersonian Gunboats

Jeffersonian gunboats were part of the downsizing of the government and its accoutrements initiated by Jefferson (Chapelle 1935:96). Chapelle described them from surviving plans as “an odd collection of different designs and sizes of galleys, cutters, sloops and schooners” (Chapelle 1935:97). They were variously rigged and armed, but typically carried one to three guns, either mounted at the bow and/or stern on slides, or midships on a pivot. The remains of at least two Jeffersonian gunboats, Nos. 137 and 138, are still in St. Leonard’s Creek and were examined by Enright during 1996 and 1997 (Enright 1999a; 1999b). A comprehensive study of the Jeffersonian gunboat program was undertaken by Tucker (1993).

Rocket Boats

Rocket Boats were essentially ship’s boats that fired rockets. They used their foremast to brace the rocket firing stand. Other than that, they were basically a ship’s boat as can be seen in the image of a Congreve Rocket boat’s crew taken from Congreve (1814) (Figure 4). The key element for using rockets in small boats was the minimal recoil, or as Congreve (1814:47) explained:

> Here it may be observed, with reference to its application in the marine, that as the power of discharging this ammunition without the burthen of ordnance, give it *exclusive* (emphasis in original) facilities for land service, so also, its property of being projected without reaction upon

the point of discharge, gives it exclusive facilities for sea service: insomuch, that Rockets conveying the same quantity of combustible matter, as by the ordinary system would be thrown from the largest mortars, and from ships of very heavy tonnage, may be used out of the smallest boats of the navy; and the 12-pounder and 18-pounder have been frequently fired even from four-oared gigs.

Figure 4. Congreve Rocket Boats (*from Congreve 1814:48, plate 11*).

Sloops

Sloops are single-masted, fore and aft rigged, sailing vessels. Parry (2000:549) reported that in the Atlantic world, especially North America and Britain, sloop was a general term for a coaster. They were used as traders, whalers, fishing boats, and privateers and were characterized as fine-lined with a lightly curved stem, and commonly had a square moderately-raked stern, although some had round sterns with a strong sheer and heavy wales. Small sloops were open and worked in protected waters, while larger versions were usually decked and fitted with bulwarks; some had a deck cabin at the stern and a rudder outboard. The single mast was generally strongly raked, which permitted setting a large, boomed gaff sail with a short gaff. The mainsail boom could be extremely long, a factor to contributing to their fairly high speed. Some also had 2 or 3 yards for square topsails. A long, steeved-up bowsprit ran atop the stemhead, which would permit 2 to 3 headsails. Average reported lengths on keel ranged from 10.4 to 13.7m with beams averaging 5 m, and depths of hold averaging 2.3m.

Colonial era sloops were fairly small, ranging from 25 to 75 tons (Chapelle 1935:11). In the American Revolution, sloops were used as armed fighters. Sloops were usually armed with carriage guns and numerous swivels (Maryland 2000:608).Arnold's 1776 flotilla on Lake Champlain had at least two sloops as shown in a contemporary drawing (Figure 5). Chesapeake sloops are shown in the painting of the

Spencer Hall Shipyard circa 1770 and are indicative of Revolutionary-era vessels on the Chesapeake (Figures 6a-b).

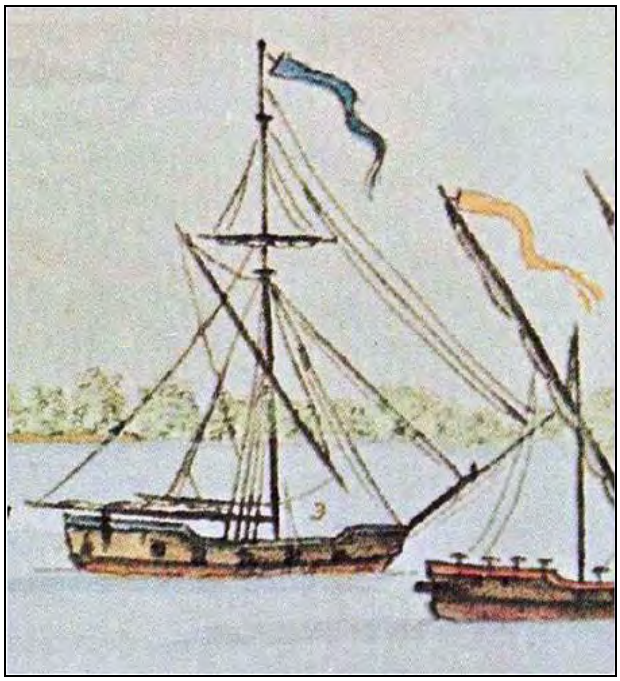

Figure 5. Sloop *Enterprise*, Lake Champlain October 1776 (*detail from Lundeberg 1966:centerpiece*).

Figures 6a-b. Sloops shown in circa 1770 painting of Spencer Hall Shipyard, Gray's Inn Creek (*Maryland Historical Society 1900.5.1*).

Schooners

Schooners were fore and aft rigged sailing vessels with at least two masts "generally setting boomed gaff sails" (Parry 2000:514). They may have evolved from the ketch, in combination with some rigging elements from Bermuda (Figures 7 and 8). Snediker and Jensen (1992:8,10) suggested:

> In its evolution, the schooner proved to be peculiarly adapted to the winds, waters, and economic endeavors of those who depended on the Chesapeake Bay in one way or another for their livelihood. More than anywhere else. . . the shipwrights of the Chesapeake employed the schooner rig to its greatest advantage, perfecting it as they did so. The key evolutionary step promoting the schooner over the sloop was recognition that it was easier to handle two smaller sails than the one large one aboard the sloop.

One Revolutionary War Era Maryland Act recommended armament as "capable of carrying 10 four pounders" (Maryland 2000:608). Schooners came into their own during the last quarter of the eighteenth century when they became known for their speed, especially as privateers operating out of the Chesapeake (Snediker and Jensen 1992:27).

As Chapelle (1935:142, 144) pointed out, prior to the Revolutionary War:

> the Americans had developed a small seagoing cruiser which was of great usefulness to the naval services, for it was usually weatherly and fast, Unlike the cutter, the schooner when built to large dimensions did not become difficult to handle. . . schooners were small, carrying four to 10 guns, and were intended to be used. . . on the American coast.

Of later schooners, Chapelle (1935:133) reported:

> Toward the end of both the Revolution and the War of 1812, the size of privateers greatly increased, but they never reached the size of heavy naval frigates, in America. The largest American privateers did not exceed 120 feet in length, and so the schooner-rig could be used in the biggest craft. The fore-and-main topsail schooner was the favorite rig perhaps.

They could carry over 20 deck guns plus swivels but were usually lightly armed, relying on speed to evade stronger enemy craft (Chapelle 1935:131-32, 134, 139-40; Chapelle 1949:182). Pivot guns and carronades were employed to lighten the armament's weight (Chapelle 1935:142, 144).

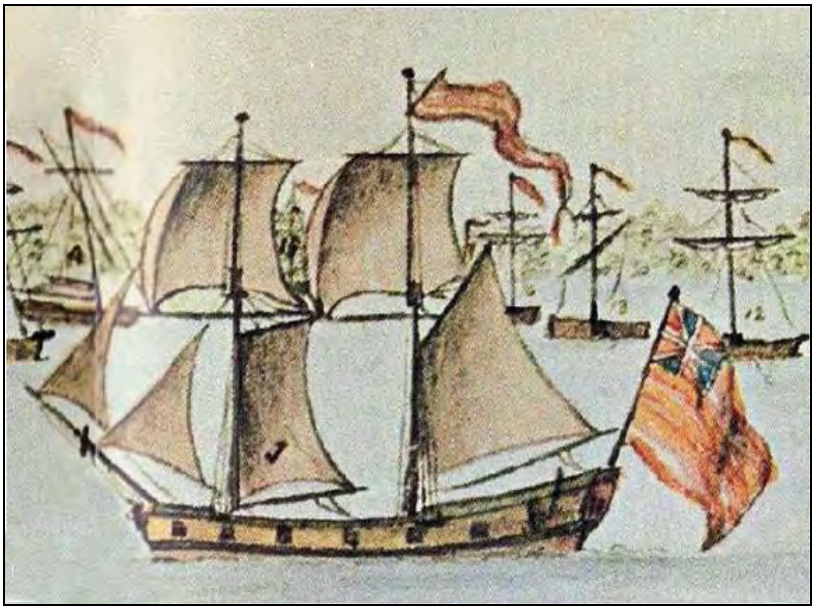

Figure 7. Schooner *Royal Savage*, Lake Champlain October 1776 (*from Lundeberg 1966:centerpiece*).

Figure 8. Two schooners shown in circa 1770 painting of Spencer Hall Shipyard, Gray's Inn Creek (*Maryland Historical Society 1900.5.1*).

Brigs

A brig was a "small 2-masted 18th- and 19th-century vessel of commerce and war . . . that, for most of the period, set square sails on the fore- and mainmasts and multiple headsails. Some early vessels carried a lateen mainsail" (Parry 2000:95). These square-rigged craft were given a third mast immediately aft the mainmast (Figure 9). This "snow mast", or "trysail mast", indicated a "snow" in the mid-eighteenth century, but American men-of-war brigs tended to have the snow mast during the War of 1812 (Chapelle 1935:15-16). Brigs could be heavily armed with a combination of carriage mounted deck guns and swivels on the rails.

Midway between the two wars, the U.S. Navy ordered brigs influenced by the campaigns against the Barbary pirates. Chapelle (1949:182) reports these were

> flushed-decked brigs, designed to row fast and to have long lower masts and rather short yards, the rig was to be light, high, and narrow to be suited to the sailing condition met in the Mediterranean. . . to permit carrying 16 24-pounder carronades, one long 18-pounder gun in the bow , and another in the stern.

These would have been ideal for use on the Chesapeake as well.

Figure 9. Brig shown in circa 1770 painting of Spencer Hall Shipyard, Gray's Inn Creek (*Maryland Historical Society 1900.5.1*).

Sloops of War

The Sloop of War was a particular military designation for a two-masted vessel, "being snows, ketches, and brigantines (what would later be called brig rig – square rigged on both masts and not brigantines in the nineteenth-century usage which is still current – with fore and aft sails only on the mizzen)" (Lyon 1993:xiv). They were generally co-equal with the French term corvette and described by Parry (2000:152, 550) as armed vessels classed just below frigates and generally used for reconnaissance. Sloops of War were armed with fewer than 20 guns, all on one deck until 1800 and during the 19th century, they carried as many as 30 guns. They generally had 3 tall masts and were ship-rigged (Parry 2000:152). The archaeological signature of such a vessel would probably be difficult to differentiate from a nineteenth-century frigate or an eighteenth-century brig without documentation.

Frigates

A frigate was a European man-of-war with various distinctions over the sixteenth through the nineteenth centuries. Parry (2000:224) described the frigate:

> As a naval vessel, it became a standard class and was a light, fast, medium-sized vessel that served mainly for scouting and escort duty, as a lookout and signal repeater, and to engage

> privateers. Generally 2 gun decks. . . but during the 18th century, all the armament was on the so-called gun deck (above the waterline); the lower deck was for crew and stores. Large frigates carried light guns or carronades on the gun deck and forecastle.

Lyon (1993:xii) added:

> The new type of Sixth and Fifth Rates which appeared from the 1740's . . . two-decked ships without any guns on the lower deck which could therefore be lower in the hull, making the whole ship a snugger and more sea kindly design whilst raising the height of the main gun battery above the waterline. This was the "true frigate", the type for which the name "frigate" is used as a category. . . at first 12 pounder armed. . . 32 and 36 gun ships and 9 pounder armed 28s. By 1780 the inevitable increases in size and power led to the introduction of 18 pounder 36 and 38 gun ships. Within the decade there were a few 24 pounder armed vessels and by the end of the Napoleonic wars there were some frigates with 50 or more guns, these larger vessels, built in increasing numbers as the nineteenth century continued, are lumped together. . . as large frigates.

The USS *Constitution* is a classic vessel of this type.

The rocket ship, *Erebus*, was employed by the British during the attack on Fort McHenry. This vessel may have been altered in the field as it does not appear on the Navy Sailing List (Lyon 1993). Although an *Erebus* does appear on the list as a bomb vessel, it was not launched until 1826 (Lyon 1993:148). It seems that it was formerly a sloop of war, or a purpose-built fireship, converted to fire rockets (Gardiner 1998:155). The conversion could have been accomplished fairly easily as explained by Congreve, "Figs. 2, 3, and 4, represent the mode of fitting any ship to fire Rockets, from scuttles in her broadside; giving, thereby, to every vessel have a between-deck, a Rocket battery, in addition to the gun batteries on her spar deck, without the one interfering in the smallest degree with the other, or without the least risk to the ship" (Congreve 1814:51).

Congreve's discussion is important in that he specifically mentions the "Erebus, sloop of war" because he further stated that it was outfitted "by a particular construction of scuttle and frame which I have since devised. . . so that the whole of the scuttle is completely filled, in all positions of traverse, and at all angles, by the frame." Congreve further noted that the rockets were "projecting 18-pounder shot, or 4 1/2-inch shells, or even 24-pounder solid shot" (Congreve 1814:51-52).

Bomb Ketches

A last relevant vessel for this study is the bomb ketch, a ship rigged vessel carrying mortars (Chapelle 1935:56). This vessel type was so specialized, it "virtually disappeared from the list in times of peace, its number increasing rapidly with hostilities" (Ireland 2000:118). These British vessels were used in the attack on Baltimore in 1814. They were a "strongly built vessel. . . used mainly to bombard coastal installations… the English placed one [mortar] forward of the mainmast, the other abaft of it" (Parry 2000:84). Locating the mortars on the centerline was possible because they were placed as pivot guns on rotating platforms (Ireland 2000:118).

The bomb vessels used at Baltimore included both what were seemingly purpose built warships and vessels apparently adapted in the field, making tracing them difficult. Those on the Sailing Navy List were the *Meteor*, *Devastation*, and *Etna* (Lyon 1993:281). Each bomb ship was armed with a 10-inch and a 13-inch mortar and was 102 feet on deck (Lyon 1993:281). The *Terror* and *Volcano* are not so listed and may be vessels adapted for the purpose in American waters and then sold off at the end of the war.

Terrestrial Defenses

Fortifications are divided into two basic types, field and permanent (Robinson 1977:85-86, 198; Hess 2005:9-10, 336). Any discussion about defensive works, be it a parapet, palisade, stockade, entrenchment, earthwork, ditch, or blockhouse, must consider the implications of what various military engineers, historians, and archaeologists meant when using the word fort. A permanent fort built with brick or stone, with curtain walls and bastions, would likely be used to guard port cities. The United States fortified key points during and after the Revolutionary War, often building anew on the same sites. Fort McHenry, as it existed in 1814, was one of the second system fortifications that replaced an earlier work. After the War of 1812, it was adapted several times as changes in weaponry occurred (Whitehorne 1997:44, 171-72; Stokinger et al. 1981:14-26).

Field fortifications were usually erected during a time of war and were not intended to be permanent. They are thus built of wood or earth that has since been altered, disintegrated, or removed, even though they may have stood for three or more years as with later Civil War earthen works. Traces of these decayed works should be visible by using a variety of survey techniques.

Siting a fortification is a key element in determining where it should have been located if it is no longer visible. Knowledge of period fortification manuals is essential as pointed out by Charbonneau (1994:24):

> The establishment of the exact trace of a work, compared to the models used at the period, produces an evaluation of the type of defence planned and carried out. Further, a fortification's defensive effectiveness and power of resistance are to be measured by an examination of its profile. The study of the French fortification at Ile aux Noix is susceptible of this model of analysis, even though it involves a so-called field fortification, that is, one erected during a period of active warfare. Though geometrical regularity and the stability of the revetments are not the primary concerns of an engineer tasked with erecting a temporary fortification, it remains true that the work should reflect the defensive theories being taught at the time as much as the so-called permanent fortification does.

Permanent Fortifications

With independence, the United States embarked on upgrading defenses at key ports in 1794. This became the First System, permanent forts designed to be regularly garrisoned even in peace time (Robinson 1977:63). Eventually, there would be four systems before the introduction of heavy, rifled steel weaponry changed the direction of coastal defense (Lewis 1979:7). For the purposes of this study, only the first two systems are discussed even though Fort McHenry presently shows major alterations associated with post-War of 1812 and Civil War upgrading that might be considered part of the third system but incorporating earthworks (Robinson 1977:70; Stokinger et al. 1981:23). As Lewis pointed out, the "four early generations of defenses were constructed for the most part of earth, earth and

stone, or entirely of stone or brick, and all were armed, almost without exception, with smoothbore cast-iron muzzle-loading cannon" (Lewis 1979:7). Lewis basically described Fort McHenry with this statement. Even with the alterations, "Fort McHenry is the only pure example of a First System seacoast fortification (1794-1808) remaining the United States" (Stokinger et al. 1981:1).

Field Fortifications/Earthworks

There are many military manuals which provide useful information commencing with John Muller's 1780 "Treatise" on fortification and Lochee's 1783 "Elements of Field Fortification . A later, more explicitly detailed manual familiar to many Civil War officers was written by D. H. Mahan in 1836 but reflects knowledge from the Revolutionary War and War of 1812. Mahan's work contains statements about labor, time, and procedure in the construction of an earthen fortification wall which are useful starting points for looking at the works erected by Maryland militia men along the Sassafras and Elk Rivers and St. Leonard's Creek, as well as the water battery erected at Fort McHenry. Mahan (1836:33-35) stated:

> The ditch should be regulated to furnish the earth for the parapet. To determine its dimensions, the following points require attention; its depth should not be less than six feet, and its width less than twelve feet, to present a respectable obstacle to the enemy. It cannot, with convenience, be made deeper than twelve feet; and its greatest width is regulated by the inclination of the superior slope, which, produced, should not pass below the crest of the counterscarp.
>
> Experience has shown that, in ordinary soils, a man with a pick can furnish employment to two men with shovels; that, not to be in each other's way, the men should be from four and a half to six feet apart; and finally, that a shovel full of earth can be pitched by a man twelve feet in a horizontal direction, or six feet in a vertical direction.
>
> The pick commences by breaking ground so far from the counterscarp crest that, by digging vertically three feet, he will arrive at the position of the counterscarp. The excavation is carried on by digging to the depth of three feet, advancing towards the scarp, where the same precaution is observed as at the counterscarp. The earth is thrown forward, and evenly spread and rammed, in layers of about twelve inches, from the banquette slope to the exterior slope.
>
> The time required to throw up a work will depend on the nature of the soil and the expertness of the laborers. From troops unaccustomed to the use of ditching tools, six cubic yards may be considered a fair day's work in ordinary soils, when the earth is not thrown higher than six feet; but when a relay is placed on an offset in the ditch, from four to five cubic yards may be taken as the result of a day's work for each man. Expert workmen will throw up from eight to ten cubic yards at taskwork.

These descriptions generally agree with those given in Captain John Gibbon's treatise on artillery published in 1860. Gibbon makes explicit reference to excavating in sandy soil and claims that, if a pick is not needed, a "man can shovel and load on a wheelbarrow from 15 to 19 cubic yards of earth per day" (Gibbon 1970:445, 448-49). The manual explains a typical earthen fortification wall profile as excavated near Savannah, Georgia (Figure 10).

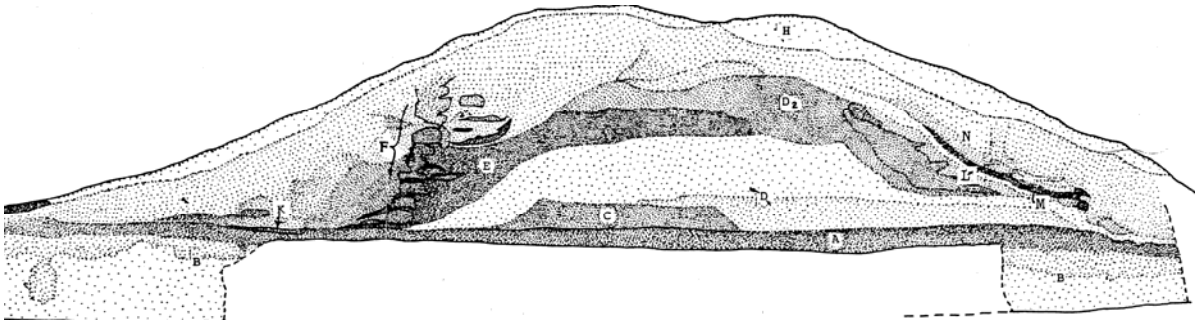

Figure 10. Earthwork wall profile, Causton's Bluff, Georgia (*Babits et al. 1987:V.70*).

The same procedure was used to erect the water battery at Fort McHenry except that, instead of using sand bags for revetting in embrasures and the parapet, logs were used, in part, because they were readily available due to the shipyards and other wood processing industries in Baltimore (Figure 11). In similar fashion, the militia-built earthworks defending the three other streams under investigation should exhibit remnant profiles corresponding to that shown in Figure 10. In that figure, A is the original ground surface. B is the subsurface and C is the surface material removed to create the start of the fortification. D is subsurface material used to build up the parapet. Since the earthwork shown in Figure 10 represents at least two, and possibly three, rebuildings, only A, C, D and E would be found in an intact militia earthwork.


Figure 11. Reproduction water battery section, Fort McHenry. Lazaretto Point in the background (*Photo: Lawrence Babits, 2010*).

Mountaine (1781:158) recommended:

> if your Works are to be erected by Seamen, they will scarcely be over curious in the Profile, and indeed it will require more Time and Hands. . . toward the Land they must at least make their Ramparts above a Man's height, and Cannon Proof, which with their Ditch will be indifferent strong; the parapet may be four Feet high. Next to the Water, Nature has in most Places made a very good Ditch, and this may serve if Time will not permit to finish your Work; yet for the Security of your Men, between your Guns drive Stakes into the Ground, and between them work

> green Boughs, as Sailors pass the Ball when they make Mats; those filled with Earth will serve as Corbeils or Gabions. The Earth you fill these with may be dug from between them . . . then you will have a Line of Ditch work and Breast work. They may be seven Feet high, and foot [banquettes] may be erected on the Land-side for the Men to fire over.

Booms and Obstructions

Blocking approach routes to river-oriented towns and fortifications was often attempted by using floating barriers called booms or by sinking watercraft and other material into the waterway. These obstructions were dependent, in large measure, on defensive forces providing covering fire so they could not be removed or destroyed. Thus, most obstructions in or on rivers were associated with land fortifications.

Booms

Booms "are the only Invention to keep an Enemy out of a River" (Mountaine 1783:152). Mountaine (1783:152-153) provided instructions for creating a boom by stretching a "Cable thwart its Mount, and to that lash Yards, or Top-masts, &, to swim or float it: Without this a Fort is but of little Service, and an Enemy may at Pleasure pass it with the Help of a good Tide and a leading Gale of Wind." According to Mountaine (1783:152-153), the best way to prevent forcing or cutting the boom is:

> to cut down a Number of Batlings or Spars (if there be a Wood near) about 20, 30, or 40 Feet long, more or less, and 5, 6, 7, 8, 9, or 10 Inches Diameter: Having a sufficient Quantity of these at Hand, and two Sheet-anchors in two Long-Boats, moor them in the Place you design your Boom shall begin: Then bend two Cables to these Anchors, and around them place your Spars or Poles, frapping on each with Ratling Stuff, (or better, with larger Rope) 'till the Boom is 7, 8, 9, 10 or more . . . Feet in Diameter, the Cables being in the midst; then take some Iron Hoops, and riveting them together, line the Boom, driving through the Hoop into almost every Spar a Nail. After you have wrought a good Birth from the Anchors, drop them, and continue your Work till you are near the Edge of the River, then over all lash your Spare-yards and Top-masts with your Top-chains, as far as the Channel goes, the remaining Part being wrought as you began, drop two more anchors.

Mountaine (1783:153) goes on to discuss the main boom in the channel:

> To that Part of the Cable in the Channel, that makes the Boom, must Cables be fastened, and over the Clinch let the Batlings or Spars be wrought, near 10 Fathoms of the Cables bent to Anchors laid down the Stream, that the Enemy may not cut those Cables. . . . this boom may be floated to open the River.

Mountaine (1783:154) described how a boom was laid in straight and curving rivers:

> stretching the Boom thwart the River, sloping . . . the lowermost End, which is next the Enemy, being upon the Weather Side. The boom must be at an angle, "sloping" for several reasons, but primarily to avoid a ship riding up and over it with a good wind and high tide, or breaking it. The last aspect of the slanted boom is that it would force the ship to lay alongside the boom, thus placing the ship under enfilade fire from the defending forts, or "rake him fore and aft.

The guns should be firing up, or down, stream at an angle so as to not strike against defensive works across the stream (Mountaine 1783:154, Fig. 4). Interestingly, Mountaine (1783:155) pointed out that "if [the point be] Obtuse it [the fort] may be a Pentagon." Mountaine (1783:156) further noted that "flanks" should be placed with cannon "to gall the Enemy if he attempts to storm the Place in Boats." He further recommended setting "Pallisadoes" at the foot of fortifications or below the water's surface and that "they stand firm, you may set them stooping towards the Enemy, and nail on Braces (Mountaine 1783:157-58).

Obstructions

Obstructions were in addition to booms. The American obstructions were sunken vessels. The problem with obstructions was that, once emplaced, they blocked the channel for both sides. Even if a channel were left through them, the channel was designed to be blocked upon the enemy's approach. While effective, they were invariably removed once the war was over.

Weaponry

Armament on the boats used in the Chesapeake was somewhat limited by boat size. Prior to about 1730, ships' boats were armed only with small arms. After circa 1744, "it seems to have been normal to carry four or six half-pounder swivels for launces [sic] or long boats" but this phrasing does not specify that all the swivels were carried by one boat, rather that the ship carried them for the boats (Lavery 1987:229). By the American Revolution, ships carried more swivels, some of which were used in the tops. After 1795, Lavery felt that swivels were replaced by a carronade, and cited orders of 1794 and 1795 stating that "each launch was to be fitted with a carronade: 24- and 18-pounders for ships of the line, and 12-pounders for small ships" (Lavery 1987:229). Lavery points out the novel feature of boat carronades in that the slide (carriage) extended down the center of the vessel so the gun could be fired from either end (Lavery 1987:229).

The Americans did not adhere to the armaments mentioned by Lavery for the Royal Navy. Vessels in Arnold's 1776 fleet that fought at Valcour Island had a wide variety of weaponry but the gundalows generally mounted two broadside guns, a bow piece, and several swivels. The *Philadelphia* serves as an example in that it had a 12-pounder on a sliding carriage at the bow, two 9-pounder guns were mounted broadside, and eight swivel mountings were found (Bratton 2002:79-80). The *Philadelphia* was 50 feet long, 25 feet in beam, and some 4.5 feet deep, with a crew of 44 (Bratton 2002:22,138). Slightly earlier 1776 gondolas were 60 feet long, mounting one 12-pounder and 12 swivel guns (Bratton 2002:20). A similar diverse assemblage was aboard the British brig *Ontario*, which sank November 1, 1780. This vessel carried sixteen 6-pounders and six 4-pounders, plus twelve half-pounder swivels (Smith 1997:10).

The American cutter on Lake Champlain, the *Lee* was armed with one 12-pounder, one 9-pounder, four 4-pounders, and two swivels (Bratton 2002:57; Chapelle 1949:106). The *Lee* had 65 crewmen and was 43 feet on deck, 16 feet 3 inches in beam, and 4 feet 8 inches deep (Bratton 2002:137; Chapelle 1949:106). The four American galleys at Lake Champlain were fairly standardized. One, the *Washington*, was captured and taken into the British service so a plan has survived. The *Washington* was 72 feet, 4 inches on deck, 20 feet beam and 6 feet 2 inches in depth (Chapelle 1949:106).

Small Arms

Muskets and Rifles

Muskets were carried by both British and American infantry, including Marines. They actually relied on two weapons, the musket, and the bayonet. Sailors from both sides used muskets without bayonets. The musket was a single shot smoothbore flintlock, firing a ball three quarters of an inch in diameter (Darling 1970:15). A fundamental difference between British and American approaches to directing the musket fire can be seen in the commands, which each side used. The British were commanded to, "Present" at which infantrymen leveled their muskets, pointing them in the direction of the enemy. It should be noted, however, that instructions accompanying the command included the expression "taking good aim by leaning the head to the right, and looking along the barrel" (Manual 1775:3, 11, 12; Winham 1969:Part I:16), which does not include a specified target. That the British soldiers were not told to aim, in the sense we use now, is evident when reading further in the manual. Officers were instructed to take special care that "they level well in presenting; the muzzle rather low, and the pieces all dressed even and at the same height" (Winham1969:Part II:14) suggesting uniformity was more important than direct aiming.

The Americans were armed with similar weaponry in that the muskets were single, shot smoothbore flintlocks. In the Revolutionary War, it is not certain what caliber these standardized weapons were but it was either 0.75 or 0.69. By the War of 1812, the Americans were using old French or new American copies of French weapons with 0.69-inch bores. The British were using the India Pattern musket, a slightly shorter and lighter version of the British Short Land Pattern musket which was in common use by British forces after 1797.

While most historians who have not fired one have described the musket as notoriously inaccurate, this is not quite true. Most quote George Hanger without reference to his second comment a few pages further on that says "practice is everything" (Babits 1998:13). Today, well-drilled musketmen, given the opportunity to practice with their weapons, and encouraged to fire rapidly, can deliver fast and accurate fire. A rate of six shots in one minute with five of those shots hitting a man sized target at 80 yards is possible, but was likely not a typical effective rate of fire during the Revolutionary and 1812 Wars. Such a high rate of fire requires a well-drilled firer and a clean weapon, as fouling due to continued use would quickly reduce the rate of fire. Both American and British ordnance officers issued buck and ball, one large ball and at least three smaller (.28 to .36 caliber) balls to their troops. In the Revolutionary War, these cartridges have been reported for Bacon's Bridge (Moss 1985:54), Camden (Moss 1985:177), Guilford Courthouse (Moss 1985:41), and in an archaeological context, the American assault trench at Ninety Six (Holschlag and Rodeffer 1976:65). Multiple loads would have increased both accuracy and lethality on the battlefield. Similar cartridges were contrived during the War of 1812 and they caught the British leaders' attention. Vice Admiral Sir Alexander Inglis Cochrane commented that, "The Enemy Use Three Buck Shot in Addition to the Ball in each Cartridge, we ought to do the Same but I am for adding a fourth placed on top of the Three—and these Never to be Used until Close to the Enemy. Each Soldier having about Twenty in his pouch to load with when at the proper distance" (Crawford 2002:III:290).

A major difference between the Americans and British is the American use of rifles. Rifles have a series of twisting, slanted grooves carved into its barrel's interior surface (rifling). The loading procedure for rifles was slower, because the powder was not always in premeasured cartridges and the ball had to be patched. Even if somewhat slower, an experienced rifleman could expect to fire one shot every fifteen seconds based on modern rapid fire experiments by members of the Brigade of the American Revolution. When fired, the greased piece of cloth which surrounded the ball acted as a gas seal, increasing muzzle velocity, and got caught the rifling, imparting a spin to the ball. These factors resulted in rifles having greater accuracy, range, and striking power than a musket (Table 1).

Most rifles carried by the Americans in the Chesapeake campaigns would have been personal weapons, made by many different gunsmiths and firing a wide variety of ball sizes. Consequently, the men were issued lead to make their own balls by the authorities. There were some rifle units but these were employed away from the Chesapeake during the engagements considered here with the exception of Baltimore when they were used at North Point and possibly at Fort McHenry.

The ranges for muskets were generally limited. Even though there were test firings (Hughes 1997:27-29) at longer ranges, most musketry was fired within 100 yards and usually within 60 yards. The most effective ranges were those under 40 yards, especially if they were using buck and ball. At 30 yards, given the shock effect of a volley, there was enough time to reload and fire again, then get the bayonets down into position to repel any assailants.

Rifle ranges were approximately double musket ranges. Competitions held on the frontier were usually at 60 yards, a figure that correlates well with the written record (Dick 1993:144). Documentary sources tend to mention fairly long range shots but these are not typical. Major George Hanger, Lieutenant Colonel Banastre Tarleton's second in command, provided a wealth of detail on American rifles in the south and rarely commented on ranges over 200 yards (Babits 1998:14, note 11).

A shot fan for muskets (both single ball and buck and ball), rifles, and pistols provides some indications of what shot artifacts can reveal about positioning.

Table 1. Ranges for Musket, Rifle, and Pistol. Measurements in yd.

Type	Effective Range	Maximum Effective Range	Maximum Range
Musket (single ball)	**40**	**75**	**125**
Musket (buck and ball)	**30-35**	**45**	**55**
Musket (buckshot)	**30-35**	**40**	**55**
Rifle	**40-75**	**100**	**400**
Pistol	**15**	**25**	**50**

In this case, the large ball of a buck and ball load might also be considered as having the maximum range of a single ball load.

Muskets were carried in every one of the engagements covered by this project. They appear in pictures of ships' landing parties and in photos of the Hamilton's berth deck (Moore and Keyes 2009). Musket balls should be found at each engagement site while musket parts might appear. If musket parts appear, they may provide clues to troop movements as British and American weaponry differed (Neumann 1967).

Pistols

Pistols of this period were single shot, smoothbore, flintlock handguns (Neumann 1967:150-215; Gilkerson 1993:225-276). Many had rings or belt hooks to fasten them to the sailor until needed (Gilkerson 1993:233-235). There were several variations that often indicate country of origin but these must be very carefully used because they often changed hands. The effective range of a pistol in the flintlock era was probably from 1 to 10 yards. Although a man, if struck at 20 yards, could easily be killed, this distance was somewhat extreme during a boarding action. Pistols were usually issued as a brace, or pair, to selected men in the boarding party (Gilkerson 1993:229).

Cutlasses

A cutlass was a naval "hanger," or short fighting sword (Gilkerson 1991:69). They were used by both sides in both wars covered in this report; often being captured and reused by the other side. They appear in photographs of the sunken vessel *Scourge*, still in position over gunports and in the ship's pump (Cain 1983:82; Moore and Keyes 2009). Some idea of the range of variants that might be encountered can be seen in Gilkerson (1991:69-106) and Neumann (1967:216-327).

Boarding Pikes

Boarding pikes were essentially spears ranging in size from 8 to 12 feet with shafts 1 to 1 3/8 inches in diameter. The longer pikes used during the American Revolution seem to have been shortened to between 8 and 10 feet by the War of 1812 (Gilkerson 1991:56). There is little difference between American and British pikes as both sides had several variants (Gilkerson 1991:48-68; Brown 1967:143-156). Pikes were noted in the War of 1812 vessels *Hamilton* and *Scourge* that sank in Lake Ontario during an August 8, 1812 storm (Cain 1983:82). This type weapon was used at Kedges Straits but is not documented for any of the other engagements discussed here, although boarding pikes were used in the Chesapeake during the War of 1812, for example by the British at Caulk's Field (Ralph Eshelman, personal communication, December 28, 2012).

Boarding Axes

Boarding axes were carried on board ships to help clear fallen rigging during storms or combat. The tool had both a blade to cut rigging and a pickhead to pry hot shot from ship timbers (Gilkerson 1991:25-26). The modern fireman's ax is a descendant of the boarding axe. To assist in dragging away fallen rigging, notches were cut in the underside of the blade (Gilkerson 1991:41). In boarding actions, they were handy weapons. Several variations existed on British and American vessels. They appear as weapons on board the *Scourge* and are mentioned in other accounts (Cain 1983:65). Some idea of the variations can be seen in Gilkerson (1991:25-47). Clearly American boarding axes can be seen in photographs of the sunken *Scourge* and are mentioned in accounts of many other naval engagements (Cain 1983:65; Moore and Keyes 2009).

Grenades

Grenades were hand thrown fragmenting explosives filled with powder. They could take many forms but the most common was probably a small, hollow, cast iron ball ranging in size from 3.0 to 3.5 inches in diameter and weighing two to three pounds (Gilkerson 1993:35-36). The fuse was mounted in a wooden plug inserted into the filling hole, or simply a piece of nitrate soaked line inserted into the filling hole (Gilkerson 1993:36). These explosive devices were more likely used aboard vessels and when boarding than by landing parties.

Aside from a grenade recovered from a British warship sunk in 1778 that was in the Rhode Island Office of Historic Preservation, the best example of a period grenade is from the *Culloden* a Royal Navy vessel sunk in January 1781. This particular grenade retained the wooden fuse and was still filled with powder. The conservators compared it to descriptions in Muller (1780:203-06) but provided artifact measurements that differed. The diameter of the *Culloden* grenade was 3.1 inches and it weighed 3.24 pounds. The diameter of the fuse hole was 5/8 of an inch (O'Donnell and Julian 1985:80-81).

Artillery

Artillery is cannon, relatively long-range gunpowder weapons used on land and sea. For archaeological survey purposes, cannon are the most likely types of weaponry to be found due to their metallic mass. They can also provide vessel identifications if used judiciously. Cannon fall into several distinct categories during the Revolutionary War and the War of 1812 that are discussed below.

Swivel Guns

Swivel guns were small cannon firing shot ranging from a half pound to over one pound. They were often mounted on a ship's rail or in the fighting tops on large men-of-war. They were diminutive cannon that were mounted by means of a yoke that fitted over the trunnions and allowed the gun to point up or down. The yoke's lower shaft was round so the gun could be turned from side to side (Gilkerson 1993:45, 52). Swivel guns were employed on nearly all vessels, providing a versatile type of gunfire. Their small size made them admirably suited for use on ships' boats (Gilkerson 1993:77-80). They were specifically mentioned as being used at Kedges Straits and a possible swivel gun part was discovered during archaeological investigation of a shipwreck believed to be one of the ships from the War of 1812-era US Chesapeake Flotilla (Hopkins and Shomette 1981:24; Ralph Eshelman, personal communication, December 28, 2012).

These could be fired with a single ball or with multiple ball loads. In the latter case, they would be giant shotguns capable of scattering their shot over a wider area. Bore diameters ranged from 1.15 to 2.0 inches (Gilkerson 1993:55). They could range in length from about 15 to 36 inches (Gilkerson 1993:54-64). Swivel guns would be employed in ship-to-ship engagements at ranges from 20 to 150 yards or more. The gun tubes could be brass, actually a bronze called gun metal or bell metal, or iron, affecting how to discover them by remote sensing (Gilkerson 1993:52). Most from Chesapeake engagements probably were iron (Gilkerson 1993:54-56).

There were two forms of swivel gun, the "little cannon" and swivel howitzers that were occasionally referred to as cowhorns/coehorns; however, the term cowhorn/coehorn is more commonly associated

with light mortars favored for their ease of movement over land to lay siege to forts, such as the 1759 siege of Fort Niagara (Gilkerson 1993:83; William Utley, personal communication, July 16, 2013). These guns could throw big shot from relatively light barrels but were of limited range. More importantly, they could unleash a huge volume of rapid fire with multiple loads such as canister. Their varieties are shown in Gilkerson (1993: 83-96).

As cannon evolved into long guns and carronades, smaller forms of the carronade were used as swivel guns, while more traditional long gun swivels were still used throughout the late eighteenth and early nineteenth centuries on both large vessels and smaller ships' boats (Gilkerson 1993:63). The varieties are shown in Gilkerson (1993:51-96).

Long Guns

Long guns were the traditional eighteenth and nineteenth century ship-borne artillery. During the Revolutionary War, long guns were beginning to be replaced, or at least supplemented, by carronades; however, long guns played a major role in American naval fighting due to their longer range. A long gun could throw shot at least a mile, but it was heavier than a carronade firing a similar sized shot.

Carronades

By the War of 1812, carronades formed the major batteries on many ships because they threw a heavier ball with a lighter powder charge and required fewer men to operate. The carronade was a close range, low velocity weapon that fired a very large shot for its weight. The low velocity resulted in far more splinters aboard the target vessel. The trade off was that their shot did not carry as far by a factor of about 60 percent. In other words, a carronade's shot went about one-third the distance of a long gun's (Skaggs and Altoff 1997:109-112). This was demonstrated in the Battle of Put in Bay on September 10, 1813, and in the fight between the *Essex* and two British vessels, *Phoebe* and *Cherub*, at Valparaiso, Chile. In both engagements, the Americans suffered from long-range British fire because the American guns could not reach them (Gilkerson 1993:85; Goldowsky 1988:42-43; Robotti and Vescovi 1999:224-25, 228). Consequently, it was necessary to be fairly close to effectively employ the carronades mounted as broadside guns on the *Protector*. Damage inflicted on the *Ladies Revenge* at Kedges Straits is suggestive of close range carronade fire.

Rockets

Rockets are perhaps the signature weapon of the War of 1812 because they were referenced by Francis Scott Key in his "Defense of Fort M'Henry" (Lord 1977:292-93, 295-97; Whitehorne 1997:191). The key document on rockets is William Congreve's "Details of The Rocket System" (Congreve 1814:53-61)(Figures 12 and 13). Congreve (1814:35) reported that the ammunition consisted:

> . . . of 32-pounder Rockets, armed with carcasses of the following sorts and ranges:-
>
> 1st .- *The small carcass*, containing 8 lbs. of carcass composition, being 3 lbs. more than the present 10-inch spherical carcass. – Range 3,000 yards.
>
> 2nd.- *The medium carcass*, containing 12 lbs. of carcass composition, being equal to the present 13-inch.- Range 2,500 yards.

3rd.- *The large carcass*, containing 18 lbs. of carcass composition, being 6 lbs. more than the present 132-inch spherical carcass.-Range 2,000 yards.

Or 32-pounder Rockets, armed with bursting cones, made of stout iron, filled with powder, to be exploded by fuzes [sic], and to be used to produce the explosive effects of shells, where such effect is preferred to the conflagration of the carcass. These cones contain as follows:-

Small.- Five lbs. of powder, equal to the bursting powder of a 10-inch shell.- range 3,000 yards.

Medium.- Eight lbs. of powder, equal to the bursting powder of a 13-inch shell.- Range 2,500 yards.

Large.- Twelve lbs. of powder.-Range 2,000 yards.

Congreve's estimated ranges may be questioned but Adye's published 1813 table tends to support Congreve's claims (Table 2).

Table 2. Rocket Ranges. (*After Adye 1813 as cited in Graves 1989:23*).

Type	Degrees of Elevation	Extreme Range in Yards
42-pounder Carcass & Shell	**60+**	**3500**
32-pounder Carcass	**55-60**	**2000-3000**
32-pounder Shell	**50**	**3000**
32-pounder Case (large)	**55**	**2500**
32-pounder Case	**50**	**3000**
32-pounder Explosion	**55**	**2500-3000**
12-pounder Case (large)	**45**	**2000**
12-pounder Case (small)	**45**	**2500**

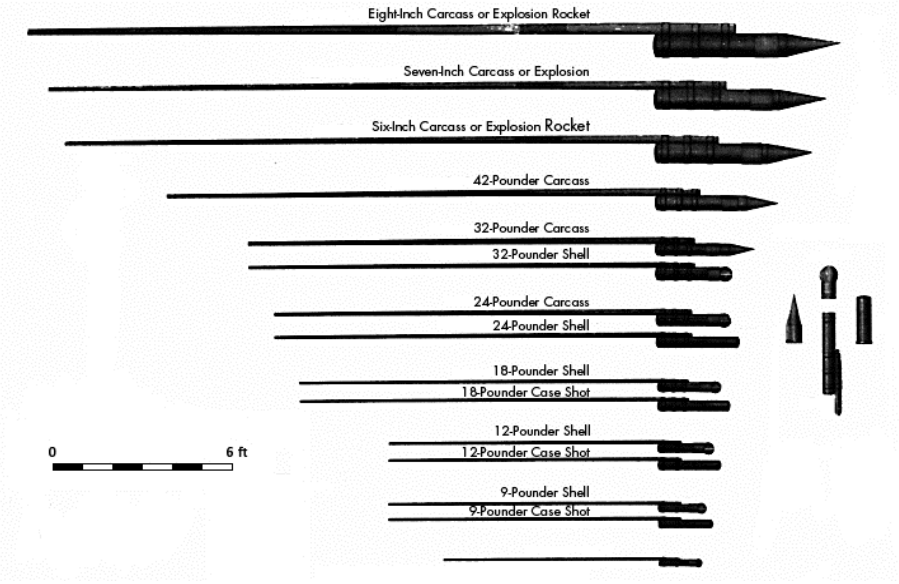

Figure 12. Congreve rockets (*adapted from Congreve 1814: 54, plate 13*).

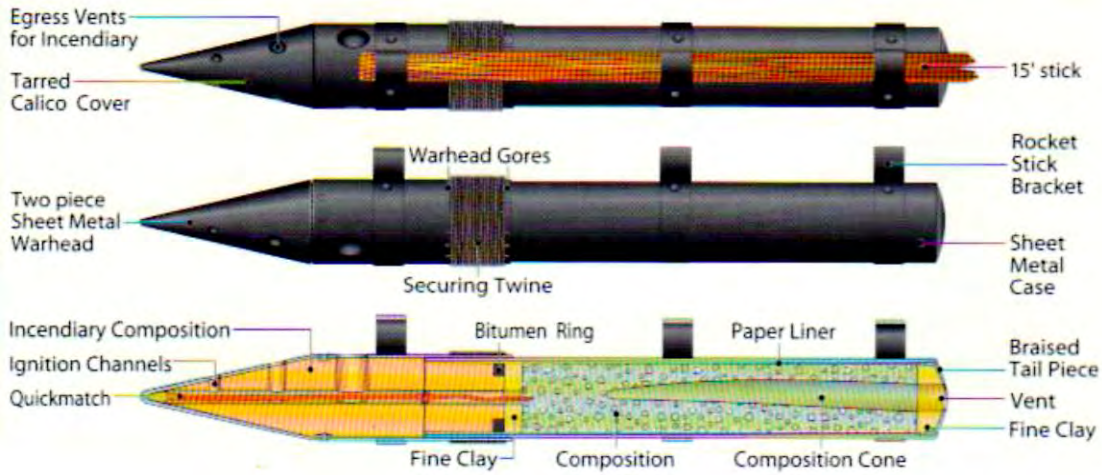

Figure 13. Congreve 32-pounder rocket (*Franklin 2005; Eshelman 2005:10*).

Congreve later (1814:47) noted that the "12 and 18-pounder shell Rockets ricochet in the water remarkably well at low angles." This observation leads to questions of accuracy if observers did not know that ricocheting the rockets was intended. As late as 1853, "There can be no doubt that the rocket as at present manufactured has one very serious defect, namely, its great irregularity of flight" (Boxer, cited in Congreve 1814:65).

Mortars

Mortars are short-barreled cannon used to throw fairly large, hollow projectiles with relatively small powder charges that make them low velocity. They are designed to fire with a high arcing shot so as to pass over obstructions (indirect fire) making them ideal for attacking fortifications (Ripley 1970:57; Olmstead et al. 1997:7; Muller 1780:65). The first American mortar vessels were the 1805 *Spitfire* and *Vengeance* when both 8-inch and 13-inch mortars were on hand (Olmstead et al. 1997:7). Of interest to this report is the possibility that Hughes Furnace (Cecil or Principio Furnace) outside Havre de Grace, Maryland, may have been producing 10-inch mortars, a possible cause for the destruction wrought by the British on May 3, 1813 (Olmstead et al. 1997:8). Muller (1780:68-69, 85-86) provided dimensions of sea mortars for the 10- and 13-inch sizes. The British mortar ships were purpose-built and mounted one, 13-inch mortar abaft of the foremast and one, 10-inch mortar forward of the mainmast (Lyon 1993:281).

Range was dependant on the size of the mortar and the powder charge employed. At 45 degrees elevation, a 10-inch mortar with a 4-pound powder charge could loft its bomb 2,028 yards. With a 10-pound charge, the shell would carry 4,250 yards (Ripley 1970:57). Another publication drawing from contemporary manuals shows the extreme effective range of 8- to 13-inch mortars as being from 2,000 to 2,900 yards (Gooding 1972:19). Muller (1780:87) observed that the powder charge was never over 15 pounds because it would damage the tube. Muller (1780:72) felt that land ranges in excess of 1,500 yards was a maximum range because accuracy dropped off dramatically after that distance.

Artillery Projectiles

Artillery Projectiles were fired from cannon. Aside from rockets, there were four major classes, solid shot, grape shot, canister, and shells. Some British shot were often marked with the "broad arrow" cast into the surface (Gooding 1972:41).

Solid Shot

Solid shot is just that, solid spherical balls of iron propelled from cannon. Solid shot were designed to crush or break what they hit. Shot weights were standardized and gave distinctions to the cannon (Table 3). A cannon that fired a ball weighing 32 pounds would be a 32-pounder (Bell 2003:43; Ripley 1970:255).

Table 3. Solid Shot Sizes & Ranges. (*after Caruana 1979:14; Simmons 1812:201-03 cited in Tucker 1989:42-43); and Muller (1780:xxxviii*).

Long Guns	Diameter of Shot (inches)	First Graze (yards)	Maximum Range (yards)
42-pounder	7.88	-	1955
32-pounder	6.25	-	1900-2700
24-pounder	5.823	1200	4610
18-pounder	5.292	1200	4191
12-pounder	4.623	-	3688
9-pounder	4.20	-	3352
6-pounder	3.668	-	2932
4-pounder	3.204	-	-
3-pounder	2.913	-	2326
0.5-pounder	1.58	-	-
Carronades	**Diameter of Shot (inches)**	**Point Blank (yards)**	
24-pounder	5.823	300	-
18-pounder	5.292	270	-
12-pounder	4.623	230	-

Note: Shot size for carronades and long guns with same diameter in these sizes (Ripley 1970: 371-72, 379; Tucker 1989:125).

The above composite view of shot does not entirely agree with distances provided by Fortune in his 1780 study (Table 4).

Table 4. Range Data from Fortune (1780:11).

Pounder	Point Blank (yards)	Utmost Range (yards)	Utmost Range (miles)
1	400	2000	1.125
3	500	2500	1.5
6	666	3330	2 nearly
9	716	3580	2
12	733	3665	2.08
18	615	3080	1.25
24	650	3250	2 nearly
32	633	3165	1.75
42	583	2915	1.1

Grape Shot

Grape Shot was a multiple load, usually of nine shot, fitted around a spindle with an iron plate at each end to ensure the correct diameter was maintained. The shot were encased in canvas that was bound up with rope giving the appearance of a bunch of grapes. The size was referenced in terms of solid shot as the diameter of the metal plates was equal to the diameter of certain weights of solid shot. The grape shot balls were sized accordingly and can be used as an indicator of the cannon's size (Ripley 1970:379; Caruana 1979:18) (Table 5).

Table 5. Sea Service Grape Shot (*Abstracted from Caruana 1979:18; Ripley 1970:379*)

Caliber	Count of Balls	Diameter of Balls (inches)	Weight of Balls
42-pounder	9	3.13-3.17	-
32-pounder	9	2.86-2.90	-
24-pounder	9	2.42	2.0 lb
18-pounder	9	2.20	1.5 lb
12-pounder	9	1.92	1.0 lb
9-pounder	9	1.80	13 oz
6-pounder	9	1.52	8 oz
4-pounder	9	1.38	6 oz
3-pounder	9	1.21	4 oz
1.5-pounder	9	0.96	2 oz
1-pounder	9	0.87	1.5 oz
.5-pounder	9	0.69	0.75 oz

From the table, it should be pointed out that the 0.5-pounder grape shot balls, if they were lead, they would be indistinguishable from musket balls. Individual grape shot probably would not register on a magnetometer unless they were iron and very close to the sensor.

Canister

Canister is "a non-explosive cylindrical projectile consisting of a base plate, a top plate, and sheet metal or thin iron sides, filled with small iron or lead balls or other object" (Bell 2003:37). The projectiles are always cylindrical and designed for antipersonnel use at short range (Bell 2003:90). Individual canisters balls were standardized and can provide information about the cannon that fired it (Bell 2003:90; Ripley 1970:379).

Shell

Shell is "an explosive smoothbore . . . projectile, designed to cause the maximum damage from the blast when the shell explodes" (Bell 2003:41). Shells were always spherical (Bell 2003:43). When used in mortars, a shell could also be called a bomb (Olmstead et all 1997:19, 155). For field and ship guns, shells were later in time, a system of fusing shells was developed by Lieutenant Henry Shrapnel circa 1784 (Peterson 1969:80). Mortars fired shells (bombs) earlier because the fusing was somewhat different and the projectile less likely to explode on leaving the tube. The fuse was ignited by the muzzle blast as a standard procedure about 1651 (Olmstead et al. 1997:7). Of interest to the Fort McHenry story is the comment by Muller that "as to the fuse falling uppermost or not, that is of no detriment, since the composition of fuses is such, that nothing but an absolute stoppage from the air is able to choak [sic] them; for they burn in water as well as any other element" (Muller 1780:90). This statement appears to belie the myth of the soldier pouring water from his canteen on a bomb that rolled into the Fort McHenry magazine during the bombardment (Lord 1977:281).

During this time period (1775-1815), mortar shells were fully packed with powder to more effectively rupture the shell and propel the fragments. Later, the shells could also contain canister or musket balls so the powder charge was much reduced (Ripley 1970:57). The bursting charge was designed to fragment the shell. When the shell detonated, there was "little scattering of the balls, they fell within a circle roughly equal in diameter to the height of the burst above ground, and struck with sufficient force to kill' (Ripley 1970:57). Loaded with powder, a mortar bomb could weighed as much as 200 pounds, and it would still be possible to lob it over 4,000 yards (Lord 1977:278).

Shot Fans

Distribution of shot from its firing position is described in terms of shot fans, shot cones, and beaten zones. These terms refer to where the bullets land when gravity over takes them or when they strike something. Working with known ranges and plotted distribution of artifacts, it is theoretically possible to establish the point from which the shot were fired (Sivilich 1996). The different sizes of shot from the variety of weapons used in the various engagements, known terrestrial positions, and shot sizes, allow for reconstructing portions of the historical record, either by working "back" from clusters of fired shot, or by projecting out from known firing positions.

