PUBLIC REPORT

ARCHAEOLOGICAL TOWN-WIDE RECONNAISSANCE SURVEY TOWN OF ARLINGTON, MASSACHUSETTS

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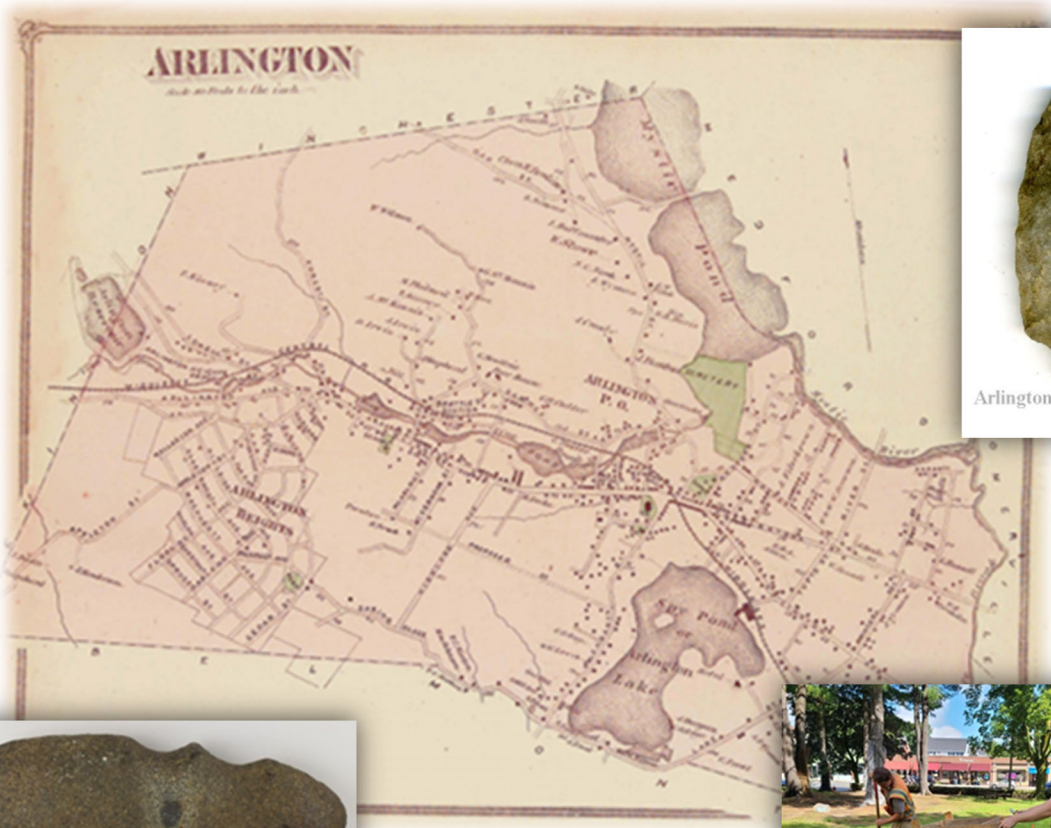

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INTRODUCTION

This public report is part of the town-wide Archaeological Reconnaissance Survey (the Survey) conducted by The Public Archaeology Laboratory, Inc. (PAL) for the Town of Arlington, Massachusetts. The town-wide survey was funded through the Town's community preservation act. The overall objective of the Survey was to document known and probable locations of archaeological sites associated with patterns of Native American and EuroAmerican history of Arlington, and to provide the Town with professional recommendations for managing these important cultural resources. Arlington's completion of the Archaeological Reconnaissance Survey, along with their Historic Preservation Plan completed in 2022, make it one of only a handful of Massachusetts communities that have funded projects to identify and manage cultural resources on a communitywide scale.

WHAT ARE CULTURAL RESOURCES AND WHY ARE THEY IMPORTANT?

Archaeological resources provide a unique record of past human activity that is not always available in the written record. These resources are described by historians and archaeologists according to two main temporal divisions: the prehistoric or pre-contact period, from about 12,000 years ago when the first humans arrived in the Northeast up to about 500 years ago when the first European explorers arrived in North America; and the historic or post-contact period, which is more conventionally understood in the United States as the history from the arrival of the Pilgrims in the early 1600s up to modern times. The Contact Period includes the time of earliest interaction between Native and non-Native peoples, including the period of European exploration along the New England coast, from about AD 1500 to 1620. Archaeological sites, therefore, include the locations of Native American and EuroAmerican habitation and land use areas, places of interaction between the two groups, and the artifacts and structural remains left behind by past human populations.

There are some differences between pre- and post-contact period sites as well as between Native American and EuroAmerican sites. A pre-contact Native American site may contain stone projectile points, concentrations of chipping debris from the manufacture of stone tools, and subsurface features (hearths, refuse pits, shell deposits). Pre- and post-contact period Native American sites could include village locations, seasonal hunting camps, lithic (stone) quarries, plant harvesting areas, and ceremonial sites and burial grounds. These sites are usually not visible on the modern ground surface since their contents are either very old or are made of materials that would not have withstood the natural elements, in which case only their impression or footprint remains in the surrounding soil. Aboveground pre-contact sites can include rock outcrops, where stone was quarried and taken elsewhere to manufacture tools. Post-contact sites often also contain standing structures, foundations, cellar holes, wells, dams and mill ponds, and household goods or industrial byproducts. Visible post-contact structures can also be associated with significant belowground features such as builder's trenches, trash pits and privies (outhouses). Historical documents such as old maps, deeds, and other town records may also indicate the locations of past EuroAmerican sites, including homes, farmsteads, schools, mills and factories, railroads, military sites, burial grounds, and taverns.

Archaeological resources are an important component of Arlington's rich cultural heritage. They provide valuable information concerning the Native Americans that lived in this area over many thousands of years. Archaeological sites can also tell the stories of the first English settlers in Arlington, and of the farmers, trades and craftspeople, and factory workers and owners who forged the historical development of the town, many vestiges of which are preserved today. Archaeological sites, however, constitute finite, fragile, and nonrenewable cultural resources. They are often not readily visible to the passerby or lay-person, and therefore, require a special kind of management by the Town of Arlington to ensure that their information content and research value is not lost to future generations.

Types of cultural resources (shown clockwise from top left): Jason Russell House [1]; Mill Brook channel behind Old Schwamb Mill [2]; 8,000-year-old Native American artifacts collected by a local resident in the 1890s along Alewife Brook [3]; Old Burying Ground in Arlington [4].

CONSIDERING CULTURAL RESOURCES: OUR NATIONAL PRESERVATION PROGRAM

After World War II, many American cities, and the surrounding communities experienced dramatic redevelopment. Older buildings, mills, bridges, and entire neighborhoods were demolished to make way for new construction. In 1966, President Lyndon B. Johnson signed into law the National Historic Preservation Act (NHPA), which created a new national framework for identifying and preserving those places important to national, state, and local history.

Among the many important parts of the Act is a requirement that federal agencies "take into account" (consider) the effects of federally funded or permitted projects on significant cultural resources before they approve such projects. The new law also created within each state and U.S. territory a State Historic Preservation Officer (SHPO) that is responsible for representing the public's interests in preserving cultural resources. Each SHPO works with federal agencies, developers, and the public to identify, record, and preserve those places. Native American tribes play an important role in this process and often consult with agencies and coordinate with archaeologists to ensure their own concerns and cultural knowledge are considered. This national preservation program remains the cornerstone of our efforts to understand, preserve and celebrate our national heritage.

CULTURAL RESOURCE MANAGEMENT

Although many people associate archaeology with work done in museums or at universities, most professional archaeologists in the United States work in the field of cultural resource management (CRM)––the research, conservation, and management of cultural resources within a regulatory framework that includes the National Historic Preservation Act. Archaeologists, architectural and industrial historians, and other professionals work together with government, industry, Native American tribes, and other interested parties to preserve pre-contact and post-contact cultural resources threatened by ground-disturbing activities.

CRM professionals assist government agencies and other organizations to identify, assess, and preserve important cultural resources that may be affected by projects funded or permitted at the federal or state level. They act as intermediaries between those planning a development and the government agency in charge of making sure all cultural resource regulations and laws are followed. When disturbance of significant archaeological sites cannot be avoided, CRM archaeologists work with other groups to recover important information before the sites are damaged or destroyed.

Archaeologists documenting a Native American site before construction for an underground cable [5].

ARCHAEOLOGY IN STEPS

Professional archaeological surveys, or CRM archaeology projects, are conducted in a series of steps, depending on the type of project and the federal, state, and/or local permitting involved. Considering a construction project's effects on archaeological sites requires several phases of investigation to search for, evaluate and, where necessary, excavate important sites that would otherwise be destroyed by the development. An archaeological investigation is done in steps to answer four basic questions:

Does the project area have the potential to contain archaeological sites?

The first step of a cultural resource investigation involves extensive background research of the project area and its surroundings. Archaeologists look at information about known archaeological sites, previous archaeological studies, historical maps, local and regional histories, and other documents. They review information about geology, plants and animals, and climate history to learn what the past environment was like and the kinds of natural resources that people would have used for food and tools. They also contact Native American Tribes with ancestral ties to Massachusetts, including the Massachusett, Wampanoag Tribe of Gay Head (Aquinnah), Mashpee Wampanoag, the Nipmuc Nation, and the Narragansett Indian Tribe. Communications with the Tribes allow for the exchange of information and the opportunity for Tribal representatives to share their special expertise about the area and their insight into the archaeological fieldwork.

Does the project area actually contain archaeological sites that may be important?

If a project area has the potential to contain archaeological sites, then the second step of a cultural resource investigation is to complete field surveys to identify any important sites that may be hidden below the ground surface. The archaeologists use shovels to dig test pits in the areas that would be disturbed by construction that measure 50 x 50 centimeters (1.6 x 1.6 feet [ft]).

Archaeologists digging test pits along the path of a proposed gas pipeline route [6].

If the project area does contain archaeological sites, are those sites important, or significant, cultural resources?

The next step of investigation, called a site evaluation, is conducted to determine if any sites will be impacted that may be eligible for listing in the National Register of Historic Places (National Register). During a site evaluation, test pits are placed close to each other and on a grid that covers the area where the site was first discovered. This design helps to determine the boundaries of a site and its integrity. An archaeological site with good integrity is one in which the artifacts and features maintain their basic relationships to each other, and patterns can be studied to learn what activities took place. Very little new information can be gained from sites with poor integrity.

After the site investigations, the archaeologists, together with the SHPO and the Tribes, decide if sites are significant cultural resources eligible for listing in the National Register because they could provide important new information about Arlington's early inhabitants. These sites would have good integrity and could be studied in more detail to learn even more information.

If the project area contains significant archaeological sites, can they be preserved? If they cannot be preserved in place, what can we learn from studying the sites before they are gone?

When any part of a significant archaeological site cannot be preserved in place, all of the teams work together to develop a data recovery plan. This final investigated step in CRM aims to recover enough information before the site is destroyed to allow the archaeologists to piece together, or reconstruct, the history of the site once bac, in the laboratory in order to tell its story when it is no longer there.

GETTING STARTED: HOW ARCHAEOLOGISTS FIND AND INTERPRET SITES

Most archaeological sites in the Northeast are difficult to find. Native American sites that are older than a few hundred years are buried under plants that have decomposed into soil. Because the soil in this part of the country is very acidic, anything made of organic materials such as wood, bone, feathers, animal hides, and plant fibers would have decomposed long ago. The only evidence of human activity is usually artifacts made of stone (spear points), fired pottery, and burned bone and wood (charcoal). Because these surviving objects can tell only part of the story of what happened at a site, archaeologists must carefully record the location of each artifact and feature, such as a fire pit, and study them as a whole.

Many changes have happened to the landscape over the past thousands of years. What first contained only forests, hills, and rivers now has towns, fields, roads, and buildings. After land was taken from the indigenous populations and diseases killed many, the tribes in what became northeast Massachusetts have maintained their distinct cultural identity through collective memory, oral tradition, and the support of pan-Indian movements across the country.

FIELD AND LABORATORY

When most people think of archaeology, they think of excavations or "digs," but these are only one part of a cultural resource investigation. The goal of fieldwork is not just to recover things buried in the ground. It includes gathering and recording other information about a site that can help archaeologists understand who visited or lived at the site in the past, when they were there, and what they did there.

Archaeological sites are places where evidence of past human activity has been found. This evidence can be anything that has been made, used, or changed by humans. Unfortunately, archaeological sites are often destroyed when the land is disturbed by housing and business development, road construction, and other activities.

Objects from an archaeological site have little meaning unless they can be related to specific soil layers (stratigraphy) and associated with other evidence of human activity, such as a fire hearth, a trash pit, a stone toolmaking location, or the footprint of a former structure. Archaeologists call this context. Any activity that disturbs the soil may destroy this context and the site's scientific and historic value.

Professional archaeologists search the ground surface and the soils to record information about them and to recover artifacts to examine in a laboratory setting. Work in the field and in the lab is done carefully to preserve not only what is recovered from the site (called cultural materials) but the site itself, if possible. Archaeologists, sometimes accompanied by Tribal members and other professionals specializing in soils and geology, excavate first test pits in a grid pattern across a site to find concentrations of cultural material, before excavating larger units. The test pits are 50 x 50 centimeters (1.6 x 1.6 feet), and the units consist of large squares about 2 x 2-meters (6.5 x 6.5 feet) that are organized into larger blocks in areas where they expected to find artifacts and features. The archaeologists remove soil in 5-centimeter (cm) and 10-cm layers (about 2 to 4 inches) and often dig as deep as 100 cm (about 39 inches) below the ground surface. The soils are sifted through a ¼-inch screen similar to a window screen to catch small artifacts. The artifacts are placed in plastic bags with tags to show where they were found in the unit. They also write pages of notes, take measurements, create maps and drawings, take photographs, collect samples of materials, and record detailed descriptions of the soils at the site.

Archaeologists try to answer research questions that will provide as much information as possible about the site. They excavate blocks of 1-x-1-meter (3.2-x-3.2 foot) and 2-x-2-meter (about 6.5-x-6.5 foot) squares, or excavation units, to expose large living surfaces. Excavating in squares makes it easier to record where artifacts and features are found [7].

For every day in the field, there are usually three days of work in the laboratory. Artifacts collected from sites are cleaned, measured, weighed, photographed, and cataloged into a computer database. A catalog of cultural materials contains detailed descriptions of the artifacts—some as small as a tenth of a gram, or 0.0035 ounces—and where they were found, or their provenience. Completing a catalog is a critical part of documenting an archaeological site and ensures that other archaeologists have useful information for any future research.

Archaeologists are trained to recognize all types of organic materials (such as seeds, nuts, and bone), Native American pottery, and lithic (stone) materials [8].

The catalog is used along with spatial analysis to study the location of the artifacts and features at a site. Most archaeological sites found in the Northeast were visited many times in the past. Because the artifacts and features associated with these many visits usually are found mixed together in the soils, carefully designed studies are needed to understand which materials were together and when.

Stone tools from Native American sites are examined under a microscope to look for scratches or polish that would indicate if a tool were used on soft materials (to cut meat or scrape an animal hide) or on hard materials (to shave wood or bone), which is referred to as use-wear analysis.

After all analyses are done, artifacts are labeled and preserved, or curated, with the fieldwork notes, maps, photographs, catalog, and other documents so others can study them later.

Archaeologists cleaning artifacts in a laboratory facility to study, catalog, analyze, and prepare for appropriate storage [9].

ARTIFACTS AND FEATURES: WHAT ARCHAEOLOGISTS FIND

Artifacts and features represent the traces of past human activity. Their context and associations are what allow archaeologists to reconstruct the story of a site. Artifacts are any objects that have evidence of being used or manufactured by humans. Before artifacts are removed from the ground, their locations need to be carefully recorded in relation to other artifacts and features. Keeping them in place is important so the archaeologists can place them within a context. Common types of artifacts found at archaeological sites are stone tools, implements of bone or wood, pottery, buttons, coins, glass, and fragments of smoking pipes.

Features are also things made or modified by humans but are usually not portable and cannot be removed from the ground intact. Common types of features are soil stains such as post molds; storage pits; charcoal stains from a hearth; burials; or the remains of a building such as a stone foundation.

Most of the artifacts found at pre-contact Native American sites in North America are stone objects. The remains of food and items made from organic materials such as wood and bone do not easily survive in the acidic soils of the Northeast. Archaeologists often rely on information from features to interpret past material culture. For example, features like cooking pits or hearths contain charred organic materials. Charred wood, seeds, and nuts survive much longer in the soils than unburned material.

Use-wear analysis and residue analysis of stone tools can provide information about the types of materials processed with these tools. Wet environments low in oxygen such as bogs are good for preserving organic items, as are very dry environments, like caves. In the Northeast, shell middens are good environments for preservation. Shells are rich in calcium carbonate, which creates an alkaline environment that counteracts the effects of acidic soils.

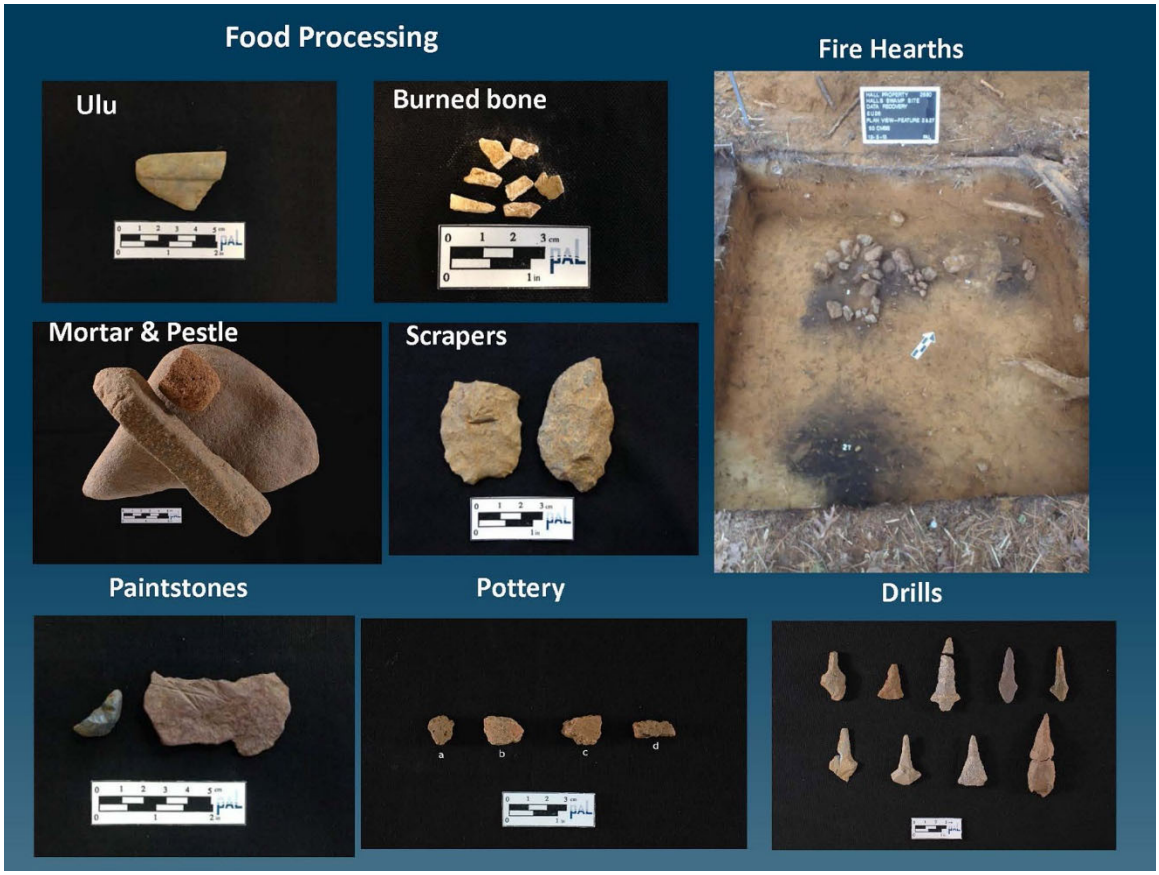
The most common artifacts found at pre-contact Native American sites are associated with making stone tools, or flintknapping. Hammerstones (cobbles) were used to remove flakes from a piece of raw stone material called a core and could also be used to pound or process nuts and tree bark. Animal antlers were also used as a type of hammerstone, but this type of bone decays in New England's acidic soils and nothing is left of them today for archaeologists to find.

Preforms are stone tool "blanks" flaked into a standard shape and size; they are unfinished tools. Debitage, or chipping debris, is the by-product of flintknapping. Similar to the wood shavings that result from whittling and carving a piece of wood, thousands of flakes or stone chips could result from knapping stone. Debitage or chipping debris is the most common type of artifact found at pre-contact archaeological sites. Most of it was discarded or ignored by Native American toolmakers, though the larger flakes could be kept as cutting tools or blanks to be made into other tools.

Making a stone spear point starts with reducing a large stone or core by taking off larger and then smaller pieces called shatter, and then removing very small finishing flakes. Stone toolmaking (called flintknapping) can create hundreds of pieces of debitage (or chipping debris). Archaeologists often can figure out the age and type of a site from such chipping debris. All of the tools and tool by-products from flintknapping have been found at sites in Arlington [10].

Knives, scrapers, nutting stones, pestles, choppers, drills, perforators, gravers, and fire-cracked rock were used to prepare foods or to work on other materials. Scrapers were used on animal hides, wood, or bone; nutting stones were used as anvils for cracking nuts. Pestles could have been used to grind up or crush seeds for food or minerals for paint. Choppers likely were used for heavy tasks, such as butchering large animals. People used drills and perforators to make holes, like those in beads or the socket ends of arrow or spear

shafts. Gravers were used to carve bone, wood, and antler and to make notches in these materials and animal hides. Fire-cracked rocks were used to line hearths, boil liquids, and to build platforms for drying, steaming, and/or roasting; these rocks got their name from the cracks and discoloration that develop when they are exposed to heat and fire. Ground stone tools, such as axes, adzes, and celts were used for woodworking. Axes were used for cutting wood, and adzes were used to shape it to make dugout canoes and containers.



Examples of tools used for food processing and fire-related features. Fire-cracked (or burnt) rocks indicate the use of platforms built to smoke and dry fish or meat. These rocks are often found at pre-contact campsites along major rivers, such as the Mystic River in Arlington [11].

Unlike artifacts, features are non-portable artifacts; they cannot be removed from the ground without destroying their context. Types of features that have been discovered at pre-contact Native American sites in New England include small and large fire pits, small and large storage or trash pits, post molds, fire hearth stone bases, and large rock-lined roasting pits. Many of these features contain burned bone, seeds, and nuts that indicate the seasons when people were using the sites, what types of food they ate, and how long ago they were there.

Fire pits, hearths, and roasting pits were used to cook food and for warmth. Fire pits were also used as a smudge pit to produce smoke. The pit's shape would have created a low oxygen environment where wood would only smolder and smoke rather than burn. Native Americans were known to use smudge pits to smoke hides in the process of making leather or to blacken pottery vessels. At sites located next to wetlands, such as Alewife Brook, the people there might have also used the smudge pit to keep away insects like mosquitos.

Archaeologists excavate the remains of an ancient fire pit [12].

CULTURAL TIMELINE: HOW OLD ARE THE SITES IN ARLINGTON?

How do we know how old things are? Relative dating and radiocarbon dating are two methods used to learn the age of the sites. Relative dating compares the styles and shapes of artifacts to those already known to be from, or are diagnostic of, a specific cultural period or time range. This technique does not provide an exact age, but allows archaeologists to determine which artifacts are older or younger than others. Projectile points are diagnostic artifacts because the different styles can be associated with different archaeological time periods, similar to the way that clothing styles can be associated with different decades. The projectile points seen in the collections at the AHS and Peabody Museum sites indicate that people made many visits and used the areas around Spy Pond, Alewife Brook, and Mystic River as short term and long term homesites for nearly 10,000 years.

Radiocarbon dating is a type of absolute dating technique used to produce a more specific point in time than relative dating can. The technique can only be used on organic material or the remains of something that once was alive. Wood, charcoal, bone, seeds, shell, and plant fibers can be radiocarbon dated. The process works by assessing the amount of a slightly radioactive carbon isotope in organic materials known as Carbon 14. Scientists estimate the age of a sample by measuring the amount of Carbon 14 left behind after an organism died.

Archaeologists in North America usually refer to dates that are before the present, or BP, instead of years that are Before Christ, or BC. There is about a 2,000-year difference between the two types of dating systems. For example, 10,000 years BP is about 8,000 BC. Since professional archaeological excavations

have not been conducted in Arlington to date that have uncovered intact features from which to extract organic material for radiocarbon dating, all of the dates are relative, based on the artifact typologies.

ARLINGTON TOWN-WIDE ARCHAEOLOGICAL RECONNAISSANCE SURVEY

As part of the Town-Wide Archaeological Reconnaissance Survey, PAL archaeologists reviewed and evaluated local environmental information and historical sources for Arlington. Environmental setting, conditions, and available natural resources are important factors to consider when assessing the potential for the presence of archaeological sites. For pre-contact period sites, priority is given to areas where such resources have previously been recorded or encountered in the town and in nearby communities. Undeveloped properties in these areas are likely to contain additional sites that have not yet been recorded. Consideration is also given to such factors as soil type, degree of slope, presence of bedrock outcroppings, proximity to subsistence resources and fresh water, drainage, and topography.

