

**Preserving and Interpreting
the Hudson River's Submerged
Heritage:**

*Linking Submerged Resources
to the Hudson Valley Landscape*

Funding provided by Hudson River Valley Greenway



NEW YORK
STATE OF
OPPORTUNITY.™

Hudson River Valley Greenway





Lake Champlain
**MARITIME
MUSEUM**



NEW YORK
STATE OF
OPPORTUNITY

**Department of
Environmental
Conservation**



NEW YORK
STATE OF
OPPORTUNITY.

**Parks, Recreation
and Historic Preservation**

FAIRBANKS
 **MUSEUM**
& *planetarium*



**Stony Brook
University**

Contributors

Ellie Burhans, Editor-in-Chief – *Hudson River Maritime Museum*

Karl Beard – *National Park Service*

Betsy Blair – *New York State Department of Environmental Conservation*

Art Cohn – *Lake Champlain Maritime Museum*

Roger Flood – *SUNY Stony Brook*

Sydney Ganon – *Hudson River Maritime Museum*

Adam Kane – *Fairbanks Museum & Planetarium*

John Ladd – *New York State Department of Environmental Conservation*

Daria Merwin – *New York State Office Parks, Recreation and Historic Preservation*

Kate Mitchell – *Hudson River Maritime Museum*

Mark Peckham – *Hudson River Maritime Museum*

Steven Resler – *New York State Department of State*

Charles Vandrei – *New York State Department of Environmental Conservation*

Brian Yates – *New York State Office Parks, Recreation and Historic Preservation*

Executive Summary

Beneath the waters of the Hudson River Estuary lies a rich heritage of maritime history. Long before contact with European explorers and settlers, the river was a crucial component of Native American life and inter-village trading. The Hudson River was, to Native peoples, a valuable natural resource for possibly 12,000 years before European colonization. Since Henry Hudson's voyage of exploration in 1609, the river has greatly influenced the development and expansion of the United States. It has served as a crucial link for domestic and international shipping trade between the Atlantic Ocean, New York City, the Great Lakes, and Midwestern U.S. Recent archeological and historical research suggests that the river represents an extraordinary repository of undisturbed shipwrecks documenting some four hundred years of Euro-American commerce, military operations, technical developments and social history. According to some historians, the Hudson River bed may be the greatest unseen history museum in New York State. Activities on or near a water body such as the Hudson River inevitably lead to items both large and small becoming part of the riverbed either through sea-level rise or through falling from the river surface. Many of the man-made materials that become part of the riverbed can decay over time, but materials that are buried may take longer to decay than those that remain at the sediment surface. Among the shipwrecks identified thus far are Hudson River sloops and schooners, a lighter, and several different types of canal boats. Other, more varied, submerged resources include railroad cars, spiked structures called *cheveaux-de-frise* used to discourage British warships from travel upriver, and submerged sites dating to times of much lower water levels.¹

Submerged archeological sites offer irreplaceable insight into the history of the river. Those insights were initially gained through viewing images of the submerged objects, describing their structure and likely origin, and integrating the submerged record into the known history of the Hudson River. As research progresses, selected shipwrecks and other archeological sites will need to be described in greater detail through diver investigation and high-resolution imaging. Although the majority of these sites should remain undisturbed, under certain circumstances, some sites may warrant detailed archeological investigation and/ or recovery.

The value of these shipwrecks and other submerged resources in the Hudson River is great, and some sites have national and international significance. The Hudson River may have one of the oldest and best preserved collection of submerged historic resources in North America due to the strategic location of the river and its four-century role in European exploration and American expansion. Once one of the world's busiest water highways, the Hudson River has been witness to exploration, colonization, wars, immigration and invention. In spite of dredging for shipping channels and periodic anchoring, these submerged resources are often left undisturbed. The Hudson River is a poor recreational diving environment and as a result there has been less of a threat to unauthorized theft of artifacts. Many of the sites documented during the past 15 years have never been visited or disturbed and offer tremendous archeological and research potential.

Between 1998 and 2003, benthic mapping uncovered 300-400 possible shipwrecks and other structures submerged beneath the river. Originally funded to research marine environments, this

¹ Roger Flood, "Sunken Treasures of the Hudson River," *Hudson River Maritime Museum Pilot Log*, no. 2011/2012 (2011): 57.

was the first extensive survey of the Hudson River since the lead-line surveys of the 1930s were completed. This program was funded by the Hudson River Estuary Program of the New York State DEC and completed by Columbia University's Lamont-Doherty Earth Observatory (LDEO) and the Stony Brook University's School of Marine and Atmospheric Sciences (SBU SOMAS). In 2004, a series of ultra-high resolution multi-beam and diver studies for cultural resources began, funded by the Office of Oceanic Exploration at National Oceanic and Atmospheric Administration (NOAA), the National Park Service (NPS), and the New York State Department of Environmental Conservation (NYSDEC). For the next year, field studies to investigate the shipwrecks and other structures in the Hudson River were completed by SBU SOMAS, LDEO, and the Lake Champlain Maritime Museum (LCMM). Despite extremely low visibility and strong currents, divers from the LCMM were successful in recording preliminary information on selected wreck sites, including dimensions, construction details, and some clues to past cargo. Of the six sites reached, at least three are eligible for listing in National Register for Historic Places.

The bed of the Hudson River is primarily the property of New York State administered by the New York State Office of General Services (NYS OGS). The Abandoned Shipwreck Act of 1987 – along with other New York State statutes, rules, regulations and case law – establishes that title and responsibility for these submerged resources rests with New York State. In addition, the protection and management of submerged cultural resources, states are encouraged to create underwater parks, or other areas to provide access and public interpretation for certain abandoned historic vessels within state boundaries. Due to concerns about potential looting of abandoned historic vessels, their locations must remain confidential until a plan for their preservation and protections can be implemented. The current ad hoc committee attempting to coordinate policy toward underwater resources includes representatives of several state agencies with jurisdiction over underwater lands, water quality, cultural resources and law. Within this group are representatives from New York State Office of General Services (NYS OGS), the State Museum (NYSM), the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP), the NYSDEC, the Department of State (DOS) and the Office of the Attorney General (OAG). While this group serves as a clearinghouse for issues involving submerged resources, it is not necessarily effective in taking action and further planning. Due to the limited and informal nature of this ad hoc committee, representatives have other responsibilities and cannot individually devote significant time to an underwater resource project of a larger scale. For any large project, such as one needed to catalogue, protect and interpret the submerged resources in the Hudson River, a framework is needed to allow more time and resources to be devoted to these goals. Unfortunately, at this time, as budgets are decreased, it has become increasingly more difficult to fund such projects.

This special resource study examines five possible frameworks for stewardship of submerged cultural resources found within the Hudson River, from the Troy Dam to the George Washington Bridge: maintaining the status quo, creating a formalized interagency working group, formalizing a public/ private not-for-profit leadership group, multi-site nominations on the National Register of Historic Places, and finally, creating a national marine sanctuary or underwater preserve. Each option must protect these historic resources, manage research, and contribute to public education and interpretation. Projects involving the study of historic resources of the Hudson River and the surrounding valley qualify for federal involvement

through the Hudson River Valley National Heritage Area and its affiliation with the National Park Service. They will provide greater understanding of natural history's impact on settlement, commercial growth and the development of this nation's cultural and political identity.

This study's recommendation is that a formalized interagency working group is needed to perform a definitive inventory of what lies on and possibly beneath the riverbed, and then champion the designation of the submerged resources as a marine sanctuary, or underwater preserve. The sanctuary must be responsible for the protection and management of further research on these shipwrecks and other structures. This alternative maintains strong control over resource management and decision making at a local level with federal oversight and complements some structures already in place for management, protect and interpretation. A marine sanctuary, administered by NOAA, would have immediate national recognition, technical and financial assistance and contribute greatly to our understanding of the Hudson River in the context of American history. In the meantime, a convening agency is needed to coordinate efforts of the current ad hoc committee.



LOSS OF THE STEAMBOAT SWALLOW WHILE ON HER TRIP FROM ALBANY TO NEW-YORK, on Monday Evening April 7th 1853. When opposite Athens she struck a large rock, her bows broke in two and sunk. By which melancholy occurrence, it is supposed that nearly 50 lives were lost.

Figure 1: Depiction of the sinking of the Swallow

Study Background

Between 1998 and 2003, more than 165 miles of river bottom between New York City and Troy was studied as part of the Hudson River Benthic Mapping Project. Using multi-beam sonar swath bathymetry, hundreds of anomalies that appeared to be shipwrecks were identified. This non-destructive underwater remote sensing technique transmits sound beams and then processes the returned sonar data to form high resolution, three-dimensional digital images of the river's bottom. The discovery of such a high number of recognizable shipwrecks was unanticipated and concerns were expressed about the confidentiality and management of site information. Initial sonar data suggested 900 anomalies, with possibly 300 representing submerged cultural resources.² Other agencies became involved, including NYSOPRHP, various programs within the NYSDEC, NOAA, NPS, LCMM, and the Hudson River Maritime Museum (HRMM). In 2003 and 2004, this mapping method was refined and diving protocols were developed to research Hudson River submerged resources in the difficult conditions created by the nature of the river. NOAA's Office of Ocean Exploration and LCMM supported additional survey dives.

The first field project specifically identify historic submerged resources was conducted by the NOAA ship *Rude*, which deployed high resolution sonar and magnetometer technology. The second field program used a highly skilled archeological dive team led by project member Art Cohn from LCMM to dive on targets to begin the critical task of understanding the historical significance and integrity of the submerged cultural resources of the Hudson River.³ In three one-week field projects, the LCMM dive team documented eleven sites between 2004 and 2007, reporting that dive conditions were generally poor. Due to bad visibility and strong currents, few notes were taken by divers while underwater. Most measurements and observations were relayed from the diver via communications to an assistant on the research vessel. The team documented two Hudson River sloops, three Hudson River schooners, one New York City Harbor lighter, one ocean-going schooner, one Morris Canal boat, one Erie Canal boat, one unidentified canal boat and one metal launch.

In 2007, a second series of dives were completed by LCMM with SBU SOMAS to verify the nature of selected sites in the Hudson River. The project was funded by NOAA's Office of Ocean Exploration and NYSDEC. The fieldwork effort comprised 17 dives on five different shipwreck targets. Targets included a canal boat, the three Hudson River schooners, and the metal launch. Due to the historic nature of at least three sites, they may be eligible for listing on the National Register of Historic Places. Partnering with the LCMM dive team, volunteer divers from the U.S. Military Academy at West Point's fire department participated in verification field work at the site of sunken defensive structures known as *cheveaux-de-frise* in the river north of West Point. These structures were used by the Colonial forces during the American Revolution.

² Roger Flood, "Exploring the Maritime Archeology of the Hudson River: Looking Beneath the Surface to a Revolutionary Past" (Stony Brook, New York: Marine Sciences Research Center Stony Brook University, 2005), 2. Available at http://nysl.cloudapp.net/awweb/guest.jsp?smd=1&cl=all_lib&lb_document_id=125326

³ *Ibid.*, 2-3.

From November 6 to December 15, 2009, NYSDEC sponsored a second round of sonar mapping from Saugerties north to Troy that extended more closely to the shorelines.⁴ Multi-beam bathymetry, and other high resolution acoustic survey techniques, can provide most of the data needed to evaluate the possible significance of individual features based on their surfaces. To discover the older archeological record under the river bed, it is necessary to look deep into the accumulated sediment at the bottom of the Hudson River. The shipwrecks examined during the surveys were in an excellent state of preservation, which adds to their archeological and historical significance. However, earlier sites may have disintegrated or become buried and other techniques will be needed to identify and evaluate these sites.

The riverbed may contain many sites dating from the seventeenth and eighteenth centuries including the wrecks of Dutch sloops, British and American warships and barriers to navigation associated with the American Revolution. Where buried, these archeological resources are likely to retain a high degree of integrity and have the potential to greatly enhance our understanding of these periods. It is important to develop approaches to the identification of these resources so that they can be effectively protected and managed.

When considering the preservation of archeological resources, it is important to understand the delicate, nonrenewable nature of archeological sites and associated materials. While some sites may reveal beautiful artifacts or fascinating ruins, the value of archeology lies in the information that sites and artifacts offer about the way people lived in the past. Once archeological material has been disturbed or removed from the site, whether through excavation or as a result of looting, development, erosion, or other processes, the context is lost and the site is destroyed forever. Properly conducted investigations preserve information through the use of collections, records, and reports that analyze and interpret the past. When these sites are improperly excavated, information is lost and the value of the archeological deposits greatly diminishes. Hallmarks of responsible archeological stewardship include thorough research and scientific methods, well-organized information collection and analysis, and public education and site interpretation.

Despite the immense possibilities for educational outreach and stewardship, the current committee of individuals from various state and federal agencies cannot undertake these functions. Beyond the need for further research of these submerged cultural resources, collaboration of key individuals, including diving experts, cultural institutions, archeologists, and state and federal agencies is needed to determine the national significance of these resources, assess potential management of the submerged cultural resources and to recommend appropriate actions necessary to ensure their future. This study recommends the eventual designation of a NOAA marine sanctuary pending the approval of a more formalized working group charged with championing the security of these submerged cultural resources. Should federal designation occur, funding in support of this project will be determined by the type of designation, the designation process and competing priorities.

⁴ "Side-Scan-Sonar Points for Hudson River, NY - Data.gov," accessed July 17, 2015, <http://catalog.data.gov/dataset/side-scan-sonar-points-for-hudson-river-ny>.