4.0 *CATO* AND *HAWK* AT CEDAR POINT (1781)

Lawrence E. Babits, Christopher T. Espenshade, and Sarah Lowry

Battle Chronology and Overview

The demise of the *Cato* and *Hawk* as the result of British interdiction of Maryland exports occurred on the night of January 22, 1781 (Figure 14). Briefly, a flotilla of at least four Maryland based vessels tried to leave Baltimore and exit Chesapeake Bay while carrying cargoes of flour. These vessels were also licensed as privateers and carried larger crews and armament than a normal merchantman. The ships were intercepted by British flotilla of four vessels that had learned of their impending departure and were cruising off Cedar Point, St. Mary's County, Maryland, on the night of January 22. To avoid capture and save their cargoes, three Maryland vessels were run ashore, the fourth escaped. The British sent boarding parties onto the *Cato* and *Hawk*. The *Hawk* was burned but while inspecting the *Cato*, the magazine detonated killing sailors of both sides. Salvage of the vessels then occurred by local Maryland militia and other citizens.

This section is something of a misnomer because there was no battle, per se. Instead, three, possibly four, American ships moving south along the Chesapeake's western shore in an effort to reach the Caribbean were intercepted by a British flotilla. Three of the Maryland vessels were run ashore, the *Cato*, the Hawk, and the *Nautilus*. The forth vessel, possibly the *Fox*, escaped. There are few details about the voyage down the bay and very little is known about the encounter. Once ashore, the vessels were boarded by the British who moved in on them using small boats to take them as prizes. While going through the *Cato*, the magazine was ignited killing some 10 British and six Americans (Maryland 1930:37).

METT-T Analysis

Mission

The American mission was to get four vessels loaded with flour to the Caribbean to supply the French. They obtained Letters of Marque and Reprisal prior to leaving Baltimore. Their primary mission was to evade British naval forces operating in the lower Chesapeake, get to the Caribbean and dispose of their cargo. A secondary mission was to capture British and Loyalist vessels they might encounter. To do this, they had to avoid any British or Loyalist vessels cruising in the lower Chesapeake. The British were attempting to interdict all American shipping in the Chesapeake. On the night in question, they were trying to intercept the flotilla coming down the Bay, both because of its cargo and because the ships were licensed as privateers.

Enemy

The British flotilla consisted of a frigate, a sloop of war, one brig, and a schooner. The four vessels had come up the "in chase of the Baltimore fleet" (Maryland 1930:38). None of these vessels are named. The one reference to a named vessel is the *Iris* (Maryland 1930:37); but that frigate was at Hampton Roads according to its logbook. Without names, the vessel armaments and dimensions are impossible

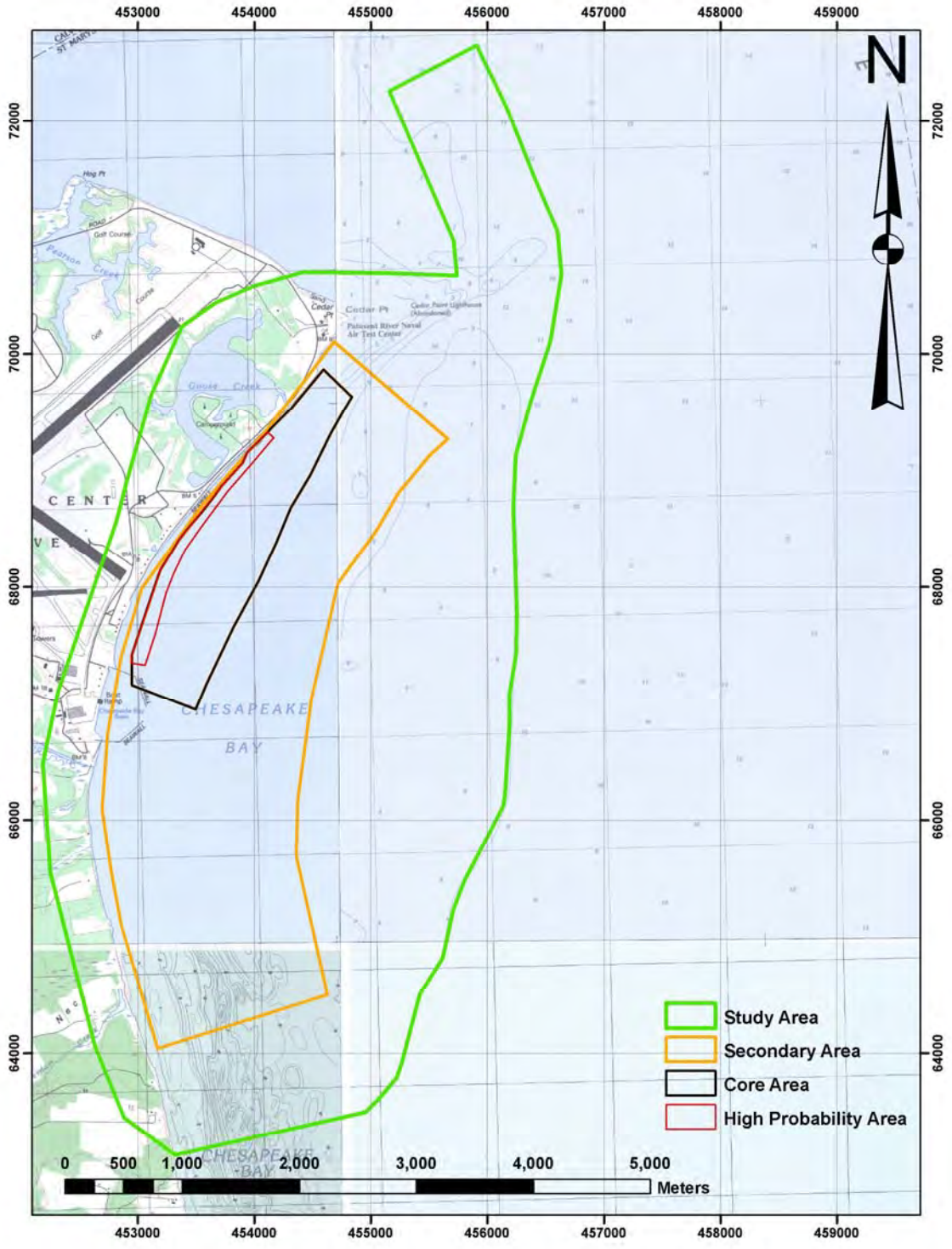

Figure 14. Map of Core and Secondary Areas for *Cato* and *Hawk* at Cedar Point (*USGS Quadrangles Barren Island, Point No Point, Solomons Island and St. Marys City; after a map by Sarah Lowry, New South Associates*).

to state with certainty. Suffice to say, the frigate and sloop of war almost certainly outgunned the Maryland vessels and the schooner would have allowed pursuit into shallow waters. The frigate and sloop of war also had a complement of small boats that were probably armed and would not have been affected by shoal waters.

Terrain

Key Terrain

Key terrain relates to the rapidly shoaling waters along the Chesapeake's western shoreline (Figure 15). Water depth was a key factor in potentially allowing the Baltimore vessels to escape because the deeper draft British could not come in so close. To some extent, the low shoreline might also be considered a key terrain feature because forest growth may have obscured British lookouts by masking the American masts and rigging.

Obstacles

Close inshore below Cedar Point, the bottom shoals rapidly upward and there is a low (5-12 feet) bluff line above a beach. In the eighteenth century, this shore probably would have been covered with trees that grew over 40 feet high. Coupled with littoral drift and the entrance of the Patuxent River just to the north, there are also sandbars off shore that could prove difficult to negotiate without a knowledgeable local pilot. The direction of the wind would play a role as an obstacle. A southern or southeastern wind would be undesirable because it would put the inshore Maryland vessels on a lee shore with little maneuverability. It is most likely that the wind was not an obstacle and that all ships were moving south with a northern (northwest, north, or northeast) wind.

The most important aspect of this shoreline is that it suddenly shoals as the bottom goes from 20+ feet 600 yards offshore to four feet within 100 yards in some places. The shift in bottom is dramatic as it occurs within a 400-yard east-west (shore to bay) line. Outside the 600-800 yard line, the bottom is fairly deep and would accommodate deep draft vessels. The most dangerous point on this section of the Bay's western shore would be at Cedar Point, the southeastern border of the Patuxent River's mouth. Here, shallows extend out a considerable distance. It is unknown if this configuration existed in 1781.

Cover and Concealment

The Maryland ships headed south at night, contending with the dark of the moon and possibly with fog as well. By staying closer inshore than the British patrol routes, there would have been some concealment against the mixed background provided by the surf, low bluff and trees along the shore. The same moon and potential fog conditions as concealment would apply to the British.

Observation and Fields of Fire

Observation was equal for both parties as the zone between the vessels was open water. Observation was somewhat limited as the moon was in last quarter on January 17, 1781. The new moon did not rise until January 24 (NASA 2010). The darkness obscured visibility. The other limitations on observation were those imposed by darkness and weather, with the additional consideration of distance. Distance would affect firing effectiveness depending on the type of cannon carried by the vessels.

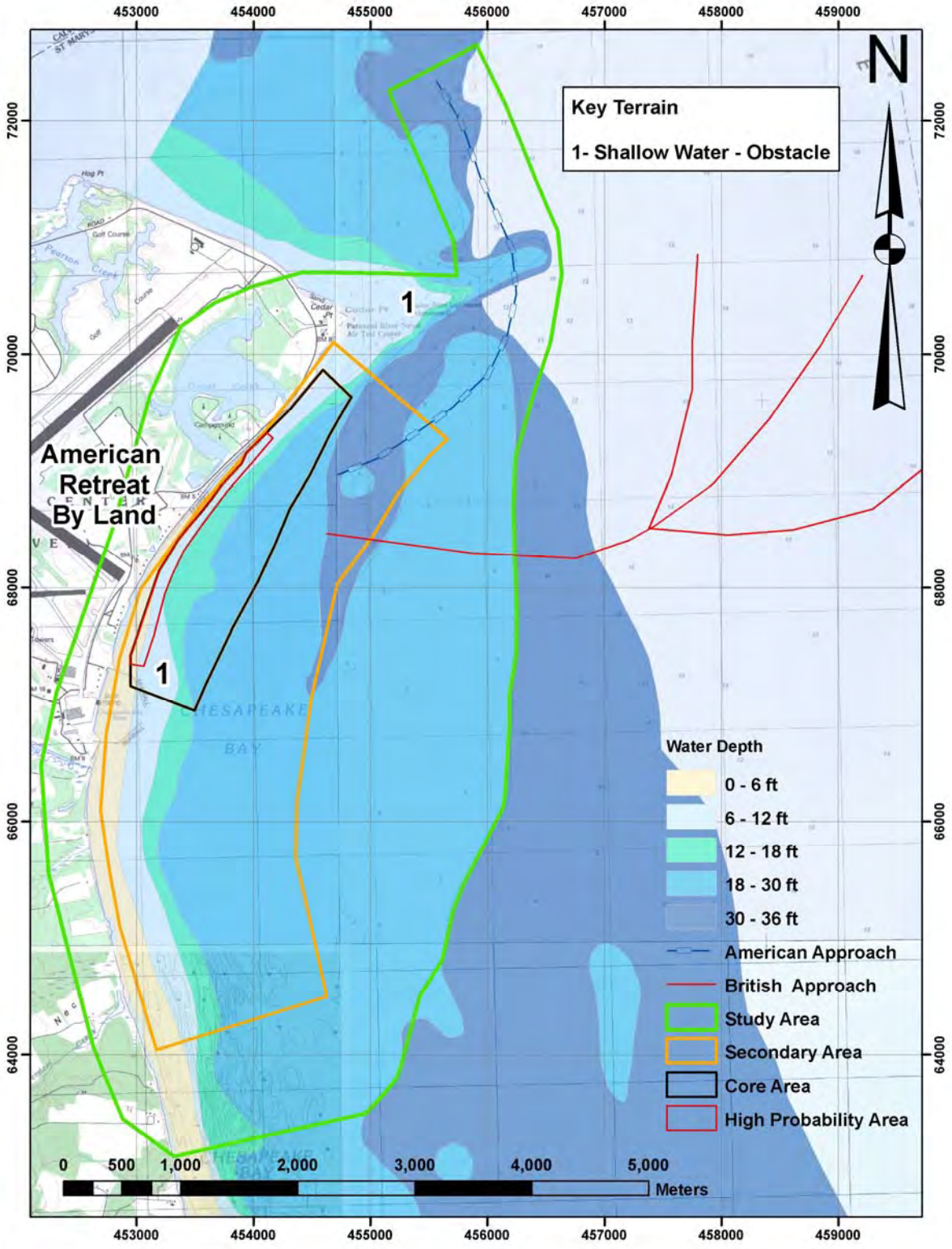

Figure 15. *Cato* and *Hawk* at Cedar Point – Key Terrain (*USGS Quadrangles Barren Island, Point No Point, Solomons Island and St. Marys City; after a map by Sarah Lowry, New South Associates*).

Avenues of Approach

The Maryland ships had an inshore lane that was constricted by shallow water to their starboard (west, right) side. They were restricted to the east by trying to avoid observation by lookouts on board the patrolling British vessels. The inshore route was potentially difficult due to sandbars and shoaling.

Weather

Several weather-related aspects need to be considered. The most important was a following wind out of the north. It is possible the wind shifted somewhat. If the wind did shift to the east or southeast, the long fetch would increase wave action, driving the Maryland vessels westward toward the shore. Such a shift would also help move the British boarding parties toward the grounded vessels. The possibility of fog due to warmer water and land close inshore should be considered as well. Finally, the tidal difference must be considered as it relates to the ships' draft.

The largest British vessel on patrol, a frigate, drew about 15 feet, and could not have operated any closer than 400 yards of the shoreline. The Maryland vessels, *Cato*, *Hawk*, and *Nautilus*, drew between four and six feet. Since the tide along Cedar Point is approximately two feet, there would be a window of opportunity for the Marylanders to move closer inshore that must be considered.

Troops Available

The Maryland, or American, flotilla, consisted for the *Cato*, *Hawk*, *Nautilus* and a fourth ship, probably the brig *Fox*. The *Cato* is described as an armed brig (Maryland 1900:187). In 1780, brigs were typically two-masted vessels but of varying length, beam and depth of hold. References to the *Cato* indicate that it served as a Maryland State Navy vessel prior to its use as a transport with a cargo of flour (Maryland III:217). When she was loaded with flour at the end of December, somewhere between 950 and 1,000 barrels were aboard (Maryland 1900:211). Together with the schooner *Nautilus*, the *Cato* received:

80 Muskets;
80 Cartridge boxes;
2631 cartridges in two barrels (32.8 per musket which agrees with the flints issue);
200 gunflints;
16 Cartridge boxes (pass boxes for cannon?);
2 leather pouches;
17 vent picks ("prickers");
8 priming horns;
6 Linstocks;
7 bunches grape shot made up for 4-pounders;
4 boxes with 250 ready filled cartridges for 4-pounders;
150 ready filled cartridges for 3-pounders;
204 empty 4-pounder cartridges;
100 3-pounder empty cartridges;
10 casks powder 50 pds French weight;
200, 4 pound shot;
150, 3 pound shot;
50 pikes;
6 hand spikes; and
4 gun boxes (Maryland 1900:187).

The cannon for the two vessels were both three and four-pounders. This list shows that there were probably as many as 12 broadside guns between the two vessels assuming that only half the guns would be firing at a time. It is possible that each 3-pounder was allocated 25 rounds for a total of six guns, "ready filled", with another 17 cartridges yet to be made up. In the same vein, it is possible to suggest that there were possibly as many as 10 4-pounders with 25 ready-filled cartridges on hand. These figures would allow five 4-pounders in a broadside and three 3-pounders. These figures agree well with the eight pass boxes and 17 vent picks and are also correct for eight priming horns.

The personal weapons indicate at least 80 men between the two ships. Each musket was allocated 32.8 cartridges suggesting that the muskets may have been French 0.69-caliber Charleville weapons, as the French cartridge box held 40 rounds. The 50 pikes suggest that there were also men for boarding parties, perhaps sailors and/or artillerymen who were not necessarily charged with using small arms.

This interpretation of men and guns is supported by a December 30 reference to the Letters of Marque and Reprisal issued to Captain Benjamin Weeks of the *Cato*. In the letter, it was noted that the *Cato* mounted 14 carriage guns, had a crew of 40, and belonged to Samuel Smith, William Smith, Daniel Bowly, and John Gwinn of Baltimore (Maryland 1900:257). If the *Cato* had 12 4-pounders and two 3-pounders, these figures tend to match the issues of shot.

The *Hawk* appears in the records as a brig (Maryland 1900:236) and brigantine (Maryland 1900:229). In the reference to *Hawke* as a brig, the vessel was rated at 113 tons with an 80-man crew (Maryland 1900:236). The *Hawk* was authorized to load up flour under her commander John Bull. When authorized, the *Hawk* was in Baltimore along with the schooner *Unity* (John Elliott) (Maryland 1900:229). A week later, the *Hawke* [sic], master John Bull, a brig of 113 tons, mounting 10 carriage guns and crewed by 30 men was issued a letter of Marque and Reprisal (Maryland 1900:236). The brig *Hawke* and the brigantine *Hawk* were the same vessel as evidenced by her commander being John Bull. The vessel was owned by Ridley & Pringle from Baltimore (Maryland 1900:236).

The *Nautilus* was a schooner (Maryland 1900:187), commanded by Captain James Kiersted (Maryland 1900:241). The *Nautilus* was rated at 103 tons, carried eight carriage guns, and a crew of 20. The ship was owned by John Dorsey & Company of Baltimore. As with the other vessels, Letters of Marque and Reprisal were issued, on January 13, 1781 (Maryland 1900:274). Along with the *Cato* (Benjamin Weeks in command) and the Brig *Fox* (Thomas Steel in command), the schooner was permitted to load a cargo of flour to be taken aboard "for the purpose of procuring Cloathing and other necessaries" on 11 December, 1780 (Maryland 1900:241).

Time Available

Time Available was of the utmost importance to both sides. The Marylanders had to use a narrow window of time linked to the night hours, phases of the moon, tide and weather, to cover their movement and negotiate relatively shallow water. The British had to be in the right place at the right time to interdict the American movements along the Chesapeake's western shore.

Principles of War

Objective

Objective in this case is a subset of the mission. The British objective depended on maintaining their duty station and interdicting any shipping. Due to their weaponry, they retained the initiative because the Maryland vessels would try to avoid them. The Marylanders had to elude the British patrol and escape the Chesapeake. Both objectives are obvious.

Offensive

Offensive, or initiative, was in the hands of the British, in large measure because of their firepower. While the Maryland vessels were initiating the activity by trying to slip out, avoidance of the British patrols was of primary importance, showing that the British retained the initiative. The Maryland vessels were on the tactical defense off Cedar Point because they wanted to remain as passive and unobserved as possible while maintaining steerage way.

Maneuver

Maneuver was restricted by external constraints. The British had a patrol station to maintain. The Marylanders' options for maneuver were restricted by land and shallow water to the west whilst the British patrols restricted movement to the east. They were endeavoring to sail south out of the Bay and then to the Caribbean.

Mass

Mass is an interesting concept in that the Marylanders had the same number of vessels but since mass is defined as superior firepower at the critical point and time, only the British achieved mass. Their weaponry clearly outgunned the four American vessels.

Economy of Force

Economy of Force relates to using enough power to get the job done. Given that the frigate and other British ships caused the Maryland vessels to be deliberately run aground, the British used economy of force successfully. The Americans did not and, as a result, were forced ashore to save their cargoes.

Unity of Command

Unity of Command for the British is fairly simple. There was an established chain of command with an existing hierarchical structure, which caused small boats to go inshore and board the Maryland ships. The Maryland vessels sailed as a group but there is no surviving evidence that they were organized as a military flotilla would be. The captains appear to have individually opted to put their ships ashore to save the cargo.

Security

Security means preventing the enemy from learning about your activities while obtaining information about the enemy. The Maryland government attempted to keep all ships and boats in Baltimore harbor about the time of the flotilla sailing. This was an effort to deny British supporters information about the precise departure time. In this case, it is possible that there was a security leak because the British

seemed to suspect vessels would be attempting to slip by the patrols at the time the vessels sailed. The British were equally unable to protect information about their movements because they were clearly visible to anyone watching from the shore and Cedar Point was the residence of a pro-American.

Surprise

Surprise is a force multiplier in combat. In this engagement, both sides seemed to be aware of the other and that there was danger. Consequently, they should be seen as being alert to potential enemy activity. The one surprise may be that the American vessels, with their local knowledge, were driven aground. The grounding was not necessarily a surprise, however, as it was done to avoid capture.

Simplicity

Simplicity is to keep things uncomplicated. The British only had to maintain their patrol and choke off available deep water to keep the Maryland vessels from getting away. The Marylanders had to elude the British. On the face of it, the Marylanders had the more difficult task.

Interpretations

Cato as an archaeological site will prove interesting in terms of assessing the vessel, but it is also going to be important for assessing what happens when a ship's magazine blows up. Comparison with the Massachusetts ship *Defence* (Ford and Switzer 1982; Switzer 1978, 1984) for planning how to approach the vessel is recommended.

Between Smith, Ridley, and Dorsey, there are links to the entire East Coast privateering community. Until the British burned out New Bern, North Carolina in 1781, they could have been operating there as well as Baltimore. The Chesapeake was a free-range area for both sides. Baltimore grew because of shipping wheat out during the war. The flour on board all three vessels was not an isolated shipment nor was the British interdiction attempts. No names were given for the British ships but they operated in conjunction with Loyalist ships, largely out of New York. While there is a contemporary statement that the *Iris* provided men, and possibly boats, to board the *Cato* and *Hawk*, these men had to have been on detached service because the Iris was still in Hampton Roads according to its logbook.

The key archaeological elements about Cedar Point are that the *Cato* was aground with the water washing in and out. The *Hawk* was burned but had been run aground. The *Nautilus* got off. Being aground limits the survey area dramatically because the 15-foot depth (2.5 fathoms) comes in fairly close to the shore. Eighteenth-century brigs and schooners rarely drew 15 feet so that can serve as a "bayward" boundary. This is clearly shown on the nautical charts and a high probability zone for the vessels should almost certainly be inside the three-meter (10-ft) contour line (See Figure 15).

The USGS topographic maps (Solomon's Island, St Mary's City) provide a means of identifying a potential survey area below Cedar Point as well as a core zone, and a high probability zone. Survey lanes should run as close inshore as the survey vessel can get to the six-foot depth contour. In most cases, this is within 150 yards of the shore until opposite the Pine Hill Run/Chesapeake Bay Basin. Below Pine Tree Run, the six-foot contour is more variable but still within 200 yards. Again, the highest probability zone of the core area is based on the three-meter (10-ft) contour line. The vessels were deliberately run

aground and, given their draught, this contour line likely marks the outer (bay side) of the most likely zone in which their remains will be found.

Since the local militia were salvaging barrels of flour, it is likely that they eventually salvaged some guns but they may not have recovered all of them. Some from the *Cato* are probably in the water because of the explosion that broke the ship open. There may be materials from the *Nautilus* because this schooner had to be lightened to get her off as it was "high up." A lot of the *Nautilus*'s rigging was taken, and it had to be towed back to Baltimore.

There should probably be three distinct magnetic concentrations. This is based on the assumption that the *Nautilus* was stripped of some materials to lighten the vessel enough to get it off the bottom. While rigging and cargo were saved in part, some guns and ammunition were moved ashore to protect the grounded vessels. The possibility of lost shot and possibly guns marking the *Nautilus*'s grounding location must be considered, although it is unlikely. This site would be the closest to the shore of the three concentrations.

The *Hawk* would be farthest away from the shore and represented by a concentration with evidence of burning. It would be concentrated because the vessel did not explode. Guns should be present along with ammunition, probably for 3- and 4-pounders.

The *Cato*'s remains would be farther from shore than the *Nautilus* materials but not as far out as the *Hawk*. The *Cato*'s structure should evidence scattering similar to that noted for the *Defence*, which also blew up (Bayreuther 1984:68-69; Ford and Switzer 1982:54, 108-09). The vessel was noted as being on the bottom but damaged enough that the water came into it through the ruptures caused by the explosion. This observation suggests that it was not in water much over five or six feet deep. This site would be marked by concentrations of 3- and 4-pound shot, as well as scatters of the same size. Cannon of those sizes should also be present as there was no mention of their salvage.

5.0 THE BATTLE OF KEDGES STRAITS (1782)

Lawrence E. Babits, Christopher T. Espenshade, and Sarah Lowry

Battle Chronology and Overview

The Battle of the Barges occurred on November 30, 1782 in Kedges Straits. The engagement took place on waters between the Tangier Islands as described in the eighteenth century (Figure 16). Today, they are South Marsh Island and Smith Island. The Americans were trying to end raids and vessel captures by a Loyalist flotilla from New York that had been harassing the Lower Chesapeake during November 1782. The Loyalists were American colonists who remained loyal to Great Britain during the Revolutionary War. The Loyalists were attempting to maintain the initiative by defeating the Americans.

In response to complaints about earlier raids (see Peden 2000:217; 2001:81; Maryland 1900:XLV:31, for typical examples), the Maryland Assembly issued commissions and arranged for vessels to patrol the Chesapeake (Maryland 2000:611, for example). The flotilla was assembled during the late spring and early summer 1782 but recruitment continued through the year (Maryland 2000:611). The flotilla was placed under Commodore Zedekiah Whaley.

In November 1782, the flotilla was operating in the southern Chesapeake, endeavoring to protect the eastern shore and its islands from British Loyalist privateers. At the time the British were discovered, Whaley's flotilla was operating in what is today called Tangier Sound, the body of water between the eastern shore and a line of relic dune islands running north-south parallel to the Eastern Shore.

The narrative of this "campaign" begins with the maneuverings of the two flotillas. The earliest precise date is Wednesday, November 27, 1782, when the Marylanders lay in Onancock Creek where "we had been windbound for several days." The wind was apparently from the south or southeast because it "brought them into the Chesapeake" (Handy 1782). Since Onancock Creek is on Tangier Sound, any movement to engage the flotilla when it was "on the seaside at Chinqateague [sic] Island" would have been virtually impossible if the wind was from the south or southeast.

The American flotilla left Onancock Creek "about 1 pm" going to meet with a "small privateer … lying off Watts Island with four prizes" (Handy 1782). Captain Levin Handy is not specific, but the privateer was probably American with British prizes, since the British were spotted "sailing S.S.W." when the Americans crossed Onancock Bar.

Handy believed there were seven British vessels, which were "barge rigged" and thought one might be a galley (Handy 1782). The supply schooner *Flying Fish*, whose captain was named Daniel Bryan, was sent to inspect the new ships because it sailed closer to the wind than the other American vessels (Handy 1782). Captain Bryan returned and said that one vessel was a galley, "which confirmed a report we had of a galley joining them" (Handy 1782). The repeated references to what the British Loyalists were doing are indicative of a good American intelligence network.

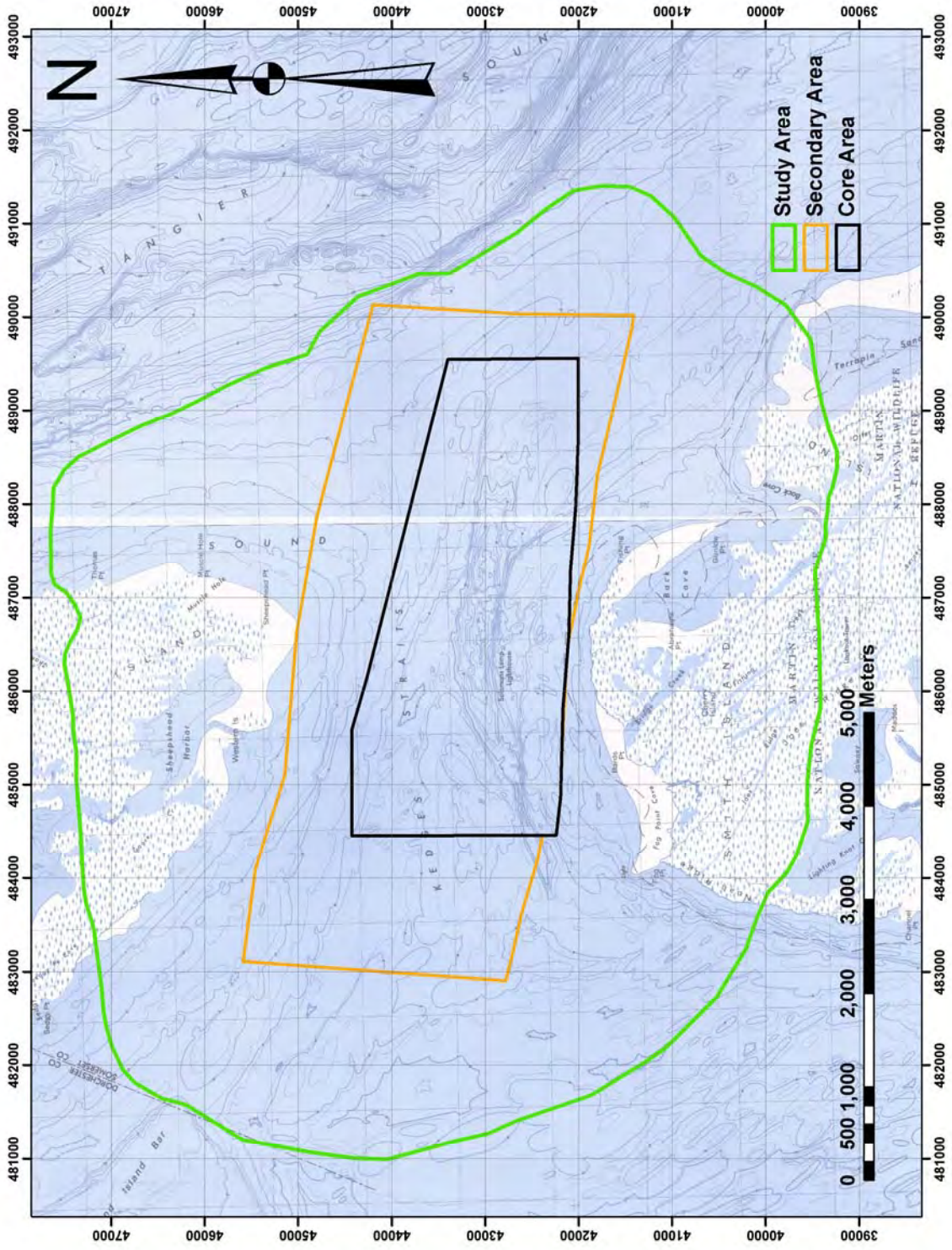

Figure 16. The Battle of Kedges Straits (*USGS Quadrangles Kedges Straits and Terrapin Sand Point; after a map by Sarah Lowry, New South Associates).*

The British ships stayed on a course bearing for Tangier Islands. At this point, there must have been a meeting of American commanders because Handy noted "It was generally concluded (though I must confess, contrary to the Commodore's or my own opinion) to push after them" (Handy 1782). Apparently the Marylanders started off in pursuit but found, as Handy (1782) reported, it:

> would be impossible to gain them before night, I was much against pushing them, and gave such reasons to the Commodore, that he determined not to risk an engagement in the night, (I imagine that if I had never seen anything of the kind in the night, I might have been as anxious as any other offer, but from what I had experienced in the land service, convinced me, that expeditions in the night gave a shock to the greatest veteran.

Handy was referring to his prior combat experience, including the Battle of Germantown fought in fog after a night march and the storming of Paulus Hook. Handy was given the thanks of Congress for his heroism at Paulus Hook (Steuart 1969:92, 158,160).

The American flotilla then stopped at Watts Island, south of the Tangier Islands, about 7 pm, coming in during a "gale of wind at S.W" (Handy 1782). The flotilla was then wind bound for November 28 because the "wind being at N.W. on the next day, put it out of our power to reconnoiter the enemy, as they lay almost in the winds eye from us" (Handy 1782). By evening, the Flotilla, using the wind returned to Onancock Creek which they reached about 5:30 pm or "a little before dark" (Handy 1782).

Immediately on landing, Whaley sent a message to Colonel John Cropper asking for men "to completely man our barges" (Handy 1782). More importantly, Handy noted the Marylanders also wanted to use "a barge and galley that belonged to Accomac" that were then in Onancock Creek (Handy 1782). These were the Virginia State Navy vessels, the *Languedoc* and the *Victory*. By coincidence, the day (November 28, 1782) was a county court day, and there was a sizeable contingent present. Volunteers were quickly obtained, armed, and put aboard two vessels, the Virginia barge, *Victory*, and the Maryland galley, *Protector*, on November 29 (Cropper 1782; Southern Literary Messenger 1857).

Early on Friday morning, Whaley sent the *Defence* out to "reconnoiter the enemy" (Handy 1782). The augmented flotilla left Onancock Creek on November 29 after Cropper came aboard with "50 militia, which completely manned the Onancock barge" (Handy 1782) about 10 am. By 1 pm, the flotilla, including the Onancock barge (*Victory*) and the galley (*Languedoc*) was outside the bar where they awaited the return of Captain Solomon Frazier who had been sent to scout the British in the *Defence*. Frazier returned about 3 pm and said he had "been in the harbor where the enemy had been two nights last, and that we might rest assured there were only six barges, and that the seventh sail was a prize" (Handy 1782). The harbor referred to was probably Kedges Straits because it is "about 3 leagues" [nine miles] from Watts Island (Handy 1782). Since the British did not have a galley, the Onancock galley was sent back and Cropper with eight others went aboard *Protector* (Handy 1782).

Although Handy is not precise, it would seem the flotilla put into one place and "manned a small barge which we took from the enemy on the 16th Nov., the command of which was given to Lieut. Samuel Handy of the *Protector* (Handy 1782). This barge is not named in the literature. By 10 pm, the Americans hove to off Fox Island, just outside Kedges Straits (Handy 1782). Captain Levin Handy then

went to the small barge and was put ashore “to gain what intelligence I could” (Handy 1782). “He learned that the British passed Fox Island during the afternoon of the 29th and were heading for “Cages Straits” (Handy 1782).

At 4 am on November 30, the Flotilla got under way and went up Tangier Sound. There was either no moon or the last stage of the last quarter of the moon. The moon was in last quarter on 28 November 1782. The new moon did not rise until December 4 (NASA 2010). About daylight, a small schooner at anchor just above James Island was boarded to obtain more information. At this time, the Americans learned that “the British Barges certainly lay in Cages Straits, as she had seen their lights just at the break of day” (Handy 1782). The other captains were informed told. At the same time, Commodore Whaley said that he thought “the enemy’s barges push would be at him, and requested that they would take notice and support him, which they all positively declared they would do, or all sink together” (Handy 1782).

The flotilla then rounded into Kedges Straits and at 8 am found the British under way, “bearing from us, as we supposed, endeavoring to make their escape-however they soon hove to. We then knew they meant to make battle, and continued our course, bearing down on them” (Handy 1782). This sequence suggests the both sides were using what little wind there was to head west or northwest. It may be that the wind first fell in the western end of the Straits and that this forced the British to fight. It may also be that the British, seeing the two flotillas were evenly matched, opted to fight, dropped their sails and rowed toward the Americans.

At 9:30, the action was commenced at long shot, over 500 yards, apparently by the British, because Handy reported we “reserved our shot from our long 18-pounder until we thought it was in our power with round and grape to sink them” (Handy 1782). The use of round shot and grape together in one firing was not unusual, but “it had not the desired effect, though it gave them a considerable shock” (Handy 1782).

The Virginia galley description cited earlier provides clues about the *Protector* which may have been somewhat under strength because they took on volunteers who served as supernumerary officers to reach the 65-man total. The Maryland vessel had only one gun forward and one aft, plus swivels, and two broadside 18-pounders in the waist. With six men to each gun, not including the swivels, the crewmen left to man the sweeps would be 32 but the officers, captain, three lieutenants, and other idlers (perhaps eight to 10 men) should be subtracted leaving about 20 men to pull the sweeps. The *Protector* was apparently a very good sailer and well ahead of most flotilla vessels. The one exception may have been the *Defence*, which seems to have fired first. It is apparent from more than two American vessels (*Protector*, *Defence*, and *Fearnought*) firing on the British that their flotilla was not arranged in line astern but was, due to relative sailing speeds, in echelon, possibly to both sides of the lead craft.

Firing began by the British from beyond 300 yards (Cropper 1782), suggesting that they were first using solid shot. The first American shots were probably fired at a range of about 300 yards “when the firing began to be serious” (Cropper 1782), indicating the possibility of grape shot due to the short range. The

Protector apparently withheld fire until the British were fairly close to increase the shock effect of their 18-pounders (Handy 1782). The *Fearnought* fired during this part of the engagement as its Lieutenant, Zadock Botfield (1782:613), later explained:

> I was Stationed at the bow Gun a 6pdr. when we came into Action the first fire bursted, as much as Two feet of the upper [sic] of the Muzzle blew of [sic]. I immediately acquainted the Capt. of the Misfortune his answer was to try her again my Answer was here is at It then and accordingly fired two rounds Shot & Two rounds Grape before the Commodore's Barge had blew up.

While the *Fearnought* was getting off five shots from its bow gun, the *Protector* fired its long 18-pounder only twice. After the second shot, "one of the Ammunition chests blew up which confused us greatly" (Handy 1782). Since the explosion involved the broadside carronade ammunition, the *Protector* was obviously in a melee with the British to at least one side. "We discharged her afterwards and before we could charge and direct her again, three of the enemy's barges were alongside, when the second ammunition chest took fire, which caused several of our men to jump overboard and disabled many others" (Handy 1782). Handy's sequence indicates that there were clearly two explosions and that the men rallied and fired the bow gun which suggests there was a British vessel to the front. That vessel and two others apparently continued on course and were in the process of boarding when the second broadside ammunition chest blew up. The confusion that ensued with the explosions and being boarded was bad enough but "seeing our barges did not give us the assistance we expected, and they falling astern", Handy asked Whaley if they should strike their colors. The response was an immediate "no" (Handy 1782).

By now, firing was by swivel gun and musket, and Commodore Whaley went down. Within a very short time, "we were much overpowered, and our men chiefly driven from their quarters" (Handy 1782). The Americans tried to surrender because they were driven from their positions along the rail. As if by agreement, "a general cry on board, was for quarters which our enemy's [sic] positively refused" (Handy 1782). Following the attempted surrender, the Loyalists boarded the *Protector*. According to Handy, "we were soon boarded by their blacks, and little mercy shown to any of us. I received seven wounds, but am happy to inform you that none of them are mortal" (1782).

The magazine explosion provides a common reference point for all accounts. The rapidity of the firing and references to the magazine explosion indicates that both sides moved quickly to close the distance between opponents and board them. The fast pace and sudden end is confirmed by Handy who says the entire engagement lasted about 25 minutes (Handy 1782). Since the *Protector*'s broadside magazine exploded (Handy 1782), this suggests that the *Protector* may have broken into the British line and was firing down the line of vessels as well as forward toward another barge at the time.

When within 300 yards and, "the fire began to be serious", some American vessels "ran away" (Cropper 1782). While Cropper says they "all ran away", this cannot be correct because the *Fearnought* was still engaged and nearby when the *Protector*'s magazines exploded (Botfield 1782). The exploding magazine burned some men to death and others, "all a-fire" went overboard to save themselves along with some trying to avoid the flames. The explosion was great enough to injure some British sailors closing in on

them. The British renewed their attack and came in close following the Kidnapper, and boarding the *Protector* with muskets, pikes and cutlasses (Cropper 1782).

Commodore Whaley was already down, either dead or mortally wounded, when the British closed in and firing was by small arms and swivel guns. Militia Captain Joseph Handy went down after the British boarded the vessel, having continued fighting despite losing the use of one arm (Cropper 1782; Handy 1782). Continental Army veteran Captain Levin Handy was "badly wounded" (Cropper 1782; Steuart 1969:92). Another Continental Army veteran, Major Smith Snead (Heitman 2003:508) suffered multiple wounds from a cutlass, pike and possibly grapeshot (Cropper 1782) while his relative was wounded by a cutlass stroke and a musket ball (Cropper 1782). Virginia militia Captain George Christian was killed by musket fire and civilian volunteer John Revell was wounded by a musket ball and a cutlass. Cropper was also badly wounded (Cropper 1782). The multiple edged weapon wounds reflect something of the ferocity of fighting when the *Protector* was boarded by Loyalists and freed blacks who showed "little mercy" (Cropper 1782; Handy 1782), despite calls for quarter.

The fight aboard the *Protector* lasted for some 10 minutes (Cropper 1782), after which the Americans were simply overwhelmed and all officers killed or wounded. British accounts claimed that 24 men, including Commodore Whaley were killed and 39 wounded (*New York Gazette* 1782). A listing of the "Men Blown up in the Barges" shows one lieutenant and one gunner, as well as fourteen seamen (Maryland 2000:615). Cropper provides a grim note of satisfaction in noting that the Americans killed one Loyalist captain (Fling of the [British] *Victory*), and wounded their commodore (Captain John Kidd) and another Captain (Young of the *Ranger*) (Cropper 1782) as well as many crewmen (*New York Gazette* 1782). The list of British casualties aboard the *Kidnapper* shows 11 killed and eight wounded of 41 officers and men (*New York Gazette* 1782).

British officer casualties suggest that at least three of the flotilla's vessels were possibly out of the action at the time *Protector* was boarded and they may have honorably accepted their fate after they struck by not participating further. The New York account noted a Captain Parey boarded the *Protector* indicating that at least one British vessel rethought their surrender and took up arms again. The absence of three other British vessels tends to confirm Cropper's account that British vessels struck their colors to the Americans prior to the *Protector*'s magazine exploding (Cropper 1782).

The captains who boarded *Protector* indicate which vessels surrounded the American and continued the fight. These would be the *Kidnapper*, the *Ranger*, and Parey's unknown vessel. By a process of elimination, the British *Victory* may have struck its colors when Captain Fling was killed prior to the explosions and the *Ladies Revenge* when it was so shot up as to be ineffective (*New York Gazette* 1782).

Other American vessels were confused in the minutes following the explosion aboard *Protector*. Handy tried to explain what happened and reported that he did not "know what to think of [Solomon] Frazier [*Defence*] and [Levin] Spedden [*Fearnought*] …I do not think they are cowards" (Handy 1782). Handy was very candid and his damnation of Robert Dashiell was explicit. "I pronounce him a coward – and as such I hope he will be treated (Handy 1782).

Handy's kinsman, Lieutenant Samuel Handy, commanded on the "small barge" and "never left us (although he could do us little good) until all the other barges were on the flight" (Handy 1782). The *Flying Fish*, the supply schooner, never engaged and made her escape. Handy explained that she was "prevented by the breezes falling", so the schooner may not have had sweeps to provide supplementary power (Handy 1782).

On *Fearnought*, some men were trying to both advance the vessel and board a British barge while others were backing their oars, trying to go in the opposite direction or more rapidly swing their craft, either to bring guns to bear or to escape the fighting (Botfield 1782:614). At some point, the *Fearnought* pulled away from the fighting, perhaps after seeing the *Protector* strike its colors, this would indicate that the fighting aboard *Protector* was over well before the eight or 10 minutes reported by Cropper had passed. Given the high casualties and confusion there, a short fight seems more correct than one lasting eight or 10 minutes.

Following the engagement, which Handy reported lasted about 25 minutes (Handy 1782), an agreement was made to take all the wounded ashore on parole and the American captives were paroled (Cropper 1782). One British vessel, the *Ladies Revenge*, was so badly damaged that it put in for repairs and the *Protector* was taken over by the British (*New York Gazette* 1782).

At any rate, the withdrawal of most American vessels resulted in British fire being concentrated on the *Protector*. In addition to its crew, there were nine Virginia volunteers (Cropper 1782). While the British flotilla swarmed around the *Protector*, the damage to some of them was so great that some struck their colors (Cropper 1782). As the Americans seemingly gained the upper hand, one magazine on the *Protector* was accidentally ignited which then set off another magazine (Cropper 1782).

The *Protector*'s fire must have been particularly effective because some British vessels struck their colors (Cropper 1782), each having been attacked in turn. This suggest that the *Protector* and any other American vessels may have swung the ship to port and starboard while advancing so as to bring the fire of the broadside 18-pounder carronade to bear as well as the long 18-pounder in the bow. If so, then the shorter range carronades may have fired solid shot, and possible double loads of grape and solid shot, at fairly close range while the longer range bow gun fired solid shot and at least one round was a solid shot and grape shot (Handy 1782). The fire must have been effective because one British vessel, the *Ladies Revenge* was disabled and had to be put into port after the battle (*New York Gazette* 1782).

The Americans failed in their mission to clear the Bay of Loyalist raiders because they were defeated and the British promptly took another prize, a Virginia schooner loaded with corn following the engagement (*New York Gazette* 1782). The British were successful, not only in defeating the Americans but by then driving surviving American craft into creeks to escape and by capturing another ship that was sent to New York as a prize (*New York Gazette* 1782).

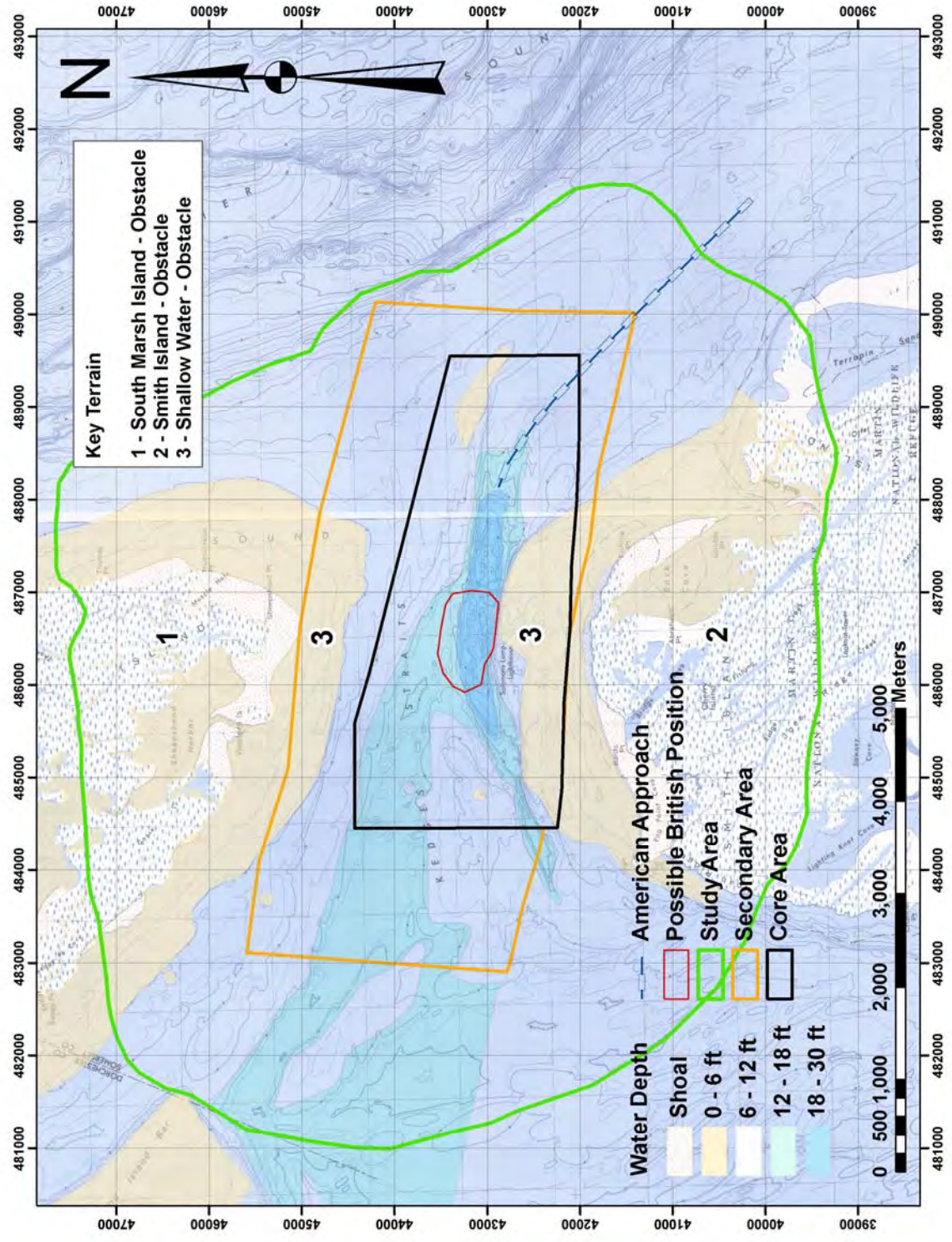

Figure 17. The Battle of Kedges Straits – Key Terrain (*USGS Quadrangles Kedges Straits and Terrapin Sand Point; after a map by Sarah Lowry, New South Associates).*

METT-T Analysis

Mission

The American mission was to annihilate or capture the British flotilla that had been raiding the lower Chesapeake. The British mission was to continue disrupting American shipping and coastal operations. To do so, they had to defeat the American flotilla.

Enemy

The British flotilla was composed of six vessels. British forces were similar to the American and had been operating as a unit for some time. They had been successfully raiding the lower Chesapeake and must be assumed to have high morale and more than adequate practical training aboard their vessels. The named Loyalist vessels are nominally barges.

During the summer of 1781, the British built five flat bottom boats at Portsmouth, Virginia. These were "70 foot straight, would carry 150 men; four boats went to New York." Another vessel "plundering and stealing" was described as "a 6-oared barge" (Maryland 1973:95). If the four boats built at Portsmouth did go to New York, they may have been included in the force used in Kedges Straits because that British flotilla was from New York (*New York Gazette* 1782). A local connection, presumably with local watermen aboard would have been very helpful, both for boats built for the locality and men knowledgeable about channels, weather, and wind conditions. This may have been easily accomplished since Kidd was initially from Virginia (*Southern Literary Messenger* 1857). To some extent, the British barges may have been undermanned because they had captured ships (*Kidnapper*, *Victory*, and *Ranger*) and placed crews aboard to take the prizes to New York. The following list the captains for the captured ships:

> Kidnapper, Captain John Kidd, a Virginia Loyalist;
> Victory, Captain Fling; and
> Ranger, Captain Young (New York 1782).

By the end of 1778, John Kidd was commander of the privateer ship *Empress of Russia* with 28 guns, eight swivels, and 40 men. John Wilkinson, John Dixon & Gregory Olive of the City of London, Merchants, owned this vessel. She operated under a Letter of Marque & Retaliation issued by Governor Tryon at New York on November 10, 1778. (Todd Braisted, personal communication March 23, 2010). The *Empress of Russia* may be the same vessel used to transport the 38th Regiment to Boston in 1774 (*Massachusetts Spy* Number 178, June 30, 1774).

Terrain

Key Terrain

Key terrain in Kedges Straits is related to several factors (Figure 17). Chief among these are the draught of the barges versus the channel depth. With the tide running out (east), there was a shift in key terrain to a more limited space around the channel. On the face of it, the Marylanders and Virginians should have had the advantage over the Loyalist New Yorkers, but it was a Maryland vessel that ran aground.

Obstacles

As the wind lessened, the only obstacle affected both sides equally. All the vessels had to operate with a sense of water depth. It may be that the western end of the Straits had a wider channel than the eastern end. To some extent this is suggested by the probable Loyalist on line formation as opposed to the apparent American in-line, or line astern, formation. One American vessel, Flying Fish could not get up because the wind died; another, the "small barge," did run aground and was thus taken out of the fighting at a time when reinforcements could have shifted the tide of battle back to the Americans.

Cover and Concealment

In the Straits, there was no cover or concealment. Both sides were equally exposed with the caveat that the Loyalists had to cope with sun shining directly in their faces. Aside from that, the vessels all operated in the open once the Americans rounded the southeastern "corner" of the Straits and moved toward the British.

Observation and Fields of Fire

Since neither side occupied the marshes along the Straits, observation was limited to what could be seen from a vessel's deck or its masthead. On a 65-foot sailing barge, the mast height could have been as high as 40 feet. At that elevation, a view of almost three miles was available on a clear day. Since both command vessels were approximately the same size, the view from each was equal with one caveat. Due to the position of the sun, the Loyalists would have been looking directly at the sun during initial phases of the engagement.

Fields of fire were open but the mounting of guns in the barges clearly restricted their use. Most barges had a long gun in the bow (Botfield 1782; Cropper 1782; Handy 1782; *New York Gazette* 1782). The 18-pounder long gun on the *Protector* would have a maximum range of 4,190 yards (see Table 3) with solid shot but the more effective grape would not be fired much over 300 yards.

There is no positive information about the *Kidnapper*'s broadside weaponry but circumstantial evidence suggests the possibility of at least one four-pounder since Cropper (1782) noted being injured by a 4-pounder ramming staff. The broadside guns of the *Protector* were a pair of 18-pounder carronades described as "short 18-pounders" (*New York Gazette* 1782). That these guns were employed is indicative of a vessel melee in which the *Protector* was virtually surrounded by Loyalist craft and firing forward, port and starboard. To use broadside guns in another fashion would require that the vessel be swung using oars or by anchoring with spring lines. No participants reported anything of the sort. In fact, all reports state that both sides advanced to the fight.

Avenues of Approach

The narrow, twisting Straits constrained overtly by low marshy islands and less visibly by shallows. The columnar approach by the Americans may well have been due to the lack of a pilot specifically knowledgeable about Kedges Straits. The British, on the other hand, had passed through the Straits, either the night before, or the morning of, the battle. Their linear approach with all vessels on line and blocking the Straits may have been the result of their superior knowledge of the particular waterway.

Weather

The weather played a role in several different ways. First, there had been a storm earlier and the wind had blown out of the west, making it impossible for the American vessels to come up Tangier Sound and enter the Straits. This wind may have also lowered the water somewhat by blowing it out of the bay. At the time of the battle's commencement, the Americans had the weather gauge, that is, they had the wind behind them. It was probably not a heavy wind, perhaps 8-14 knots, as they also used oars. It may be that the wind was stronger earlier and then died as the *Protector* engaged the *Kidnapper* because the *Fearnought* was using its oars when approaching the *Protector* to support her.

