

# Highway to the Past

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## *The Archaeology of Boston's Big Dig*



*Ann-Eliza H. Lewis, Editor*

With contributions by:

*Brona G. Simon*

*Rita Reinke*

*Ann-Eliza H. Lewis*

*Christa M. Beranek*

Published by:

***William Francis Galvin***

*Secretary of the Commonwealth*

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# Foreword

As Chairman of the Massachusetts Historical Commission, I am pleased to present *Highway to the Past: The Archaeology of Boston's Big Dig*. This publication captures the history and character of archaeological sites that, remarkably in this densely developed city, remained untouched for centuries. Now they tell us the stories of people who lived or worked at the sites long ago. Before work started on the Big Dig, the largest public works project in our nation's history, archaeologists excavated a number of sites in the path of construction. As you will read, the recovered artifacts provide detailed information about life and events in early Boston.



Federal and state archaeological and historic preservation laws insure that publicly funded projects take into consideration the identification and protection of historic resources before the actual project starts. Congress and the Legislature (or The General Court) wisely anticipated that such large projects would be in the public interest, but at the same time did not want these projects to destroy all evidence of the nation's patrimony without consideration of alternatives. For all its dilemmas and disruption, the Central Artery project is a national model of preservation planning and protection.

However, federal and state preservation laws do not address public interpretation and display of the findings of archaeological investigations. The Massachusetts Historical Commission is grateful that the Legislature chose to support a modest exhibit of the artifacts at the Commonwealth Museum, the development of school programs and curricula, and a small traveling panel exhibit.

I extend my gratitude to The Gillette Company for generously supporting the publication of this booklet and its wide distribution to schools, libraries, and museums in the Commonwealth. Thanks to Gillette, which also supported the Big Dig exhibit, the public can share in these exciting discoveries about Boston's past.

A handwritten signature in cursive script that reads "William Francis Galvin".

William Francis Galvin  
Secretary of the Commonwealth  
Chairman, Massachusetts Historical Commission



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The Gillette Company is honored to sponsor the publication of "Highway to the Past – The Archaeology of Boston's Big Dig."

The Big Dig, which is shaping Boston's transportation future, has revealed a remarkable story about our city's past. Thousands of artifacts uncovered in the path of excavators provide a first-hand look at Boston centuries ago, from Native American settlements of the pre-Colonial period, to the home of a 17<sup>th</sup>-century widow, to a 19<sup>th</sup>-century glass factory in South Boston.

Gillette supported the exhibit on which this book is based, "The Central Artery Project – Highway to the Past," at Boston's Commonwealth Museum. Presented by Secretary of the Commonwealth William F. Galvin and the Massachusetts Historical Commission, the exhibit has treated museum visitors, including thousands of school children, to a unique view of Boston's history.

Gillette's relationship with Boston goes back a century. King C. Gillette, inventor of the safety razor, founded the Company in Boston in 1901. Operations began that year over a fish store on Atlantic Avenue. Today, Gillette is a \$9 billion global company with 39 facilities in 19 countries, led by our flagship South Boston Manufacturing Center, better known as "World Shaving Headquarters."

As Gillette moves into its second century, we are proud to call this vibrant city our home.

Edward F. DeGroot  
President and Chief Operating Officer  
The Gillette Company

# Acknowledgments

Any public education and exhibit program depends on high-quality research. The archaeological research presented in this book is the result of many years of study by a number of fine scholars. The Institute of Conservation Archaeology at Harvard University, The Public Archaeology Laboratory, Boston University's Office of Public Archaeology, John Milner Associates, and Timelines, Inc. all contributed to the archaeological research. The fieldwork conducted by the people at these organizations provides the foundation for the Massachusetts Historical Commission's successful education programs.

Many agencies and organizations have supported Central Artery archaeology including: the Federal Highway Administration; Massachusetts Highway Department; Massachusetts Turnpike Authority; Advisory Council on Historic Preservation; and the Boston Landmarks Commission. The

archaeology was overseen by the Massachusetts Historical Commission.