A Brief Overview of Hudson River History

The Hudson River, and its valley, is a microcosm of American history. Over time, the river valley changed from a sparsely populated wilderness to a center of culture and commerce for a new nation to a leading region in innovation and technology.⁵ It has played an important role in national events and has been one of the most significant factors in development of the United States.⁶ Of the river, historians have said, “Scenically, historically, and humanistically, in its tangibles and intangibles, its cumulative interest is scarcely exceeded, if indeed it is even matched, by any other rivers.”⁷

The Dutch colony of New Netherland was culturally diverse and arguably America’s first “melting pot”. In comparison to other colonies, New Netherland was remarkable for its tolerance.⁸ During the American Revolution, the river was an important strategic resource in both terms of transporting troops and materials as well as dividing the colonies into two.⁹ Augmented in the nineteenth century by the Erie and Champlain Canals, the Hudson River was a crucial component in the nation’s industrialization as well as its westward expansion. The shipwrecks and other structures at the bottom of the Hudson River are tangible evidence of this rich and important history.



Figure 2: 1685 map of the Hudson River and surrounding areas

⁵ Vernon Benjamin, *The History of the Hudson River Valley: From Wilderness to the Civil War*, 1 edition (The Overlook Press, 2014), xiii.

⁶ Roland Van Zandt, *Chronicles of the Hudson: Three Centuries of Travel and Adventure* (Hensonville, N.Y.: North Country Books, 1992), xi.

⁷ Paul Wiltach, *Hudson River Landings*, Second edition (Tudor, 1937), 17.

⁸ New Netherland Institute, *Explorers, Fortunes and Love Letters*, First edition (Albany, N.Y.: State University of New York Press, 2009), 7.

⁹ Flood, “Sunken Treasures of the Hudson River,” 57.

The Hudson River and the Study Area

From more than 4,000 feet in elevation in the Lake Tear of the Clouds in the Adirondack Mountains, the waters of the Hudson River flow 315 miles to the Battery on Manhattan Island, where it empties out into the upper and lower bays and finally the Atlantic Ocean. Along with the St. Lawrence River, it is one of a small number of rivers deep enough to allow ships into the North American continent. Below the dam at Troy, the Hudson River is an estuary, an inlet of the sea where tide and river current meet. Tidal action is present as far north as Troy. At its deepest near West Point, the river reaches a depth of 216 feet, but most of its distance is considerably shallower. The federal government maintains a 32-foot shipping channel through regular dredging.

Unlike many American rivers, the Hudson River below Troy has no fall line to impede navigation and descends only about five feet over the distance from Albany to New York City. Today the river continues to serve as a major commercial corridor for ocean-going ships transporting bulk cargoes and freight as far inland as Albany.¹⁰

Before The Europeans

Nomadic bands of Paleo Indians used the Hudson River valley for hunting as far back as 12,000 years ago according to archeological excavations. For about 6,000 years, the river has been used for subsistence and commercial fishing as seen through the remains of stone weirs that indicate an increasing importance in fishing among the inhabitants. Around 1000 B.C.E indigenous groups began to cultivate crops and establish permanent villages and homes. Women typically performed agricultural tasks while men hunted in the fall and early winter. Trade among Native groups predates European settlement, and trade routes followed north-south routes.¹¹

Two Algonquian groups lived in the Hudson Valley, the Mahican in the northern regions and the Lenape to the south. Both spoke a common language but each used a different dialect, possibly making communications between the two groups difficult.¹² Both lived in small settlements that depended on nearby seasonal food sources. Mahican villages were oriented towards the river and agricultural lowlands. When resources of the surrounding land became scarce or accumulated waste became problematic, the village relocated. The river provided fish in the spring and fertile land for maize and bean crops. While Iroquois tribes never lived in the Hudson River valley, they often used it for trade, fishing, and travel to Long Island Sound.¹³

¹⁰ National Park Service, "Hudson River Valley Special Resource Study Report," Resource Study Report (National Park Service New England Support Office, 1996), 14.

¹¹ Ibid., 24.

¹² Benjamin, *The History of the Hudson River Valley*, 31–32.

¹³ Ibid., 33–34.



Figure 3: Lenape Villiage, Illustration courtesy of Herbert C. and John T. Kraft

The river provided smelt, herring, striped bass and shad for Native diets so many villages set up along the water's edge. Using white or red elm and possibly birch, many villagers made bark canoes. Lenape villages, living along the Hudson River where it is the widest, used stone tools and fire to hollow out logs into canoes from either tulipwood or elm. Some canoes exceeded fifty feet in length.¹⁴ The Hudson River was a focus of human activity for nearly twelve thousand years and throughout this time water levels have changed. Due to rising water levels, some sites associated with these people are now covered entirely by water.¹⁵

Dutch and English Settlement

While sustained contact between Natives and Europeans began in earnest with Henry Hudson's exploration of the river in 1609, the indigenous inhabitants of the river valley first encountered Europeans during the 1524 voyage of Giovanni da Verrazano.¹⁶ The Dutch were a maritime people and placed considerable emphasis on commercial trade and profit.¹⁷ Their initial settlements in New Netherland emphasized business opportunities unlike settlers in adjacent colonies motivated by poverty, religious persecution, or the desire for independence.

The winter of 1613-1614 marked the start of Dutch shipbuilding on the Hudson River with the construction of the *Onrust*, commissioned to explore and trade along the Hudson and East Rivers and Long Island Sound. For inland waterways, the Dutch primarily used sloops – sailing vessels with one mast and a fore-and-aft rig and other small “jachts” to trade peltry on the Hudson River.¹⁸ The region's rivers, many navigable for long distances, demanded ships. There are many types of craft referenced in the public documents of New Netherland, but many remain obscure to modern researchers due in part to less-than-precise nomenclature in describing the colony's ships and boats. The



Figure 4: A View of New Amsterdam in 1673

¹⁴ Ibid., 37.

¹⁵ Flood, “Exploring the Maritime Archeology of the Hudson River: Looking Beneath the Surface to a Revolutionary Past,” 2–3.

¹⁶ Paul Andrew Otto, *The Dutch-Munsee Encounter in America: The Struggle for Sovereignty in the Hudson Valley*, First Edition edition (New York: Berghahn Books, 2006), 27.

¹⁷ Donna Merwick, *The Shame and the Sorrow: Dutch-Amerindian Encounters in New Netherland* (Philadelphia: University of Pennsylvania Press, 2006), 7–19.

¹⁸ Paul E. Fontenoy, *The Sloops of the Hudson River: A Historical and Design Survey*, Indexed edition (Mystic, Conn: Mystic Seaport Museum, 1970), 6.

sloops of New Netherland were used for river or coastal travel. The Dutch sloop of New Netherland was much smaller than the Hudson River sloop and would not increase in size significantly until the end of the seventeenth century.

The Dutch surrendered their colony and territories in New Netherland in the English in 1664. Hopelessly outmanned and overpowered, Dutch colonists pleaded for Stuyvesant to capitulate to the British terms of surrender. On August 17, the articles of capitulation were signed by six burghers and six Englishmen, though not the director himself. On the October 21 that same year, 250 burghers, traders, and community leaders including Stuyvesant swore allegiance to the king of England.¹⁹ The British influence was soon seen in ship design and construction. Ocean-going ships were built but internal trade and communication continued to rely upon sloops.²⁰

In the decades leading to the American Revolution, Hudson River sloops were further adapted to meet the river's unique navigational conditions. Sloops continued to dominate trade and travel. They were the most comfortable, most reliable, and most efficient means to travel.²¹ In a 1765 report, Albany was port to 25 sloops, and this number increased by three in a report released two years later. By 1769, Kingston owned six sloops, Saugerties eight, and Catskill two. Albany's number had increased to 31. These ships made the round trip between New York and Albany 11 or 12 times during the season – from when the ice melted to until the river refroze.²² By this time the Hudson River sloop had evolved into a distinct local variant different from those used in the Chesapeake Bay, New England, or along the coasts. Hudson River sloops were somewhat larger and retained their Dutch bluff bows and raised quarterdecks. They had substantial passenger accommodations under a large quarterdeck. In addition to serving as passenger transport, the sloops carried produce, livestock, lumber and pelts downriver. Upriver traffic primarily comprised manufactured goods such as rum, hardware, fabrics, furnishing, and luxury items carried to expanding settlements in the Hudson River Valley, western Connecticut, Massachusetts, and the Mohawk Valley. Sloops remained dominant well into the nineteenth century. After the introduction of the pivoted centerboard, sloops continued to evolve, becoming larger, shallower and more efficient.²³

The Hudson Valley in the War for Independence

The record of the American Revolution in some areas of the Hudson Valley is significant; data that has been collected at significant Revolutionary War sites, such as off Yonkers, New York, and the Hudson Highlands. General George Washington viewed the Hudson River as the strategic key to the success of the Continental forces during the Revolution, and efforts by both the Americans and British forces to control the river are reflected by the archeological resources left in the wake of the conflict.

¹⁹ Benjamin, *The History of the Hudson River Valley*, 94.

²⁰ Fontenoy, *The Sloops of the Hudson River*, 15.

²¹ *Ibid.*, 27.

²² *Ibid.*, 36–37.

²³ *Ibid.*, 43.

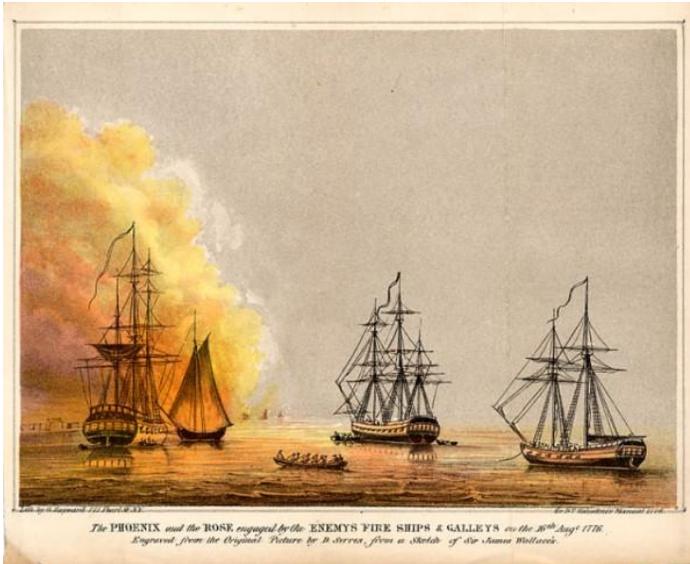


Figure 5: The PHOENIX and the ROSE, engaged by the ENEMY'S FIRE SHIPS & GALLEYS, on the 16th Aug 1776.

Part of the American's plans for defending the river consisted of creating obstructions where British ships would be caught – or at the least slowed – at key locations, making the vessels vulnerable to cannon fire from nearby forts. These defensive structures included scuttled ships (some rigged with iron pikes projecting just below the water surface to snag passing vessels) as well as features that were extended shore-to-shore, including two massive iron chains and a *cheveaux-de-frise* (sunken caissons with projecting iron pikes north of West Point).

West Point was one of the most important fortifications along the

Hudson River during the Revolution. The colonies were divided through natural formations along a line that ran from British Canada south through Lake Champlain and its tributaries, and down the Hudson to British New York. The line was made vulnerable by Britain's superior army and navy. Below West Point, Britain's navy could disrupt travel and communication to Albany. Twice British forces came close to controlling the line and cutting the Colonies into two.²⁴ West Point was a natural choke point for navigation on the river.

Both British and Colonial forces had learned the importance of the Hudson River and Lake Champlain during the French and Indian War. At the time of the American Revolution, the Hudson River was navigable for ships as far north as Albany, making it an important trading route.²⁵ Early battles along the river went poorly for the Continental Army. In July 1776, British forces passed the American batteries and *cheveaux-de-frise* 12 miles north of Manhattan. General Knox lost more men to old and defective firepower than to British ships during the encounter. More forts were passed on September 14. The British ships *Phoenix* and *Rose* sank two American sloops, and a British sailing tender was sunk off shore from Yonkers. Yet while the *cheveaux-de-frise* commanded respect, the iron-pointed stakes were not thick enough to stop cautiously ships, although the chain at Fort Montgomery temporarily stopped the British forces.²⁶

In October 1777 British forces attacked Forts Montgomery and Clinton. The British gained control of both forts after attacking by land rather than by water. Two Continental frigates, the 28-gun *Congress* and the 24-gun *Montgomery*, and the galley *Shark* were burned to prevent their capture by the British. Researchers have yet to find any evidence of the vessels lost during the Battle of Fort Montgomery, but several sections of the *cheveaux-de-frise* have been located

²⁴ Gerald C. Stowe and Jac Weller, "Revolutionary West Point: 'The Key to the Continent,'" *Military Affairs* 19, no. 2 (July 1, 1955): 81–82, doi:10.2307/1983343.

²⁵ *Ibid.*, 82.

²⁶ *Ibid.*, 86.

stretching across the river bottom.²⁷ Submerged logs remain from the chain boom at Fort Montgomery dismantled after Forts Clinton and Montgomery were captured.

Industry and Westward Expansion

After the American Revolution and into the early nineteenth century, a thriving waterborne economy had returned to the Hudson River heralding new developments in vessels. The river had long served as an incubator of watercraft and this was the case with the development of a viable steamboat. Robert Fulton's 1807 vessel, the *North River Steamboat*, was not the earliest steam-powered vessel, but its voyage between New York City and Albany, roughly 150 miles apart, was the first trip of significant distance, and it clearly demonstrated the commercial feasibility of steamboat travel. For the first few decades of the nineteenth century, however, sailing vessels such as sloops and schooners still maintained a dominant presence on the river. By 1810, there were more than 200 active sailing ships on the Hudson River. A mere 10 years later, Albany, a city of 2,000 stores and businesses, typically recorded between 80 and 200 sloops.²⁸ As steamboats became safer and more comfortable, passenger travel gradually shifted away from sloops. Sloops and schooners continued to be significant carriers of freight due to their lower operating costs. The sloop *Mad Anthony* operated out of Verplanck's Point until 1908.²⁹ Well-preserved examples of these sloops remain submerged in the river between Haverstraw Bay and Kingston.