The landscape of Arlington has also been evaluated considering pre-contact period settlement patterns observed elsewhere in southern New England. Archaeological evidence has confirmed that certain types of settlement and activity locations were favored by Native Americans over the millennia. For example, a location on level, sandy, well-drained ground near fresh water and food sources would have been more favorable for habitation than a rocky, swampy, or steep location; however, certain rocky outcrops were favored for rock shelters. Documented activity areas include locations of high-quality bedrock outcroppings and perennial wetlands that supported the animals and plants that Native Americans hunted and gathered. This intuitive pattern has been corroborated by the locations of pre-contact period sites recorded to date within Arlington and the surrounding communities.

Arlington contains cultural deposits associated with Massachusett people who lived within the present-day town boundaries of the Town and the Greater Boston area. The Massachusett interacted with EuroAmericans during the contact and post-contact periods, and descendants of these people likely live and/or work in the town today. Post-contact Native American sites often exhibit a combination of sensitivity variables. For example, site location may be tied to environmental attributes, and deposits may include both lithic tools and features typically associated with pre-contact archaeological sites and European-manufactured goods and building materials. Sites of interaction may also be related to conflict and defense, including places and events surrounding King Philip's War in 1675-6.

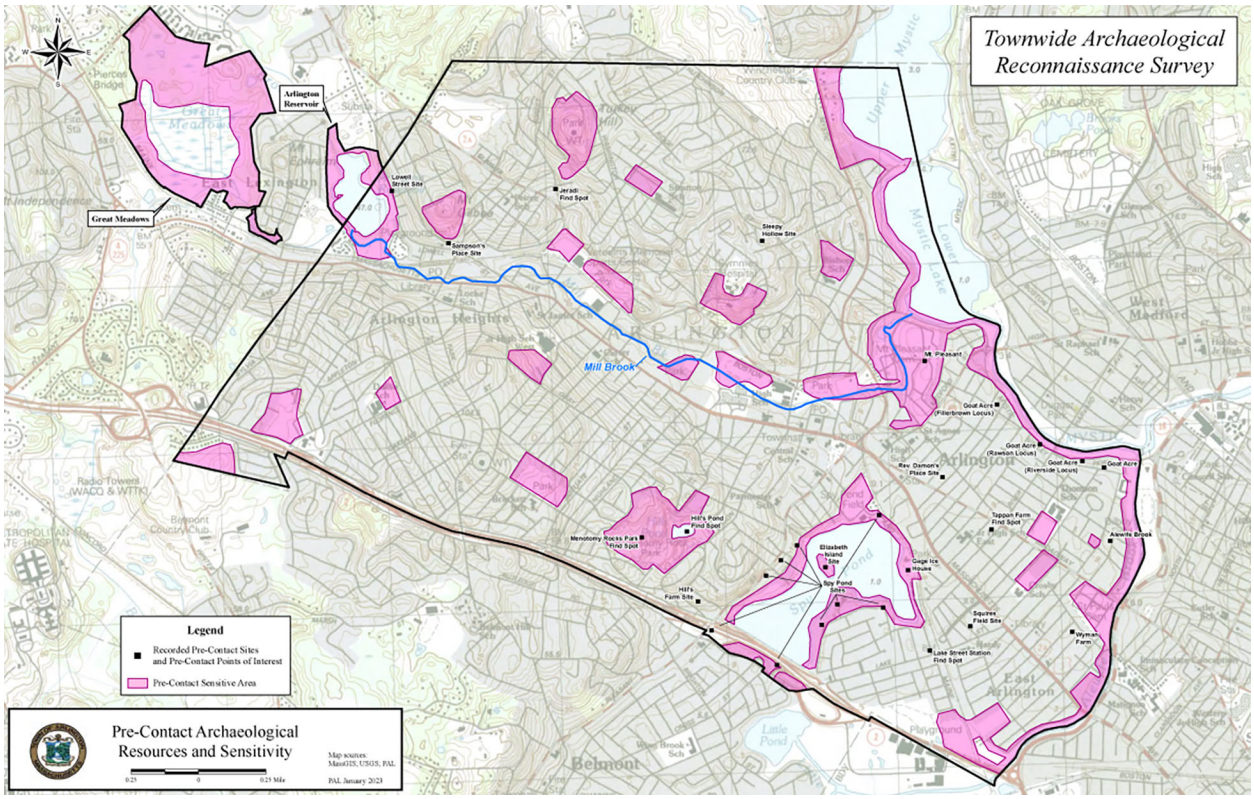
Information about post-contact period archaeological sites in Arlington is primarily based on documentary and cartographic materials, although certain historic site types (e.g., mills and industrial sites) are also closely tied to environmental attributes such as waterpower. Town maps from the late eighteenth century and nineteenth century help to document settlement and land use patterns as well as show the locations of old roads, residential clusters, industrial sites, and civic and institutional structures. Local histories, both townwide and area-specific (e.g., village histories) chronicle information pertaining to post-contact period resources in the town, including previous function(s), ownership, local socioeconomic conditions, and political development. Consideration, mostly through local historians, has also been given to sites that are not shown on historical maps, but were likely to have existed in certain locations: domestic and agricultural sites, maritime industry sites, commercial sites, and institutional sites. Sites of interaction may also be related to conflict and defense, including places and events surrounding the Battles of Lexington and Concord in 1775, fighting between retreating British regulars and local militiamen, and the march along Massachusetts Avenue.

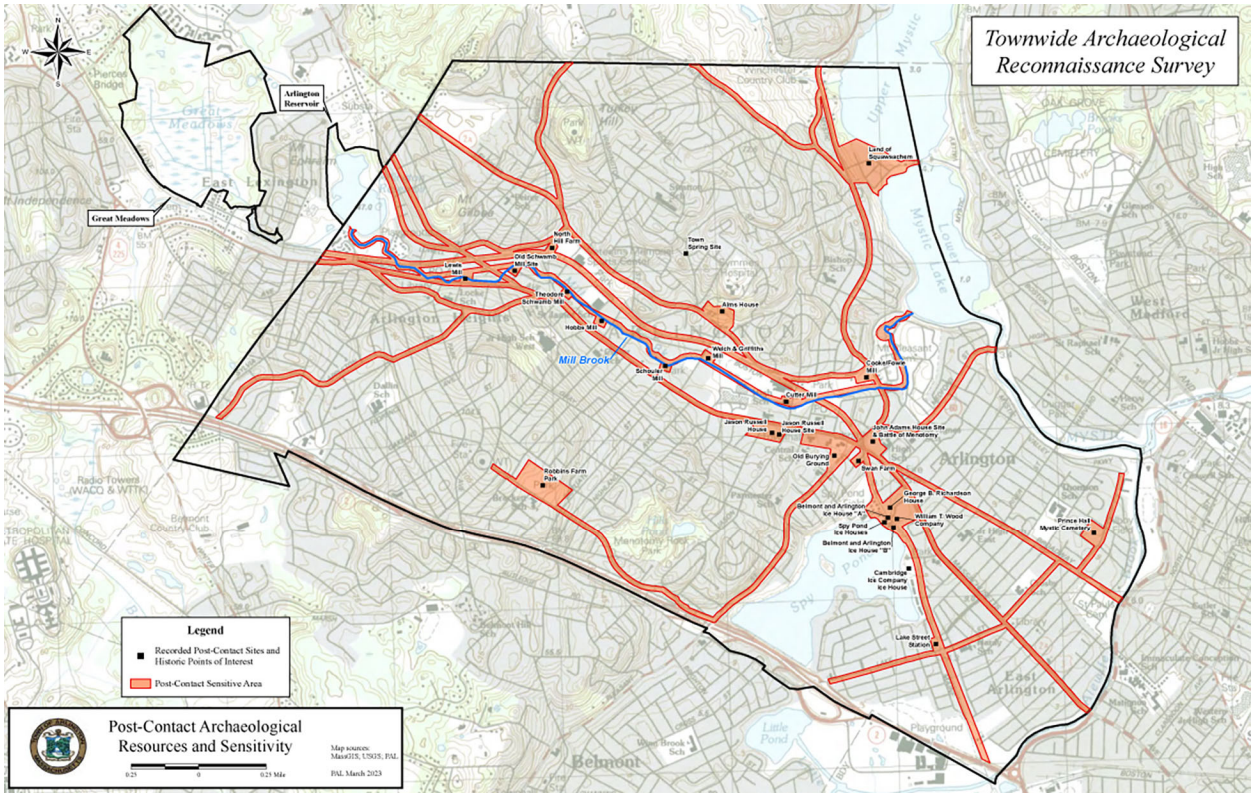
Background research conducted by PAL included a review of historical sources such as maps, aerial photographs, and historical publications available at the Arlington Historical Society (Jason Russell House), Robbins Library, and the Old Schwamb Mill in Arlington. Information on recorded archaeological sites was gathered from the *Inventory of Historic and Archaeological Assets of the Commonwealth* at the Massachusetts Historical Commission (MHC) in Boston. The MHC holds archaeological reports of professional surveys and other reports and publications about the history of archaeological investigations in Arlington. Collections of Native American artifacts from Arlington housed at the Arlington Historical Society's Jason Russell House and at Harvard University's Peabody Museum of Archaeology and Ethnology in Cambridge were also examined.

Overall, PAL documented 26 previously recorded archaeological sites (17 pre-contact and 9 post-contact) in Arlington, and identified 11 new pre-contact archaeological sites through collections research combined with a review of historical maps. The archaeological record in Arlington represents at least 10,000 years of human history. The information collected during the survey will help the Town of Arlington protect significant archaeological resources more effectively, and help educate the community about its Native American and historic past.

The survey was also informed by the existing information about the town's cultural resources that has been assembled by local historians. Arlington's efforts to protect open space within the various parcels of conservation land and parks throughout the town has helped to protect many cultural resources, known and potentially unknown. The collective knowledge and interest in preserving Arlington's rich cultural heritage can be used in the future as a resource to help identify additional archaeological sites.

Archaeological Sensitivity of Arlington: One of the ways that PAL presented the results of the survey was through archaeological sensitivity maps prepared for known and expected pre- and post-contact period resources in Arlington. The archaeological record shows that the town's natural environment has drawn and supported human populations for thousands of years. The rich cultural heritage is documented throughout the town by Native and Euro-American habitation and activity areas. Many of the same features that attract people to Arlington today drew Native American, Euro-American, and other residents in the past.





Pre-Contact and Post-Contact Archaeological Sensitivity Maps of Arlington [13]

PRE-CONTACT NATIVE AMERICANS IN THE ARLINGTON AREA

The Native American presence in eastern Massachusetts and the Middlesex County region has been well documented in general, but the locations and numbers of sites vary greatly from one location to the next. By utilizing information about the known pre-contact period sites in Arlington and the body of data about sites in nearby areas with similar environmental attributes, it was possible to construct a chronology of Native American settlement and land use for Arlington. The context not only helps to interpret the known sites in town, but also has been used to predict where and what types of unknown pre-contact archaeological sites could be present in Arlington.

To help understand the past, archaeologists have created a cultural chronology based on different observed patterns, technologies, artifact types, and other factors. In the Eastern United States, archaeologists have divided the Pre-Contact Period into subperiods starting with the PaleoIndian Period (about 12,500–10,000 years ago) and ending with the Late Woodland Period (about 1,000–450 years ago).

NATIVE AMERICAN CULTURAL CHRONOLOGY OF NORTHEASTERN UNITED STATES

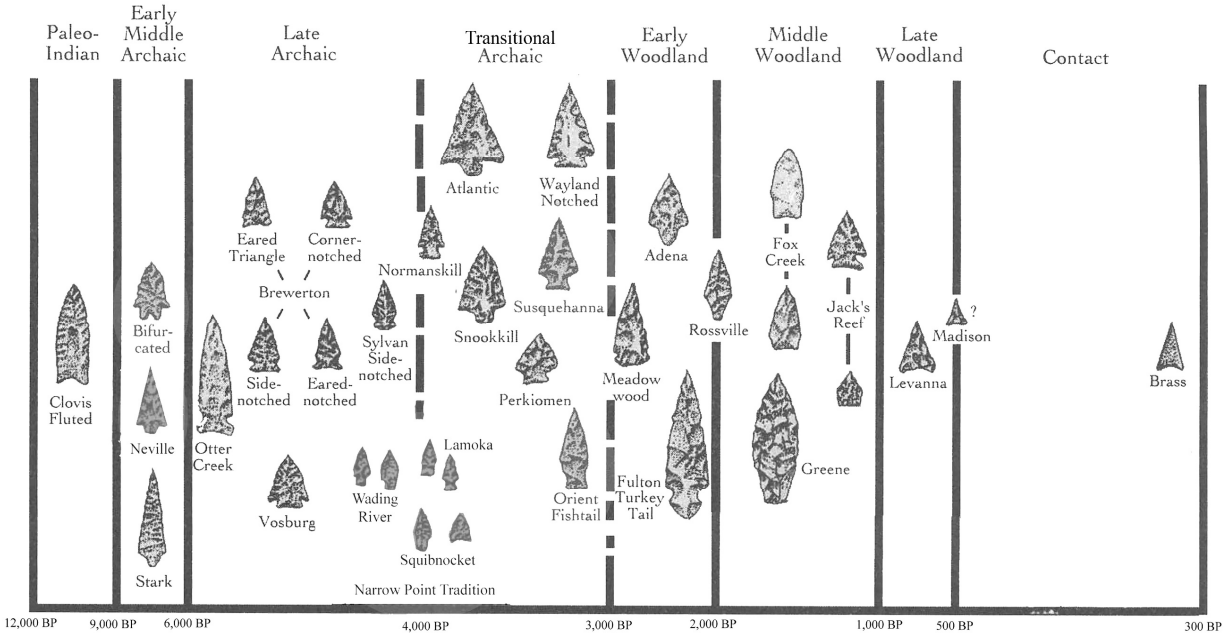
Period/Time	Subsistence Pattern	Settlement Pattern	Diagnostic Features	Events Elsewhere
PaleoIndian >12,000 to 10,000 BP	Small game hunting; fishing, foraging, and gathering of various plants; hunting of large game extinct today: mastodon, mammoth, giant beaver, ground sloth, musk oxen	Small seasonally occupied camps	Lanceolate/fluted projectile points/knives; end and side scrapers, burins	New Stone Age in Europe People entering North America from Asia (>12,000 BP) Altamira Cave, Spain (10,000 BP)
Archaic 10,000 to 3,000 BP	Gathering and hunting of wild plants and animals; clearing areas in forest to attract game to new plants	Larger seasonally occupied camps	Atlatl (spear thrower), projectile points/knives; soapstone vessels, ground stone tools, axe grinding and hammer stones	Great tower built, Jericho (7,800 BP) Iceman (Otzi), Italy/Austria (5,300 BP) Great pyramids built, Egypt (ca. 4,500 BP) Stonehenge built, England (ca. 4,000 BP) Shang dynasty, China (ca. 3,500 BP)
Woodland 3,000 to 450 BP	Gathering and hunting supplemented by horticulture	Small, widely-dispersed villages inhabited most of the time occupying floodplains and clearing for gardens.	Bow and arrow; pottery decorated by stamping, incising and impressing; pottery tempered by sand and crushed quartz; food storage pits	Olmec culture, Mesoamerica (ca. 3000 BP) Birth of Christ (BC/AD) Parthenon built, Greece (2,400 BP) Moundbuilders, Ohio (2,000 BP) Rome Falls (1,500 BP) Norse Voyages to Vineland (ca. 1,000 BP) Mesa Verde (900 BP)
European Contact 450 to 350 BP	Farming, trading, hunting, trapping, exploring	Trading outposts, missions, forts, and smaller Indian villages	Glass beads, wrought iron tools and weapons, blown glass vessels, molded bricks, white clay pipes	St. Augustine, Florida settled (AD 1565) Spanish conquest of the Aztec Empire (AD 1520)

PALEOINDIAN PERIOD

People first moved into what is now the northeastern United States during the PaleoIndian Period, when it was much colder and drier than today. The mile-high glacial ice covering New England began to melt, and sea level was about 300 feet lower. They lived in small groups, travelled often, collected plants, and hunted mastodon, bison, elk, caribou, and smaller animals. PaleoIndian archaeological sites are usually identified by fluted spear points, which consist of a lanceolate-shaped projectile points that have been thinned by removing one or more flakes from the base to the tip, leaving a long flake scar, or "flute," on each side. These points are often found together with large flake scraping tools, spokeshaves, and gravers.

Animal tendons were used to sew clothing together, bind tools to handles, and tie together wooden posts and frames to use for their shelters. Tools such as awls were made from animal bones, and teeth were used to made jewelry or to decorate clothing.

So far, no PaleoIndian sites have been reported from Arlington, however, they have been found elsewhere in Massachusetts, but most consist of isolated fluted spear points. Most Paleoindian finds in southern New England, while rare, appear to have been small seasonal camps, where stone tools were made and maintained and domestic activities such as cooking, and cleaning hides were done. Because PaleoIndians moved around so often, they did not leave behind much evidence of their activities. One exception is the Bull Brook Site in Ipswich, which covered several acres and yielded thousands of artifacts including more than 175 fluted points.



Archaeologists learn the age of Native American projectile points by comparing shapes and sizes with others found with charcoal that can be scientifically dated. The point styles or types found in this region indicate that indigenous peoples occupied the area as early as 12,000 years ago [14].

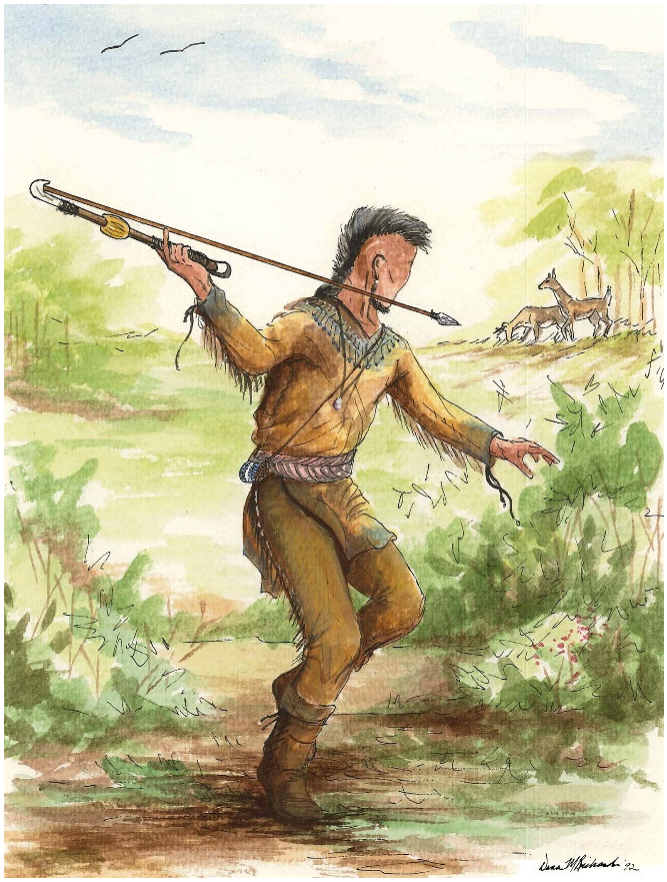
ARCHAIC PERIOD

The Archaic Period is divided into the Early, Middle, and Late Archaic subperiods. As the glaciers continued to melt, the climate warmed and dense pine forests grew across much of the Northeast People began staying in one place for longer periods, so more things were left behind for archaeologists to find later. Although the mastodon and bison disappeared, other types of animals, such as white-tailed deer, and woodland and wetland vegetation and nuts were available for food. People began to make more types of stone tools to process the new types of food. Axes and gouges were made for woodworking.

Early Archaic Period sites are usually identified by the presence of bifurcate-base projectile points. This point style was first used in what is now the southeastern United States and then as far north as southern New England by about 9,000–10,000 years ago. New tool types such as chipped-stone adzes were used for woodworking.

Most of the Early Archaic sites found in Massachusetts are along rivers and in uplands. The earliest evidence to date of humans in Arlington dates to the Early Archaic Period, and we know that Early Archaic people were camping around Spy Pond and along the Mystic River between Mount Pleasant Cemetery and Alewife Brook because bifurcate-base points were found.

By the Middle Archaic Period, around 8,000 years ago, the climate was wetter and warmer than before. Oak, hickory, and hemlock trees provided wood to make more types of tools. Woodworking tools such as adzes, gouges, and grooved axes suggest that Native Americans were making *mishoonash*, or dugout canoes to travel on the Mystic River and to the interior by way of connected rivers and streams. The presence of net sinkers and plummets indicates the growing importance of fishing. The projectile points that usually identify a Middle Archaic site are called Neville, Neville Variant, and Stark points. They were hafted as dart tips on spears that were used with an atlatl, or spear thrower. In Arlington, these types of points were found around Spy Pond, the Mystic River, Alewife Brook, along Lowell Street, and from a newly identified site at the corner of Forest and Aerial streets (designated as the Jeradi Find Spot).



Before bows and arrows, Native Americans used atlatls, an Aztec word for throwing sticks, to add force and distance when using a spear [15].

Many more Middle Archaic sites have been found in Arlington and in Massachusetts in general, than in the preceding periods, reflecting an increased population and use of upland locations, and seasonal base camps near major water sources.

Middle Archaic Stark projectile point made of quartzite at the Arlington Historical Society that found at the corner of Forest and Aerial streets [16].

Late Archaic Period sites in the Northeast are better understood than those from earlier periods, partly because more of them have been discovered. The Late Archaic, beginning around 5,000 years ago, is the best represented archaeological period in Arlington. The climate continued to be similar to today's and was ideal for nut-bearing oaks and hickory trees and various grasses and wild grains. People settled along large rivers and in uplands and stayed at campsites for longer periods of time, which archaeologists have learned from the post molds left behind by their *wetus* or wigwams. There is evidence of new technologies such as making stone bowls. People also traded with others who lived in New York for special types of stone not found in Massachusetts and participated in more ceremonial burying of their dead.

Late Archaic sites are found in a range of environments, including estuaries (e.g., shell heaps, fish weirs, and fishing camps), uplands (e.g., camps and lithic workshops in the Blue Hills), and rivers (e.g., large base camps and ceremonial burials at the Watertown Arsenal). The Late Archaic Boylston Street Fishweir Site was found in Boston beneath 30 feet of fill during a construction project in the 1940s. Archaeologists have found evidence of Late Archaic campsites in Massachusetts with stone fire hearths, storage pits, caches of stone tools, and post molds from wetus. Analysis of charred plant remains have shown that people were eating hickory nuts, acorns, walnuts, hazel nuts, and blueberries, raspberries, and elderberries. Annual seed plants such as goosefoot, knotweed, bedstraw, and pokeweed were commonly used.

Shell middens (piles of clam and oyster shells) found at some sites along the coast and major rivers indicate that estuaries formed and shellfishing increased. Evidence of fish weirs has been found along Alewife Brook and the Mystic River. Late Archaic people in Massachusetts stayed at small special purpose camps, larger seasonal base camps, steatite (soapstone) quarries, rockshelters, and burial grounds. The

As forests developed during the Archaic periods, Native Americans used woodworking tools, such as gouges and axes, to fell trees and make *mishoonash* (dugout canoes, house frames, drying racks for food and hides, and a variety of other objects and tools [17].

Late Archaic Period is associated with three major cultural traditions (the Laurentian, Narrow Stemmed, and Susquehanna) that are associated with certain point styles. The Late Archaic artifacts found in collections from Arlington include a several styles of spear points, including Otter Creek, Brewerton, Squibnocket Triangle, and Small or Narrow Stemmed points that have been found all around Spy Pond, Mystic River, and Alewife Brook, as well as within Menotomy Rocks Park, and along Lowell Street.

Wigwams or wetus were made of bark and saplings that could be disassembled easily when groups moved from one site to another. People settled in various areas along large rivers as well as in the uplands and would stay at campsites for longer periods of time, as is evident from the post molds archaeologists find from their wigwams, storage pits, cooking hearths, and fish drying platforms. ([18] R.S. Peabody Museum of Archaeology, Andover, MA).

The Transitional Archaic Period overlapped with the end of the Late Archaic Period, starting about 3,600 years ago, and the beginning of the Early Woodland Period around 2,500 years ago. The Susquehanna Tradition included new kinds of artifacts and complex burial traditions. Susquehanna and broadspear points, and fishtail points were used. Though broadspears are often called "points," most were probably not used for hunting. Several use-wear studies indicate they were more likely used as knives and scraping tools. In Arlington, Orient Fishtail points have been found at all of the places listed above, as well as on Elizabeth Island and along Sleepy Hollow Lane.

During the Transitional Period, soapstone (also called steatite) was mined as a raw material for the production of stone bowls, then transported miles away by dugout canoe. The soapstone material was easy to carve [19].

Stone bowls made of steatite (soapstone) are the oldest vessels found by archaeologists in the Northeast. Although Native Americans were making vessels out of bark and wood long before they started using steatite, only the stone survived in the acidic soils. Steatite was regionally available from quarries in Milford. south-central Massachusetts, northern Rhode Island, and Connecticut.

WOODLAND PERIOD

Similar to the Archaic Period, the Woodland Period is divided into Early, Middle, and Late subperiods. During the Woodland Period, Native peoples in the Northeast gradually changed from a life as hunter-gatherers to a more sedentary one as small-scale farmers or horticulturalists.