Many organizations and individuals supported the exhibit *Archaeology of the Central Artery: Highway to the Past* on which this book is based: The Commonwealth Museum; The Massachusetts Archives; Maxine Trost, Curator and Associate Archivist of the Commonwealth; Boston City Archaeologist, Ellen Berkland; John Dazell, formerly of the International Bowling Museum and Hall of Fame; Ancient and Honorable Artillery Company, Boston; Barbara Luedtke, University of Massachusetts, Boston; Blanchard's Tavern; Dennis Piechota, University of Massachusetts, Boston; Kenneth Wilson; Marine Model Gallery, Salem, Massachusetts; Museum of Fine Arts, Boston; Old Sturbridge Village; Patrick Otton, Department of the Navy, Charlestown, Massachusetts; Plimoth Plantation; Robert S. Peabody Museum of

Archaeology; Sandwich Glass Museum; the Society for Historical Archaeology; the Family of Charles O. MacDonald; and the House of Seven Gables.

Special thanks are due to William Francis Galvin, Secretary of the Commonwealth and Chairman of the MHC; Judith McDonough, State Historic Preservation Officer and Executive Director of the MHC; and State Archaeologist Brona Simon for their commitment to preserving the Commonwealth's archaeological resources and for their support of creative archaeology education. Their work of many years to fund and staff a curation laboratory to care for the Commonwealth's archaeological collections provides the foundation for the success of the program.

This book was designed by Thomas M. Blazej, Director of Graphic Communications for the Office of the Secretary of the Commonwealth. Herb Heidt and Eliza McClennen of

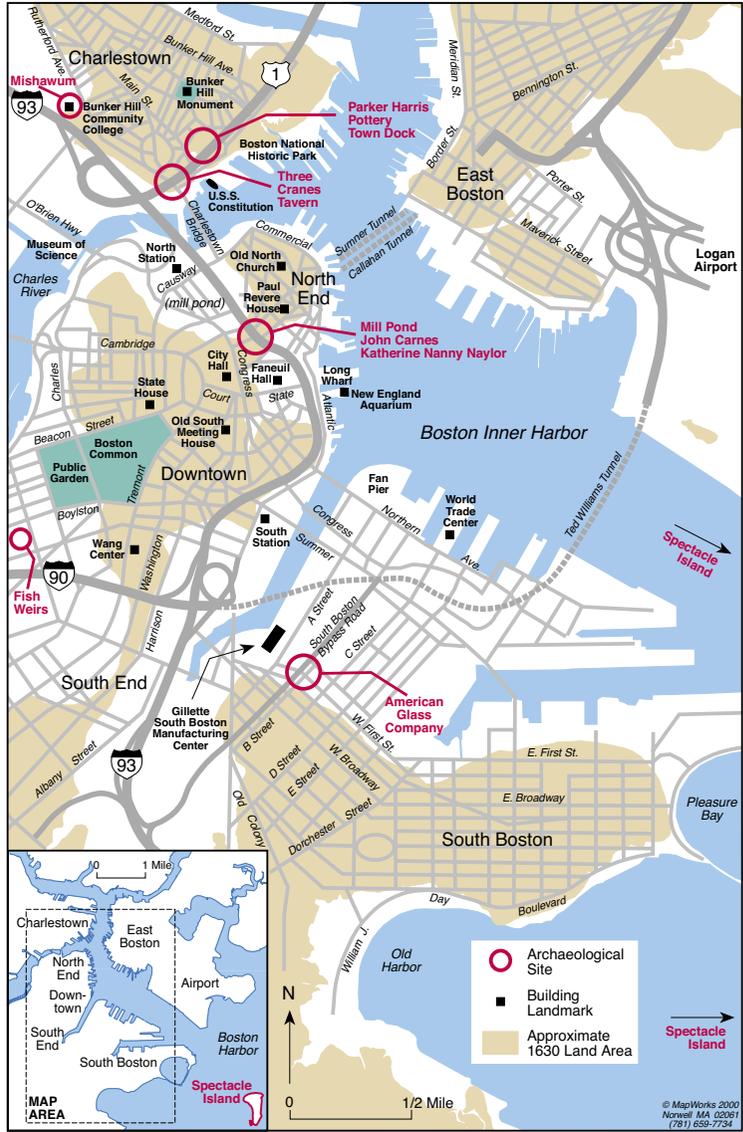
Mapworks created the maps.

The staff at the MHC's Archaeological Curation Center has undergone a number of changes but the following people have all made significant contributions to the education program and to the exhibit on which this book is based: Christa Beranek, Jeff Carovillano, Margo Muhl Davis, Frederica Dimmick, Harley Erickson, Liz Kiniry, Alicia Paresi, Rita Reinke, J. N. Leith Smith, and Carolyn White.