Three significant canals feed into the Hudson – the Erie Canal, the D&H Canal, and the Champlain Canal. The Erie Canal was built



Figure 6: Original Clinton's Ditch Erie Canal -- looking east down the original Erie Canal prism -- taken in April 2007. From Schoharie Crossing State Historic Site.

between 1817 and 1825 linking 363 miles from Albany to the Great Lakes and the Finger Lakes. When combined with the Champlain Canal, completed in 1823, and the Delaware & Hudson Canal, completed in 1828, the Hudson River became part of an integrated waterway connecting the region. The Erie Canal provided access to the grain fields of western New York, and perhaps more importantly, opened the American West to Euro-American settlement via the Great Lakes.

Built to advance the interests of the state, the Erie Canal and its effects transcended the state and its

region. No longer was the Midwest solely dependent upon transporting goods along the Mississippi River or through the Great Lakes. The Erie Canal helped to divide the nation into North and South as opposed to East and West and further ensured New York City's primacy as an Atlantic seaport. The canal system not only channeled the flow of goods from New England into New York State, but people also used the canals to move into the "Old Northwest" assuring these new settlements inhabited by New Englanders. The Erie Canal, along with the Champlain

²⁷ Flood, "Exploring the Maritime Archeology of the Hudson River: Looking Beneath the Surface to a Revolutionary Past," 3.

²⁸ Benjamin, *The History of the Hudson River Valley*, 297.

²⁹ *Ibid.*, 300.

and D&H Canals, changed the way Americans transported goods and migrated to new regions of the nation.

The Hudson-Canal corridor led to the rise of the “Empire State.” New York became the national leader in population, industry, economic strength and all of these translated into great political power. New York City became the center for the nation’s finances and leading commerce hub. Rivals along the Atlantic seaboard, each fiercely competing for dominance in trading, began to build their own canal systems, setting off a period of “canal mania.”

By the late nineteenth century, improvements to steam vessel safety, competitive fares and reliable timetables made steam the preferred way to travel from New York to Albany and the cities in between. A few companies owned most of the steamboats that plied the river, and the rivalry between the lines often led to racing, occasionally with disastrous results. The era of steam was punctuated by a series of accidents, some of which resulted in wreck sites in the Hudson River. These include the accidents involving the *Swallow* in 1845 and the *Point Comfort* in 1919, as well as the hulks of abandoned steamers including the *William Romer*, the *Saugerties*, the *Storm King* and the *Garrison*.

Another highlight of the confirmed, but not yet completely investigated, sites in the Hudson River is a large twentieth-century steamer. Originally known as *Trojan*, the steamer was built in 1909 at the Marvel Shipbuilding Company at Newburgh on the river for the Citizen’s Line night service between New York and Troy. The 2,571-ton, steel, side-wheel steamer was renamed *New Yorker* in 1939 when she was briefly moved to serve New York City passengers going to the World’s Fair in Flushing, Queens. The following March, while laid up waiting for the spring thaw, *New Yorker* burned at the dock. Prior to her World’s Fair duty, *New Yorker* was the last night boat to ply the route between New York and Albany. She covered the route alone in 1939, the final year of the service. It is fitting that the first vessel to which researchers are able to attach a name is also the last of her kind working on the Hudson, ending a golden age of sail and steam.

Interpretive Themes

The Hudson River’s submerged cultural resources offer a new interpretive framework for exploring the region’s history. Intended to compliment the interpretive themes developed by the many cultural and historical sites along the river, this new framework emphasizes on the important contributions the river has made on local, regional, state and national levels, including the nation’s emergence and its social, political and economic development.

European – Native Contact on the River

Dutch explorers and settlers continually shaped their communities in the colony of New Netherland by their experiences in the United Provinces and their war for independence from Spain. Encounters with Native people at first took place on ships, or along the water’s edge. The West India Company saw the Hudson River, not as an ideal spot to colonize, but as a route to lucrative trade of furs with the Iroquois Confederacy. Unfortunately, often as a result of greed and disrespect, racial violence between natives and settlers occurred frequently.

The Hudson River in the American War of Independence

The access the Hudson-Champlain corridor provided to the interior of the continent, as well as the physical barriers it formed between New England and the middle colonies, gave it strategic importance during the early colonial period and the American Revolution. The Hudson River was the scene of considerable fighting connected to the Saratoga campaign in 1777, often considered the turning point of the war.

Development of the American Economy

The Hudson River, both itself and as the connector to the New York State Canal System, was a significant route altering the flow of capital and goods between the Atlantic coast and the emerging settlements in the nation's interior and contributed to the economic growth and development of the modern day midwest, enabling the region to develop as an exporter of grain and natural resources. Commerce along the canal facilitated the rise of urban centers such as Buffalo, Rochester, Oswego, Syracuse, and Albany. It amplified New York City's role as the nation's leader in shipping, commerce, and capital, and helped shape the pattern of urban growth around the Great Lakes.

People, Places and Transforming the Cultural Landscape

As New York State developed the canal system, of which the Hudson River was an important component, travel across New York to the Great Lakes region became faster, safer, and more reliable. Population flow from New England to upstate New York to the Midwest greatly increased. This cultural tie bound the Old Northwest to the North and helped to shape the divisions that would split the nation in the Civil War. This corridor accelerated the movement of people, ideas, cultural developments and political and religious movements along its path.

Technological Advancement

The Hudson River has always served as an incubator of innovation, including iron foundries, steel, steam navigation, early railroads, arms innovations, bridge and tunnel technologies, mass transportation, canal engineering, communication technologies and educational institutions supporting innovation.

Submerged Hudson River Cultural Resources

The Hudson River's marine archeological record was significantly advanced during 2004-2005 dives performed by LCMM, in partnership with the NOAA ship *Rude*. The study performed emphasized the search for historically known shipwrecks and defensive structures built and lost during the American Revolution. The team selected promising sites using the multi-beam echo sounding and side-scan sonar mapping of the Hudson River. Divers were able to document eleven sites – two Hudson River sloops, three Hudson River schooners, one New York City lighter, one ocean-going schooner, one Morris Canal boat, one Erie Canal boat, one unidentified canal boat, and one metal launch. The data projects generated by this project include high-

resolution multi-beam data files, side-scan sonar data files, magnetometer data files, and the log files of the diver operations. Stony Brook University has archived the raw high-resolution sonar data. The raw magnetometer files have been archived at the Lamont-Doherty Earth Observatory, and the raw dive records are archived at the LCMM. These investigations offer important insights into the integrity and significance of the hundreds of wreck sites known to be present in the river.

Morris Canal Boat

The canal boat was in a fair state of preservation at the time of the dives, with the structure preserved up to the deck beams. The presence of coal, strongly indicates that the boat's sinking was not intentional. The ship's size and construction indicates that the boat was built after 1860. It is believed to be the only known example of an extant Morris canal boat. The hull of the boat is approximately 75 percent intact, missing the deck, planking exposed above the mudline, and the cabin structure. The hull is built plank on frame, with vertical sides expected of a canal boat.

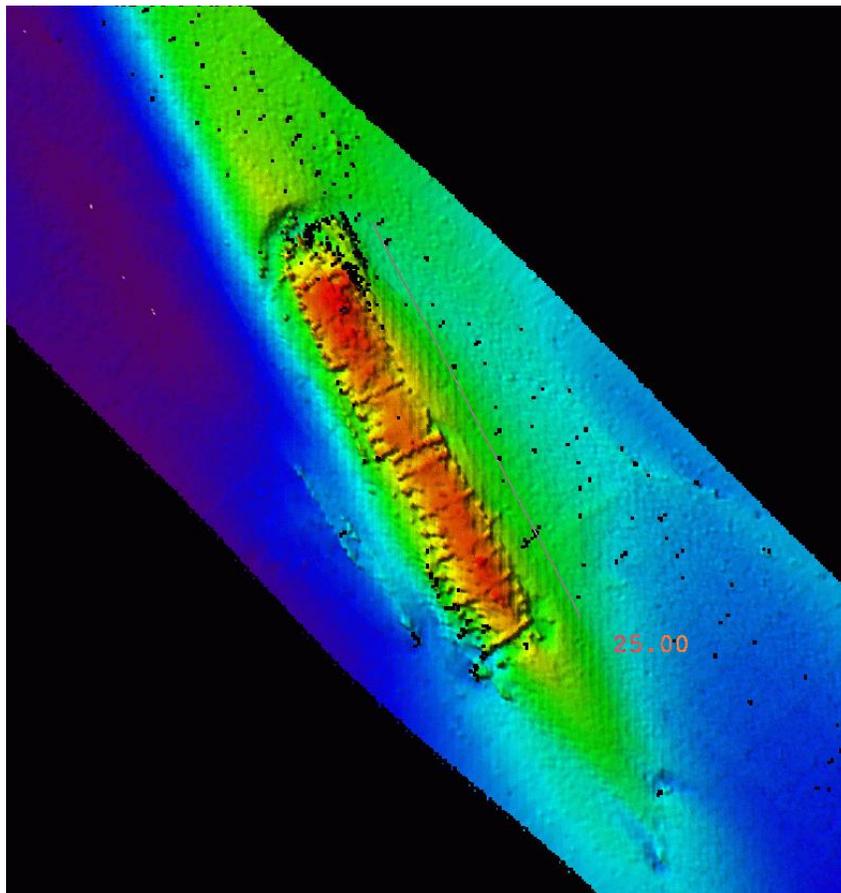


Figure 7: Sonar scan of Morris Canal Boat

The condition of the bow, divers discovered, was similar to the ship's general condition. Much of the structure was still extant, although the foredeck and the upper two to three feet of planking are no longer present. Displaced deck beams and pieces of the foredeck lay in the forecabin. Much of the bow's exterior was exposed due to a significant scour extending two to three feet

below the typical bottom sediments. Divers determined the type of vessel by the sharp bow relative to the bluff shape of typical of other types of canal boats.

Some coal was found in the bow, but divers suspected that it had fallen into the forecastle as the boat decayed. The sediment level in the forecastle was approximately two feet lower than the coal cargo in the hull, suggesting that the coal had indeed fallen. The forecastle contained several displayed timbers, which researchers were unable to document given the cursory nature of the study. One fragment of decking had a round hole.

The hold was divided into two sections based upon the unique articulated construction of the canal boat type. Known as “section boats”, Morris Canal boats were built as two separate boats with each half joined by cleats on the deck. The boat was divided transversely at approximately its midpoint. This design was necessitated due to the inclined plane employed on the Morris Canal used to pass over hills. The stress exerted upon the boat at the hill’s crest was so great, it would cause structural damage. Because of the poor underwater conditions, researchers did not initially recognize this characteristic. They did document, however, a vertical transverse plank extending across the hold forty-five feet aft of the stem. This plank is believed to be the top of one of the bulkheads used to separate the halves of the hull. The sectional nature of the hull was also apparent in the multi-beam data, which shows the misalignment between hull sections.³⁰

Researchers determined the shipwreck they documented sunk in a storm. According to an eyewitness account reported April 29, 1885 a strong gale swept into the Tappan Zee area causing ten to fifteen foot waves at two in the afternoon. The side-wheel steamboat *Oswego* with about a dozen canal boats was in the area, and despite assistance, at least seven of 10 canal boats sank, though there was no loss of life. Each boat, with the exception of a barge, had been loaded with coal. During the storm, the smaller boats were separated from the larger steamboat; despite the crew’s best efforts, many boats sank.³¹

Built by Capes & Burtis in Brooklyn in 1848, *Oswego* was the first large side-wheel steamboat built exclusively for towing on the Hudson River. The towboat was 212 feet long with a 28-foot beam and a tonnage rating of 211. The ship, built for Commodore Alfred Van Santvoord, was exclusively used for towing barges between Albany and New York City. Thomas Cornell purchased the ship and brought it to the Rondout, giving Cornell control of the towing business between Rondout and Albany. *Oswego* remained in commission until 1918 when the boat was laid up. In November of 1920, the ship was sold to the Kingston Scrap Iron and Metal Company and was towed to Terry Brother’s Brickyard and broken up.

³⁰ Flood, “Exploring the Maritime Archeology of the Hudson River: Looking Beneath the Surface to a Revolutionary Past,” 8–11.

³¹ “Sunk in the Tappan Zee.: A Gale on the Hudson Causes the Loss of Ten Canal Boats,” *New York Times*, April 30, 1885.5.

Historic sites help scholars understand the innovations and the ambitions that drove Hudson River transportation and the localized challenges in competing for market shares. The Morris Canal, connecting Phillipsburg on the Delaware River to Jersey City on the Hudson River, was completed in 1836 and was 103 miles long. To overcome elevation challenges of 1,674 feet, canal boats moved more than 23 inclined planes powered by water through scotch turbines located deep underground.



Figure 8: A hinged Morris Canal boat atop an inclined plane.

This system was unique to the Morris Canal.³² This innovative technology was proposed for use

in connecting the waters of the Illinois River to Lake Michigan.³³ The canal connected Pennsylvania's anthracite coal mines to the New York-New Jersey markets, making it a crucial part of the economic revival of New Jersey's iron industry and development in northern parts of the state. However, other essential items such as grain, wood, cider, vinegar, beer, whiskey, bricks, hay, hides, iron ore, sugar, lumber, manure and lime were commonly found being shipped between Phillipsburg and New York City. Before railways were well-developed, the Morris Canal was significant in the economic development of Northern New Jersey.³⁴ As the canal business increased, so did the length and width of canal boats. The increased size led to difficulty traversing the inclined planes in the lock system. Thus the section boat was introduced to the canal which allowed the boat to bend over the summit.³⁵

New York Harbor Lighter

While preliminary data was not conclusive, researchers suspect that one of the shipwrecks is a mid-to-late nineteenth-century sloop-rigged New York City harbor lighter. This conclusion is based on the presence of a single mast set far forward in the hull, the absence of a bowsprit, and the suggested age of the vessel. At the time of the dive, the boat was in a fair state of preservation with the hull preserved to just below the deck. The lighter was divided into three use areas –bow, hold and stern.

The stem stood nearly nine feet proud of the bottom, suggesting a likely height of between nine and 10 feet. There was no evidence of a bowsprit, nor were there any remains of a forestay

³² "Microsoft Word - MORRIS CANAL FACT SHEET #1.doc - morrisfact1.pdf," accessed June 4, 2015, <http://www.canalsocietynj.org/morrisfact1.pdf>.