The Early Woodland Period, which began around 3,000 years ago, is sometimes referred to as the 'container revolution.' In the Northeast, the transition from steatite pots to clay pottery was a major revolution signifying a change in the economy and cooking technology. A pot is a tool, just like a spear point, and was invented to fill a need. They were used for cooking over a fire, storage, and were easier to transport than steatite containers. Just as stone spear points can be "dated" based on their style, so can clay pottery. The Early Woodland pottery, called Vinette I by archaeologists, had very little decoration, thick walls, and pointed bottoms for placing on or in the ground or between stones in a hearth. Besides this distinctive pottery, stone spear points called Rossville and Meadowood are associated with this subperiod. These artifacts have been found around Spy Pond and Alewife Brook in Arlington.

Early Woodland sites have been found in a variety of landscapes, including floodplains, wetlands, terraces, and upland lakes. We also know that the Native American hunter-gatherers began experimenting (altering) with natural resources and planting blueberries, Chenopodium (quinoa), and sunflower seeds. However, little evidence is left of this planting, except for charred seeds.

During the Middle Woodland Period, starting around 2,000 years ago, people began staying at sites for longer periods of time. Pottery became more elaborate and was decorated with incised (carved) and stamped designs. The use of "exotic" stone, such as jasper, for making stone tools suggests the Native Americans had established trade networks that reached as far as Labrador in Canada. Typical spear points were called Jack's Reef and Fox Creek. Archaeologists have found post molds, fire hearths, and the remains of turtle, deer, and small mammals at Middle Woodland sites in Massachusetts, which means that people were there in the spring and summer. Sites found along the Mystic and Charles rivers with roasting platforms, storage

Changes in pottery style during the Woodland Period [20].

pits, and food remains such as beaver, turtle, bayberry, and sturgeon, may have been summer and fall camps. By the end of the Middle Woodland Period, food was stored underground using baskets to keep nuts, seeds, and dried berries.

Some small-scale farming, called horticulture, was done and local plants included tobacco, Chenopodium, and sunflower by the end of the Middle Woodland Period, around 1,000 years ago. We know that people camped along Alewife Brook and the southwest shore of Spy Pond during the Middle Woodland Period by the Fox Creek spear points found in the artifact collections from Arlington.

During the Late Woodland Period, Native Americans were living in larger, semi-permanent settlements. These were near major rivers and coasts and fertile lands that would have been good for farming. Maize (corn), beans, and squash supplemented the hunting-gathering diet. This limited farming, called horticulture, did not replace the tradition of making seasonal rounds for food, and smaller, task-specific camps were still common. Grinding stone tools such as mortars, pestles, and milling stones, and tools used for farming, such as hoes, are found at Late Woodland village sites. Large storage pits were used to save food to use during the winter and to make sure enough seeds were available to grow crops the following year. More elaborate pottery was made with rounded bottoms for better heat distribution when hanging over fires.

Beginning around 1,000 years ago, Native Americans made triangular stone arrowheads to use with a bow and arrow. Once the Europeans arrived, Native Americans traded furs and maize for metal objects, such as pots, which they used to make arrowheads [21].

The Late Woodland Period is well represented along coastal Massachusetts, including Boston Harbor, and along interior river systems such as the Charles and Mystic rivers. Large settlements or base camps occupied in the spring and fall were sited at estuary heads such as the confluence of the Mystic and Charles rivers.

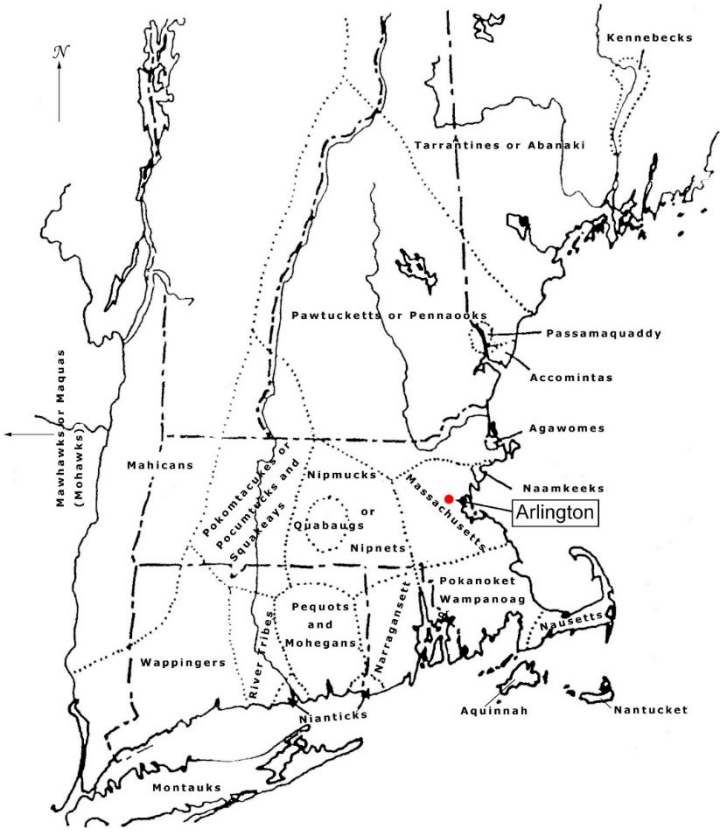
Triangular projectile Levanna and Madison projectile points were the first real arrowheads for bow and arrow hunting. Levanna arrowheads were found around Spy Pond, Alewife Brook, and along Lowell Street. By the end of the Late Woodland Period, almost 10,000 years had passed since the Early Archaic people were hunting around Spy Pond and the Mystic River.

FIRST CONTACT WITH EUROPEANS: THE END OF A TRADITIONAL WAY OF LIFE

The historic context developed for cultural resources in Arlington encompasses the earliest period of contact between Native Americans and European and EuroAmerican colonists into the twentieth century. For archaeological study, this time period is differentiated from the pre-contact period by the presence of written records that can be used to help reconstruct human activities across the landscape.

The first interactions between the Native peoples of Massachusetts and Europeans who had travelled to North America happened about 450 years ago during what archaeologists call the Contact Period. The lives of Native Americans changed dramatically. Many Natives died as the result of wars with the new settlers and the diseases that were brought from Europe.

At the time of European settlement in New England, Arlington was populated by Eastern Algonquian-speaking Native Americans, who lived in large permanent base camps and villages and smaller hunting and fishing camps. The extensive network of waterways connecting the Mystic River Valley to the coast was occupied by the Massachusett, who were closely related to Pawtucket(t) to the north, the Wampanoag to the south; and the Nipmuck(s) to the west. However, it's important to keep in mind that Native places and the names that they themselves used for their groups would have changed over thousands of years, and it was the English settler-colonists for their own political and economic interests that imposed rigid land boundaries and sought to identify Native groups by specific names. Indigenous leaders and their peoples, in fact, resisted European



A map of New England showing English ideas of tribal lands in the seventeenth century. The names attributed to Native groups and the dotted lines shown to represent boundaries between groups are uncertain and do not represent flexible indigenous traditions of travel to established places and interactions among peoples occupying the region [22].

conceptions of fixed property boundaries and continued traveling and occupying favored places throughout their homelands known and remembered by them over hundreds of generations.

During the Contact Period the core area of settlement centered around the Mystic River estuary continued to be a focal point of Native American activity. This core area also probably included several smaller adjacent coastal drainages such as the Malden, Pines, and Saugus rivers. The larger lakes and ponds, including Fresh Pond and Spy Pond, near the estuary, and Spot Pond and Crystal Lake in the Middlesex Fells, formed part of the inland section of the Mystic core. In this core area, a major Native American trail system likely followed the Mystic River north toward the adjacent Ipswich River drainage, with smaller trails or paths along tributary stream networks. Another major trail, the Salem Path, followed the western margin of the Boston Basin along the approximate alignment of Route 60 (Pleasant/Mystic Streets) in what is now Arlington.

Interactions with Europeans rapidly transformed and disrupted the traditional cultural systems of Native Americans in southern New England during the Contact Period. Early explorer accounts and ethnohistorical sources attest to the extensive fur trading network that was especially detrimental to regional tribal relationships. In exchange for furs, Native Americans received clothing, food items, metal, and beads, highly coveted items that led to conflict among those tribes competing to be sole source distributors to English and Dutch buyers. Wampum also became a major trade items. In both instances, ancient Native trails were re-purposed as conduits for the distribution of European goods by the early seventeenth century.

Warfare and disease decimated Native American populations and dispersed survivors. Smallpox and measles had especially devastating effects on the Massachusett, with its Boston Bay population nearly annihilated by smallpox in the early 1630s. After decades of disruptions and conflicts, in 1675– 1676 a war between the colonist-settlers and Metacom (known as King Philip to the English) and his allies led to displacement and destabilization. After the war, many Native men, women, and children were enslaved in southern New England and the Caribbean, while African and Caribbean peoples were brought here to labor as slaves.

To date, no Contact Period sites have been recorded in Arlington, but sites elsewhere in coastal Massachusetts have yielded seventeenth century pottery, copper and brass beads, copper kettles and arrowheads, English white clay pipes, Native American clay pipes, textiles, and bottles indicate that trading was common, and that Natives were becoming involved in a European way of life.

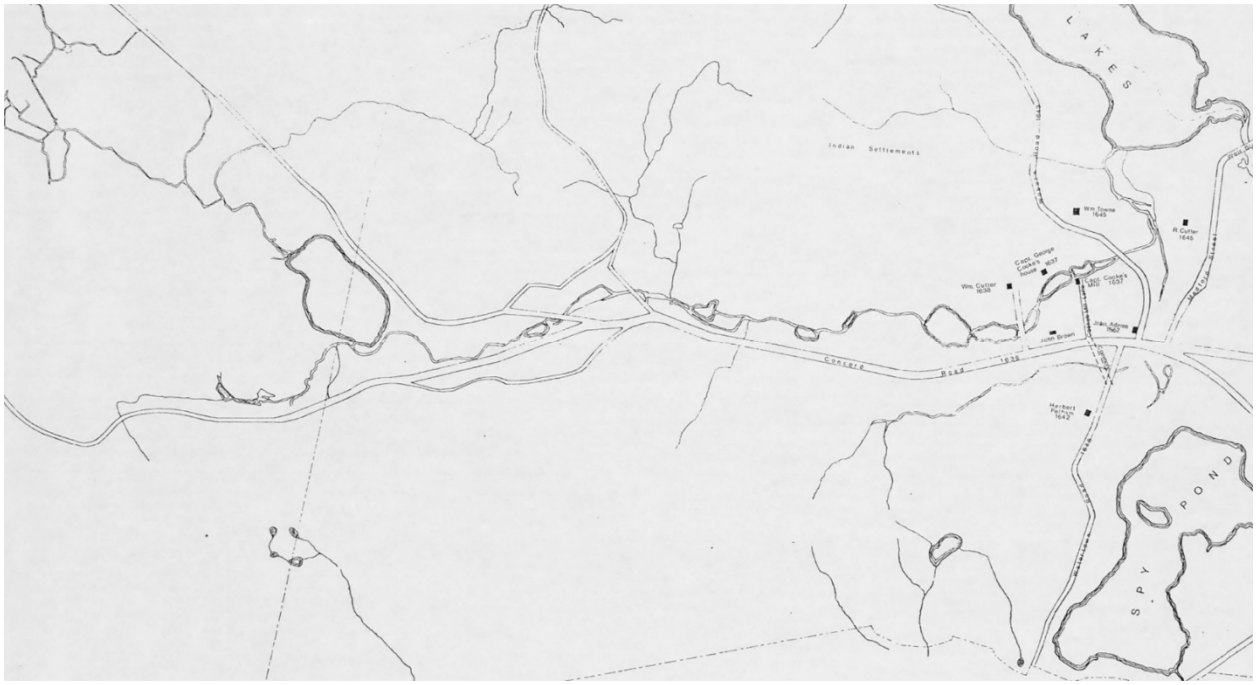
POST-CONTACT SETTLEMENT AND DEVELOPMENT OF ARLINGTON

During the Plantation Period (1620–1675) remnant Native American populations were settled at two village sites near the confluence of Alewife Brook and the Mystic River and along the lower Mystic River at Winnesimmett (now Chelsea). These villages were occupied by Massachusett groups under the leadership of Sagamore John. In 1638, another parcel of land (Squaw Sachem reservation) on the west side of the Mystic River in what is now Arlington and Winchester was also designated for Native American use. A core area of European settlement developed along the Mystic River estuary in Medford in the 1630s, where shipbuilding and agriculture were important activities. Several small but important inland core areas of European settlement became established along the upper Mystic/Aberjona River at Woburn, Reading (now Wakefield) on the Saugus River, and Malden (Malden River) through the 1640s.

In the early to mid-seventeenth century, the area now within the town of Arlington formed the western part of Charlestown and later became part of the town of Cambridge. Fewer than 200 English settlers lived on dispersed farmsteads. Settlement occurred along a primary roadway, Concord Road, that later became Massachusetts Avenue. Native American trails following the approximate routes that are now

Massachusetts Avenue and Pleasant, Mystic and Medford streets were modified for use as local roadways. Planting fields were in the Menotomy Plain area in what is now East Arlington. Agriculture and animal grazing were the main economic activities. The marsh/wetland along Menotomy River, or Alewife Brook, was set aside as common property reserved for hay production, cutting, and animal grazing. An early mill established by George Cooke ca. 1636–1637 on Mill Brook was the first industrial development in the West Cambridge/Arlington area.

The first documented English fish weir was built in Alewife Brook by John Clarke in 1635. Weirs were built and repaired in early spring before the large runs of alewives began and continued in use through the mid-to-late seventeenth century. The selectmen of Cambridge were the ones to grant the weirs to individuals for up to three years and the ones to set the fish prices charged. The fish caught in weirs were also used as fertilizer in corn fields and gardens.



1650 (Anon.) Menotomy map showing major roadways and settlements [23].

During the Colonial Period (1675–1775), Arlington was on the western perimeter of the developing Boston core that included most of the area that had formed the earlier, more localized Mystic River core. During this period, settlement in West Cambridge expanded in several areas. Land division grants in the Cambridge Rocks (Arlington Heights) and Spy Pond areas in 1689 and 1703 increased the area under active settlement. The Massachusetts Avenue and nearby Mill Brook areas were a primary focus of development, and the construction of a school house (1693) and the Menotomy meeting house (1733) helped to define a town center. Massachusetts Avenue was well established as the major east/west transportation corridor passing through the area, and a distinct town center continued to develop along the radial road network formed by Pleasant/Mystic and Medford streets. Commercial activity in this town center included several taverns and a store along Massachusetts Avenue. By 1734, a separate church parish had been formed in this section of Arlington.

In the late 17th and early to mid-18th centuries, the local economy in Arlington was based primarily on agricultural and animal husbandry/grazing. Small-scale industrial development continued along Mill Brook with the expansion of more mill privileges. The population of Arlington remained relatively low, with about

500 to 600 persons living there by 1765. At the end of the Colonial Period most of the land in close proximity to Spy Pond was in agricultural/pastoral use and formed the perimeter of the small village center along Massachusetts Avenue. Outside this village center some residential development had taken place along Pleasant Street just west of Spy Pond. The town military training field used for local militia musters and other activities was located on the east shore of Spy Pond, near the present location of Linwood Street.

In the Federal Period (1775–1830), Arlington was just inside the western edge of the expanding Boston core, and several other developments were nearby in Medford, Cambridge, and Watertown. The general settlement pattern established in and around the town center during the preceding Colonial Period remained in place. Development expanded along Massachusetts Avenue and the Mill Brook valley. Institutional buildings added to the town center included a Baptist meetinghouse (1790), the Middle District School (1801), and the First Parish Church (1804-1805). The early nineteenth century included the opening of the Middlesex (Massachusetts Avenue) Turnpike through the center of Arlington and the Concord Turnpike (Concord Avenue) in Cambridge and Belmont. These major east–west corridors linked Boston with other towns in outlying areas of Middlesex County. The importance of Massachusetts Avenue as a transportation corridor connecting Boston to rural towns was illustrated by its role in the initial battle of the Revolutionary War.

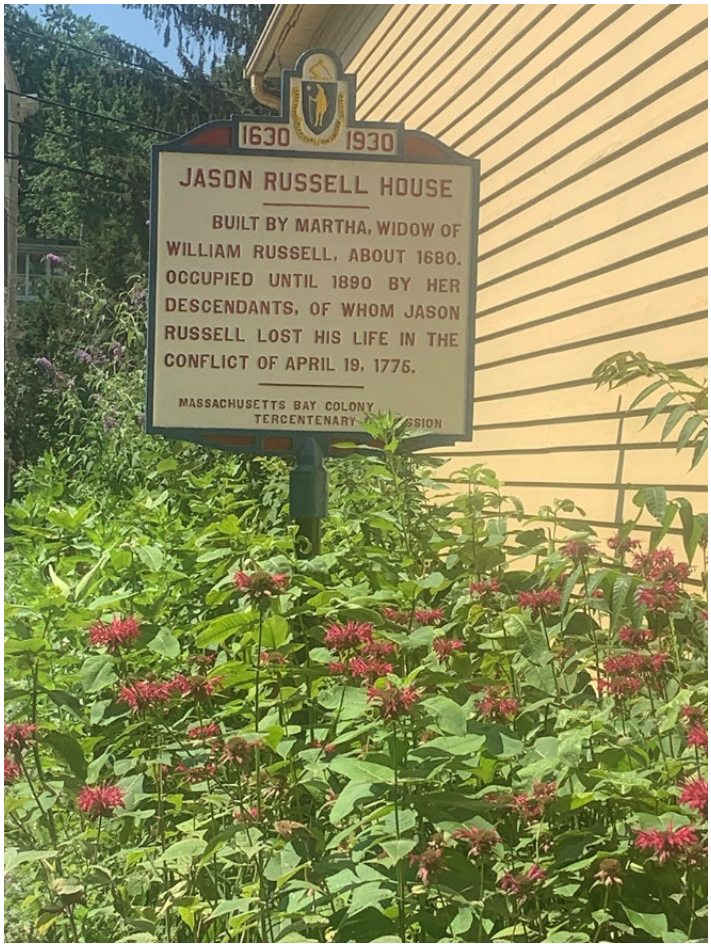
1830 (Hales) map of West Cambridge in Middlesex County [24].

The Jason Russell House is one of the nine post-contact archaeological sites recorded in Arlington for its significance as the site of the most intense fighting between retreating British regulars and local militiamen on April 19, 1775. At the time of the battle, Russell, who was 59 years old and lame, was urged to take shelter at the neighboring George Prentiss House with his wife, Elizabeth, and their children. Russell brought his family there but decided to head back to his own property, joining the Minute Men as they

retreated toward his house for cover. Russell was shot and bayonetted on his own doorstep by the British soldiers, and 11 other men were killed in the house and yard. The house itself was riddled with bullet holes, and blood stains were still visible on the kitchen floor when it was replaced in 1863. The 12 men were buried in the Old Burial Ground on Pleasant Street after the attack in a single grave, without coffins. More than 70 years later, the spot was marked by a plain granite obelisk reading:

Erected by the Inhabitants of West Cambridge, A.D. 1848, over the common grave of Jason Russell, Jason Winship, Jabez Wyman and nine others, who were slain in this town by the British Troops on their retreat from the Battles of Lexington and Concord, April 19th, 1775. Being among the first to lay down their lives in the struggle for American Independence.

Small industries became a larger component of the economic base for West Cambridge, although agriculture and other farming were still important. Produce from farms was transported to Boston markets in a pattern that persisted into the early twentieth century; however, by the early nineteenth century West Cambridge now also manufactured wool, and cotton carding and leather splitting equipment was produced in small machine shops along the Mill Brook valley. Commercial ice cutting in the Boston area began in 1806 when Frederick Tudor made the first shipment of ice outside the United States—130 tons sent to Martinique in the West Indies. After the War of 1812, subsequent shipments of ice were made to various Southern ports in 1817–1820. Other early experiments in commercial ice cutting on Fresh Pond in Cambridge began in the 1820s and soon expanded to become an important local industry for the area. Local entrepreneur Frederick Tudor had developed horse-drawn ice cutting equipment and was shipping ice to southern ports in the United States to the Caribbean in the 1820s.



Plaque at the Jason Russell House [25]

The existing Old Schwamb Mill is the third structure to stand on the property at 17 Mill Lane, following the original seventeenth- and eighteenth-century grist mills and the nineteenth century Woodbridge Spice Mill. The Schwab family converted the Woodbridge building into a woodworking shop in 1847 that burned down in 1860 and was immediately rebuilt on the existing foundations. Given the likeliness that original mill features exist, such as the tailrace and other mill works, PAL designated the Old Schwamb Mill as an important archaeological resource in addition to being listed on the National Register of Historic Places.

During the Early Industrial Period (1830–1870), Arlington was affected by significant changes taking place in the Boston area. Improvement and expansion of transportation systems, such as steam and horse-drawn

street railroads, connected the center of West Cambridge/Arlington and the Massachusetts Avenue/Mill Brook to Boston. A branch railroad extending from Somerville and Cambridge to Lexington was built through Arlington in 1846. An early horse-drawn street rail system was active along the Massachusetts Avenue corridor by 1859. These improved transportation systems contributed to suburban development. New residential areas were added to the central portion of the town by subdividing some larger parcels of former farmland. During this period, the George B. Richardson House was built ca. 1840 along Pond Lane. The name of the town of West Cambridge was changed to Arlington in April 1867.

The existing Old Schwamb Mill at 17 Mill Lane [26].

The Richardson House is one of the nine post-contact sites recorded in Arlington. PAL found evidence of the house foundation during a survey for Spy Pond Shores in 1993. The survey found structural remains of domestic (G.B. Richardson House) and industrial/commercial (William T. Wood Company, Arlington Pipe and Supply) buildings and several ice houses (Belmont and Arlington Ice Company Ice House A and Ice House B and the Cambridge Ice Company Ice House) constructed in the mid/late nineteenth and early twentieth century.

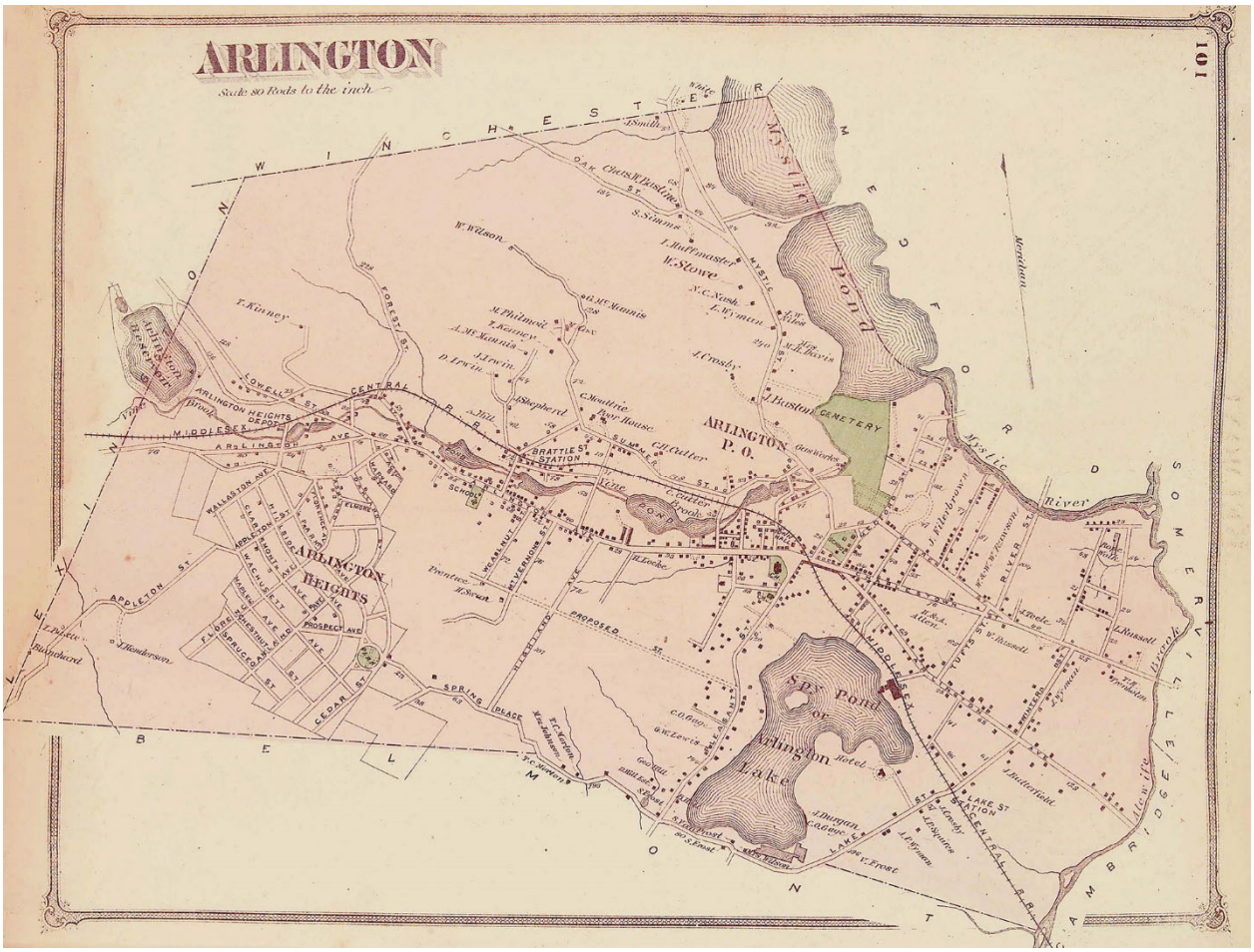
The industrial base of the local economy became larger and more diversified. The 1830s included the revitalized Whittemore card factory, a calico cloth print works, and a saw factory established by two English manufacturers. By 1845, mills in the Mill Brook district were grinding spices, dyewoods, and drugs, and the Arlington Mills were established by Samuel Fowle in 1863, which produced one of the first breakfast cereals (Arlington Wheat Meal). The Schwamb Brothers woodworking factory, established in the former Woodbridge Spice Mill on Mill Lane in 1865, produced oval picture frames. Market gardening was important, with large parcels of land used to produce vegetables for Boston markets. In 1865, 67 farms in Arlington yielded produce valued at $176,000—an amount greater than the value of items produced by any other local industry.