The Gillette Company's support of Archaeology of the Central Artery: Highway to the Past is greatly appreciated. Its generous contributions have made it possible for us to produce a high-quality book and to distribute it for free to schools and public libraries throughout Massachusetts as well as to the general public. ♦

# Archaeology and the Big Dig

Map of the Central Artery Project with the locations of the sites marked in red. The coastline of Boston, circa 1630, is shaded tan.



# Archaeology and the Big Dig

*Ann-Eliza H. Lewis*

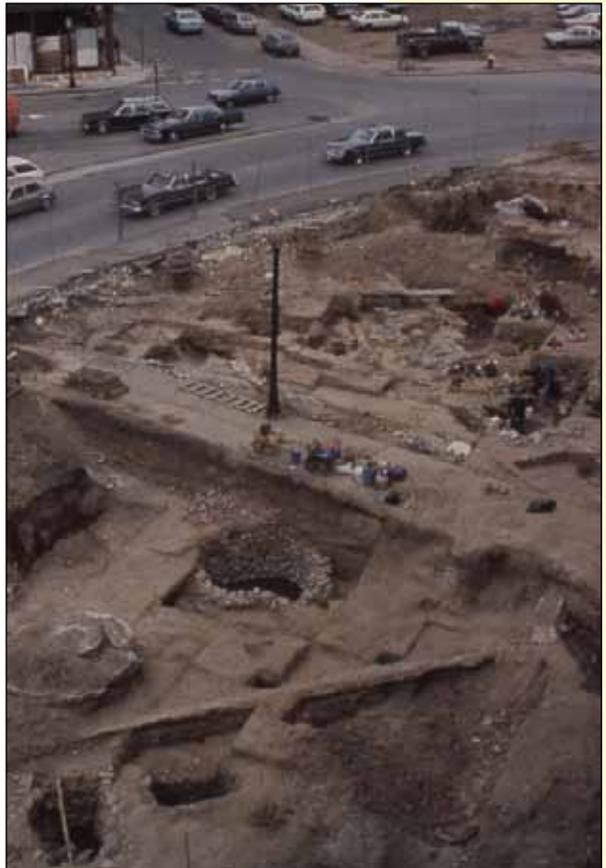


When people imagine archaeologists at work, they don't usually think of a modern city like Boston. You might picture someone excavating a pyramid in the desert or maybe a hidden temple in an exotic jungle, but not someone digging in an urban center. But in a historic city like Boston our past is everywhere—above and below ground. For thousands of years Native Americans have called this area home, and for the nearly four centuries since the first Puritans arrived, immigrants from all over the world have settled here. That is a lot of history. All of these people have left things behind, and these things become the archaeological record of their time in the Boston area. Over the last several years many sites have been excavated in downtown Boston, but no project has provided as great a view into Boston's archaeological past as the Big Dig.

The Big Dig—also known as the Central Artery Project—is the largest and most complex construction project ever at-

tempted in the United States. The Central Artery Project will replace the elevated I-93 highway with a state of the art underground tunnel. The project is aptly named because the Central Artery is

An overhead view of excavations in full swing in Charlestown's City Square in the mid 1980s.



## Archaeology and the History of Glassmaking in South Boston

The Big Dig passes through a section of South Boston that was a thriving center of glass production throughout the 19th century. Central Artery Archaeologists had a unique opportunity to explore this aspect of South Boston's industrial heritage.

The Boston Glass Manufactory built the first factory on this site in 1811 with the intention of producing window glass. The War of 1812, however, limited access to the necessary ingredients. During this difficult time, Thomas Cains, a worker in the factory leased a furnace to make flint glass (often called lead glass or lead crystal). Cains's company, the South Boston Flint Glass Works continued to operate as a subsidiary of the Boston Glass Manufactory for nearly 10 years until

Cains opened his own factory on a new site. Cains is often called the father of the flint glass industry in the Atlantic states, but before the recent archaeological research few examples of his work were known. The Big Dig has provided new insight into this successful businessman's work.

After Cains separated from the Boston Glass Manufactory, the company reorganized itself several times and experienced various financial difficulties. It wasn't until Patrick Slane leased the site in 1843 that this glass factory entered another successful and productive phase, this time under the name, The American Glass Company.

Over the years the glass factories on this site produced a wide variety of items and introduced a number of advancements in the technology of making glass that helped to modernize the industry while satisfying the growing demands for affordable glassware. In addition to window glass the various factories produced perfume and apothecary bottles, chemical glass such as pipettes and test tubes and many fancy tablewares, lamps, and candlesticks.