³³ "On the Comparative Advantages between Locks and Inclined Planes in Overcoming Great Elevations on Canals," *The Dublin Penny Journal* 4, no. 161 (August 1, 1835): 83.

³⁴ "Microsoft Word - MORRIS CANAL FACT SHEET #1.doc - morrisfact1.pdf."

³⁵ Flood, "Exploring the Maritime Archeology of the Hudson River: Looking Beneath the Surface to a Revolutionary Past," 13–14.

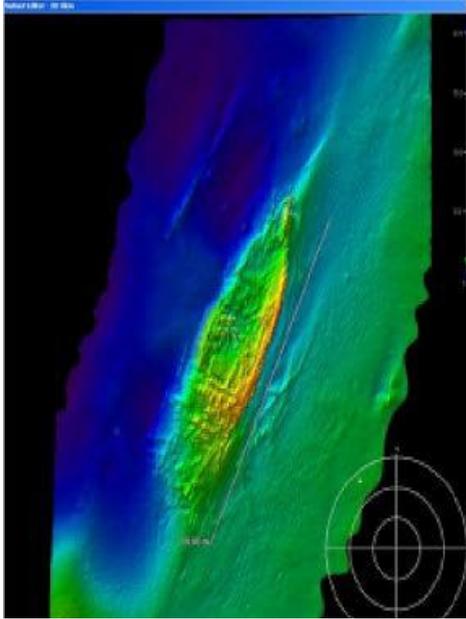


Figure 9: Sonar scan of New York Harbor Lighter

attached to the stem. The bow's exposed framing consisted of six single top timbers with room and space ranging from eight inches to a foot and a half. Divers found a transverse bulkhead 12.5 feet aft of the stem consisting of vertical planks separating the forecabin from the hold. The stump of a mast was located 11 feet aft of the stem with a circumference of nearly three feet. Forward of the mast laid a displaced knee, likely the lodging knee from the starboard side. Divers found rope remnants, suggesting the presence of a rope locker.

The hold was filled with coal, obscuring the details of the hull's construction making it difficult to determine the framing pattern. It contained five lodging knees used to secure no longer extant deck beams to the side of the hull. These knees were spaced with two pairs of top timbers separating each knee. The tops of four stanchions were located along the ship's centerline. These stanchions would have supported the deck beams. They did not line

up well with the lodging knees and their irregular locations indicates either displacement as the deck was torn from the hull or inconsistencies merging the archeological data from the centerline baseline and the port side baseline. Divers were unable to find a centerboard trunk in the hold.

The stern contained remnants of the boat's cabin, sternpost, rudder, and rudderpost. The stern is separated from the hold by a transverse bulkhead made of vertical planks. The cabin is defined by bulkheads, both transverse and fore-and-aft, constructed of vertical planks. Researchers had difficulty defining the cabin's layout due to the nature of the study and difficult diving conditions, but they did draw some preliminary conclusions. Two small fore-and-aft bulkheads located to the starboard of the boat's centerline may be the remnants of the sides of the companionway leading to the cabin. Just to the outside of the starboard fore-and-aft bulkhead researchers noted thin, smooth planking overlaying the ceiling. This planking, researchers believe, was used to finish the walls of the cabin's interior.

The vessel's stern was, at the time of the dive, the hull's most deteriorated section. The entire transom was missing, although the rudderpost, rudder, and sternpost were all still present. The rudder had unshipped from the sternpost and was turned hard to port and canted towards the vessel's starboard side. The top of the rudderpost had mortice for a tiller, although the tiller was no longer extant.³⁶

³⁶ Ibid., 11–13.

Hudson River Sloop

The remains of a Hudson River sloop include the bottom of the hull, extended at the time of survey one to three feet above the turn of the bilge. The vessel sank with its cargo of salt glazed stoneware and red earthenware ceramics. Based on the ceramics, research teams determined the ship sank between 1834 and 1850.

When divers surveyed the wreck, the structure of the hull extended one to three feet below the bottom sediments with the stern being nearly entirely buried. The hull remains consist of planking, ceiling, framing, and a stern knee with one third of the original hull present. Rigging elements, the sternpost, stem, deck, and cabin were gone. This wreck features a centerboard and the remains of a centerboard trunk composed of stanchions at the forward and vertical planks making the trunk's

side. It is approximately three feet, nine inches tall, likely its original height. The centerboard, introduced on Hudson River sloops circa 1815, represented an important design development. It allowed vessels to be built shallow but retain good sailing characteristics. Shallower drafts allowed sailors to avoid frequent groundings and opened access to towns and villages along with shallow landings and creeks.

Divers determined the wreck was a significant, sensitive archeological site with artifacts that would be coveted by collectors. For this reason, the site's location must remain confidential. Divers also determined the site was likely eligible for the National Register of Historic Places. The ceramics associated with Moses and Nathan Bell, who were prominent potters in Cornwell, New York. The site is one of the oldest Hudson River sloops found to date.

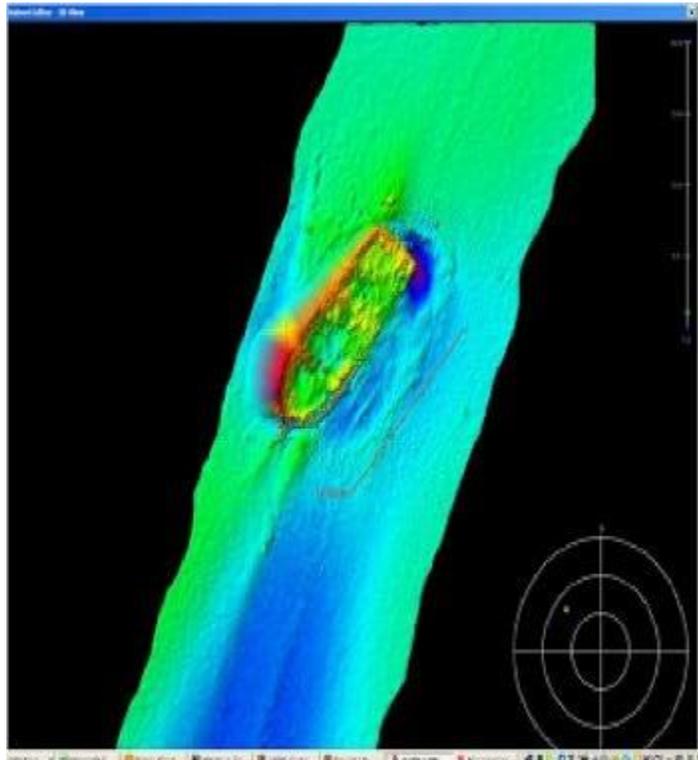


Figure 10: Sonar scan Hudson River Sloop

Cultural Resource Managers

Federal Government

The Federal Government, as well as public and private not-for-profit agencies, are actively involved with the planning and management of the natural and cultural resources of the Hudson River. The following federal agencies and not-for-profit organizations have responsibilities and/or resources connected with underwater lands and cultural resources.

National Park Service (NPS)

The National Park Service parkland, heritage corridors, and historic sites and monuments for the enjoyment, education, and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world. The NPS funds National Historic Preservation programs and the Historic Preservation Fund. These programs and funds aim to recognize, save and protect America's historic sites through the Nations Register of Historic Places, tax credits and surveying and inventorying America's historic sites. National Park Service sites in the Hudson River valley include: The Hudson River Natural Heritage Corridor, the Saratoga National Battlefield, the Martin Van Buren House, the FDR National Historic Site, Vanderbilt Mansion, and Gateway National Park (which includes the Custom House, Hamilton Grange, and Castle Clinton).

Advisory Council on Historic Preservation

The Advisory Council on Historic Preservation (ACHP) is an independent federal council that promotes the preservation, enhancement, and productive use of our nation's historic resources, and advises the President and Congress on national historic preservation policy. As directed by the National Historic Preservation Act (NHPA), the ACHP serves as the primary federal policy advisor to the President and Congress; recommends administrative and legislative improvements for protecting our nation's heritage; advocates full consideration of historic values in federal decision making; and reviews federal programs and policies to promote effectiveness, coordination, and consistency with national preservation policies.

United States Military Academy, West Point

The U.S. Military Academy at West Point assisted with the dives to research the *cheveaux-de-frise*. Additionally, instructors at West Point teach military history, including that of the American Revolution. The military academy at West Point manages cultural resources on its campus and adjacent lands. Its war museum is an important interpretive resource for the public. Both the U.S Army and the staff at West Point are vital to any preservation, research or interpretation of these submerged structures.

National Oceanographic & Atmospheric Administration (NOAA)

From daily weather forecasts, severe storm warnings, and climate monitoring to fisheries management, coastal restoration and supporting marine commerce, NOAA's products and services support economic vitality and affect more than one-third of America's gross domestic product. NOAA's scientists use cutting-edge research and high-tech instrumentation to provide citizens, planners, emergency managers and other decision makers with reliable information they need when they need it. NOAA administers marine sanctuaries, such as Thunder Bay in the Great Lakes and offers technological resources to support the detailed investigation of submerged cultural resources through enhanced grants to develop shipwreck programs.

United States Coast Guard

The Coast Guard is one of the United States' five military services. It defends and preserves the United States. The U.S. Coast Guard protects the personal safety and security of American; the marine transportation system and infrastructure; natural and economic resources; and the territorial integrity of the nation. It protects these interests in U.S. ports and inland waterways, along the coasts, on international waters. The Coast Guard is a military, multi-mission, maritime force offering a unique blend of military, law enforcement, humanitarian, regulatory, and diplomatic capabilities. These capabilities underpin its three broad roles: maritime safety, maritime security, and maritime stewardship.

United States General Services Administration (GSA)

GSA provides workplaces by constructing, managing, and preserving government buildings and by leasing and managing commercial real estate. GSA's acquisition solutions offer private sector professional services, equipment, supplies, and IT to government organizations and the military. GSA also promotes management best practices and efficient government operations through the development of government-wide policies.

United States Department of Defense

The national security depends on our defense installations and facilities being in the right place, at the right time, with the right qualities and capacities to protect our national resources. The Defense Department manages an inventory of installations and facilities to keep Americans safe. The Department's physical plant is huge by any standard, consisting of more than several hundred thousand individual buildings and structures located at more than 5,000 different locations or sites. When all sites are added together, the Department of Defense utilizes more than 30 million acres of land. The United States Army, Navy, Air Force, and Marine Corps all operate under the Department of Defense as well as various reserve forces. Under law, sunken all lost military resources are technically owned by the various armed forces. Each branch may administer the ownership of the cultural resource differently however.

New York State Government

Several state agencies have jurisdiction over underwater lands and cultural resources. No single agency has primary authority or responsibility. An ad hoc underwater group was developed in which representatives from each of the agencies form an informal clearinghouse for shipwreck issues and other underwater cultural resources as well as a forum for defending the state's legal interests when the need arises. The committee has also helped these agencies coordinate preservation initiatives with interested federal agencies and not-for-profit organizations. The committee receives no dedicated funding and is not currently recognized in law or regulation.

New York State Department of Environmental Conservation (NYSDEC)

Established to conserve, improve, and protect the state's natural resources and environment, the NYSDEC manages extensive public lands and protects wetland protection, fish, wildlife, and marine resources, streams, wetlands, and forestry. The NYSDEC administers access to submerged heritage preserves in Lake George and Lake Champlain.

Hudson River National Estuary Research Preserve

A part of the NYSDEC, this state-operated federal program promotes enhances coastal management through conservation, education, and research at a network of natural areas in the tidal Hudson River.

New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP)

This office administers and operates one hundred and fifty parks, park preserves, and recreational facilities, three arboretums, and thirty-five state historic sites throughout New York State. Many of these properties are adjacent to the river. It is New York State's historic preservation office. In this capacity, the office has been delegated authority to represent the federal historic preservation program in New York State while advancing parallel state laws and regulations. These programs include the National Register of Historic Places, historic resource surveys and the review of state and federal undertakings that often affect historic and archeological resources. THE NYSOPRHP maintains an extensive cultural resources database (CRIS) as well as a statewide shipwreck database.

The Hudson River Valley Greenway

In December of 1991, New York State enacted the Greenway Act creating the Hudson River Valley Greenway, the Greenway Communities Council, and the Greenway Conservatory for the Hudson River Valley, Inc. The communities' council was to initiate a process for regional decision-making that would encourage communities to cross municipal, county, and river boundaries in developing resource management plans. The conservatory was established as a public benefit organization and nonprofit corporation that would uphold the state's commitment to preserving and enhancing the scenic, natural, and cultural resources of the Hudson River Valley while encouraging responsible economic development.

The Greenway's mandate is to develop a comprehensive plan for natural and cultural resource protection, regional planning, economic development, public access, and heritage and environmental education. Greenway assists communities who voluntarily participate in a coordinated planning process to resolve regional issues and concerns with their cross-river and adjacent neighbors.

New York State Office of General Services (NYSOGS)

NYSOGS manages and leases real property, designs and builds facilities, contracts for goods, services, and technology, and delivers a wide array of support services. The office serves as the state's landowner for extensive public land holdings not owned by a specific state agency including most of New York State's underwater lands. In this capacity, the office manages and controls the use of these lands, including those which lie beneath or within which many shipwrecks are embedded.

The New York State Museum in the Department of Education

The New York State Museum serves the lifelong educational needs of New Yorkers and visitors through its collections, exhibitions, scholarship, programs, media and publications in science, history, anthropology, and art. The Museum explores and expresses New York State's significant natural and cultural diversity, past and present.

In New York State, education corporations are created by the Board of Regents of the University of the State of New York. As the senior educational authority in New York State, the Board of Regents oversees the State's educational system. Nonprofit organizations and institutions with educational purposes, such as schools and cultural agencies, seeking to incorporate, must do so under Education Law § 216, subject to the authority of the Regents. New York State is unique in the United States because it not only considers its cultural agencies to be an integral part of its educational system; it incorporates such agencies under Education Law instead of under Corporation Law.