The wind was almost certainly blowing from the southeast or south-southeast. This would not have affected a field of fire per se but it would have contributed a problem to the Americans because their vessels would have been slightly down by the bow due to wind pressure on their sails. Pushing the bow slightly down would cause some changes in elevation for the gunner but these would not be extreme since the winds were fairly light. The amount of chop due to the earlier storm is difficult to assess but the water was probably not calm.

The wind conditions can be interpreted as light because both sides were using oars and the Loyalists were successful in moving against it to engage the Americans. The wind died fairly soon after the long range portions of the engagement commenced (Handy 1782) and at that point maneuvering was based on oar power.

The weather, if the tidal flow is considered as such, also played a role. Tides in this area are in the range of 1.6–2.6 feet. If the British came forward into the wind and under oars, they would have benefitted from the outgoing tide. If they knew when the tide was going out, they may have led the Americans deeper into the Straits and then turned about to attack when the tide shifted. To some extent, this would have mitigated the favorable wind behind the Americans. The Americans advanced under both sail and oars but the wind died during the American approach (Handy 1782).

Troops Available

The American Troops available consisted of Maryland State Navy personnel, plus militia and volunteers from both Maryland and Virginia. Some Maryland State Navy personnel had seen considerable service. Some Maryland and Virginia militiamen had prior service, either with state naval forces or with Continental infantry regiments. Volunteers from Maryland and Virginia included Continental Army veterans who had served as officers. These latter men provided leadership on at least three American vessels.

American forces consisted of a galley, four barges, and a sloop (Cropper 1782; Handy 1782). Two Virginia vessels, the *Languedoc* and the *Victory*, neither of which participated, might be included as part of the force. The *Languedoc* never sailed as part of the flotilla and the *Victory* was aground near their starting point at Onancock Creek (Cropper 1782; Handy 1782).

Virginia Volunteers

At the time of the engagement, Colonel John Cropper was the chief militia officer in Accomac County, Virginia. He had prior service in the 9th Virginia and saw action in the Northern Theater including being

wounded at Brandywine while Major of the 7th Virginia. He resigned as a Lieutenant Colonel on August 16, 1779 and then served as a militia Colonel (Heitman 2003:179). On November 28, 1782, Cropper came out of retirement to join the expedition against the British.

Major Smith Snead (Heitman 2003:508) answered the call for help at Accomac. Snead had seen hard combat as a Continental officer in 1781, including Guilford Courthouse, Hobkirk's Hill, Ninety Six, and Eutaw Springs. He was certainly experienced and reliable under fire. Captain Thomas Parker is one of two possible men (Heitman 2003:426) but is most likely the officer who initially served in the 9th Virginia, and then served to the close of the war. The other Thomas Parker was a Lieutenant until September 30, 1783 and thus on duty elsewhere when the engagement occurred.

Cropper and his 25 "gentlemen volunteers" were picked up at Accomac, but only nine Virginians served aboard the engaged vessels. When the Maryland flotilla arrived at Accomac, two Virginia vessels were available and manned by their crews and Virginia militiamen. When the *Languedoc* proved not useful and was sent back, Cropper and eight other Virginians went aboard the *Protector*. The 25 Virginians were organized into three companies under Captains Thomas Parker, William Snead, and George Christian. The volunteers almost certainly came from existing militia companies who simply served under their usual officers but as "sea soldiers" with their land service company designation (Sanchez-Saavedra 1978:175-76).

Vessels and Crew

Galley

Protector (Whaley or Walley in command) had one long 18-pounder, two short 18-pounders (carronades), and possibly one 4-pounder, plus swivels. Of the 65 men aboard 25 were killed/drowned, 29 were wounded (some mortally), and only 11 escaped injury. The original, pre-battle crew was 40 officers and men, plus nine gentleman volunteers from Virginia (Cropper 1782; New York 1782). It is unclear why there is a discrepancy between the casualty report (n=65) and the pre-battle crew size. Captain Levin Handy (Steuart 1969:92; Heitman 2003:272) served from August 1776 until he resigned as a 5th Maryland Regiment Captain in May 1780. Like many other participants, he was a native of the Eastern Shore's Somerset County (Peden 2000:125). On August 5, 1781, Joseph Handy drew pay as a Lieutenant aboard the Barge *Protector* from June 12, 1781-August 5, 1782 (Maryland 2000:610).

Barges

The *Defence* (Solomon Frazier in command) was the first American vessel to fire (Botfield 1782; Cropper 1782; Handy 1782). Solomon Frazier may have been the "Marriner" from Dorchester County in 1778 when he was reported aboard a sloop docked in Caroline County (Peden 2001a:72). He was Captain and his brother Levin was a Lieutenant aboard the *Flying Fish* from September 19 -December 19, 1781 (Peden 2000a:76). He apparently was switched between vessels as needed as his service shows both vessels during this time period. Solomon had early war service on the *Sturdy Beggar*. Levin had been a Continental Army Lieutenant with service in the Northern Campaigns prior to sea service (Peden 2000a:75-76). The *Defence* was a long serving Maryland State Navy vessel, in commission as early as

1776 (Peden 2000a:137, 248). The long service suggests an experienced crew that would stand to their posts.

On *Fearnought* (Levin Spedden/Spedding in command), the bow gun was a 6-pounder. Levin Spedden/Spedding had been a Talbot County militia officer since 1776 (Peden 2001:177-78). His kinsman, Edward Spedden, was a Lieutenant aboard *Fearnought* during the engagement (Peden 2001:177). Another kinsman, Robert Spedden was aboard the Maryland boat *Intrepid* during 1781 (Peden 2001:178; 2001a:76).

The barge *Fearnought*'s muster roll for an unknown date after July 29, 1782 survives (Maryland 2000:611-12). It is supplemented by another pay roll for monies due January 1, 1783 (Maryland 2000:613). Given their last name, it is possible that two men, Matthew and William Navy (Navey) were African Americans. Matthew was a substitute recruit with a dark complexion while William had a fair complexion (Peden 2000a:175). At least some of the men had prior Continental Army experience (Peden 2001:171).

The *Terrible* (Robert Dashiell in command) dropped back with accusations of cowardice (Handy 1782). There are at least three Somerset County Robert Dashiells. The family was economically and politically powerful on the Eastern Shore (Peden 2000:72). For July 14, 1781, a pay roll for the barge *Terable* [sic] showed two lieutenants, one gunner, and only two seaman (Maryland 2000:610). The Lieutenant who signed the *Terable*'s pay roll was Oakley Haddaway, who mustered earlier on the *Intrepid*.

Maryland sailors enlisted, seemingly in 1782, are grouped by their enlisting officers, Captain Bryan (*Flying Fish*), Captain Frazier (*Defence*), and Captain O. Delisle (Maryland 2000:615). Delisle is unknown and is almost certainly a miss-reading and subsequent misprinting of Dashiell. Only Delisle's list says "crew" and at least one of Frazier's enlistees served on the *Fearnought* (Maryland 2000:615). If it is Dashiell instead of Delisle, then the list is for the *Terrible*.

The "Small Barge" (Samuel Handy in command) was captured from British on November 16 (Handy 1782). Samuel Handy was a Somerset County native but which Samuel is difficult to say at present (Peden 2000:126).

Schooner

Flying Fish (Daniel Bryan in command) was a supply vessel possibly without sweeps. It lagged behind when the wind failed and was not in action. Bryan was possibly from Queen Anne or Dorchester County (Peden 2000a:23; 2000b:32). One of the ship's Lieutenants, at least under Solomon Frazier, was William Byus (Byas, Byers). Byus volunteered as a private but was commissioned as a Second Lieutenant in the U.S. Navy in August 1782 although he does not appear in Heitman (Peden 2000a:28-29; Heitman 2003:138). A William Byus commanded a barge in Joshua Barney's Chesapeake Flotilla during the War of 1812 and was captured at Bladensburg. Presumably, he also fought in the battles of Saint Leonard's Creek (Peden 2000a:29).

Other Vessels

The *Victory* (a Virginia barge, captured from British) could not keep up and was sent back to Onancock. The 24 Virginia volunteers went aground at Onancock Creek or outside Kedges Straits (Cropper 1782; Handy 1782). The *Langodoc* (a Virginia barge, captured from British) stayed at Onancock and was not in action (Handy 1782).

Taken as a whole, the American flotilla was not inexperienced. They had taken prizes and many of the crewmen had, seemingly, seen considerable service during the war, commencing at least as early as 1776. More importantly, several officers were veterans, including a substantial leavening of Continental Army veterans who had seen heavy combat. Given the experienced watermen and combat experience, the Americans were certainly a capable lot.

Time Available

Both sides were constrained by the time. The Americans had to get close to the Loyalists before they could get away. To do so, they needed to move rapidly up the sound between Tangier Islands and the East Shore. This movement had to be completed before the wind died. For the Loyalists in Kedges Straits, time was less important as they had the option of not fighting, using the wind to exit from the western end of the Straits, or of engaging by heading eastward toward the Americans. If they were as knowledgeable about local conditions as seems likely, they knew there was a good possibility the southeastern wind would die after mid-morning so they could bide their time somewhat.

Principles of War

Objective

The American objective was twofold. First, strategically, they were to rid the lower Chesapeake of Loyalist raiders. The tactical aspect was to close with the Loyalist vessels and defeat them. To this end, the Americans advanced under oar and sail to engage the Loyalists. At some point during the advance, there was a failure in the command structure addressed under Unity of Command. The Loyalists had earlier attempted to evade the Americans while still conducting privateering against American shipping. When it was clear that they had to engage, the Loyalists went into action attempting to defeat the American vessels and continue their operations.

Offensive

Both sides operated in an offensive fashion, advancing to meet each other. The initiative, however, lay with the Americans who were forcing the issue, with the wind at their back, whilst the Loyalists were endeavoring to reestablish their freedom of movement that was now interdicted by the American flotilla.

Maneuver

Both sides retained the ability to move without hindrance on the battlefield, subject to water depth. Ultimately, the Loyalists were more successful in maneuvering because the majority of the American vessels did not close up and engage their British counterparts. Even after some British ships struck their

colors, the larger number of British vessels at the critical point and time allowed them to surround the leading American ship, the *Protector*, and board it after it suffered damage from onboard explosions.

Mass

On the face of it, both sides were evenly matched in terms of numbers. As the battle played out, the British clearly achieved mass, as they were able to bring superior firepower to bear on the one American vessel that actually engaged. As the engagement developed, the *Protector* was getting the upper hand and had effectively dealt with at least two, if not three of the Loyalists fleet. At that point, when the Loyalists were virtually ready to quit, an explosion on board the *Protector* changed the situation by reducing both American numbers and available American firepower. The explosion reduced American firepower at the critical point and time, giving the Loyalists fire superiority and mass as their surviving vessel crews overwhelmed the Americans.

Economy of Force

Economy of Force means using enough resources to succeed in the mission. The American violated this principle, in large measure because only two (*Protector* and *Defence*), possibly three (*Fearnought*), of their six vessels engaged due to violations of other principles, in particular, Unity of Command. The British were successful because they had superior fire power at the critical place and time.

Unity of Command

Unity of Command means that one person is responsible and that those under his command are obedient to his intentions. The American vessel commanders violated this principle by not following orders and not engaging the British vessels. There were later accusations of cowardice directed toward one Maryland officer. The British had one commander and his instructions seem to have been followed, even to the point of vessels that struck their colors rejoining the battle when the advantage shifted to the British following the explosion of the *Protector*'s magazine.

Security

Security relates to obtaining information about the enemy while denying information about one's own force. Security is designed to guard against surprise. In this case, both sides followed the rubrics of security guarding against surprise as the American sent out scouting parties and also inquired of a passing schooner where the British flotilla was located. Since the British were underway when the Americans reached the Straits, it is likely they also were aware of the American presence and were certainly ready when Whaley's flotilla arrived.

Surprise

Surprise is a force multiplier and represents a disaster for an unprepared side. Neither side was surprised. Both were ready and willing to engage.

Simplicity

Simplicity relates to the tactical and operational plan of the day. Both sides kept their plans fairly simple. On the day, it seems the British plan was more complicated in that they were on line while the Americans seem to have simply been told to follow the *Protector* into battle. It is possible that the

American command ship was not the lead element as the *Defence* fired first but the *Protector* was clearly the focus of British fire as the engagement went on because other American vessels did not come up.

Interpretations

Using three military analytical formats proved useful in guiding this study of the Battle of Kedges Straits. The original intent was to use KOCOA but this is a subset of METT-T, which also proved useful. A final analysis of the activity was also guided by using the Principles of War that are, in their current form, a derivative of later warfare analysis but did prove useful.

Additional information might be generated by applying rowing and sailing capabilities to this study so as to predict a general area of search. For example, the Americans appear to have rowed/sailed for less than half an hour toward the British. Since this was from a point at the eastern end of the Straits (after rounding Fox Point), it should be an easy matter to show that they could have covered something like two miles maximum and one mile minimum before encountering the Loyalist flotilla. The Loyalists were also approaching but there is no indication as to whether or not they had exited the western end of the Straits so there is no starting point for projecting a search area. The probable search area would thus be defined from American accounts and would extend from the northern and southern shores of the Straits with an eastern boundary of about one mile into the Straits and not more than two miles into the Straits. The concentration of resources would be centered on the fight between the *Protector* and the Loyalist vessels that boarded the American galley. The probable search area could then be projected around a point midway between northern and southern shores and 1.25-1.75 miles into the Straits.

It is probable that, if a loosely defined circle some 20 meters in diameter could be identified through remote sensing within the secondary area, ground truthing should reveal a varied collection of circa 1781 militaria. This would be the zone where the *Protector* was overwhelmed following the explosion and boarded by Loyalist sailors. A second, but less dense, similar zone would probably be the location where the *Victory* was struck and its captain killed.

The British probably stayed overnight in the deeper water just north of Solomon's Lump. They were already gone when the Maryland flotilla got there. The Marylanders went up Tangier Sound past Terrapin Sand Point ("Fox Island" then) in the Tangier Sound Channel. At about Fishing Point, they could see well into the Straits and this marks the shortest distance between deeper water. It is bordered by shallows that range from 2-4 feet today (and might have been somewhat deeper in 18th century). From the time they turned and became visible to the British, they could have reached the eastern end of deeper water in Kedges Straits within a half hour.

The proposed core and secondary areas for Kedges Straits are shown in Figure 16. These areas mark out the general battle area based on the analysis of a variety of sources. The actual engagement between the *Protector* and the three or four Loyalist vessels was probably in the deeper water east/by east northeast of Solomon's Lump light. Concentrations of eighteenth-century material may mark where individual vessels suffered traumatic damage. Individual shot distributions may allow analysts to pinpoint vessel locations when they fired.

It is unlikely any vessels were sunk in Kedges Straits. The most damaged vessel was sent into port for repairs. Even if one sank, as unsalvaged armed barges, their magnetic signature would clearly depend on weaponry that went down. The *Protector* did not sink as it was taken over by the British, in part to replace the badly damaged *Ladies Revenge*. If the *Ladies Revenge* sank, an unlikely scenario as it was sent into port for repairs, a side scan image would be difficult to interpret since barges were basically large rowboats and distinguishing them from any other vessel lost since 1782 would be difficult without ground truthing and recovery of diagnostic materials dating to before 1782.

The Straits could have several 18-pound shot on the bottom, as well as smaller shot. The size of the shot could provide information if it could be identified and recovered. The distribution would be widely scattered in two "fans." One shot fan would spread out from the locations of the two or three American vessels; the other would be from a broader base line representing the British flotilla's battle line. Shot midway between these two scatters could represent materials lost when the *Protector* was boarded following the magazine explosion.

One particular spot might also be defined by probable iron muzzle fragments indicating the location of the barge *Fearnought*, an American barge on which the bow 6-pounder burst but continued to fire (Botfield 1782). While it is possible that the bow gun was a bronze/brass piece, it is more likely that it was iron and the fragments might therefore be noted by a magnetic survey. Such a fragment would help define the American flotilla's route into the primary battle area as well as confirming the secondary zone.

6.0 RAIDS ON FRENCHTOWN AND ELKTON ON THE ELK RIVER (1813 & 1814)

Lawrence E. Babits, Christopher T. Espenshade, and Sarah Lowry

Battle Chronology and Overview (1813)

There were two engagements on the Elk River during the War of 1812 (Figure 18). The first occurred during April 28, 1813; the second was over a year later during July 11-13, 1814. These are treated separately in this section as they involve two different areas and different groups, with different missions.

The April 1813 raid was part of British harassment of the Upper Chesapeake drainage in an attempt to "ruin the coasting trade" (Hickey 1989:153) by destroying civilian vessels. To accomplish their mission, the British sent landing parties up nearly all rivers draining into the Chesapeake Bay. On April 29, 1813, one landing party struck at Frenchtown, a small village with a packet boat landing on the Elk River (Figure 19). According to an American eye witness, (Kinkead June 12, 1813 published in the *Maryland Republican* November 20, 1813), the British came up river and arrived "about seven o'clock, A.M."

The British approach took some time, because they got lost and went up the wrong river. Initially, only "five or six barges were at first seen; in a few minutes the river appeared full of them – the whole number was 12 large barges" (*National Intelligencer* May 6, 1813). A "considerable British force, distributed into thirteen barges, commenced a hostile attack on a landing called Frenchtown, the property of this deponent" (Kinkead 1813). "There had been a battery commenced on the lower wharf, but was not near completed; four guns were mounted" (*National Intelligencer* May 6, 1813). "Some days previous thereto, a battery for five guns had been commenced on the wharf; but was in an unfinished state" (Kinkead 1813). Years later, one person who worked on the battery reported "I remember doing one day's work for my country at Frenchtown, helping to build a log battery on the wharf at the place by cutting and floating large trees from below there" (Sample 1880).

Regardless of the precise number of British barges and American guns, it seems that the British advance boats came around Locust Point. Encouraged by the small number of boats, "eight or 10 men collected and commenced firing from the battery" (Kinkead 1813). The "few individuals, (8 or 10) manned the guns and commenced firing when the barges were about a mile off" (*National Intelligencer* May 6, 1813). The cannon fire "stopped the advance of the barges for some time" (Kinkead 1813), but "the ammunition being expended" (Kinkead 1813), the volunteer artillery left. "The ammunition in the battery amounted only to 12 or 15 rounds which was all fired before the barges got within a half a mile of the battery" (*National Intelligencer* May 6, 1813). The range at which the wharf battery fired suggests they were using solid shot. "The barges commenced firing within about a half a mile distance, and continued firing for some time, as they came up, until they found no further resistance. 18 pound balls were flying in every direction …only one ball struck … the ball fell after passing through the shed about 10 feet" (*National Intelligencer* May 6, 1813). The range of the British firing was determined by their 18-pounder carronades, which opened at extreme range if they really did start firing at 880 yards. At that point, they were certainly firing solid shot (18 pound balls) but when they got within 300 yards or

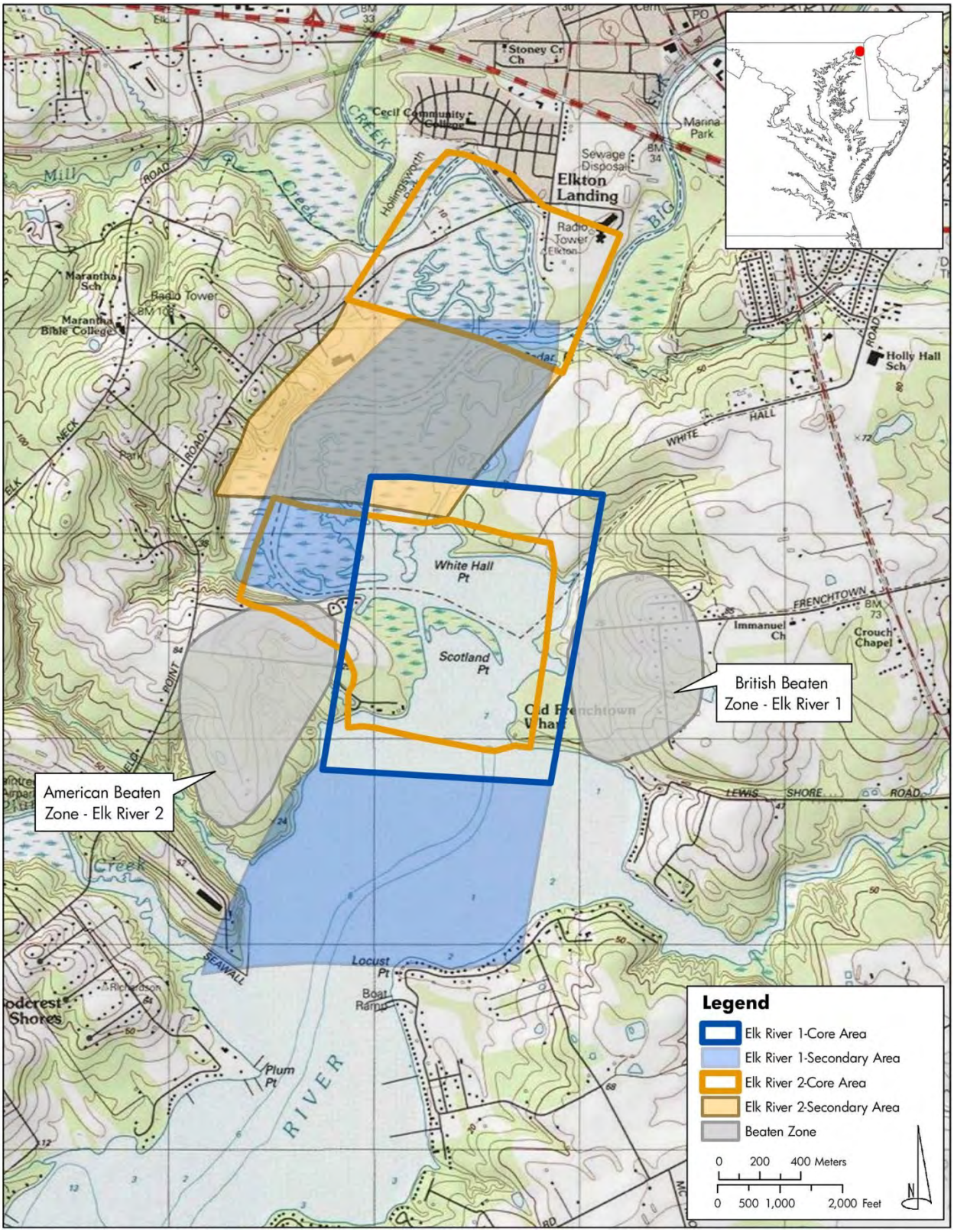

Figure 18. Map of Core and Secondary Areas for both Raids on Elk River (*USGS Quadrangle Elkton; Map by Sarah Lowry, New South Associates*).

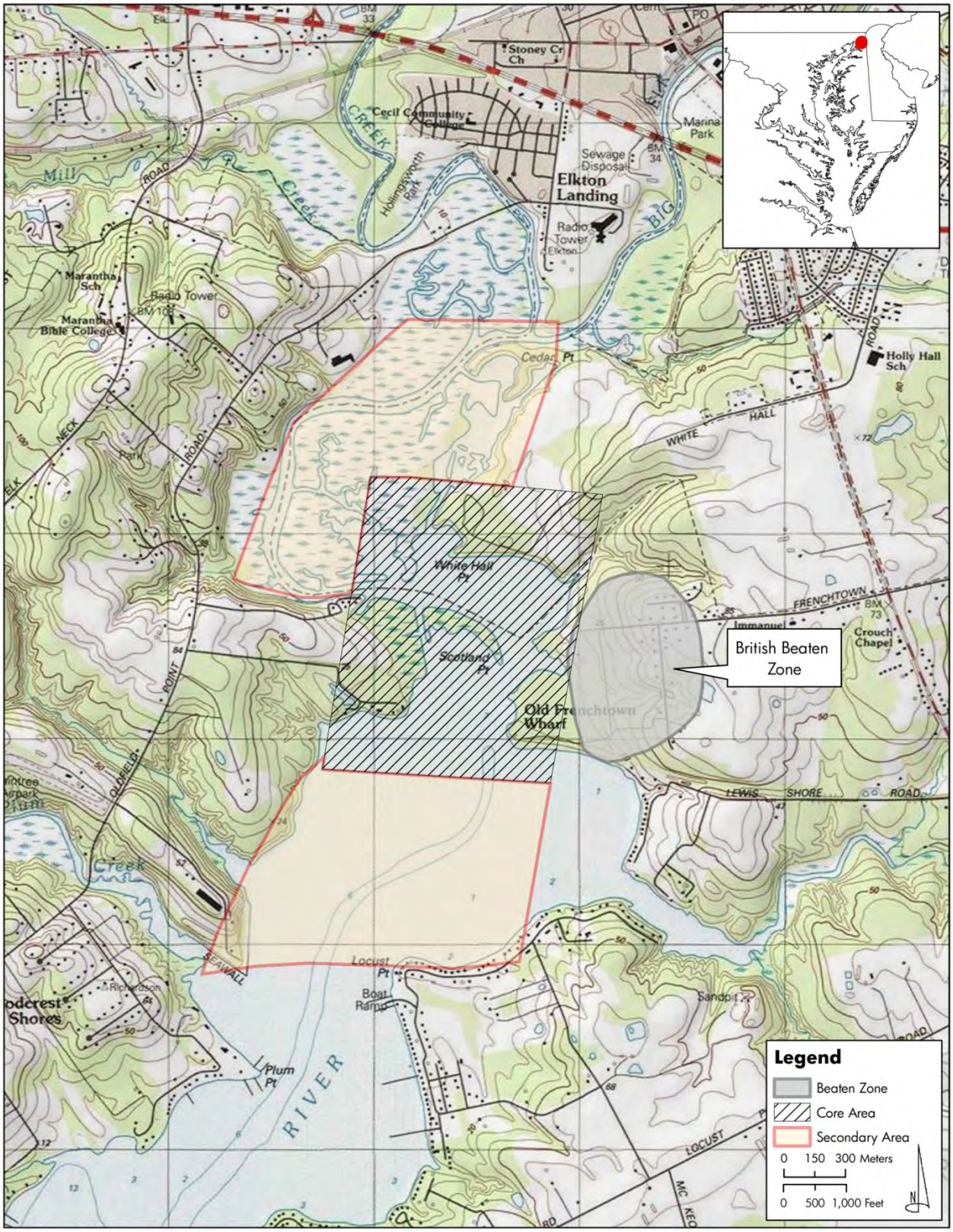

Figure 19. The First Raid on Elk River (*USGS Quadrangle Elkton; Map by Sarah Lowry, New South Associates*).

less, they may have shifted to grape shot. Those balls would be smaller (see Table 5). The "barges then came on and a firing commenced of cannon shot at the battery and also at the dwelling house in Frenchtown" (Kinkead 1813). From Kinkead's account, some of the British shot went further and hit his house.

When the Frenchtown Wharf artillery battery initially opened fire on the advanced boats, the British "landed about 150 marines at Locust point, and marched them up the shore; on finding they had to cross Perch creek, two barges went up and carried them over" (*National Intelligencer* May 6, 1813). "The British then landed on the wharf and immediately ("in 10 minutes" (*National Intelligencer* May 6, 1813) set fire to a new store house on the wharf … also a fishery adjoining the wharf "(Kinkead 1813). At the same time, the earlier landing party reached the wharf from the land side (*National Intelligencer* May 6, 1813).

After destroying the buildings, "a force of about two hundred and fifty marines was marched from the wharf through Frenchtown up the river shore" (Kinkead 1813). The marines were initially pursuing "thirty or forty of the militia from Elkton" (*National Intelligencer* May 6, 1813) but apparently also had instructions to march on Elkton. "They marched within view of Elkton landing. Six or seven barges were paraded along the shore. They burnt two vessels – one was Captain Howell's *Susquehanna Packet*, the other Isaac Lorett's which was run ashore on the approach of the enemy" (*National Intelligencer* May 6, 1813). After "finding the river must be crossed… to get to Elkton, the whole force returned …plundered and carried off …goods" (Kinkead 1813), as well as setting "the [old store] house on fire" (*National Intelligencer* May 6, 1813). At no point was there any reference, by either side, to Fort Defiance or opposition once the British passed through Frenchtown. The British then withdrew to their ships downstream.

METT-T Analysis

Mission

As with the Sassafras River raid, the American mission is difficult to identify. The British had made it known they would only destroy shipping and public materials if they encountered resistance. Effective resistance was a virtual impossibility due both to British strength and to the British ability to maneuver and mass for attacks when and where they wanted. The American defensive effort was left to local militia because the main American war effort was directed toward the Great Lakes frontier. Spread thin, the Americans were no match for the British. Some towns opted to take advantage of British statements that private property, except for ships, would be spared if there were no resistance. Others tried to fight but were overwhelmed by British numbers and firepower.

The British mission was aptly spelled out in documents originating at the higher command levels as well as in the immediate operations order. The assignment of British Army forces to work with the Royal Navy was spelled out in the British Secretary of State for War and Colonies, Henry Bathurst's March 20, 1813 letter. "The object of the Expedition is to harass the Enemy by different attacks, you will avoid the risk of a general action, unless it should become necessary to secure your retreat" (Dudley 1992:325). The most obvious goal was to destroy the American naval forces and military supplies, "and ruin the

coasting trade" by burning civilian vessels (Hickey 1989:153). Each raid was not to secure a land position as the instructions required "reembarking the Force as soon as the immediate object of each particular attack shall have been accomplished" (Dudley 1992:325). If the attack was "to take possession of any Naval or Military Stores, you will not delay the destroying them, if there is reasonable round of apprehension that the Enemy is advancing with a superior force to effect their recovery (Dudley 1992:325). At Frenchtown, there was little attempt to take stores and structures housing them were quickly burned.

A corollary to the raiding and destruction of resources was that civilian property was to be respected. "If you shall be enabled to take such a position as to threaten the Inhabitants with the destruction of their property, you are hereby authorized to levy upon them Contributions in plate and Money in return for your forbearance. But you will not by this understand that the Magazines belonging to the Government, or their Harbours, or their Shipping are to be included in such arrangement" a circumstance that occurred on the lower Sassafras after destroying shipping further upstream (Dudley 1992:325). The British further interpreted these instructions by letting inhabitants know that, if no resistance was encountered, the British would not destroy anything but government property and shipping (Dudley 1992:341, 344-345).

Enemy

The British forces involved with the May 6, 1813 attack on Frenchtown were experienced raiders conducting precisely this type of search and destroy mission over the last month. The same officers and men had been working together in March on Virginia's waters (Dudley 1992:322, 339-40). The British flotilla operating on the northern Chesapeake consisted of the *Maidstone*, *Mohawke*, *Fantome*, *Dragon*, *High Flyer* and *Dolphin* (tenders). The Elk River assault force consisted of 12-13 ship's boats rowed by sailors and carrying about 200 Marines (Hughes 2003:28-29). This was an experienced raiding group that had earlier gone some 15 miles up the Rappahannock River in Virginia and captured armed American vessels (Dudley 1992:339). Some idea of the skill and purposefulness of their raiding technique can be seen in that it took only 10 minutes from landing at Frenchtown wharf to the burning of the buildings and subsequent pursuit of the Elkton militia.

Since the warships did not participate due to shallow water, they are not further described here. The ships boats are described in detail in the overall introduction. According to Rear Admiral George Cockburn, the British boats were armed with 18-pounder carronades (Dudley 1992:343; May 1999:113,116). Carronades were lighter, shorter range weapons throwing much heavier shot for their weight (Gooding 1972:8). Carronades had such a shorter range, usually about a third to half the distance covered by long guns, because they used a smaller amount of powder. Gunners probably would not fire unless the target was well within 500 yards for solid shot and less than 200 yards for grape shot (Gooding 1972:8).

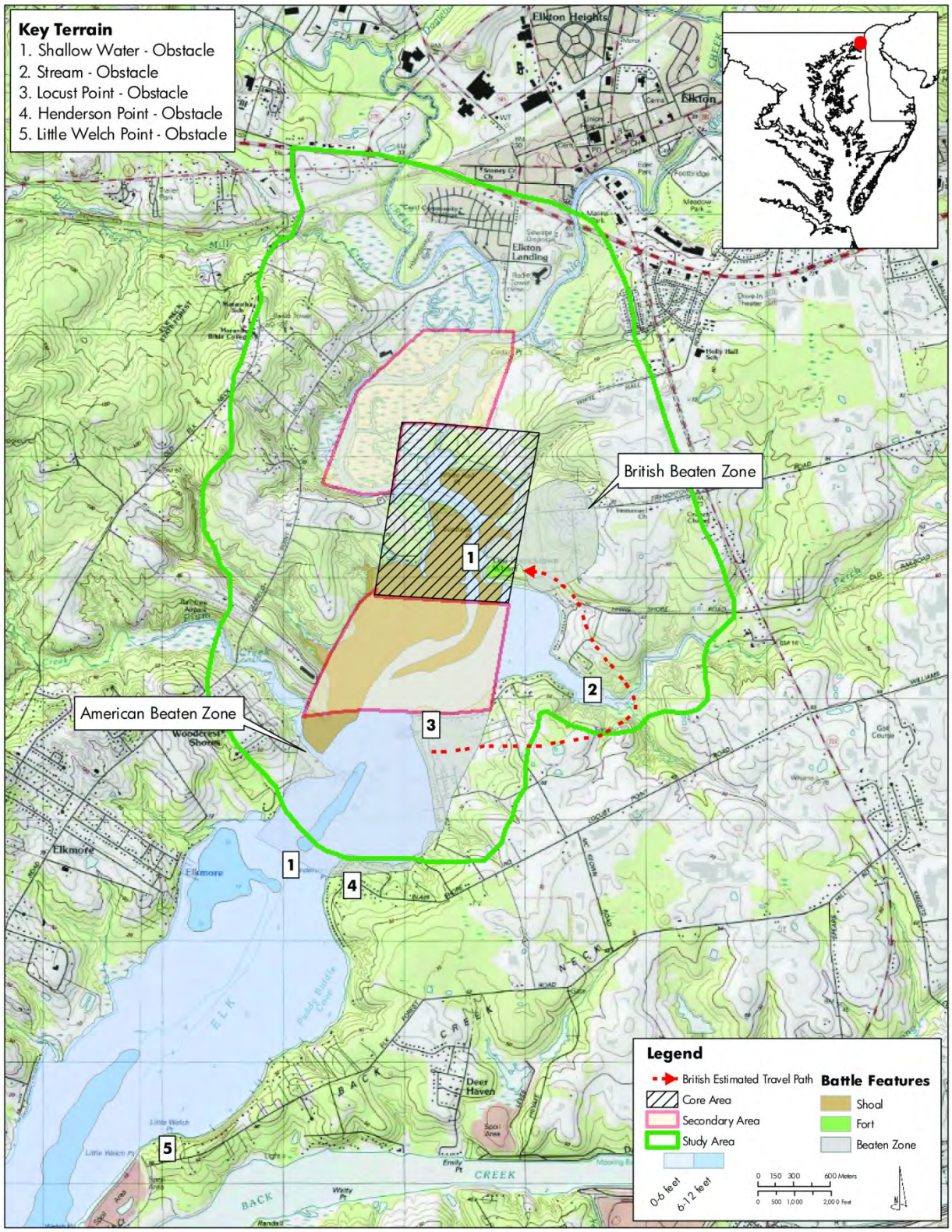

Figure 20. The First Raid on Elk River – Key Terrain (*USGS Quadrangle Elkton; Map by Sarah Lowry, New South Associates*).

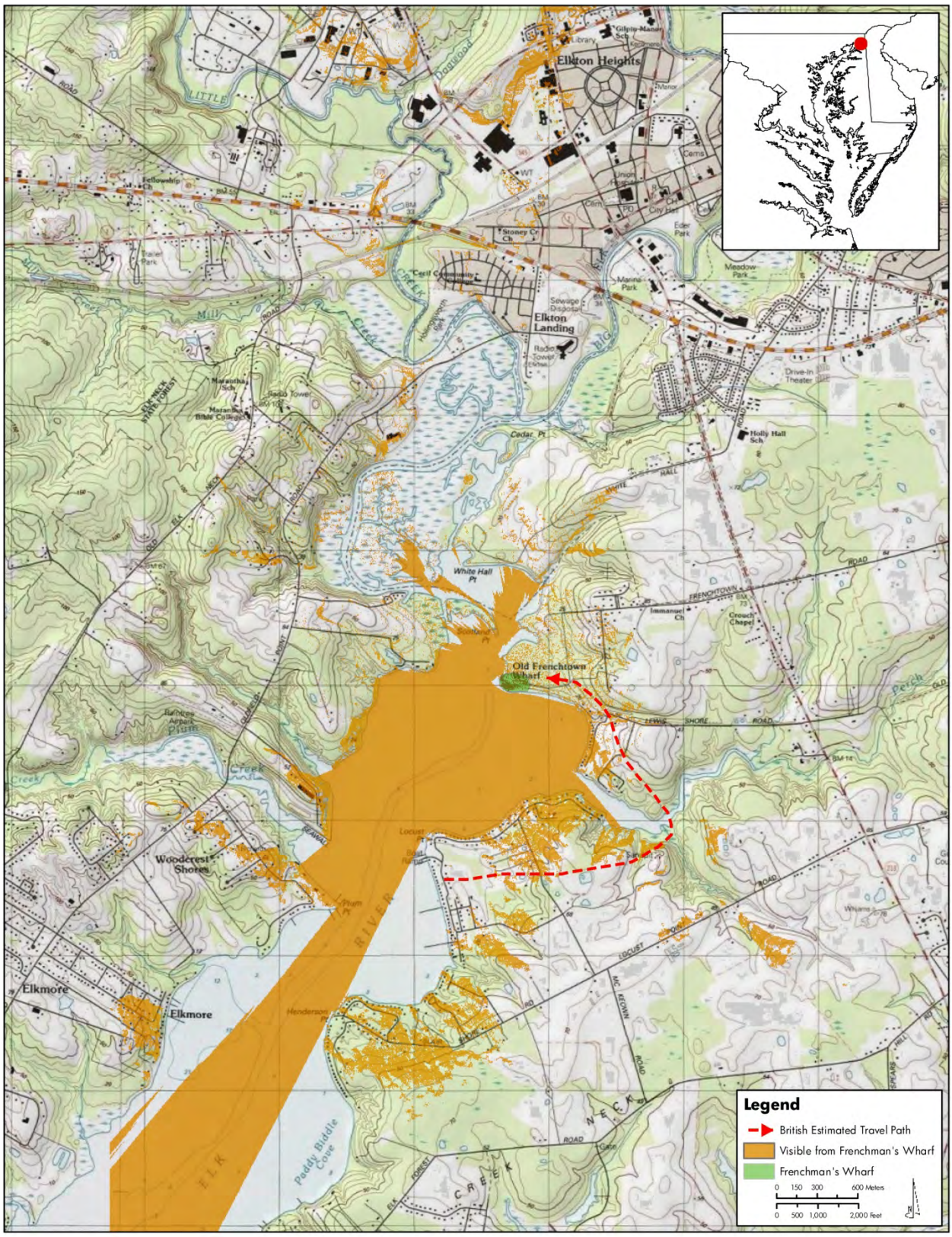

Figure 21. The First Raid on Elk River – Viewshed from Frenchman's Wharf (*USGS Quadrangle Elkton; Map by Sarah Lowry, New South Associates*).

Terrain

Key Terrain

Initially, the river must be considered as key terrain (Figure 20). It was the avenue of approach and was the key focus of the defenders. The shallow water dictated that only small boats could be used, in part because the British did not know the channel. Three points, Little Welch, Henderson, and Locust, jut into the stream from the east bank and somewhat interrupt the viewscape from Frenchman Wharf where the Americans erected their defenses (Figure 21). Plum Point extends from the west bank between Henderson and Locust Points, creating a narrows where the channel runs very close to Plum Point. The points could have provided observation further downstream but the Americans did not use them. At the same time, the land jutting into the river prevented the Americans from seeing the approaching British to some extent.

In 1807, Benjamin Latrobe published a view of the Frenchtown Landing that gives an idea of the landscape where the American redoubt was located (Eshelman et al. 2010:127). Latrobe was interested in the area because it might serve as one end of what became the Chesapeake and Delaware Canal. His other images provide information about the wharf, and landscape as seen from the wharf (Hughes 2003:64, 66). These clearly show the basically flat terrain near the water and dominant hills away from the shore line, especially a view downstream (Hughes 2003:66).

Obstacles

The major naval obstacles for the British were the shallow water, twisting channel and a lack of information about the landscape. They overcame these by using small boats. The Americans were on home ground without obstacles because they had pre-positioned guns in their one battery at the wharf. The British overcame their obstacles, although they added substantially to the distance traveled by going up the wrong creek, probably, Bohemia River, due to their lack of knowledge about Elk River (Hughes 2003:29).

Cover and Concealment

The Americans had limited cover behind their makeshift position but were not concealed as the wharf jutted out into the river in plain sight. The British had no cover although they initially intended on using darkness to conceal their movement. To some extent, points of land offered concealment but they dictated the British route.

Observation and Fields of Fire

The Americans were already in position and could see the British approaching over open water. The British were visible as they approached in daylight and moved straight up the river toward Old Frenchman Wharf. The Americans opened fire on an advanced group, perhaps because they were unaware of the full size of the British landing party that was still behind Locust Point (Figure 22). Once upstream of Locust Point both British and Americans were in clear view (aside from cannon smoke) and with open fields of fire. The British did use Locust Point to mask their initial landing when the advance boats came under fire, an issue of concealment as well as observation.

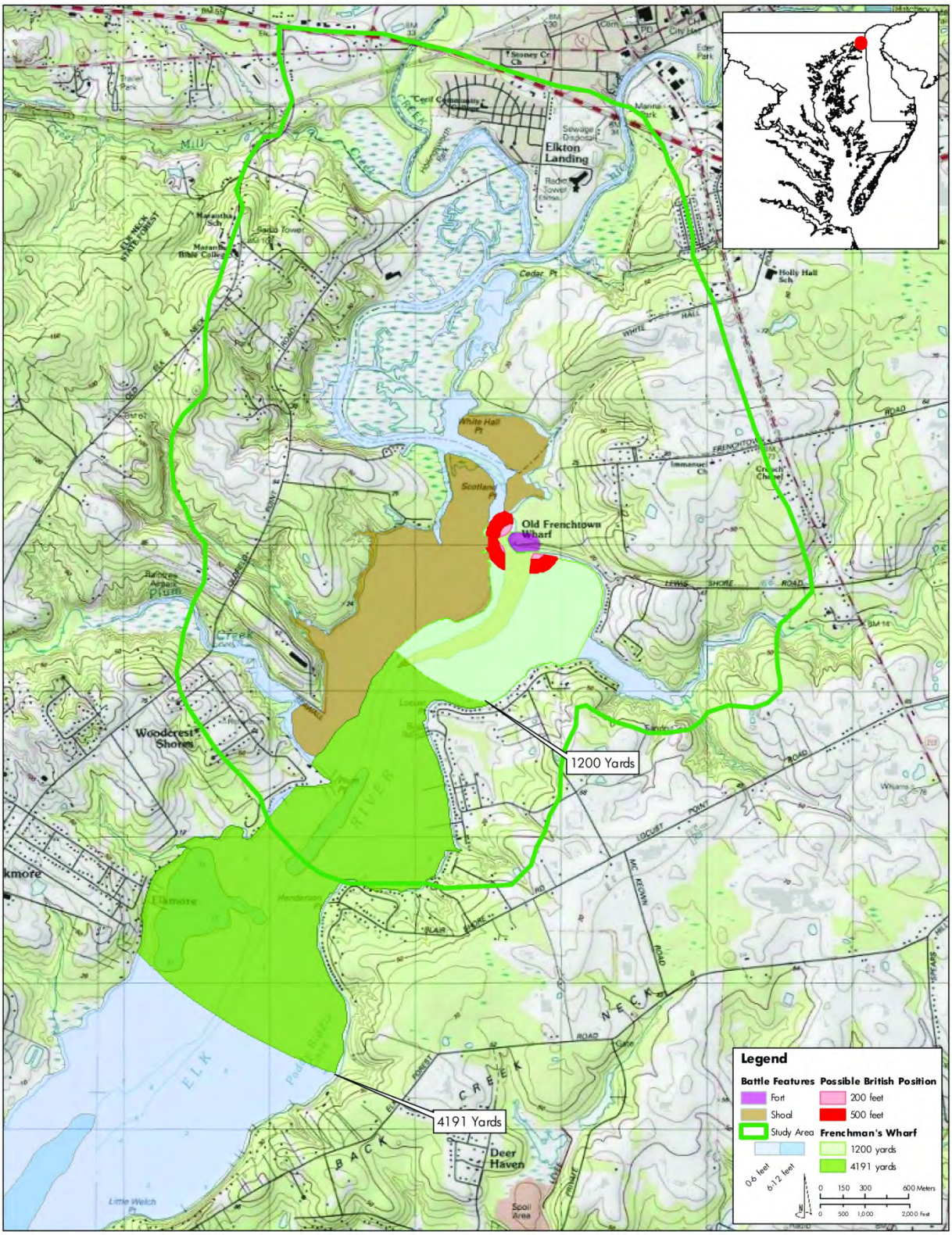

Figure 22. The First Raid on Elk River – Field of Fire (*USGS Quadrangle Elkton; Map by Sarah Lowry, New South Associates*).

Avenues of Approach

The Americans had no plans for an evacuation and were pre-positioned. The British approach was over open water in clear sight of the defenders. The channel depths were known from maps published as early as 1777, presumably the result of the British campaign against Philadelphia during that year (Plakos 2003:59). The British did use their landing party to vary the approach and threaten the Frenchtown wharf battery with being cut off. There was no opposition to this land threat.

Weather

The weather was not a factor. In fact, the cooler weather of April was probably better for the men rowing small boats. The night, seemingly, was fairly dark (Dudley 1992:344) but any effect it might have had was lost by the Bohemia River detour (Hughes 2003:29-30).

Troops Available

American forces consisted of only some 8 - 10 volunteers because the militia had returned home, in part because the British had not shown up as early as expected (Hughes 2003:30). The volunteers manned the unfinished Frenchtown Battery with its three, or four, 4-pounder long guns (Hughes 2003:25, 105). These men were militia, including some artillerymen. The American guns did not have a great deal of shot, being limited to 12 or 15 rounds, probably a total since the position was over run so quickly (Hughes 2003:25). The two cannon balls that have been found in the Elkton-Frenchtown area were three pounds in weight.

The range of 3- or 4-pounder cannon firing solid shot was over 1,000 meters. This meant that the channel between Locust and Plum Points was covered at long range. If they had grapeshot, this would have been used when the British crossed the halfway point of the cove between the wharf and the two points. This distance was circa 250 yards from the American battery.

Time Available

The British were not really restricted by the tides, which are minimal this far up the Bay but had wanted to move during the night. They were delayed by a variety of factors, especially a lack of knowledge about the river (Hughes 2003:29). This meant they arrived later than they wanted, potentially exposing them to enemy fire.

Principles of War

Objective

The American objective was to defeat the British raiders and preserve supplies and the vessels anchored above Frenchtown Landing. The British wanted to destroy the vessels and the supplies. In 1813, the militia utterly failed to defend Frenchtown and the 8-10 volunteers who happened to be there were limited to fewer than 20 rounds of ammunition for their cannon. The British objective was the destruction of military stores and any vessels that might be in the upper reaches of the Elk River. They were successful in rapidly eliminating resistance, destroying stores, then pursuing militia out of town, returning, burning other buildings and leaving the scene. Their goal was not to take ground, simply to destroy stores and shipping.

Offensive

The Americans opted for a defensive posture, hoping to repulse the British. The initiative clearly lay with the British who forced the issue by moving armed barges upstream, landing Marines to outflank, or cut off the artillery position, and then engaging the Frenchtown Wharf battery with fire from their carronades as soon as they came within range. While the range reported was a half mile, this seems excessive for carronades and, given the landscape, the British almost certainly moved very rapidly to within 400 yards to bombard the American position, possibly using more intimidating grape shot instead of 18-pound shot.

Maneuver

Both sides retained the ability to move. The Americans quickly evacuated their position when they ran out of ammunition. The British were not restricted to the river. As soon as the Americans began firing, a Royal Marine landing party was put ashore to outflank the battery, while other barges moved forward and brought the battery under close range fire.

Mass

The British clearly achieved mass as they were able to bring superior firepower to bear, first by their barge mounted carronades and then by Marines who both landed at the wharf and came a short distance overland against the wharf from a landing point below Locust Point. When faced with a creek crossing, British barges swiftly provided ferry service to get the marines into position to outflank the battery. The Americans violated mass in almost every manner possible. They had few men, and these were volunteers who stepped in when the militia went away. The American guns were three, or possibly, 4-pounders without adequate ammunition. They did have longer range, but after each gun fired three or four times, it was a moot point because there was no more ammunition.

Economy of Force

Economy of Force means using enough resources to succeed in the mission. The American violated this principle by not having regular troops or a massive force of competent militia at any point on the Elk River. The British were successful because they had superior firepower at critical places and times. They achieved artillery fire superiority from their boat-mounted cannon and then, by landing Marines, forced the American volunteers to withdraw.

Unity of Command

Unity of Command means that one person is responsible and that those under his command are obedient to his intentions. The American commander seems to have abdicated his responsibilities and sent his men home, leaving the defense to volunteers who happened to be on site when the British finally arrived. In the engagement, there was no American commander. The British commander led from the front and his instructions were followed in moving rapidly to attack the American battery, seize the land and then move against upstream targets.

Security

Security relates to obtaining information about the enemy while denying information about one's own force. Security is designed to guard against surprise. The Americans knew the British were coming but

then went home when they did not arrive as expected. The British had a near total lack of information about the river. They only knew that there was a landing and a flour depot. The lack of knowledge was exemplified when the British went up the wrong river. In the end, it did not matter because resistance was so ineffectual.

Surprise

Surprise is a force multiplier and represents a disaster for an unprepared side. Neither side was surprised, as the Americans were positioned and waiting on the British. The British were anticipating possible resistance. Both were ready and willing to engage.

Simplicity

Simplicity relates to the tactical and operational plan of the day. Both sides kept their plans fairly simple. The American plan called for resistance at river choke points but the militia had gone home, leaving any defense to volunteers. The British plan was more complicated in that they were moving upstream, guarding against the possibility of an ambush. There were apparently contingency plans to land troops if necessary and to assault any resistance with their cannon armed small craft. The British were experienced raiders and they had already demonstrated a pattern of effectively coping with local forces and destroying both shipping and stores in a rapid manner.

Battle Chronology and Overview (1814)

Sources about the July raid on Elkton are marginal and confusing. The British hardly mention it and then only in passing. American sources appear largely as newspaper accounts. The secondary accounts are clearly garbled and conflict with contemporary reports. Together, one impression is that this was not only a backwater but an insignificant backwater, by 1814. Elkton was defended by at least three fortifications and a boom across the river (Figure 23).

Fort Hollingsworth was “a small earth-work or redoubt, mounted with a few pieces of small cannon” (Johnston 1956:410, 414). According to Johnston (1956:41), it was erected “early in the war. It was manned part of the time. There were, I think, six guns in it – six-pounders, - except the one at the north port-hole, which was a twelve-pounder” (Johnston 1956:41).

There was a mud or earth battery built just below the old stone house [John Hanson Steelman House], which stood on the lower wharf; we had a little six-gun earthwork at Elkton. They several times came in sight of it with their barges, but got out of the reach of our shot. This battery was situated about a mile below Elkton (Sample April 9, 1881). Sample’s statement about the distance from Elkton is suspect and might be confused with Fort Defiance. The Elkton fort, Fort Hollingsworth, was “never tested by British advance under command of Captain Henry Bennett who were repulsed lower down the river at Fort Defiance” (Johnston 1956:410).

Fort Defiance was associated with the 1813 raid in late nineteenth-century accounts of the War of 1812. Both British and American reports of the 1813 raid clearly show that it was not involved. In fact, it might not have been built at the time and may have been erected because of the 1813 raid. A significant comment stated that “a six gun battery had lately been erected (James in Marine 1913:43) and it was

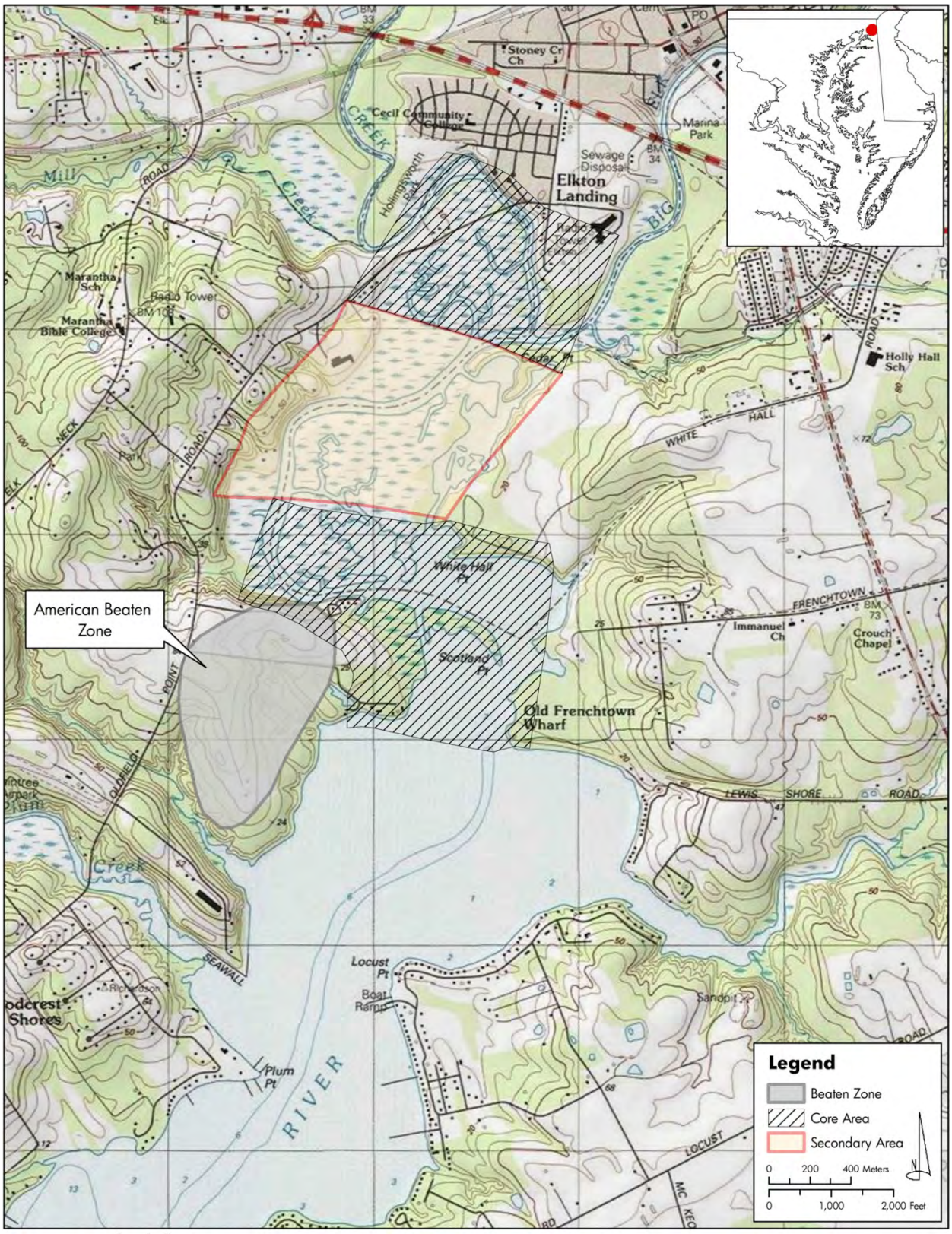

Figure 23. The Second Raid on Elk River (*USGS Quadrangle Elkton; Map by Sarah Lowry, New South Associates*).

seemingly built after the British were done "completing the work of destruction at Frenchtown" (Andrews 1925:699).