Commercial ice cutting began on Spy Pond in 1837, when the first ice houses were constructed on the southwest side of the pond. Two of the most successful Boston ice merchants, Frederic Tudor and Jacob Hittinger, owned property including ice houses on Fresh Pond. Hittinger also owned ice houses on Little Pond and the east/south side of Spy Pond in Arlington. By 1852 a railroad spur had been built to serve icehouses on the southeast corner of Spy Pond. Regular use of Spy Pond as a recreational or resort area, as well as for ice-cutting, started in the mid-19th century. By the 1850s the Spy Pond Hotel or Taft Hotel had been built on a peninsula on the southeast shore of the pond. A railroad depot was located a short distance away on Lake Street, providing easy access to Spy Pond for Boston area visitors. The Taft Hotel advertised bathing, boating, and fishing as activities available to its guests.

The Prince Hall Mystic Cemetery on Gardner Street was established in 1864 by Prince Hall Grand Lodge Grand Master William B. Kendall as a place for African Americans to bury their loved ones. Records indicate the cemetery was in use until about 1897 before falling into disuse. It is unclear why burials on the

property stopped. In the 1980s, the Prince Hall Grand Lodge in Dorchester and the Arlington Historical Society formed the Prince Hall Mystic Arlington Cemetery Association, which is responsible for the cemetery's upkeep. It is one of the nine post-contact archaeological sites in Arlington and is an important piece of evidence of the influence and presence of the African American community in Boston during the 1800s. The cemetery is also within the Alewife Brook Site and could also contain undisturbed deposits from the Pre-Contact Period.

The Prince Hall Mystic Cemetery was established in 1864 [27].



1875 (Beers) map of Arlington [28].

During the Late Industrial Period (1870–1915), electric street railways were installed that connected Arlington to other urban centers such as Medford, Somerville, Cambridge, and Boston, and residential development increased, especially along the Massachusetts Avenue corridor and in Arlington Center. New construction involved more multi-family dwellings on both sides of Massachusetts Avenue, along parts of Pleasant Street, and in the Arlington Heights area west of the town center. A number of subdivisions were created on former farmland in the western portion of town in the 1890s. Between 1870 and 1900 the population of the town increased to more than twice its former level and almost doubled a second time in the period from 1900 to 1915.

The Mill Brook valley industrial district was still active, with eight manufacturers there in 1871, however, loss of water power due to establishment of the Arlington Water Works on upper Mill Brook put the mills in this district out of operation by the end of the 1870s. The Arlington Water Works was abandoned in 1899 when Arlington was made part of the Metropolitan District water system. A former saw factory on Grove Street was occupied by the Arlington Gas Light Company in 1885. With the demise of some local industries, market gardening became an even more important element of the local economy.

In the Spy Pond area, there was additional construction of ice houses to support the seasonal ice cutting industry. Some of the labor force required to cut ice in winter was provided by men who worked on Arlington farms and market gardens during the rest of the year. In 1875, a large ice house owned by Gage and Company was located on the east shore of the pond at the termination of Linwood Street. By 1898, an

ice house owned by H. Ella Ilsley occupied a shoreline lot formerly owned by George Richardson at the end of Pond Street. A smaller ice house owned by the Belmont and Arlington Ice Company was later built on this lot in 1908.

The 5.5-acre estate of John Wyman extended to the shore of Spy Pond between Pond Lane and Linwood Street. Small parcels owned by R.W. Hopkins and the town of Arlington were located on the pond shore just north of Linwood Street. The former Gage and Company ice house next to Linwood Street was owned by the Cambridge Ice Company. The Linwood Street ice house was one of the largest in the area and held about 35,000 tons of ice. In 1914, an ice house on Linwood Street burned and was replaced. The Taft Hotel went out of business in 1907, and the large structure was removed.

During the Early Modern Period (1915–1940), Arlington's population continued to increase. The onset of the Depression slowed this process in the 1930s. The urban street trolley lines and railroad network dating to the turn of the century remained essentially the same. Residential development continued along Massachusetts Avenue and in subdivisions in the Menotomy Rock highlands, Arlington Heights, and East Arlington. Commercial strip development also spread along Massachusetts Avenue, and most of the mill ponds along Mill Brook were filled by the mid-1900s. In East Arlington dense infilling with multi-family structures occurred near major streets such as Broadway and Lake Street. Arlington became even more accessible from all directions once Route 2 was constructed along the southern edge of the town between 1932 and 1935. Until the 1940's, market gardening was the largest local industry; however, most farmland was eventually sold for suburban residential development.

In the post-World War II era of the late 1940s and 1950s, during the Mid-Century Modern Period (1940–1970), improved highway access (Routes 16 and 2) and increasing use of automobiles rather than earlier street railway systems also contributed to the expansion of suburban residential development in Arlington. Route 2 was expanded in 1964, allowing Arlington to become even more accessible. The population increased by about a third during this period, and the Town's accessibility also made it attractive for several types of businesses.

By 1970, Arlington's population was 52,720; by 1990, it had decreased to 44,630; and in 2010, it was 42,844. In the Spy Pond area, following a fire in 1969, the remains of the William T. Wood Ice Tool factory were demolished. The George Richardson House and a barn/garage located on the north side of Pond Lane were also damaged by fire and demolished in 1978 and 1980. Today, Arlington is a lively suburb of Boston, with several museums and historic sites, open recreational spaces, business districts, theaters, restaurants, and a flourishing local arts scene.

ARCHAEOLOGICAL SITES & ARCHAEOLOGY IN ARLINGTON

Thirty-eight archaeological sites are recorded in Arlington (28 pre-contact and 10 post-contact sites). As mentioned above, 26 of these sites were recorded with the MHC before PAL conducted the Town-Wide Archaeological Reconnaissance Survey, and the remaining 12 were recorded as a result of the Survey and those new sites are now recorded with MHC. Most of the site forms for the previously recorded sites in Arlington were completed by professional archaeologists from Harvard and the MHC while conducting inventories of the artifact collections held at Harvard's Peabody Museum in the 1970s and 1980s.

The Native American artifacts at the Peabody Museum were originally collected from farm fields and construction sites around Spy Pond, Alewife Brook, and the Mystic River by avocational archaeologists in the late 1800s and early to mid-1900s and eventually donated and/or sold to the museum. The largest collection came from George B. Frazar, a local resident, whose collection was purchased by the Peabody Museum between 1900 and 1910. Other notable artifact collections from Arlington at the Peabody Museum

were collected by Jos. McNaughton in 1897 and S.J. Guernsey in 1915.The Jason Russell House holds a much smaller collection of Native American artifacts, all of which were donated to the museum by local residents. Artifacts at both the Peabody Museum and Jason Russell House consist mostly of chipped stone tools (i.e., spear points, knives, scrapers) and ground stone tools (i.e., axes, gouges, celts, adze, pestles). Pottery is largely absent from the collections since a whole vessel was not as likely to survive the test of time as a stone tool in a plowed field or on a construction site, and broken pieces of pottery, or sherds, blend in with the dirt and were not easily recognizable to avocational archaeologists.

Unfortunately, very little information is known about the sites in which these artifacts originated. Most early collectors did not record detailed field notes, nor conduct formal excavations as far as we know, and the only information, if any, included with the collection was a short note with the general location. However, these notes helped PAL connect the artifacts to historical place names shown on maps from the late 1800s and early 1900s when the artifacts were collected, such as "Wyman's Farm" or "near the hotel on Spy Pond."

Example of the types of notes that helped the archaeologists connect artifacts with a location in Arlington. This one is on a pestle found along Alewife Brook that's in the Peabody Museum's collection [29].

As mentioned above, the previously recorded pre-contact sites in Arlington were clustered around Spy Pond, Alewife Brook, and the Mystic River. Avocational archaeologists usually favor exposed areas including pond shores, riverbanks, plowed fields, and other areas where cultural deposits are visible on the ground surface. Collectors often focus on large, artifact-rich sites or sites that are well known in local historical records. Those that are present in Arlington follow this pattern closely. In particular, the Spy Pond, Alewife Brook, and Mystic River areas are reported as a high-density artifact collection area where materials were collected in agricultural fields near and along the pond and river banks, or in areas being dug up for construction. Similarly, avocational sites are also located at or near sources of bedrock outcroppings where collectors expected to find quarry areas, lithic tools, and chipping debris; however, this is not the case in Arlington.

Although numerous pre-contact sites are recorded in Arlington, most have not been investigated by professional archaeologists, as noted above. However, we know from the types of projectile points found in the artifact collections from Arlington (i.e., relative dating) that all major time periods of Massachusetts Native American history during the pre-contact period are represented, with the possible exception of the PaleoIndian Period, and that the potential for learning more about the Arlington's pre-contact history is great, given the richness of the area. The pre-contact artifact collections from Arlington span at least 10,000 years and represent dense habitation and fishing areas from the Early Archaic through the Contact periods. Furthermore, the Spy Pond and Mystic/Alewife areas represent the largest and most productive pre-contact sites in Greater Boston. The river site locations were likely targeted for the rich runs of anadromous shad, salmon, and alewives, while the sites by wetlands suggest activities associated with hunting, foraging and tool maintenance.

Other areas in Arlington occupied by Native Americans, but that have not been as well

The Alewife Brook (top) and Mystic River (center) areas were likely targeted for the rich runs of anadromous shad, salmon, and alewives, while wetlands around Spy Pond (bottom) were targeted for hunting and other types of resources [30].

represented in artifact collections, include the wooded forest and exposed rocky outcrops within Menotomy Rocks Park, which could have been a favored area for rock shelters and to extract Cambridge argillite to make stone tools, as well as for campsites.

Rock outcrops at Menotomy Rocks Park [31].

PROFESSIONAL ARCHAEOLOGICAL SURVEYS IN ARLINGTON

There have been nine professional archaeological investigations conducted in Arlington to date. These include archaeological investigations at the Jason Russell House, along the eastern shore of Spy Pond, along Mystic Valley Parkway, and the Alewife Greenway.

As part of Arlington's 350th anniversary celebrations, archaeologists from Boston University conducted limited excavations at the Jason Russell House in 1985. The purpose of the work was to test architectural historian Robert Nylander's 1964 theory that the house had been built in two stages rather than as one episode in 1745 as popularly believed. Nylander believed that Jason Russell moved into his grandfather's ca. 1684 house after inheriting it in 1740 and then relocated it and added the ell addition after his marriage in 1750. Dendrochronological research conducted in 2012, however, provided new information about the house's construction. Sampling of beams, joists, and roof components from various parts of the house indicated the trees from which the house was built were felled ca. 1661/1662, 1684/1685, and 1740–1750. These results, combined with the knowledge that felling dates usually coincide with construction dates, suggest Jason Russell built the entire house ca.1745 using new wood for its main structural components and re-used timbers from his grandfather's seventeenth-century house for the interior beams.

In 2021, archaeologists from Geophysical Survey Systems, Inc. (GSSI) conducted a ground-penetrating radar (GPR) survey on the property to confirm that the Jason Russell House had not been moved from another location on the property as Nylander had earlier proposed and to identify any historical features and the extent of disturbance on the property in advance of a geothermal project. GSSI identified the footprints of the houses at 782 and 788 Massachusetts Avenue and at 9 Jason Street and six anomalies that potentially represented archaeological features. The footprint of the former house at 782 Massachusetts Avenue and Anomaly 06, a circular shaft feature within it, extended into the geothermal project area. GSSI's results also indicated wall remnants and coarse cellar fill in the footprints of the three former buildings and fills and disturbance between the Jason Russell House and the footprints of the former buildings at 782 and 788 Massachusetts Avenue. Additionally, Anomaly 06 and the other five identified circular features, likely are the locations of wells, privies, or other historical shaft features.

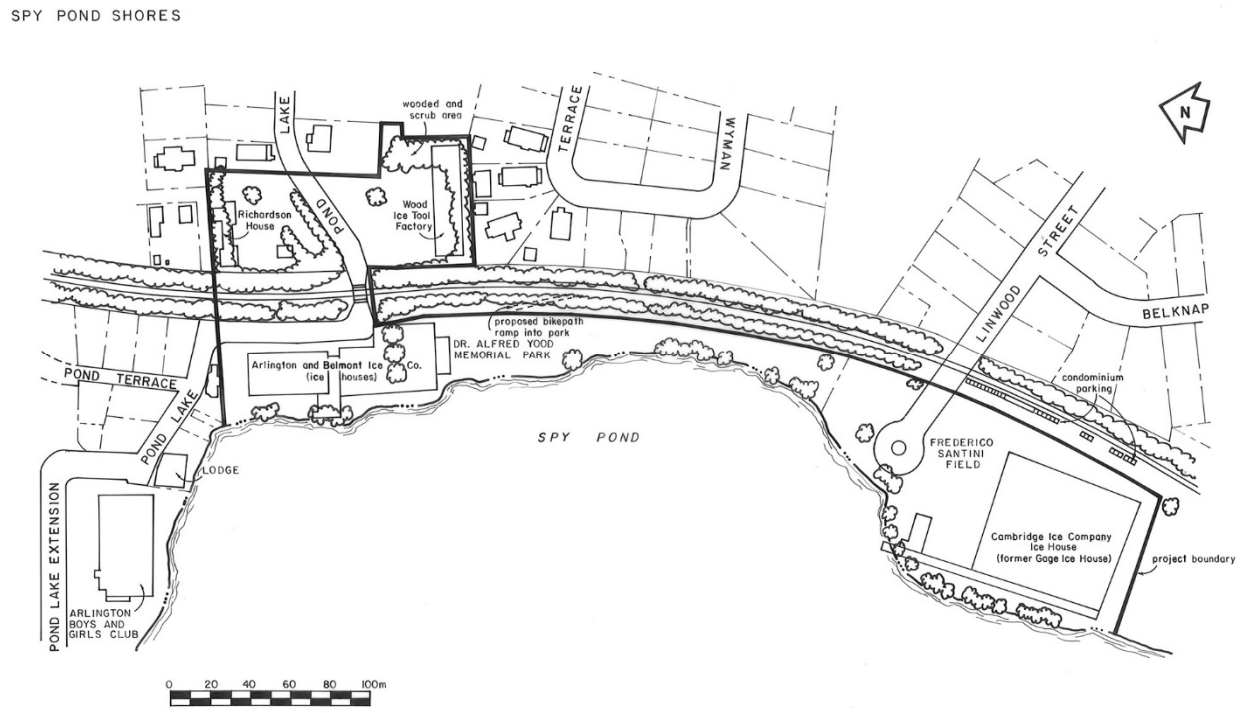
Following the GPR survey, PAL conducted an archaeological survey in the property's north lawn as part of the geothermal project. The survey documented multiple fill deposits underlying the landscaped topsoil across most of the project area. The fill deposits are associated with historical landscape alterations and landscaping around the house and the late nineteenth-century construction and twentieth-century demolition of two houses (at 782 and 788 Massachusetts Avenue). A total of 180 post-contact artifacts were recovered from the Project area: eighteenth- and nineteenth-century ceramic sherds; bottle, lamp, and mirror glass fragments; 2 pieces of animal bone; and architectural debris. No structural evidence of the former house at 782 Massachusetts Avenue was identified despite the results of the GPR survey mentioned above that identified its foundation footprint along the eastern edge of the proposed drilling area. Demolition fill was recorded in the location of the GPR-identified circular anomaly adjacent to the former house and is interpreted as a cistern that was filled when the house was demolished.

PAL conducted an archaeological survey for the Jason Russell House Geothermal Project in 2021 (AHS [32]).

An archaeological survey was conducted by PAL for the Spy Pond Shores Project in 1993. Background research by PAL indicated that intensive historic and modern period development had taken place in the project area. Remains from the G.B. Richardson House, William T. Wood Company and several ice houses were uncovered, however the effects of modern period demolition and landscaping on these structural features were unknown. The ice houses were destroyed by fire and demolished ca. 1930, and the area covered with fill and landscaped for use as a town beach and park in the early 1930's and 40's. Subsurface testing along the shoreline confirmed the locations of demolished ice house structures in the existing playground near Pond Lane and adjacent to the baseball field on Linwood Street. Subsurface testing in the eastern half of the project area confirmed the locations of the G.B. Richardson House (ARL-HA-4) and William T. Wood Company factory (ARL-HA-3).

The Richardson House site contained filled foundations (house, outbuildings) and associated deposits of mid/late 19th and early 20th century domestic refuse. The foundation of the William T. Wood Company factory contained deposits of coal ash/slag. The section of ice house foundation exposed in the Pond Street parking lot and a remnant foundation floor for a storage shed belonging to the Arlington Pipe and Supply Company were not considered to be potentially significant cultural resources due to the loss of integrity

(demolition). The other ice house foundations buried under modern fill in the existing playground and baseball field appeared to be more intact. It was recommended that the project improvements be planned to avoid disturbing the buried ice house foundations. Furthermore, it was recommended that the G.B. Richardson House and William T. Wood Company factory sites had the potential to yield additional information on 19th century residential and industrial development/urban land use and should be preserved in place. There was little or no modification of the Richardson House lot (landscaping, tree/shrub planting) and the proposed parking lot on the parcel containing the William T. Wood Company factory was reconfigured to avoid the factory foundation.



The remnants of several historic sites were identified by PAL during an archaeological survey for the Spy Pond Shores Project in 1993 [33].

Timelines, Inc. conducted a survey in 2004 for the Arlington Water Main, Mystic Valley Parkway Project, which spanned 640 meters along the Mystic River and fell within a previously recorded pre-contact site. Shovel test pits and machine-assisted trenches revealed disturbed soils and dense fill deposits, likely representative of the major landscape changes in the project area associated with the construction of the Mystic Valley Parkway. A small amount of post-contact period refuse was re-covered (i.e., glass and nails), as well as pre-contact chipping debris and a flake tool (i.e., scraper). ‘

PAL conducted a survey for the Alewife Greenway Corridor Improvement Project in 2009, which fell within two of the previously recorded site areas along the Mystic River and Alewife Brook. As with the Mystic Valley Parkway Project, PAL found pre-contact chipping debris mixed with post-contact cultural material consisting of ceramics, glass, brick, etc., and modern trash from fill contexts. It was concluded that the pre-contact materials were brought into the area with fill material when Alewife Brook was channelized.

Image Credits:

Cover:	Map of Arlington (Beers 1875), Stark projectile point and double-grooved stone axe from Arlington (photograph courtesy of Arlington Historical Society), PAL archaeologists excavating at the Jason Russell House (photograph courtesy of Arlington Historical Society).
1, 2. 4-13, 25-27, 30 &31	Photos and images by PAL.
14&19	*Bulletin of the Archaeological Society of Connecticut*, 1984.
10, 15&17	Illustrations courtesy of Dana Richardi, The Public Archaeology Laboratory, Inc.
16 & 32	Image courtesy of Arlington Historical Society (AHS)
3 &29	Image by Dianna Doucette from the collection of the Peabody Museum of Archaeology and Ethnology, Harvard University, 99-30-10/56391; 99-30-10/56398.
18	Image of diorama "A Pawtucket Village on the Merrimack River, 500 Years Ago. © Robert S. Peabody Institute of Archaeology, Phillips Academy, Andover, Massachusetts.
20	C. Keith Wilbur, *New England Indians*, 1978.
21&22	University of Rhode Island Digital Collections, with PAL annotation.
23	Anon. Map of Monotomy 1650
24	Hales Map of Arlington 1830
28	Beers Map of Arlington 1875
33	1993 PAL report on Spy Pond Shores, page 61, adapted from W. Pressley Associates, Inc. plan.

LEARN MORE ABOUT ARCHAEOLOGY AND ARLINGTON'S HISTORY

Museums to Visit

Jason Russell House (www.arlingtonhistorical.com)
Old Schwamb Mill (www.oldschwambmill.org)
Cyrus Dallin Museum (www.dallin.org)
Harvard Peabody Museum of Archaeology and Ethnology (www.peabody.harvard.edu)
R.S. Peabody Museum (www.peabody.andover.edu)
Peabody Essex Museum (www.pem.org)
Robbins Museum (www.massarchaeology.org)
Mashpee Wampanoag Museum (mashpeewampanoagtribe-nsn.gov)
Old Sturbridge Village (www.osv.org);
Historic Deerfield (www.historic-deerfield.org).
Massachusetts Archaeological Society (www.massarchaeology.org).
Tomaquag Museum (www.tomaquagmuseum.org)

Other Resources

Massachusetts Commission on Indian Affairs
100 Cambridge St, Suite 300, Boston, MA 02114
This commission's fundamental role is to assist Native American individuals, tribes, and organizations in their relationships with state and local government agencies and to advise the Commonwealth in matters pertaining to Native Americans. The commission was created by the state legislature in 1974 and its members represent different tribes throughout the state.
Learn more by calling **(617) 573-1292** or visiting www.mass.gov/service-details/indian-affairs.

Archaeological Institute of America (www.archaeological.org)

Massachusetts Historical Commission
220 Morrissey Blvd., Boston, MA 02125
The Massachusetts Historical Commission, office of the State Historic Preservation Office (SHPO), administers various federal and state programs created by the National Historic Preservation Act of 1966. These programs identify and protect the buildings, sites, structures, districts, and objects important in Massachusetts' cultural heritage. ***If you find an artifact: call Massachusetts Historical Commission (MHC) to fill out a site form.***
Learn more by calling **(617) 727-8470** or visiting www.sec.state.ma.us/mhc.

Massachusetts Archaeology Month: www.sec.state.ma.us/mhc

Massachusetts Tribal Nation
This Tribe's ancestral lands have always been the present-day Greater Boston area, including Arlington. The native name is written Massachuseuck (Muhsachuweeseeak) /məhs at͡ʃəw iːs iː ak/—singular Massachusee (Muhsachuweesee), which translates as "at the great hill," referring to the Great Blue Hill, located in Ponkapoag.
Learn more by visiting www.massachusetttribe.org

Mashpee Wampanoag Tribe
483 Great Neck Road South, Mashpee, MA 02649
This tribe, also known as the People of the First Light, has inhabited present-day Massachusetts and eastern Rhode Island for more than 12,000 years. It was re-acknowledged as a federally recognized tribe in 2007. In 2015, the federal government declared 150 acres in Mashpee and 170 acres in Taunton as the Tribe's initial reservation, on which it can exercise its full tribal sovereignty rights.
Learn more by calling **(508) 477-0208** or visiting www.mashpeewampanoagtribe-nsn.gov.

Wampanoag Tribe of Gay Head/Aquinnah
20 Black Brook Rd, Aquinnah, MA 02535
This Tribe's ancestral lands have always been on the southwestern end of Noepe (Martha's Vineyard), even after the Town of Gay Head was incorporated in 1870 under Commonwealth law. In 1972, the Wampanoag Tribal Council of Gay Head, Inc. was formed to promote self-determination among Wampanoag people, to ensure preservation and continuation of Wampanoag history and culture, and to seek the return of Tribal lands to the Wampanoag people. In 1987, the Tribe obtained federal recognition by an act of Congress and approximately 485 acres were purchased as Tribal Lands.
Learn more by calling (508) 645-3790 or visiting www.wampanoagtribe-nsn.gov.

Tribal Government of the Nipmuc Nation: Hassanamisco Band of Nipmucs
25 Main Street, South Grafton, MA 01560
On behalf of their ancestors, their descendants and all the members of their community, the Tribal Government and Citizens of the Nipmuc Nation seeks to preserve and promote the culture, language, and values of the Nipmuc People and to improve their quality of life, including that of future generations.
Learn more by calling **(774) 317-9138** or calling www.nipmucnation.org.

Narragansett Indian Tribe
4533 South County Trail, Charlestown, RI 02813
This Tribe includes descendants of the aboriginal people living in present-day Rhode Island but claims territorial interests throughout Massachusetts. The Narragansett Indian Tribal Historic Preservation Office is authorized to determine all matters on behalf of the Tribe with respect to historic preservation, Indian graves' protection, religious freedom, and other relevant cultural matters.
Learn more by calling (401) 364-1100 or visiting www.narragansettindiannation.org.

Suggested Readings

Bragdon, Kathleen J.
1996 *Native People of Southern New England, 1500–1650*. University of Oklahoma Press, Norman.

2009 *Native People of Southern New England, 1650–1775*. University of Oklahoma Press, Norman.

Braun, Esther K., and David P. Braun
1994 *The First Peoples of the Northeast*. Moccasin Hill Press, Lincoln, Mass.