The New York State Museum regulates objects of historic interest on state lands under Section 233 of the New York State Education Law. These objects and sites are considered to be part of the museum's collections. Under this law, shipwrecks on state underwater lands may not be disturbed without authorization. A permit process exists for archeological investigations but unlike some states, archeological sites may not be appropriated for private use or profit.

The New York State Department of State

The Department of is New York's federally and State designated coastal management agency, responsible for administering New York's federally approve Coastal Management Program and State inland waterways programs, providing comprehensive planning and coastal policy direction to municipal, State and federal agencies in addition to reviewing and ensuring that certain State and municipal actions are consistent with and advance State coastal and inland waterway policies and plans. Activities that are consistent with such policies and plans are to be advanced, and those not consistent with such policies and plans are not to be undertaken, funded

or approved. In addition, the NYSDOS has advocated the continued development of submerged underwater heritage preserves through an underwater Blue Water Trail initiative completing a statewide heritage tourism program.

The Office of the Attorney General in New York State

As head of the Department of Law, the Attorney General is both the “People's Lawyer” and the State's chief legal officer. As the “People's Lawyer,” the Attorney General serves as the guardian of the legal rights of the citizens of New York, its organizations and its natural resources. In his role as the State's chief legal counsel, the Attorney General not only advises the Executive branch of State government, but also defends actions and proceedings on behalf of the State. The Attorney General serves all New Yorkers in numerous matters affecting their daily lives. The Attorney General's Office is charged with the statutory and common law powers to protect consumers and investors, charitable donors, the public health and environment, civil rights, and the rights of wage-earners and businesses across the State. This office is charged with protecting and defending New York State's interest in all manner of archeological or otherwise important cultural resources and sites.

Other Organizations

The Hudson River Valley is home to many other organizations with a long respected records in resource management, including historic preservation. Below are some of the most prominent organizations that may play a part in resource management of the Hudson River Valley.

The National Trust for Historic Preservation

The National Trust for Historic Preservation, one of the nation's oldest preservation advocacy organizations, has made significant contributions to the advancement of laws and programs at the federal, state and local levels. Its publications have done much to educate the public and to develop a preservation ethic among many Americans.

Historic Hudson Valley, Inc.

A not-for-profit education organization that interprets the history, culture, and the landscape of the Hudson River Valley. The organization currently owns or manages Kykuit, Washington Irving's Sunnyside, Philipsburg Manor, Van Cortlandt Manor, Union Church of Pocantico Hills, Montgomery Place, and the Historic Hudson library and headquarters at 639 Bedford Road in Tarrytown, New York.

Scenic Hudson

Scenic Hudson is a charitable, nonprofit organization whose mission is to protect and preserve the cultural, historic, natural and recreational resources of the Hudson Valley. It provides technical assistance to local governments and citizen groups, organizes coalitions, sponsors forums, and provides legal expertise on land use issues.

Hudson River Heritage (HRH)

Hudson River Heritage (HRH) is a nonprofit membership organization established in 1976, committed to preserving the unique character of the Mid-Hudson Valley's historic architecture, rural landscapes and scenic views through education, advocacy and community involvement. HRH is the federally designated steward of the Hudson River National Historic Landmark District, a 32-square-mile area stretching from Germantown, in Columbia County, to Hyde Park, in Dutchess County. The Hudson River National Historic Landmark District was designated by the U.S. Secretary of the Interior in 1990. Federal landmark status acknowledges that the historic resources in the heart of the Hudson Valley are of the highest national significance. This organization manages significant environmental, scenic and cultural lands including the site of the Cold Spring Foundry adjacent to the Hudson River.

Clearwater

Founded by Pete Seeger, *Clearwater* is an environmental organization that sponsors public programs (aboard the replica sloop of the same name) designed to celebrate, protect, and restore the Hudson River watershed. The organization is supported by smaller organizations, including the Beacon Sloop Club that sails the smaller ferry sloop, *Woody Guthrie*. The *Clearwater* was placed on the National Register of Historic Places in 2004 at the national level of significance in recognition of its role in advancing the modern environmental protection movement.

Hudson Riverkeeper Fund

Riverkeeper is a member-supported watchdog organization dedicated to defending the Hudson River and its tributaries and protecting the drinking water supply of nine million New York City and Hudson Valley residents.

For nearly 50 years, Riverkeeper has been a significant clean water advocate. It has helped to establish globally recognized standards for waterway and watershed protection and serves as the model and mentor for the growing Waterkeeper movement that includes nearly 200 Keeper programs across the country and around the globe.

Other organizations include the Audubon Society of New York, The Nature Conservatory, nearby historic sites, and private land holders. Coordination among the numerous federal and state agencies, authorities, municipalities, not-for-profit organizations and property owners is challenging due to their numbers, overlapping jurisdictions and areas of interest and the length of the river.

Any successful regional planning must rely upon frequent consultation among interested stakeholders, openness, and the frequent dissemination of information to the public. Although the locations of archeological sites must remain confidential under state and federal law, information about the sites and their significance can and should be widely shared in ways that do not compromise locations and security.

Current legal Frameworks

At the time of publication, several state and federal laws govern the management of these submerged cultural resources. The current ad hoc management system strives to protect and manage the shipwrecks and other submerged structures under these extant laws. Due to complications and conflicts within this system, it is difficult to properly manage and protect these cultural resources in a unified or comprehensive manner.

Federal and State Legal Frameworks

The Abandoned Shipwreck Act of 1987

Under this Act, title to abandoned shipwrecks falls into three categories – abandoned shipwrecks embedded in a state’s submerged lands, abandoned shipwrecks embedded in the coralline formations protected by the State on its submerged lands, and abandoned shipwrecks located on a State’s submerged lands and included in or determined eligible for inclusion in the National Register of Historic Places. The Act simultaneously claimed federal ownership of abandoned shipwrecks and transferred jurisdiction to the state. However, the United States retained its title to shipwrecks located on or in public lands while Indian tribes hold title to shipwrecks located in or on Indian lands.³⁷

The Act further directs the National Park Service to prepare guidelines to direct the States and Federal agencies in developing legislation and regulations to maximize the enhancement of cultural resources, foster a partnership among sport divers, fisherman, archeologists, salvors, and other interests to manage submerged cultural resources, and facilitate access and utilization by recreational interests. The guidelines also reflect comments and suggestions provided by public, State and Federal agencies, and other interest groups during the course of their development.³⁸

At the state level, the Act encourages state agencies to carry out their responsibilities in a manner that protects natural resources and habitat areas, guarantees recreational exploration of shipwrecks, and allows for the appropriate public and private sector recovery of shipwrecks and other submerged structures with protection of the site’s historical values and environmental integrity. Guidelines have been offered by the National Park Service to ensure that States are fully assuming their responsibilities in implementing regulations.³⁹

Without sufficient funding, neither state nor federal agencies would be able to effectively carry out assigned responsibilities under the Act. Expenses associated with the management of publicly-owned historic shipwrecks can be exorbitant, especially the costs that are required to conduct scientific research underwater and maintaining and conserving artifacts and material recovered from an underwater environment. The National Park Service released guidelines to assist state and federal agencies in securing and allocating funds and in generating revenues to

³⁷ “NPS Archeology Program: Abandoned Shipwreck Act Guidelines,” accessed July 31, 2015, <http://www.nps.gov/archeology/submerged/intro.htm>.

³⁸ Ibid.

³⁹ “NPS Archeology Program: Abandoned Shipwreck Act Guidelines,” accessed July 31, 2015, <http://www.nps.gov/archeology/submerged/state.htm>.

carry out responsibilities to manage publicly-owned shipwrecks under their respective control. In summary, the Act claimed abandoned and historic shipwrecks in the waters of the United States and then transferred them to the states when on or in underwater lands within the boundaries of the state to manage as cultural and recreational resources. Although significant authority and responsibility was given to the states, the necessary funding was not provided. The National Park Service suggested that state and federal agencies find funding from the following sources: annual appropriations, collaboration with other agencies to reduce costs, using available money from the Historic Preservation Fund, Coastal Management grants, public and private grants, donations of funds and services, the use of volunteers and educational organizations, and by encouraging commercial salvors to post performance bonds.

The National Historic Preservation Act of 1966

The National Historic Preservation Act (Public Law 89-665) created a federal system for evaluating potential historic sites, buildings, objects, districts, and structures which should be considered in all planning processes. The 1966 Act broadened the federal government's traditional concept of preservation, and established legal guidelines for the preservation of cultural properties. Title I of this Act requires the Secretary of the Interior to create a list of sites and properties of the past deemed worthy of preserving. This list was called the National Register of Historic Places and was required to include sites, buildings, objects, districts and structures significant in American history, architecture, archeology, and culture.⁴⁰ Title II of the Act set up the Advisory Council on Historic Preservation, consisting of members of the President's cabinet and a selected number of private citizens. Its duty is to advise the President on how cultural property is to be handled with it is affected by tax dollars and federal licenses.⁴¹

The key elements of the Act set public policy for preserving American heritage, established state-federal and tribal-federal relationships, establishes the National Register of Historic Places and the National Historic Landmarks Program, mandates the selection of state historic preservation officers, establishes the Advisory Council for Historic Preservation, charges federal agencies with responsible stewardship, and establishes the role of Certified Local Governments within individual states. Significant responsibility for the implementation of the Act is delegated to the states through state historic preservation offices and support from the Historic Preservation Fund.

Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effects of their actions on historic properties by identifying historic properties, assessing adverse effects and resolving those adverse effects. The process is initiated by the federal agency, and includes comment and input from stakeholders at the local and State levels, as well as the Advisory Council on Historic Preservation. In many states the process is coordinated by the State Historic Preservation Office. Often called the Section 106 Process, the following steps are typically included:

Step 1: Initiate the Section 106 Process. The responsible Federal agency first determines whether it has an undertaking that is a type of activity that could affect historic properties. Historic

⁴⁰ *Keeping Time: The History and Theory of Preservation in America*, 3 edition (Hoboken, N.J.: Wiley, 2005), 51.

⁴¹ *Ibid.*, 53.

properties are properties that are included in the Nation Register of Historic Places or those that fit its criteria. It should also plan to involve the public, and identify other potential consulting parties. If it determines that it has no undertaking, or that its undertaking is a type of activity that has no potential to affect historic properties, the agency has no further Section 106 obligations.

Step 2: Identify historic properties. If the agency's undertaking could affect historic properties, the agency determines the scope of appropriate identification efforts and then proceeds to identify historic properties in the area of potential effects. The agency reviews background information, consults with the SHPO/THPO and others, seeks information from knowledgeable parties, and conducts additional studies as necessary. Districts, sites, buildings, structures, and objects listed in the National Register are considered; unlisted properties are evaluated against the National Park Service's published criteria, in consultation with the SHPO/THPO and any Indian tribe or Native Hawaiian organization that may attach religious or cultural importance to them.

If questions arise about the eligibility of a given property, the agency may seek a formal determination of eligibility from the National Park Service. Section 106 reviews gives equal consideration to properties that have already been included in the National Register as well as those that have not been so included, but that meet National Register Criteria.

Step 3: Assess adverse effects. The agency, in consultation with the SHPO/THPO, makes an assessment of adverse effects on the identified historic properties based on criteria found in ACHP's regulations. If they agree that there will be **no adverse effect**, the agency proceeds with the undertaking and any agreed-upon conditions. If a) they find that there is an **adverse effect**, or if the parties cannot agree and ACHP determines within 15 days that there is an adverse effect, the agency begins consultation to seek ways to avoid, minimize, or mitigate the adverse effects. If the agency finds that no historic properties are present or affected, it provides documentation to the SHPO/THPO and, barring any objection in 30 days, proceeds with its undertaking. If the agency finds that historic properties are present, it proceeds to assess possible adverse effects.

Step 4: Resolve adverse effects. The agency consults to resolve adverse effects with the SHPO/THPO and others, who may include Indian tribes and Native Hawaiian organizations, local governments, permit or license applicants, and members of the public. ACHP may participate in consultation when there are substantial impacts to important historic properties, when a case presents important questions of policy or interpretation, when there is a potential for procedural problems, or when there are issues of concern to Indian tribes or Native Hawaiian organizations.

Consultation usually results in a Memorandum of Agreement (MOA), which outlines agreed-upon measures that the agency will take to avoid, minimize, or mitigate the adverse effects. In some cases, the consulting parties may agree that no such measures are possible, but that the adverse effects must be accepted in the public interest.

Step 5: Implementation. If an MOA is executed, the agency proceeds with its undertaking under the terms of the MOA. If consultation proves unproductive, the agency or the SHPO/THPO, or ACHP itself, may terminate consultation. If a SHPO terminates consultation, the agency and

ACHP may conclude an MOA without SHPO involvement. However, if a THPO terminates consultation and the undertaking is on or affecting historic properties on tribal lands, ACHP must provide its comments. The agency must submit appropriate documentation to ACHP and request ACHP's written comments. The agency head must take into account ACHP's written comments in deciding how to proceed.⁴²

The National Register Criteria for Evaluation: The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association. The National Park Service deems any district, site, building, structure or object eligible for a place on this National Register of Historic Places if it exhibits any of the following criteria: being associated with events that have made a significant contribution to the broad patterns of history, that are associated with the lives of significant people from the past, that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction or that will have yielded or may be likely to yield, information important in history or prehistory.⁴³

New York State Historic Preservation Act

Enacted in 1980, the State Historic Preservation Act parallels the federal National Historic Preservation Act and declares historic preservation to be state public policy. Section 14.09 creates the New York State Register of Historic Places, the official list of sites, buildings, structures, areas or objects significant in the history of the state, architecture, archaeology or culture of the community. The Act requires state agencies to consult with the State Historic Preservation Officer if it appears that any projects being planned may or will cause any change, beneficial or adverse, in the quality of any historic, architectural, archaeological, or cultural property that is listed on the National Register of Historic Places or listed on the State Register of Historic Places. Agencies are required to avoid or mitigate adverse impacts to such properties, to explore all feasible and prudent alternatives and to give consideration to feasible and prudent plans that would avoid or mitigate adverse effects to the property.⁴⁴

The Coastal Zone Management Act of 1972

The Coastal Zone Management Act of 1972 (Public Law 109-58) declares it national policy to encourage and assist states in managing the “resources of the coastal zone, giving full consideration to the ecological, cultural, historic and aesthetic values as well as to needs for economic development” [16 USC 1452(2) (A-D)]. Shipwreck management falls into several of the areas designated by Congress to be managed by the states under the CZMA. Management

⁴² “ACHP | Section 106 Regulations Summary,” accessed August 3, 2015, <http://www.achp.gov/106summary.html>.