It was traditionally located about a mile downstream, below Fort Hollingsworth, at a point called Fowler's Shore in 1881 (Johnston 1956:410). Some remnants of the fortifications were still extant then. The fort was armed with either "four small four-pounders" (Andrews 1925:699) or was "a six gun battery" (James in Marine 1913:42). The two statements are not necessarily in conflict if the battery was to have six guns but only mounted four at the time of the attack.

Fort Frederick was located just upstream, above Fort Defiance. The name seems linked with a "smaller earth-work about 300 yards up the river from Fort Defiance" (Johnston 1956:410). Both forts were on bluffs that would have enabled plunging fire and covered the likely avenue of approach because "the channel at that time being near the bluff west [sic] of the fort" (Johnston 1956:410). Since the bluff is west of the river, the channel should be east of the fort.

The British came up river, passed by Frenchtown wharf, probably because it was destroyed the year before, and then rounded Scotland Point. Here they were clearly in view of any defenders at Fort Defiance, and probably of anyone at Fort Hollingsworth (Figure 24).

There is little information about the engagement at Fort Defiance but the British advance was terminated at this point, in part because of strategic instructions issued by Admiral Sir Alexander Cochrane was that "no time ought to be lost in taking of Forts – besides the great loss of lives – the Object may in general be attained without taking the Bull by the Horns" (Crawford 2002:III:133). Carried one step further, there was no point risking a landing party when they could almost certainly see that there were no masts upriver at Elkton.

The British did not go very far above Frenchtown as reported by Cockburn, "Captain Brown was with the Boats as high as French Town, and took Possession of every thing he could find afloat either on the Bay or in the upper Rivers" (Crawford 2002:III:155).

There is little British mention of any engagement, only that they were fired at several times from the land. American Commodore John Rodgers reported that, "on the 11th inst. four of the enemy's barges had been repulsed by a party of militia at Elkton, hat [sic] they were expected to return" (Crawford 2002:III:). The minor nature of the engagement was explained by one newspaper as, "An attack was made on Elkton on Monday evening by the British in four barges; after exchanging a few shot with the fort below the town they retired" (*Baltimore Republican* July 14, 1814). In that same issue, there was an "Extract of a letter from Elkton, dated Monday 11th, at 4 o'clock P.M. which said "The British have just made an attack on this place with four large barges full of men, and after exchanging a few shot, they returned down the river." The reference to 4 pm provides a time frame for noting when the attack occurred and that it was in broad daylight.

The engagement could not have lasted very long because the British withdrawal was reported in the *Loire*'s log for July 11, 1814 that they "anchored at the mouth of the Elk River – at Dark the Bots returned having captur'd a Light Schooner - & being fired at several times from the Shore by field Pieces

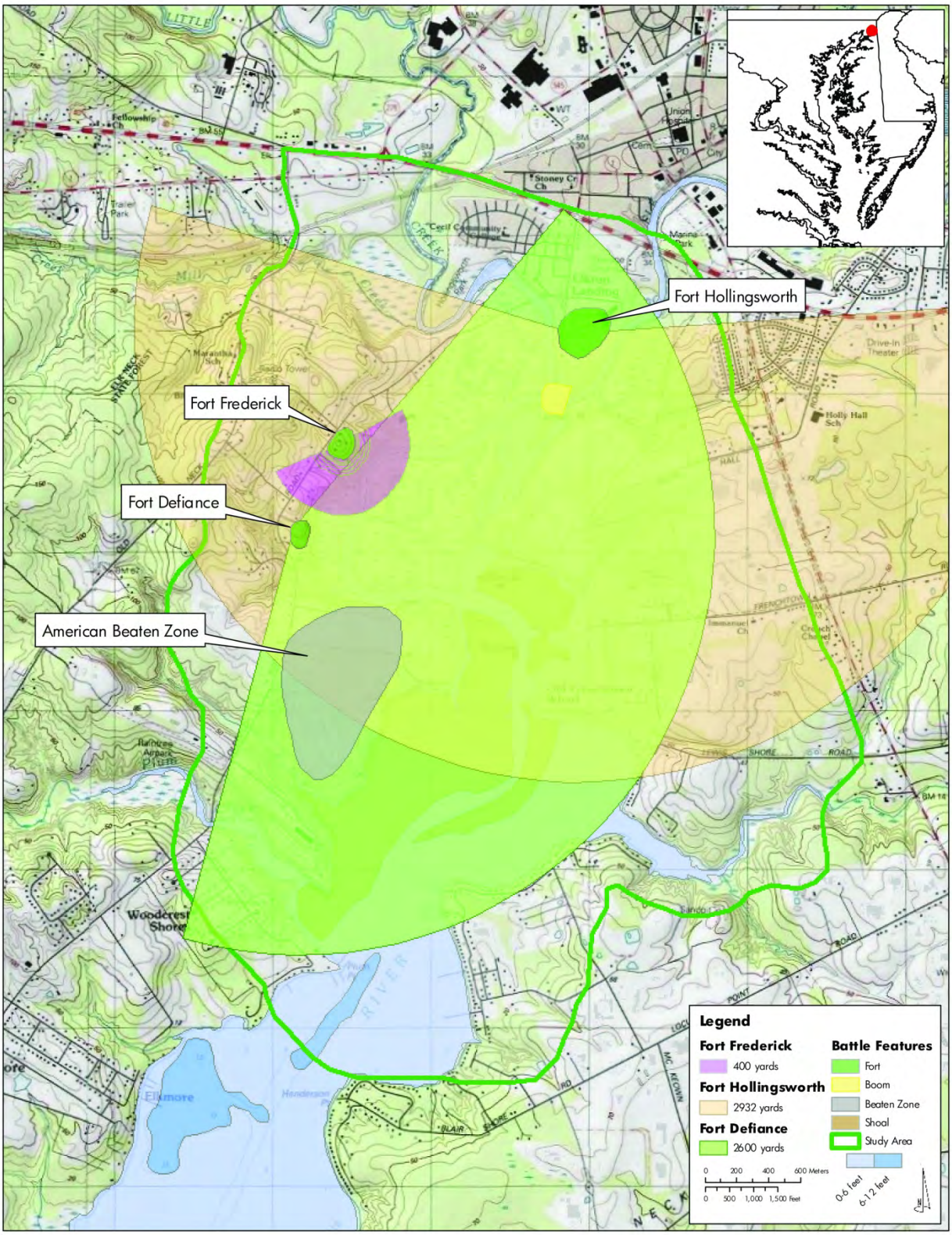

Figure 24. The Second Raid on Elk River – Field of Fire (*USGS Quadrangle Elkton; Map by Sarah Lowry, New South Associates*).

near Frenchtown – landed and spikes a Gun & destroyed the ammunition" (*Loire* 11 July 1814). The interesting thing is that they were fired on by field pieces and that there was no mention of any fortification.

The American response was rapid. Commodore John Rodgers wrote Secretary of Navy William Jones a letter that was printed in the *Maryland Republican* July 23, 1814. "On the 11th inst. That four of the enemy's barges had been repulsed by a party of militia at Elkton, hat [sic] that they were expected to return the succeeding night in greater force, I was induced to order Lieu. Morgan of the Navy to march 250 of the officers and seamen attached to the flotilla to his assistance of the defence [sic] of that place and the adjacent county." This group got there well after the raid and soon returned to Philadelphia without firing a shot.

METT-T Analysis

Mission

The Americans were better prepared in 1814 than in 1813. They presented a more effective resistance, were better armed, and had fortifications. Their intent was to defend the landing and any ships at Elkton. At the time of the attack, there probably were no vessels above Frenchtown. In 1814, the British mission was identical to 1813 but Captain Thomas Brown was ordered by Admiral Cockburn to operate on the upper Chesapeake "from Baltimore to the Elk, and to endeavor to intercept the Steam Boat (of Five hundred Tons Burthen) which runs continually between those places" (Crawford 2002:III:155). The raid "missed the Steam Boat by a few hours only" (Crawford 2002:III:155) as "Our information respecting her [Steam Boat] arrival at Baltimore was incorrect she get in it seems in the Afternoon, instead of after Dark as we supposed" (Crawford 2002:III:152).

Enemy

The British attack force was much smaller than in 1813. Only four barges are described as participating. This equates with the report by the *Loire* especially if all the boats came from a single vessel. The number of men is not precisely stated but was probably less than 100. If each barge had 12 oarsmen and a steersman, and could carry 20 marines, the grand total would be about 120. This was nothing like the force that arrived in 1813.

Terrain

Key Terrain

The Key Terrain in 1814 was slightly different from the earlier raid (Figure 25). The shallower, upper reaches of the Elk River presented more of a problem because of the long sweeping turns around the many shallow water mud flats above Frenchtown. The turns exposed the British small boat flotilla to fire for a longer period at a time when their own cannon, shorter range carronades, were out ranged by the American long guns.

The Americans made better use of the terrain by erecting at least three fortifications. These were Fort Hollingsworth, Fort Defiance, and Fort Frederick. Fort Hollingsworth was located further upstream and

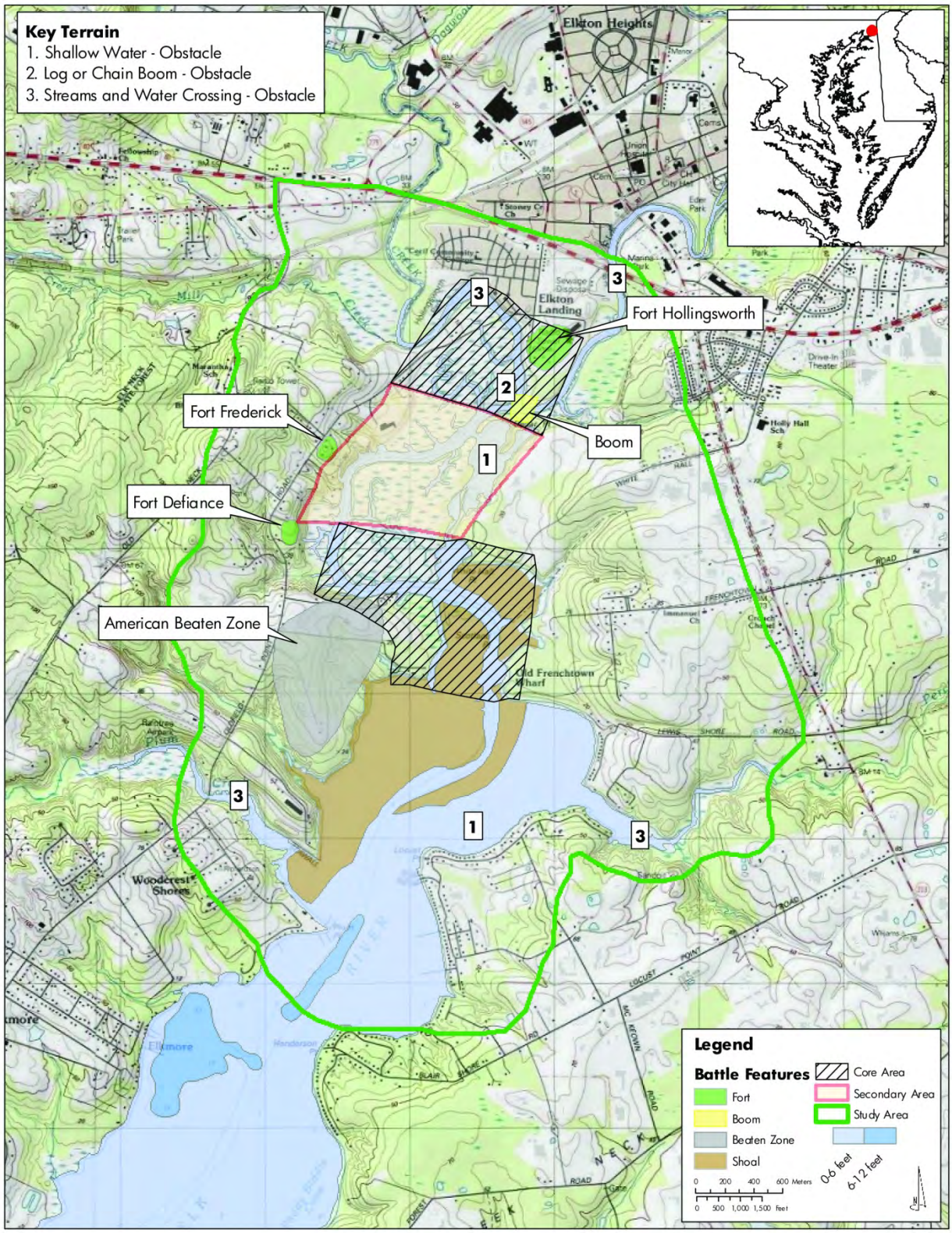

Figure 25. The Second Raid on Elk River – Key Terrain (*USGS Quadrangle Elkton; Map by Sarah Lowry, New South Associates*).

was not reported to have been involved in the firing but may have shot at the British although the range would have been extreme.

Fort Defiance and Fort Fredrick were located in close proximity a mile below Elkton on the upper reaches of a bend where the Elk River turned north after paralleling Scotland Point's northern shore. The open water bordered by shallows to the north of the channel provided good fields of fire for the Americans on higher ground.

Obstacles

Aside from the natural obstacles mentioned for the 1813 raid, a man-made obstruction was possibly present in the upper Elk River. It was not encountered in 1813, in part because the British did not proceed upstream much beyond the wharf. A boom was erected below Elkton. No remains indicating the boom were found during surveys in 1999 and 2000 (Hughes 2003:26-27). The documents indicate there was a boom but since the British do not mention one, it may not have been deployed at the time of the 1814 raid, or that the British never got up to it because they turned back when fired upon by Fort Defiance.

Cover and Concealment

Cover and Concealment were much the same in 1814 as the year before. The Americans did have better cover provided by fortifications on the western shore of the upper Elk River. These provided some cover but were almost certainly visible from the river. The British had no cover and, once they rounded Scotland Point, they were in clear view of the American defenders at Fort Defiance, Fort Fredrick and probably, Fort Hollingsworth from across the marsh.

Observation and Fields of Fire

Observation and Fields of Fire were American advantages in 1814. From their higher ground fortifications, they could gauge the range and point of shot impact. As local residents, they already had a fair idea of the practical distances involved. Their fields of fire were clear and slightly downward. Even Fort Hollingsworth had clear fields of fire across the marshes. The long guns employed by the American defenders out ranged the British carronades even though the British guns were much heavier.

The British were at a disadvantage because their guns were shorter range and their point of view was closer to the water surface. There are also questions about how high the British carronades could be elevated. The western shore of the Elk River where Fort Defiance and Fort Fredrick were located might have made it impossible for the barge mounted carronades to bring fire against them.

Avenues of Approach

The British Avenues of Approach were not limited to the river but they opted to use barges instead of marching over land in 1814. Given that they used only four or five barges, this makes sense because their manpower was limited and American militia could have assembled against them in such numbers as to threaten their survival. The American fortifications were effectively sited to cover the river and this was demonstrated in 1814 when they successfully repelled the smaller British raiding force.

Weather

Weather was not a major factor in 1814. The engagement took place during daylight hours in the heat of a July summer. If the heat and humidity affected the experienced British sailors in their rowing, it was not mentioned. For the defenders, the heat would have been less of a problem. Humidity affecting powder charges in the cannon would have had an equal impact on the day. If the British powder had long since been issued from shipboard magazines, that might have been a factor for both raids, but it was not mentioned. In fact, the British shot in 1813 seems to have carried well beyond the intended target at Frenchtown wharf suggesting it was not a problem.

Troops Available

The American resistance was largely militia. Numbers are confusing and inconsistent. A U.S. Navy reinforcement from Philadelphia arrived after the fighting ended but soon departed. Despite references to cannon in the various forts, the only accounts of American guns suggest 6-pounders, and possibly one 12-pounder at Fort Hollingsworth. There is some question as to whether they were mounted. The contemporary British account said they were fired on by field pieces without any mention of fortifications. It is likely that American militia who did fire cannon at the British were using small bore cannon that were not in obvious fortifications, in part, because British accounts said field pieces. If they were behind earthworks, this detail could not have been observed.

The Delaware Flotilla men, when they arrived manned an 11-gun battery but this fortification is unknown. It may mean that they took positions at all three forts where it was possible for six guns (Fort Hollingsworth), three or four guns (Fort Defiance), and one or two guns at Fort Fredrick could have been located. Otherwise, the Flotillamen had to have simply run their guns out on solid ground at Elkton, above the under armed Fort Hollingsworth.

Time Available

In 1814, time was much more of a factor for the British. The longer they were on the Elk River, the more defenders would mass to fight them. They had to conduct their raid quickly and get away.

Principles of War

Objective

The American objective was to repulse the British. They were successful. The British objective was to burn a steam powered boat that was carrying supplies from Elkton to Baltimore. Once they were above Scotland Point, they could see across the marsh and tell there were no ships at Elkton. This phase of their mission was no long operative. On their way down river, the landing party apparently seized a schooner and brought it back to the Loire.

Offensive

Offensive, or initiative, lay with the British because they were attacking. This might be somewhat incorrect because they violated several other principles. Certainly, once the British knew the steamboat was not at Elkton; there was no sense of acting on the offensive. The Americans did act offensively by moving field artillery to points, not necessarily fortifications, where they could engage the British barges.

Maneuver

Maneuver might be seen as the British principle. They did go up the river and initiate contact. However, they did not really have the capability to operate on land and, once American field pieces began firing from higher ground, they had little option but to withdraw. The Americans, nominally in a defensive posture, did maneuver to bring the British under fire. If British accounts that the American used field pieces to fire at them are correct, then the American defenders maneuvered their artillery to bring the barges under effective cannon fire.

Mass

Mass was on the American side. British numbers were not sufficient to over awe the defenders and, if pressed into fighting, they were outnumbered. If the barge mounted carronades could not be elevated to fire at cannon on the river bluffs, then the Americans clearly achieved mass by having superior fire power at the critical place and time.

Economy of Force

Economy of Force represents a shift for both sides. In 1814, the Americans had enough defenders to provide effective resistance whereas the British did not have enough small boats, artillery, or manpower to achieve their aims. As a result, the British violated economy of force as the Americans achieved mass. The strategic implications of economy of force for the Americans were that they had massed more and better troops elsewhere, yet there were still enough militiamen to defend Elkton when the British arrived.

Unity of Command

Unity of Command is, perhaps, best demonstrated by the British who had a specific mission to intercept the steam packet. Soon after rounding Scotland Point, they could tell that neither the packet nor any other vessels were at Elkton. In accordance with their instructions, they withdrew. American leadership activity is difficult to pinpoint, especially as to names. That said it is clear from British accounts that someone got the field pieces into position to conduct effective firing on the barges. Coupled with the resistance and the absence of any shipping, the attack fizzled out.

Security

Security does not seem significant. Coming up a long river through hostile territory allowed the defenders to know British strength. The British did not have any clear idea of what they would encounter, only that they were to intercept shipping. This suggests a lack of actionable military intelligence on the British side but they did know the steam packet docked at Elkton. They just picked the wrong time to raid the town. American resistance was enough to halt the British once they knew their objective was not possible. There was also enough advanced warning to get the defense ready.

Surprise

Surprise is not a factor for the 1814 raid. Both sides were willing to engage up to the point and were ready to do so.

Simplicity

Simplicity is not a factor. The British mission was simple – go to Elkton and intercept the steam packet. The *Loire* had both the small boats and the manpower to conduct the raid. The Americans only had to muster their forces are fortifications and open fire when the British came. Moving field artillery about the landscape was equally simple for experienced men and they seemed to have been well positioned.

Interpretations

This section includes interpretive elements for both the 1813 and 1814 raids because they took place on, and around, the same body of water. It is significant that Plakos noted the War of 1812 channel in the study area is "very similar to the modern channel" but not as deep (Plakos 2003:60). This is an important observation, especially since the Corps of Engineers did not report dredging the channel (Plakos 2003:65).

An underlying assumption of Admiral Sir Alexander Cochrane was that "no time ought to be lost in taking of Forts – besides the great loss of lives – the Object may in general be attained without taking the Bull by the Horns" (Crawford 2002:III:133). Given these instructions, it should not be surprising that the 1814 raid by four barges was terminated after firing a few shots.

Plakos (2003:72) identified two apparent vessels using sonar. One, (18CE319), was probably burned during the 1813 British raid and is possibly a packet (Plakos 2003:83,129). This site was recommended for additional research. The other wreck (18CE318) was described as a modern vessel based on its condition and not recommended for additional research (Plakos 2003:86, 87). Plakos recommended additional surveying in the river.

Both Plakos and Hughes reported magnetic anomalies associated with cultural material. Hughes anomalies 2, 3, and 7 may be associated with one of the British raids. Hughes's Anomaly 2 was located off the Old Frenchtown wharf (Hughes 2003:84). While the interpretation suggested a twentieth-century origin, the suggestion that it might mask earlier material (Hughes 2003:84) indicates a more detailed inspection should be made.

Anomaly 3 was located in shallow water approximately 300 yards (275 meters) north-northeast of the Old Frenchtown wharf. Visual inspection revealed a partially buried wooden object described as a timber: "smooth and curved and had other wood connected to it" (Hughes 2003:86). Due to low visibility and time constraints, this material was not further inspected but the curved timber with attached elements certainly suggests watercraft, an interpretation that is supported by the ballast visible at low tide.

Anomaly 7 was located further upstream on the edge of the channel within close artillery range of Elkton Landing and might be associated with the 1814 raid since fragments of chain were recovered (Hughes 2003:87). What was thought to be chain shot turned out to be boat drain plugs (Hughes 2003:88). A possible lynch pin to lock down a truck (wheel) for a gun carriage was also found but not recognized as such at the time. Since this location is within the American beaten zone where the British landing vessels would have been brought under fire, additional inspection is recommended.

When Plakos conducted remote sensing in 2000, he used a 12-foot johnboat to work outside the river channel. He reported many sunken trees and some areas were so shallow the survey crew could not get into them with the jon boat. To effectively survey in these shallows, either a kayak or some other shallow water craft would have to be used. The bottom is a muddy slurry so there would some difficulty wading. Conditions were so difficult, Plakos and his crew probably only surveyed a "workable" river width of some 30 meters and did three lanes. It was even narrower above Cedar Point. They did a walking/probing search in the shallow water but found nothing.

For surveying the cove between White Hall and Old Frenchtown Wharf, a kayak mounted magnetometer unit would probably be the best alternative. There is cultural material there including a possible vessel identified as Anomaly 3 in Hughes's thesis (2003). This anomaly (3) is just off the unnamed point of land that juts into the river opposite Scotland Point and above Old Frenchtown Wharf. It is just above a continuation of the Frenchtown Road. This anomaly has high potential of being the second vessel destroyed by the British in the 1813 raid. Mr. Lorett's packet was driven ashore and in this case, given that the river probably has changed little, "ashore" might be a relative term really meaning that it was run aground, "run ashore on the approach of the enemy" (*National Intelligencer* May 6, 1813). In fact, if it were run aground, and thus not moveable, the mucky bottom might have allowed it to be gotten off later if no damage occurred. Since the British burned it, the slurry covered bottom may have preserved a considerable amount of the lower hull in aerobic mud.

North of Scotland Point (the sand bar), there are two wrecks identified by Plakos (2003). One of these is pre-1840 and probably associated with the 1813 raid. The other is a twentieth-century vessel. Plakos's analysis was based on a very small sample and additional work is necessary to confirm his interpretation that the wreck was one of the packets destroyed by the British.

In addition to the core and secondary areas, there are two beaten zones where shot likely fell if it missed its intended target. Very few American shots were fired during the first engagement and these likely went down stream, passing west of Locust Point. During the second engagement, the Americans were more successful and fired considerably more shots at the British. Since these were fired further upstream near Elkton Landing, it is likely that they impacted the north (upstream) side of the high ground west of Scotland Point. If this did happen, then the bulk of these three or four shot should be found on the north facing slope shown as Beaten Zone 1 on Figure 23.

In a similar fashion, when the British made their first raid, they fired at Old Frenchtown Wharf. Any of their 18 pound balls or grape shot that missed the wharf area would have landed in the shallow mud flats north of Old Frenchtown Wharf or the hill northeast of it. This zone is shown as British, Beaten Zone 2 on Figure 19.

7.0 THE RAID ON GEORGETOWN AND FREDERICKTOWN ON THE SASSAFRAS RIVER (1813)

Lawrence E. Babits, Christopher T. Espenshade, and Sarah Lowry

Battle Chronology and Overview

The British raid up the Sassafras River to Georgetown and Fredericktown was one of a series of attacks against towns on the upper Chesapeake in 1813 (Figure 26). Frenchtown on the Elk River was attacked on 29 April and Havre de Grace was attacked on 3 May (Dudley 1992:118). By 5 May, the Sassafras River was the only river in the upper Chesapeake that Cockburn had not yet "examined and cleared" (Dudley 1992:344).

The Approach

Cockburn's raiding party consisted of sailors, 150 Marines, and artillerymen, most of whom had participated in earlier raids (Dudley 1992:342, 344). The number of boats can be estimated with some accuracy because a sketch by a British participant survives (Figure 27) (Anonymous 1813). In the sketch, there is a cutter advanced toward the American positions covering a choke point in the river. A short distance downstream is a second boat, followed by two carronade armed barges and a rocket boat. Finally, six troop carrying barges bring up the rear. The rocket boat used against Havre de Grace was again used on the Sassafras (Dudley 1992:344).

Cockburn intended that the raiders would arrive at dawn but completely underestimated the distance involved in transiting the river. Consequently, it was "late in the morning" before Americans were encountered (Dudley 1992:344). The first Americans were two men in a small boat who were taken by the British, they were:

> "sent forward. . . to warn their Countrymen against acting in the same rash manner the People of Havre-de-Grace had done, assuring them if they did that their Towns would inevitably meet with a similar Fate, but on the contrary, if they did not attempt Resistance no Injury should be done to them or their Towns, that Vessels and Public Property only, would be seized, that the strictest Discipline would be maintained, and that whatever Provisions or other Property of Individuals I might require for the use of the Squadron should be instantly paid for in its fullest Value" (Dudley 1992:344).

Engagement at the narrows

The Americans, foolishly, resisted from positions a mile below the twin towns (Figure 28). This narrowing of the river was ideal because there was high ground on both sides of the river (Dudley 1992:344). There were about 400 American militiamen, almost equally divided between the north and south banks where they had "entrenched". The south bank position seems to have been where the one "long gun" was emplaced (Dudley 1992:344).

The British quickly returned fire with carronades on their ships' boats and with rockets (Dudley 1992:344). Under cover of this fire, they landed parties above (upstream of) the militia positions, and

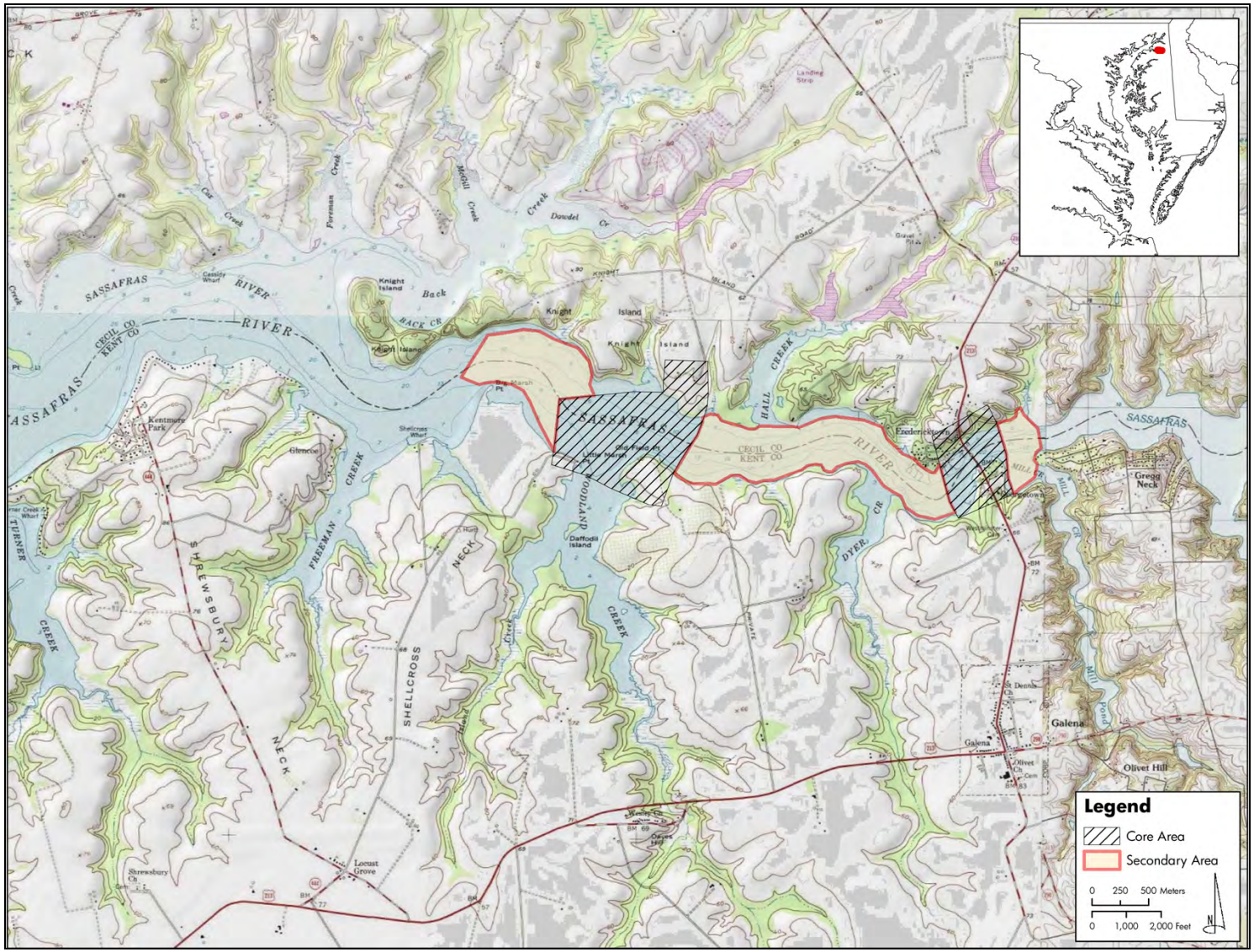

Figure 26. Map of Core and Secondary Areas for the Raid on Georgetown and Fredericktown (*USGS Quadrangles Galena and Earleville; Map by Sarah Lowry, New South Associates*).

probably on both sides of the river. In the course of passing the militia positions, the British suffered five wounded men, but only one of these was severe. The landings caused the militia to flee into the woods (Dudley 1992:345). When the raiders reached the towns, they "destroyed" all stores, unoccupied buildings, and "four Vessels laying in the River" (Dudley 1992:345). Cockburn is not explicit in saying they burned the four vessels but this would have been the easiest way to destroy them. The four ships were almost certainly schooners.

Withdrawal

The British very rapidly reembarked their men and moved downstream. They stopped at a small town that did not resist, paid for what supplies they took, and returned to their ships.

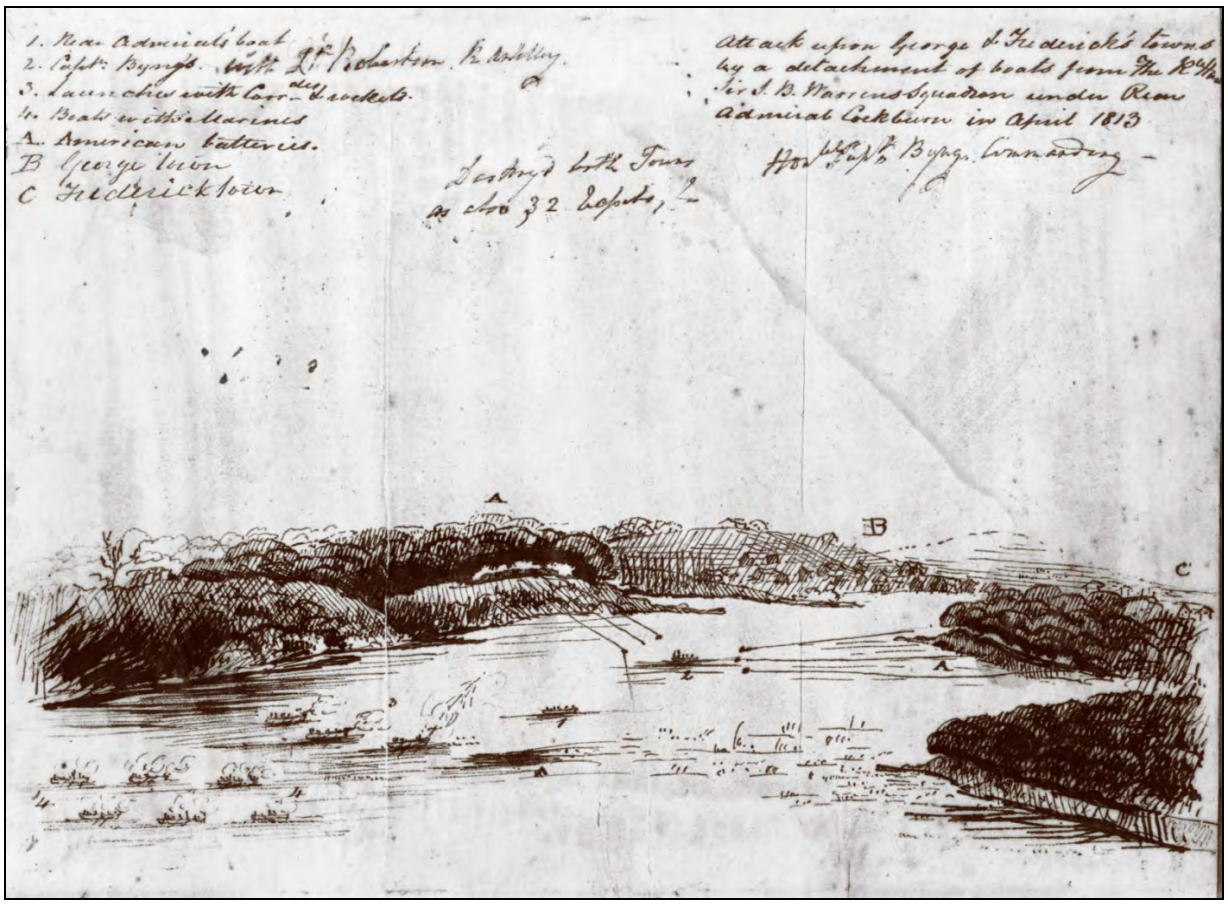

Figure 27. *Attack upon George & Frederick's towns by a detachment of boats from the R[ight] Honorable Sir J.B. Warren's Squadron under Rear Admiral Cockburn in April 1813, Hon. Capt. Byng, Commanding*; (*after Eshelman et al. 2010:12*). (Note: the towns are opposite from their real positions).

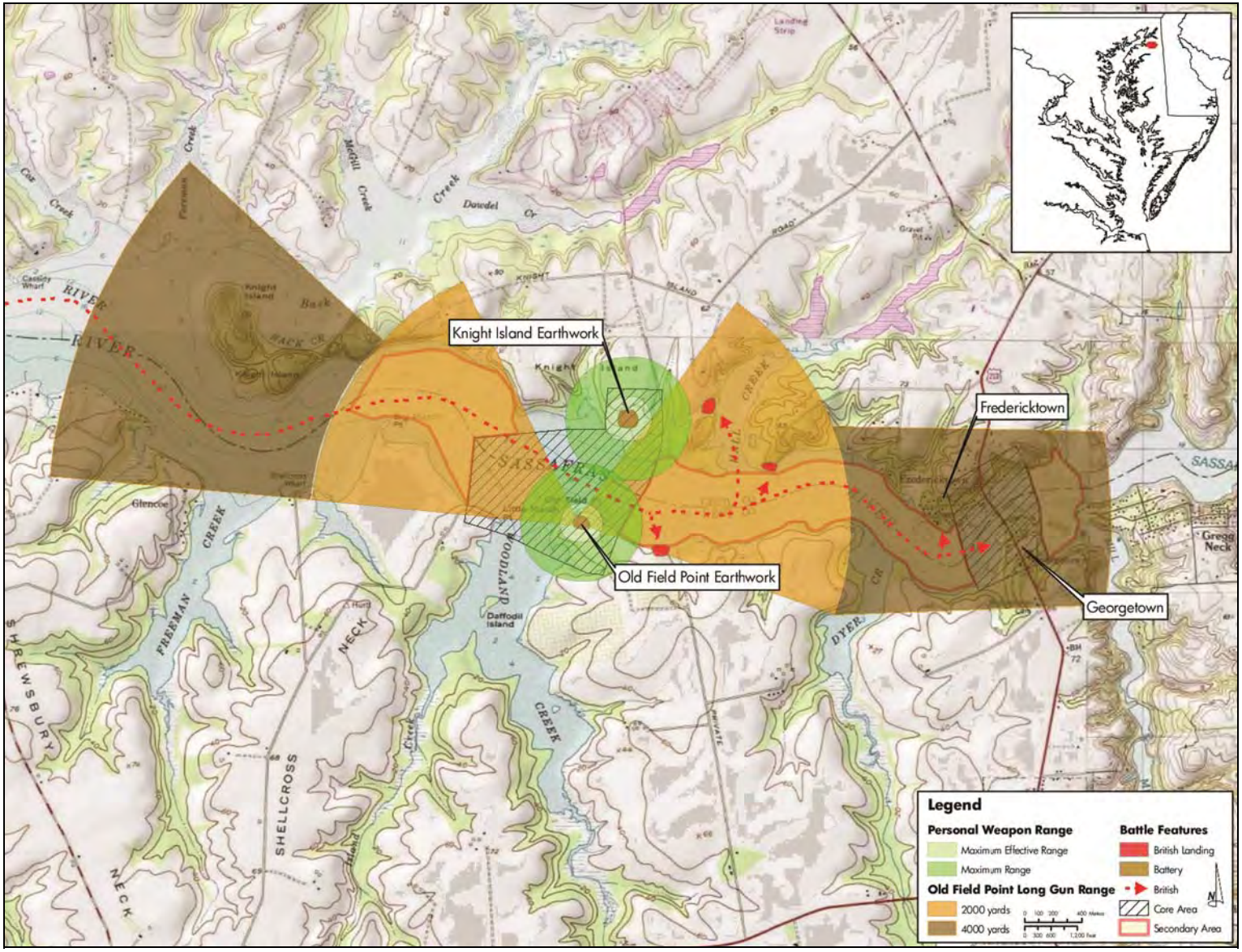

Figure 28. The Raid on Georgetown and Fredericktown - Field of Fire (*USGS Quadrangles Galena and Earleville; Map by Sarah Lowry, New South Associates*).

METT-T Analysis

Mission

The American mission is difficult to specify. Effective resistance was a virtual impossibility due both to British strength and to the British ability to maneuver and mass for attacks when and where they wanted. The American defensive effort was left to the local militia because the main American war effort was directed toward the Great Lakes frontier (Hickey 1989:127,185). Spread thin, the Americans were no match for the British. Some towns opted to take advantage of British statements that private property, except for ships, would be spared if there were no resistance (Dudley 1992:342,344). Others tried to fight but were overwhelmed by British numbers and firepower (Dudley 1992:344-45).

The British mission was aptly spelled out in documents originating at the higher command levels as well as in the immediate operations order. The assignment of British Army forces to work with the Royal Navy was spelled out in a March 20, 1813 letter by Bathurst, "The object of the Expedition is to harass the Enemy by different attacks, you will avoid the risk of a general action, unless it should become necessary to secure your retreat" (Dudley 1992:325). The most obvious goal was to destroy the American naval forces and military supplies, "and ruin the coasting trade" by burning civilian vessels (Hickey 1989:153). Each attack was not to secure a foothold on the land as the instructions ordered "reembarking the Force as soon as the immediate object of each particular attack shall have been accomplished" (Dudley 1992:325).

A corollary to the raiding and destruction of resources was that civilian property was to be respected. Bathurst (Dudley 1992:325) ordered:

> If you shall be enabled to take such a position as to threaten the Inhabitants with the destruction of their property, you are hereby authorized to levy upon them Contributions in plate and Money in return for your forbearance. But you will not by this understand that the Magazines belonging to the Government, or their Harbours, or their Shipping are to be included in such arrangement.

Such a circumstance occurred on the Sassafras. The British further interpreted these instructions by letting inhabitants know that, if no resistance was encountered, the British would not destroy anything but government property and shipping (Dudley 1992:341, 344-345). According to Cockburn (Dudley 1992:344), before proceeding up the Sassafras, the British sent two local men in their own boat:

> to warn their Countrymen against acting in the same rash manner the People of Havre-de-Grace had done, assuring them if they did that their towns would inevitably meet with a similar Fate, but on the contrary, if they did not attempt Resistance no Injury should be done to them or their Towns, that Vessels and Public Property only, would be seized, . . . that whatever Provisions or other Property of Individuals I might require. . . should be instantly paid for in its fullest Value.

Enemy

The British forces involved with the May 6, 1813 raid on Georgetown and Fredericktown had considerable experience conducting precisely this type of search and destroy mission over the last month. The same officers and men had been working together in March on Virginia's waters (Dudley

1992:322, 339-40). Immediately before the attack on the Sassafras River, they had struck Frenchtown on the Elk River and Havre de Grace at the headwaters of the Chesapeake (Dudley 1992:118; 341-43).

The British flotilla consisted of *Maidstone*, *Mohawke*, *Fantome*, *Dragon*, *High Flyer*, and *Dolphin* (tenders). From these ships, a rocket boat and at least 10 ships boats (launches, cutters, and barges) went up the river. There was a ship landing party as well as 150 marines and a detachment of Royal Artillery (Dudley 1992:344), the same men who had participated in the destruction of Frenchtown, Havre de Grace, and raided the Rappahannock.

Terrain

Key Terrain

Initially, the river must be considered as key terrain, especially as the shallow water dictated only small boats can be used so that even British tenders could not operate upstream (Figure 29). The river divided the towns of Fredericktown and Georgetown, necessitating that troops be ferried across after marching to Georgetown if they were all to assemble on one side. Until joining, the two landing parties were separated and coordination may have been affected.

Points of land jutting into the stream interdicted the channel at Old Field Point where the Americans had earthworks slightly over a mile below Georgetown (See Figures 26 and 27). From the British perspective, the key terrain was not the high ground but the river's width. At the choke point, the river is over 500 meters wide. This means that there was a zone midway between the American positions that could not be reached by American musketry. Figure 27 seems to show this in that apparent indicators of American shot are shown falling to either side of the lead boat. If the following boats took the same course, they would be safe from musket fire. The same high ground land provided observation further downstream as far as another point just above the junction with Back Creek. Here, the river turned south.

Obstacles

The major naval obstacle for the British was the shallow water. They overcame this by leaving their ships in the upper Bay, using small boats, and by landing Marines to march overland. Because there are creeks running off the river that could serve to block the British landing parties if they marched overland to Fredericktown and Georgetown, it is likely that the landing parties were reembarked to move against the towns. This is an interpretation based on the fact that the British ground forces got to the towns so rapidly and that there is no record of the men being ferried across the river between the towns, something that would have been done if their landing party had marched overland.

The Americans were on home ground without obstacles because they had a pre-positioned gun in one earthwork.

Cover and Concealment

The Americans had cover behind their positions but were not, apparently, concealed. Even if they were concealed, they gave their positions away by opening fire. The British had no cover although they fully

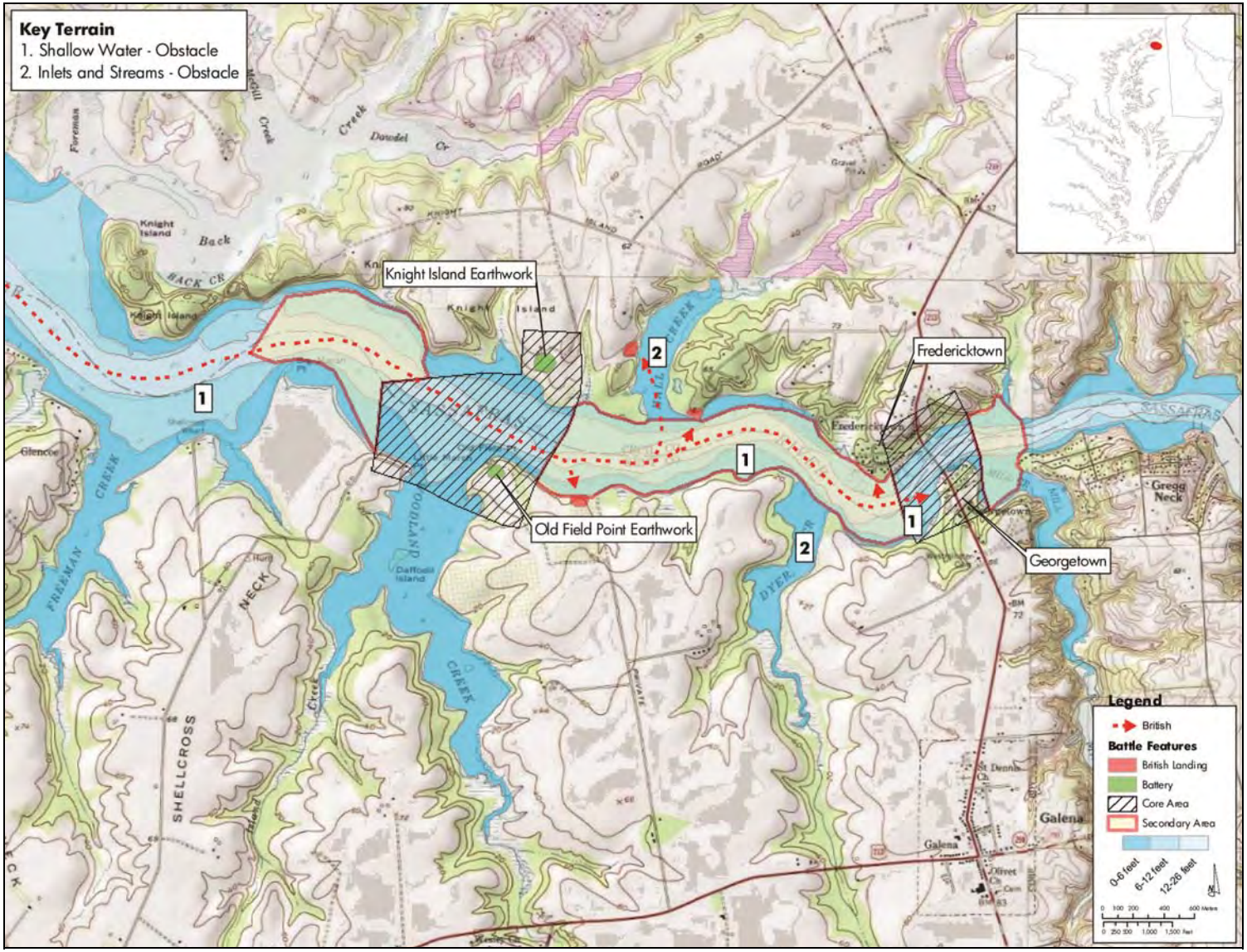

Figure 29. The Raid on Georgetown and Fredericktown - Key Terrain (*USGS Quadrangles Galena and Earleville; Map by Sarah Lowry, New South Associates*).

intended, initially, on using darkness to conceal their movement (Figure 30). To some extent, river bends offered concealment. Once the British landed Marines above the American positions, the Americans used woods for cover and concealment as they attempted to avoid an open field fight.

Observation and Fields of Fire

The Americans were already in position and could see the British approaching over open water. The British were visible as they approached in daylight and came around a point in the river. At this juncture both sides were clearly visible and within range. One aspect of observation that is not readily apparent is that the British apparently observed where American shot was falling short of hitting the lead boat. This allowed following craft to take the same course and avoid musket fire.

Avenues of Approach

The Americans appear to have had plans for an evacuation that reflected a desire to avoid open battle. The British approach was over open water but, when faced with resistance, they also debarked Marines to approach over land and outflank the American position.

Weather

The weather was not a factor. In fact, the cooler weather of April was probably better for the men rowing small boats and the Marines marching overland than it would be a month later. The night, seemingly, was fairly dark but any effect it might have had was lost through delays in getting up to the batteries at the narrows (Dudley 1992:344).

Troops Available

American forces consisted of some 400 men, about equally divided between two positions on each side of the river and "entrenched"). These men were militia, including some artillerymen. The one gun was described as a long gun, probably in the six-pounder range, although this is not clearly stated (Dudley 1992:344).

Time Available

The British were not really restricted by the tides but had wanted to move during the "darkness of the Night" (Dudley 1992:344). They were delayed by a variety of factors, especially a lack of knowledge about the river (Dudley 1992:344). The Americans apparently used the extra time to man their batteries at the choke point where two points of land came together. Other than this, the British intended to move in rapidly, burn any vessels and supplies and then leave.

Principles of War

Objective

The American objective was to defeat the British raiders and preserve supplies and four vessels anchored in the river. The British wanted to destroy the vessels and the supplies, as well as obtain supplies for themselves.

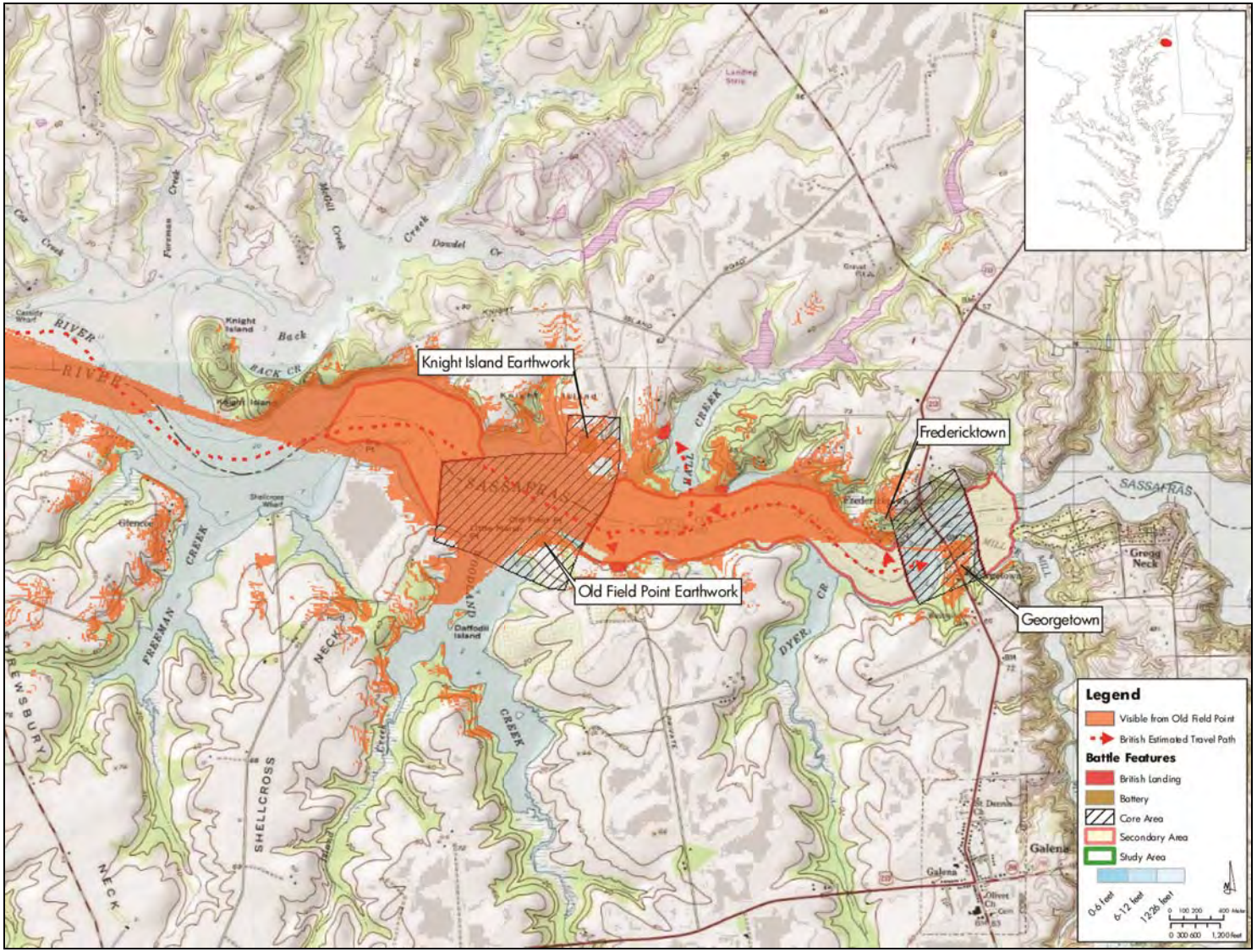

Figure 30. The Raid on Georgetown and Fredericktown - Viewshed from Defenses (*USGS Quadrangles Galena and Earleville; Map by Sarah Lowry, New South Associates).*

Offensive

The Americans opted for a defensive posture, hoping to repulse the British with the gun and earthworks below Georgetown. The initiative lay with the British who forced the issue by attacking the American defenders, moving upstream past their positions, and then landing Marines to outflank the artillery position and threaten towns further upstream. The initiative was clearly in British hands.