Calloway, Colin G., editor
1997 *After King Philip's War: Presence and Persistence in Indian New England*. University Press of New England, Hanover, N.H.

Calloway Colin G., and Neal Salisbury, editors
2003 *Reinterpreting New England Indians and the Colonial Experience*. Colonial Society of Massachusetts, Boston.

GLOSSARY OF ARCHAEOLOGICAL TERMS

Abrader
A general term for a stone used to grind wood, antler, or another stone. Abraders are typically identified by the scratches and other wear on their surfaces produced during their use.

Adena
A lanceolate to triangular biface blade with excurvate (convex) edges with near 90° shoulders and a lobate, rounded stem with a convex base. Diagnostic of the Early Woodland Period (2800-1200 B.P.).

Adze
Pecked and ground stone woodworking tool that are less than half grooved and that have a convex cross-section.

Anthropology
The study of humanity – our physical characteristics as animals, and our unique non-biological characteristics we call culture. The subject is generally broken down into three subdisciplines: biological (physical) anthropology, cultural (social) anthropology, and archaeology.

Archaeology
A subdiscipline of anthropology involving the study of social and cultural past events through material remains and explaining the order and meaning of those events.

Archaeological sensitivity
The likelihood for pre-contact and post-contact archaeological resources to be present.

Archaeological sites
The physical remains of the past that are in ruins or partially or completely buried in the ground.

Argillite
A type of shale ranging in color from blue green to black.

Artifact
Any portable object that shows evidence of modification by humans. Examples of artifacts are spear points chipped from stone, animal bones burned during preparation of a meal, fragments of pottery vessels and coins. Whether ancient or recent, artifacts are the traces of human behavior, and therefore one of the prime categories of things studied by archaeologists.

Assemblage
All of the cultural, floral, and faunal materials collected from a site.

Atlantic Point
A style of projectile point associated with the Late Archaic and Transitional Archaic periods (4100-3600 B.P.) that is widely distributed in eastern Massachusetts and along the Eastern Seaboard.

Atlatl
An Aztec term for "spear-thrower," a wooden shaft used to propel a spear or dart. The atlatl functions like an extension of the arm, providing more thrusting leverage.

Avocational archaeologist
A person with little or no formal training who surface collects from areas such as plowed fields and excavates sites for artifacts and features.

Axe
Pecked and groundstone tool that is at least ¾ grooved and tend to have a convex-convex cross-section.

B soil horizon
Soil located below organic soils that consist of sands and inorganic materials that have been leached out through chemical interactions.

B.P.
An abbreviation for Before Present, 'present' being 1950 based on the date when radiocarbon analysis was first used to date archaeological sites.

Biface
An artifact that has been worked on both the front (ventral) and back (dorsal) sides and exhibits two convex surfaces and at least one curving edge.

Bifurcate-base projectile point
A triangular blade that is corner notched with an expanding base and shoulders that vary from 90° angle to long drooping barbs. A style of projectile point diagnostic of the Early Archaic Period (10,000-8000 B.P.). Also known as Kanawha Stemmed, Le Croy Bifurcate, St. Albans side-notched in the southern United States.

Bioturbation
The movement of soils and sediments by plants and animals. Burrowing by small mammals, worms, and insects is a significant factor in the movement of sediments. The growth and decay of plant roots creates voids in the soil that fill with sediments from the surrounding topsoils and subsoils. Large volumes of soils can be disturbed when mature trees blow down in storms or topple after dying. Bioturbation is largely responsible for the gradual burial of artifacts left on the ground surface at most archaeological sites found in the Northeast.

Brewerton point
A triangular blade that can be corner-notched, broad-eared, and side-notched with expanding stem. Diagnostic of the Late Archaic Period (5500-4500 B.P.). Also known as Vosburg and Sylvan side-notched in New York and western Connecticut.

Calcined bone
Bone that has been heated to a high degree and altered to chalky-like appearance.

Ceramic temper
Shell or mineral, primarily sand, mixed with clay during the manufacture of pottery vessels. Occasionally steatite or ground ceramic fragments (grog) are used.

Chert/Chalcedony
A hard, extremely dense, or compact sedimentary rock. It has a tough, splintery to conchoidal fracture and may be white, gray, green, blue, pink, red, yellow, brown, or black. The term flint is essentially synonymous. Chalcedony is the material of much chert.

Chipping debris/debitage
The residue created during the manufacturing or sharpening of stone tools. This category includes flakes, shatter, and chunks.

Cobbly
Characterized by cobbles, e.g., a "cobbly soil."

Coburn point
A regional name for the Wayland-notched point in Massachusetts. Diagnostic of the Transitional Archaic Period (3600-3000 B.P.).

Contact Period
The era when Native American and European explorers and traders came into contact, around 450 to 300 years ago.

Context
Archaeological context refers to the setting within a site from which the relationship of archaeological features, artifacts, and environmental evidence are connected. Usually, the meaning of artifacts cannot be discerned without information about their setting. One example is determining how old an object is by its depth in the ground. Unless the depth of an object is carefully recorded against a fixed point of reference, it may be impossible to relate objects to the dimension of time. Another example is finding an artifact in a ceremonial pit versus a trash pit, which gives that object different meaning.

Continental shelf
That part of the continental margin that is between the shoreline and the continental slope. It is characterized by a gentle slope and depths of less than 200 m.

Cord-marked ceramics
Aboriginal vessels decorated by imprinting cords on the partially dried surface.

Core
A nodule of stone suitable for flake removal during tool manufacturing. A piece of stone with two or more flakes removed.

Cortex
The outside surface remnant on stone debitage or tools.

Cremation burial
A secondary interment where bones have been subjected to intense heat.

Cultural resources
Districts, sites, buildings, structures, and objects relating to American history, architecture, archaeology, engineering, and culture.

Cultural Resource Management (CRM)
The practice, usually by trained professionals, of identifying, documenting, and helping to preserve Districts, sites, buildings, structures, and objects relating to American history, architecture, archaeology, engineering, and culture.

Data: Relevant observations made on objects, serving as a basis for study.

Data recovery program
If a significant site is to be impacted by a construction project, mitigating these impacts often means excavating or collecting data from a site or portion of a site during a data recovery program.

Depositional event
The activities of a group, during their occupation or use of an area, which creates a site visible in the soil horizons.

Diagnostic artifacts
Artifacts that possess distinct characteristics that occasionally allow them to be used as temporal markers. Generally, include projectile points and ceramics.

Disturbance
Natural or cultural activities that adversely affect the physical condition or integrity of a site. These can include erosion or construction activities.

Ecofact
The natural remains found in an archaeological site, such as seeds, bones, shell, and plant pollen.

Eden point
Lanceolate blade with parallel sides with a straight to slightly concave base. Diagnostic of the late PaleoIndian Period (11,000-10,000 B.P.). Also known as Plano in western United States.

Early Archaic Period
The pre-contact period from ca. 10,000 to 8000 years ago and characterized by such diagnostic artifacts as bifurcate-base, Kirk, and Hardaway-Dalton projectile point types in southern New England and the Eastern Seaboard.

Early Woodland Period
The pre-contact period ranging from ca. 3000-2000 years ago and characterized by the presence of Small Stemmed and Meadowood projectile points and ceramics.

EuroAmerican
A term used to describe on-Indigenous people in North America, typically applied to the early immigrant colonists and settlers who left their homelands in Europe to permanently reside in what is now the United States.

Feature
A visual discrete, non-portable deposition produced during an activity associated with the occupation of a site. Can include a cooking/heating hearth, pits for storage and trash disposal, living surfaces, middens, and burials.

Felsite
A generally light-colored stone containing larger grained crystals or phenocrysts. Outcrops of this material have been identified at several locations in eastern Massachusetts and occurs as cobbles in glacial drift.

Flakes
Chipping debris with evidence of a striking platform, or bulb of percussion, with identifiable ventral (front) and dorsal (back) surfaces. Includes trimming flakes from biface reduction and primary flakes from cobble or quarry blank.

Flintknapping
The process of removing flakes from a piece of stone to form tools. Flintknapping shapes stone through the controlled removal of material by striking the stone with a hammer made of stone, antler, or wood, called percussion. Flintknapping can also involve the removal of flakes by pressing on the edge of the stone with sufficient force to detach a flake, a process called "pressure flaking." Knapped or "chipped" stone tools are distinct from "ground stone tools" which are made through the abrasion or grinding of a stone to form a tool.

Fluted points
Lanceolate blade with a fluted base varying from just the lower portion of the blade to nearly the entire length of the blade. Diagnostic of the PaleoIndian Period (12,500-10,000 B.P.). Also known as Clovis or Folsom in the western United States.

Fox Creek
A lanceolate blade that has a parallel to slightly tapering stem with a concave to straight base and small (stemmed) or no shoulders (lanceolate). Diagnostic of the Middle Woodland Period (2000-1000 B.P.).

Glacial outwash
Stratified sand and gravel removed or 'washed out' from a glacier by meltwater streams and deposited in front of or beyond the margin of an active glacier. The coarser material deposited close to the glacier.

Glacial lake
A lake that derives much or all of its water from melting glacial ice. Located in a basin produced by glacial deposition and dammed by glacial deposits or in a basin produced by the collapse of outwash materials surrounding masses of melting ice.

Gouge
Pecked and ground stone woodworking tool with parallel sides and a shallow, but well defined hollowed out bit at one end.

Hammerstone
A stone or cobble used in the manufacture of stone tools; part of a flintknapping kit.

Hardaway-Dalton point
A lanceolate shaped blade with broad shallow side-notches and a deeply concave base with flaring tangs. Diagnostic of the Early Archaic Period (10,000-9000 B.P.).

Hearth: A place where a fire is built, often ringed by stones.

Holocene Period
An epoch of the Quaternary Period from the end of the Pleistocene (ice age), approximately 10,000 years ago, to the present time.

Hornfels
A fine-grained rock composed of a mosaic of grains or phenocrysts formed during contact (thermal) metamorphism, produced by changes in temperature.

Horticulture
The practice of planting and maintaining crops without the use of a plow.

Ice lobe
A large, rounded, tongue-like projection from the margin of the main ice mass.

Igneous rocks
Rock or mineral that solidified from molten or partly molten material.

Incised ceramic decoration
Decoration of pottery by shallow cutting prior to firing a vessel.

Indigenous communities
The original or first peoples to settle a region. In the Americas, they are also known as American Indians, Native Americans, and First Nations.

Intensive archaeological survey
An intensive archaeological survey is designed to locate and identify any cultural resources within a given area using small hand-excavated test pits placed within areas that are considered sensitive for archaeological resources.

Jack's Reef point
A point type that occurs either as corner-notched or pentagonal. Exhibits a lanceolate to pentagonal blade with an expanding base with a straight bottom. Diagnostic of the late Middle Woodland Period (2000-1000 B.P.).

Judgmental testing
Subsurface testing conducted during an archaeological investigation that is placed to test a particular environmental or cultural feature.

Kettle Hole
A steep-sided, usually basin- or bowled-shaped hole or depression, commonly without surface drainage, often containing a pond, lake, or swamp. Formed by the melting of a large, detached block of stagnant ice that was entirely or partially buried by glacial drift. Kettles range in depth from about one meter to tens of meters, and in diameter to as much as 13 kilometers.

Kirk point
A triangular blade that is corner-notched and barbed with a stem that expands at the bottom. Diagnostic of the Late Paleo and Early Archaic Period (10,000-8000 B.P.).

Land-Disturbing Activity
Any activity that causes a change in the position or location of soil, sand, rock, gravel, or similar earth material. Typically used in permitting and planning to categorize a regulated action.

Late Archaic Period
The period of time between 5000 to 3000 B.P. with diagnostic artifacts including Brewerton, Squibnocket Triangles, Small Stemmed projectile points. Consists of the Laurentian, Small Stemmed, Susquehanna traditions.

Laurentian Tradition
The earliest tradition of the Late Archaic; characterized by diagnostic Vosberg, Otter Creek, and Brewerton projectile points.

Levanna point
A large equilateral triangle projectile point with a concave, or occasionally straight, base, and asymmetrical tangs. Diagnostic artifact of the late Middle to Late Woodland Period (1000-400 B.P.).

Lithic
Stone.

Lithic workshop
An area where stone tools were manufactured, characterized by moderate to large quantities of chipping debris, broken tools, partially completed, and completed tools.

Locus
A small concentration of cultural material, or discrete deposits within a larger site area

Madison point
A triangular point that is similar to both Squibnocket Triangles and Levanna points. Diagnostic artifact of the Late Woodland and early post-contact periods (1000-450 B.P.).

Mansion Inn blade
Lanceolate biface with obtuse shoulder angles and contracting stems with straight or concave bases.

Meadowood point
An isosceles triangle biface blade that is side-notched, with blade outline continuous above and below side-notch. The base is usually convex with a width the same or greater than that of the blade. Diagnostic of the Early Woodland Period (3000-2000 B.P.).

Metamorphic rocks
Any rock derived from pre-existing rocks by mineralogical, chemical, and/or structural changes in response to temperature, pressure, stress, and chemical environment.

Midden
A feature characterized by darker soils and different textures which contain refuse from food processing activities, such as shell and bone, and other processing features such as hearths and pits. Animal and human burials are occasionally interred in midden deposits.

Middle Archaic
Pre-contact era from ca. 8000-5000 years ago. Diagnostic artifacts include Neville and Stark projectile points.

Middle Woodland Period
Pre-contact era from ca. 2000 to 1000 years ago. Diagnostic artifacts include the Jack's Reef and Fox Creek projectile points.

Moraine
A mound or ridge of unsorted, unstratified, glacial drift, predominantly till, deposited chiefly by direct action of the glacial ice.

Multicomponent site
Evidence of more than one occupation at a site, generally indicated by the presence of a range of diagnostic artifacts.

Neville point
A stemmed triangular blade point with a narrow stem and shoulders that approach 90°. The blade can be serrated. Diagnostic of the Middle Archaic Period (8000-6000 B.P.). Also known as a Stanley Stemmed in the southern United States.

National Register of Historic Places
A list of nationally significant cultural resources in the country that is maintained by the US Department of the Interior.

Orient Fishtail point
A narrow lanceolate blade with rounded shoulders, expanding stem, and straight or concave base. Diagnostic of the Late Archaic/Transitional Archaic periods (3000-2000 B.P.).

Orient Phase
A Late Archaic/Transitional Archaic.

Ossuary
A multiple, secondary interment consisting of burned, unburned, and disarticulated and semi-articulated bones.

Paleoenvironment
The climate, plants, and animals that existed during the geologic past.

PaleoIndian Period
The period between ca. 12,500-10,000 years ago, representing the earliest occupation of humans in North America.

Palynology
A science concerned with the study of pollen of seed and spore plants, whether living or fossil, including their dispersal and applications in stratigraphy and paleoecology.

Perforators
Type of stone tool also referred to as drills or awls in archaeological literature.

Period
A broad and general arbitrary chronological unit defined for a region, based on artifact assemblages or industries, and used in cultural historical interpretation.

Pestle: A ground stone tool used to grind seeds, nuts, and other materials into flour.

Podzol
A soil group that develops in coniferous or mixed forests or under heaths, in cool to temperate moist climates. Characterized by an organic matt and a very thin organic-mineral layer overlying a grey, leached A2 horizon and a dark brown B horizon enriched with iron oxide, alumina, and organic matter.

Pollen core
A sample of sediment collected from a wetland and/or archaeological setting from which microscopic fossil pollen grains are anayzed to determine past vegetational patterns.

Post-Contact Period
Refers to the time period after initial European settlement, which differs depending on the geographic area in question.

Pre-Contact Period
The era before written records. In New England, it refers to the time before Europeans arrived.

Projectile point
The stone, bone, or metal tip of a spear or arrow.

Quartz
An important rock forming mineral occurring in transparent crystals or colored by impurities. Forms the major portion of sands and has a widespread distribution in igneous, metamorphic, and sedimentary rocks.

Quartzite
A very hard metamorphic or sedimentary rock consisting mainly of quartz.

Quaternary Period
The second period of the Cenozoic era; it began about two to three million years ago and extends to the present.

Radiocarbon dating
A means of dating the amount or ratio of radioactive Carbon 14 (C-14), which forms in the atmosphere and is circulated throughout living plant and animal matter.

Reconnaissance survey
A reconnaissance survey is designed to identify archaeologically sensitive areas within a project area.

Reduction sequence
The stages of stone tool manufacturing.

Residential base camp or homesite
A primary camp of hunter-gatherers which reflects a wide variety of subsistence activities and frequently multiple occupations over a long period of time. Relatively large site with a high degree of internal variability.

Retouch
Aspect of stone tool manufacturing or sharpening and indicated by the presence of deliberate chipping on the edges of tools.

Rhyolite
A group of extrusive igneous rocks, typically porphrytic and commonly exhibiting banding.

Rockshelter
A site type defined by the presence of a rock overhang or large boulder used for protection and shelter.

Rossville point
A diamond shaped projectile point with a contracting stem terminating in a blunt point. Diagnostic of the Middle Woodland Period (2000-1500 B.P.). Also known as the Diamond point in Massachusetts.

Serrated edge
Saw-like edge of a bifacial tool created by a regular pattern of flaking.

Shatter/chunks
Chipping debris that are angular and blocky in shape and lacking striking platform and bulb of percussion.

Sherd
A fragment of pottery.

Site
A spatially discrete area where human activity has occurred. The spatial clustering of archaeological data, comprising artifacts, ecofacts, and features.

Site examination
After sites have been identified, they must be evaluated for significance. A site's significance is based on size, contents, structures, age, condition, and socio-economic function. Research questions posed by the data and importance of the site in relation to known sites in the area, are also considered.

Small Stemmed point
A narrow triangular blade with nearly square to rounded base. Its point has been categorized into six different varieties based on blade length and width. Diagnostic of the Late Archaic and Early Woodland periods (5000-2000 B.P.). Other names include Bare Island and Squibnocket Stemmed in the eastern United States.

Small Stemmed Tradition
One of the most widespread traditions in New England. Largely defined by a projectile point style that spans the Late Archaic and Early Woodland periods. Found in a wide variety of environmental settings and characterized by a site type from temporary camp to large semi-permanent homesites. Diagnostic artifacts include Small Stemmed or Narrow Stemmed and Squibnocket Triangle points.

Soil profile
A vertical section of soil beginning at the ground surface and extending down through the unconsolidated material to a depth of 60 inches. The physical and chemical characteristics observed within the soil profile are the basis for differentiating one soil horizon (A, B, and C) from another.

Squibnocket Triangle point
An equilateral to isosceles triangle with a straight to concave base. Diagnostic of the Late Archaic Period and the Small Stemmed Tradition (4500-3000 B.P.).

Stark point
A stemmed triangular blade with a rounded or pointed contracting stem and obtuse shoulder angles. Diagnostic of the Middle Archaic Period (8000-6000 B.P.). Also known as Morrow Mountain in southern United States.

Steatite
A compact rock consisting chiefly of talc, but usually containing much other material. Also known as soapstone. Can be easily carved into vessels, pipes, and ornamental objects.

Striking platform
The area of a flake where force was applied to detach it from the core or biface.

Subsistence pattern
The way in which a group disperses itself spatially across the landscape to obtain food and material resources.

Susquehanna Tradition
A Late/Transitional Archaic period (3600-2500 B.P.) cultural tradition characterized by a larger concentration of site locations in coastal areas and elaborate cremation burials. Diagnostic artifacts include Atlantic and Susquehanna-broad points and Mansion Inn blades.

Susquehanna Broad
Diamond-shaped blade with obtuse shoulder angles, corner-notched, expanding stem and often straight or concave base. Diagnostic of the Late Archaic/Transitional Archaic Period (4000-3500 B.P.).

Systematic testing
Subsurface investigation conducted in a regular pattern, such as on a grid, within a project area.

Task-specific location
Site type characterized by small size, low degree of internal variability, very short occupation (less than a day), and limited range of activities. Features are not generally found.

Temporary camps
Site type characterized by small size, low degree of internal variability, short duration occupation (overnight), and limited variation of activities. Only one or two features found.

Test pit
Square unit of excavation generally measuring 50-x-50 cm which is excavated down to sterile subsoils.

THPO
Tribal Historic Preservation Office or Officer. The THPO oversees historic preservation for a federally recognized Indian tribe and typically is the tribal representative who consults with other parties on projects that might affect areas of Native American cultural, religious, or archaeological sensitivity.

Toolkit
Cluster of artifacts that occur together as a consequence of having been used together in certain activities, such as making spear points.

Tradition
Term used to denote archaeological manifestations that exhibit great time depth over a large region.

Transect
A course across a project area along which information about the cultural and natural environment is collected either during a walkover or by excavating test pits at regular intervals.

Transitional Archaic Period
The period of time between ca. 3600-2500 B.P. Diagnostic artifacts include the Atlantic, Susquehanna, and Coburn points. Also characterized by use of steatite and complex burials.

Typology: The systematic organization of artifacts into types on the basis of shared attributes.

Ulu
Chipped, and often pecked and ground stone knife that is flat and with relatively thin semi-circular shapes.

Unifacial (Uniface)
Tool or flake modified along one face of one edge.

Volcanic rocks
A generally finely crystalline or glassy igneous rock.

Wayland-notched point
A triangular blade with corner-notching with a straight or concave base. Diagnostic of the Late Archaic/Transitional Archaic Period (3600-3000 B.P.). Also known as Watertown, Dudley, and Coburn in Massachusetts.

APPENDIX E

RECOMMENDED POLICIES AND PLANNING DOCUMENTS

ARCHAEOLOGICAL RESOURCE PROTECTION & REVIEW MECHANISMS
EXAMPLE BYLAWS: ACTON, AQUINNAH, & MEDFIELD
RECOMMENDED UPDATES TO ARLINGTON'S MASTER PLANS

E-1. Example of Archaeological Resource Protection and Review Mechanisms

The towns of Acton, Aquinnah, Barnstable, Bourne, Bolton, Brewster, Dennis, Middleborough, Northborough, Wayland, and Westborough have all adopted some formal archaeological resource protection regulations. These local regulations are designed to give community representatives the authority to review and comment on potential new construction projects that may not otherwise require cultural resource review at the federal or state level. Below are summaries of Massachusetts local archaeological review processes. The text of the specific regulations for Acton, Aquinnah, and Medfield are attached.

Acton: The town of Acton just recently passed (2022) an archaeological resources protection bylaw. The Preservation of Archaeologically Significant Resources Bylaw (attached) is administered by the Acton Historical Commission and was is adopted for the purpose of surveying and documenting archaeologically significant features and resources within the Town prior to large areas of land disturbance of currently Undisturbed Land in archaeologically sensitive areas. It contains definitions a detailed set of procedures to follow for an archaeological permit submission and sensitivity assessment, and how the bylaw shall be enforced. The specified archaeologically sensitive areas were identified through a Town-Wide Archaeological Reconnaissance Survey conducted for the town in 2008 (Ritchie 2009)

The bylaw states that any person proposing to disturb 15,000 square feet or more of currently Undisturbed Land within the Archaeological Protection Area/High, or 1 acre (43,560 square feet) or more of Undisturbed Land within the Archaeological Protection Area/Moderate shall submit to the Commission an Archaeological Protection Permit Application for alterations of land within an archaeologically sensitive area including: (1) address and area type, (2) survey with overlay of land to be disturbed and delineation of the Archaeological Protection Areas, (3) a brief narrative summary of the planned or proposed Alteration, specifying the proposed disturbance of the land (collectively, the "Archaeological Protection Permit Application"). The bylaw also indicates that the town will pay for the archaeological sensitivity assessment and, if an intensive survey is warranted, the Town may pay the costs of such Intensive Archaeological Survey, to the extent that appropriations are available (see attached).

Aquinnah: The town of Aquinnah on Martha's Vineyard passed (May 24, 2000) a set of amendments to the town's zoning bylaws as part of a town-wide district of critical planning concern (DCPC). Among the measures included in the DCPC oversight is the island's first archaeological resource protection bylaw. The Town of Aquinnah Historic and Archaeological Resource Protection Bylaw (attached) contains a detailed set of special protections for the unique archaeological and cultural resources in the town. Including this requirement in the bylaw indicates that the town recognizes the limited public funding for such archaeological surveys and makes it clear up front that the applicant is responsible for this expense along with other more conventional development-related costs.

The Aquinnah Bylaw is administered by the Town's Planning Board Plan Review Committee (PBPRC) and requires an applicant to prepare and submit an MHC Project Notification Form (950 CMR 71) (attached) to the MHC as part of the initial planning board application for a project. The requirement applies to construction on developed and undeveloped lots and includes any activity, such as perc tests, well drilling, utility trenching, demolition, road construction, clearing, excavation or use of heavy machinery that may destroy or disturb historic and archaeological resources. The MHC reviews the PNF and responds in writing to the applicant and the Planning Board within 30 days of receipt. The comments of the Tribal Historic Preservation Officer of The Wampanoag Tribe

of Gay Head (Aquinnah) is also consulted as part of the APBPRC review process.

If archaeological investigations are requested by MHC, the applicant is responsible for hiring a professional consultant to complete the study and report the results to MHC. If potentially significant cultural resources are identified, additional studies are conducted under MHC review and permitting and the APBPRC does not make a final approval of a project until those studies and the MHC review are complete and/or an order of conditions is approved.