⁴³ Rustin A. Quaide, “Section II: How to Apply the National Register Criteria for Evaluation, National Register of Historic Places Bulletin (NRB 15),” November 28, 2001, http://www.nps.gov/nr/publications/bulletins/nrb15/nrb15_2.htm.

⁴⁴ “Federal & State Preservation Legislation - NYS Parks, Recreation & Historic Preservation,” accessed August 6, 2015, <http://nysparks.com/shpo/environmental-review/preservation-legislation.aspx>.

provisions affecting shipwrecks include managing cultural and historic resources, providing public access opportunities, and coordination and cooperation among governmental groups.

The Coastal Zone Management Program was meant to offer federal and state agencies the ability to enhance the shipwrecks management activities in ways that were not anticipated during the development and passage of the Abandoned Shipwreck Act which was replaced with New York State's economic development programs. In New York State, the Coastal Management Program was approved in 1982 and the state's Department of State took the lead in drafting Executive Law 42, Waterfront Revitalization of Coastal Areas and Inland Waterways, which provides the state with the authority to establish a coastal program, include coastal policies, define the coastal boundaries, and establish state consistency standards. The inland coastal zone boundary is variable, but generally 1,000 feet from the shoreline in non-urbanized areas. In urban areas and other developed areas along the coastline, the inland boundary is usually 500 feet or less, with the boundary possibly extending inland up to 10,000 feet to encompass significant coastal resources. New York State's consistency provisions are intended to ensure that state agency regulated activities contribute are consistent with state coastal plans.

The New York State Executive Law, Article 42

The Executive Law establishes the Department of State, and Article 42 of the law is the coastal act implementing the Coastal Management Plans and the Coastal Zone Management Act. It implements elements of the federally approved Coastal Management Program and requires state agencies to adhere to specific coastal policies, and approved coastal and inland waterway plans. Actions directly undertaken by state agencies within the coastal area including grants, loans or other funding assistance, land use and development, or planning, and land transactions shall be consistent with the coastal area policies of this article. It requires the Commissioner of Environmental Conservation to amend the regulations to assure adequate consideration of impacts on the use and conservation of coastal resources.

State Environmental Quality Review Act

New York State's Environmental Quality Review Act (SEQRA) requires all state and local governments to consider environmental impacts equally with social and economic factors during discretionary decision-making. These agencies are required to assess the environmental significance of all actions they have discretion to approve, fund or directly undertake. This act mandates that the agencies balance the environmental impacts with social and economic facts when deciding to approve or undertake an action. If an action is determined not to have significant adverse environmental impacts, a determination of nonsignificance (Negative Declaration) is prepared. If an action is determined to have potentially significant adverse environmental impacts, an "Environmental Impact Statement" is required. SEQRA uses this statement to examine ways to avoid or reduce adverse environmental impacts related to a proposed action. This includes an analysis of all reasonable alternatives to the action. This decision making process encourages communication among government agencies, project sponsors and the general public.

The Archeological Resources Protection Act of 1979

This statute (16 U.S.C. 470aa-470mm; Public Law 96-95) was enacted to “secure, for the present and future benefit of the American people, the protection of archeological resources and sites which are on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional and archeological community, and private individuals.” This Act is a direct response to the increasing commercial value of the contents of historical sites and the priceless value they have in understanding the nation’s past. Section 4 of the statute describes the requirements that must be met before Federal authorities can issue a permit to excavate or remove any archeological resource on Federal or Indian lands. In Section 5 the curation requires of artifacts removed from such sites and the records related to these artifacts are described as well as the responsibilities of the Secretary of the Interior in regards to these collections. These specific sections, as well as much of the Act itself, provides more detailed descriptions of prohibited activities and larger financial and incarceration penalties for convicted violators. Section 6 describes the range of prohibited activities, including damage or defacement in addition to unpermitted excavation or removal. In addition, selling, purchasing, or other trafficking activities whether in the United States or internationally is prohibited. The section also prohibits interstate or international sale, purchase, or transport of any archeological resource excavated or removed in violation of a state, or local law.

ARPA’s main focus is the regulation of legitimate archeological investigation on federal lands and the enforcement of penalties against those who loot or vandalize archeological resources. In 1988 amendments to better manage archeological sites on public lands were added. Section 9 requires managers responsible for the protection of archeological resources hold information about the locations and nature of the resources confidential unless providing the information would further the purposed of the statute and not cause a risk of harm for the resources. It empowers the Secretary of the Interior to cooperate with avocational and professional archeologists and organizations in exchanging information about archeological resources and improving the knowledge about the United States archeological record.⁴⁵

The National Environmental Policy Act of 1970

The National Environmental Policy Act of 1970 requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions. The range of actions covered by NEPA is broad, including making decisions on permit applications, adopting federal land management actions, and constructing highways and other publically-owned facilities. The NEPA process, detailed in the Act, agencies must evaluate the environmental and related social and economic effects of their proposed actions. Agencies are directed to provide opportunities for public review and comment on those evaluations.

Title I of the Act contains a Declaration of National Environmental Policy, requiring the federal government to use all practicable means to create and maintain conditions under which man and nature can exist in harmony. Section 102 of the Act requires federal agencies to incorporate environmental considerations in their planning and decision making process through an interdisciplinary approach that details the environmental impact of alternatives to major federal actions significantly affecting the environment.

⁴⁵ “NPS Archeology Program: The Archaeological Resources Protection Act of 1979 (ARPA),” accessed August 5, 2015, <http://www.nps.gov/archeology/tools/Laws/arpa.htm>.

Title II of NEPA established the President’s Council on Environmental Quality and to oversee NEPA implementation. This council is responsible for ensuring that federal agencies meet their obligation under NEPA, overseeing the federal agency implementation of the environmental impact assessment process, and issuing regulations and other guidance to federal agencies regarding NEPA compliance. Federal agencies may refer to the council concerning proposed federal actions that might cause an unsatisfactory environmental effect. The council’s role, when it accepts such a referral, is to develop findings and recommendations consistent with the policy goals of NEPA.⁴⁶

New York State Education Law, Section 233

Section 233 of the New York State Education Law details the proper curatorial practices for artifacts in museum collections and establishes a permit process for survey and investigation of archeological sites on state land. According to the law, the State Museum in the Department of Education is the repository for state-owned archaeological, historical, and scientific specimens and collections. Unauthorized excavation or removal of archaeological material from state-owned lands, including underwater properties, is a prohibited. Permits may be issued for scientific archeological investigation. Private salvage of archeological sites on public lands is prohibited in New York State.

In 1999, the New York State Museum laid out a policy statement on submerged resources preserves. It states the commitment to the preservation of the state’s cultural heritage through the protection of archaeological resources and historic environments located on public lands. In composing these policy guidelines, the belief that public lands belong to the people and that no individual or group of people has the right to deprive people the access to these resources for research, educational or recreational purposes was taken into consideration. Working through the Ad Hoc Committee on underwater resources, the Museum outlined a process for evaluating and establishing new submerged heritage preserves:

Step 1: Completed proposal form is sent to New York State Office of General Services. This would confirm that the land in question is in fact state-owned property and determine if any land management issues exist that would preclude opening the site as a preserve.

Step 2: Copies of the proposal should be sent to New York State Department of Environmental Conservation, New York State Education Department, New York State Department of State, and the New York State Office of Parks, Recreation, and Historic Preservation.

Step 3: Any request for information from the applicant made by agency needing such information.

Step 4: Meeting of interagency advisory panel called and proposal discussed.

Step 5: Additional meeting needed to support a determination.

⁴⁶ OECA US EPA, “What Is the National Environmental Policy Act?,” Overviews and Factsheets, accessed August 6, 2015, <http://www2.epa.gov/nepa/what-national-environmental-policy-act>.

Step 6: If a site has potential but needs research, artifact recovery or some other underwater activity before it can be opened, proposal is turned over to SED for development of permit and research plan.

Step 7: When the research and collections phase is completed, if needed, if approved the proposal is delivered to managing agency for development as a submerged preserve.⁴⁷

The New York State Public Lands Law, Section 75

This section authorizes grants, leases, easements, and lesser interests, including permits, for the use of state-owned land underwater and the cession of jurisdiction thereof consistent with the public interest in the use of state-owned lands underwater for purposes of navigation, commerce, fishing, bathing, and recreation; environmental protection; and access to the navigable waters of the state; with due regard for the need of affected owners of private property to safeguard their property.

New York State Environmental Conservation Law

Title I of the New York State Environmental Conservation Law states that, “It shall further be the policy of the state to improve and coordinate the environmental plans, functions, powers and programs of the state, in cooperation with the federal government, regions, local governments, other public and private organizations and the concerned individual, and to develop and manage the basic resources of water, land, and air to the end that the state may fulfill its responsibility as trustee of the environment for the present and future generations.”

The law establishes the responsibilities and authorities of the Department of Environmental Conservation which include assuring man’s surroundings are healthful and aesthetically pleasing, guaranteeing the widest range of beneficial uses of the environment is attained without risk to health or safety, promoting patterns of development and technology which minimize adverse impacts on the environment, preserving the unique quality of special resources, and providing that care is taken for the air, water, and other resources that are shared with the other states of the United States and with Canada.⁴⁸ DEC also regulates any activities that impact water quality, including disturbance of underwater sediments. The agency has also sponsored submerged heritage reserves in partnering with several not-for-profit organizations.

⁴⁷ “Underwater Preserves,” accessed August 6, 2015, <http://www.nysm.nysed.gov/services/233/prediverone.html>.

⁴⁸ “2006 New York Code - :: Declaration Of Policy,” *Justia Law*, accessed August 6, 2015, http://law.justia.com/codes/new-york/2006/environmental-conservation/env01-0101_1-0101.html.

Threats to Submerged Cultural Resources under Existing Jurisdictions and Law

Under existing laws and regulations in New York State, submerged cultural resources receive protection from a series of several statutes, all complimentary but confusing, administered by state and federal agencies with significantly different responsibilities and priorities. The protection, management and interpretation of shipwrecks and other submerged structures is not the sole responsibility of one person, one group or even one agency. Significant submerged resources are continually threatened by projects, environmental hazard mitigation projects, unlawful theft and salvage and actions with unintended consequences.

The Limitations of Existing Laws

The Abandoned Shipwrecks Act of 1987

Under the Abandoned Shipwrecks Act of 1987, the United States claimed jurisdiction over abandoned, embedded and/ or historic shipwrecks on submerged public lands. The Act then delegated responsibility for their management to the states. It was envisioned that each state would place the responsibility for managing these resources within an appropriate agency, department, or program and implement policies promoting preservation, recreational access and appropriate salvage. However, no funds were provided, and in some states, the law failed to take into account differences in the structure of state governments and laws already in place. Existing laws affecting underwater resources in New York make it difficult to consolidate jurisdiction under a single agency. The lack of federal funding has severely limited the ability of New York State government to advance new programs and policies, new submerged heritage sites, or to propose new legislation to meet current needs. Under New York State law, the salvage of historic shipwrecks and other archeological sites is prohibited. Several challenges to the law, brought by salvors and treasure hunters in New York State, have failed, but only after lengthy litigation and unlawful damage to the affected sites. The protections offered under the Act are not uniform. The definition “embedded” is ambiguous and courts in different states have ruled inconsistently on what qualifies as “abandoned.” It does not apply to warships under the international principle of Sovereign Immunity. Under this principle, warships remain the property of the flag nations unless they were formally transferred to another nation or commercial interest.

Section 233 of State Education Law

Section 233 assigns ownership of archeological sites and objects of historic interest on public lands to the New York State Commissioner of Education on behalf of the New York State Museum. It provides the basis for scientific investigation of archeological sites for public benefit through carefully screened permits. Violations of Section 233 are misdemeanors. Penalties are insufficient to discourage the removal of artifacts, and the law enforcement community is often unaware of the law and unable to concentrate sufficient resources to enforce it.

Section 106 of the National Historic Preservation Act

Section 106 requires federal agencies to consult with state historic preservation offices when historic and archeological resources are affected by federal undertakings. The law requires a consideration of project affects and measures to mitigate them, but it does not guarantee the preservation of these resources. Although there are many instances when projects are modified through genuine consultation and significant resources survive or are integrated into projects, other consultations conclude that no reasonable alternatives exist. The mitigation of these projects is sometimes limited to the preparation of an archeological report.

Section 14.09 of the State Historic Preservation Act

Similar to Section 106 of the National Historic Preservation Act, Section 14.09 of the State Historic Preservation Act requires state agencies to consult the State Historic Preservation Officer when historic and archeological sites are affected by state undertakings. Again, significant resources are to be considered and avoided where possible, but often the resources are ultimately impacted or lost, with or without meaningful mitigation.

Land Ownership

Land ownership must be taken into account in the protection, research, and interpretation of submerged Hudson River cultural resources. Portion of the river bottom are privately owned or leased, and not all owners share an awareness and appreciation of submerged historic resources. Most of the disparity exists uplands and along the shoreline, with both public and private ownership, but certain upland owners do own the land under the water, having acquired it from the state, although ownership of this land often comes with some form of limitation. Most of the riverbed, however, is owned by the state and is managed by the Office of General Services.