These cologne bottles stand just a few inches high and were manufactured at the American Glass Company in South Boston in the mid 1800s.



just that—a highway that runs right through the heart of Boston and through some of the city's most historic neighborhoods. From such a sweeping construction project, you would expect nothing less than some of the most important archaeology ever conducted in Massachusetts—we were not disappointed.

### Where to Begin?

The Central Artery Archaeological Project provided an unprecedented look at Boston's archaeological past, from early Native American residents of Massachusetts Bay through the arrival of European colonists and the American Revolution and on to the Industrial Revolution. This book summarizes the exciting discoveries from the Big Dig Archaeology project, but it is not a comprehensive report. Big Dig archaeological research began in the late 1970s and continued on and off through the 1990s. If you were to stack up just the reports on the excavations and scientific analyses that resulted from these years of research, the pile would be more than four feet high, and that does not include all the field and research notes, which would add many more feet. The archaeological collections fill more than 1,000 boxes.

Excavating sites in an urban area such as downtown Boston

is a considerable challenge. The conditions are often much dirtier than at a rural site and the logistics can be a nightmare, but the rewards far outweighed any of the difficulties on this particular project. The extensive urban development in Boston destroyed many archaeological sites long before the laws were put in place that protect them today. But as you will see in reading this book, small pockets of land were found that contained significant archaeological evidence of our past.

Donning safety vests and hardhats, archaeologists work in less-than-perfect conditions directly under the current elevated highway.



We are frequently asked how we found these pockets. The truth is that many months of research often precede an excavation. Big Dig archaeologists used a combination of traditional historical research and high tech methods. Maps from the 17th, 18th, and 19th centuries were the most useful. Archaeologists compiled the maps and adjusted the scales so they could be compared. Since much of Boston is built on filled land, a lot of time was spent just trying to figure out what was land and what was water at different points in time. Archaeologists also had to rule out all the city lots where there are buildings with deep foundations, and they had to identify all the utility trenches. After all this research, a few places emerged where there had been little building activity in the last century, and these were the areas that were tested.

When all was said and done, important sites had been discovered in Charlestown, the North End, South Boston, and on Spectacle Island. In Charlestown there were both Native American and historical sites including a large Native American site, the first stone-ware pottery in New England,

Governor John Winthrop's first home in the colony, a distillery and a tannery, and a number of docks and wharves. The North End sites include a lot along the former Mill Pond, the home and workshop of a colonial metal smith, and a privy, which belonged to an intriguing Puritan woman. Archaeologists excavated a shell midden on Spectacle Island, and in South Boston they examined a 19th-century glass factory. All told there were sites that spanned several thousand years of human occupation in the Boston area.

In this short book we provide just some of the highlights of the larger project. This book is based on the exhibit Highway to the Past: The Archaeology of the Central Artery Project, open at the Commonwealth Museum from July of 1999 through July 2001. The exhibit was organized around the neighborhoods through which the Central Artery passed; we have maintained that organization in this book. In the pages that follow you will find archaeological tours of Massachusetts Bay, Charlestown, and the North End. ♦

## Archaeology 101

When I ask students what an archaeologist does, invariably the answer is “they dig up old stuff.” And we do...most of the data we analyze comes out of the ground. But an archaeologist’s goal isn’t to dig up artifacts; it is to learn about and understand human behavior. Digging is only a small part of archaeological research and sometimes it isn’t even necessary. Archaeologists are social scientists who study people who lived in the past by looking at the material the people left behind. Archaeologists want to know how people lived, what they ate and how they prepared it, what they believed in, how they organized their families and their governments, what made their lives meaningful, and how and why cultures change over time.

In a sense archaeologists are storytellers. We want to tell a story about how people lived in the past. To write the story, we collect clues—often by excavating an archaeological site. The clues are mostly artifacts, that is, anything that has been made or used by a person. It could be the ruins of an ancient city, a cache of tools left behind by a Native American, the trash in a privy, or the privy itself. By using such a broad definition of an artifact archaeologists can study just about anything. A great deal of research must be done before deciding to excavate, and after an excavation most archaeologists count on at least three days of lab work for every day spent digging. Then an archaeologist must publish their research and arrange for the permanent curation of the artifacts and research notes.