The Aquinnah bylaw relies on MHC's technical expertise to complete initial cultural resources review of the project and determine if any known cultural resources are located there. The APBPRC typically requires an applicant to follow the MHC request for cultural resources studies, however the bylaw does allow for discretionary approval by the town without the requested studies.

Barnstable: Under the Town of Barnstable's General Ordinances at Chapter 237: Wetlands Protection, the Barnstable Conservation Commission has the authority to review projects or activities that occur within 100 feet of wetlands or activities occurring more than 100 feet from wetlands that have the potential to affect wetlands values, and to issue permits for those activities. If the commission determines that that an activity occurring beyond the limit of jurisdiction noted above is having or has had a significant effect on the wetland values of a "resource area," the Commission may require a notice of intent or determination of applicability for that activity.

The Commission makes a determination, after a public hearing, if the proposed activities which are the subject of a notice of intent are likely to have a significant or cumulative effect upon the wetland values protected by the regulation. Among those protected categories are Historical Values, which are defined as "The importance of wetlands and adjoining land areas as sites often used for prehistoric and historic occupation, subsistence, industry, trade, agriculture, burial and other cultural purposes." The regulations state that any activities in or within 100 feet of resource areas shall not have a significant effect on historical values.

Resource areas which are known to contain sites of historic or archaeological resources, defined as being listed of the State Register of Historic Places, the Inventory of Historic and Archaeological Assets of the Commonwealth, and/or the Barnstable Historical Commission's Historic Properties Inventory, are deemed to have historic value.

The commission has the authority to impose conditions which it deems necessary or desirable to protect wetlands values and requires that all activities shall be completed in accordance with those conditions. The conservation commission works with the Barnstable Historical Commission to determine which projects are likely to impact historic sites and can request technical assistance from the MHC if the Order of Conditions might include archaeological investigations.

The Barnstable Historical Commission oversees demolition review of historic structures but does not have any independent regulatory review over archaeological resources. As such, Barnstable's local archaeological site protection is limited to the wetland areas under the Conservation Commission's review. The Barnstable model could be useful in identifying mechanisms for Arlington's Conservation Commission to trigger review of archaeologically sensitive areas in and around wetlands.

Bolton: Bolton's 2001 townwide archaeological reconnaissance survey report included recommendations for local review recommendations, some of which had been recommended in the town's 1998 historic preservation plan. Bolton has a Demolition Delay Bylaw that includes review by the Bolton Historical Commission. Under the Bolton Subdivision Rules and Regulations Section

3000, Preliminary Subdivision Plans must include major site features including "cart paths and historic artifacts." Under Section 5100: Design Standards, subdivisions must reduce, to the extent possible "disturbance of important wildlife habitats, outstanding botanical features, geologic features, scenic or historic places."

Under Bolton's Zoning Bylaws 2.5.5.7, the Planning Board, at its discretion, may appoint a Design Review Board as part of its consideration of a Special Permit Review. The regulation also allows the Board of Selectmen and Zoning Board of Appeals to utilize a Design Review Board as part of projects that require Site Plan Review or variances. Under the regulations, the Design Review Board may include one or more members of the Historical Commission. While the bylaw is written primarily to provide oversight to the design of buildings, the inclusion of the Historical Commission provides an opportunity for comments on other cultural resource impacts a project may have.

Brewster. The Brewster Historical Commission was established to "for the preservation and development of the historical and archeological assets of the town." Under the Town of Brewster's General Legislation, Development Standards, Chapter 83, historic and archaeological resources cannot be "impaired, damaged or altered" by any proposed activity. During the review process, an agent of the Plan Review Committee must provide written determination if a PNF must be filed with the MHC. A determination of non-significance may be made at the local level for certain types of projects after an on-site inspection by an agent of the Plan Review Committee.

Brewster's Conservation Commission oversees potential impacts to the town's wetlands under General Legislation, Wetlands Protection, Chapter 172 which are similar to those described above for Barnstable. The regulations define the "Protection of Historic Values" to mean areas subject to protection under the bylaw which are known or are determined in writing by the Conservation Commission to be likely to contain sites of archaeological significance, including but not limited to middens, burial sites, and prehistoric structures and artifacts.

Medfield: The Medfield Archaeological Advisory Committee was formed in 1993 as a subcommittee of the Medfield Historical Commission. This group identified four archaeologically sensitive areas (designated as an Archaeological Protection District) within Medfield and in 1994 incorporated the protection of those areas into the town's Demolition Bylaw. In 1997, the Archaeological Advisory Committee provided oversight for the completion of a townwide archaeological reconnaissance survey (Ritchie 1997) which generated archaeological sensitivity maps and draft text for an Historic and Archaeological Resources Protection bylaw.

In 1999, Medfield completed a townwide historic preservation plan (Broomer 1999). The 1999 plan recommended expanding the Archaeological Protection District to include all of the sensitive areas identified on the archaeological sensitivity maps. The plan also recommended deleting the archaeological section of the demolition bylaw and instead amending the town's zoning bylaw to establish the revised Archaeological Protection District as a zoning overlay district with associated permitting procedures. As an alternative to revising the zoning bylaw, the town could consider deleting the archaeological review under the demolition bylaw and instead implement some version of the historic and archaeological resources protection bylaw that had been proposed in 1997.

The Historical Commission's oversight for archaeological review is currently completed under the town's General Bylaws at Chapter 150: Historic Preservation. Upon receipt of an application for a building permit, earth removal permit, subdivision permit, or open space residential zoning permit for a property located within the Archaeological Protection District, the proponent must provide a copy of the permit application to the historical commission for review and comment. If the commission does not comment within 30 days that signals its lack of opposition. If the commission

determines that the project "poses a serious threat to the Town's archaeological resources" it can recommend that the permit granting authority require the applicant to make "adequate provision for the safeguarding of said archeological resources" including, but are not limited to, surveys and resource preservation plans completed in cooperation with the Commission and/or the MHC.

Although not enacted to date, the Medfield Historical Commission (together with the Archaeological Advisory Committee) drafted a comprehensive bylaw to provide a consistent procedure to avoid, minimize, or mitigate harm to historic and archaeological resources in the town. It is included here for purposes of review and consideration by the Town as a possible model for an Arlington bylaw.

The draft *Final Bylaw Amendment, Town of Medfield. Historic and Archaeological Resource Protection* (attached) is comprehensive in that any private or public project that requires review or approval by a permit granting authority or official of the Town of Medfield is subject to review if the project is a) located within an archaeologically sensitive zone (as identified on the townwide archaeological sensitivity maps); b) included in the Inventory of Historic and Archaeological Assets of the Commonwealth (MHC Inventory), and/or the Medfield Historical Commission's Inventory of Historic and Archaeological Sites; or c) listed in the National or State Registers of Historic Places.

The Medfield bylaw is enacted upon receipt of an application for a permit or other determination by a town board or commission, who directs the applicant to provide project information to the Medfield Historical Commission and to the Massachusetts Historical Commission for review and comment. Unlike the Aquinnah bylaw, the Medfield bylaw does not specify use of an MHC Project Notification Form for the initial submittal of information. The Medfield Historical Commission has 30 days within which to respond. The other town board(s) may continue to review a project during this 30-day period but may not issue any permit or determination until the 30-day period has passed.

The Medfield Historical Commission holds a public meeting to hear and review the application and may seek the comments of the MHC as part of its review. If the Historical Commission finds that the proposed application may adversely affect historic and archaeological resources, they issue a decision with recommendations to the permit granting authority or official that the applicant make adequate provision for the protection of those resources. The provisions can include (but are not limited to) having a qualified archaeological consultant conducting archaeological investigations under review by the MHC and under a State Archaeologist's permit in compliance with the MHC's regulations (950 CMR 70). The permitting agency or board is required to include the Historical Commission's recommendations when it issues, conditions, or denies an application. Decisions made by the Historical Commission may be appealed to the Selectmen within 21 days from the date of the decision of the Commission. The bylaw does not explicitly state how confidential information about archaeological site locations is addressed during the public meeting process.

Middleborough: The Middleborough Zoning Board of Appeals requires applications for special permits to go to a number of town boards and commissions, including the Historical Commission. The historical commission has the opportunity to comment and make recommendations on the application which are then considered as part of the review record.

Under the Commonwealth of Massachusetts Chapter 53 of the Acts of 2019, the Town of Middleborough was enabled to purchase an approximately 20-acre parcel of land that contained a significant Native American archaeological site. Upon purchase, the town, through its Conservation Commission or Board of Selectmen, was also enabled to assign a perpetual conservation restriction on the land to the Native Land Conservancy, Inc., and the Archaeological Conservancy. This action is the culmination of a long-term effort by the community to protect an identified significant archaeological site from proposed development, to partner with other land stewardship organizations,

and to provide for its perpetual care and preservation.

Northborough: The Town of Northborough Municipal Code Part 10 includes the town's Subdivision Rules and Regulations. All subdivision plans must include an impact report prepared by a civil engineer, landscape architect, or land use planner. The report must include the identification of potential impacts to significant historic and archaeological resources. As part of the identification effort, the proponent must submit a PNF to the MHC. The Planning Board then considers the MHC comments and recommendations as part of their review and may attach Special Conditions for permit approval that include requiring a proponent to comply with any MHC recommendations for archaeological investigations conducted under a State Archaeologist's permit.

Northborough does not have a townwide Historical Commission but instead has an Historic District Commission whose oversight is limited to designated districts within the town.

Wayland: The town of Wayland does not have any formal mechanisms for protecting archaeological resources, but through a long-standing practice of local partnerships, has been successful in advocating for the protection of important sites when threatened by development. In 1977, local residents and interested professionals formed the Wayland Archaeological Research Group (WARG) in response to a town proposal to build a soccer field in an archaeologically sensitive area. Since its inception, several members of the WARG, including Ms. Largy have also served on the Wayland Historical Commission.

The initial WARG group included local educator Barbara Robinson and Tonya Largy, a professional archaeologist. Since 1978, the Wayland Historical Commission, through the Wayland Archaeology Group, has conducted at least six archaeological projects on town-owned and private properties in Wayland. These projects have been completed under a State Archaeologist's permit and MHC review. The Historical Commission is provided a modest budget by the town to purchase equipment, analyze data, and report on the results. Space for the curation of artifacts is provided in the town hall. These projects have been well-publicized and have relied on local volunteers, resulting in ongoing opportunities to educate the community about archaeological methods and to highlight the importance of the town's cultural resources. The WARG also maintains a database of archaeological sites and encourages local residents to bring in artifacts they have found for identification and to report any potential archaeological sites they find. WARG members including Ms. Largy also regularly present public lectures and programming about local archaeological sites and projects.

The WARG works with the Wayland Historical Commission to identify proposed construction projects in the vicinity of known archaeological sites. If the project is a small private development, the commission may monitor construction. If the project is a larger development, the commission may request review by the MHC.

The Wayland Historical Commission has also supported a Railroad Interpretive Site Study as a research and planning tool to interpret and preserve the railroad corridor and railroad-related features in town: https://www.wayland.ma.us/historical-commission/pages/railroad-interpretive-site-study. In 2005, the historical commission was allocated funds to hire a consultant to complete a Master Plan for a railroad interpretive site that spanned multiple geographic locations and structures within the town. The study included a summary of local railroad history potential railroad-related archaeological deposits and features, recommendations for collaboration with other agencies and groups, and recommendations for site management and preservation, interpretation, and public access. The planning study also supported a determination of National Register eligibility for Wayland's railroads. This study may be a useful resource for Arlington to consider as part of a future effort to preserve and interpret the town's railroad history.

Westborough: The Westborough Historical Commission reviews proposed development upon notification by the Planning Board, Zoning Board of Appeals, and Building Inspector. Westborough does not have a specific bylaw or local regulation under which the Historical Commission reviews projects for their potential to affect archaeological resources, but rather reviews and comments on projects under the authority granted to municipal historical commissions under MGL Chapter 40 section 8D. The commission has been reviewing projects in this way since 1977, in large part due to the strong support of cultural resource protection by residents and public officials in Westborough. Public education and outreach about archaeology has been a major factor in ongoing local support. Dr. Curtiss Hoffman, who was chair of the Bridgewater State University Department of Anthropology and a leading member and officer of the Massachusetts Archaeological Society, conducted public archaeological projects in Westborough over the past 40 years. Dr. Hoffman's long-term efforts to publicize, speak about, publish on, and engage the general public in the ancient Native American history of Westborough has clearly contributed to the level of awareness about Westborough's archaeological heritage and has undoubtedly helped to maintain the generally high level of support for archaeological resource protection in Westborough over decades.

The commission reviews project plans for their potential to affect historic and archaeological resources. If the project is sponsored by the town or the state, the commission refers review to the MHC. If the project is proposed by a private developer or does not meet any of the other thresholds for MHC review and areas of resource potential are to be impacted, the Westborough Historical Commission recommends that a survey be conducted at the developer's expense. Westborough has not undertaken a comprehensive townwide archaeological reconnaissance survey, but areas of historic and archaeological concern have been predetermined and mapped by the commission. There is no size threshold that triggers the jurisdiction of the Westborough Historical Commission, so any project can trigger a recommendation for an archaeological survey if it is located within a sensitive area.

Regional Review Models: The most effective regional models come from the Martha's Vineyard and Cape Cod Commissions, both of which review projects that meet certain criteria or thresholds in consultation with the MHC. In particular, the Cape Cod Commission has a set of "Minimum Performance Standards" that apply specifically to historic resources within Developments of Regional Impact (DRI). These standards include a provision (6.1.3) that any development proposed for an area with known archaeological resources or considered to have a high archaeological sensitivity requires additional review and/or archaeological investigations during the site planning phase. Importantly, this provision gives jurisdiction over this provision to the Massachusetts Historical Commission and the local historical commission. The Cape Cod Commission and the MHC provide technical assistance with this process and should be considered important resources for the Mashpee HC to consult in situations of cultural resource review.

E-2. EXAMPLES OF MASSACHUSETTS BYLAWS FOR PROTECTION OF ARCHAEOLOGICAL RESOURCES: ACTON, AQUINNAH, AND MEDFIELD

TOWN OF ACTON, MASSACHUSETTS

Article 10 Amend General Bylaws – Preservation of Archaeologically Significant Resources

To see if the Town will vote to amend the General Bylaws by adding a new Chapter titled "Preservation of Archaeologically Significant Resources" to read as follows, or take any other action relative thereto.

PRESERVATION OF ARCHAEOLOGICALLY SIGNIFICANT RESOURCES

Section 1. Intent and Purpose

This bylaw is adopted for the purpose of surveying and documenting archaeologically significant features and resources within the Town prior to large areas of land disturbance of currently Undisturbed Land in archaeologically sensitive areas. Archaeologically significant features and resources explain the significant cultural heritage and provide a material record to understand how people lived and used the land, and thereby enrich and enhance historical knowledge of this region.

Therefore, to achieve the above stated purposes, the Acton Historical Commission is empowered to review proposed development when land disturbance occurs within certain lands located in sensitive areas as specified in the Acton Archaeological Sensitivity Maps: Acton Town-Wide Survey Post-Contact Archaeological Sensitivity and Acton Town-Wide Survey Pre-Contact Archaeological Sensitivity, prepared by the Public Archaeology Laboratory, Inc. (PAL), dated July 15, 2008 and revised March 12, 2009 (the "Sensitivity Maps").

Section 2. Definitions

2.1 "Alter" or "Alteration" – Any activity that modifies the natural or existing topography and conditions of real property in such a manner that it may adversely affect any Archaeological Resources located on, at or under such property. These activities may include, but are not limited to: removal (excavation or grading) or placement (filling) of soil, sand, gravel, stone or other earth materials; removal of ground cover vegetation or trees; dredging or filling of wetlands; the construction, modification, or expansion of subsurface utilities (e.g., septic systems, telephone, television, electrical, gas, security services, or water supply), roadways, parking or other paved areas; and the development and construction of proposed buildings, structures or any other improvements on any Undeveloped Land.

2.2 "Archaeological Protection Area/High" – Areas within the Town identified as "High" on the Sensitivity Maps for their likelihood of containing pre-contact or post-contact Archaeological Resources based on environmental attributes such as soils, proximity to wetlands or other water sources, documentary or cartographic evidence, written or oral tradition, and discoveries of historic and archaeological resources.

2.3 "Archaeological Protection Area/Moderate" – Areas within the Town identified as "Moderate" on the Sensitivity Maps for their likelihood of containing pre-contact or post-contact Archaeological Resources based on environmental attributes such as soils, proximity to wetlands or other water sources, documentary or cartographic evidence, written or oral tradition, and discoveries of historic and archaeological resources.

2.4 "Archaeological Resource(s)" – Locations or sites used for ancient or historical period occupation, subsistence, manufacturing, processing, industry, quarrying, trade/commerce, recreation, transportation, agriculture, graves, and other cultural purposes, containing material remains of ancient or historic human activity one-hundred (100) years old or older.

2.5 "Archaeological Sensitivity Assessment" – A preliminary, noninvasive assessment conducted by a registered professional archaeologist that determines the likelihood of finding significant archaeological or historical assets. Such engagements include historical research, environmental context review, and field inspection.

2.6 "Commission" – The Acton Historical Commission.

2.7 "Intensive Archaeological Survey" - Also known as a reconnaissance or intensive (locational) survey that identifies all archaeological sites in a project area. Such engagement includes systematic shovel test pit sampling employed to locate as many archaeological deposits as reasonably possible.

2.8 "Permit" – Any permit, order, order of conditions, license, approval or entitlement from a Permit Granting Authority that is required in connection with the Alteration of any Undeveloped Land.

2.9 "Structure" – A combination of materials assembled to give support or shelter, such as buildings, towers, masts, sheds, roofed storage areas, mechanical equipment, swimming pools, tennis courts, signs, fences; but not including driveways, walkways and other paved areas, underground storage tanks, septic tanks and septic systems, and accessory facilities associated with the provision of utilities such as drains, wells, transformers and telephone poles.

2.10 "Sensitivity Maps" – The Acton Archaeological Sensitivity Maps: Acton Town-Wide Survey PostContact Archaeological Sensitivity and Acton Town-Wide Survey Pre-Contact Archaeological Sensitivity, prepared by the Public Archaeology Laboratory, Inc. (PAL), dated July 15, 2008 and revised March 12, 2009. The Sensitivity Maps (and any subsequent amendment(s)) is incorporated into this Bylaw by reference, and are available for review by the public at the Town Clerk's office at Town Hall.

2.11 "Threatened Archaeological Resource(s)" – Any Archaeological Resource that is likely to be adversely impacted, as determined by the Commission, by any Alteration of Undeveloped Land for which a Permit is sought.

2.12 "Undisturbed Land" - Land area that is free of human disturbance due to clearing, grading, paving, building, landscaping or other site development activities, such as tilling and cropping, residential and commercial development, grazing, paved or gravel roads and mowing, but not including selected cutting of trees or removal of dead wood.

Section 3. Procedure

3.1 Archaeological Submission

Effective no earlier than July 1, 2022, any person proposing to disturb 15,000 square feet or more of currently Undisturbed Land within the Archaeological Protection Area/High, or 1 acre (43,560 square feet) or more of Undisturbed Land within the Archaeological Protection Area/Moderate shall submit to the Commission an Archaeological Protection Permit Application for alterations of land within an archaeologically sensitive area including: (1) address and area type, (2) survey with overlay of land to be disturbed and delineation of the Archaeological Protection Areas, (3) a brief narrative summary of the

planned or proposed Alteration, specifying the proposed disturbance of the land (collectively, the "Archaeological Protection Permit Application").

3.2 Archaeological Sensitivity Assessment

3.2.1 Within thirty (35) days after receipt of the Archaeological Protection Permit Application, the Commission shall meet and make a written determination as to whether additional investigation is needed into the presence of Archaeological Resource(s) and potential impact from the proposed Alteration (the "Archaeological Sensitivity Assessment"). Such an Assessment may include a site visit by the Commission and the Commission procuring a preliminary non-invasive analysis of the potential Archaeological Resources at the site by a trained professional in the field. All costs of such Assessment shall be paid by the Town.

3.2.2 If the Commission has determined that an Archaeological Sensitivity Assessment is required, such assessment shall be completed, and the Commission shall determine whether the Alteration will adversely impact any Archaeological Resource within 45 days of the Commission's initial determination. The Commission and applicant may, by mutual agreement, extend the date for such preliminary Assessment. No Alteration shall commence, nor shall a building permit be issued during such 45-day period (or any authorized extension). Should the Commission fail to act or get the time extended within that initial 45-days, it waives the opportunity to do such Archaeological Sensitivity Assessment, and an Archaeology permit under this Bylaw shall be issued.

3.2.2.1 If the Commission determines that the Alterations will not adversely impact any significant Archaeological Resource(s), the Commission shall notify the Applicant in writing within fourteen (14) days of such determination and issue an Archaeology permit. Upon receipt of such notification or more than fourteen (14) days since the Commission's determination without any such notice, the applicant may commence the proposed Alteration, subject to the requirements of any other applicable laws, bylaws, rules and regulations.

3.2.2.2 If the Commission determines that the Alteration may adversely impact any significant Archaeological Resource(s), the Commission shall notify the applicant in writing within fourteen (14) days of said meeting that the proposed Alteration is identified as significant, and a detailed study to document any found Threatened Archaeological Resources is recommended. Regardless of that finding, the Commission shall issue an Archaeology permit at this time, with a request to conduct an Intensive Archaeological Survey.

3.2.2.3 Upon the grant of an Archaeology permit, the applicant may commence the proposed Alteration, subject to the requirements of any other applicable laws, bylaws, rules and regulations. If the applicant agrees to proceed with an Intensive Archaeological Survey by a qualified archaeological team to locate, identify, evaluate, and document archaeological resources, costs of such Intensive Archaeological Survey may be paid by the Town, to the extent that appropriations are available.

3.2.2.4 Matters pertaining to the locations of archaeological resources that are "not a public record" and "confidential" pursuant to M.G.L. c. 9, §26A(1) & (5), c. 9, §27C and c. 40 §8D shall not be disclosed for public review.

Section 4. Enforcement and Remedies

4.1 The Commission and the Building Commissioner are each authorized to institute any and all proceedings in law or equity as it deems necessary and appropriate to obtain compliance with the requirements of this bylaw, or to prevent a violation thereof.

4.2 For any Undeveloped Land upon which a Threatened Archaeological Resource has been voluntarily Altered in violation of this Bylaw, no Building Permit shall be issued for a period of three (3) years after the date of the completion of such unauthorized Alteration unless permitted by the Commission pursuant to Section 4.4. For purposes of this Section 4.2, the term Threatened Archaeological Resource shall mean any Archaeological Resource that the Commission, in its sole discretion, would have determined to be a Threatened Archaeological Resource but which Archaeological Resource was voluntarily Altered before such determination could be issued.

4.3 Should the applicant or the owner of the subject Land, if not the applicant, fail to secure any Threatened Archaeological Resource as required under this Bylaw, the loss of such Threatened Archaeological Resources through fire or other cause shall be considered voluntarily Altered for the purposes of Section 4.2.

4.4 At any time, the applicant, or owner of the subject Land, if not the applicant, of Undeveloped Land upon which a Threatened Archaeological Resource has been voluntarily Altered in violation of Sections 4.2 and 4.3 may apply to the Commission for an exemption to the provisions of those Sections. Such application must state with particularity the facts and circumstances such that the Commission can find that an exemption is warranted due to exigent circumstances or disasters beyond the Permit applicant's or owner's control. The Commission may, in its sole discretion, determine that the request states sufficient grounds for exemption from the provisions of Sections 4 and authorize an exemption from Section 4.

Section 5. Miscellaneous

5.1 Real property owned or operated by the Town of Acton, including the Acton Boxborough Regional School District and the Acton Water District; or private owners receiving state funding or licensing must comply to requirements in M.G.L. c. 9, §§ 26A, 27C and 950 C.M.R. 70, et seq. of the Massachusetts Historical Commission and are therefore not subject to this bylaw.

5.2 The sections, paragraphs, sentences, clauses, and phrases of this bylaw are severable, and if any phrase, clause, sentence, paragraph, or section of this bylaw shall be declared unconstitutional or otherwise invalid by the valid judgment or decree of any court of competent jurisdiction, such unconstitutionality or invalidity shall not affect any of the remaining phrase, clauses, sentences, paragraphs and sections of this bylaw.

5.3 Rules and Regulations

The Historical Commission may adopt such reasonable rules and regulations with respect to the submission and administrative process as may be necessary or appropriate to implement the provisions of this bylaw.

TOWN OF AQUINNAH, MASSACHUSETTS

5.0 HISTORIC AND ARCHAEOLOGICAL RESOURCE PROTECTION

5.1 Goals. Historic and Archaeological resources are fragile features that embody the significant prehistoric and historic cultural heritage of the Town of Aquinnah and The Wampanoag Tribe of Gay Head (Aquinnah); they provide a material record to understand and explain our past, and enhance and enrich the Town's quality of life, The purpose of this by-law is to protect the significant historic and archaeological resources of the town and provide a means for review of activities that may affect these non-renewable resources. The provisions of this by-law do not waive applicable Federal and State laws regarding the discovery of unmarked human burial or skeletal remains (which require development activity to cease immediately) or the inadvertent or unexpected discovery of significant historical and archaeological resources.