Complicating matters further is the fact that bodies of water surrounded by private lands may still be public waterways. Under Section 223 of the New York State Education Law, any archeological resources resting beneath the bottomlands of these waterways are under the jurisdiction of the state. Current state and federal law does not by itself provide uniform or effective protections of historic and cultural resources. The diversity of ownership and owner interests can complicate approaches to effective stewardship.

Salvage and Recreational Diving Threats

New York State prohibits the theft of archeological and other material from public lands. Nevertheless, treasure hunters and “pothunters” actively engage in these activities and even boast on the internet and at trade shows about objects that have been taken illegally. Some more valuable items are offered for sale online. There are insufficient law enforcement resources to investigate these violations or the illicit trade in stolen archeological materials. These removals began long before they were prohibited by state law but dramatically accelerated with the development of recreational scuba diving in the 1960s. Although thefts have been well-known in New York’s fresh water lakes and in the waters surrounding Lake George, the extent of these losses in the Hudson River is not well known. The Hudson River is a poor recreational diving

environment due to strong currents, bad visibility, commercial traffic, hidden obstructions, and entanglement hazards. It should not be promoted as a recreational resource. Nevertheless, as divers acquire ever more sophisticated equipment, some may be tempted to disturb sites for personal gain. It is, therefore, essential that information about the location of these sites remain confidential, as it is under state and federal law. Nevertheless, it is likely that sensitive sites, and sites with valuable contents, will be identified. Consideration must be given not only to site recording and surveillance but also the removal of at-risk artifacts for conservation off-site in some instances.

State and federal laws also require the state to protect these cultural resources from treasure hunting, looting, and illegal salvage. These sites have become more vulnerable to potential damage as divers can more easily obtain data from remote equipment. Once artifacts and sites are damaged or otherwise disturbed, they cannot be replaced or repaired. Removing artifacts from shipwrecks without proper archeological procedures destroys the historic integrity of the site and permanently diminishes their recreational and education value to the community.

Bottom Disturbance Threats

Bottom disturbances – bridge repairs, dredging, maintenance or expansion of underwater utility cables and pipelines, to name a few – threaten Hudson River cultural resources. The river, home of many deep-water ports, is still used for extensively commercial transportation and travel. Its unique nature allows for large, deep boats to travel safely. This requires dredging the channels. The high level of water traffic on the Hudson River is a danger to historic sites; anchoring has the potential to severely damage fragile historic shipwrecks, compromising their integrity and their artifacts.

In addition to dredging, the river's environmental clean-up has, and potentially will, require dredging to clean the riverbed of dangerous chemicals and toxins. This may harm known or unknown shipwrecks. Proper cultural resource assessment surveys must be completed according to the Section 106 process in the National Historic Preservation Act to minimize any potential damage. The recently completed Hudson River Superfund Project, located from the Troy Dam to Hudson Falls, identified a number of wooden shipwrecks that had absorbed hazardous chemicals and could not be safely recovered for interpretation. It is likely that additional shipwreck sites are similarly compromised, militating against traditional methods of archeological investigation and the conservation of artifacts.

Ecological and Environmental Threats

Ecological threats to shipwrecks are a concern as invasive species begin to populate the Hudson River. Zebra mussels have been documented in the Hudson River since 1991. Since 1992, these mussels have become dominant in the tidal freshwater sections of the river. While there have not been documented cases of zebra mussels in the lower Hudson River yet, there is documented evidence of their presence in the upper Hudson River, the Great Lakes, and Lake Champlain. Zebra mussels are damaging both to sites and the divers due to the mussels' sharp edges and fecundity. When zebra mussels colonize historic shipwrecks, they quickly obliterate the construction details and site's structure. As mussels colonize the steel retaining walls and water

intake pipes, the steel has been observed to degrade at a significantly more accelerated rate. While zebra mussel populations have declined slightly since 2001, both Tropical Storm Irene and Hurricane Sandy's turbulent effect on the riverbed may have washed zebra mussels into areas that had been previously free of the invasive species. Due to the tidal forces of the Hudson River, the added weight of zebra mussels or other invasive species on weakened and waterlogged timbers or other material could significantly add to forces that further break apart and destroy shipwreck remains.

The erosion and deposition of sediments may affect the stability and future preservation of shipwrecks. Shipwrecks sites are routinely covered and obscured by sediment, uncovered, scoured, and possibly moved. The dynamic nature of the river bottom's topography and morphology require regular surveys to map and monitor submerged cultural resources. Most sites of mapped anomalies have not yet been dived on, therefore comprehensive information on the threats and conditions cannot be completed. A baseline is still needed to explore and understand the conditions of these submerged cultural resources.

Threats to Field Work

Diving in the Hudson River is difficult and often dangerous. During the 2004 dives, Art Cohn of the LCMM cited the river as the worst wreck diving he had ever been involved with. Divers must take extra precautions to deal with difficulties, including average visibility of six to 12 inches and strong currents. Much work in both 2004 and 2007 was done by feel and by relaying information back to the surface to a note-taker via radio instead of recording while underwater. Since these dives, technology has improved, and there may be other methods of mapping the riverbed or specific shipwrecks sites. While advancements may not assist recreational divers, they will aid researchers and marine archaeologists. Blue-ray sonar is the most promising technology at this time, although may be cost prohibitive and requires equipping research vessels with new technology.

Management Strategies or Recommendations

Management Goals

This resource study recommends strategies that will advance the identification protection and interpretation of submerged cultural resources. Many nineteenth century vessels are easily classified by type and significance. Older vessels, however, have less integrity and may be of even greater concern for preservation. Additionally, anomalies must be identified and mapped so agency researchers fully understand the inventory of shipwrecks in the Hudson River. Any management approach must fund further research and will require coordination of federal, state and local agencies.

Specific Recommended Actions

This special resources study recommends the following actions. While immediate action should be taken to inventory the shipwrecks in the Hudson River, long-term plans must be preserve, interpret, and manage these resources. Unfortunately, due to the current levels of funding available, it may take some time to achieve these goals.

1. Multi-Site State Designation

The NYSOPRHP would use a pre-developed outline for a multiple property, state and federal National Register of Historic Places nomination for the Hudson-Champlain transportation corridor. Through this concept, the department would organize a cohesive framework for consistent documentation of shipwrecks and create an inventory for individual sites or an area/ areas of sites to guide the protection and research of these submerged resources. Listed properties and those considered eligible for the two registers receive protection from the effects of federal and/or state agency sponsored, licensed or assisted projects through a notice, review and consultation process.

A multiple property registers nomination for submerged resources would establish historic contexts associated with shipping and other activities, create a means of classifying resources and measuring significance, and establish an inventory of significant sites which would expand as resources allow new sites to be documented. The state or federal register nomination proposal would be a cooperative effort between the sponsor and the State Historic Preservation Office. Standard nominations are initiated by completing a State and National Registers Program Applicant Form, a Historic Resource Inventory Form, and/or other explanatory materials to the State Historic Preservation Office. The staff of the Survey and National Register Unit, using the National Register of Historic Places Criteria for Evaluation and other guidelines published by the NPS, evaluates these materials. A project of this magnitude will require special handling.

While the sponsor prepares a National Register Nomination Form, staff can assist with portions of this work. It is often appropriate to use private consultants for large and technically complex projects. Funding for such projects may be available through state, federal, or private sources.

Once the draft nomination has been successfully submitted, the office will seek comments from owners and local officials and schedule a review by the New York State Board for Historic Preservation. This board meets quarterly; nomination reviews must be scheduled three months in advance to fulfill the public notification requirements. Once recommended, the form is finalized and forwarded to the State Historic Preservation Officer for review and signature. Once signed, the nomination is entered on the New York State Register of Historic Places and transmitted to the NPS, where it is nominated to the National Register of Historic Places. If approved by the Keeper of the Register, the nomination is signed and listed on the National Register.

Historic and cultural resources identified in the nomination are protected by the Historic Preservation Laws enacted on the state and federal level. Resource protection strategies would ideally go beyond state and federal agency consultations to include new regulations, the issuing of permits by authorized agencies, incident response and contingency planning, damage assessment and restoration, and enforcement. Such enforcement would occur through partnerships with state agencies, and federal, state, and local law enforcement. It relies heavily upon community stewardship.

2. Nomination as National Marine Sanctuary or Underwater Preserve

The Hudson River would be designated as a National Marine sanctuary administered by NOAA in coordination with other state and federal agencies. The Hudson River would appear to be an especially strong candidate for designation given its remarkable biological diversity and productivity, its historical significance and extensive cultural resources, and its pre-eminent position as a nexus of education and tourism. NOAA had at one time put on hold any new nominations for marine sanctuaries, but in 2014 began to accept them again. Communities may submit applications to have NOAA consider nominations of areas of marine and Great Lakes environments as National Marine Sanctuaries. Through this nomination process, NOAA is seeking to give communities an opportunity to identify special marine and Great Lakes areas they believe would benefit from designation as a national marine sanctuary. There is no requirement as to who may nominate an area for consideration; however, nominations should demonstrate broad support from a variety of stakeholders and interested parties. This rule contains the criteria and considerations NOAA will use to evaluate national marine sanctuary nominations, describes the process for submitting national marine sanctuary nominations, and promulgates the regulations necessary to implement this action. If NOAA determines a nomination adequately meets the final criteria and considerations, it may place that nomination into an inventory of areas for the NOAA Administrator, as delegated from the Secretary of Commerce, to consider for designation as a national marine sanctuary. In issuing this rule, NOAA replaces the currently inactive Site Evaluation List with a new process for communities and other interested parties to work collaboratively and innovatively in their submission of national marine sanctuary nominations.

Although, there is no official nomination form, nominations should be no more than 25 pages. Letters of support may be added in an appendix, but no other appendixes are permitted. NOAA requires all nominations to be in Times New Roman size 12 font; none other will be accepted. Any copyrighted information must be properly acquired for use in the nomination document. Nominations should provide a clear connection and focus on the criteria and

considerations that are relevant to the goals and intent for the nominated area and provide as much information as possible for those. While NOAA does not establish a minimum number of national significance criteria, nor giving greater significance to any particular criterion, the strongest nominations will provide a clear connection and focus on the criteria most relevant to the goal and intent for the nominated area, and provide as much information as possible for those criteria. There are no deadlines for submissions. Nominations will be reviewed on a rolling basis as they are received by NOAA. Submissions can either be sent via electronic forms or through the mail.

Submissions are evaluated on the following four criteria:

Criteria #1

The area's natural resources and ecological qualities are of special significance and contribute to: biological productivity or diversity; maintenance or enhancement of ecosystem structure and function; maintenance of ecologically or commercially important species or species assemblages; maintenance or enhancement of critical habitat, representative biogeographic assemblages, or both; or maintenance or enhancement of connectivity to other ecologically significant resources. The Hudson River would certainly qualify due to the unusual mixing of salt and fresh water in the estuary and the biodiversity created by it.

Criteria #2

The area contains submerged maritime heritage resources of special historical, cultural, or archaeological significance, that individually or collectively are consistent with the criteria of eligibility for listing on the National Register of Historic Places, have met or which would meet the criteria for designation as a National Historic Landmark, or have special or sacred meaning to the indigenous people of the region or nation. Prior to European contact, the native people living near the Hudson River used the river and its resources for thousands of years. For four hundred years the river served as a transportation and innovation corridor for Europeans and Americans.

Criteria #3

The area supports present and potential economic uses, such as tourism; commercial and recreational fishing; subsistence and traditional uses; diving; and other recreational uses that depend on conservation and management of the area's resources. The concentration of educational institutions and cultural sites is extremely significant.

Criteria #4

The publically-derived benefits of the area, such as aesthetic value, public recreation, and access to places depend on conservation and management of the area's resources.

A concerned non-profit partnering with concerned citizens within the community would be ideal in beginning the nomination process. Such a partnership facilitated the creation of the Thunder Bay National Marine Sanctuary in Lake Huron, Michigan. Approximately one hundred shipwrecks are

under its care. The Sanctuary requires permits to dive on these shipwrecks and the waters are patrolled by the Coast Guard. The wrecks are inventoried to ensure the Sanctuary can record any changes to these cultural resources. Thunder Bay also has a strong volunteer core in touch with the diving community. When citizen divers discover new wrecks, the information is brought forward. While wrecks are not off-limit in Lake Huron, there is a system of buoys to prevent boaters from dropping anchors on the sites. While the Hudson River is not viable for recreational diving, there is great potential to interpret these shipwrecks in the many existing museums and state and federal historic sites throughout the river corridor.

3. Consolidate Archeological Data at New York State Department of Parks, Recreation, and Historic Preservation

Data could be easily consolidated with the New York State Department of Parks, Recreation and Historic Preservation. This agency currently has extensive archeological data files and a highly capable data platform using GIS. Currently this agency houses the shipwreck database. At this time Daria Merwin, an archeologist deeply involved with researching these shipwrecks, is on the department's staff.

4. Educate the Public on Significance and Threats

The Hudson River Maritime Museum (HRMM) has a unique opportunity to educate the public about the significance of these resources and the threats to their loss. Located on the Rondout Creek, the Museum is the anchor to the downtown community of Kingston, New York and the only museum in the state dedicated to the transportation history of the entire Hudson River. According to the most recent data, 15,000 people pay for admission annually. HRMM is host to the Hudson River Stewards program in partnership with the Hudson River Sloop *Clearwater* and most recently The *Onrust* Project. This program educated every fourth grade student in a given school district on the history, ecology and importance of the Hudson River. In its second year, the museum hosted four school districts. With a strong web and social media presence, HRMM is able to educate the public about these shipwrecks as well as coordinate interested members of the community. The museum's Follow the River lecture series could easily adapt its format host as roundtable discussion of experts. Roundtable discussions have been held at the museum's Riverport Wooden Boat School; most recently HRMM hosted a discussion and Q&A on the resurgence of rowing on the Hudson River. The Hudson River Maritime Museum is ideally situated near the midpoint of the river and is an excellent position as an institution to convene involved agencies and interested parties striving to advance research, preservation and interpretation.