To make the jump from the artifacts we dig up to human behavior we look at something called “context.” Remember when you were learning to read and your teacher told you to use the context to define an unfamiliar word? It’s a similar process for an archaeologist. The stories of people who lived in the past emerge from the combination of artifacts found, from their relationships to other artifacts, and from their location in the ground. For example, a musket ball found with some deer bones tells a very different story from a similar musket ball found inside the ruins of a fort. *(continued)*

Many activities are visible in this overview of the Three Cranes Tavern Site. Archaeologists use the grid pattern to track the exact find spot of each artifact; all excavated dirt is carried to a screen, visible in the lower left. Sifting the dirt or “screening” helps to recover even the tiniest artifacts. Large sheets of plastic are ready in case a sudden rain threatens the exposed site. At the top, an archaeologist stops to record her findings in a notebook.



Archaeologists conduct their research much like any other scientist. We take careful notes and document each step. There is, however, one significant difference between a traditional scientist and an archaeologist. Most scientists can repeat their experiments if they need to, but excavating a site destroys it forever. Once the site is excavated,

it exists only in our notes and the recovered artifacts. That is why proper training is crucial for an archaeologist. If an archaeologist in the future wants to restudy the Central Artery sites—the only records are the notes and artifacts collected by the current Central Artery archaeologists. Their work is their legacy.



# Massachusetts Bay

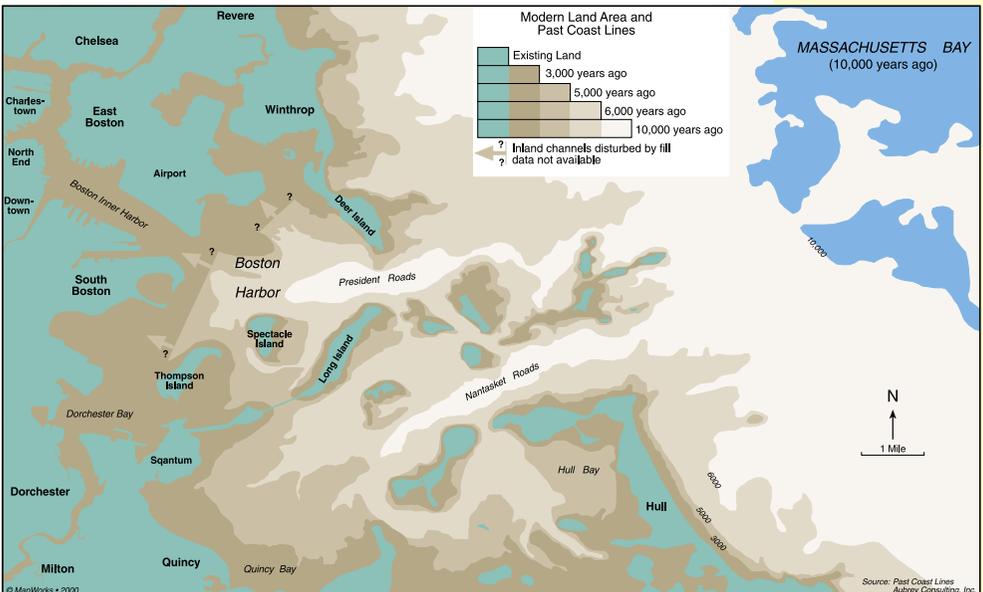
Brona G. Simon

Imagine the excitement felt by the archaeologists who discovered ancient Native American archaeological sites in a modern urban setting like the Charlestown section of Boston during their investigations of the Central Artery project area. The original landscape of Boston has been so heavily modified, graded, filled, and built upon by colonists and urbanites over the past nearly 400 years, as to be unrecognizable as ever having supported Native American

settlements. Yet small pockets of Native archaeological sites have been found in Boston giving us small windows to see the past. In addition, sites discovered on the undeveloped Boston Harbor Islands provide a chronicle of thousands of years of Native American occupation. Native peoples have lived in Massachusetts for over 12,000 years.

Imagine yourself a Native visitor to the Boston area 8,000 to 10,000 years ago. You would

This map illustrates how the coastline of Massachusetts Bay was flooded over the last 10,000 years. Water released from melting glaciers far to the north slowly enlarged the oceans and carved our current coastline. Modern Boston is green; the changing coastline is shown in shades of tan.



have come here by dugout canoe or on foot. Standing on top of what is now Spectacle Island, if you looked to the east, you would see a broad coastal plain extending about 11 miles out to the ocean's edge. Dotted this forested plain would be hilltops that we now know as the Boston Harbor Islands and three major river valleys formed by what are now known as the Charles, Mystic, and Neponset rivers. As a hunter, you would see the advantage of the hilltops as lookouts for spying game. As a gatherer of wild plant foods, you would see the hilltops for their blueberries, hickory nuts, and acorns. As a fisherman, you would look to the rivers, ponds, and ocean.