Maneuver

Both sides retained the ability to move although the British were constricted to some extent by water depth. Some British boats moved very rapidly, passed the American positions, and then landed Marines probably on both sides of the river, cutting the Americans off from the towns further upstream. While the Americans may have planned on holding their positions without maneuvering, they were outflanked by the British landing. At that point, the Americans seem to have had little difficulty withdrawing. Ultimately, the British were most successful as their landings both outflanked the American batteries and lightened their boats so they could easily proceed upstream.

Mass

The British clearly achieved mass as they were able to bring superior firepower to bear, first by bringing their small boats and artillery to bear on the artillery positions, then on land as they achieved superior flanking positions and forced the American withdrawal.

Economy of Force

Economy of Force means using enough resources to succeed in the mission. The American violated this principle by not having regular troops or a massive force of competent militia. The British were successful because they had superior firepower at critical places and times. They achieved artillery fire superiority from their boat-mounted cannon and then, by landing Marines, forced the American militia to withdraw. Even though the American force had a slight advantage in numbers, the quality of British Marine infantry was far superior to the poorly trained militia.

Unity of Command

Unity of Command means that one person is responsible and that those under his command are obedient to his intentions. The American commander was in charge, but there is no account stating who ordered the withdrawal. The one British commander led from the front and his instructions were followed in more closely engaging the American batteries and in the movement to outflank the American positions. In fact, the limited destruction of civilian property suggests that the British were thoroughly under control, destroying only supplies, vessels, and the property of those who offered resistance.

Security

Security relates to obtaining information about the enemy while denying information about one's own force. Security is designed to guard against surprise. The Americans seem to have, whether intentionally or not, an advance warning party downstream on the Sassafras. This group was taken by the British who then sent them ahead with the message that, if there was resistance, private property would also be destroyed.

The British had a near total lack of information about the river. In fact, Admiral Cockburn admitted that he "was frustrated by the Intricacy of the River, our total want of local Knowledge in it . . . and the great Distance the Towns lay up it" and this contributed to a delay in conducting the attack (Dudley 1992:344).

Surprise

Surprise is a force multiplier and represents a disaster for an unprepared side. Neither side was surprised as the Americans were positioned and waiting on the British. The British were anticipating possible resistance. Both were ready and willing to engage. The British did achieve a tactical surprise of sorts by landing their Marines and outflanking the American artillery position. In fact, the British gave up any possibly surprise by sending "forward the two Americans in their Boat to warn their Countrymen against acting in the same rash manner the People of Havre-de-grace had done" and then "allowed sufficient Time for this Message to be digested" (Dudley 1992:344).

Simplicity

Simplicity relates to the tactical and operational plan of the day. Both sides kept their plans fairly simple. The American plan called for resistance at the choke point on the river. The British plan was more complicated in that they were moving upstream and guarding against the possibility of an ambush. There were apparently contingency plans to land troops if necessary and to assault any resistance with their cannon-armed small craft.

Interpretations

There are two distinct types of survey zones, the river and the land to either side, each with Core and Secondary areas. The Core areas in the river are related to the downstream engagement with the American position at Old Field Point and the destruction of four vessels in the river between Georgetown and Fredericktown (Figure 26). The downstream (western) border is the point of land at Woodland Creek's northwest edge. The upstream end would be the mouth of Mill Creek. The terrestrial portion of these areas would be the southern and northern banks of the river from just above Old Field Point to Mill Creek.

The Core area in the vicinity of Old Field Point and the Knight's Island Earthwork is approximately one mile further west (downstream) from the survey boundary on the original proposal submitted to ABPP for the present work and from the Core area identified by Eshelman and George (2000). Here the land extends into the river creating a natural end to the viewscape from the American position. This point is at extreme range for a long gun firing grape shot and the point would have been struck by solid shot. When the British boats rounded Little Marsh Point, they were brought under fire and began returning fire. No boats are reported as sunk in this engagement. Since the British moved rapidly to pass the American position, there should be a scattering of shot downstream from Old Field Point and opposite it where the British would have been in a musket crossfire. This musket beaten zone should be in two parallel clusters, separated by a zone in the center of the stream where American musket shot did not reach.

The American weaponry was largely muskets (0.69-caliber using a ball circa 0.62-inch in diameter). The long gun could have been a 12-pounder, but a 6-pounder seems more likely. Solid shot would range from 4.52 inches in diameter (12-pounder) to 3.58 (6-pounder) (Ripley 1970:378). Grape shot would have balls ranging in size from circa 2.1 inches (12-pounder) to about 1.0 inch (6-pounder). With the exception of the 12-pound solid shot, a definitive magnetic signature is unlikely. The British weaponry included 0.75 caliber muskets firing a 0.68-0.70 inch diameter ball, cannon, probably 18-pounder carronades on the boats, and rockets. The rockets had iron components that might be detectable using a magnetometer. The other primary river survey area would be the waterfront between Georgetown and Fredericktown, and between Dyer Creek (west) and Mill Creek (east) where the British burned four vessels. These vessels, if they were not cleared after the War, or by later river clearance work, would have definitive magnetic and side scan signatures. They are more likely to be located in the river's deeper water but the possibility that they were later dragged to more shallow water along the riverbank cannot be discounted.

The terrestrial portion of the Core area would include Old Field Point and the Knight Island Earthwork on the north bank. Earthworks and military artifacts have been reported in these areas, but they have also been heavily impacted by modern earth moving. Other zones that might be significant but that are unlikely to contain evidence of the battle are structures known to have been burned during the short British occupation.

8.0 THE BATTLES OF ST. LEONARD'S CREEK (1814)

Lawrence E. Babits, Christopher T. Espenshade, and Sarah Lowry

Battle Chronology and Overview

The four engagements (June 8, 9, 10 [first battle], and June 26, 1814 [second battle]) on St. Leonard's Creek involved the Chesapeake Flotilla commanded by Captain Joshua Barney and Royal Navy vessels under Captain Robert Barrie. In terms of sheer firepower, the American flotilla was badly outgunned. Barney led his flotilla from Baltimore on 24 May 1813, heading down the bay. On June 1, 1814 when the flotilla encountered elements of the British fleet in the Chesapeake Bay near St. Jerome's Creek it withdrew northward with the British in pursuit. As the Chesapeake Flotilla continued evading the British, the ships pulled into the Patuxent River in a straggling line astern. Neither Barrie nor Barney wanted a general engagement, but when the British made an attempt to cut off a civilian American schooner and jeopardized Gunboat 137, a Jeffersonian gunboat that was acting as a supply vessel, Barney anchored two vessels and opened fire. After a brief exchange of cannon and British rockets, the Americans withdrew into the Patuxent.

After a few days anchored near Drum Point, Barney was faced with a larger British force and withdrew upstream on June 6. By June 8, Barrie had his vessels in the Patuxent as the Americans moved into St. Leonard's Creek. The creek was protected by sand bars and was in something of a wind shadow so that any British craft attempting to get at the Chesapeake Flotilla would have to use oars. Even if the British got into the creek, they were vulnerable because forested bluffs provided excellent cover for American regulars and militia who might fire with impunity at the exposed sailors.

Starting that day, the British moved into the creek to, first test the Flotilla's strength, then to destroy Barney's flotilla if possible. Barney reported the British went into the creek on June 8 and 9 with long range firing, especially by their rocket boat, which threw its projectiles "one mile further than our shot" (Crawford 2002:III:101). As part of their sortie, the larger vessels were moved as close to the mouth of the creek as practical so they could fire up the creek if the Americans presented themselves. American reinforcements came across the Patuxent and to stop them, Barrie attacked both the Flotilla and the land base at the north edge of the creek mouth.

This engagement was far more intense with heavy fire from barges, rocket boat, and armed schooners brought into the creek by the British (Figure 31). When the British withdrew in the late afternoon, the Americans pursued and the British barges moved off in some disorder. In the meantime, the *St. Lawrence* ran aground but was ignored by the pursing Americans. The larger British vessels, positioned for just such an opportunity opened fire with their big guns and drove the flotilla back into the creek.

Both sides licked their wounds, repaired damage, and sought other ways to get at each other. On June 26, masked batteries supported by regular American infantry on high ground north of the creek mouth opened on the British ships blocking the creek. The fighting was largely at the mouth of the creek and the British eventually withdrew. Barney was also withdrawing, but when he realized that the Royal Navy

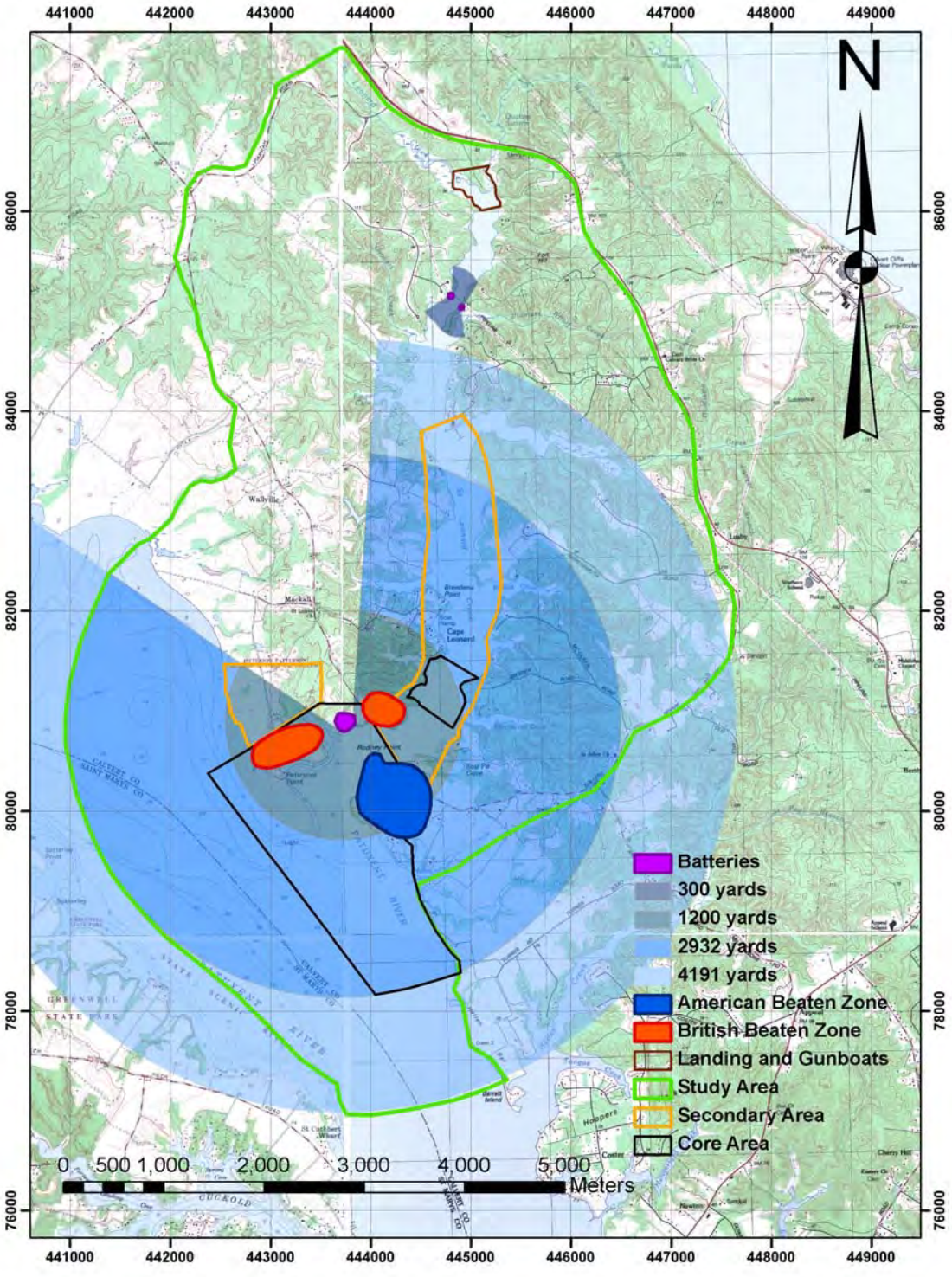

Figure 31. St. Leonard's Creek – Field of Fire (*USGS Quadrangles Broomes Island, Cove Point, Hollywood and Solomons Island; after a map by Sarah Lowry, New South Associates).*

no longer controlled the creek mouth, he ordered his barges and sloop out of the creek and up the Patuxent. They would remain there until they were scuttled on August 22, 1814.

Analysis finds the four engagements are remarkably similar. The American's Chesapeake Flotilla was defending a temporary base at the head of the creek. The British were attempting to destroy the Chesapeake Flotilla. Until the June 26 engagement when American land based artillery entered the fray, the four days of fighting basically had the British advancing up the creek and the Americans defending with the fighting moving up and down the creek as one side or the other seized a temporary advantage.

The first days engagement, June 8, involved 15 British gun barges trying to determine just where the Americans were and how resolute they would be. As Barney (Crawford 2002:III:84-85) reported

> at 8 am the Enemies Barges came up the creek, the ship & anchored at the mouth of the Creek, a Rocket barge was advanced upon us, we fired several shot to try the distance which fell short, whilst their Rockets passed over us in every direction, finding myself exposed in such a situation I got my Barges (13 in number) under way leaving the Scorpion & gunboats at Anchor, and rowed down upon them when they precipitately fled from their position behind a point, sailed & Rowed off with all their means- we pursued them until near the Shipping, fired several shot among them, when we return to our moorings; In the afternoon they came up again, Again threw Rockets, and was again pursued out of the Creek, but this time they were more successful, as One Rocket fell onboard of No 4 of the White, killed one man, set fire to a barrel of musket carthridges [sic], the explosion of which very much injured three men, this kind of warfare is much against us, as they can reach us, when we cannot reach them, and when we pursue them, their light boats fly before us, I expect we will have much of this kind of fighting, and if they continue the Blockade of the Creek, we shall be out of provisions in 12 days

Captain Robert Barrie reported the June 8 fighting very briefly as a reconnaissance:

> . . . the water was too shoal to admit even the Jaseur being carried into the Creek, and the St Lawrence had grounded early in the Morning, and was still ashore, every exertion was made to Anchor the Loire and Jaseur at the Mouth Of the Creek, so as to pen the Flotilla within it, and about Noon I proceeded with the Boats to Reconnoitre the Enemies position. I found him most advantageously Anchored about six miles from the entrance. The Creek is in few places more than a Musket shot wide, and in many not above two Cables length. Its banks are covered with Trees, and the Land is generally high. Finding it impossible to attack the Enemy in our Boats with the most distant prospect of success, I had nothing left for it but to endeavour by every means in my power, to annoy him from our Boats and provoke him to Chance them with Gun shot of the Frigate (Crawford 2002:III:89).

The day's action was largely at long range supported by the British rocket barge because the British barges held back to avoid close combat. From Barney's account, it is clear that the rockets had an impact, psychologically as well as physically.

The June 9 engagement was preceded by the British maneuvering their larger vessels, the *Loire* and *St. Lawrence*, much closer to the creek's mouth where they could fire upstream. The number of barges was

increased to 20 led by Barrie. Barney had taken a position deeper in the creek basin at a point where the land constricted British movements to a narrow front. The engagement again involved long range rocket fire but their chief intent was for the barges to feign a retreat, serving as a lure draw pursuing Americans into range of the massive firepower available at the mouth of the creek. Barney summarized the fighting in his June 11 letter. "On the evening of the 9th, the enemy moved up with twenty barges, having received more force from the 74, at the mouth of the Patuxent. I met them, and after a short action drove them until dark, and returned to my anchorage" (Crawford 2002:III:88). Barrie was also terse about the June 9 encounter in that he only stated "with this View every scheme I could think of was practiced both Night and day without success, till the 10th" (Crawford 2002:III:89).

The June 10 engagement was a much more intense affair. Barney had already taken steps to protect the upper reaches of the creek by posting marines on high ground above the southern end of the boom. An artillery battery was dug in above the north end of the boom at what became known as Fort Hill (Crawford 2002:III:99). He also improved the maneuverability of his barges by removing their masts, an action that also helped conceal them. The flotilla was then positioned between these two points and presumably below the boom.

Barney's account, written June 11 is fairly short:

> Yesterday they made a bold attempt; about 2 P.M. they moved up with twenty-one barges, one rocket barge, and two schooners in tow. On making their appearance, we went down on them; they kept up a smart fire for sometime, and seemed determined to do something decisive. But they soon gave way and retreated; we pursued them down the creek. At the mouth lay the eighteen gun schooner [St Lawrence]; she attempted to beat out, but our fire was so severe, she ran ashore at the entrance, and was abandoned. We still pursued, until the raze [Loire] and brig [Jaseur] opened upon us a brisk fire, which completely covered the schooner and the flying barges, 7. We must have done them considerable damage' (Crawford 2002:III:88).

Barrie's account is longer and has many more details including noting that the tide fell:

> 10th Instant when our Rocket[s] and Carronades Gall'd him so much, that he quitted his position and Chaced the Boats nearly to the Entrance of the Creek, just at this Moment the St Lawrence grounded with a falling Tide, and lay completely exposed to the fire of the Flotilla, without being able to bring more than One Gun to Act against it. The Boats and Flotilla kept up a very smart fire on each other, till the Latter got to within Reach of the Loire's Guns, when the Action became general but the Enemy was so cautious of exposing himself, that he kept under the Trees on the Starboard Point of entrance, out of sight of the Loire and Jaseur except from the Mast heads, so the Gun's could only be pointed by direction of the Officers stationed at the Mast heads, but under this great disadvantage so quick a fire was kept up, that after a little more than half an Hours general firing, the Enemy precipatately [sic] made Off, before a Party of Royal Marines under the Command of Captain Carter, could reach their station the Starboard point Of the Creek, over the position the Enemy had been firing from, our Boats harass'd his retreat and chaced him to his former Anchor[age] where he lay secure defended by strong parties of Regulars and Militia, stationed on each side of the Creek behind the Trees. Notwithstanding the exposed situation of the St Lawrence, the Enemy's Gun's were so ill directed that only four Shot

> struck her, in this skirmish our loss consists of three killed, and two slightly wounded (Crawford 2002:III:89, 91).

The Americans fought the engagement with 13 gun barges because the two Jeffersonian gunboats were tied up at St. Leonard's Town along with the *Scorpion*. The gunboats were too "cranky" to move as adroitly as needed. The *Scorpion* was too large and too difficult to propel by oars in the low wind environment of a creek surrounded by high hills. Barrie's flotilla, consisting of 21 armed barges, a rocket boat, and two towed schooners serving as gun platforms, moved up the creek in the early afternoon (Shomette 2009:96-100).

The battle was intensely fought and at a fairly close range, generally inside 350 yards. The British sank one of the American barges, but American cannon pummeled the British. Americans felt that they forced the British to withdraw (Crawford 2002:III:88), but Barrie reported that he tried everything to "provoke him [Barney] to Chace them within Gun shot of the Frigate" (Crawford 2002:III:89). Whether the British withdrawal was planned or not, it was conducted with spirited firing all the way to the creek mouth. There, the Americans could be brought under fire by the *Loire* and the *Jasseur*. The *St. Lawrence* was already in the creek mouth but ran aground in a position where it could not return fire. If the British withdrawal was designed to draw the Americans into a kill zone, it succeeded.

British confusion at the creek mouth aided the deception. The rocket barge was hit and Barrie's personal craft was badly damaged (Crawford 2002:III:99). There was no attempt to try and get the *St. Lawrence* off the shoal. Under a very heavy fire, the *St. Lawrence* was abandoned just when the frigates opened fire on the Chesapeake Flotilla. The flotilla ran close inshore behind the southern point at the creek mouth where they were practically invisible (Crawford 2002:III:89). The British then sent officers aloft and a party of marines to take the high ground at the creek mouth and direct fire. Threatened by the shore party and nearly out of ammunition, Barney withdrew up the creek.

The last St Leonard's Creek engagement is perplexing for the manner in which it ended. Preparations began immediately after June 10 and continued until the final engagement on June 26. The British spent the interim repairing their vessels, conducting raids on Patuxent River plantations in an attempt to draw Barney out, and in reinforcing their small boat flotilla. Barrie was replaced by Captain Thomas Brown (Crawford 2002:III:121).

Barney, "Finding that the masts of my barges was a mark for them over the trees and points of land, I have had them all taken out, the boats are light & will row faster, with less danger from the Fire of the Rockets" (Crawford 2002:III:99). Barney also "erected a small battery, (1. 24 lb. Carronade), at the mouth of the branch there the Scorpion & the Gunboats lay, and have also drove piles across the Creek, with a Boom, so that, should the force increase we have little to fear from an Attack by boats, no matter how numerous" (Crawford 2002:III:99). American preparations came to a head when two battalions of infantry, the 36th and 38th U.S. Infantry, and a battery of field artillery began arriving June 24. Barney detached some of his flotillamen to man two, 18-pounder siege and garrison cannon that would be placed in a masked battery on Peterson Point. Barney left Gunboats 137 and 138 behind and began moving the rest of the flotilla downstream the night of June 25 so as to act in concert when the batteries opened fire. After digging in the guns, Geoghegan was ordered to move them about 3:30 am. At

daybreak, Sailing Master John Geoghegan loaded his 18-pounders, supported by three, 12-pounders under Marine Captain Samuel Miller (Crawford 2002:III:126).

At 4 am on June 26 the masked batteries opened fire and caught the British by surprise, or as Barney reported, "at the point of day we woke up our enemies, by 2 pices. (18-pounders) under Capt Geoghegan his officers & 20 men of the flotilla, with red hot shot, 3 pr. Under Capt Miller of the Marines, the Artillery posted on a Hill commanding the Enemy, the whole under Col. Wadsworth…" (Crawford 2002:III:123). Because the British ships were anchored on spring lines so as to fire up St. Leonard's Creek, they could not immediately reply when point blank shot began striking their ships. The British soon learned that the American fire was largely ineffective (Shomette 2009:147-150) and took steps to counter it by sending a landing party supported by the rocket barge to outflank the American position and put it out of action.

Barney (Crawford 2002:III:123) further reported that "I moved down with the flotilla, and joined in "Chorus," our shot was terrible." Barney's flotilla was late for a variety of reasons largely centering on a lack of inter-service cooperation and Barney's belief that the army could not do what they promised (Shomette 2009:148). When the flotilla did engage at a range inside 400 yards (Crawford 2002:III:123), they achieved surprise, raking the *Loire* and penetrating its hull while also damaging the British barges tied up around the frigate. The close range allowed the British to reply with grapeshot from their warships even as they withdrew from the creek mouth into the Patuxent about 6 am (Crawford 2002:III:123). Without protection in their barges, the Chesapeake Flotilla sailors continued to fire and the exchange became "a scene to appall the inexperienced and the faint hearted" (*Daily National Intelligencer*, cited in Shomette 2009:150).

As the water fighting grew in intensity, American land elements began to disintegrate. Frightened by at least two barges of marines and the rocket barge, American regiments began withdrawing amidst a succession of confusing and conflicting orders, a growing shortage of ammunition, and British counter battery fire that grew increasingly effective (Shomette 2009:150-154; Crawford 2002:III:125). When the American land batteries went silent, Barney withdrew because "it would have been an act of madness in such a force, unassisted, to content against two frigates, a brig, two schooners, and a number of bares, in themselves equal to the force that could be brought into action from the flotilla" (*Daily National Intelligencer*, cited in Shomette 2009:154).

When Barney withdrew, the British quickly seized the opportunity to disengage and dropped down the Patuxent River to a safer landing. The British withdrawal allowed Barney to reverse his path and take the chance of getting out the creek and further up the river. "The moment the enemy ran off, we moved up the River, so that, thanks to the Hot & cold shot the Blockade has been raised" (Crawford 2002:III:125). The Americans felt they had won a major victory as the Chesapeake Flotilla had survived to make its way upstream. Unfortunately, Barney's craft were heading for their graves as they were destroyed on August 22, 1814 when the British moved upstream to attack them again (Shomette 2009:274).

METT-T Analysis

Mission

The Americans had a dual mission. The first was to keep the Chesapeake Flotilla intact. To succeed at this part, the Americans needed to escape from St. Leonard's Creek and that, in turn, meant defeating the British detachment that penned them up. An option considered by Barney was to dismount their boat's equipment, go to the head of the creek, take the boats overland and down into the Chesapeake (Crawford 2002:III:101). The second American mission was to end British raids on the Chesapeake. British intentions were far more reasonable. They wanted to destroy the American flotilla. A more strategic mission was to gain unrestricted access to the upper Patuxent, both for obtaining supplies and for a potential overland march against Washington.

After the initial fight, Barrie reported to Cockburn that the Chesapeake Flotilla amounted to "24 Vessels averaging about 60 men each, having a regiment attached to them—there are four large Sloops of light Dft of water with 4 or 5 Guns of a Side, the others carry a long 24 Pr. Each and are tolerably well handled & managed, this Force therefore he states cannot be secured in its present inoffensive Position with less than two Frigates and a Brig or Schooner which Force he has therefore left there" (Crawford 2002:II114). From Cockburn's letter about Barrie, it is obvious that the British thought Barney's flotilla was larger than it was but that, while they kept it blockaded in St Leonard's Creek, it was "inoffensive".

Enemy

For the two Battles of St Leonard's Creek, the British forces were virtually the same (Table 6).

Table 6. British forces at the Battles of Saint Leonard's Creek *(Lyon 1993: 127, 140, 142, 244, 283; Eshelman 2005: 8, 18).*

First Battle of St Leonard's Creek (8-10 June 1814)
Frigate Loire, 38
- **upper deck: 28, 18-pounder long guns**
- **quarter deck: 8, 9-pounder long guns**
- **fo'csle: 4, 9-pounder long guns; 2, 24-pounder carronades**
***Gun brig Jasseur, 18* - 2, 6-pounder long guns; 16, 32-pounder carronades**
***Schooner St. Lawrence, 18* - 2, 6-pounder long guns; 12, 12-pounder carronades**
2nd Schooner (otherwise unidentified)
(15-21) Barges –32-pounder carronades
(1) Rocket boat

Second Battle of St Leonard's Creek (26 June 1814)
Loire, 38
- **upper deck: 28, 18-pounder long guns**
- **quarter deck: 8, 9-pounder long guns**
- **fo'csle: 4, 9-pounder long guns; 2, 24-pounder carronades**
Narcissus, 32
- **upper deck: 26, 18-pounder long guns**
- **quarter deck: 4, 6-pounders long guns; 6 (or 8) 24-pounder carronades**
***Schooner St Lawrence, 18* - 2, 6-pounder long guns; 12, 12-pounder carronades**
2nd Schooner (otherwise unidentified)
(21) Barges –32-pounder carronades
(1) Rocket boat

Terrain

Key Terrain

Key terrain in the Saint Leonard's Creek basin involved the hills and points along the creek as well as shoal water at the creek mouth (Figure 32). While St. Leonard's Creek generally flows east, at its mouth, it actually flows south after passing around the point. A shoal ran south from Peterson Point that obstructed direct movement into the creek. Thus, at the mouth, a vessel had to move north, then turn east after passing the point. The west side of this passage is marked by shoal water. The channel is deep enough for schooner to enter the creek if they stay on the eastside while moving north, then on the south side while moving east.

At the creek mouth, high ground on the north side at Peterson Point provided a gun position for the American masked batteries used on June 26. On the south side of the creek mouth, another ridge ran north and kept observers outside the creek from seeing up it. The southern hill was high but sailors who went into the upper masts of the Loire could see over it and direct naval gun fire when the flotilla took refuge east of the point. Royal Marines also landed on this higher ground and threatened to outflank the flotilla from the landside. Another aspect of key terrain is covered below in Avenues of Approach.

Further up the creek, there are narrows. Barney chose these areas to place his numerically inferior fighting force on line in such a way as to maximize its firepower while negating some of the British

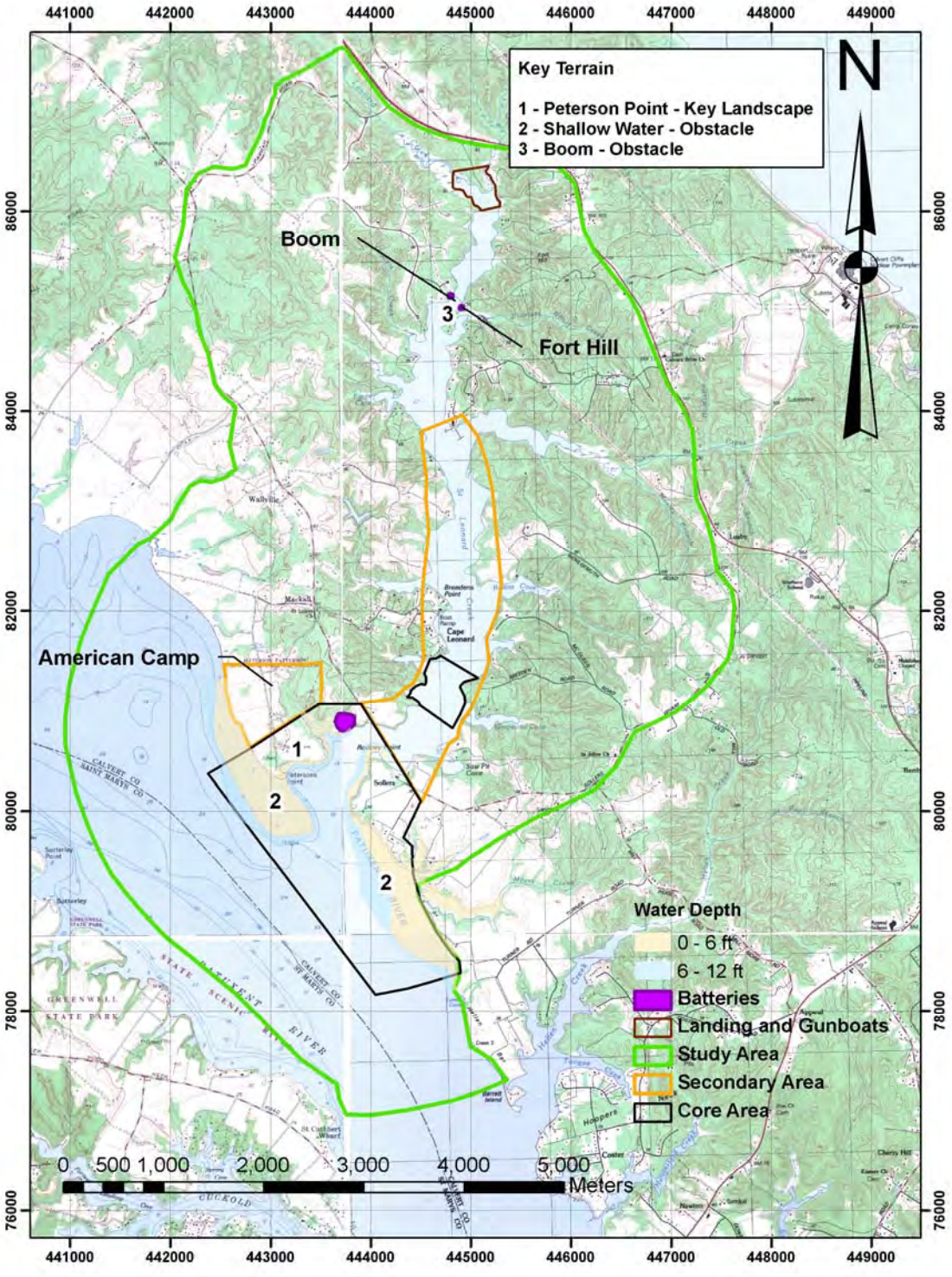

Figure 32. St. Leonard's Creek – Key Terrain (*USGS Quadrangles Broomes Island, Cove Point, Hollywood and Solomons Island; after a map by Sarah Lowry, New South Associates).*

vessels. Above John's Creek, Barney placed an artillery battery, boom and marine infantry positions. These effectively blocked access to his base at St. Leonard Town at the head of the creek.

Obstacles

The British encountered the natural and man-made obstacles as the moved up the creek. At different times, due to wind, tide, and movements necessitated by American threats or British maneuvering, shoal water affected operations at the creek mouth and interfered with supporting fire from larger warships. As the creek narrowed, fewer British gun barges could be placed on line and this affected their ability to use superior numbers. Finally, the British do not seem to have passed above the boom, until after Barney left the creek (Enright 1999a:61).

Cover and Concealment

Cover and Concealment are interesting aspects of the St. Leonard's Creek engagements. Points of land jutting into the creek offered some cover to both sides at different times. Eventually the British sent men aloft to direct fire based on where shot was falling and they changed their charges to drop shot on the masked battery at Peterson Point. The points of land at the creek mouth provided cover from fire at the mouth of the creek until one side or the other moved around them. Until one side did go around these hills, they were safe from fire. More importantly, on 26 June, when the American flotilla moved down to conduct its coordinated attack against the British, the points of land protected them and concealed them as well.

Barney removed the masts from his vessels making them more maneuverable and less visible behind the higher ground and trees that obstructed British observation (Crawford 2002:III:99). Removing the masts was initially done to conceal the American vessels but it improved their handling as well.

Observation and Fields of Fire

Observation and fields of fire were affected by the same landforms that offered cover and concealment at the mouth of the creek. Once in the creek, there was no obstruction to seeing the other side, and there were clear fields of fire. It is significant that the maneuvering of both sides tended to be concentrated at the mouth of the creek where there was cover and some concealment that affected the combatant's fields of fire. Even when the British put officers aloft to the mastheads and onto the southern hill at the creek mouth, there was still no clear field of fire.

Avenues of Approach

Avenues of Approach were constrained by shoal water, a north-south entrance that then turned east where a lack of wind power within the creek basin meant an emphasis on using oar power. After passing through the creek entrance, movement up and down the creek was on a single axis that was effectively controlled by Barney's Chesapeake Flotilla and its placement at choke points. In similar fashion, Barney's Flotilla also moved along that axis when they came to the creek mouth and threatened the British vessels.

The British were not totally focused on the creek as an avenue of approach. When threatened by Army artillery on June 26, they attempted to outflank and bombard their opponents by going up the Patuxent River and threatened a landing north of the artillery and its supporting infantry. This maneuver caused

the American land forces to evacuate their positions, lessening the threat to the British ships. The British also landed a force of Royal Marines with Navy officers on the southern side of the creek mouth to direct naval artillery against the Chesapeake Flotilla. This means they knew full well that they could have landed a larger force and moved against the flotilla from the creek's shoreline. This is all the more puzzling since the creek, "is in few places more than a Musket shot wide, and in many not above two Cables length. Its banks are covered with Trees, and the Land is generally high" (Crawford 2002:III:89). This suggests that a landing party could have disrupted the Flotilla. "Finding it impossible to attack the Enemy in our Boats" (Crawford 2002:III:89) and opting to tempt Barney to attack the British, clearly indicates that the British leadership knew a gun boat battle was not going to be effective. Why they did not try to flush the Chesapeake Flotilla out by using a landing party is unknown.

Weather

The weather was generally calm and moderate, probably with high humidity, although a front had passed through on 6 June (Shomette 2009:84). At some times, there was an east wind which might be used on the creek to American advantage but generally wind was not a factor because of the high hills and hills on both sides of the creek basin.

Troops Available

The American waterborne forces were the same in both engagements (Table 7).

Table 7. American forces at the Battles of Saint Leonard's Creek *(Shomette 1995:57, 62-633; Enright 1999a-b; Crawford 2002:III:104-05 Eshelman 2005:18).*

***Sloop Scorpion* –1, 24-pounder long gun; 1, 18-pounder gunnade;2, 12-pounder carronades**
(4) 75 ft Barges – 1, 18-pounder long gun; 1, 32-pounder carronade
(3) 75 ft Barges – 1, 24-pounder long gun; 1, 42-pounder carronade
(4) 50 ft Barges – 1, 12-pounder long gun; 1,24-pounder carronade
(2) 50 ft Barges – 1, 18-pounder long gun; 1, 24-pounder carronade
(2) Gun boats (Nos. 137 and 138 – not used) – 1, 18-pounder gunnade - may have been removed and used on other vessels
Row galley Vigilant – 18-pounder gunnade
Lookout boat – 12-pounder gunnade (after)

Barney made a well-known drawing of a 100-foot long gun barge (see Eshelman 2005:7) but this size vessel was not used at St. Leonard's Creek. Instead, shorter vessels 50 and 75-foot long apparently designed by William Doughty were produced (Eshelman 2005:19; Shomette 1995:59-60).

Aside from the watercraft, the flotillamen were experienced and had considerable morale even after the first round of fighting in the creek. Nevertheless, Barney felt it wise to keep from revealing the ultimate

plans as “to my Officers & Men the final result, they are in high spirits and anxious to meet the enemy, who we look on as defeated & Beaten” (Crawford 2002:III:108).

Time Available

Time Available was perhaps more of a problem for the Americans than the British. While the Americans were able to reinforce their land forces, Barney’s flotilla was not going to be reinforced. Barney was also constrained by subsistence requirements, “we shall be out of provisions in 12 days” (Crawford 2002:III:84-85). The British, on the other hand, could marshal several major warships at the mouth of St. Leonard’s Creek and further down the Patuxent. As more line of battle ships came to the Cedar Point area, Barrie would have more barges to oppose the already outnumbered Chesapeake Flotilla.

Principles of War

Objective

The American objective was to preserve their flotilla. To save their vessels, the Americans either had to get out of the creek by crossing the spine of the peninsula into the Chesapeake or break out into the Patuxent River. If the Americans lightened their vessels to move them over the divide between St. Leonard’s Creek and the Bay, the British could easily destroy them while they were unable to fight. The flotilla could not break out of the creek unless the British withdrew. The British wanted to destroy Barney’s flotilla. Failure to destroy the Chesapeake Flotilla was not a problem for the British as long as they kept it bottled up in St. Leonard’s Creek.

Offensive

Offensive, or the initiative, lay with the British. Their superior firepower, as represented by men-of-war, dominated the American barges. The Americans were trapped in St. Leonard’s Creek. The British opted to maintain a blockade for a time without trying to make a major effort up the creek. Both sides jockeyed for position in the creek itself, but, except for the surprise brought by the masked American battery, the British could dictate what happened. Even within the creek, Barney could only maneuver up and down stream, but he did so judiciously and forced British withdrawals at different times.

Maneuver

Maneuver was not restricted to either side unless the Americans wanted to get out of the creek. The creek shore determined the maneuvering space and materially aided the Americans. The higher ground on points intruding into the creek also restricted maneuver. The Americans removed the barges’ masts to increase stability and maneuverability. The British were limited in how they could maneuver by the creek banks and had to tow their bigger vessels (two schooners) with their barges. They could not outflank the Chesapeake Flotilla and were forced to engage it when the Americans had the advantage. The seesaw battle reflected the constraining effect of the creek. British firepower blocked American maneuvering outside the creek until they chose to withdraw.

Mass

Mass was achieved by the American flotilla in the creek but not outside on the Patuxent River. Barney had aligned his barges to cover the entire width of the creek where they could block a British advance by

the position and its firepower, thus achieving force superiority at the critical time and place. The British could not mass enough firepower to break through the American line across the creek. When the Americans tried to exit the creek, mass shifted to the British because the Royal Navy had multi-gun warships with superior firepower dominating the creek mouth. Barney's flotilla was outgunned and withdrew back into the creek.

Economy of Force

Both sides observed Economy of Force. Barney did not bring two gunboats and a sloop into action, in part, because he had enough barges to effectively block the creek channel. Consequently, he left them out of the fighting. When Barney blocked the channel at a narrow point, he forced the British to deploy their own barges in ranks because there were too many of them; this deployment limited the amount of firing the British could direct against the Americans. The British used their larger vessels as fire support while the advance up the creek was conducted by ship's boats that also towed two vessels as gun platforms. Barney had enough firepower at the critical time and place; the British were unable to break through the Americans indicating they violated economy of force by not having the assets to complete their mission. At the same time, the British used economy of force effectively at the creek mouth until Captain Brown decided to move away. Their superior firepower was effective, even though they did not have all their vessels at the creek mouth.

Unity of Command

Unity of Command was not a problem for the American flotilla. Joshua Barney had his barges well under control, led his flotilla from a barge in the battle line, and maneuvered them effectively during the fighting. British commander Robert Barrie also commanded from a barge in his own battle line.

At higher levels, there was a problem coordinating American land forces with naval operations. Barney noted that "Col Carbery [sic] is here, his conduct does not please me in more ways than one, …he seems to have no disposition to give me real assistance… last night he withdrew, without giving me any notice whatever" (Crawford 2002:III:101-02). This manifested itself in the abandonment of artillery positions and then the departure of infantry support because the artillery and the infantry were not effectively controlled, in part because they were inexperienced soldiers.

When the American flotilla withdrew back up the creek on June 26, British Commodore Robert Barrie elected to move his vessels downstream to the mouth of the Patuxent because they had been damaged. The withdrawal, contrary to the British mission of destroying the flotilla, allowed Barney to leave St. Leonard's Creek and move further up the Patuxent River. The British withdrawal seemingly contradicts the British mission and may have violated instructions issued by Barrie's commanding officer. This is not clear, but Captain Brown shortly thereafter replaced Barrie.

Security

Security was a definite problem for the Americans. Barney wrote that "the Enemy will be informed of our intentions, by the people of this district, who are all disafected [sic]" (Crawford 2002:III:101). They controlled the creek banks and blocked transit up the creek. The British flotilla was constrained to follow the creek. The Americans were successful in emplacing artillery without British knowledge. The

British were unable to maintain security because they operated on the river in full view of American observers on the shore and had been positioned there for some time. The Americans also benefitted from information obtained from British deserters as Barney mentioned "one of the Marines who deserted informed me" (Crawford 2002:III:101).

Surprise

Surprise was not a factor beyond the masked American artillery battery on the north point of the creek mouth. When this battery opened fire, it caught the British off guard and forced them to maneuver their vessels to more favorable locations, denying some direct fire up the creek. While the British were fixated on the American land batteries, Barney's flotilla attacked them, achieving a second surprise. Despite having the ability to operate almost freely along the Patuxent, the British were surprised by the Americans getting two regiments and artillery into positions where they threatened the Royal Navy.

Simplicity

The American battle planning was simple in concept but its execution could be seen as difficult since it involved staying on line across the creek. Maintaining the line of battle would require each barge to coordinate closely with each other. That they did reflects on Unity of Command as well as the skill of the individual boat crews. Coordinating American Army and Navy assets proved far more difficult when they tried to conduct a surprise attack on 26 June. If the flotilla had been in place when the batteries open fire, the results might have been slightly different.

Interpretation

The entire creek should be regarded as historically and archaeologically significant with selected areas designated as core areas. There are three core areas (Figure 33). The first is the location of the boom designed to protect the upper reaches of the creek from any British incursion. The likelihood of encountering any remains in this area is low. The boom was on the creek surface and anchored on the shoreline. The pilings associated with the boom might still remain in the creek bottom and some effort to locate them should be made as they would be the last vestiges of the American activity in the mid-creek area.

The second core area is the flotilla's location when it engaged the British during the battles of June 8-10 and June 26, 1814. This zone is very elongated because there was much ebb and flow up and down the

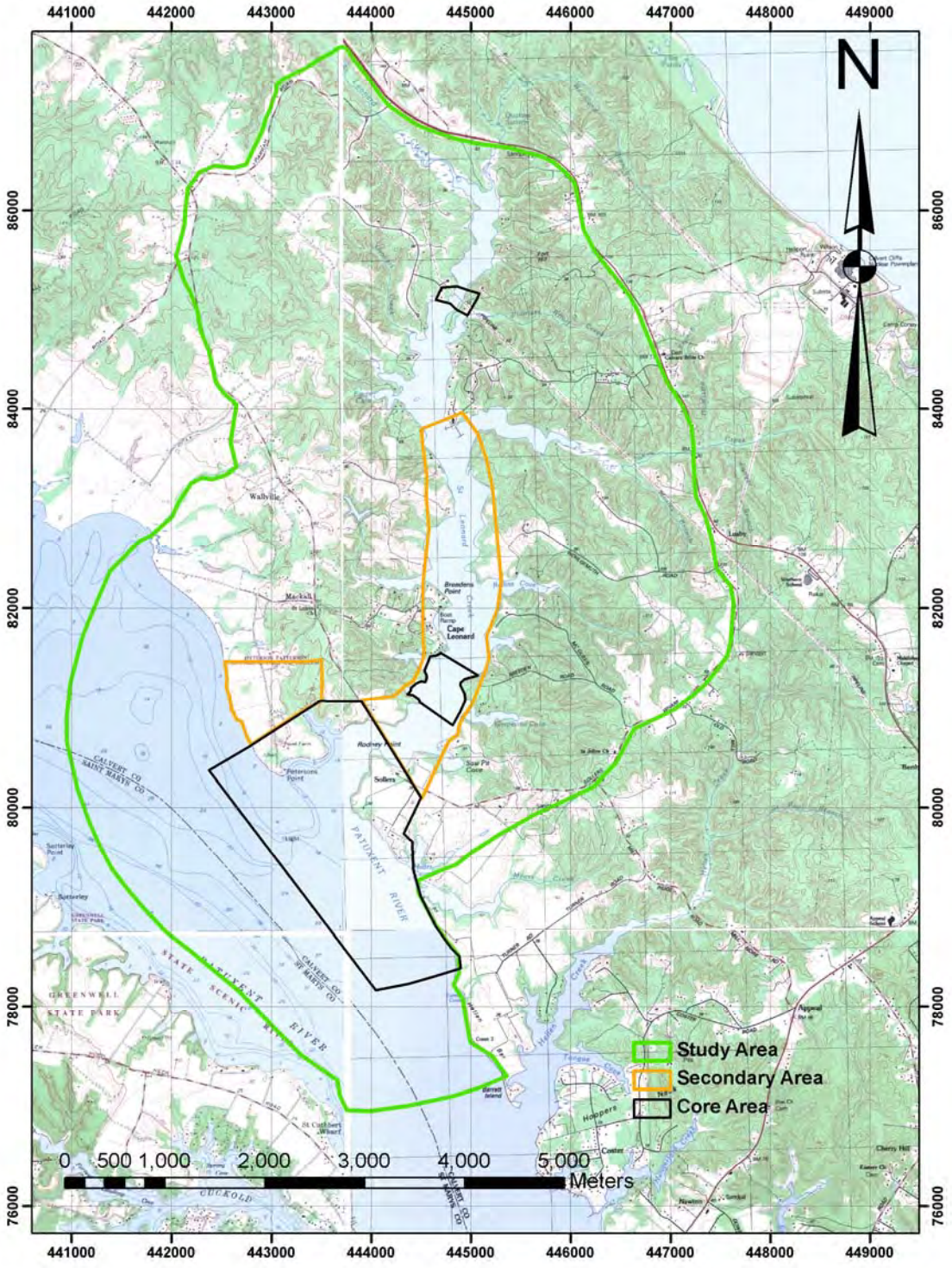

Figure 33.Map of Core and Secondary Areas for St. Leonard's Creek (*USGS Quadrangles Broomes Island, Cove Point, Hollywood and Solomons Island; after a map by Sarah Lowry, New South Associates).*

stream as each side saw opportunity presented. One barge was reported sunk and later refloated in this zone (Eshelman 2005:14). In addition to objects lost during the sinking and recovery of that barge, scattered detritus from the other barges and shot fired by the British should survive in this area. This third primary zone should also be extended north onto the point of land that marks the northwestern point of the creek mouth. This is part of Jefferson Patterson Park and Museum grounds and was the location of American camps and an artillery emplacement. The third core area is at the mouth of the creek where the British ships were located. These received a great deal of shot from the Americans and one vessel, the St Lawrence, ran aground and presumably dumped materiel overboard to get off. It was also was temporarily abandoned after being battered by American cannon.

Secondary areas include the entire creek and three terrestrial zones where British and American artillery fire landed. Beaten Zone 1 is the hill that forms the spine of the southwestern side of the creek mouth. This was fired over, and presumably into, by both sides during the artillery duel. Material that should be found here includes a variety of shot matching the artillery on American and British vessels as well as British rocket elements. Beaten Zone 2, is the second point intruding into the creek from the northern bank about one mile up the creek. This site should contain British artillery and rocket detritus. The third beaten zone is the southern portion of the Jefferson Patterson Park property where one British vessel fired on the American camps and artillery. To a large extent, this zone is part of the primary zone because of the camps and artillery position that are focal loci within the beaten zone. Beaten Zone 3 is specifically mentioned because it expands the area where British shot likely fell during the harassment fire by the British. From a maritime standpoint, the land positions where the American erected additional batteries should also be considered as part of the secondary areas. These were not fully explored during this research but they are briefly described and located in Eshelman (2005:12-31-3213) and Shomette (2009:355-57,471, note 14). The battery on Fort Hill and its partner on the south side were both bulldozed, so it is unlikely anything remains visible. The battery and American camp on the Jefferson Patterson Park and Museum property were explored and tested with limited success (Eshelman 2005:31-32).

9.0 THE BATTLE OF BALTIMORE (1814)

Lawrence E. Babits, Christopher T. Espenshade, and Sarah Lowry

Battle Chronology and Overview

The Battle of Baltimore was actually two interrelated battles, one with two components. The first was a land assault that attempted to reach the city from the east. The overland attack following initial skirmishing that cost the life of the British land commander Major General Robert Ross resulted in the Battle of North Point. More skirmishing nearer the Hampstead Hill defenses followed this engagement. The North Point engagement involved a short bombardment by artillery and rockets, followed by infantry maneuvers that displaced the defenders. When the British land forces then found themselves up against a well fortified position at Hampstead Hill, manned with large numbers of militia, and backed by numerous artillery pieces, they asked for naval support, especially a diversion threatening the American rear.

The naval support resulted in the famous bombardment of Fort McHenry. In conjunction with their bombardment and the projected land attack against the Hampstead Hill flanks that was aborted, the Royal Navy also attempted to create a diversion for the land attack by outflanking Fort McHenry and firing on batteries beyond (west of) the fort. The water borne force separated in the night. The larger portion had a very brief encounter with the Lazaretto Point defenses; Forts Babcock and Covington discovered the other segment and a land versus water artillery fight ensued before the British withdrew. These three episodes – 1) North Point; 2) Fort McHenry bombardment; and 3) attempted diversion west of the fort -- are treated as different engagements for analytical purposes.

North Point

The North Point battlefield represents a crucial link in the British campaign to subdue American defenses in Chesapeake Bay and capture Baltimore. Following the successful engagement at Bladensburg and after burning Washington, the British moved north up the Chesapeake Bay toward Baltimore, planning on shutting down American naval operations from that harbor.

On September 12, the British landed forces on the northern neck of the Patapsco River then marched along the peninsula toward Baltimore (Figure 34). In the early stages of their advance, the British commander, Major General Robert Ross was killed by a Maryland scouting party (Whitehorne 1997:180). At the narrowest point on the peninsula, between Bear Creek and Back River, Maryland militia took a position where the North Point and Trappe roads joined. When the British attacked the American defensive position the Americans withdrew after an initial resistance. The American force withdrew from the battlefield in good order, after having caused sufficient delay to the British that allowed a much larger defensive force to take positions at Hampstead Hill where earthen fortifications seemed far too strong to be carried by assault. This engagement is referred to in multiple studies as a turning point of the Baltimore campaign.