Management Structure

This special resource study finds there are three alternatives to manage the recommendations of the report. A management structure is necessary to facilitate taking inventory of the shipwrecks in the Hudson River and the nomination of the corridor as a NOAA Marine Sanctuary. The current ad hoc committee lacks the staff time and funding to do so.

Public-Private Partnership

Using this strategy, a formalized partnership between NYSOPRHP and a non-profit with a coinciding mission would formalize a relationship between the state and non-profit entity with clear roles and responsibilities for each. The department would organize a cohesive framework for consistent documentation of shipwrecks in the Hudson River and create an inventory for individual sites or an area/ areas of sites to guide the protection and research of these submerged resources. Keeping the inventory in a state or federal office would help protect the confidentiality of sensitive sites. Unlike not for profits, these agencies are required by law to protect the confidentiality of archeological site locations. The non-profit entity would be responsible for interpretation of these resources and educational outreach programming.

This alternative follows the same process for multi-site nomination so that state agencies can take on responsibility for the management and protection of these cultural resources. The NYSOPRHP and other agencies would apply for grant funding through the same process. Additional funding may be provided by donations and revenue from the non-profit group partnered with the state. The State Historic Preservation Office receives support from the federal Historic Preservation Fund to cover basic operational and personnel costs. Support from a non-profit organization could fund and help coordinate community outreach, interpretation and advocacy efforts beyond the scope of state agencies.

Public-private partnerships offer benefits: they reduce development risks, provide more cost effective infrastructure systems, offer the potential for better ongoing maintenance, and leverage limited public sector resources, all while maintaining appropriate public control of resources and projects. These partnerships can, if effectively managed, provide services at comparable or lower prices than those associated with public financing while providing great value to the public. Public sector assets are often managed by the private sector entity, and this can include human resources. The agreement under which the public-private partnership operates is closely governed by the contractual relationship between public and private sectors, with the objective of utilizing the best skills and capabilities of each sector. The objective of the partnership is to provide a more efficient and cost effective means of providing the same or better service at a saving to the public, both general and government. In this case, the agreement and regulations regards each entity's responsibility is unclear. No not-for-profit entity has stepped forward to manage these cultural resources and the state lacks funding to document and nominate these submerged resources, let alone facilitate a lengthy nomination process with a federal agency.

Formal Commission through Legislation

Under this strategy, the New York State Legislature would formalize the current ad hoc committee into an officially recognized commission. The commission would have the authority to make decisions regarding the inventory, management and interpretation of these cultural resources using state and federal laws as guidance and would facilitate the nomination of the shipwrecks in the Hudson River as a NOAA Marine Sanctuary. Individuals from invested state agencies would meet to coordinate the nomination process. At this time however, funding for such projects are not a high priority and individuals from state agencies often have several other

responsibilities. It is doubtful that a state commission would result in hiring additional staff to assist in this process.

Formalized Working Group to Designate Region as Marine Sanctuary

Using this strategy, a formalized interagency working group of regional federal and state agency staff would collaborate with a local not-for-profit to outline or comment on an approach towards nominating the Hudson River corridor a marine sanctuary. While state and federal employees cannot be directed by a not for profit organization, non-profit staff could play a liaison role of calling upon other agencies for assistance when needed or convening members of the Ad Hoc Committee to address issues as they come up. While potential candidates for a non-profit lead, would include HRMM, Hudson River Sloop *Clearwater*, or Riverkeeper, a new not-for-profit organization could be incorporated. Within this option, not-for-profit organization's director would lead research, interpretation and community engagement in coordination with the state and federal agencies, though potentially new representatives and members of the Ad Hoc Committee. These agencies include: NYSOPRHP, NYSDEC, the State Museum, Department of State, Office of General Services, and the Attorney General. Members from the National Park Service, NOAA, and the Greenway should be added.

Through this management system, data could be easily consolidated at the New York State Office of Parks, Recreation and Historic Preservation. This agency currently has extensive archeological data files and a highly capable data platform using GIS. Currently this agency houses the shipwreck database. At this time Daria Merwin, an archeologist deeply involved with researching these shipwrecks, is on the department's staff. The not-for-profit organization's staff would take the lead in public outreach, education and interpretation as well as gathering interagency for assistance or convening meetings to address issues regarding the nomination process. The non-for-profit that becomes the coordinator for these agencies will need to devote a significant amount of time both facilitating meetings and inviting field experts to comment on the nomination process. The coordinator would convene meetings, prepare written reports, maintain minutes and records, and ensure that agencies work together seamlessly. This may require a new full-time position, with appropriate funding. The understood goal of this new formalized group should be to nominate the submerged resources of the Hudson River as a NOAA marine sanctuary as outlined above. Therefore, this group, and its additional responsibilities, will be a temporary entity.

Conclusion

This report of the special resource study concludes that the shipwrecks in the Hudson River contains resources and represents themes that are national, and even international, in significance. Yet the nature of the river and the needs it serves makes it difficult to preserve and protect these sites. The shipwrecks submerged beneath the tidal waters of the Hudson River would be a suitable national or state park because they represent the material culture of the development of the nation. A significant part of the river's resources is subject to state and national laws that place management in the hands of the several state agencies, local municipalities, and in some cases, private owners. The disparate jurisdictions and accumulation of laws and procedures present significant challenges when envisioning a system of effective management. Many issues may still need to be addressed that are outside the scope of this study.

Currently no state agency is mandated or adequately staffed or equipped to protect, manage, and interpret these shipwrecks effectively. The public has not been well-informed of the nature of the Hudson River's cultural resources and cannot be expected to advocate for their protection. Any action will need to involve educating the public to gather support. Based on the findings of this study, a formalized working group of concerned individuals must convene to plan and manage the future of these resources and the needs of the multiple organizations involved.

A structure for specific tasks and involvement must be created and existing research must be consolidated before moving forward.

1. An organizational database must be created and made available to key individuals. The research data currently is spread between multiple organizations, and not readily accessible to individuals attempting to manage, protect or interpret these cultural resources. The data and files from previous research surveys have not yet been consolidated. The sonar data is currently located at Stony Brook University, the raw dive data resides at the Lake Champlain Maritime Museum, and the magnetometer information is at Lamont Doherty Earth Observatory.
2. Continued investigations and dives are necessary to inventory and characterize additional wrecks, their contents, and their significance. The combined dives of 2004 and 2007 have only offered a sample of the Hudson's hundreds of significant wreck sites.
3. Community awareness and support must be gathered through educational programs to bring awareness to the cultural resources in the river-bed. Outreach material, a web presence, and educational programming should be developed to continue to educate the public on the cultural resources and history of the Hudson River. With increased awareness of the value of these shipwrecks, communities must be educated of the dangerous nature of diving in the river.

A chief recommendation of this special resources study is that the river's shipwrecks should be nominated as a part of a NOAA marine sanctuary. Today the 4,300-square mile Thunder Bay National Marine sanctuary protects one of America's best-preserved and nationally-significant collections of shipwrecks. The maritime cultural landscape allows Thunder Bay's marine

heritage to continue to unfold as new discoveries are made and encourages an increasingly diverse public to find shared meaning in this nationally and internationally significant place. Thunder Bay National Marine Sanctuary conducts, supports, promotes, and coordinates scientific research and monitoring of its marine heritage resources to ensure their long-term protection. Any long-term goal must include underwater preservation of these submerged cultural resources.

While the eventual goal of this project is to designate the submerged cultural resources as a national marine sanctuary, a formalized working group of key individuals with the various state and federal agencies involved must be created. This group must protect, manage and research the remainder of unexplored sites. While the exact nature of this group will be determined as individuals and agencies coalesce, a director or lead should be appointed with the authority to making binding decisions relating to the submerged Hudson River cultural resources.

Local support for the protection of the Hudson River and its cultural and natural resources is evident by the many private organizations that contribute towards conservation and heritage in tourism. These efforts demonstrate the distinct cultural and historic nature of the Hudson River and its surrounding area. Submerged cultural resources require more recognition and support in resource planning. Improved management will build a fuller appreciation and support protection of these very important resources. The working group should contribute to national recognition, technical assistance, long-term national perspective, and financial assistance while maintaining local control of decision-making. An NOAA marine sanctuary, under federal control, could partner with local interests to leverage resources.

This report only touches upon many aspects of the natural, cultural, and recreational resources of the Hudson River. It relies upon multiple secondary sources and analyses; it is not intended to represent primary source material. Rather, it reviews existing information to assess resources. This report finds these resources to be important to understanding the unique nature of the American identity and they require greater preservation, research and management.

Appendix 1: Management Alternatives

	Multi-Site Designation	Public-Private Partnership	National Marine Sanctuary	Formalized Working Group for Marine Sanctuary
Intensity Federal Involvement	Moderate	Moderate	High	High
Timespan Federal Involvement	Permanent	Variable	Permanent	Permanent
Management	NY State manages each site with Federal oversight.	NY State manages each site with Federal oversight.	NOAA	Working group
Planning	NYSOPRHP	NY OPRHP/ 501 (3)c	NOAA	Working group
Historic Preservation	Governed by New York State historic preservation laws.	Governed by New York State historic preservation laws.	NOAA – Federal historic preservation laws	State and Federal historic preservation laws
Interpretation	Developed by NYS Dept. Education and implemented by NYSOPRHP.	Developed by NYS Dept. Education and implemented by NYSOPRHP.	NOAA	Working group/ NYS Museum
Visitor Services	NYSOPRHP	NYSOPRHP	NOAA	Hudson River Maritime Museum

Appendix 2: Bibliography

- “2006 New York Code - :: Declaration Of Policy.” *Justia Law*. Accessed August 6, 2015. http://law.justia.com/codes/new-york/2006/environmental-conservation/env01-0101_1-0101.html.
- “ACHP | Section 106 Regulations Summary.” Accessed August 3, 2015. <http://www.achp.gov/106summary.html>.
- Benjamin, Vernon. *The History of the Hudson River Valley: From Wilderness to the Civil War*. 1 edition. The Overlook Press, 2014.
- “Federal & State Preservation Legislation - NYS Parks, Recreation & Historic Preservation.” Accessed August 6, 2015. <http://nysparks.com/shpo/environmental-review/preservation-legislation.aspx>.
- Flood, Roger. “Exploring the Maritime Archeology of the Hudson River: Looking Beneath the Surface to a Revolutionary Past.” Stony Brook, New York: Marine Sciences Research Center Stony Brook University, 2005. Available online at: <http://nysl.cloudapp.net/awweb/guest.jsp?smd=1&cl=all lib&lb document id=125288>
- . “Sunken Treasures of the Hudson River.” *Hudson River Maritime Museum Pilot Log*, no. 2011/2012 (2011): 53–65.
- Fontenoy, Paul E. *The Sloops of the Hudson River: A Historical and Design Survey*. Indexed edition. Mystic, Conn: Mystic Seaport Museum, 1970.
- Institute, New Netherland. *Explorers, Fortunes and Love Letters*. First Edition edition. Albany, N.Y: State Univ of New York Pr, 2009.
- Keeping Time: The History and Theory of Preservation in America*. 3 edition. Hoboken, N.J: Wiley, 2005.
- Merwick, Donna. *The Shame and the Sorrow: Dutch-Amerindian Encounters in New Netherland*. Philadelphia: University of Pennsylvania Press, 2006.
- “Microsoft Word - MORRIS CANAL FACT SHEET #1.doc - morrisfact1.pdf.” Accessed June 4, 2015. <http://www.canalsocietynj.org/morrisfact1.pdf>.
- National Park Service. “Hudson River Valley Special Resource Study Report.” Resource Study Report. National Park Service New England Support Office, 1996.
- “NPS Archeology Program: Abandoned Shipwreck Act Guidelines.” Accessed July 31, 2015. <http://www.nps.gov/archeology/submerged/intro.htm>.
- “NPS Archeology Program: Abandoned Shipwreck Act Guidelines.” Accessed July 31, 2015. <http://www.nps.gov/archeology/submerged/state.htm>.
- “NPS Archeology Program: The Archaeological Resources Protection Act of 1979 (ARPA).” Accessed August 5, 2015. <http://www.nps.gov/archeology/tools/Laws/arpa.htm>.
- “N.Y. PBL. LAW § 75 : NY Code - Section 75: Grants of Land under Water.” *Findlaw*. Accessed August 6, 2015. <http://codes.lp.findlaw.com/nycode/PBL/6/75>.
- “On the Comparative Advantages between Locks and Inclined Planes in Overcoming Great Elevations on Canals.” *The Dublin Penny Journal* 4, no. 161 (August 1, 1835): 38.
- Otto, Paul Andrew. *The Dutch-Munsee Encounter in America: The Struggle for Sovereignty in the Hudson Valley*. First Edition edition. New York: Berghahn Books, 2006.
- Quaide, Rustin A. “Section II: How to Apply the National Register Criteria for Evaluation, National Register of Historic Places Bulletin (NRB 15),” November 28, 2001. http://www.nps.gov/nr/publications/bulletins/nrb15/nrb15_2.htm.

“Side-Scan-Sonar Points for Hudson River, NY - Data.gov.” Accessed July 17, 2015.
<http://catalog.data.gov/dataset/side-scan-sonar-points-for-hudson-river-ny>.

Stowe, Gerald C., and Jac Weller. “Revolutionary West Point: ‘The Key to the Continent.’”
Military Affairs 19, no. 2 (July 1, 1955): 81–98. doi:10.2307/1983343.

“Sunk in the Tappan Zee.: A Gale on the Hudson Causes the Loss of Ten Canal Boats.” *New York Times*. April 30, 1885.

“Underwater Preserves.” Accessed August 6, 2015.
<http://www.nysm.nysed.gov/services/233/prediverone.html>.

US EPA, OECA. “What Is the National Environmental Policy Act?” Overviews and Factsheets.
Accessed August 6, 2015. <http://www2.epa.gov/nepa/what-national-environmental-policy-act>.

Wilstach, Paul. *Hudson River Landings*. Second edition. Tudor, 1937.

Zandt, Roland Van. *Chronicles of the Hudson: Three Centuries of Travel and Adventure*.
Hensonville, N.Y: North Country Books, 1992.