Move ahead in time to 6,000 years ago and you see that the seacoast is closer and that three major river valleys have formed. As a fisherman,

you would look to the rivers, ponds, and ocean for prime fishing spots. If you move ahead again to 5,000 years ago, your eye catches sight of the same prominent hilltops from the past, but you notice that some of the outer hills are now separate islands and the seacoast is much closer to you. What you are witnessing are the dramatic changes made by the continuous melting of the Ice Age glaciers. As the glaciers melted, the oceans enlarged and inundated the prehistoric coastal zones throughout the world. The rapid rate of glacial melting did not slow down to its present rate (about 1 foot every 20 years) until about 3000 years ago. In the Boston area, the former hilltops on the old coastal plain became surrounded by ocean water and became the islands of the harbor we know today. At 3,000 – 1,500 years ago, salt marshes and estuaries grew at the mouths of the rivers and streams along the coast. These became important locations for Native peoples to gather shellfish, hunt fowl, fish, collect reeds for basketry, and obtain clay in order to make their own pottery. It is around this time period that Native peoples inhabited the archaeological sites found in the Central Artery project.

The Native use of the mainland and harbor islands

This net weight and line sinker, or plummet, were found at archaeological sites in the greater Massachusetts Bay area (Calf Island and Hull, respectively). They are typical items that would be found in the tool kit of Native Americans in this region.





Native Americans often caught fish by building structures of twigs and wooden stakes called fish weirs. This is an artist's rendition of a fish weir in Back Bay. While many fish weirs are elaborate structures, current research suggests that the ones in Boston's Back Bay were more ephemeral. Drawing courtesy of Timelines, Inc.

changed through the millennia in response to environmental and social changes. Sharing an intimate knowledge of the bounties of nature in terms of where and when the resources would be available, Native groups would move their family camps in accordance with the seasonal availability of sources of food. At certain times of the year when food resources would be available in abundance, such as during the spring spawning of anadromous fish (herring, alewives, shad, and salmon), multiple families would convene together in large campsites. The families (men, women, and children) would construct wooden fish weirs or deploy nets, fishing lines, or spears to harvest the migrating fish. In what is now the Back Bay

section of Boston, archaeologists have discovered a series of wooden fish weirs that spanned across a former tidal bay of the Charles River. Known as the Boylston Street Fish Weir, the complex of fish weirs was radiocarbon dated to about 5,000 years ago. During such times of year there would also be much feasting and socializing.

The Native peoples undoubtedly recognized the dynamic of the changing environment. As sea level rose and global warming continued to change, plant and animal species changed the location of their habitats. In response to these biotic changes, Native people changed the locations of their seasonal settlements as well as changing their tool technology.

The Native American tool kit was filled with a wide variety of stone tools including spear points, knives, scrapers, drills, and more recently, arrowheads. Bifaces are stones chipped on both sides to form a sharp edge for cutting and scraping. Tools made of stone are strong, durable, and easily resharpened for long use.

### The Charlestown Area

Two Native sites that were discovered in the Central Artery project in Charlestown show how Native people adapted to the changes in sea level. These sites are known as the Water Street Site and the Town Dock Prehistoric Site.

The Water Street Site was used as a seasonal campsite several times between 4,000 and 1,500

years ago. The principal period of occupation was during the Early Woodland period (about 2,300 years ago) when the site was used as a fishing camp. The stone tools and hearths at the site suggest that fish were cut and dried on wooden racks for later use. Pottery sherds found in or near the hearths indicate that food was also boiled on the site, probably for daily consumption. It was during the Early Woodland period that Native women first started to make clay pots in New England.

The Town Dock Prehistoric Site may have been contemporary to the earliest camp at the Water Street Site. The Town Dock site was a small hunting camp where stone tools were manufactured and repaired. At that time the site was located on the edge of a small cove. Soon after, the site was inundated by rising sea level, which created a layer of peat on top of the campsite. The peat indicates that an estuary was being formed on what had previously been dry land. As Native peoples saw their old campsites become flooded, they moved a little further inland and to higher ground along the unstable, but economically important coast.

In addition, Native groups would make seasonal trips to