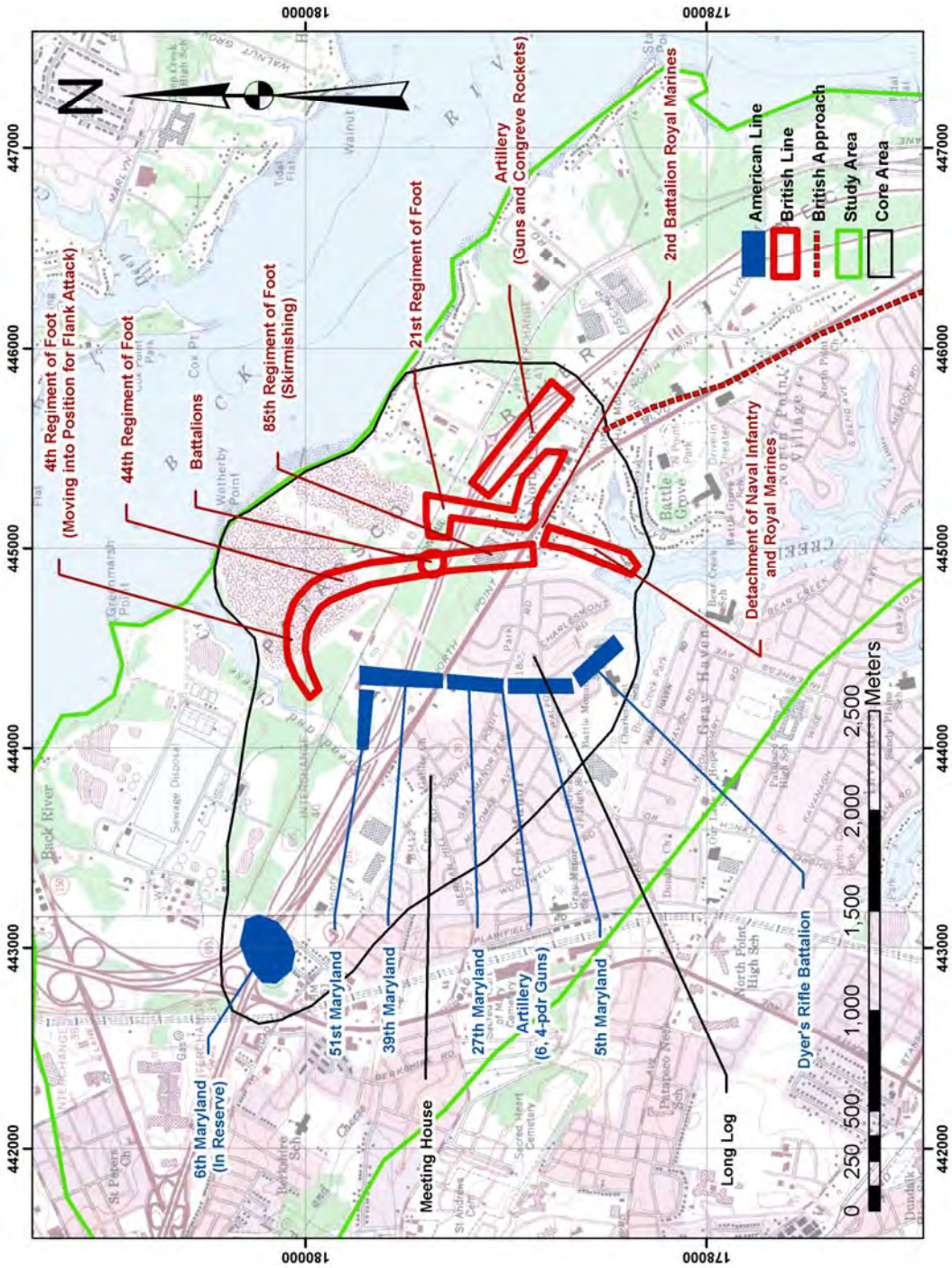

Figure 34. The Battle of North Point (*USGS Quadrangles, Baltimore East and Middle River; after a map by Sarah Lowry, New South Associates*).

The North Point battlefield around the road junction is now significantly altered, with commercial and residential growth covering most of the landscape. A portion of the site has been preserved by the State of Maryland. A survey may determine the location of combatants during this engagement. It is believed that there is still significant information about the battle that a site survey can retrieve.

Following the capture of Washington, British commander Major General Robert Ross had no intention of a lengthy occupation of the American capital. Attacking Baltimore, the principal maritime facility on the Chesapeake Bay, became the British priority. The inevitable attack sparked a panic within Baltimore, prompting full mobilization of the populace. The local Committee of Vigilance and Safety conscripted every male aged 18-45 into militia duty (Elting 1991:224). Preparations for the city's defense had begun during the summer of 1813. When the British fleet arrived outside Baltimore Harbor in September 1814, the city presented formidable defenses (Cassel 1969:349).

The Patapsco River's shoal water limited British naval movement upriver closer to Baltimore (Elting 1991:229). Without full naval support, the British could not ensure safe landing of their forces. Consequently, the British anchored their transports at the southern end of the Patapsco Neck peninsula on September 11, 1814 (Figure 35). Ross's force landed the following morning (Elting 1991:230). The Americans did not contest the landing.

As soon as the light troops were ashore, General Ross moved forward, leaving Colonel Arthur Brooke to finish landing the remaining troops and artillery. Ultimately, Ross landed a numerically superior force, over 4,400 soldiers, including the 85th, 44th, 21st, and 4th Regiments of Foot, Royal artillery, two Royal Marine battalions, and a naval infantry detachment (George 2001:137). Brooke began moving with some men and the artillery up the North Point (Long Log Lane) Road before all the other infantry and artillery had landed. Four miles later, the British column reached an unfinished earthwork between Humphrey Creek and the Back River. The earthwork was planned to block access to the rest of the peninsula by anchoring its flanks with the two streams. The British halted here, at the Gorsuch Farm, to close up their column and began preparing for contact with the Americans (Whitehorne 1997:178).

As they waited, a patrol captured some American dragoons who reported some 20,000 men were waiting for the British. The British advance continued for another two miles. Ross's column was proceeding with limited intelligence and his neglect in assessing the opposition cost the British. Brigadier General John Stricker had ordered delaying attacks against the advancing British column and opposing forward detachments collided. The 85th Regiment so sufficiently involved itself that Ross, endeavoring to find out what was going on, rode forward and was mortally wounded by buck and ball discharged from an American musket (Whitehorne 1997:180), leaving Colonel Arthur Brooke in command (George 2001:140).

To further contest the British advance, the Americans deployed the 3rd Brigade of Militia, the best trained American militia unit, commanded by Brigadier General John Stricker. Stricker's brigade fielded approximately 3,185 soldiers in five Maryland regiments – the 5th, 6th, 27th, 39th, and 51st Regiments. Stricker also possessed detachments of cavalry, riflemen, and six 4-pounder cannon (George 2001:137; Elting 1991: 230; Whitehorne 1997:176).

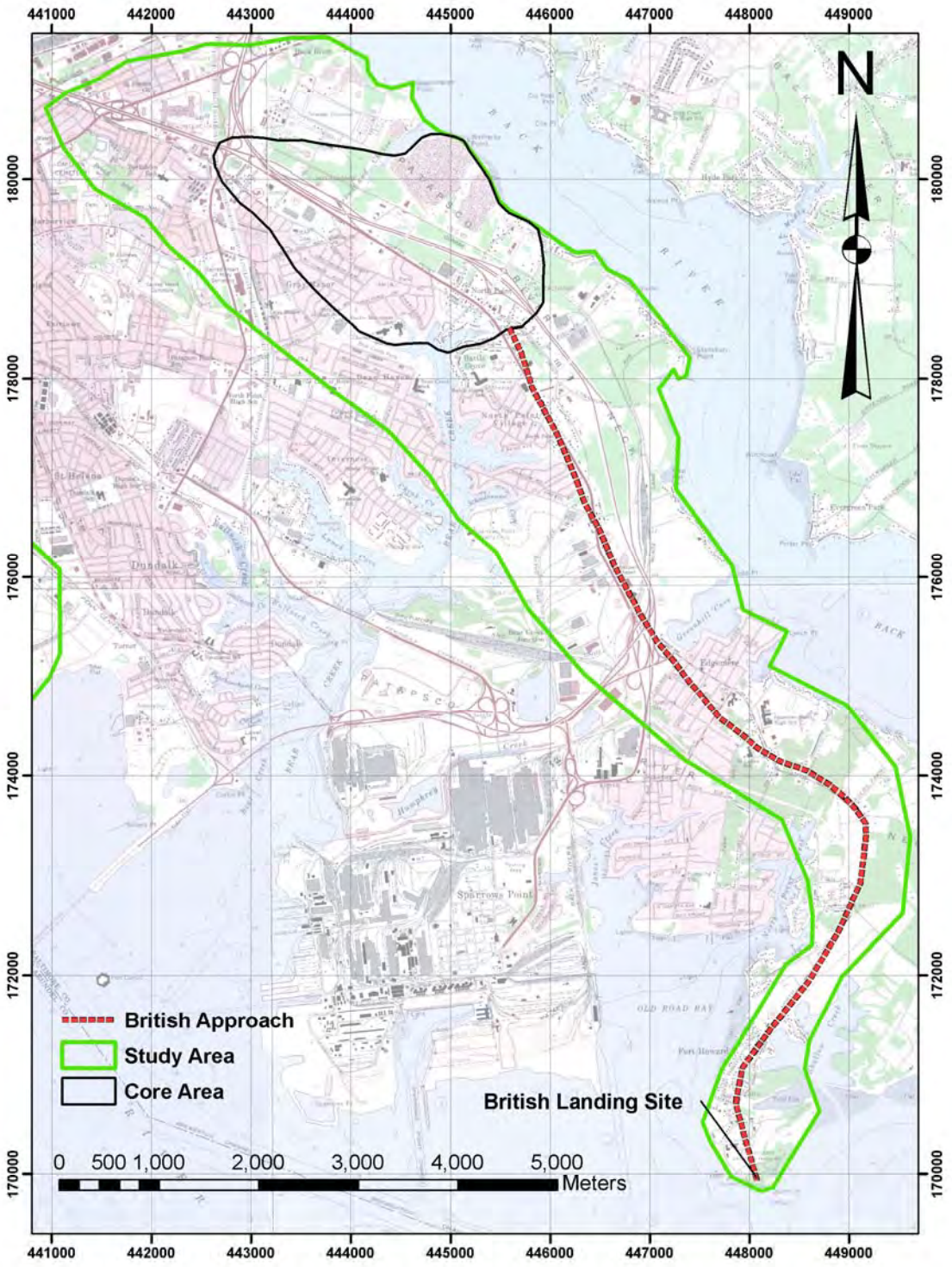

Figure 35. The Battle of North Point –Overview. *(USGS Quadrangles Baltimore East, Curtis Bay, Middle Rive and Sparrows Point; after a map by Sarah Lowry, New South Associates).*

By 8 am, September 12, Sticker's men were at the narrowest point of land on Patapsco Neck, the high ground between Bread and Cheese Creek (to the north) and Bear Creek (to the south). Less than a mile separated the two creeks at this point, and there was open ground to the east with unobstructed fields of fire. The headwaters of the creeks were marsh and thus securely anchored the American defensive position entered at the intersection of Trappe and North Point (Long Log Lane) roads (Figure 36) (Whitehorne 1997:177).

From the road junction stretching north to the American left, Stricker deployed the 27th Regiment. The experienced 5th Regiment formed south of the road junction. These two regiments formed the American center. The 39th and 51st Regiments deployed approximately 300 yards behind them. The 6th Regiment was posted in reserve west of the intersection. The 4-pounders commanded the road junction and the fields beyond. The eastern wood line was well within their effective range (Figure 37). Large expanses of mud leading to Back River protected the American left flank, and Bear Creek anchored the right.

Knowing the strength disparity between the forces, Stricker intended to harass Ross's advancing column enough to encourage British caution. Captain William Dyer's rifle battalion had endured defeat at Bladensburg and had experience fighting the British. These riflemen were ordered to occupy a small pine forest three miles ahead of the American line to conduct the harassment but Dyer and his men panicked at rumors of being outflanked by a nonexistent British landing along Back River (Elting 1991:232-233). To ensure Dyer proved useful without further poisoning militia morale, Stricker moved Dyer's battalion to broken ground on the 5th Regiment's right (Figure 36).

The British reached the open fields opposite the American position sometime after 9 am. The light Infantry maintained a screen of skirmishers as the infantry moved up and began deploying. The men were ordered to eat while Brooke planned his next moves. Any direct approach by the British towards Stricker's position had to cross a half-mile of clear farmland before reaching effective musket range.

By 2 pm, the British lines extended behind the skirmishers, looking for a way between the northern flank and Bread and Cheese Creek. The topographic high there gave the Americans a slight advantage but it was also perpendicular to the line of British artillery and rocket fire. Brooke massed his artillery on the north side of North Point Road, and the 85th Regiment deployed as the British center (Elting 1991:234). The British artillery, both cannon and Congreve rocket launchers, opened fire. The rockets accomplished little during the engagement except to ignite haystacks near the farmhouse (George 2001:142). Left of the 85th Regiment, Brooke arrayed the naval infantry and the Marine battalion. The 21st deployed behind the Marine battalion to advance against the American center, while the 4th and 44th Regiments deployed behind the main line to maneuver against the American left flank (Elting 1991:235).

Stricker realized Brooke's plan, and moved the 39th and 51st Militia to extend the American left flank. According to the Wilder map, the 51st Regiment's position refused his flank along high ground above the mud adjacent to Bread and Cheese Creek (Figure 36). The 51st lacked sufficient training to carry out

Figure 36. The Winder Kearney Map illustrating the battle lines *(U.S. National Archives, 1814)*.

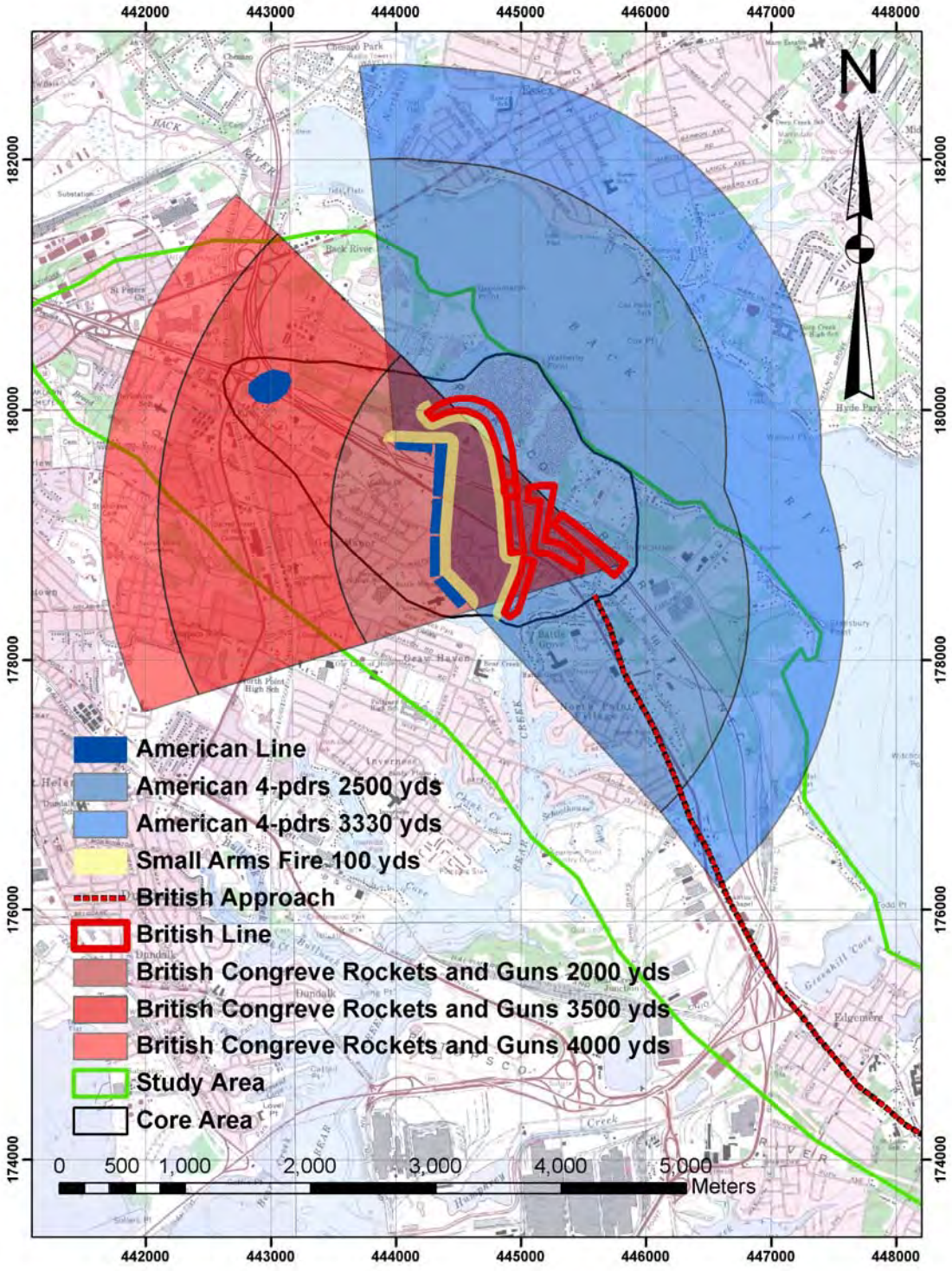

Figure 37. The Battle of North Point – Field of Fire *(USGS Quadrangles Baltimore East, Curtis Bay, Middle Rive and Sparrows Point; after a map by Sarah Lowry, New South Associates).*

this maneuver, and the regiment fell into confusion (George 2001:142). The regiment collapsed, crippling the stability of the American left flank. Brooke ordered a general advance and brought his superior firepower to bear.

The 4th Regiment's flank march floundered in rough terrain, though the presence of the British unit fostered further panic in the 51st and 39th Maryland Militia Regiments. The 4th Foot spent the remainder of the day dislodging itself from the terrain and pursuit of the routed 51st Militia (Elting 1991:235). Simultaneously, the British center gained ground on the American line. Stricker likely desired to avoid receiving a British bayonet charge, and when the British moved into range for such an attack, he withdrew the Americans west of Bread and Cheese Creek in good order (Elting 1991:236; Whitehorne 1997:182).

The Maryland Brigade remained intact and Brooke's infantry were spent, unable to press their advantage. The engagement cost the British 46 dead and 295 wounded, while accounts estimated American casualties at 24 killed and 139 wounded (George 2001:145). The Americans conducted one final harassing tactic as they withdrew towards Baltimore; they cut down a number of trees to block the North Point Road.

The defense at North Point provided extra time for the city of Baltimore to fully man defenses constructed during the previous year (Cassel 1969:360). Brooke failed to penetrate the city's defensive perimeter. The next day, they inspected the American positions centered on Hampstead Hill and decided not to continue their advance against Baltimore. While Brooke overestimated the American strength, there were over 11,000 men and more than 100 artillery pieces on the fortification line. After some maneuvering by both sides, the British evacuated their ground forces during the night bombardment of Fort McHenry (Whitehorne 1997:184-85, 191).

METT-T Analysis

Mission

The American mission for North Point was first to learn British intentions, slow the British advance and, finally, to oppose and defeat the British land advance that threatened Baltimore from the east. The key point of the American mission was to deny the British access to Baltimore and thus protect American shipping and privateering operations. The British were attempting to avoid a naval assault on Baltimore's harbor by advancing overland and outflanking the coastal defenses, much as they had during the attack on Washington, D.C. Ultimately, they wanted to destroy Baltimore as a base for American privateers and sink as many American ships as possible.

Enemy

The British had clear superiority at their landing and during the advance up the peninsula. The British force consist Ross landed a numerically superior force, over 4,400 soldiers, including 4 Regiments of Foot, a Royal Marine battalion, and sailors acting as infantry as seen below (Tables 8-10).

Table 8. British Infantry

Light Brigade: Colonel Arthur Brooke, Major Timothy Jones
85th Regiment of Foot
Light Infantry Companies of:
4th Regiment of Foot
21th Regiment of Foot
44th Regiment of Foot
Second Brigade – Lt. Col Thomas Mullins
4th Regiment of Foot
44th Regiment of Foot

Table 9. Provisional Marine Battalion (Crawford 2002:III:273)

Provisional Marine Battalion	
Ship	**No. Marines**
Surprise	**48**
Diomede	**17**
Weser	**9**
Thames	**11**
Madagascar	**35**
Seahorse	**59**
Royal Oak	**45**
Diadem	**12**
Regulus	**14**
Melpommene	**14**
Volcano	**8**
Rover	**20**

Provisional Marine Battalion	
Ship	**No. Marines**
Havannah	**48**
Ramilies	**100**
Dictator	**14**
Trave	**10**
Brune	**17**
Wolverine	**18**
Severn	**46**
Tonnant	**110**

Table 10. Naval Landing Party (Whitehorne 1997:233-34)

Third Brigade – Lt Col William Patterson
21st Regiment of Foot
2nd Battalion, Royal Marines
Artillery – 4 Companies: 2 howitzers; 6 field pieces; rocket launchers
- **Carmichael's Co, Royal Artillery**
Mitchell's Co, Royal Artillery
2nd Company, Royal Marine Artillery
- **Rocket Section, Royal Marine Artillery**

The British foot regiments were experienced veterans of European battles and had just routed American defenders at Bladensburg. The Marine battalions had been expanded by adding Colonial Marines, raised, in part, from freed Chesapeake slaves trained on Tangier Islands (Whitehorne 1997:196). The artillerymen were experienced as well. The rocket artillerymen had been training constantly at Woolwich between 1805 and their departure for North America (Graves 1989:12). The sailors, after a year of landings, were used to terrestrial operations if not pitched battles.

The British land force was a small, but formidable veteran detachment, capable of handling almost anything the Americans could put in the field against them. They were rested, fed and confident, but

were not expected to assault fortifications nor occupy any land they took. Their leaders were confident and experienced but those under the Ross were not well versed in leading multi-brigade operations.

Terrain

Key Terrain

The battle of North Point took place on key terrain consisting of higher ground on Patapsco Neck where the main road passed between two intrusive bodies of water surrounded by marsh (Figure 38). The position's center was also a road junction allowing for reinforcement from, or retreat toward, the west. Both Bread and Cheese Creek and Bear Creek were shallow and surrounded by marsh, making travel impossible at their heads and providing flank security to any line between them. In addition to flank security, the center point at the road junction faced nearly one half mile of open space to the east that denied the approaching British of any cover or concealment.

Obstacles

Obstacles were on both flanks where marsh prevented easy passage of troops. Fence lines to the front would tend to break up any advance. A fence line at the American battle line provided a last obstacle while it also provided cover to the defenders. The British faced fence lines bordering the open fields. If they left the road, their movements would be impeded by tree cover all the way to the water.

Cover and Concealment

Cover and concealment was lost to the British once they crossed a point about a half-mile from the American position and entered open fields. Some Americans were covered by a fence line perpendicular to the roadway on the west side of the field. If the British attempted to maneuver north and south of the road, trees would provide some cover and concealment but hindered their movement and formation into battle lines. The British could also be observed from higher ground at the American position. Once artillery began firing, smoke from the guns and from burning haystacks provided intermittent concealment to troops.

Observation and Fields of Fire

Observation and fields of fire initially benefited the American defense due to slightly higher ground fronting open fields along the road. There were clear lines of sight for both sides when the British arrived at the east end of the field, but these became obscured once artillery began firing and started fires in haystacks. The open fields provided a good field of fire for both sides as the British advanced. From the American left flank, the British were not clearly seen in the woods as they attempted to work their way around the northern flank but once within effective musket range, they were under fire. In a similar fashion, the Maryland Militia on the left flank must have been observed by the British because they were terrorized by artillery and rocket fire that enfiladed their ranks.

Avenues of Approach

Avenues of approach were wide open and well covered by American musketry and artillery. The North Point Road was the main axis of advance and retreat. It followed the spine of Patapsco Neck, using high ground all the way to the river. To either side of the road, there were fairly dense woods interspersed with fields. Once the British went into the woods north and south of the road, their movement was

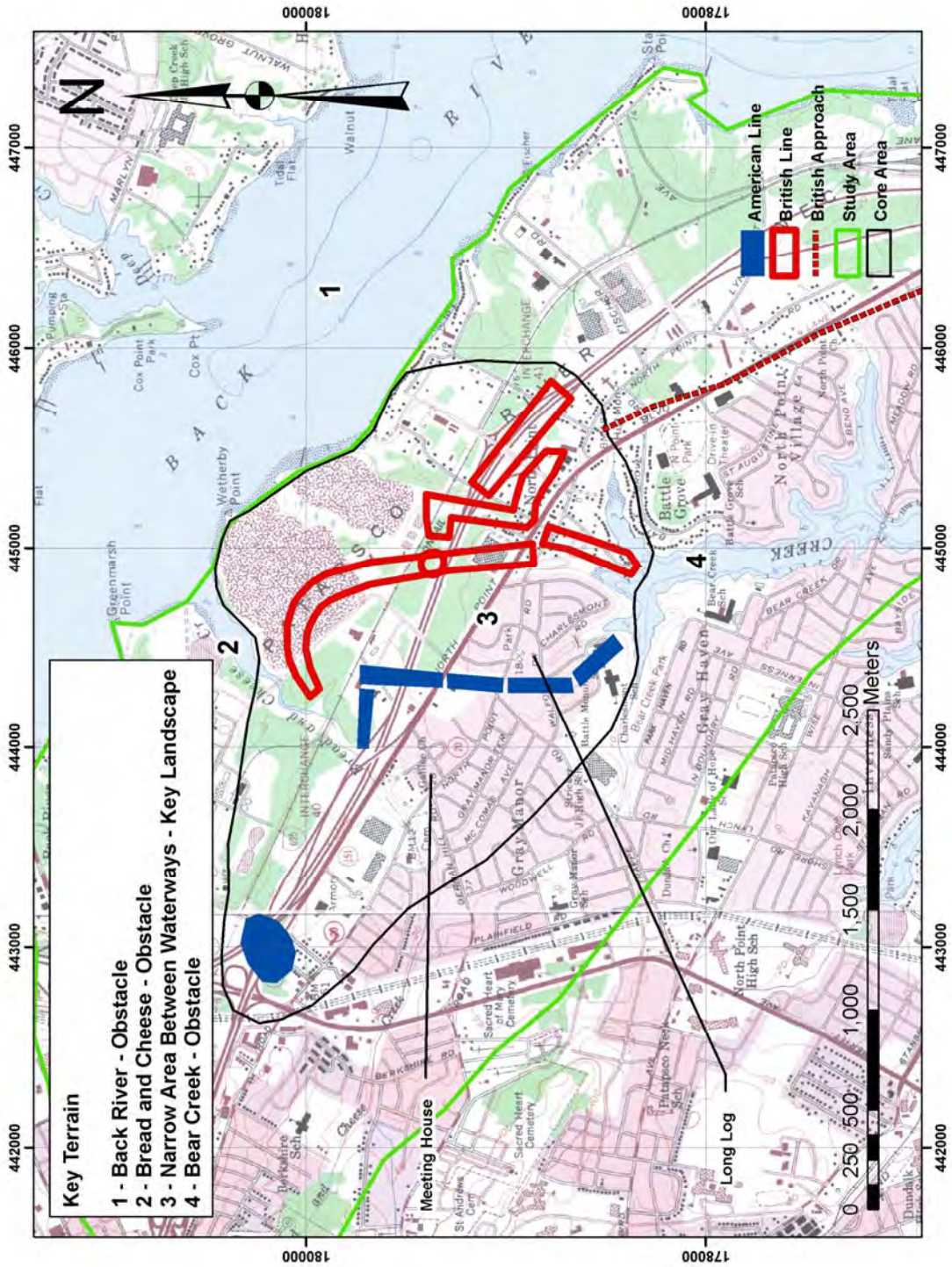

Figure 38. The Battle of North Point – Key Terrain *(USGS Quadrangles Baltimore East and Middle River; after a map by Sarah Lowry, New South Associates).*

covered but restricted by the tree cover. To get at the American infantry ranged across the peninsula, they had to cross open fields fronting the American position. Streams and their surrounding marshes covered both American flanks. The retreat route of the Americans was easily negotiated along the main road.

Weather

The weather was hot and humid. This worked to the advantage of most Americans who remained in position until driven off by the British advance. For the American skirmishers and British infantry, the situation was dire. The high heat and humidity caused several heat casualties among the British even as they landed (Whitehorne 1997:178).

Troops Available

The American force consisted of Stricker's brigade of Maryland militia infantry, number approximately 3,185 soldiers in five Maryland regiments:

Infantry

5th Infantry Regiment;

6th Infantry Regiment;

27th Infantry Regiment;

39th Infantry Regiment; and

51th Infantry Regiment (Whitehorne 1997:222-224).

Riflemen

1st Rifle Battalion, Maryland Militia (Whitehorne 1997:222).

Cavalry

First Baltimore Hussars;

Maryland Chasseurs;

Fell's Point Light Dragoons; and

Independent Light Dragoons (Whitehorne 1997:222).

Artillery

6, 4-pounder cannon (George 2001:137; Elting 1991: 230; Whitehorne 1997:176, 222).

In addition to the men actually at North Point, there were over 15,000 men at Hampstead Hill, just to their rear, with more coming in daily.

Time Available

The Americans were fighting a delaying action. Once they were in position at the crossroads, there was no obligation to do more than scout ahead and try to delay the British. The longer it took the British to

move into an assault position against the main line at Hampstead Hill, the more American troops would gather to defend it. Time was on the American's side.

Principles of War

Objective

At North Point, the American objective was to oppose the British advance as much as possible. Any delay imposed on the British benefitted defenders massing at the Hampstead Hill fortifications. The British objective was to capture Baltimore, destroy the military stores there, and ruin all sites capable of producing military materials including shipyards that were building warships and privateers. At North Point, a more limited objective, defeating the American infantry blocking the road as rapidly as possible, was more relevant. While the overland attack was an operation in conjunction with the Royal Navy, the Army was the major force attempting to penetrate the city's defenses.

Offensive

While the British were clearly on the offensive, the Americans were not simply responding to hostile action. The Americans conducted an aggressive defense by sending out patrols along Patapsco Neck and engaging the British advance parties. In the sense of initiative, this principle shifted to the Americans on the death of Ross because it slowed the British land advance. Coupled with the stout defense put up at the road junction, the British were effectively stymied in their attempts to enter Baltimore. The active defense caused the British to slow down, allowing more defenders to reach Hampstead Hill and also caused the death of the British land commander.

Maneuver

Maneuver was retained by both sides up to the North Point engagement. Both sides had no difficulty bringing troops to the battlefield and the defenders also had clear access to a retreat route, one that was subsequently followed by the British. The British deployment toward, and then around, the American left also demonstrated maneuver that favored the British. As the flanking parties got into position, British artillery enfiladed the defense causing it to break.

Mass

Mass favored the British when they landed and marched overland. In part, this was because there was no active defense against the landing. As the British moved toward Baltimore, the defenders produced more, and higher quality, resistance the closer they moved toward the city. At the road junction where the battle of North Point took place, the British attained superior fire power at the critical point. They achieved mass because their troops were more skilled and better disciplined under fire. The Maryland militia at North Point stood their ground until enfilade fire on their left flank caused one regiment to withdraw.

At North Point, the British achieved tactical mass, but they were not fighting against the American's main line of resistance. Delays imposed at North Point allowed the defenders to build up superior firepower at a much more critical time. Thus, while the British tactically achieved mass at North Point, strategically, it cost them in terms of any later fighting at Hampstead Hill where the Americans had

superior numbers, superior artillery, and extensive fortifications that overawed the British into not attacking. Instead, the land forces called for a diversion to make the defense shift to the harbor area. This attempted diversion resulted in the famous bombardment.

Economy of Force

In terms of economy of force, both sides demonstrated their ability to commit only those resources required to get the job done. The British effectively landed, confronted skirmishers, and drove off the brigade of defenders at a choke point on the route toward Baltimore. The Americans used enough skirmishers to slow the British approach, then committed a brigade to buy additional time at the choke point. Both sides used the minimal number of men and artillery to accomplish their goals on Patapsco Neck. In the long run of the operation, the Americans were more successful because they did not risk much, effected tactical withdrawals without losing unit cohesion, and killed the senior British commander.

Unity of Command

Unity of command was clearly demonstrated by both sides. Ross was operating with naval, marine, and army forces. He had them under firm control and, when killed, the next in command, an army officer, took over without any interruption in effective leadership. In a similar fashion, the defense also had an effective command structure that extended well beyond Patapsco Neck. The preliminary fighting on Patapsco Neck was orchestrated by higher authorities and conducted well by field grade officers on the scene. When threatened with being outflanked, the defenders maintained cohesion, command, and control, bringing their force of the field in condition to fight again, immediately if needed.

Security

Security was not an issue for either side. While the Americans did not precisely know where the British landing would occur, their knowledge of the landscape limited the possible locations and they were prepared with scouting parties and skirmishers to identify the precise landing site, assess the danger, and ultimately, slow down the advance, denying the British an opportunity to learn what lay in front of them.

The British knew that there would be opposition and they had dealt with similar situations in the past, most recently in the attack on Washington, D.C. They maintained advanced parties and, had Ross not ventured into the firing zones of the skirmishers, things might have been different. It is something of a testimony; perhaps, to the Americans that the British did not know precisely what they were facing and this led Ross to the front.

Surprise

Neither side was the victim of surprise. Both had skirmishing parties out that were conducting themselves properly. The Americans had known of probable landing sites and had them under observation. The British knew the Americans would resist and expected combat before they could get into Baltimore.

Simplicity

Simplicity may have been on the British side. They were advancing to contact, following well-established practices that had proven successful in the Chesapeake for two years. The American defenders had to conduct a fighting withdrawal while obtaining information and slowing down a formidable enemy. The American task was made more difficult because they were using only the smallest number of men so as not to risk forces they would need on the main line of resistance.

Interpretations

More publications exist that discuss the overall Chesapeake Campaign than studies that specifically examine the North Point engagement. Christopher George's *Terror on the Chesapeake* (2001) examines the campaign as a whole, with a chapter dedicated to the defense of Baltimore. Ross Kimmel (2008) wrote a brief work for a Maryland Department of Natural Resources magazine. Frank Cassel wrote an essay analyzing the success of Major General Samuel Smith and the defensive preparations of Baltimore during the year prior to the British assault. He referred to defensive works placed on Hampstead Hill; he mentions, "an artillery park containing perhaps 50 cannon" (Cassel 1969: 359).

From an archaeological perspective, Kathy Lee Erlandson investigated three property lots adjacent to North Point Road in 1999. Her metal detector survey concluded that no further investigation of the battlefield was necessary, due to excessive relic hunting and development (Erlandson 1999:37). This study was carefully considered and a number of conditions within the study indicate the conclusion is far from definitive. According to Erlandson, constraints on time and monetary resources prevented conservation and cataloging, and presumably analysis, of a number of heavily rusted artifacts, some of which were not easily discounted as obviously twentieth-century artifacts (Erlandson 1999:34). The survey was limited to a lot consisting of 5.56 acres and, due to adverse terrain only a third of this ground was covered. Still, the survey recovered seven musket balls, located north and south of an area of wetland not examined (Erlandson 1999:38). The site plan's artifact distribution reveals a possible linear correlation between three unfired and three impacted musket balls near the lot's eastern boundary. The wetlands intersecting the site findings may contain more artifacts due to better preservation of submerged materials. Recent research on battlefield sites (e.g., Balicki et al. 2007; Espenshade et al. 2008; Jolley 2007, 2008, 2009) suggests that it is very rare for such sites to be "hunted out." With sufficient time, experienced personnel, and proper equipment, important data can still be recovered from sites previously subjected to extensive relic collecting (Balicki and Espenshade 2010).

Despite the passage of time, the North Point Battlefield still retains zones that may be archaeologically significant and should be investigated. While the North Point Battlefield landscape has been significantly altered since 1814, potential exists to recover material related to the engagement. Maryland State Highway 151 (North Point Blvd.) and Interstate 695 (Patapsco Freeway) intersect the battle lines at near-perpendicular angles (Figures 39). A rail line also transects the battlefield immediately south of Bread and Cheese Creek mouth. Significant twentieth-century residential development covers the southern portion of the battlefield, masking the American right and British left flanks.

American positions shown on the Winder-Kearney Map are believed to be largely correct, and the 1999 Erlandson Survey determined the approximate center of the American line (the location of the 4-

pounder battery) as the intersection of North Point Road and Trappe roads. Several acres of woodland remain undeveloped north of Interstate 695 between the mouth of Bread and Cheese Creek and Roseview Road. Though no militia units fielded fully standardized equipment, Dyer's rifle battalion may be the most easily identifiable of the Maryland units because their rifles had a circa 50-54-caliber ball, distinctly different from the 0.69-caliber bullets and buck shot fired by the other Marylanders and the 0.75-caliber bullets fired by the British.

The lot ("Battle Acre") initially surveyed in 1999 should be reexamined thoroughly with a more experienced crew of battlefield metal detectorists. This lot's eastern border was the likely battle line of the 27th Maryland Militia. The space to its rear would likely contain detritus related to their withdrawal and British shot that passed over or through the 27th Maryland Militia's line.

Area 1 consists of several acres of woodland between State Highway 151 and Interstate 695, west of Trappe Road. According to the Winder Map, this land was likely the initial position of the 27th Maryland Militia or the second position of the 39th Maryland Militia. Area 2 lies between the rail line and Roseview Road between Norris Lane and Bread and Cheese Creek. This was the likely position of the 51st Maryland Militia, and was possibly occupied by elements of the British 4th Regiment of Foot during the afternoon of September 12, 1814. This zone seems relatively undisturbed by modern commercial growth, and woodland growth may have hindered relic hunters' efforts. Any artifacts that are found can be assigned to one side or the other on the basis different types, sizes and markings.

Bombardment of Fort McHenry (September 13-14, 1814)

After successfully attacking Washington, D.C., the British turned their attention to Baltimore (Figure 39). They left Washington August 25 and marched to reembark on transports and warships near Benedict, Maryland. By September 11, they were in the mouth of the Patapsco River, some 10 miles below Fort McHenry. The next day, the British landing party engaged Maryland militia at North Point. Unlike the battle of Bladensburg (August 24, 1814), the militia stood firm, inflicted casualties and then retired in good order when part of their line collapsed. In addition to standing firm, the militiamen also killed General Robert Ross, the British Army commander, a serious loss for the overall campaign.

The American defenders took position in prepared fortifications on and around Hampstead Hill and waited for another British attack. The Hampstead Hill defenses were impressive and well manned with regular U.S. Army units, militia from Maryland and Pennsylvania, and numerous artillery pieces. The British leadership asked that the Royal Navy conduct a diversion to draw away some defenders to protect the harbor entrance. As a result, bomb ships and a rocket ship took position and commenced bombarding Fort McHenry.

As part of the diversion, the British attempted to distract the Americans by "bombarding" batteries west of Fort McHenry during the bombardment. This failed as will be discussed in the following analysis section, but it was not important because higher authority had already decided that the army should be

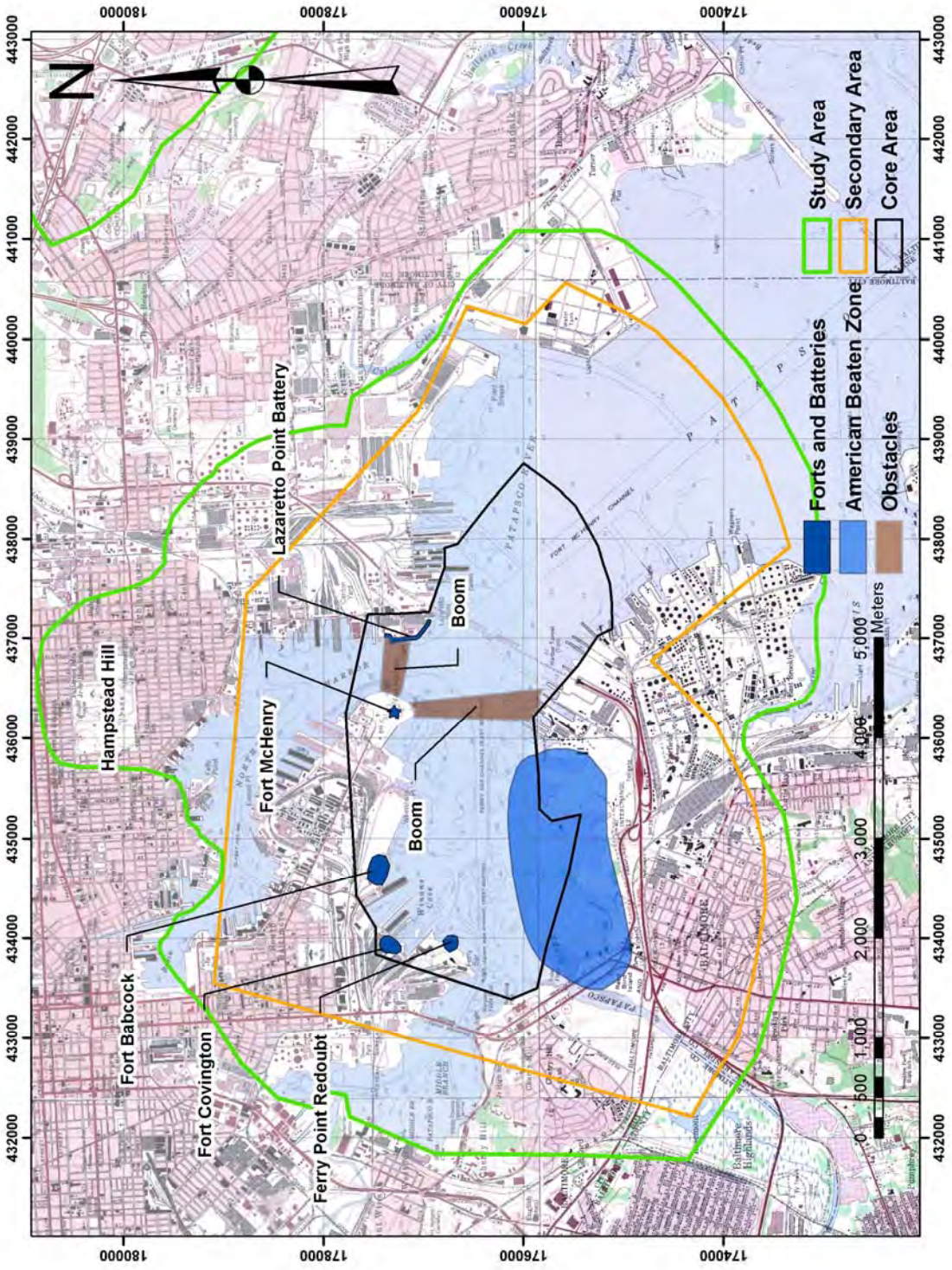

Figure 39. The Bombardment of Fort McHenry *(USGS Quadrangles Baltimore East, Baltimore West, Curtis Bay, Middle River, Sparrows Point, and Relay; after a map by Sarah Lowry, New South Associates).*

reembarked. The bombardment continued but then ceased as the Army marched back to their landing, boarded transports, and the British force moved out into Chesapeake Bay.

"On the night of Saturday the 10th instant, the British fleet, consisting of ships of the line, heavy frigates and bomb vessels, numbering in the whole to 30 sail appeared at the mouth of the river Patapsco, with every indication of an attempt on the city of Baltimore" (Armistead 1814:13). Admiral Cochrane reported much the same, "I proceeded up this River and anchored off the mouth of the Patapsco on the 11th ins when the Frigates and Smaller Vessels entered to a convenient distance for landing the troops [on Patapsco Neck] (Crawford 2002:III:286). "On Monday morning, very early, it was perceived that the enemy was landing troops on the east side of the Patapsco [River], distant about 10 miles" (Armistead 1814:13). It is clear from the low key statements by both commanders that these preliminary activities were observed by both sides without apparent interference.

Once the army was on shore, the Navy commenced their own phase of operations against Baltimore. Baltimore's overall commander, General Samuel Smith noted that "The enemy made his approach by water at the same time that his army was advancing on the land" (Crawford 2002:III:297). Crawford (2002:III:286) provided more details:

> So Soon as the Army moved forward I hoisted my Flag in the Surprize and with the remainder of the Friga[ates,] Bombs, Sloops, and the Rocket Ship passed further up the River to render what co-operation could be fou[nd] practicable. While the Bomb Vessels were working up in order that we might open our Fire upon the Enemy Fort at day break the next morning [13 September], an account was brought to me that Major General Ross…had received a mortal Wound by a Musket Ball.

The British clearly observed last minute American preparations to defend the Harbor by blocking Northwest Branch. "The Enemy have been Sinking Ships Across their Harbour All day [12 September], and in front of the Fort" (Crawford 2002:III:273). "The entrance by Sea [Northwest Branch], within which the Town is retired nearly three Miles, was entirely obstructed by a barrier of Vessels Sunk at the mouth of the Harbor, defended inside by Gun Boats, flanked on the right by a strong and regular fortification [Fort McHenry] and on the left by a Battery [Lazaretto Point] of Several heavy guns" (Crawford 2002:III:287).

Admiral Cockburn, serving with the British land forces reported that, because Baltimore "was defended by extremely Strong Works on every Side, and immediately in front of us by an extensive Hill [Hampstead Hill] on which was an entrenched Camp and great quantities of artillery. . . Colonel Brooke lost no time in reconnoitering these Defences, after which he made his Arrangements for Storming during the ensuing Night [13-14 Sept]" (Crawford 2002:III:281). Colonel Brooke's letter to Cochrane acknowledged that Hampstead Hill could be turned. "there [sic] Works might be turnd. . . In the Morng. We hope to proceed and at about thelve [sic] or one to work our destruction and have communication with you about 10 or Eleven when we shall have looked about three miles of the entrenchments. As your fire I should think on the Town would [be] of infinite Service to us" (Crawford 2002:III:277). Brooke also pointed out that naval gunfire on Baltimore was important to the army's effort against Hampstead Hill.

As part of his preparations, Brooke requested a bombardment of the forts guarding the harbor entrance, supplemented by a diversion that would appear as if the Royal Navy were bombarding the fortifications west of Fort McHenry, if not actually threatening a landing west of Fort McHenry. In response Cochrane reported, "We Shall place the Bombs and begin to Bombard the Fort. You will find them over upon the Eastern Shore as the Enemy have forts upon the Western Side which it is not necessary to encounter" (Crawford 2002:III:275). Admiral Cochrane was willing to conduct the effort but noted that "It is impossible for the Ships to render you any assistance-the Town is so far retired with the Forts" (Crawford 2002:III:277-78). While Cochrane noted that it was not possible to bombard Baltimore proper, it was possible to bombard forts guarding the entrance of the harbor. Cochrane pointed out that, under their instructions, the navy was subservient to the Army on land, "It is for Colonel Brooke to consider under such circumstances whether he has Force sufficient to defeat so large a number as it [is] said the Enemy has collected. . . without this can be done it will be only throwing the Mens lives away" (Crawford 2002:III:277-78).

Movements to Bombardment Positions

"We have moved up to Abt. Four miles from the Fort to wait the Arrival of the Bombs-which will All five in No. be here this Evening" (Crawford 2002:III:273). "So soon as our landing was completed, I directed captain Nourse of this Ship [*Severn*] to advance up the Patapsco with the Frigates Sloops and Bomb Ships to bombard the Fort and threaten the Water approach to Baltimore, and I moved on with the Army" (Crawford 2002:III:279). "During that day and the ensuing night, he had brought sixteen ships (including five bomb-ships) within about two miles and a half of this fort" (Armistead 1814:14). The British were now in position to threaten Baltimore by both land and sea.

The Bombardment

Cochrane reported opening fire, "At day break the next morning the Bombs having taken their Stations within Shell range Supported by the *Surprize*… opened their Fire upon the Fort that protected the entrance of the Harbor" (Crawford 2002:III:287). According to Major George Armistead (1814:14):

> On Tuesday morning, about sun-rise, the enemy commenced the attack from his five bomb vessels, at the distance of about two miles, and kept up an incessant and well directed bombardment. We immediately opened our batteries, and kept up a brisk fire from our guns and mortars, but unfortunately our shot and shells all fell considerably short of him. This was to me a most distressing circumstance; as it left us exposed to a constant and tremendous shower of shells, without the most remote possibility of our doing him the slightest injury. It affords me the highest gratification to state, that through [we] were left thus exposed, and thus inactive, not a man shrunk from the conflict.

For Major Armistead and his men in Fort McHenry, it was a trying period and his commander, General Samuel Smith, acknowledged this. The enemy "commenced a discharge of bombs and rockets at the Fort as soon as he got within range of it. The situation of Major Amistead [sic] was peculiarly trying, the enemy have taken his position at such a distance as to render offensive operations on the part of the Fort entirely fruitless – whilst their bombs & rockets were every moment falling in and about it – the officers and men being at the same time entirely exposed." (Crawford:III:297) (Figure 40).

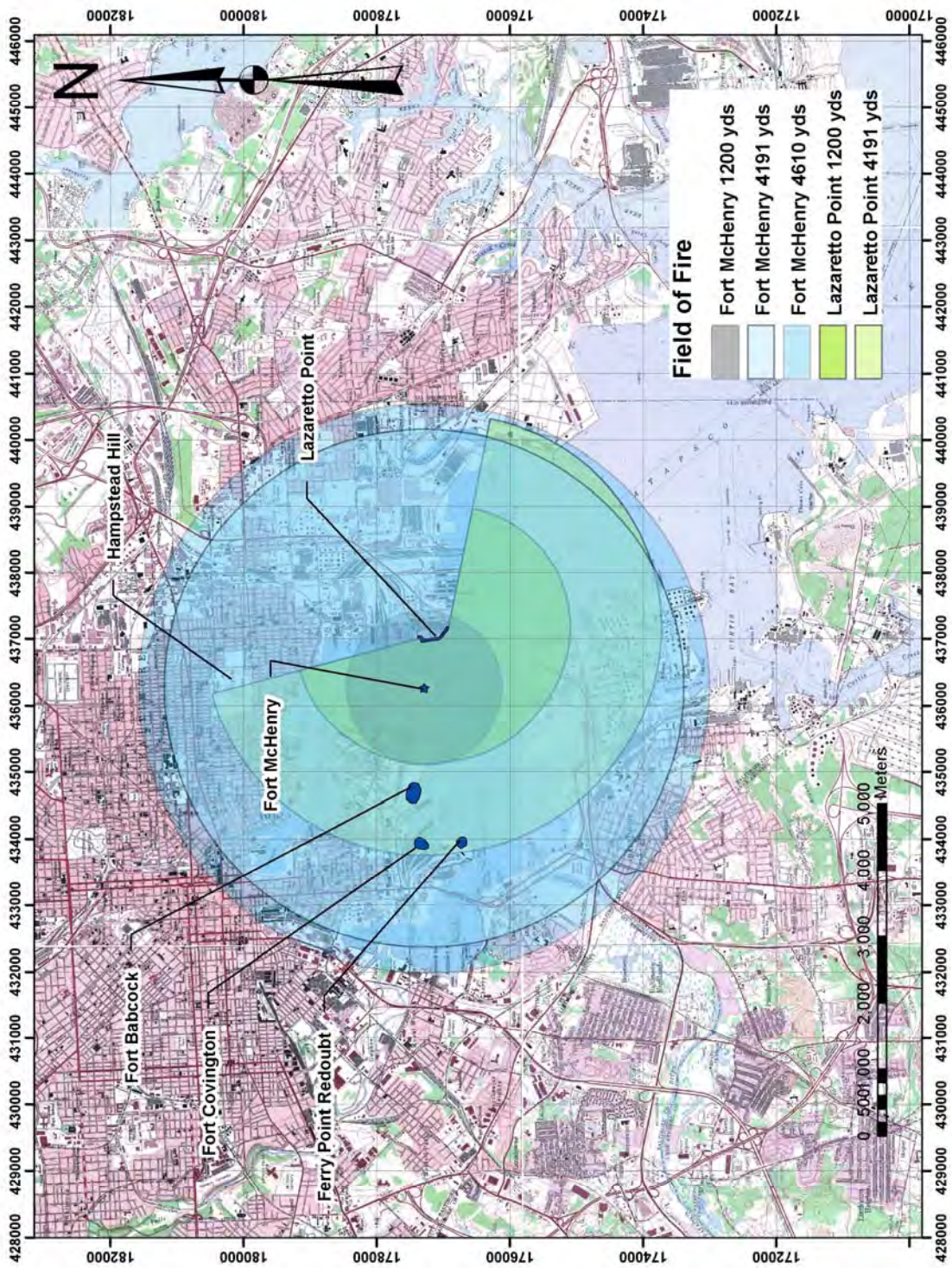

Figure 40. The Bombardment of Fort McHenry – Field of Fire *(USGS Quadrangles Baltimore East, Baltimore West, Curtis Bay, Middle River, Sparrows Point, and Relay; after a map by Sarah Lowry, New South Associates).*

Although the British bombarding vessels were out of Fort McHenry's range, there was a period when they were taken under fire by the Lazaretto Battery commanded by Lieutenant Solomon Rutter of the Chesapeake Flotilla. As General Smith noted, "The Barges and Battery at the Lazzaretto under the command of Lieut. Rutter of the Flotilla kept up a brisk and it is believed, a successful fire during the hottest period the bombardment" (Crawford 2002:III:297).

Shifting Positions During the Bombardment

The British fire did have an impact on Fort McHenry but it was minimal in terms of reducing the fort:

> About two o'clock P.M., one of the 24-pounders on the southwest bastion, under the immediate command of Captain Nicholson, was dismounted by a shell, the explosion from which killed his second lieutenant [Levi Clagget], and wounded several of his men; the bustle necessarily produced in removing the wounded and replacing the gun, probably induced the enemy to suspect we were in a state of confusion, as he brought in three of his bomb ships, to what I believed to be good striking distance. I immediately ordered a fire to be opened, which was obeyed with alacrity through the whole garrison, and in half an hour those intruders again sheltered themselves by withdrawing beyond our reach (Armistead 1814:15).

Smith also reported on the British advance and repulse. When "Two vessels however had the temerity to approach somewhat nearer-they were as soon compelled to withdraw" (Crawford 2002:III:297). This little victory was a morale booster for the Fort McHenry garrison as reported by Major Armistead, "We gave three cheers, and again ceased firing (Armistead 1814:14-15).

Continued Bombardment

Armistead reported that the bombardment continued:

> The enemy continued throwing shells, with one or two slight intermissions, till one o'clock in the morning of Wednesday, when it was discovered that he had availed themselves of the darkness on the night, and had thrown a considerable force above our right [in the Ferry Branch]; they had approached very near to Fort Covington, when they began to throw rockets; intended I presume, to give them an opportunity of examining the shore – as I have since understood, they had detached 1250 picked men, with scaling ladders, for the purpose of storming this fort. We once more had the opportunity of opening our batteries, and kept up a continued blaze for nearly two hours, which had the effect again to drive them off (Armistead 1814:15).

The scaling ladders and intended landing are misleading. The British orders cited in the next segment clearly show that the intent was to create a diversion. Still, Armistead must have had something to base his comment on. It is possible that what were called ladders were the launching apparatus for a rocket barge. If this is so, then the rocket's trail of fire must have pointed out exactly where the barge was located to gunners along Ferry Branch:

> During the bombardment, which lasted 25 hours (with two slight intermissions) from the best calculation I can make, from 15 to 1800 shells were thrown by the enemy. A few of these fell short. A large proportion burst over us, throwing their fragments among us, and threatening destruction. Many passed over, and about 400 fell within the works (Armistead 1814:15-16).