5.2 Prior to any development in the Aquinnah District of Critical Planning Concern (DCPC), it must be determined if there are significant historic and archaeological resources at the site. Significant historic and archaeological resources are those that meet the criteria for evaluation for listing in the National Register of Historic Places (36 Code of Federal Regulations, Part 60), or the State Register of Historic Places. This requirement applies to both developed and undeveloped lots and includes any activity, such as perc tests, well drilling, utility trenching, demolition, road construction, clearing, excavation or use of heavy machinery that may destroy or disturb historic and archaeological resources. The Planning Board Plan Review Committee shall determine what actions shall be taken to locate, identify, and evaluate, any significant historic and archaeological resources that may be affected by the development. If any significant historic and archaeological resources are found, The Planning Board Plan Review Committee shall determine what actions shall be taken arid avoid, minimize, or mitigate adverse effects to said resources. In making the above determinations, The Planning Board Plan Review Committee shall consult with The Massachusetts Historical Commission (MHC), The Tribal Historic Preservation Officer of The Wampanoag Tribe of Gay Head (Aquinnah), and such local agencies as it deems necessary for guidance.

5.3 The owner/agent must submit a Project Notification Form (950 CMR 71) and the required maps and plans (a complete list is available at the town hall) to The MHC by certified mail, and to the Planning Board Plan Review Committee. Within thirty (30) days of receipt by certified mail of adequate project documentation, The MHC will make its recommendations to the Planning Board Plan Review Committee. Within forty-five (45) days of receipt by certified mail of adequate project documentation by the MHC, The Planning Board Plan Review Committee will hold a meeting to determine whether an archaeological survey of the site is required, and if so, the type and extent of the survey,

If a survey is *required,* it will be conducted by a qualified professional at the owner/agent's expense. The results of this survey will be presented to the MHC for technical advice and the Planning Board Plan Review Committee. If significant historic or archaeological resources are not found, the development may proceed through the normal permitting process. If the survey identifies areas of the site that are known or are likely to contain significant historic or archaeological resources, and the owner/agent agrees that these areas will not be affected or disturbed by the proposed development, the Planning Board Plan Review committee will issue an order of conditions under which the proposed development May proceed through the normal permitting process. If the survey identifies areas of the site that are known or are likely to contain significant historic or archaeological resources that will be affected or disturbed by the proposed development, a mote extensive survey may be conducted, at the owner/agent expense to locate, identify, and evaluate said resources. If significant historic or archaeological resources are found, the survey will also develop plans to avoid, minimize, or mitigate the adverse effects of the development.

The results of this final survey will be presented to the MHC and the Planning Board Plan Review Committee. The Planning Board Plan Review committee shall then hold a meeting to determine what actions should be taken to avoid, minimize, or mitigate for any potential damage or impairment to any historic and archaeological resources and issue an order of conditions under which the proposed development may proceed through the normal permitting process.

TOWN OF MEDFIELD, MASSACHUSETTS

HISTORIC AND ARCHAEOLOGICAL RESOURCE PROTECTION BYLAW

Section 1. Intent and Purpose

The purpose of this bylaw is to provide a consistent procedure to protect the public interest to avoid, minimize, or mitigate harm to historic and archaeological resources in the Town of Medfield, whenever a private or public project that requires review or approval by a permit granting authority or official of the Town of Medfield, may harm historic and archaeological resources. Historic and archaeological resources are fragile and non–renewable features that embody the significant cultural heritage of the Town of Medfield; they provide a material record to understand and explain our past and enhance and enrich the Town's quality of life.

Section 2. Definitions

2.1 Alteration(s):

Activities that modify the natural or existing topography and conditions of areas within archaeologically sensitive zones, and that may adversely affect the historic, archaeological, architectural, or cultural qualities, integrity, or preservation of historic and archaeological resources. These activities may include, but are not limited to: removal (excavation or grading) or placement (filling) of soil, sand, gravel, stone or other earth materials; removal of ground cover vegetation or trees; dredging or filling of wetlands; the construction, modification, expansion, neglect, or demolition of proposed or existing buildings or structures; and the construction, modification, or expansion of subsurface utilities (e.g., septic systems, telephone, television, electrical, gas, security services, or water supply), roadways, or parking areas.

2.2 Archaeologically Sensitive Zone(s):

Areas of the town known or likely to contain historic or archaeological resources determined on the basis of environmental attributes such as soils, proximity to wetlands or other water sources, documentary or cartographic evidence, written or oral tradition, and discoveries of historic and archaeological resources. These areas also include the Archaeological Protection District established by the existing Historic and Archeologic Demolition bylaw (Article XVI) for the Town of Medfield. The Archaeologically Sensitive Zones are shown on the map entitled "Archaeological Sensitivity Map of the Town of Medfield, Massachusetts."

2.3 Commission:

The Medfield Historical Commission

2.4 Historic and Archaeological Resources:

Locations, structures or sites used for prehistoric and historic period occupation, subsistence, industry, trade/commerce, transportation, agriculture, burial and other cultural purposes, containing material remains of human activity.

2.5 Permit Granting Authority or Official:

A board, commission, authority, or official of the Town of Medfield that is authorized by law or regulation to issue a permit, determination, order, or other action, including the issuance of a lease, license, permit, certificate, variance, approval, or other entitlement for use. For the purposes of this bylaw, "permit, determination, order, or other action or approval" shall not include the issuance of a general entitlement to a person to carry on a trade or profession or to operate mechanical equipment which does not depend upon the location of such trade or operation, nor shall it include the issuance of permits or licenses that are independent of and unrelated to a geographical area of impact (e.g., birth or death certificates, marriage or dog licenses), nor shall it include the issuance

of permits or licenses for existing facilities where no alteration(s) are proposed (e.g., common victualers license).

Section 3. Jurisdiction/Regulated Buildings, Structures and Sites

The provisions of this bylaw shall apply to the following areas, buildings, structures and sites whenever a permit, determination, order, or other action, including the issuance of a lease, license, permit, certificate, variance, approval, or other entitlement for use, granted by a permit granting authority or official of the Town of Medfield will be required for alteration(s) of:

3.1 Areas located within the boundaries of the Archaeologically Sensitive Zones.

3.2 Properties included in the Inventory of Historic and Archaeological Assets of the Commonwealth, and/or the Medfield Historical Commission's Inventory of Historic and Archaeological Sites.

3.2 Properties listed in the National or State Registers of Historic Places.

Section 4. Procedure

4.1 Upon receipt of an application for a permit, determination, order, or other action or approval that may result in alterations to historic and archaeological resources, the permit granting authority or official shall direct the applicant or project proponent to: (1) supply the Commission with a copy of the application and any other materials and plans the Commission requires for review and comment; and (2) supply the Massachusetts Historical Commission with the same for review and comment. The Commission shall develop guidelines for applicants and permit granting authorities or officials to assist in implementing this bylaw. The permit granting agency or official shall not issue its permit, determination, order, or other action or approval until the Commission has responded to the application, but said agency or official may continue to review and comment on the application. Failure of the Commission to respond within thirty (30) days of its receipt of the application shall indicate that the permit granting agency or official may proceed with issuing approval.

4.2 Within fourteen (14) days of receipt of the application by the Commission, the chairperson shall post the date for a meeting of the Commission at which the application shall be heard. The hearing shall take place no fewer than twenty-eight (28) days and no more than forty two (42) days after the receipt of the application material from the applicant. The Commission shall give public notice of the hearing by publishing at least fourteen (14) days before the hearing an announcement in a local newspaper of the time, place and purpose of the hearing. The Commission shall also mail or otherwise provide a copy of said notice to the permit granting agency or official, the applicant, to all abutters, to the owners of all properties deemed by the Commission to be affected by the proposed project, to the Medfield Historical District Commission and to any others the Commission deems entitled to notice. The Commission may seek comments from the State Archaeologist and the Massachusetts Historical Commission to assist the Commission in evaluating the application.

4.3 If upon review of the application, the Commission finds that the proposed application may adversely affect historic and archaeological resources, the Commission shall issue a decision with recommendations to the permit granting authority or official that the applicant make adequate provision for the protection of said resources. These provisions can include, but are not limited to conducting archaeological investigations by a qualified archaeological team under a permit (950 CMR 70) issued by the State Archaeologist to locate, identify, evaluate, or mitigate historic and archaeological resources, and the preparation of historic and archaeological preservation, protection, or mitigation plans. All such provisions shall be implemented by the applicant in consultation with the Commission, the State Archaeologist and the Massachusetts Historical

Commission. The permit granting authority or official shall incorporate the Commission's recommendations in issuing, conditioning, or denying its approval to the applicant.

Section 5. Enforcement, Remedies and Appeals

5.1 The Commission and permit granting authorities and officials are each authorized to institute any and all proceedings in law or in equity as they deem necessary and appropriate to obtain compliance with the requirements of this bylaw or to prevent a violation thereof.

5.2 Decisions made by the Commission may be appealed to the Selectmen within twenty-one (21) days from the date of the decision of the Commission.

Section 6. Severability

If any section, paragraph or part of this bylaw be for any reason declared invalid or unconstitutional by any court, every other section, paragraph and part shall continue in full force and effect.

APPENDIX E-3. RECOMMENDATIONS TO ARLINGTON'S TOWN MASTER PLANS

The following section provides recommendations and suggested text to edit the most recent versions of the Arlington's *Historic Preservation Survey Master Plan* (2019), the *Mill Brook Corridor Report* (2019), *Open Space and Recreation Plan (OSRP) Update* (2022), and the *Arlington Master Plan* (2015).

Updates to the 2019 Historic Preservation Master Plan

Page 4: Introduction
Edit last paragraph: Change prehistoric and historic archaeological sites to ***ancient Native American and historic period archaeological sites***

Page 22: Historic Themes & Periods of Development in Arlington
Add before first paragraph:
First Settlers of Arlington
Archaeological and cultural resources document more than 9,000 years of human habitation in Arlington before the arrival of the colonists. The Town's Native American history has been documented especially around Spy Pond and the Alewife Brook and Mystic River areas by the recovery of cultural material, such as chipped stone tools used for hunting, woodworking, and fishing.

Edit: The ***written*** history of the Town of Arlington begins with the settlement of the Menotomy…

Page 56: Areas & Properties Recommended for Study
Third paragraph – replace:
The Town completed a communitywide archaeological reconnaissance survey in 2023 designed to document the town's known archaeological resources, identify new sites through research and informant interviews, and predict the most likely locations of unknown ancient Native American and historic period archaeological sites. The survey included the development of townwide archaeological sensitivity maps keyed to assessor's parcel data that are designed to be an effective tool for town officials reviewing proposed development and considering areas for conservation. Areas of archaeological sensitivity were identified bordering Spy Pond, Alewife Brook, Mystic River, and along the Mill Brook Corridor. Several above-ground resources in these locations are already represented in the town's inventory; others are included in the recommendations of this plan.

Page 58: Center Zone Burial Ground/cemetery forms
Survey Unit C23: Mt. Pleasant Cemetery (ARL.801) should include a statement: ***Any undeveloped upland portions of the cemetery property are sensitive for archaeological sites. The Mt. Pleasant Cemetery area has been identified as a significant ancient Native American resource area (19-MD-263).***

Page 58: Center Zone Landscape forms
Survey Unit C24: Menotomy Rocks Park should include a statement: ***Any undeveloped upland portions of the property and the wetland margins are sensitive for ancient Native American archaeological sites. The park may also contain archaeological deposits of Cambridge argillite associated with the manufacturing of stone tools.***

Survey Unit C25: Spy Pond Field should include a statement: ***Any undeveloped upland portions of the property and the wetland margins are sensitive for archaeological sites. This area of Spy Pond has been identified as a significant ancient Native American resource area and also an area associated with Arlington's early ice harvesting industry.***

Page 61: East Zone Burial Ground/cemetery forms

Survey Unit E39: St. Paul Roman Catholic Cemetery should include a statement: ***Any undeveloped upland portions of the cemetery property are sensitive for archaeological sites. The St. Paul Catholic Cemetery area has been identified as a significant ancient Native American resource area (19-MD-370).***

Page 67: Recommendations for Corrections
An updated form for the Old Burying Ground (ARL.800) should be updated to include additional information gathered during the Archaeological Reconnaissance Survey of the Old Burying Ground.

Page 73: Survey Action Plan with Cost Estimates
43. Update to indicate Town-Wide Archaeological Reconnaissance Survey completed in 2023.

Updates to 2019 Mill Brook Corridor Report

Although much work is currently underway, any future ground disturbing revitalization work along Mill Brook Corridor should include archaeological review including but not limited to a survey designed to locate and identify any potentially significant ancient Native American and/or historical archaeological sites that may be impacted.

Page 36: Long Term Recommendations – Historical Context
Section 2: ***Conduct an archaeological investigation at Old Schwamb Mill to locate original mill features, such as the tailrace in the back garden.***

Bullet at end of section:

- ***Incorporate Town-Wide Archaeological Reconnaissance Survey and highlight areas along Mill Brook also sensitive for pre-contact, ancient Native American occupation.***

Add signage that documents Native American history in Arlington and importance of waterways, like Mill Brook, for food and other resources as well as transportation routes.

Page 38: Placemaking
Section 7: ***Improve signage at Mt. Pleasant Cemetery, which was a large Native American village 5,000 years ago, to include Native American Use of Mill Brook Lower Mystic Lake.***

Updates to the 2022 Arlington Open Space and Recreation Plan (OSRP)

While many revitalization projects in Arlington's open space and recreational areas are underway, any proposed new development/revitalization projects should include archaeological review including but not limited to a survey designed to locate and identify any potentially significant ancient Native American and/or historical archaeological sites that may be impacted.

The results of the town-wide archaeological reconnaissance survey and the development of archaeological sensitivity maps can augment the Open Space and Recreation Plan and provide additional information to augment the text. Specific recommendations for revisions to the Open Space and Recreation Plan include:

Pg. 19 – B. History of the Community
Add a new first paragraph:
First Settlers of Arlington
Archaeological and cultural resources document more than 9,000 years of human habitation in Arlington before the arrival of the colonists. The Town's Native American history has been documented especially around Spy Pond and the Alewife Brook and Mystic River areas by the recovery of cultural material, such as chipped stone tools used for hunting, woodworking, and fishing.

[add representative graphic of Native American land use]

The ***written*** history of the Town of Arlington begins with the settlement of the Menotomy…

Page 72: 4. Archaeological Areas
Replace the final paragraph:
The Town completed a communitywide archaeological reconnaissance survey in 2023 designed to document the town's known archaeological resources, identify new sites through research and informant interviews, and predict the most likely locations of unknown ancient Native American and historic period archaeological sites. The survey included the development of townwide archaeological sensitivity maps keyed to assessor's parcel data that are designed to be an effective tool for town officials reviewing proposed development and considering areas for conservation. The survey resulted in the identification of 9 new pre-contact sites and 1 post-contact site, bringing the towns current total to 26 pre-contact and 10 post-contact recorded archaeological sites located in all sections of town.

Page 87: B. Arlington's Open Space and Recreational Resources
Add a line to end of first section (before Table 5-1)*:*
The town-wide archaeological reconnaissance survey has also identified areas of pre- and post-contact archaeological sensitivity within many of the open space and recreational areas, especially in wooded uplands, along natural wetland margins, and in proximity to eighteenth and nineteenth century roads and farmsteads.

Page 176. Action Item
Edit Objective 4.C. Increase public awareness and encourage the use of the town's natural ***and cultural areas***, recreational facilities, and other public spaces

4.C.3. Incorporate signage in archaeologically sensitive areas to educate the public and promote awareness of ancient Native American occupation of Arlington around Spy Pond, Alewife Brook, and Mystic River parks, and early ice harvesting industry on Spy Pond.

Updates to the 2015 Arlington Master Plan

Page 15: Historic and Cultural Resource Areas Recommendations

Update to indicate both historic preservation plan and town-wide archaeological reconnaissance plans have been completed:

The Town completed a communitywide archaeological reconnaissance survey in 2023 designed to document the town's known archaeological resources, identify new sites through research and informant interviews, and predict the most likely locations of unknown ancient Native American and historic period archaeological sites. The survey included the development of townwide archaeological sensitivity maps keyed to assessor's parcel data that are designed to be an effective tool for town officials reviewing proposed development and considering areas for conservation. The survey resulted in the identification of 9 new pre-contact sites and 1 post-contact site, bringing the towns current total to 26 pre-contact and 10 post-contact recorded archaeological sites located in all sections of town.

Page 109: Historic & Cultural Resources
Edit Paragraph 2:
Historic Resources are the physical remnants that provide a visible connection with the past. These include Arlington's historic buildings and structures, objects, and documents, designed landscapes, and cemeteries.

Cultural Resources are the tangible assets that provide evidence of past human activities, including both ***artificial*** and natural sites, structures, and objects that possess significance in history, architecture, archaeology, or human development. In Arlington, among others, this includes the heritage landscapes of ***ancient Native American villages around Spy Pond, Alewife Brook, and Mystic River, and the generations of industrial development along Mill Brook.*** Together, Arlington's collection of historic and cultural resources helps tell the story of the modern, colonial, and Native American settlement of the land. These irreplaceable resources contribute to Arlington's visual character and sense of place.

Page 116: Prince Hall Mystic Cemetery

Add to Second paragraph, line 19: ***As part of the 2023 town-wide archaeological reconnaissance survey, it was recommended that additional non-invasive investigations at the cemetery using ground penetrating radar, drone survey, and lidar imagery be conducted to locate existing unmarked graves that may be present.***

Archaeological Resources

Replace first sentence of the section with:
The Town completed a communitywide archaeological reconnaissance survey in 2023 designed to document the town's known archaeological resources, identify new sites through research and informant interviews, and predict the most likely locations of unknown ancient Native American and historic period archaeological sites. The survey included the development of townwide archaeological sensitivity maps keyed to assessor's parcel data that are designed to be an effective tool for town officials reviewing proposed development and considering areas for conservation. The survey resulted in the identification of 9 new pre-contact sites and 1 post-contact site, bringing the towns current total to 26 pre-contact and 10 post-contact recorded archaeological sites located in all sections of town.

Edit Line 8: Replace ***"prehistoric lithic chipping debris" with "pre-contact lithic chipping debris."***

Replace last sentence of first section with:
Arlington is located in within an area of Massachusetts that was settled thousands of years before the first English settlers arrived. Ancient Native American sites have been recorded around Spy Pond, Alewife Brook, and Mystic River, and it is realistic to imagine that other significant archaeological resources exist within Arlington despite the town's intense development.

Historic Collections

Edit Line 8: ***Artifacts contained in these collections include Native American stone tools, historic documents, meeting records…***

Page 120: Educational and Interpretive Activities

General recommendation: ***Signage should be placed in archaeologically sensitive areas to educate the public and promote awareness of ancient Native American occupation of Arlington around Spy Pond, Alewife Brook, and Mystic River parks, and early ice harvesting industry on Spy Pond.***

Page 123: Recommendations

1. ***Update to indicate town-wide historic preservation and archaeological reconnaissance surveys have been completed.***

Draft Public Education Recommendations

As discussed above, some of the most successful examples of local archaeological regulatory review in

Massachusetts have been adopted in those communities that regularly engage in public outreach about cultural heritage. By committing to regular, varied, and multigenerational educational efforts, the AHC can help with not only awareness about the town's cultural heritage but public support for local regulatory mechanisms that identify and protect these resources.

The draft recommendations will be revised and updated for the final report based on input from the Town and School Department during Phase III of the project.

"Take-a-Walk" or "Tour of the Town"

A local history tour of the Town can be incorporated into the existing Take-a-Walk routes/maps established by the Arlington Open Space Committee, or be developed by the AHC to include historic properties like Old Schwamb Mill, Jason Russell House, Cyrus Dallin Art Museum, or historic stops along the Minuteman Bikeway and Mill Brook. The AHC and/or School Committee could incorporate locations into a tour that highlight a broader range of the town's history and encompass areas of archaeological sensitivity. Cultural resources like those listed above are all excellent places to emphasize the Town's archaeological cultural resources and awareness of the deep heritage of the settlement beginning with Native Americans at least 10,000 years ago.

The important natural and cultural resources in Arlington including Mill Brook, Alewife Brook, and the Mystic River can be incorporated into a tour or even highlighted at a booth during the annual Town Day. The tour could include a stop at one the town-owned or publicly accessible locations where educators could talk about the importance of waterways for power, food, travel, and trade, as well as their importance and use by Native Americans. The types of archaeological evidence that could be found to support the use of these areas should be a topic of discussion.

Menotomy Rocks Park is a good place to see Cambridge argillite, which the Native Americans used to make stone tools for thousands of years, and rocky ledges that may have been used as rockshelters. Lessons discussed at the rock outcrops or back in the classroom could include what makes the stone unique and why it was so important as a resource in ancient times; the techniques and methods Native Americans used to quarry stone and make chipped stone tools.

Educational opportunities tied to locations where archaeological surveys have taken place, such as at the Jason Russell House and Spy Pond Park, could integrate archaeological methods as well as what evidence was found to support the Town's role in important events like the Revolutionary War and the Arlington's ice industry, and the early development of the Town.

Capitalizing on the knowledge of local historians and AHS historical information, these sites could be interpreted and highlighted to call attention to the historical and archaeological assets of the town.

APPENDIX F

MHC REFERENCE FORMS

PRESERVATION RESTRICTIONS FAQS
KNOW HOW #4- WHAT TO DO WHEN HUMAN BURIALS ARE UNCOVERED MHC PROJECT NOTIFICATION FORM
SAMPLE PRE-CONTACT AND POST-CONTACT MHC SITE FORMS

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

Frequently Asked Questions Regarding
Preservation Restrictions in Massachusetts

1. ***What is a preservation restriction?*** A preservation restriction is a legally binding agreement (typically, an easement) to assure the long-term protection of a historically significant property. The preservation restriction, which the property owner grants to another party (either a governmental entity or a qualified charitable corporation or trust – the "grantee"), prohibits or conditions specified physical changes or uses of the historic property by current and future owners. Massachusetts General Laws Chapter 184, sections 31-33, establishes a legal statewide framework for their conveyance, recording and enforcement for the public benefit. Under Chapter 184, the Massachusetts Historical Commission must approve all preservation restrictions, and for those held by a charitable corporation or trust, the municipality in which the property is located must also approve the restriction.

2. ***In what ways are preservation restrictions used?*** Property owners may convey a preservation restriction on their property at any time to assure the long-term protection of its significant historic qualities. The owner of a historically significant property may require a preservation restriction as a condition of sale. Local, state and federal preservation programs usually require a preservation restriction in return for restoration or rehabilitation funds granted to a historic property. Municipalities may require a restriction to afford protection to a significant property as a condition for granting a permit or variance.

3. ***What properties are eligible for preservation restrictions?*** Under M.G.L Chapter 184, preservation restrictions are limited to historic structures or sites significant for their architecture, archaeology or associations in history. These may include properties listed in the State or National Register of Historic Places and those that the Massachusetts Historical Commission has found to meet the criteria for listing in the National Register. Historically significant buildings, structures, landscape features and archaeological sites and their settings may be protected through a preservation restriction.

4. ***Who may grant a preservation restriction?*** Only the owner of a qualified property or the owner's authorized agent may grant a preservation restriction. The owner or owner's agent must sign the preservation restriction agreement.

5. ***Who may accept a preservation restriction?*** Only a governmental body or a qualified charitable corporation or trust whose purposes include the preservation of historically significant properties, and which has the power to acquire an interest in land may accept a preservation restriction.

220 Morrissey Boulevard, Boston, Massachusetts 02125
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www.sec.state.ma.us/mhc

6. ***How is a preservation restriction conveyed?*** A preservation restriction may be conveyed in the form of a restriction, easement, covenant or condition in a deed, but it may also be conveyed in a will or other instrument. It may be conveyed as a donation or sold for value. If freely donated, a restriction on a qualified property may constitute a charitable deduction for federal income tax purposes.

7. ***What conditions should a preservation restriction contain?*** A preservation restriction can forbid or limit any or all (a) alterations in exterior or interior features of a historic structure, (b) changes in the appearance or condition of a site, (c) historically inappropriate uses, (d) archaeological field investigation without permit by the State Archaeologist, (e) other acts or uses detrimental to appropriate preservation of the structure or site. Current and future owners must also agree to maintain the property so as to preserve those characteristics that contribute its architectural, archaeological and historical integrity and significance. A property may require additional restrictions or allowances based on the purposes of the restriction and the particular circumstances and requirements of the owner and the grantee.

8. ***Is there a particular set of preservation standards that preservation restrictions should reference?*** Yes. Preservation restrictions must reference "The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings" (36 CFR 67 and 68), as these may be amended from time to time.

9. ***Must the preservation restriction be recorded?*** Yes. A preservation restriction must be recorded with the appropriate Registry of Deeds to be generally binding on future owners of the property.

10. ***How long does a preservation restriction remain in effect?*** A preservation restriction can be conveyed in perpetuity or for a term of years.

11. ***How is the preservation restriction on a property administered?*** The terms of the preservation restriction specify when and how the property owner must seek prior written approval from the grantee for proposed activities that are limited or conditioned by the restriction. The grantee inspects the property periodically to assure that the terms of the restriction are being observed. The grantee is also empowered to seek legal enforcement means, should the terms of the restriction be violated. Grantees may condition their acceptance of a preservation restriction on the payment of a fee or donation toward an endowment dedicated to cover the costs of administration, monitoring and enforcement.