Withdrawal

"The bombardment continued on the part of the enemy until 7 o'clock on Wednesday morning, when it ceased and about 9, their ships got under weigh, and stood down the river" (Armistead 1814:15). As the British withdrew, Fort McHenry fired a morning gun and "the 30' x 42' flag was hoisted over the fort as Yankee Doodle played" (Sheads 1999:17). A British officer on board HMS Hebrus wrote "after bombarding the forts and harbor of Baltimore for twenty-four hours, the squadron of frigates weigh. . . And, as the lasts vessel spread her canvas to the wind, the Americans hoisted a most superb and splendid ensign on their battery. . ." (cited in Sheads 1999:17).

METT-T Analysis

Mission

The overall American objective was to keep the British out of Baltimore. This task was divided into holding the eastern lines at Hampstead Hill, as well as blocking access into the harbor so as to protect shipping and the maritime infrastructure. To accomplish this mission, they defended access to the harbor with Fort McHenry and the Lazaretto Point Battery. These two positions covered a line of hulks and a boom across the waterway leading into the harbor. The defense also had to hold outlying forts that protected Fort McHenry.

The British mission was twofold. First, the Royal Navy had been tasked with creating a diversion that would cause the American defense in front of the city to be weakened. Such a diversion and hoped for weakening of Baltimore's eastern defense line, it was thought, would allow the land forces to break into the city. At the same time, there was the desire for the Navy to get beyond the city's defenses and attack shipping in the harbor. They were not there to take and hold land, or to assault forts with infantry if they could help it.

Enemy

British forces involved in the bombardment were entirely from the Royal Navy. The British employed five mortar ("bomb" ships, the *Volcano*, *Meteor*, *Terror*, *Devastation*, and *Aetna*, as well as the rocket ship *Erebus* (Lord 1977:277). These fire bombardment vessels were supported by Cockchafer and "the *Surprize* with the other Frigates and Sloops" according to Admiral Cochrane (Crawford 2002:III:287). Other vessels can be seen in the list of Marines detached to augment the Army (Crawford 2002:III:273) and shown with the British forces that fought at North Point).

Terrain

Key Terrain

Key terrain is difficult to assess with a naval artillery bombardment (Figure 41). The low lying forts were visible and did not have any appreciable elevation to allow plunging fire. The upper Patapsco's confusing sloughs, creeks, and streams did offer some interlocking fields of fire for the shoreline batteries.

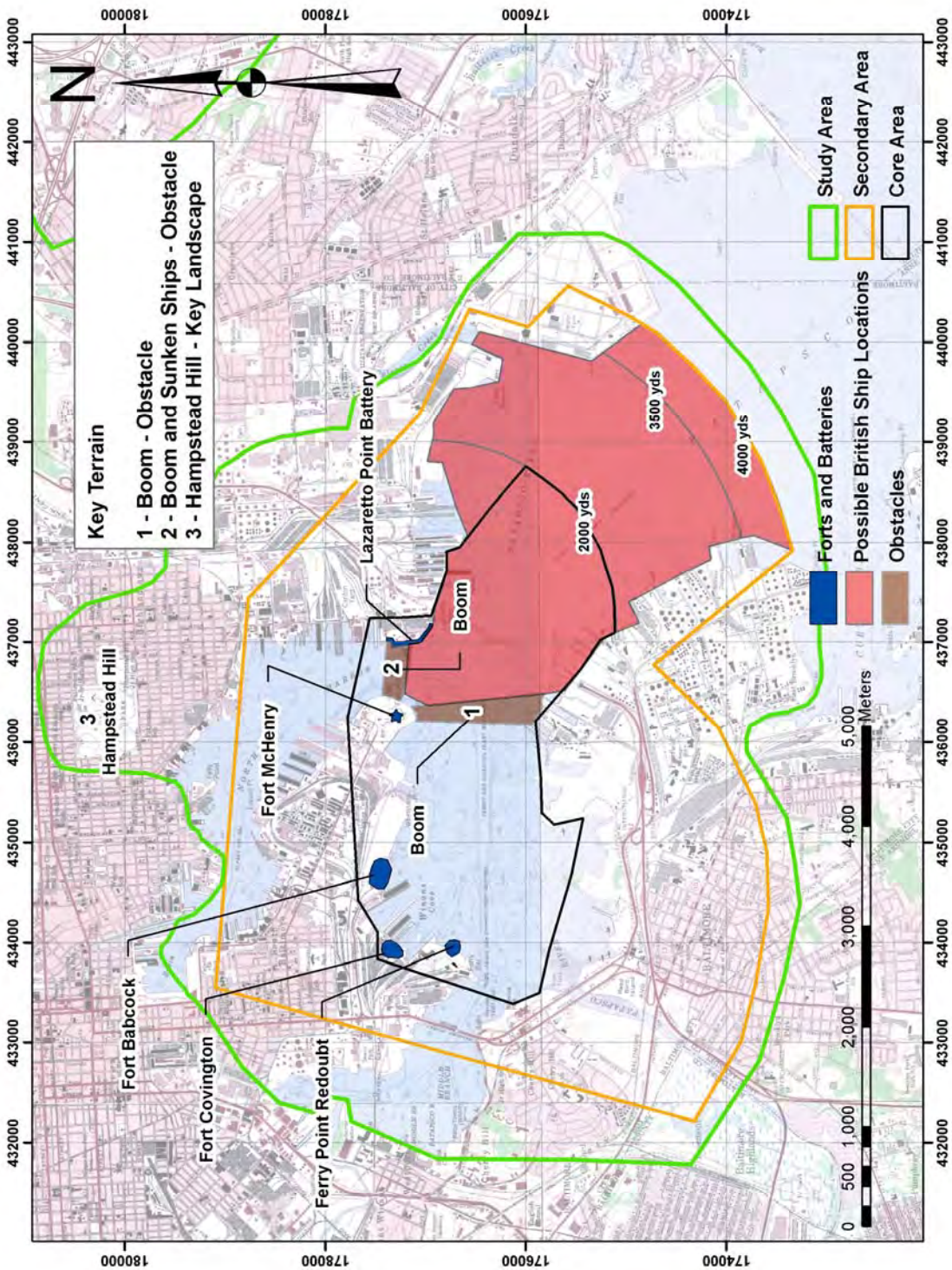

Figure 41. The Bombardment of Fort McHenry - Key Terrain *(USGS Quadrangles Baltimore East, Baltimore West, Curtis Bay, Middle River, Sparrows Point, and Relay; after a map by Sarah Lowry, New South Associates).*

Obstacles

Obstacles were set by the American defenders by "Sinking Ships Across their Harbour . . . and in front of the Fort" (Crawford 2002:III:273). These were presumably associated with a booms and were effective to some extent as it they brought a halt to the wayward members of the diversionary bombardment party. The chief obstacle to the defenders was that their artillery did not throw shot as far as the British bomb (mortar) ships did. The distance between land and water commanders made coordination difficult to some extent but Admiral Cockburn was with Ross, then Brooke, so this became a moot point except when the Army's withdrawal was not, apparently, coordinated with the naval forces in time to halt the small boat diversion.

Cover and Concealment

The Americans clearly had cover and concealment to some extent. The fortifications provide some protection to those inside the fort. The batteries outside the fort proper also seem to have protected their garrisons fairly well. The British had no cover as they were in ships exposed to cannon fire if they got too close. British leadership took steps to provide cover of a sort by moving their vessels out of range but remaining close enough to continue firing effectively on the fort. There was intermittent concealment for both sides during the bombardment because it was raining and the moon was in a dark phase.

Observation and Fields of Fire

Observation and fields of fire were no advantage to either side once the longer range British artillery is explained. Both sides could see each other, even in a rainy night. The American commander suspected that the British had a fairly good view, at least during daylight hours, of what was going on in the fort. "the bustle necessarily produced in removing the wounded and replacing the gun, probably induced the enemy to suspect we were in a state of confusion, as he brought in three of his bomb ships" (Armistead 1814:14). This may well be true as the distance was only two miles and, from the fighting tops, it may have been possible to see within the fort using telescopes. Cochrane's comment that "the Boats in Bear Creek with a Birds Eye View of the fortifications of Baltimore and the New entrenchments I saw them throwing up to the NNE.-of the Town. . . It struck Me that this entrenched Camp [Hampstead Hill] may be turned" (Crawford 2002:III:276) clearly indicates that the British could see, both from their boats close to shore and their ships in the Patapsco River, what was going on to Baltimore's east and south.

Avenues of Approach

Avenues of approach are a moot point. The Royal Navy had to approach by water and this line of attack was clearly covered by the Americans who did not attempt to go out and attack the British. When some vessels moved closer, apparently thinking the Americans were in disarray after a gun was dismounted, they came up the river and were soon brought under fire, then withdrew.

Weather

Weather did not appreciably affect the bombardment but it was raining on the night of September 13/14 (Lord 1977:287). Together with no moon, any observation was somewhat limited.

Troops Available

The American force at Fort McHenry and in surrounding batteries was effective. The best description of the garrison was provided by its commander, Major George Armistead (1814:14):

> My own force consisted of one company of United States artillery, under Captain [Frederick] Evans, and two companies of [US] Sea Fencibles, under Captains [Matthew S.] Bunbury and [William H.] Addison. Of these three companies, 35 men were, unfortunately on the sick list, and unfit for duty. I have been furnished with two companies of volunteer artillery from the City of Baltimore, under Captain [John] Berry (Washington Artillerists] and Lieutenant Commanding [Charles] Pennington [Baltimore Independent Artillerists]. To these I must add another very fine company of volunteer artillerists, under Judge [Joseph H.] Nicholson, [Baltimore Fencibles], who had offered their services to aid in the defense of this post whenever an attack might be apprehended; and also a detachment from Commodore [Joshua] Barney's [US] Chesapeake Flotilla, under Lieutenant [Solomon] Rodman. Brigadier General [William] Winder had also furnished me with about 600 [US] Infantry, under the command of Lieutenant-Colonel [William] Steuart and Major [Samuel] Lane, consisting of detachments from the 12th, 14th, 36th and 38th regiments of United States troops – the total amounting to about 1000 effective men.

Major Armistead (1814:14) described the deployment of his troops:

> I had arranged my force as follows: the regular artillerists under Captain Evans, and the volunteers under Captain Nicholson, manned the bastions in the Star Fort. Captains Bunbury's, Addison's, Rodman's, Berry's and Lieutenant Pennington's command were stationed on the lower works, and the infantry, under Lieutenant Colonel Steuart and Major Lane, were in the outer ditch, to meet the enemy at his landing, should he attempt one.

Time Available

Time available to the British was constrained by logistics and orders. The British orders did not envision occupying any terrestrial locations according to a letter by Cochrane July 17, 1814 (Crawford 2002: III:133). They were attempting to destroy American privateering effort by burning facilities and shipping, as well as capturing, destroying, or purchasing available supplies. They had supply problems, including obtaining potable water. They could not stand off Fort McHenry and continue to fire because they did not have unlimited ammunition.

Even before the bombardment, the British were well aware that any delays resulted in an increased American numbers as Cochrane clearly observed that, "The Enemy is daily gaining strength his loss let it be ever so great cannot be equally felt" (Crawford 2002:III:277-78). The longer they waited, even if firing, the stronger the Americans would get and the more severe would be the American threat (small boat attacks, fire ships, etc) potential. Time was on the side of the Americans once the British did arrive. At that point, all the work toward building and improving fortifications was either completed or would be continued.

Principles of War

Objective

The American objective was to defend the fort; in this case, the Star Fort (Fort McHenry) itself and the rear area that provided access to Fort McHenry's land side. They did this successfully, even though they misread British intentions. The British were attempting to divert defenders from Hampstead Hill so that their army could outflank or storm it.

Offensive

The British seemed to have the offensive in that they moved forward and engaged Fort McHenry at long range. This is misleading in the sense of initiative because the British were basically reacting to what the Americans had done with their defenses around Baltimore. The British did not come to directly confront the fort, in part because the Baltimore defenses were three miles behind the forts. Their overall strategy did not place any emphasis on taking forts and losing men when they were not intending to hold points on the landscape. If offensive is viewed as initiative, then the Americans held this principle because they basically forced the British to react to their defensive positioning.

Maneuver

Maneuver was the British action on the night. They moved forward and engaged the Americans, then withdrew when American guns reached them. The British then took up a safer position and continued the bombardment. The Americans had no intention of sallying out to engage.

Mass

Mass was on the side of the Americans. They had superior firepower at the critical points and times, Hampstead Hill on land, Fort McHenry in the land/sea engagement, to carry the day. The British started with too few men on land and they did not have enough man power to assault Hampstead Hill, outflank it, or assault Fort McHenry. They did not have the fire power to reduce Fort McHenry by bombardment. Cochrane summed up the British lack of mass, "For want of Troops I am obliged to bring My Seamen into the Line" (Crawford 2002:III:290).

Economy of Force

Economy of force clearly affected the British and was reported by Cochrane. "With Two Thousand Additional Troops the Enemys [sic] Works might have been Turned but with the force we had this measure could not have been attempted without risking the retreat of the army being Cut off which from the Numerous Militia the Enemy had Assembled they could have done" (Crawford 2002:III:289). While Cochrane is referring to outflanking Hampstead Hill, this operation was part of the combined arms attack on Baltimore. Without the men to go around Hampstead, the Royal Navy's efforts against forts guarding the harbor were not likely to succeed.

Unity of Command

Unity of command was effective for both sides. The American command structure was clearly under the control of Major Armistead and he maintained command even when being bombarded and unable to return fire. Including this principle in the analysis produced an unexpected piece of information relating

the British command and control. When General Ross was killed, Colonel Arthur Brooke took command. Brooke had Admiral Cockburn with him on land so the Royal Navy was intimately part of the decision making process for the attack on Baltimore. The decision to abandon the land attack, and thus the whole attempt on Baltimore, while traditionally ascribed to Brooke and his council of war, was a demonstration of the British command structure and adherence to strategic planning in London.

American "preparations rendering it impracticable to afford any essential co-operation by Sea I considered that an attack on the enemy's strong position by the Army only, with such disparity of Force, tho confident of success, might risk a greater loss than the possession of the Town would compensate for, while holding in view the ulterior operations of this force in the contemplation of His Majesty's Government. And therefore, as the primary object of our movement had been already full accomplished I communicated my observations to Colonel Brooke, who coinciding with me in opinion, it was mutually agreed that we Should withdraw" (Crawford 2002:III:287).

Security

Security was in effect for both sides to some extent but British accounts make it certain that each could see what the other was doing. Even during hours of darkness, and the "approaching Equinoxial new moon" (Crawford 2002:III:286) when the night hours were dark, there was some visibility from afar because of explosions.

Surprise

Surprise was not a factor for the Americans. They maintained good observation, even during hours of darkness. Despite the problems inherent in losing night vision and being back lighted by shells and rockets, sentries were alert and prevented any landings. The British attempted a surprise but it was not intended to be continued for more than two hours, as it was a diversion. British orders clearly stated that a landing was not intended. There could be no surprise in terms of the artillery exchange; once each side had tested the ranges involved, both sides knew where they were reasonably safe.

Simplicity

Simplicity was a principle the Americans adhered to. They maintained fire when the enemy was within range; otherwise they stayed as much under cover as possible. The British bombarding ships conducted their firing out American cannon range but shifted forward when it appeared Fort McHenry was having trouble. The bombarding ships had only to calculate the range, test fire, and the continuing firing. Once the range was established, it was a simple matter to maintain powder charge and elevation.

Interpretations

Archaeologically, the distribution of British shot, if enough fragments could still be located and mapped, might prove very interesting and provide commentary on mortar and rocket accuracy. This would be possible if accurate recording of shot were done. The rocket fragments would be distinctive. Some British shot was marked with the broad arrow earlier and this insignia would allow discrimination from American shot.

The location of the boom between Lazaretto Point and Fort McHenry as shown on maps may be questionable, or tactically unsound. Mountaine (1781:155-56) pointed out that a boom should be angled across the stream. There are two reasons for this. One is to make a direct strike on the boom difficult for an assaulting ship that might otherwise break through. The other is that angling the boom causes the ship to lie against the boom and present her bow or stern to the covering fort's raking gunfire that would sweep down the decks. An even more important issue here is that, if firing directly across the channel as shown in the sketch map, shot would hit the Lazaretto Point battery. Thus, the western anchor for the boom and hulk line should be at least 50 yards north or south of the direct line between Fort McHenry and Lazaretto Point. Given that the shoreline has expanded eastwards from the Fort McHenry side, it is possible that the western anchor point[s] may well be found under the modern shore line.

The boom that extends south across Ferry Branch, as shown on the Figure 39 map, may not have been in place at the time of the bombardment. Unlike the boom blocking access to the harbor that appears to have stopped wayward members of the small boat diversion party, there was nothing reported by the British boatmen who went up Ferry Branch. Had there been an effective boom or line of hulks at the time of the bombardment, it would almost certainly have slowed the British, and been mentioned in reports, because they would have had to cut their way through it before proceeding.

The Attempted Naval Assault Landing at Fort McHenry

After bombarding Fort McHenry for 15-18 hours, Admiral Cockburn began implementing a requested diversion designed to force the Americans to reinforce other parts of the defense line. The plan involved a threatened landing by sailors and marines west of Fort McHenry while a major assault took place against Hampstead Hill. The diversion involved moving a boat force up the Patapsco and into Ferry Branch, crossing over any obstructions due south of Fort McHenry and then taking up a firing position at some point west of the fort (Figure 42). It had to be done this way because the line of sunken block ships across Northwest Branch prevented the Royal Navy from sailing into the harbor itself. By the time the diversionary attack was launched, Brooke's subordinates had opted to retire instead of attacking the American left.

The attack was to proceed up Ferry Branch and get behind Fort McHenry. Two American forts were located in this area. Fort Babcock was about 1.25 miles west of Fort McHenry. Fort Covington was approximately a quarter mile beyond Fort Babcock. A painting, "The Battle of Fort McHenry" shows both forts overlooking Ferry Branch (Eshelman et al. 2010:59). A second painting, "A view of the Bombardment of Fort McHenry" also shows Fort Babcock (Eshelman et al. 2010:12). Plan views of both forts survive (Eshelman et al. 2010:60; Cole and Sheads 2001:19).

Cockburn selected Captain Charles Napier, commander of the *Euryalus*, who had pressed on to Baltimore in the ship's cutter and two barges after his frigate ran aground in the Potomac River (Lord 1977:286), to lead the diversion. Napier's force was to proceed with muffled oars up the Patapsco and into the Ferry Branch. After proceeding a mile or more, they were to anchor and wait for the signal to commence their "attack". At 1 am, the mortar ships were to restart their bombardment. Then, a series of rockets would tell Napier when he was to open his diversionary fire.

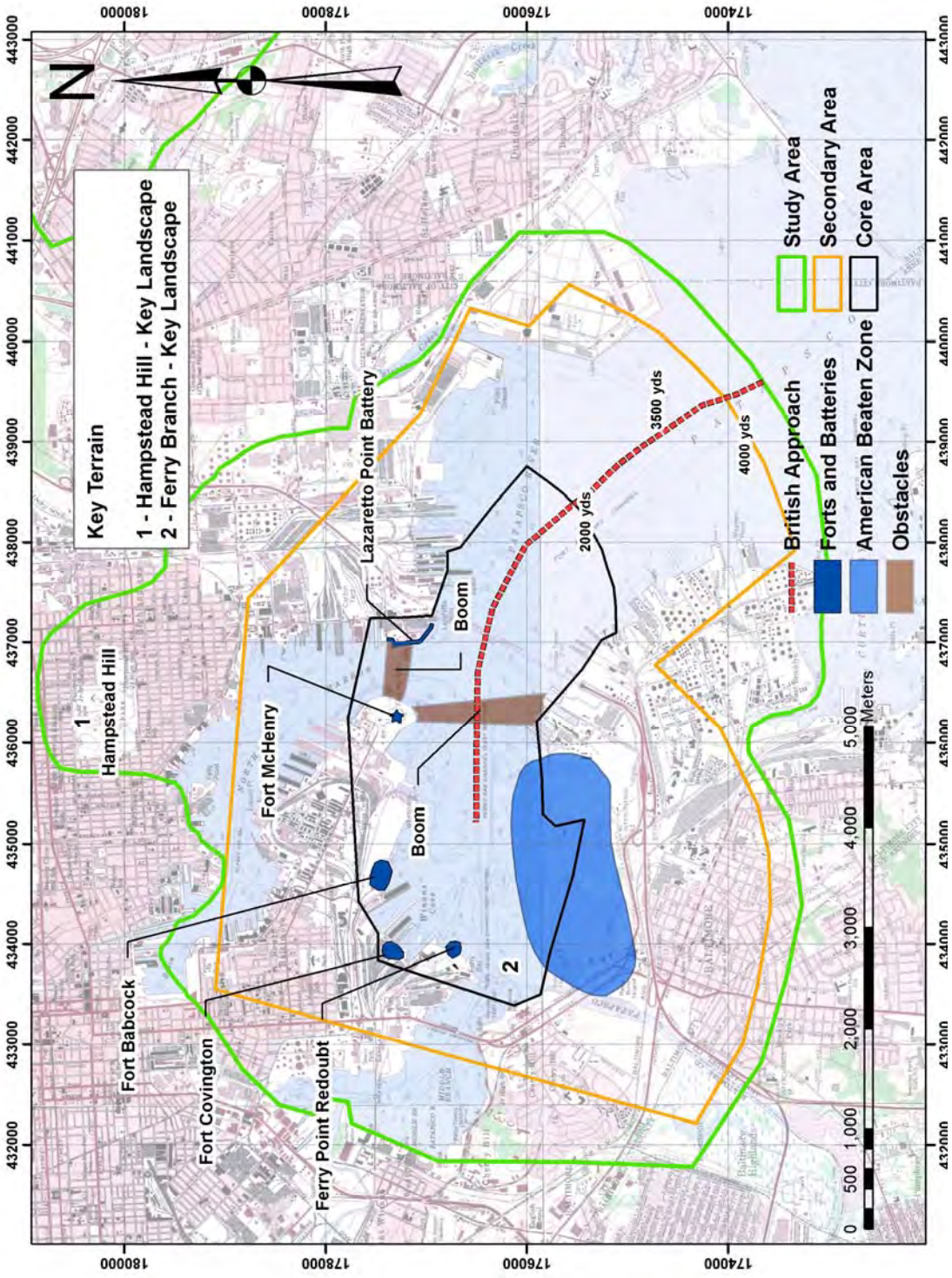

Figure 42. The Attempted naval assault on Fort McHenry – Key Terrain *(USGS Quadrangles Baltimore East, Baltimore West, Curtis Bay, Middle River, Sparrows Point, and Relay; after a map by Sarah Lowry, New South Associates).*

Captain Charles Napier received written instructions from Admiral Cochrane (Crawford 2002:III:278) for his movement west of Fort McHenry:

> You are to proceed with the Boats placed under Your command and execute the following Services - The Boats to proceed up the patapsco [*River*] (to be Supplied with An additional Quantity of Blank Cartridges) to fire ~~more~~ for the intention of drawing the Notice of the Enemy-. When the Boats leave this Ship Their Oars must be Muffled- They will in the first place proceed dired [directed] for the Shore Abreast *Meteor* Bomb-then row up Close to the Shore until they round the point of the patapscco, and proceed up that river About One or One and a half Miles- then let Them drop their Grapnels and remain perfectly Quiet Until One Oclock.- at which Hour the Bombs will open upon the Fort and Sky Rockets will be Thrown up when You will begin a Regular fire directed upon the Opposite Side of the River Occasionally using blank Cartridges only- ~~This is Intended to take off the Attention of the Enemy Opposite to Where our Army, as~~ an Attack is to be Made Upon their Lines directly at Two OClock- ~~The Boats will leave the patapscco] before Three OClock and Rendezvous Along Side of the Ship~~ After you find that the Army is seriously engaged you will return to this Ship for further Order.

These instructions are quite explicit and should have eliminated the error by which over half the boats ended up in Northwest Branch. They also clearly indicate that the "landing" was really a diversion and that no assault on the fort was intended. Firing was to commence at 1 am and stop before 3 am. There is no mention of any landing and the use of blank cartridges hardly suggests an attempt to physically damage the American shore positions.

The timing of the instructions to Napier coincided with a letter from Brooke to Cochrane that made the diversion a moot point. "From your letter to Admiral Cockburn this Evening, I calld a Councill [sic] of War, though I had made all my arrangements for attacking the Enemy at three in the Morng the result of which was that from the situation I was placd in they advisd I should Retire, I have therefore orderd the Retreat to take place to Morow morning, and hope to be at my destination the day after to Morrow that is the place we disembarkd from" (Crawford 2002:III:279). Getting the letter from Brooke to Cochrane took time and in the interim, Napier's diversionary force set off.

The Approach

Two accounts document the approach. Armistead (1814:15) reported

> The enemy continued throwing shells, with one or two slight intermissions, till one o'clock in the morning of Wednesday, when it was discovered that he had availed themselves of the darkness on the night, and had thrown a considerable force above our right [into the Ferry branch]; they had approached very near to Fort Covington, when they began to throw rockets; intended I presume, to give them an opportunity of examining the shore – as I have since understood, they had detached 1250 picked men, with scaling ladders, for the purpose of storming this fort. We once more had the opportunity of opening our batteries, and kept up a continued blaze for nearly two hours, which the effect again to drive them off.

Smith similarly reported:

> During the night whilst the enemy on land was retreating and whilst the bombardment was the most severe—two or three rocket vessels [barges, not to include the rocket ship Erebus] & barges succeeded in getting up the Ferry Branch-but they were soon compelled to retire, by the forts in that quarter commanded by Lieut. Newcomb of the Navy and Lieut. Webster of the Flotilla- the forts also destroyed, one of the barges, with all on board. The Barges and Battery at the Lazzaretto under the command of Lieut. Rutter of the Flotilla kept up a brisk and it is believed, a successful fire during the hottest period the bombardment (Crawford 2002:III:297).

Land/Water Engagement

U.S. Navy Lieutenant Henry Newcomb (Crawford 2002:III:292) provides an account of the engagement from the American perspective (Figure 43):

> The enemies small vessels & barges were discovered – the headmost abreast of F. Covington- Commenced firing-which was immediately returned with shot-shells & rockets-Fort Babcock, (or the Six gun battery) now opened- The darkness prevented our accurately distinguishing their force. . . the barges, (number unknown, Throwing 12, 18 & 24 lb Shot-) abreast of us- Our fire was directed at the headmost- A few broadsides checked their advance, when they concentrated nearly abreast of us, & continued their attack on the batteries.

Armistead (1814:15) commended the defensive efforts led by Newcomb:

> In justice to Lieutenant [Henry] Newcomb, of the United States Navy, who commanded at Fort Covington, with a detachment of sailors, and Sailing Master [John Adams] Webster, of the [U.S. Chesapeake] flotilla, who commanded the Six Gun Battery [Babcock], I ought to state, that during this they kept up an animated, and I believe, a very destructive fire, to which I am persuaded, we are much indepted [sic] in repulsing the enemy.

Commodore John Rogers (Crawford 2002:III:300) likewise praised Newcomb and Sailing Master John Adams Webster:

> The Enemy's repulsion from the Ferry Branch on the Night of the 13th: Inst after he had passed Fort McHenry with his Barges and some light Vessels was owing to the warm reception he met from Forts Covington and Babcock commanded by Lt Newcomb and S. Master Webster.

Withdrawal

Newcomb (Crawford 2002:III:292) reported "The decided superiority of our fire compelled them to retreat when They were met by a fire from F. MHenry-which, however from the darkness of the night was soon discontinued." Newcomb's statement reads almost is if it were a statement about mass – superior power at the critical time and place. Armistead's (1814:15) account provided further detail on the post-engagement situation:

> One of his sunken barges has since been found with two dead men in it; others have been seen floating in the river. The only means we had of directing our fire, was by the blaze of their rockets, and the flashes of their guns. Had they ventured to the same situation in the day time, not a man would have escaped.

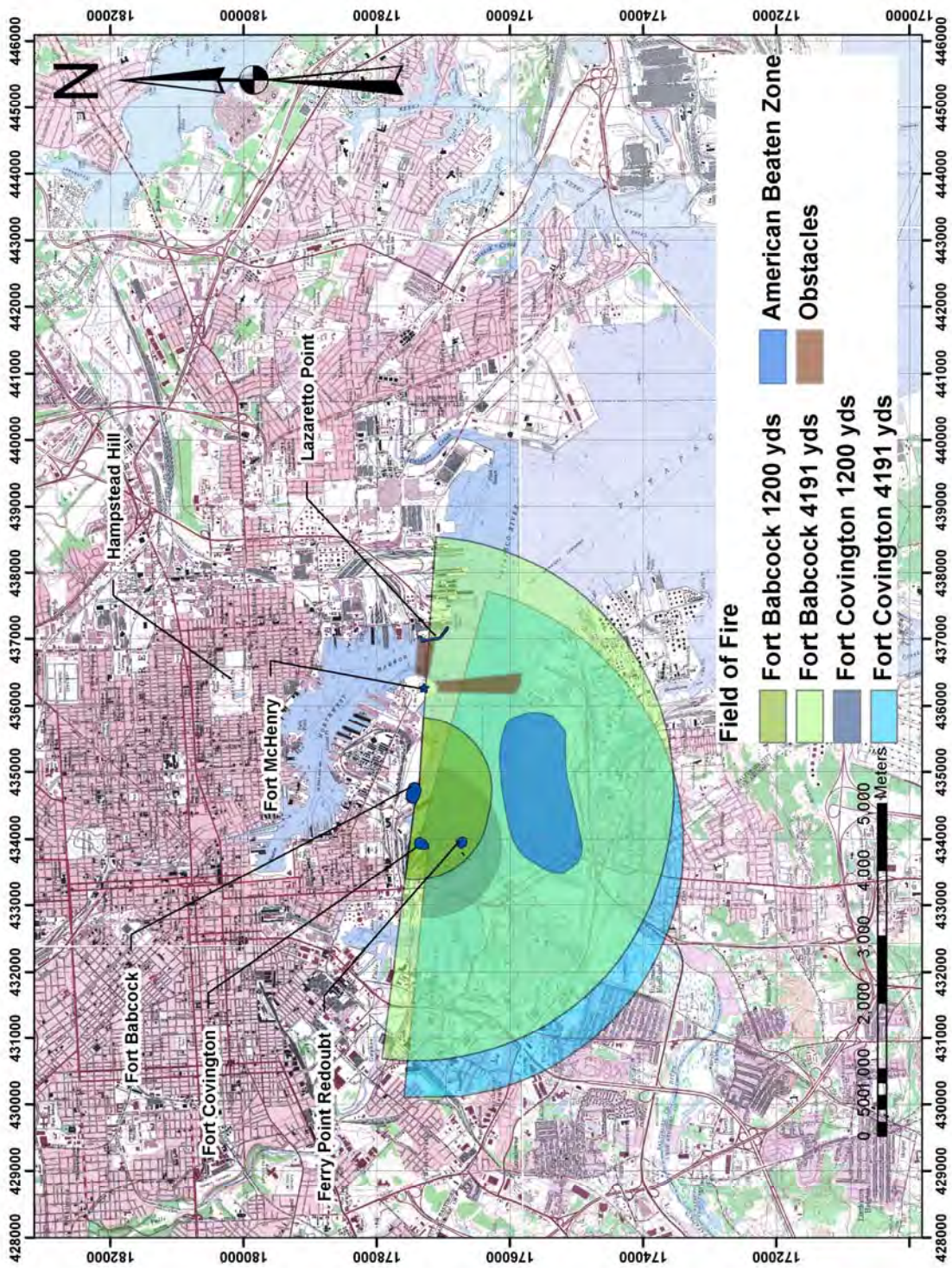

Figure 43. The Attempted naval assault on Fort McHenry – Field of Fire *(USGS Quadrangles Baltimore East, Baltimore West, Curtis Bay, Middle River, Sparrows Point, and Relay; after a map by Sarah Lowry, New South Associates).*

METT-T Analysis

Mission

The American mission was to prevent a British landing, or any other operations, west of Fort McHenry. In this, they were successful. The British mission was not a landing as been generally presented in most historical accounts (Whitehorne 1997:188-89, for example). It was supposed to be a diversion to draw manpower away from Hampstead Hill. To that end, Napier's boats and barges were given blank charges so as to increase their presence when firing at the forts west of Fort McHenry. The plan was that the party would withdraw to their ships when they heard the gunfire from Hampstead Hill.

Enemy

Newcombe reported specifically that British "small vessels and barges" armed with a variety of cannon, including 12-pounder, 18-pounder and 24-pounder guns (Crawford 2002:III:292). Some barges were armed with Congreve rockets, the rocket boats. These vessels were barges, requiring some twelve oarsmen, a steersman, a gunner, and perhaps assistant gunners. Some accounts suggest, perhaps following Armistead (1814:15), suggest that 1,200 men were in the 20 boats (Whitehorne 1997:188). This is an impossibility. Not only were all surplus marines (circa 700 men) serving with Brooke on Patapsco Neck, but 20 boats would be unlikely to carry 1,200 men. If 260 men (13 times 20) were required for the boat crews, subtracting the non-oarsmen and gun crew would, mean that each barge carried some 45 additional men, before subtracting the rocket boats from the total. It is far more likely that the total party initially consisted of 20 boats with somewhere around 300 men aboard.

Terrain

Key Terrain

The terrain around Fort McHenry was water, solid land, or marsh. The Americans had heavily fortified the dry land, partially blocked water access and could fire into the marshes. The key terrain was the dry land along the north bank of the Patapsco River, which was solid enough to support earthwork fortifications that provided cover and some concealment to American gunners and their artillery but was not so high as to allow plunging artillery fire. Instead, the American artillery could fire with well-leveled guns across water where ranges were known from hours of drill and measurement.

Obstacles

Obstacles had been emplaced by the Americans to bar British access to the inner harbor, Ferry Branch, and Ridgley's Cove (Figure 44). These included a boom at ferry point blocking access into Ridgley's Cove. The exact time this boom was set up is unknown. Between Whetstone Point and the marsh across Ferry Branch, there was a line of hulks but this barrier was probably not erected until after the bombardment. From the sketch map it seems that there was from 2.25-4.5 feet over these hulks. While this obstruction would have caused problems for warships ranging from deep draft men-of-war to much more shallow draft schooners, bomb ships, and tenders, the hulks would prove little hindrance to ship's boats, even those laden with men and an artillery piece(Figure 44). This is all the more obvious if the north and east winds blew more water into Ferry Branch the night of the assault. Between Whetstone Point and Lazaretto Point, there was both a line of hulks and a boom consisting of a chain supported by masts.

Figure 44. Detail of sketch map showing obstacles set by American forces to protect the entrances to the inner harbor, the Ferry Branch, and Ridgley's Cove (*after Kearney 1814*).

The line of hulks was scuttled about September 11. Whether the boom was placed over the hulks is difficult to tell from the available documents, but the hulks were sunk in place before the bombardment. Both lines of hulks were directly under the guns of Fort McHenry and its water battery, making them effective barriers blocking access to water beyond the fort if they were in place.

Cover and Concealment

Cover and Concealment were moot points for either side. Both British and American leaders could easily see the other over the open water. At night, there was the possibility of poor vision as the moon was dark and, on the night of the bombardment, the night clouded over and was rainy. During the battle, there was covering fire provided overhead by the British mortar and rocket vessels but this did little to conceal the boats making the attempted diversion except as it reduced American night vision to minimal levels and that was not enough. Given the necessity for concealing the advance of the diversionary landing party, it is surprising that "The enemies small vessels & barges were discovered by their lights moving up the S.W. Branch – the headmost abreast of Fort Covington" as reported by Newcomb (Crawford 2002:III:292), and also be Webster. This violated attempts at concealment, in turn, a violation of security as well.

Observation and Fields of Fire

American Observation and Fields of Fire were unlimited during daylight hours. Even during a night without a moon and with "heavy showers of rain" (Crawford:III:292), once the British small craft flotilla was detected, they were very exposed to cannon fire across the open water. Observation was somewhat limited due to loss of night vision caused by gunfire, munitions exploding overhead, and intermittent moonlight. A key point about observation is that when the British tried to go around the American right flank and land troops, the artillery and rocket fire over the fort may have kept the Americans' night vision shifting from light to dark. That is, the constant lighting and dimming due to exploding shells and passing rockets may have provided some cover by generating variable light conditions that made it hard to see. The explosions were generally overhead and not over the areas where the British small craft were maneuvering, further obscuring them. When the British landing party was returning, one boat violated security by firing a rocket and the immediate American response suggests that the rocket's trail provided an excellent reference point for aiming and firing grape shot, probably backed by a solid shot.

For the British, their ability to see the American batteries was limited because they were part of the terrain. Since exploding shells and rockets were detonating over the fort and over the outlying forts, they would have been visible, if only occasionally. The British boat artillery was largely ineffective, both due to a boat's inherent motion and the range of the small carronades when compared to the heavy American long guns.

Avenues of Approach

Avenues of approach largely apply to the British. They could not march overland against Fort McHenry to create their diversion so they came in ship's boats up the Patapsco River and into Ferry Branch. The Americans had not yet obstructed Northwest Branch with sunken vessels and booms so their passage was relatively easy. Even if Ferry Branch had been obstructed at the time of the battle, the shallow draft

ship's boats could pass over the hulks as they had clearance ranging from 2.5-4.5 feet. If the Ferry Branch water level was increased by wind, the barges could easily have passed over any hulks that might have been emplaced. Avenues of approach were thus not obstructed but they were under the view of heavy gun positions that could fire leveled across the water.

Weather

Weather played a role. While pouring rain might make participants uncomfortable, it also obscured both sounds and vision. Operating in the dark of night from 10 pm to past 3 am ensured that the small boats would be hard to see. A new moon appeared that night, increasing the darkness created by the bad weather. Other than that, weather did not play a major role beyond these attributes. Tidal changes were marginal, circa 1.5 feet, but with the wind from the north and east (Crawford 2002:III:292), the tidal change might have been augmented by the wind pushing water into Ferry Branch. Prior to midnight, the weather was "thick & hazy with frequent showers of rain" (Crawford 2002:III:292).

Troops Available

The American defenders during this phase were positioned outside the main fort in a series of water batteries that faced the Ferry Branch to the south or the Northwest Branch to the east. There were other batteries across the Northwest Branch on Lazaretto Point that are not included in this study dealing with the boat party diversion. Virtually the entire tip of the point in front of Fort McHenry had been fortified with earthen artillery positions, decked with planking, revetted, and connected with a trench system. Included with the cannon were at least 15, French 42-pounders.

The men manning the water batteries were virtually all experienced seaman, used to discipline and the handling of heavy guns. Firing their big guns from a stable terrestrial platform posed little difficulty to gunners used to rolling and pitching ships. The men, guns, and the forts involved in repulsing the British diversion are shown in Table 11.

Table 11. American Guns and Troops Available (*Crawford 2002:III:300*).

Fort	Gun Numbers/Type	Number of Men
Fort McHenry Water Battery (S. Master Rodmond [sic])		**60 (Chesapeake Flotilla)**
Fort Babcock (Webster)	**6, 18-pounders**	**50 (Chesapeake Flotilla)**
Fort Covington (Lt. Newcomb)	**10, 18-pounders**	**80 (*Guerriere*)**

Time Available

Time available did not concern the Americans. They were alert and ready, waiting out a bombardment that had slackened. Some men were asleep, but others were clearly alert. The British had a tight time frame involving their departure from their ships, travel over water into Ferry Branch, and then the precise time for their opening fire. The return time was also observed. There was some confusion about the timing because the Ferry Branch firing was supposed to be a diversion and, in the confusion of

relaying orders, the reason for that diversion, the land attack against the American left at Hampstead Hill, did not occur.

Principles of War

Objective

For both sides during the diversionary attack, the objective was clear and attainable. The Americans wanted to stop the British and forestall any landing. The British wanted to get beyond Fort McHenry, threaten the north shore with a diversionary bombardment, then withdraw when firing indicated that the assault east of Baltimore at Hampstead Hill was underway. The British plan went awry when more than half the boat party took a wrong turn and went up Northwest Branch toward the harbor instead of going into Ferry Branch to outflank Fort McHenry.

Offensive

Offensive, in this case better described as the initiative, lay in American hands. The British were taking offensive steps by forcing the issue with their diversion. They were, however, responding to American strength that dictated how and where they could operate. In other words, despite British aggressive actions, the initiative was clearly an American asset. They were forcing the British to react to American plans and moved into what was basically an American kill zone.

Maneuver

Maneuver during the diversion effort was a British asset. The Americans did not have to move but could have done so laterally to repel any landing made between the forts if artillery did not break up the attack. The British moved effectively to get into position, conducted their diversionary fires for almost two hours, and then withdrew.

Mass

Mass is not the larger number of men and this is clearly shown in the divisionary attack where the Americans had superior fire power at the critical point and time. The smaller American force (circa 200 men) with their big guns covered by earthworks totally outclassed the British party which had lost over half its numbers by losing their way. American mass was further enhanced because the guns in Fort Babcock were double-shotted with both solid shot and grape shot firing at a range estimated by Webster as 200 yards (Webster 1853:179).

Economy of Force

Economy of Force was also demonstrated by the Americans. While the British may initially have had more men, perhaps 300, there were not enough of them to accomplish the mission, even before over half the boats got lost. The limited number of Americans committed to the water batteries along Northwest Branch and the Ferry Branch were more than adequate to deal with the situation.

Unity of Command

Unity of Command was not a problem except that the British column divided accidently during the approach. When the diverging party was discovered by the Americans, they were well out of position

and opted to return to their ships. The other group was under good control throughout except for the apparently errant signal rocket fired during the withdrawal (Lord 1977:291; Whitehorne 1997:189). The Americans were likewise under control, except for one officer who refused to send men forward to Fort Babcock when ordered (Webster 1853:180). The reason for refusing to send back Webster's troops clearly indicates that the shore batteries leadership thought they were under attack, suggesting the effectiveness of the false bombardment but also showing that no troops were being sent to the threatened sector, even if it was within a few hundred yards, much less on the other side of town.

There was clear violation of British unity of command caused by delays in inter-service communication but this was as much a product of distance, involving signals carried over land and water, at night, and in bad weather. The Ferry Branch bombardment was supposed to divert American attentions from a planned British attack against the American left on Hampstead Hill. Instead of carrying out the attack on Hampstead Hill, the land forces met in a council of war and elected not to try and assault the American position because it was found to be stronger than thought and had obviously been reinforced, News of this decision, and the British Army's withdrawal around 1:30 am (Whitehorne 1997:190), did not reach the Navy until after the diversionary force had left on their mission.

Security

Security was effective on both sides. The Americans had known positions but the night was dark and rain obscured them. They had sentinels posted and officers were alert as well. The British, those who went the right way, moved along the southern shore of Ferry Branch so as to conceal their movements as much as possible. They had lights on their craft and that ultimately gave them away to the American gunners in Fort Covington (Crawford 2002:III:292). Sailing Master J. A. Webster claimed that "we were convinced it was the noise of the muffled oars of the British barges. Very soon afterwards we could discern small gleaming lights in different places. I felt sure then that it was the barges, which at that time were not more than two hundred yards off. Some of the lights were above me next to Fort Covington" (Webster 1853:180).

The worst violation of security came whilst Napier's boatmen were retiring to their ships. An officer, for some reason, fired a signal rocket and this resulted in a second bombardment against the little flotilla (Webster 1853:180). The British said one boat was damaged but the Americans claimed they found two damaged boats and wounded personnel.

The accidental diversion of half the barges might well be seen as a failure in security. These vessels did not follow the leading craft and went toward the harbor. How well briefed the steersmen were is unknown, but someone in each boat should have known something of the route. In this case, the fog of war (wind, rain, haze, and irregular lighting) caused problems. This issue is discussed further under interpretations.

Surprise

Surprise during a battle is not always possible. In this case, both sides were fully alert and observing the battlefield. Surprise was simply not possible.

Simplicity

Simplicity was easy for the Americans as they were in position and their guns were already loaded for firing both solid shot and grape against any British party. Given the rainy, dark conditions, the British plan may not have been simple enough. Eleven of the 20 landing party barges lost their way and nearly ran afoul of the artillery battery on Lazaretto Point before returning to their ships.

Interpretations

Armistead's statement (1814:15) about British numbers is in error. For one thing it conflicts with the mission orders given to Napier. For another, the 20 boats, with 12 men rowing in each, plus a steersman and possibly two gunners, would add up to 260 men. There were not 1000 marines available to put in the boats because all "surplus" marines had already been detailed to serve with the Army on Patapsco Neck. The issue of scaling ladders is also incorrect. They would not have been taken aboard the barges unless a landing was contemplated. Armistead said they were found in a damaged barge but these were probably on a rocket boat that had been hit and the "scaling ladders" were the launching apparatus. Reference to the rocket section of the weaponry and boats will confirm the similarity.

The statements by Newcomb about the wind and how they knew the British were coming are important elements in a deductive chain regarding the British diversion into Ferry Branch. Newcomb said that the wind was out of the east and north with heavy showers of rain (Crawford 2002:III:292). Coupled with Webster's statement that they heard "the noise of the muffled oars of the British barges" (Webster 1853:179) and then saw several lights, the mystery of how the other half of the diversion got lost may be solved.

If the British sailors put a shielded lantern in the stern of each boat in the diversion force, the lights would guide following boats. The wind was out of the east or north and, when the lead craft turned into Ferry Branch, the wind gusts associated with rain showers would have been from astern and could have blown out one or two lanterns. Newcomb confirms small boats with lights. Newcomb was in Fort Covington a quarter mile west of Webster in Fort Babcock. Webster said they heard splashing of muffled oars. Webster did not initially see the lights and held his fire until either he saw the lights himself or Newcomb opened fire from Covington. That Newcomb could see the lights indicates the leading craft had almost passed Fort Covington so that Newcomb saw the lights from the starboard quarter. The statements indicate that Webster could not see them and Fort Covington firing first tends to support this. This interpretation has the best fit with the statements of Newcomb about the weather and the boat lights, plus Webster's statement about learning the British were there by their splashing.

If the ninth boat's light blew out, the following boats could have kept going straight toward the Northwest Branch. If there were lights in town, they might have been glimpsed by the boat crews. It is also possible that the boat crews saw battle lanterns on the water battery that might have been in a row and thought they were the missing boats.

Archaeologically, the distribution of the water batteries shot might prove very interesting. The 42-pounder guns used in the water battery were French and may have used French ammunition. If so, these shot may be identifiable, beyond their size, as the French did mark some shells with the fleur-de-

lys, at least during the American Revolution. The large size shot might also be unique to these cannon. The Americans had 18 and 24-pounder cannon firing across Ferry Branch with solid and grape shot. If these were found on the southern side of the branch, they could possibly be ascribed to specific batteries (See beaten zone in Figure 39).

It is unlikely that the one, or two, damaged barges the British lost would be found. Webster said he repaired one and sold it (Webster 1853:180). Both sides said they were damaged and it is unlikely they would have been removed initially, but grass fires, tides, storms, and rot would almost certainly have moved and/or destroyed these craft. If a small watercraft exhibiting damage of the sort inflicted by artillery were found during a survey, it might be possible to ascribed it to this event but supporting evidence in terms of size and markings would have to be found as well.

The map showing an obstruction across Ferry Branch probably dates after the battle. The boom almost certainly does because the British boat party made no mention of it. As a landmark indicating their position in the night, there would probably have been a reference to it by Napier or one of his men. Whether or not the obstruction line was there on September 13, the possibility of finding remnants of the northern or southern most vessels is something to be considered unless it can be shown that dredging took place in those areas where the line ended.

10.0 BATTLEFIELD ANALYSES - CONCLUSIONS

Lawrence E. Babits, Christopher T. Espenshade, and Sarah Lowry

Cato and *Hawk* at Cedar Point (1781)

The encounter at Cedar Point involving the *Cato* and the *Hawk* was not a battle per se. Instead, it was an American attempt to save cargoes threatened with capture by running the vessels aground. The preliminary actions do lend themselves to analysis using standard military formats. The outline led to questions about the wind, tide, moon phase, weaponry on board, and depth of water versus vessel draft. A model for examining the vessels was proposed by comparing the site to the *Defence*, a privateer that blew up earlier in the Revolutionary War.

The Battle of Kedges Straits (1782)

The Battle of Kedges Straits was the only "pure" naval engagement in this study. Using the military format to asks questions of documents suggested zones for archaeological survey and most assuredly provided a better understanding of the encounter between Loyalists and Maryland naval militia. In particular, the issue of how the barges engaged is now better understood, in part because the wind, tide, and the elevation of the sun can now be included.

Raids on Frenchtown, Elkton, Georgetown, and Fredericktown (1813 & 1814)

The British raids on Frenchtown, Elkton, Georgetown, and Fredericktown, Maryland, can be seen both locally and in a wider perspective as part of the British strategy to destroy American shipping and will to resist during the War of 1812. The British tried to go up the Elk and Sassafras rivers at night to effect surprise but were thwarted by a lack of knowledge about the rivers. American resistance was minimal and swiftly overcome except in the 1814 raid against Elkton. There, it is clear the British had a specific objective, the steam packet, and sent only a small party to destroy it. That small party violated economy of force and withdrew when confronted with effective resistance.

The Battles of St. Leonard's Creek (1814)

The series of engagements between the Chesapeake Flotilla and Royal Navy small boats in St. Leonard's Creek was clarified by using the military format. This particular engagement had been studied in depth and analyzed. Some new information did come from this analysis, but the information was already present in slight different form.

The Battle of Baltimore (1814)

The Battle for Baltimore resulted in a national mythology and the creation of the national anthem. That said, these conclusions are fraught with danger because they might be seen as damaging mythology associated with a National Shrine. It is fairly clear from the documents under analysis that the key fighting was the September 12skirmish and following engagement at North Point. In some ways, the Patapsco Neck fighting seems almost reminiscent of the Battles of Cowpens (Babits 1998) and Guilford Courthouse (Babits and Howard 2009), but on a much larger scale. That is, the Marylanders deployed in

three progressively stronger “lines”, first were skirmishers who attritted the British. A second line composed of the most reliable militia available stood its ground and retired largely intact to a third, much stronger, fortified line backed by artillery and more than 10,000 men at Hampstead Hill.

Faced with the massive defensive works at Hampstead Hill, the British looked for a way to outflank the position, then asked for the navy’s help. This led to the bombardment of Fort McHenry. Here the situation becomes confused by mythology. The entrance to Baltimore’s harbor was heavily fortified and the town was out of reach until the fortifications were passed. The British did not intend to assault prepared fortifications because of the casualties they might suffer.

The Royal Navy opted for a bombardment. This force consisted of only five mortar (bomb) vessels and a rocket ship. The frigates and ships of the line with their hundreds of guns did not participate. The bomb and rocket ships had the range to stand off and fire away at the American forts without fear of being hit in return. The bombardment was intended to distract the Americans while the British land forces attempted to outflank the Hampstead Hill. To encourage the Americans to send men away from Hampstead Hill, a diversion was arranged that was to simulate an artillery attack, if not a landing, west of Fort McHenry.

The British attack fell largely on Fort Babcock. Here 60 men were originally positioned with six guns. Twenty men were sent to the rear to help man another position. This made little difference as the 40 defenders still in Fort Babcock were the least likely to fail under pressure. They were remnants of Joshua Barney’s Chesapeake Flotilla, hardened by Flotilla duty all spring and over the summer. More importantly, that duty included a naval skirmish at Cedar Point, followed by more skirmishing and three battles in St. Leonard’s Creek. Here the Flotillamen took the measure of British barges and rocket boats, standing firm in the open for hours at a time.

The Flotilla’s vessels were destroyed to avoid capture but the men stayed on and were the only effective fighting force at Bladensburg where they fought the British to a standstill and were only driven off after all other Americans left the field. Now, battle hardened and inured to rocketry and artillery, behind solid earthen works with 18-pounders, they fought for almost two hours against the British diversion before it withdrew. In the meantime, the British land forces were already withdrawing from their positions threatening Hampstead Hill and were heading back to reembark on their ships.

Aside from the spectacular bombardment that inspired Francis Scott Key to write the “Defense of Fort M’Henry”, and the spirited opposition against a diversion that did not attempt to close with Fort Babcock, the key to Baltimore’s defense may have been the mundane skirmishing and hard fighting of Stricker’s Brigade at North Point. Sticker’s men bought time needed to fully man the Hampstead Hill defenses that caused the British Army to request the bombardment and diversion.

The British raiding during 1813 and 1814 has a clear pattern in that the landing parties did not engage fortifications just as they were instructed by their leadership. Instead, they attacked, and if resistance was encountered, they drove it away or retired. The British apparently had a healthy respect for fortified Americans and the damage they could inflict. Consequently, they usually withdrew when confronted by forts but attacked when Americans, especially militia, were arrayed in battle lines in the

open. This observation makes the later attack at New Orleans all the more curious because it went against both instructions and experience.

This study has shown the utility of conducting an analysis within the framework of METT-T, KOCOA, and the Principles of War. For each engagement there is now a better understanding of what happened and why. Each should now be more thoroughly reexamined in greater depth to more fully explore what the existing documents and archaeological materials have to tell us.

11.0 UNDERWATER ARCHAEOLOGICAL FIELDWORK – METHODS AND RESULTS

Susan Langley and Troy J. Nowak

Introduction

Reconnaissance-level underwater archaeological fieldwork was undertaken by MMAP in selected areas related to the 1781 loss of *Cato* and *Hawk* at Cedar Point, the 1782 Battle of Kedges Straits, and the 1813 raid on Georgetown and Fredericktown utilizing marine geophysical remote-sensing techniques, and inspections of previously recorded underwater archaeological sites associated with the 1813 raid on Frenchtown and the 1814 Battles of S. Leonard's Creek were conducted whenever possible. New South Associates provided background information, KOCOA research findings, and recommended the specific locations and sizes of the areas where reconnaissance-level fieldwork was conducted over two summer field seasons. The purpose of reconnaissance-level fieldwork is to identify areas with potential to contain significant cultural resources, in this case, physical evidence of the engagements that were subjected to battlefield analyses by Babits, Espenshade, and Lowry (Chapters 4-10). Future identification and data recovery efforts should lead to a better understanding of the events that occurred during these engagements, their outcomes, and the daily lives of the participants in these actions and their contemporaries. Inspection of previously identified sites was intended to ensure that the sites remain undamaged and to record any observations that might facilitate future surveys or investigations.

Cato and *Hawk* at Cedar Point (1781)

Study Area and Rationale

The Core and Secondary areas for the loss of *Cato* and *Hawk* at Cedar Point are shown in Figure 14. Based on review of historical records and the results of KOCOA analyses the location where this engagement occurred appears to be along the shoreline south of Cedar Point between the Navy seaplane basin and Cedar Point. The Core area measures approximately 500 acres. An area measuring 1500 acres which included the Core area and a large portion of the Secondary area initially was chosen for investigation, but was truncated to 1000 acres because of poor weather and sea conditions, and time lost due to equipment malfunctions. The entire Core area was surveyed.

Three distinct concentrations of eighteenth-century materials should exist within the Core area representing the locations where *Nautilus* ran aground, and where *Cato* and *Hawk* were lost. Remnants of *Cato* and *Hawk* are expected to exist as well as equipment, guns, and ammunition lost during the engagement. All three locations are expected to be identified through collection, analyses, and ground-truthing of magnetometer and side scan sonar data. The present study aims to provide recommendations that identify and prioritize areas that exhibit potential to contain remnants from the battle for future identification-level work.

Timeframe

July, August, September & October 2010, June 2011

Survey Vessel and Navigation

A 8.2 m (27.0 ft) Maycraft, a cabin cruiser with a draft of approximately 0.5 m (1.6 ft), was used as a survey platform by MMAP. Survey transects were planned and navigation was directed using Hypack hydrographic survey software and a Northstar 941 XD GPS receiver in 2010 and a Garmin GPSMAP 162 WAAS-enhanced GPS receiver in 2011. The Northstar receiver has a stated accuracy of 2.0 to 5.0 m (6.6 to 16.4 ft), and a one second update (Northstar 1996:2). It did not function at the start of the 2011 field season and was replaced by the Garmin receiver. The Garmin receiver has a stated accuracy of 1.0 to 5.0 m (3.3 to 16.4 ft), and a one second update (Garmin Corporation 2001:81). Transects were planned at 15.0 m (49.2 ft) intervals and data were collected applying both geographic coordinates referenced to WGS84 and Maryland State Plane, NAD83 with units in meters.

Side Scan Sonar

An EdgeTech 272-TD 100/400 kHz side scan sonar system was used during 2010. Data were collected digitally using Triton Isis software. The starboard sensor on the towfish failed before the commencement of survey at Cedar Point and the system was operated with only its port sensor. Its topside unit later malfunctioned and much of the data collected during 2010 subsequently was found to be unreadable by Triton Isis or Hypack. As a result, the EdgeTech 272-TD system was replaced by a Klein model 595 100/500 kHz side scan sonar system for the 2011 field season. In 2011, data were ported from an analog topside unit through a National Instruments analog to digital converter and into a laptop computer running Hypack hydrographic survey software. Both towfishes were deployed off the starboard side of the vessel at a depth of approximately 0.75 m (2.5 ft). Each was operated with a range of 50.0 m (164.0 ft) per channel and data were collected along transects spaced at 15.0 m (49.2 ft) intervals. Additional side scan sonar data were collected in 2011 along every fifth transect using the Klein system with its range set at 100 m (328.0 ft) per channel in an effort to eliminate data gaps that existed because of the failure of the EdgeTech system and to enable creation of a continuous side scan sonar mosaic with even contrast.

Each line of side scan sonar data was viewed in real-time and later reviewed using Triton Isis for data collected using the EdgeTech system during 2010, and Hypack's Side Scan Targeting and Mosaicking module for data collected using the Klein system in 2011. Potentially significant and unidentified side scan sonar contacts were tabulated and their attributes were recorded. Crab pots, pound nets, piers, pilings, and ATONs (Aids to Navigation) were noted, but not tabulated.

Individual lines of data from both systems then were position corrected and processed with a resolution of 5.0 pixels per meter, and exported as georeferenced *.tif files whenever possible. A side scan sonar mosaic also was generated with a resolution of 2.0 pixels per meter and exported as a georeferenced *.tif file. The processing of sonar data at resolutions ranging from 2.0 to 10.0 pixels per meter were tested to determine the most effective methods of image processing, review, and presentation. Image

resolution was limited by the size of data files and available hardware. The file size for each individual line processed at 5.0 pixels per meter was approximately 600 mb uncompressed/80 mb compressed, while the file size of the complete mosaic processed using selected lines at a resolution of 2.0 pixels per meter was only 150 mb uncompressed/30 mb compressed. The resolution of 5.0 pixels per meter for individual lines was considered adequate for the identification of shipwrecks and submerged historic structures, while the resolution of 2.0 pixels per meter for the side scan sonar mosaic was considered sufficient to show large manmade structures and natural variations in the bay bottom, and suitable to show coverage.

Magnetometer

A Geometrics G-881 marine magnetometer was employed during 2010 and 2011 to detect distortions in the earth's magnetic field that could indicate the presence of *Cato* and *Hawk* or other significant submerged cultural resources related to the events that resulted in their loss. This instrument was operated at 3 Hz and towed 30.0 m (98.4 ft) behind the survey vessel along transects spaced at 15.0 m (49.2 ft) intervals. Data were collected, position-corrected, processed, and reviewed using Hypack software.

Each trace of magnetometer data was position-corrected and reviewed using Hypack's Single Beam Editor module and individual anomalies with amplitudes above 10 nT were assigned inventory numbers and tabulated. Information including the location, sensor height, amplitude, signature, and duration of each anomaly was calculated and recorded. In addition, tables containing total magnetic field measurements with position-corrected coordinates for each reading were generated to enable the creation of magnetic field intensity contours at various intervals using Surfer contouring and 3-D surface mapping software.

Data Interpretation

Data from the side scan sonar and magnetometer surveys, including individual side scan sonar lines, side scan sonar mosaics, tables of magnetic anomalies and potentially significant and unidentified side scan sonar contacts, and magnetic field intensity contours, were combined with other available data using ArcGIS for interpretation. Those additional data included aerial photographs, nautical charts, and data from the Office of Coast Survey's Automated Wreck and Obstruction Information System (AWOIS) and the Maryland Historical Trust's archaeological site files. Areas containing clusters of magnetic anomalies and individual magnetic anomalies exhibiting high amplitudes, durations, and/or complex signatures that could indicate the presence of ferrous debris indicative of submerged cultural resources were assigned target numbers and received further scrutiny.

Results (Appendix 1, Maps 1-3)

Water depths within the survey area ranged from approximately 2.1 to 9.1 m (7.0 to 30.0 ft). Weather and sea conditions varied during data collection; however, incoming data were monitored and work was temporarily suspended numerous times to ensure that quality data were collected.

Magnetic Anomalies

A total of 328 magnetic anomalies were identified within the Cedar Point survey area (Appendix 2, Table 1). Amplitudes of magnetic anomalies ranged from 9 to 6258 nT and durations ranged from 5 to 1145 m (16.4 to 3756.6 ft). Two hundred thirty-five were dipoles, fifty-seven were monopoles, and thirty-six were multi-components. These anomalies were recorded with magnetometer sensor heights ranging from approximately 0.6 to 7.7 m (1.9 to 25.3 ft), with 315 out of the 328 magnetic anomalies identified having sensor heights of less than 5.9 m (19.3 ft). All magnetic anomalies with amplitudes greater than 100 nT, and clusters of two or more magnetic anomalies that could not be associated with a modern source, such as existing ATONs and shoreline revetment, received further scrutiny. Seventy-four magnetic anomalies exhibited high amplitudes (< 100 nT). These include 24 associated with the Patuxent River Naval Air Station seaplane basin, 17 associated with an outfall pipeline, and 12 classified as insignificant debris. The 12 classified as insignificant debris were recorded with sensor heights ranging from 0.6 to 2.2 m (1.9 to 7.2 ft). All had simple signatures, short durations measuring from 5.0 to 22.5 m (16.4 to 73.8 ft), and were isolated or adjacent to the existing seawall. The remaining 21 high amplitude magnetic anomalies received further scrutiny singly or during scrutiny of targets composed of multiple magnetic anomalies.

Eighteen targets, designated Targets 01-18, were identified and are described below.

Side Scan Sonar Contacts (Appendix 3, Cedar Point SSS 01 and 03)

Five side scan sonar contacts were recognized during review of side scan sonar line data or side scan sonar mosaics and designated Cedar Point SSS 01-05 (Appendix 2, Table 2). Appendix 3 contains images of Cedar Point SSS 01 and SSS 03. The remaining three are related to Cedar Point Targets 10-13, and are discussed below and illustrated accordingly.

Cedar Point Targets (Appendix 3, Cedar Point Targets 01-18)

Cedar Point Target 01 is located approximately 850.0 m (2788.7 ft) north of the seaplane basin and 50.0 m (164.0 ft) offshore at a depth of 0.9 m (3.0 ft). This location is 85.0 m (278.9 ft) west of the Core area. Cedar Point Target 01 is composed of a single magnetic anomaly, M036. M036 is a dipole with a high amplitude (452.0 nT) and a short duration (22.5 m/ 73.8 ft). It was recorded with a sensor height of 0.7 m (2.3 ft). No magnetic anomalies were recorded on adjacent transects and no significant side scan sonar contacts were identified that can be associated with Cedar Point Target 01, suggesting that it may represent isolated and buried ferrous debris. No further work is recommended for Cedar Point Target 01.

Cedar Point Target 02 is located approximately 750.0 m (2460.6 ft) north of the seaplane basin and 95.0 m (311.7 ft) offshore at a depth of 1.2m (4.0 ft). This location is 55.0 m (180.4 ft) west of the Core area. Cedar Point Target 02 is composed of a single magnetic anomaly, M055. M055 is a dipole with a high amplitude (305.1 nT) and a medium duration (25.0 m/ 82.0 ft). It was recorded with a sensor height of 1.0 m (3.3 ft). No magnetic anomalies were recorded on adjacent transects and no significant side scan sonar contacts were identified that can be associated with Cedar Point Target 02, suggesting that it may represent isolated and buried ferrous debris. No further work is recommended for Cedar Point Target 02.

Cedar Point Target 03 is located approximately 650.0 m (2132.5 ft) north of the seaplane basin and 210.0 m (689.0 ft) offshore at a depth of 1.8 m (6.0 ft). This location is within the Core area and the high probability area. Cedar Point Target 03 is composed of two magnetic anomalies, M103 and M114, that were recorded on adjacent transects. M103 is a dipole with a low amplitude (33.7 nT) and a medium duration (45.0 m/ 147.6 ft). M114 is a dipole with a high amplitude (584.6 nT) and a medium duration (30.0 m /98.4 ft). Both were recorded with sensor heights of 1.6 m (5.2 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Cedar Point Target 03, suggesting that it may be buried.

Cedar Point Target 04 is located approximately 410.0 m (1345.1 ft) north of the seaplane basin and 175.0 m (574.1 ft) offshore at a depth of 0.9m (3.0 ft). This location is within the Core area and the high probability area. Cedar Point Target 04 is composed of a single magnetic anomaly, M093. M093 is a dipole with a high amplitude (362.7 nT) and a short duration (20.0 m/ 65.6 ft). It was recorded with a sensor height of 0.7 m (2.3 ft). No magnetic anomalies were recorded on adjacent transects and no significant side scan sonar contacts were identified that can be associated with Cedar Point Target 04, suggesting that it may represent isolated and buried ferrous debris. No further work is recommended for Cedar Point Target 04.

Cedar Point Target 05 is located approximately 270.0 m (885.8 ft) north of the seaplane basin and 250.0 m (820.2 ft) offshore at a depth of 0.9 to 1.8 m (3.0 to 6.0 ft). This location is within the Core area and the high probability area. Cedar Point Target 05 is composed of four magnetic anomalies, M105, M116, M125, and M131, that were recorded on adjacent transects. M105 is a multi-component with a low amplitude (40.5 nT) and a medium duration (42.5 m/ 139.5 ft). M116 is a multi-component with a high amplitude (119.0 nT) and a long duration (60.0 m /196.8 ft). M125 is a dipole with a medium amplitude (62.2 nT) and a medium duration (47.5 m/ 155.8 ft). M131 is a multi-component with a medium amplitude (89.9 nT) and a long duration (55.0 m (180.4 ft). M105 was recorded with a sensor height of 0.7 m (2.3 ft); M116, 125, and M131 were recorded with sensor heights of 1.6 m (5.2 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Cedar Point Target 05, suggesting that it may be buried.

Cedar Point Target 06 is located approximately 250.0 m (820.2 ft) north of the seaplane basin and 305.0 m (1000.6 ft) offshore at a depth of 2.1 m (7.0 ft). This location is within the Core area and within 10.0 m (32.8 ft) of the high probability area. Cedar Point Target 06 is composed of two magnetic anomalies, M144 and M151, that were recorded on adjacent transects. M144 is a monopole with a low amplitude (26.3 nT) and a short duration (17.5 m/57.4 ft). M151 is a dipole with a high amplitude (157.2 nT) and a medium duration (35.0 m /114.8 ft). Both were recorded with sensor heights of 1.9 m (6.2 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Cedar Point Target 06, suggesting that it may be buried.

Cedar Point Target 07 is located approximately 425.0 m (1394.4 ft) north of the seaplane basin and 400.0 m (1312.3 ft) offshore at a depth of 3.0 m (10.0 ft). This location is within the Core area. Cedar Point Target 07 is composed of two magnetic anomalies, M182 and M188, that were recorded on adjacent transects. M182 is a dipole with a high amplitude (104.4 nT) and a long duration (80.0 m/262.5

ft). M188 is a monopole with a medium amplitude (60.0 nT) and a medium duration (40.0 m /131.2 ft). Both were recorded with sensor heights of 2.8 m (9.2 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Cedar Point Target 07, suggesting that it may be buried.

Cedar Point Target 08 is located approximately 500.0 m (1640.4 ft) north of the seaplane basin and 520.0 m (1706.0 ft) offshore at a depth of 5.2 to 5.5 m (17.0 to 18.0 ft). This location is within the Core area. Cedar Point Target 08 is composed of three magnetic anomalies, M235, M241, and M245, that were recorded on adjacent transects. M235 is a dipole with a high amplitude (203.5 nT) and a long duration (60.0 m/196.8 ft). M241 is a dipole with a high amplitude (124.1 nT) and a long duration (65.0 m /213.3 ft). M245 is a dipole with a high amplitude (223.1 nT) and a long duration (107.5 m/352.7 ft). M235 and M241 were recorded with sensor heights of 5.0 m (16.4 ft) and M245 was recorded with a sensor height of 5.3 m (17.4 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Cedar Point Target 08, suggesting that it may be buried.

Cedar Point Target 09 is located approximately 90.0 m (295.3 ft) north of the seaplane basin and 160.0 m (525.0 ft) offshore at a depth of 0.9 m (3.0 ft). This location is within the Core area. Cedar Point Target 09 is composed of two magnetic anomalies, M082 and M087, that were recorded on adjacent transects. M082 is a dipole with a high amplitude (846.9 nT) and a medium duration (35.0 m/114.8 ft). M087 is a multi-component with a high amplitude (155.0 nT) and a medium duration (47.5 m /155.8 ft). Both were recorded with sensor heights of 0.7 m (2.3 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Cedar Point Target 09, suggesting that it may be buried.

Cedar Point Target 10 is located approximately 250.0 m (820.0 ft) east of the seaplane basin at a depth of 3.4 m (11.0 ft). This location is within the Core area. Cedar Point Target 10 is composed of two magnetic anomalies, M246 and M251, that were recorded on adjacent transects. M246 is a dipole with a medium amplitude (73.9 nT) and a long duration (50.0 m/164.0 ft). It was recorded with a sensor height of 2.8 m (9.2 ft). M251 is a dipole with a high amplitude (244.4 nT) and a long duration (75.0 m /246.0 ft). It was recorded with a sensor height of 3.2 m (10.5 ft). One side scan sonar contact was identified during scrutiny of side scan sonar imagery in the vicinity of Cedar Point Target 10, SSS05. It measures approximately 3.5 x 4.5 m (11.5 x 14.8 ft) and appears to represent insignificant debris. It is likely that the magnetic anomalies that compose Cedar Point Target 10 were generated by the object inventoried as SSS05.

Cedar Point Target 11 is located approximately 250.0 m (820.2 ft) east of the seaplane basin at a depth of 4.3 m (14.0 ft). This location is within the Secondary area. Cedar Point Target 11 is composed of three magnetic anomalies, M257, M260, and M262, that were recorded on adjacent transects. M257 is a dipole with a low amplitude (17.4 nT) and a long duration (52.5 m/172.0 ft). M260 is a dipole with a medium amplitude (76.8 nT) and a long duration (102.5m /336.3 ft). M262 is a dipole with a high amplitude (319.8 nT) and a long duration (75.0 m/246.1 ft). All three were recorded with sensor heights of 4.3 m (14.0 ft). One side scan sonar contact was identified during scrutiny of side scan sonar imagery in the vicinity of Cedar Point Target 11, SSS02. It measures approximately 6.2 x 3.0 m (20.3 x 9.8 ft). It is

likely that the magnetic anomalies that compose Cedar Point Target 11 were generated by the object inventoried as SSS02.

Cedar Point Target 12 is located approximately 620.0 m (2034.0 ft) east of the seaplane basin at a depth of 6.4 m (21.0 ft). This location is within the Secondary area. Cedar Point Target 12 is composed of two magnetic anomalies, M319 and M321, that were recorded on adjacent transects. M319 is a dipole with a medium amplitude (96.2 nT) and a long duration (127.5 m/418.3 ft). M321 is a dipole with a medium amplitude (57.4 nT) and a long duration (130.0 m /426.5 ft). Both were recorded with sensor heights of 6.2 m (20.3 ft). One side scan sonar contact was identified during scrutiny of side scan sonar imagery in the vicinity of Cedar Point Target 12, SSS04. It is a canoe-shaped object that measures approximately 8.5 x 2.5 m (27.9 x 8.2 ft). It is likely that the magnetic anomalies that compose Cedar Point Target 12 were generated by the object inventoried as SSS04.

Cedar Point Target 13 is located approximately 80.0 m (820.2 ft) south of the seaplane basin and 310.0 m (1020.0 ft) offshore at a depth of 1.8 to 2.4 m (6.0 to 8.0 ft). This location is within the Secondary area. Cedar Point Target 13 is composed of five magnetic anomalies, M135, M140, M147, M153, and M159, that were recorded on adjacent transects. M135 is a monopole with a medium amplitude (50.2 nT) and a short duration (22.5m /73.8 ft) that was recorded with a sensor height of 1.6 m (5.2ft). M140 is a monopole with a medium amplitude (69.6 nT) and a short duration (17.5 m/57.4 ft) that was recorded with a sensor height of 1.9 m (6.2 ft). M147 is a dipole with a high amplitude (665.4 nT) and a medium duration (32.5 m (106.6 ft) that was recorded with a sensor height of 1.9 m (6.2 ft). M153 is a dipole with a high amplitude (212.2 nT) and a medium duration (42.5 m/139.4 ft) that was recorded with a sensor height of 1.9 m (6.2 ft). M159 is a dipole with a medium amplitude (69.6 nT) and a medium duration (45.0 m/147.6 ft) that was recorded with a sensor height of 2.2 m (7.2 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Cedar Point Target 13, suggesting that it may be buried.

Cedar Point Target 14 is located approximately 350.0 m (1148.3 ft) east of the seaplane basin at a depth of 4.9 to 5.2 m (16.0 to 17.0 ft). This location is within the Secondary area. Cedar Point Target 14 is composed of two magnetic anomalies, M278 and M283, that were recorded on adjacent transects. M278 is a monopole with a high amplitude (103.3 nT) and a medium duration (30.0 m/98.4 ft) that was recorded with a sensor height of 4.7 m (15.4 ft). M283 is a dipole with a low amplitude (28.0 nT) and a medium duration (78.0 m /255.9 ft) that was recorded with a sensor height of 5.0 m (16.4 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Cedar Point Target 14, suggesting that it may be buried.

Cedar Point Target 15 is located approximately 450.0 m (1476.4 ft) south of the seaplane basin and 795.0 m (2608.3 ft) offshore at a depth of 5.8 m (19.0 ft). This location is within the Secondary area. Cedar Point Target 15 is composed of two magnetic anomalies, M287 and M293, that were recorded on adjacent transects. M287 is a dipole with a high amplitude (241.6 nT) and a long duration (75.0 m/246.0 ft). M293 is a dipole with a high amplitude (50.2 nT) and a long duration (62.5 m /205.0 ft). Both were recorded with sensor heights of 5.6 m (18.4 ft). No significant side scan sonar contacts were identified

during scrutiny of side scan sonar imagery in the vicinity of Cedar Point Target 15, suggesting that it may be buried.

Cedar Point Target 16 is located approximately 600.0 m (1968.5 ft) south of the seaplane basin and 750.0 m (2460.6 ft) offshore at a depth of 5.8 m (19.0 ft). This location is within the Secondary area. Cedar Point Target 16 is composed of two magnetic anomalies, M270 and M272, that were recorded on adjacent transects. M270 is a dipole with a medium amplitude (84.0 nT) and a long duration (55.0 m/180.4 ft). M272 is a dipole with a low amplitude (35.4 nT) and a long duration (57.5 m /188.6 ft). Both were recorded with sensor heights of 5.6 m (18.4 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Cedar Point Target 16, suggesting that it may be buried.

Cedar Point Target 17 is located approximately 950.0 m (3116.8 ft) south of the seaplane basin and 250.0 m (820.0 ft) offshore at a depth of 1.9 m (4.0 ft). This location is within the Secondary area. Cedar Point Target 17 is composed of two magnetic anomalies, M023 and M048, that were recorded on adjacent transects. M023 is a dipole with a high amplitude (260.5 nT) and a medium duration (42.5 m/139.4 ft). M048 is a dipole with a high amplitude (964.3 nT) and a medium duration (42.5 m /139.4 ft). Both were recorded with sensor heights of 1.0 m (3.3 ft). No side scan sonar data were collected in the vicinity of Cedar Point Target 17.

Cedar Point Target 18 is located approximately 1890.0 m (6200.8 ft) south of the seaplane basin and 615.0 m (2017.7 ft) offshore at a depth of 4.4m (14.0 ft). This location is within the Secondary area. Cedar Point Target 18 is composed of a single magnetic anomaly, M209. M209 is a dipole with a high amplitude (114.0 nT) and a long duration (65.0 m/213.3 ft). It was recorded with a sensor height of 4.1 m (13.5 ft). No magnetic anomalies were recorded on adjacent transects that can be associated with Cedar Point Target 18 and no side scan sonar data were collected in the vicinity of this target.

The Battle of Kedges Straits (1782)

Study Area and Rationale

The Core and Secondary areas for the Battle of Kedges Straits are shown in Figure 16. Based on review of historical records and the results of KOCOA analyses the engagement appears to have been in the vicinity of Solomon's Lump light. The Core area measures approximately 2500 acres. Due to the amount of time and funding allotted to fieldwork, only a portion of the Core area was chosen for investigation. It measured approximately 1250 acres and was centered on the deepwater channel through Kedges Straits in the vicinity of Solomon's Lump light. This area encompassed both the British position and a portion of the American approach as defined through KOCOA analyses (Appendix 1, Map 4).

No ships are expected to be found related to the battle, as it appears unlikely that any vessels were lost in the Battle of Kedges Straits. Concentrations of eighteenth-century material might be identified that allow analysts to pinpoint the locations of American and British forces and possibly the locations of *Protector*, *Fearnought*, and *Ladies Revenge* during the battle. The locations of shot, lost equipment, and

fragments of damaged guns might be identified through collection, analyses, and ground-truthing of magnetometer data. Collection of side scan sonar data could help eliminate magnetic anomalies caused by modern materials, such as crab pots, from consideration but is not expected reveal the locations of individual objects related to the battle. The present study aims to provide recommendations that identify and prioritize areas that exhibit potential to contain remnants from the battle for future exploration by diving archaeologists.

Timeframe

April and May 2011

Survey Vessel and Navigation

A 8.2 m (27.0 ft) Maycraft, a cabin cruiser with a draft of approximately 0.5 m (1.6 ft), was used as a survey platform by MMAP. Survey transects were planned and navigation was directed using Hypack hydrographic survey software and a Garmin GPSMAP 162 WAAS-enhanced GPS receiver. The Garmin receiver has a stated accuracy of 1.0 to 5.0 m (3.3 to 16.4 ft), and a one second update (Garmin Corporation 2001:81). Transects were planned at 15.0 m (49.2 ft) intervals and data were collected applying both geographic coordinates referenced to WGS84 and Maryland State Plane, NAD83 with units in meters.

Side Scan Sonar

A Klein model 595 100/500 kHz side scan sonar system was used during the entire survey. Data were ported from an analog topside unit through a National Instruments analog to digital converter and into a laptop computer running Hypack hydrographic survey software. The towfish deployed off the starboard side of the survey vessel at a depth of approximately 0.75 m (2.5 ft) and operated with a range of 50.0 m (164.0 ft) per channel. This resulted in more than 200% coverage of the survey area.

Each line of side scan sonar data was viewed in real-time and later reviewed using Hypack's Side Scan Targeting and Mosaicking module. Individual lines of data were position corrected, processed with a resolution of 10.0 pixels per meter, and exported as georeferenced *.tif files. A side scan sonar mosaic also was generated with a resolution of 2.0 pixels per meter and exported as a georeferenced *.tif file. The resolution of 10.0 pixels per meter for individual lines was considered excellent for the identification of shipwrecks and submerged historic structures, while the resolution of 2.0 pixels per meter for the side scan sonar mosaic was considered sufficient to show large manmade structures, natural variations in the bay bottom, and coverage within the survey area. No potentially significant side scan sonar contacts were found during review of side scan sonar data. Crab pots and ATONs were noted, but not tabulated.

Magnetometer

A Geometrics G-881 marine magnetometer was employed by MMAP to detect distortions in the earth's magnetic field that could indicate the presence of objects from the Battle of Kedges Straits or other significant submerged cultural resources. This instrument was operated at 3 Hz and was towed 30.0 m (98.4 ft) behind the survey vessel along transects spaced at 15.0 m (49.2 ft) intervals. Data were collected, position-corrected, processed, and reviewed using Hypack software.

Each trace of magnetometer data was position-corrected and reviewed using Hypack's Single Beam Editor module and individual anomalies with amplitudes above 10 nT were assigned inventory numbers and tabulated. Information including the location, sensor height, amplitude, signature, and duration of each anomaly was calculated and recorded. In addition, tables containing total magnetic field measurements with position-corrected coordinates for each reading were generated to enable the creation of magnetic field intensity contours at various intervals using Surfer contouring and 3-D surface mapping software.

Data Interpretation

Data from the side scan sonar and magnetometer surveys, including individual side scan sonar lines, side scan sonar mosaics, tables of magnetic anomalies and potentially significant and unidentified side scan sonar contacts, and magnetic field intensity contours, were combined with other available data using ArcGIS for interpretation. Those additional data included aerial photographs, nautical charts, and data from the Office of Coast Survey's Automated Wreck and Obstruction Information System (AWOIS) and the Maryland Historical Trust's archaeological site files. Areas containing clusters of magnetic anomalies and individual magnetic anomalies exhibiting high amplitudes, durations, and/or complex signatures that could indicate the presence of ferrous debris indicative of submerged cultural resources were assigned target numbers and received further scrutiny.

Results (Appendix 1, Maps 4-6)

Water depths within the survey area ranged from approximately 2.1 to 9.1 m (7.0 to 30.0 ft). Weather and sea conditions generally were good during data collection.

Magnetic Anomalies

A total of 56 magnetic anomalies were identified within the Battle of Kedges Straits survey area (Appendix 2, Table 3). Amplitudes of magnetic anomalies ranged from 12.3 to 308.7 nT, and durations ranged from 5.0 to 142.2 m (16.4 to 466.5 ft). Forty-one were dipoles, twelve were monopoles, and three were multi-components. These anomalies were recorded with magnetometer sensor heights ranging from approximately 1.9 to 4.7 m (6.2 to 15.4 ft). All anomalies amplitudes greater than 100 nT, and clusters of two or more magnetic anomalies that could not be associated with a modern source, such as existing ATONs, received further scrutiny. Three targets, designated Kedges Straits Targets 01-03, were identified and are described below.

Side Scan Sonar Contacts

No significant unidentified side scan sonar contacts were recognized during review of side scan sonar line data or side scan sonar mosaics.

Kedges Straits Targets (Appendix 3, Kedges Straits Targets 01-03)

Kedges Straits Target 01 is located in the northeastern corner of the Core area at a depth of approximately 4.0 m (13.0 ft). It is composed of magnetic anomalies M005 and M006 that were recorded on adjacent transects. M005 is a dipole with a high amplitude (218.7 nT) and a long duration (54.0 m/ 177.1 ft). M006 is a dipole with a low amplitude (20.8 nT) and a medium duration (48.0

m/157.5 ft). Both were recorded with sensor heights of 3.8 m (12.5 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Target 1, suggesting that it may be buried.

Kedges Straits Target 02 is located approximately 640.0 m (2100.0 ft) southeast of Target 1 at a depth of approximately 4.0 m (13.0 ft). It is composed of magnetic anomalies M032 and M033 that were recorded on adjacent transects. M032 is a monopole with a high amplitude (133.4 nT) and a medium duration (32.2 m/105.6 ft). M033 is a monopole with a low amplitude (26.8 nT) and a medium duration (45.0 m/ 147.6 ft). Both were recorded with sensor heights of 3.8 m (12.5 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Target 2, suggesting that it may be buried.

Kedges Straits Target 03 is located near the center of the Core area at a depth of approximately 4.9 m (16.0 ft). This location coincides with the area identified through battlefield analyses as the British position during the Battle of Kedges Straits. This target is composed of magnetic anomalies M041 and M042 that were recorded on adjacent transects. M041 is a dipole with a high amplitude (308.7 nT) and a medium duration (40.0 m/131.2 ft). M042 is a multi-component with a high amplitude (119.2 nT) and a long duration (62.5 m/205.0 ft). Both were recorded with sensor heights of 4.7 m (15.4 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Target 3, suggesting that it may be buried.

The Raids on Frenchtown and Elkton (1813 & 1814)

Study Area and Rationale

The purpose of this segment of the project was to undertake a non-intrusive condition assessment/inspection of 18CE319, a nineteenth century shipwreck and 18CE331, a ballast pile that may represent a shipwreck. The Maryland Historical Trust regularly receives applications for dredging in this area and although avoidance always has been required, it was desirable to check to ensure the sites remained undamaged, to determine in so far as possible the nature of other targets in the area, and to record any observations that might facilitate future surveys or investigations.

Timeframe

June 2011

Site Access

A 5.8 m (19.0 ft) Carolina Skiff, an open center-console boat with a draft of approximately 0.25 m (1.0 ft) was launched from Locust Point Marina on the Elk River. The marina owner showed an aerial photograph and some Department of Natural Resources (DNR) plans that located a channel that had been initiated previously in the Elk River. He cautioned that the channel was incomplete and also that a segment above the marina had collapsed making the river difficult to navigate even at high tide. This did prove to be the case, even with the very shallow draft of the skiff. As a result, this portion of the project had to be canceled.

Results

It was not possible to access the locations of 18CE319, a nineteenth century shipwreck and 18CE331, a ballast pile, in the upper reaches of the Elk River.

Recommendations

New strategies for accessing these sites should be devised and tested. Future work should include identification-level work designed to ascertain the identities of these sites and their relationship to the War of 1812 raids on Frenchtown and Elkton. In addition, a comprehensive program of reconnaissance and identification-level work should be undertaken within the Core and Secondary areas. These studies should include both the terrestrial and the underwater portions of the battlefields.

The Raid on Georgetown and Fredericktown (1813)

Study Area and Rationale

The Core and Secondary areas for the Raid on Georgetown and Fredericktown are shown in Figure 18. The Core areas include the engagement between the American position at Old Field Point and the flotilla of British armed boats and barges, and the destruction of four vessels in the river between Georgetown and Fredericktown. The Secondary areas include the British approach and adjacent areas. Portions of the Core area between Georgetown and Fredericktown have been impacted by marina construction or were littered with moored vessels and not accessible at the time when field work was conducted (Appendix 1, Maps 7- 8). As much of the Core areas identified by Babits, Espenshade and Lowry in the present work and the Core area identified by Eshelman and George in 2000 were surveyed as possible during the 2010 field season.

Scatters of shot from the American 6 or 12-pounder long gun and British 18-pounder carronades and rockets might be detected using a magnetometer within the Core and Secondary areas; however, it is unlikely that they will appear in dense concentrations that will easily be detected. On the other hand, the four vessels destroyed in the vicinity of Georgetown and Fredericktown should be easily detected using magnetometer and side scan sonar systems provided that they were not removed after the War or by later river clearance work and that their locations were accessible during data acquisition.

Timeframe

June 2010

Survey Vessel and Navigation

A 8.2 m (27.0 ft) Maycraft, a cabin cruiser with a draft of approximately 0.5 m (1.6 ft), was used as a survey platform by MMAP. Survey transects were planned and navigation was directed using Hypack hydrographic survey software and a Northstar 941 XD GPS receiver. The Northstar receiver has a stated accuracy of 2.0 to 5.0 m (6.6 to 16.4 ft), and a one second update. Transects were planned at 15.0 m (49.2 ft) intervals and data were collected applying both geographic coordinates referenced to WGS84 and Maryland State Plane, NAD83 with units in meters.

Side Scan Sonar

An EdgeTech 272-TD 100/400 kHz side scan sonar system was used during the entire survey. Data were collected digitally using Triton Isis software. The towfish deployed off the starboard side of the survey vessel at a depth of approximately 0.75 m (2.5 ft) and operated with a range of 50.0 m (164.0 ft) per channel. The starboard sensor on the towfish failed within hours of the commencement of work and line direction was adjusted as needed to compensate for the loss of the sensor; however, corrupt data files combined with slight deviations from planned transects necessary because of obstructions including crab pots and moorings resulted in minor data gaps.

Each line of side scan sonar data was viewed in real-time and later reviewed using Triton Isis and/or Hypack's Side Scan Targeting and Mosaicking module. Potentially significant and unidentified side scan sonar contacts were tabulated and their attributes were recorded. Crab pots, moorings, piers, pilings, and ATONs were noted, but not tabulated.

Individual lines of data from both systems then were position corrected and processed with a resolution of 10.0 pixels per meter, and exported as georeferenced *.tif files whenever possible. A side scan sonar mosaic also was generated with a resolution of 2.0 pixels per meter and exported as a georeferenced *.tif file. The resolution of 10.0 pixels per meter for individual lines was considered adequate for the identification of shipwrecks, while the resolution of 2.0 pixels per meter for the side scan sonar mosaic was considered sufficient to show large manmade structures and natural variations in the river bottom, and suitable to show coverage.

Magnetometer

A Geometrics G-881 marine magnetometer was employed to detect distortions in the earth's magnetic field that could indicate the presence of vessels destroyed by the British or other significant submerged cultural resources related to the 1813 raid. This instrument was operated at 3 Hz and towed 30.0 m (98.4 ft) behind the survey vessel along transects spaced at 15.0 m (49.2 ft) intervals. Data were collected, position-corrected, processed, and reviewed using Hypack software.

Each trace of magnetometer data was position-corrected and reviewed using Hypack's Single Beam Editor module and individual anomalies with amplitudes above 10 nT were assigned inventory numbers and tabulated. Information including the location, sensor height, amplitude, signature, and duration of each anomaly was calculated and recorded. Anomalies in Area A, located below the 213 bridge, were assigned inventory numbers beginning with M100, and anomalies in Area B, located above the 213 bridge, were assigned inventory numbers beginning with M001. In addition, tables containing total magnetic field measurements with position-corrected coordinates for each reading were generated to enable the creation of magnetic field intensity contours at various intervals using Surfer contouring and 3-D surface mapping software.

Data Interpretation

Data from the side scan sonar and magnetometer surveys, including individual side scan sonar lines, side scan sonar mosaics, tables of magnetic anomalies and potentially significant and unidentified side scan

sonar contacts, and magnetic field intensity contours, were combined with other available data using ArcGIS for interpretation. Those additional data included aerial photographs, nautical charts, and data from the Office of Coast Survey's Automated Wreck and Obstruction Information System (AWOIS) and the Maryland Historical Trust's archaeological site files. Areas containing clusters of magnetic anomalies and individual magnetic anomalies exhibiting high amplitudes, durations, and/or complex signatures that could indicate the presence of ferrous debris indicative of submerged cultural resources were assigned target numbers and received further scrutiny.

Area A Results (Appendix 1, Maps 7-9)

Water depths within Area A ranged from approximately 0.8 to 7.9 m (2.5 to 26.0 ft). Weather and sea conditions generally were good during data collection.

Magnetic Anomalies

A total of 118 magnetic anomalies were identified within Area A (Appendix 2, Table 4). Amplitudes of magnetic anomalies ranged from 10.0 to 644.7 nT, and durations ranged from 2.7 to 191.4 m (8.6 to 628.0 ft). Sixty-two were dipoles, thirty-nine were monopoles, and seventeen were multi-components. These anomalies were recorded with magnetometer sensor heights ranging from approximately 0.3 to 7.6 m (1.0 to 25.0 ft). All anomalies with amplitudes greater than 100 nT, and clusters of two or more magnetic anomalies that could not be associated with a modern source, such as existing ATONs, received further scrutiny. Eleven targets, designated Sassafras River Targets 01-11, were identified and are described below.

Side Scan Sonar Contacts

Typical side scan sonar contacts in Area A included piers, pilings, bulkheads, shoreline revetment, and insignificant bottom disturbances. None of these typical insignificant contacts were inventoried. Eight unidentified side scan sonar contacts, designated Sassafras River SSS 01 to SSS 08, were recognized and inventoried during review of side scan sonar line data in Area A (Appendix 2, Table 5). Only the magnetic anomalies that compose Target 04 could be associated with a side scan sonar contact, that contact, SSS 04, is discussed below. No other magnetic anomalies were recorded that could be associated with side scan sonar contacts; however, magnetometer data were not collected within 40.0 m (131.2 ft) of SSS 06. SSS 06 measures approximately 15.3 x 8.4 m (50.2 x 27.6 ft). The rest of the side scan sonar contacts, SSS 01-SSS 03, SSS 05, and SSS 07-SSS 08, recorded in Area A appear to represent insignificant non-ferrous debris and bottom disturbances.

Sassafras River Targets in Area A (Appendix 3, Sassafras River Targets 01-11)

Sassafras River Target 01 is located approximately 390.0 m (1279.5 ft) northwest of Little Marsh Point in the Core area at a depth of approximately 4.0 m (13.0 ft). It is composed of a single magnetic anomaly, M209. M209 is a dipole with a high amplitude (332.1 nT) and a medium duration (32.4 m/ 106.3 ft). It was recorded with a sensor height of 1.5 m (4.9 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Target 01, suggesting that it may be buried.

Sassafras River Target 02 is located approximately 400.0 m (1312.3 ft) north/northwest of Old Field Point in the Core area at a depth of approximately 4.0 m (13.0 ft). It is composed of three magnetic anomalies, M115, M124, and M129, that were recorded on adjacent transects. M115 is a dipole with a low amplitude (27.2 nT) and a short duration (10.5 m/ 34.4 ft). M124 is a dipole with a low amplitude (10 nT) and a short duration (19.4 m/63.6 ft). M115 and M124 were recorded with sensor heights of 3.0 m (9.8 ft). M129 is a dipole with a high amplitude (170.9 nT) and a medium duration (25.2 m /82.7 ft). It was recorded with a sensor height of 2.4 m (7.9 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Target 02, suggesting that it may be buried. Careful review of the attributes and spatial distribution of these anomalies suggests that they may not be related and probably represent three independent concentrations of insignificant debris. No further work is recommended for Sassafras River Target 02.

Sassafras River Target 03 is located at Old Field Point in the Core area at a depth of approximately 0.8 m (2.5 ft). It is composed of a single magnetic anomaly, M210. M210 is a dipole with a high amplitude (426.3 nT) and a short duration (8.1 m/ 26.6 ft). It was recorded with a sensor height of 0.3 m (1.0 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Target 03, suggesting that it may be buried. It seems likely that the amplitude of M210 was exaggerated by the close proximity of the magnetometer to a relatively small ferrous mass. Target 03 likely represents an isolated concentration of insignificant debris. No further work is recommended for Sassafras River Target 03.

Sassafras River Target 04 is located at Old Field Point in the Core area at a depth of approximately 0.8 m (4.0 ft). It is composed of three magnetic anomalies, M193, M205, and M212, and one side scan sonar contact, SSS 04. M193 is a dipole with a high amplitude (605.9 nT) and a medium duration (31.5 m/ 103.3 ft). M205 is a monopole with a high amplitude (245.2 nT) and a medium duration (60.0 m/ 196.8 ft). M212 is a multi-component with a high amplitude (422.7 nT) and a medium duration (56.7 m/ 186.0 ft). All three were recorded with sensor heights of 0.9 m (3.0 ft). These anomalies clearly are associated with a partially buried shipwreck inventoried as side scan sonar contact SSS 04. This shipwreck measures approximately 25.1 x 7.2 m (82.3 x 23.6 ft). Its location, approximately 1.0 mi (1.6 km) west of Georgetown and Fredericktown, and the first appearance of a symbol on navigation charts in 1967 at this location to show that a portion of a shipwreck was exposed at mean low water, makes it unlikely that Target 04 is one of the ships that was burned during the raid on Georgetown and Fredericktown (US Coast and Geodetic Survey, *Head of Chesapeake Bay,* 6th edition, 1967, 1:40000).

Sassafras River Target 05 is located approximately 730.0 m (2395.0 ft) northeast of Old Field Point in the Secondary area along the northern shore of the Sassafras River at a depth of approximately 1.2 m (4.0 ft). It is composed of a single magnetic anomaly, M104. M104 is a multi-component with a high amplitude (133.9 nT) and a medium duration (26.0 m/85.3 ft). It was recorded with a sensor height of 0.9 m (3.0 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Target 05, suggesting that it may be buried.

Sassafras River Target 06 is located approximately 220.0 m (721.8 ft) east of Target 05 in the Secondary area along the northern shore of the Sassafras River at a depth of approximately 0.9 m (3.0 ft). It is

composed of a single magnetic anomaly, M125. M125 is a multi-component with a high amplitude (174.9 nT) and a medium duration (43.0 m/141.0 ft). It was recorded with a sensor height of 0.6 m (2.0 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Target 06, suggesting that it may be buried.

Sassafras River Target 07 is located between Old Field Point and Dyer Creek in the Secondary area at a depth of approximately 2.1 to 3.4 m (7.0 to 11.0 ft). It is composed of three magnetic anomalies, M196, M206, and M215, that were recorded on adjacent transects. M196 is a monopole with a low amplitude (14.8 nT) and a short duration (10.5 m/34.4 ft). It was recorded with a sensor height of 1.8 m (5.9 ft). M206 is a dipole with a low amplitude (31.2 nT) and a short duration (16.8 m/ 55.1 ft). It was recorded with a sensor height of 3.0 m (9.8 ft). M215 is a dipole with a high amplitude (358.2 nT) and a short duration (21.6 m/70.9 ft). It was recorded with a sensor height of 1.8 m (5.9 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Target 07, suggesting that it may be buried.

Sassafras River Target 08 is located approximately 110.0 m (360.9 ft) east of Hall Creek in the Secondary area at a depth of approximately 2.7 to 3.4 m (9.0 ft). It is composed of two magnetic anomalies, M127 and M137, that were recorded on adjacent transects. M127 is a multi-component with a high amplitude (177.2 nT) and a long duration (81.7 m/268.0 ft). M137 is a dipole with a high amplitude (115.4 nT) and a medium duration (35.7 m/117.1 ft). Both were recorded with sensor heights of 3.0 m (9.8 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Target 08, suggesting that it may be buried.

Sassafras River Target 09 is located approximately 130.0 m (426.5 ft) east of Target 08 in the Secondary area at a depth of approximately 0.9 m (3.0 ft). It is composed of a single magnetic anomaly, M110. M110 is a dipole with a high amplitude (644.7 nT) and a medium duration (31.2 m/141.0 ft). It was recorded with a sensor height of 2.4 m (7.8 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Target 09, suggesting that it may be buried.

Sassafras River Target 10 is located approximately 250.0 m (820.2 ft) northwest of Dyer Creek in the Secondary area at a depth of approximately 3.4 m (11.0 ft). It is composed of two magnetic anomalies, M184 and M188, that were recorded on adjacent transects. M184 is a dipole with a high amplitude (232.3 nT) and a long duration (82.5 m/270.7 ft). M188 is a monopole with a high amplitude (157.0 nT) and a short duration (10.4 m/34.1 ft). Both were recorded with sensor heights of 3.0 m (9.8 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Target 10, suggesting that it may be buried.

Sassafras River Target 11 is located approximately 100.0 m (328.1 ft) southeast of Target 11 in the Secondary area at a depth of approximately 3.7 m (12.0 ft). It is composed of a two magnetic anomalies, M216 and M217, that were recorded on the same transect. M216 is a monopole with a high amplitude (130.4 nT) and a short duration (16.2 m/53.1ft). M217 is a monopole with a medium amplitude (50.8 nT) and a medium duration (45.9 m/150.6 ft). Both were recorded with sensor heights of 3.4 m (11.2 ft). No

significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Target 11, suggesting that it may be buried.

Area B Results (Appendix 1, Maps 7, 8 and 10)

Water depths within Area B ranged from approximately 0.6 to 6.4 m (2.0 to 21.0 ft). Weather and sea conditions generally were good during data collection.

Magnetic Anomalies

A total of 52 magnetic anomalies were identified within Area B (Appendix 2, Table 4). Amplitudes of magnetic anomalies ranged from 10.2 to 3728.8 nT, and durations ranged from 5.4 to 143.53 m (16.4 to 465.8 ft). Twenty-two were dipoles, twenty-three were monopoles, and five were multi-components. These anomalies were recorded with magnetometer sensor heights ranging from approximately 0.6 to 6.1 m (1.9 to 20.0 ft). All anomalies with amplitudes greater than 100 nT, and clusters of two or more magnetic anomalies that could not be associated with a modern source, such as piers or other shoreline construction, received further scrutiny. Two targets, designated Targets 12 and 13, were identified and are described below.

Side Scan Sonar Contacts

Typical side scan sonar contacts in Area B included piers, pilings, shoreline revetment, and insignificant bottom disturbances. None of these typical insignificant contacts were inventoried. Two unidentified side scan sonar contacts, designated SSS 09 and SSS 10, were recognized and inventoried during review of side scan sonar line data in Area B (Appendix 2, Table 5). No magnetic anomalies were recorded that could be associated with these sonar contacts. They appear to represent insignificant non-ferrous debris and bottom disturbances. It is unlikely that they represent significant cultural resources.

Sassafras River Targets in Area B (Appendix 3, Sassafras River Targets 12-13)

Sassafras River Target 12 is located in the Core area approximately 200.0 m (656.2 ft) east of the 213 bridge. It is located near the center of the river at a depth of approximately 6.4 m (21.0 ft). It is composed of three magnetic anomalies, M020, M022, and M025, that were recorded on adjacent transects. M020 is a monopole with a low amplitude (12.8 nT) and a long duration (72.0 m/ 236.2 ft). M022 is a multi-component with a high amplitude (297.2 nT) and a long duration (129.6 m/425.2 ft). M025 is a dipole with a low amplitude (15 nT) and a short duration (18.0 m/59.0 ft). All three were recorded with sensor heights of 6.1 m (20.0 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Target 12, suggesting that it may be buried.

Sassafras River Target 13 is located approximately 25.0 m (82.0 ft) east of Sassafras River Target 12. It is in the center of the river at a depth of approximately 6.4 m (21.0 ft). It is composed of two magnetic anomalies, M018 and M021, that were recorded on adjacent transects. M018 is a dipole with a low amplitude (38.2 nT) and a medium duration (45.2 m/148.3 ft). M021 is a monopole with a medium amplitude (96.7 nT) and a long duration (57.6 m/189.0 ft). Both were recorded with sensor heights of 6.1 m (20.0 ft). No significant side scan sonar contacts were identified during scrutiny of side scan sonar imagery in the vicinity of Target 13, suggesting that it may be buried.

The Battles of St. Leonard's Creek (1814)

Study Area and Rationale

The inclusion of the site of Gunboats 137 and 138 (18CV414) (Figure 33), that were scuttled prior to the escape of the Chesapeake Flotilla from St. Leonard's Creek in 1814,was intended to provide an opportunity to ensure there had been no clandestine damage to the vessels since they are in shallow water and the location is well known locally. Also, it provided the opportunity to ensure that the reburial process had been successful and that the sites had not become exposed subsequently and suffered environmental damage.

Timeframe

May 2010

Site Access

Fortunately, St. Leonard's Creek is surrounded by private property, and the closest residents had permitted access through their property during the past investigations and became protective of the site. No unauthorized visitation to the site has been reported. The condition assessment/inspection involved accessing the site from the same private property as before and wading to the locations recorded during the initial investigations (Enright 1999a, 1999b).

Results

The site of was relocated with little effort. Using SCUBA and a short probe, then by hand and with a tape measure, the vessels were located and checked around their periphery and in the areas where test units had been excavated previously. The vessels remain buried under 15.0 to 30.0 cm (5.9 to 11.8 in) of sand and there is no discernible difference in coverage in the loci of the test units. There is no evidence of intrusion, either clandestine or related to other development (i.e. dredging).

13.0 UNDERWATER ARCHAEOLOGICAL FIELDWORK - RECOMMENDATIONS

Susan Langley and Troy J. Nowak

Cato and *Hawk* at Cedar Point (1781)

Collection of ultra high resolution side scan sonar data (for example utilizing a 600/1600 kHz system) and additional magnetometer data collected over a grid centered on each target with transects spaced at a maximum of 10 m (32.8 ft) intervals is recommended for Cedar Point Targets 03, 05-18 and SSS 01 and 03. These additional data should allow archaeologists to pinpoint the locations of each target and facilitate identification-level inspections by diving archaeologists. Inspections should include visual examination, sampling, and probing and/or targeted sediment removal as necessary to ascertain the identity and extent of each target and its possible relationship to the 1781 loss of *Cato* and *Hawk* at Cedar Point. Following that work recommendations should be made regarding future studies and a reassessment should be made of battlefield Core and Secondary areas taking into account the results of identification-level efforts and further desktop and field research into shoreline change.

The Battle of Kedges Straits (1782)

Collection of ultra high resolution side scan sonar data (for example utilizing a 600/1600 kHz system) and additional magnetometer data collected over a grid centered on each target with transects spaced at a maximum of 10 m (32.8 ft) intervals is recommended for Kedges Straits Targets 01-03. These additional data should allow archaeologists to pinpoint the locations of each target and facilitate identification-level inspections by diving archaeologists. Inspections should include visual examination, sampling, and probing and/or targeted sediment removal as necessary to ascertain the identity and extent of each target and its possible relationship to the Battle of Kedges Straits. Following that work recommendations should be made regarding future studies and a reassessment should be made of battlefield Core and Secondary areas taking into account the results of identification-level efforts and further desktop and field research into shoreline change.

The Raids on Frenchtown and Elkton (1813 & 1814)

New strategies for accessing these sites should be devised and tested. Future work should include identification-level work designed to ascertain the identities of site nos. 18CE319 and 18CE331 and their relationship to the War of 1812 raids on Frenchtown and Elkton. In addition, a comprehensive program of reconnaissance and identification-level archaeological work should be undertaken within the Core and Secondary areas in order to ascertain the locations of the American positions and the locations of all the vessels destroyed during the 1813 raid with certainty. These studies should also include a reexamination of existing historical sources, as there are discrepancies between the analyses conducted by Babits, Espenshade, and Lowry that appear in the present work and the analyses of Eshelman and George that were conducted in 2000. Defining the locations of the American positions and associated

battlefield features with certainty is essential to identifying the Core and Secondary areas of the battlefield. Following that work a reassessment should be made of battlefield Core and Secondary areas and recommendations should be made regarding future studies.

The Raid on Georgetown and Fredericktown (1813)

Collection of ultra high resolution side scan sonar data (for example utilizing a 600/1600 kHz system) and additional magnetometer data collected over a grid centered on each target with transects spaced at a maximum of 10 m (32.8 ft) intervals is recommended for Sassafras River Targets 01, 05-13. These additional data should allow archaeologists to pinpoint the locations of each target and facilitate inspections by diving archaeologists. Inspections should include visual examination, sampling, and probing and/or targeted sediment removal as necessary to ascertain the identity and extent of each target and its possible relationship to the 1813 raid on Georgetown and Fredericktown. Even though it is unlikely that Target 04 represents one of the ships destroyed in 1813, it should be inspected to ascertain its identity with certainty. In addition, further reconnaissance-level work should be conducted in areas that were inaccessible during data acquisition for the present study. Portions of the Core area adjacent to Dyer Creek and in the vicinity of marinas that line the river's shores were inaccessible due to a large number of moored vessels and continuous vessel traffic. Survey of these areas during the winter months may be feasible and should be attempted. These areas have the highest probability of containing remnants of the vessels destroyed in 1813 if they survived clearing after the war and impacts related to the development and use of this reach of the Sassafras River. In addition, terrestrial reconnaissance and identification-level archaeological work should be conducted in an attempt to ascertain the locations of the American positions with certainty, as there are discrepancies between the analyses conducted by Babits, Espenshade, and Lowry that appear in the present work and the analyses of Eshelman and George that were conducted in 2000. Defining the location of the American positions with certainty is essential to identifying the Core and Secondary areas of the battlefield. Following that work a reassessment should be made of battlefield Core and Secondary areas and recommendations should be made regarding future studies.

The Battles of St. Leonard's Creek (1814)

There is no need for any action beyond ongoing monitoring of applications for development in the area to ensure these do not propose any activity that might impact site no. 18CV414.

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