12. ***Can a preservation restriction be terminated? If so how?*** The grantee of a preservation restriction under Chapter 184 may release it in whole or in part for such consideration, if any, as the holder may determine, but only after a public hearing and with the approval of the Massachusetts Historical Commission, with the determination that such a release is in the public interest and meets all the requirements of Chapter 184.

Questions/comments: Michael Steinitz, Deputy State Historic Preservation Officer, Massachusetts Historical Commission (michael.steinitz@state.ma.us) 617 727-8470

KnowHow #4

INFORMATION AND ASSISTANCE FROM THE MASSACHUSETTS HISTORICAL COMMISSION

What to Do When Human Burials are Accidentally Uncovered

1. Why are bones sometimes found?

In Massachusetts, many unmarked graves exist without gravestones, fences, tombstones, or other surface indications of their presence. These are chiefly the graves of prehistoric and historic Indians, which may never have been marked at all; and graves which had been identified at one time in the past, but the markings are no longer visible. As a result, bones are often found during ordinary ground disturbance activities such as the construction of new homes, utilities, or roads; in the agricultural or industrial use of a site; or the excavation of sand or gravel borrow. Bones are also sometimes found eroding out of areas exposed by natural erosion, floodwater scouring, or sand dune formation.

A new law has been enacted which establishes procedures to follow when human bones are accidentally discovered.

2. Who is involved?

Private citizens, State and Local Police, Medical Examiners, State Archaeologist, and the Commission on Indian Affairs.

3. What should you do if you discover bones?

Do not touch or disturb the bones. Notify the state or local police and the regional medical examiner about the discovery and location.

4. What does the Medical Examiner do?

The Medical Examiner investigates the discovery to determine whether the bones are human, and whether they are recent or more than 100 years old. If the bones are less than 100 years old, a criminal investigation may be warranted. If the bones are more than 100 years old, the Medical Examiner then notifies the State Archaeologist, who immediately conducts an archaeological investigation of the site. Throughout these investigations, the police authorities must insure that the site is protected from further damage.

5. What does the State Archaeologist do?

The State Archaeologist investigates the site to determine the age, cultural association and identity of the burial. If the State Archaeologist determines that the burial is that of a Native American, the Commission on Indian Affairs is notified. The State Archaeologist consults with the landowner to determine whether the burial can remain undisturbed. In the case of development projects, the owner and State Archaeologist discuss whether there are prudent and feasible steps the owner can take to protect the burial. If it is impossible to avoid future harm to the burial, the State Archaeologist removes the remains.

6. What does the Commission on Indian Affairs do?

The archaeological investigation of Indian burials is monitored by the Commission on Indian Affairs to insure that the remains are treated respectfully.

> Please remember: Once bones or artifacts are removed from the site, valuable information concerning the identity and age of the human remains is lost. Therefore, it is important not to disturb the site in any way until the State Archaeologist can conduct an investigation and record the discovery.

BIBLIOGRAPHY

Massachusetts General Laws, Chapter 38, section 6B; Chapter 9, sections 26A & 27C; Chapter 7, section 38A; Chapter 114, section 17; as amended by Chapter 659 of the Acts of 1983 and Chapter 386 of the Acts of 1989.

For Further Information:

Please contact the State Archaeologist at the Massachusetts Historical Commission.

William Francis Galvin
Secretary of the Commonwealth
Chairman, Massachusetts Historical Commission
Massachusetts Archives Building, 220 Morrissey Boulevard, Boston, MA 02125
Phone: (617) 727-8470 Fax: (617) 727-5128 TDD: 1-800-392-6090
Website: www.magnet.state.ma.us/sec/mhc

APPENDIX A

MASSACHUSETTS HISTORICAL COMMISSION
220 MORRISSEY BOULEVARD
BOSTON, MASS. 02125
617-727-8470, FAX: 617-727-5128

PROJECT NOTIFICATION FORM

Project Name: _____

Location / Address: _____

City / Town: _____

Project Proponent

Name: _____

Address: _____

City/Town/Zip/Telephone: _____

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies).

Agency Name	Type of License or funding (specify)

Project Description (narrative):

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.

Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation.

Does the project include new construction? If so, describe (attach plans and elevations if necessary).

APPENDIX A (continued)

To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.

What is the total acreage of the project area?

Woodland _____	acres	Productive Resources:	
Wetland_____	acres	Agriculture _____	acres
Floodplain_____	acres	Forestry _____	acres
Open space_____	acres	Mining/Extraction _____	acres
Developed _____	acres	Total Project Acreage_____	acres

What is the acreage of the proposed new construction? _____ acres

What is the present land use of the project area?

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

Signature of Person submitting this form: _____Date: _____

Name: _____

Address: _____

City/Town/Zip: _____

Telephone: _____

REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.

Guidance for Completing MHC's ***Project Notification Form*** *(950 CMR 71.00, Appendix A)*

❖ Please make sure you **type or print legibly** the Project Notification Form (PNF) and fill out **all** sections of the form.

❖ Please submit a PNF for **each** project separately. This will facilitate MHC's review of multiple project submissions.

❖Please include the street and number in the address line of the project area. Please be sure to specify the town name.

❖ Please make sure you fill out *both* the **project address section** and the **project contact** section. Please note that these two addresses may be the same in some cases. It is important for MHC to have a contact person in order to facilitate review, should questions arise.

❖ The funding, licensing, and permitting section **must be completed** in order for MHC to review the PNF. Be sure to list *all* funding, licensing and permitting involved with the entire project; this includes **federally** funded, licensed, and permitted projects, as well as **state** funded, licensed, and permitted projects. Some examples of common funding, licensing, and permitting agencies and funding sources are: **Army Corps of Engineers; Federal Communications Commission; Community Development Block Grants; School Building Assistance from the Massachusetts Department of Education; Department of Housing and Community Development; Department of Environmental Protection (permits such as sewer connection, wetlands, or Chapter 91 permits); Massachusetts Highway Department (curb cut permits), etc. There are many others.**

❖ Please be sure to **describe** the proposed project in **detail**. Attach additional pages if necessary. If dates of construction on buildings or dates of alterations to a site are known, please be sure to include this information in your project description.

❖ Please include photographs of the proposed project site. If the project involves demolition or rehabilitation of a building(s), be sure to include photos of major elevations of the building(s). Please also be sure to label photographs. Attach the most current project plans and elevations if available.

❖ **Please be sure to include a photocopy of the pertinent section of the U.S.G.S. map with your submission**. The MHC cannot review a PNF without a U.S.G.S. section map. You can purchase U.S.G.S. maps at local camping, hiking, and sporting goods stores, or download U.S.G.S. maps from the World Wide Web at www.topozone.com; or make a photocopy of U.S.G.S. maps at libraries.

❖ Do not use other maps instead of the U.S.G.S. map. However, additional maps such as plot plans or assessors' maps may be included **in addition** to the U.S.G.S. section map.

❖ **Boundaries of the project area** should be specific. Do not circle a large plot of land on the U.S.G.S. map and indicate that the project falls within the circle.

This guidance document is offered to assist in compliance with M.G.L. Chapter 9, Section 26-27c, as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00)

FORM D ARCHAEOLOGICAL SURVEY
PREHISTORIC ARCHAEOLOGICAL SITES

Massachusetts Historical Commission
Office of the Secretary
State House, Boston

FOR MHC OFFICE USE ONLY

Town
UTM
QUAD
MHC NO.

NR ☐ ACT ☐ ELIG. ☐ NO DISTRICT ☐ YES ☐ NO

IDENTIFICATION

1. SITE NAME(S) SAMPLE | MAS NO. | OTHER NO.

2. TOWN/CITY | COUNTY

3. STREET AND NUMBER (IF NOT AVAILABLE, GIVE DETAILED DESCRIPTION OF HOW TO REACH SITE)

4. OWNER(S) AND ADDRESS(ES) ☐ Public ☐ Private

5. SITE LOCATED BY
☐ CRM Survey ☐ Avocational Collector ☐ Field School ☐ Other (Specify)
Describe Sampling Strategy used to Locate Site:

DESCRIPTION

6a. PERIOD(S) (Check all applicable boxes)
☐ Paleo ☐ Early Woodland ☐ Contact
☐ Early Archaic ☐ Middle Woodland ☐ Unknown
☐ Middle Archaic ☐ Late Woodland ☐ Other (Specify)
☐ Late Archaic

☐ Single Component ☐ Multi-Component
Specify All Components

6b. Estimated Occupation Range

7. DATING METHODS: C-14 ☐ Intuition ☐ Other (specify) | Comparative Materials

8. DESCRIBE SITE TYPE / FUNCTION

9. DESCRIBE SIZE AND HORIZONTAL AND VERTICAL BOUNDARIES

10. GENERALIZED SITE PROFILE
Type of Soil(s) Cultural Material

Indicate Depth of Levels

ENVIRONMENT

11. SOIL | USDA Soil Series | Contour Elevation | % Slope of Ground ☐ 0 - 5 ☐ 5 - 15 ☐ 15 - 25 ☐ Over 25

Acidity
1 ——— 7 ——— 14
(Acid) (Base)

12. TOPOGRAPHY
☐ Flat ☐ Gentle undulation ☐ Other
☐ Rolling Hills ☐ Mountains

13. WATER | NEAREST WATER SOURCE | SIZE AND SPEED | DISTANCE FROM SITE | SEASONAL AVAILABILITY

14. VEGE-TATION | PRESENT | PAST

CONDITION

15. SITE INTEGRITY
☐ Undisturbed ☐ Good ☐ Fair ☐ Destroyed

IF DISTURBED, DESCRIBE DISTURBANCE

16. SURROUNDING ENVIRONMENT
☐ Open Land ☐ Woodland ☐ Eroded Soils ☐ Residential ☐ Scattered Buildings Visible from Site
☐ Commercial ☐ Industrial ☐ Rural
☐ Coastal ☐ Isolated

17. ANY THREATS TO SITE DESCRIBE POTENTIAL THREATS
☐ Yes ☐ No

18. ACCESSIBILITY TO PUBLIC
☐ Free Access ☐ Need Owner Permission ☐ Restricted ☐ No Access

RESEARCH STATUS

19. PREVIOUS WORK		
☐ Surface Collected	By Whom / Affiliation	Date
☐ "Pot hunted"	By Whom / Affiliation	Date
☐ Tested	By Whom / Affiliation	Date
☐ Excavation	By Whom / Affiliation	Date

20. PRESENT LOCATION OF MATERIALS (INCLUDE ADDRESS)

21. REFERENCES / REPORTS

SIGNIFICANCE

22. RECOVERED DATA (identify in DETAIL, including features, pits, burials, faunal material, etc.)

23. ARCHAEOLOGICAL OR HISTORICAL SIGNIFICANCE

SITE PLAN

24. ATTACH PORTION OF USGS QUAD WITH SITE AREA MARKED TO THIS FORM

25. SKETCH PLAN OF SITE

See Attached Map

Scale:

26. PHOTOS: Attach if available
Label each with: Date of photo, photographer, view shown, name of site

REPORTED BY:	NAME	ADDRESS	
	ORGANIZATION		DATE

FOR OFFICE USE ONLY

FIELD EVALUATION

COMMENTS

FORM D ARCHAEOLOGICAL SURVEY
HISTORIC ARCHAEOLOGICAL SITES

Massachusetts Historical Commission
Office of the Secretary
State House, Boston

FOR MHC OFFICE USE ONLY

Town
UTM
QUAD
MHC NO.
NR ☐ ACT ☐ ELIG. ☐ NO DISTRICT ☐ YES ☐ NO

IDENTIFICATION

1. SITE NAME(S) SAMPLE | MAS NO. | OTHER NO.

2. TOWN/CITY | COUNTY

3. STREET AND NUMBER (IF NOT AVAILABLE, GIVE DETAILED DESCRIPTION OF HOW TO REACH SITE)

4. OWNER(S) AND ADDRESS(ES) ☐ Public ☐ Private

5. SITE LOCATED BY
☐ CRM Survey ☐ Avocational Collector ☐ Field School ☐ Other (Specify) _____
Describe Sampling Strategy used to Locate Site:

DESCRIPTION

6a. PERIOD(S) (Check all applicable boxes)
☐ 17th C. ☐ 18th C. ☐ 19th C. ☐ 20th C. ☐ Unknown

6b. Estimated Occupation Range

7. DATING METHODS | MAPS | TITLE SEARCH ☐ Yes ☐ No | ADDITIONAL DOCUMENTS
Comparative Materials | OTHER

8a. SITE TYPE ☐ Agrarian ☐ Residential ☐ Industrial ☐ Commercial ☐ Military ☐ Unknown ☐ Other (Specify)

8b. DESCRIBE

9. DESCRIBE SIZE AND HORIZONTAL AND VERTICAL BOUNDARIES

10. STRATIGRAPHY

Surface Indicators	Stratigraphy
☐ Standing Ruins	☐ Stratified
☐ Surface Finds	☐ NOT Stratified
☐ Markers	☐ Below Ground Structural Remains
☐ Cellar Hole	

ENVIRONMENT

11. SOIL | USDA Soil Series | Contour Elevation | % Slope of Ground ☐ 0 - 5 ☐ 5 - 15 ☐ 15 - 25 ☐ Over 25

Acidity
1 ——— 7 ——— 14
(Acid) (Base)

12. TOPOGRAPHY ☐ Flat ☐ Gentle undulation ☐ Other ☐ Rolling Hills ☐ Mountains

13. WATER | NEAREST WATER SOURCE | SIZE AND SPEED | DISTANCE FROM SITE | SEASONAL AVAILABILITY

14. VEGE-TATION | PRESENT | PAST

CONDITION

15. SITE INTEGRITY
☐ Undisturbed ☐ Good ☐ Fair ☐ Destroyed

IF DISTURBED, DESCRIBE DISTURBANCE

16. SURROUNDING ENVIRONMENT
☐ Open Land ☐ Woodland ☐ Eroded Soils ☐ Residential ☐ Scattered Buildings Visible from Site
☐ Commercial ☐ Industrial ☐ Rural
☐ Coastal ☐ Isolated

17. ANY THREATS TO SITE DESCRIBE POTENTIAL THREATS
☐ Yes ☐ No

18. ACCESSIBILITY TO PUBLIC
☐ Free Access ☐ Need Owner Permission ☐ Restricted ☐ No Access

RESEARCH STATUS

19. PREVIOUS WORK		
☐ Surface Collected	By Whom / Affiliation	Date
☐ "Pot hunted"	By Whom / Affiliation	Date
☐ Tested	By Whom / Affiliation	Date
☐ Excavation	By Whom / Affiliation	Date

20. PRESENT LOCATION OF MATERIALS (INCLUDE ADDRESS)

21. REFERENCES / REPORTS

SIGNIFICANCE

22. RECOVERED DATA (identify in DETAIL, including structures, related outbuildings, landscape features, etc.)

Documentary:

Archeological:

23. ARCHAEOLOGICAL OR HISTORICAL SIGNIFICANCE

SITE PLAN

24. ATTACH PORTION OF USGS QUAD WITH SITE AREA MARKED TO THIS FORM

25. SKETCH PLAN OF SITE

See Attached Map

Scale:

26. PHOTOS: Attach if available
Label each with: Date of photo, photographer, view shown, name of site

REPORTED BY:	NAME	ADDRESS	
	ORGANIZATION		DATE

FOR OFFICE USE ONLY

FIELD EVALUATION

COMMENTS

APPENDIX G

PUBLIC OUTREACH AND EDUCATIONAL MATERIALS
SAMPLE LESSON PLANS

Native Americans in New England Curricular Project

Title: Stories We Use to Understand Our World: Exploring Native American Deeptime[1] Stories and Geology Explanations

Grade Level: Second Grade

Subject Area Focus: English Language Arts

Estimated Number of Days to Complete: 5 lessons, 5-6 Days

Submitted by* Lani Blechman, Lisa Kuerzel
School Leverett Elementary School
District Union 28
State Massachusetts
Date Submitted _____

Curricular Project Summary:

In this unit, 2nd grade students will explore two ways that we tell stories in order to explain the world around us. By focusing on a mountain that is (just about!) visible from the school, students will connect with the cultural importance of deep-time stories as a way to understand our landscape. This will be compared to a geological explanation of mountains. Students will engage in multiple ways with both types of stories--through listening, analyzing, illustrating, telling (the story), and comparing. A collaboration between the classroom and library, this unit includes extension activities in the art classroom and sets the stage for a connected writing project. Students engage with local native culture and history and are encouraged to nurture a deeper respect for traditional tales. A "Read and Analyze Nonfiction Chart" is used to scaffold a mini-research process, allowing students to confirm their prior knowledge and uncover misconceptions.

[1]In her publicly available essay, "The Geology and Cultural History of the Beaver Hill Story", Marge Bruchac (Abenaki) explains the significance and characteristics of deep-time stories, particularly those with an "earthshaper motif": "Native stories in this genre describe, in metaphorical terms, using human, super-human, and non-human characters, how ancient geological events reshaped the landscape, forming mountains, rivers, lakes, islands and rocky outcroppings. Many of these stories also describe species evolution and climate change. Native oral narratives about the landscape formed part of a larger body of knowledge that enabled Native people to efficiently hunt, fish, gather and plant, make climate predictions, practice ethnobotany, and situate homesites in the best locations."

Desired Results/Objectives

1. Essential Questions/Historical Questions:

What are the different ways that we explain the world around us? Why is a particular place important?

2. Objectives: By the end of this project what will students know, understand and be able to do?

Students will know…

- How fault-block mountains are formed geologically.
- The Pocumtuck deep-time story of Wequamps, Beaver-tail Hill (Mount Sugarloaf).

Students will understand…

- That different people have different ways of seeing and explaining the world around them.
- The importance and usefulness of oral storytelling.

Students will be able to…

- Participate in the retelling of one story about how a mountain was formed.
- Compare and contrast deeptime stories (traditional tales) with scientific narratives.

3. Curriculum Standards (National, State, Local):

Mass. DOE Reading Standards for Literature: Grade 2:

Key Ideas and Details:

1. Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
2. Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.
3. Describe how characters in a story respond to major events and challenges.

Craft and Structure:

5. Describe the overall structure of a story, including describing how the beginning introduces the story and the ending concludes the action.

Integration of Knowledge and Ideas:

7. Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.

9. Compare and contrast two or more versions of the same story (e.g., Cinderella stories) by different authors or from different cultures.

Mass. DOE Speaking and Listening Standards: Grade 2

1. Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.

   a. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).

   b. Build on others' talk in conversations by linking their comments to the remarks of others.

   c. Ask for clarification and further explanation as needed about the topics and texts under discussion.

2. Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

3. Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.

4. Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.

4. Transfer Goal:

Students will understand that different viewpoints and ways of seeing the world are all valid. They will foster a deeper sense of place through history and story telling.

Assessment/Evidence

Performance Task or Assessment used to gauge student learning: (Please describe)

- Retell a portion of one story.
- Identify a place that is important to you.
- Graphic Organizer filled out with differences and similarities between Scientific Explanations and Deep-time Stories/Traditional Tales.

Pre-Assessment: RAN Chart will be used to facilitate and document a group discussion of "What we think we know" about how mountains are formed and about Native American deeptime stories (traditional tales).

Formative Assessment:

- Observation of student participation and observations during read-alouds as questions are asked of them, and they ask questions.
- On-going use of the RAN Chart to facilitate and document discussions of what knowledge we have 'confirmed', what 'misconceptions' we have uncovered, our 'wanderings', and what we've 'learned'.

Other Assessment Evidence: n/a

Learning Plan

Lesson Summaries:

Lesson 1: Introduction of RAN chart and reading of first Deeptime Story
Lesson 2: Deeptime Story reading and chunking story into seven parts
Lesson 3: Reading of scientific text, chunking into seven parts, and further filling in of RAN chart
Lesson 4: Identifying similarities and differences between scientific text and Deeptime story
Lesson 5: Retelling of Deeptime story and scientific 'story' of mountains.

Learning Activity Details:

LESSON 1: UNIT INTRO & DEEPTIME STORY #1

Materials/Resources Tools:

- Blank RAN Chart
- Joseph Bruchac's "The Earth on Turtle's Back" from *Keepers of Earth*
- "The Earth on Turtle's Back" images projected

Instructional Tips/Strategies/Suggestions:

- Activate prior knowledge
- Read and make predictions
- Visual Thinking Strategies

Historical Question/Essential Question: How are mountains formed? How can we use stories to understand the world around us? What places are important to me?

Lesson 1 Details

Lesson Openings
Unit Introduction: Teacher and Librarian verbally introduce the unit, goals, schedule and timeline for the unit. We will be exploring how landforms are created through various types of stories (traditional stories and scientific stories).
Introduce RAN CHART: Teacher and Librarian introduce the RAN CHART as a way that we will track and record our learning throughout the unit.
Students are asked to answer the question, "How are mountains formed?". Teacher or Librarian fill out the "Prior Knowledge" column on the RAN CHART based on student input. Emphasize that we, as a class, will be using stories to "Confirm" what we know or to learn about our misconceptions. Teacher or Librarian do not need to *correct* student input.
Students are asked to answer the question, "What is a Native American traditional tale or deep-time story?". Teacher or Librarian fill out the "Prior Knowledge" column on the RAN chart based on student input. Emphasize that we, as a class, will be using stories to "Confirm" what we know or to learn about our misconceptions. Teacher or Librarian do not need to *correct* student input.

Students are asked what questions have come up while listening to their classmates. These are recorded under the "Wonderings" column of the RAN CHART.

During the Lesson: Read "The Earth on Turtle's Back"

The focus of this lesson is one deeptime story. Teacher and Librarian define deep-time story and give some background on the story.

Teacher or Librarian read the story, encouraging students to make predictions:

- What do we think will happen in this deeptime story based on the projected images?
- Why is the wife's dream important?
- What do you think will happen with the seeds?

Lesson Closing

Teacher and Librarian ask students if we have confirmed anything that we know about how mountains are formed or what deep-time stories are. This is noted in the "Confirmed" column on the RAN CHART. Based on our reading, what do we know about:

- Who tells or writes the story
- Where do they get their knowledge

Teacher and Librarian also ask students if we have uncovered any "Misconceptions" and note these in the RAN CHART.

Teacher and Librarian remind students that deeptime stories are about places that are important to native cultures who have lived here, where we are, for thousands of years. We all have places that are important to us because we have fun at these places, we get our food from them, etc.

In this deeptime story, we learn about how the Earth came to be. What is important to the people in the story?

Teacher and Librarian ask students to close their eyes and think of a place that is important to them. A few students can share with the group what they see.

LESSON 2 - DEEPTIME STORY #2: Beaver-tail Hill

Materials/Resources Tools:

- Images from Amiskwôlowôkoiak - the People of the Beaver-tail Hill (text transcript link)
- Audio recordings of Marge Bruchac (Abenaki) telling Wôbanakiak: Amiskwôlowôkoiak – the People of the Beaver-tail Hill (duration: 5:26 minutes)

- Image of Marge Bruchac, Abenaki story-teller

Instructional Tips/Strategies/Suggestions:

- Using context clues to decipher meaning
- Re-"read" for deeper understandings
- Synthesize readings to form new learning and challenge misconceptions
- Summarize and sequence
- Practice classroom procedures and collaborative skills for large group discussions
- Demonstrate learning verbally and through drawing

Historical Question/Essential Question: How do traditional tales explain the creation of landforms? What places are important to me?

Lesson 2 Details

Lesson Opening: A picture of Marge Bruchac is projected.
Students are asked to sit quietly in a circle so that we can listen to an Abenaki storyteller, Marge Bruchac (who lives in Northampton part of the year), tell the story of how Mount Sugarloaf is formed. We will listen to this story multiple times, and you can close your eyes if you want to. Play recording for the first time.
During the Lesson
Teacher reviews vocabulary that we heard in the story: • awaasak - animals • Quinneticook - Connecticut • abaziak - trees • Pocumtuck - Indians who were living near what is now Deerfield when English settlers moved to western Massachusetts • amiskw - beaver • councilled - had a meeting to discuss • Obbamakwa - shape-maker, or one who moves the earth around • Wequamps - Indian name for Mt. Sugarloaf • Amiskwôlowôkoiak - people of Beaver-tail Hill
Teacher asks students to verbally recall the important things that happened (key actions) in the story.

Teacher projects images from Amiskwôlowôkoiak - the People of the Beaver-tail Hill and replays the recording.
As a group, we verbally outline the action in the story using 7 frames, and the Teacher writes these up on 7 pieces of butcher paper.
Lesson Closing
Teacher and Librarian ask students if we have confirmed anything that we know about how mountains are formed. This is noted in the "Confirmed" column on the RAN chart. Teacher and Librarian also ask students if we have uncovered any "Misconceptions" and note these in the RAN CHART.
Teacher and Librarian remind students that deep-time stories are about places that are important to native cultures who have lived here, where we are, for thousands of years. We all have places that are important to us because we have fun at these places, we get our food from them, etc. In this story, why might Wequamps (Mount Sugarloaf) be important to the Pocumtuck?
Teacher and Librarian ask students to close their eyes and think of a place that is important to them. A few students can share with the group what they see.
Students are told that they will be illustrating the story frames in art class this week.

LESSON 3 - Geology of Mountains

Materials/Resources Tools:

- Seymour Simon's *Mountains*
- Group RAN chart
- Chunking paper-chart or large construction paper
- Class set of blank graphic organizers
- Class set of paper for use with p. 8, *Mountains*
- 10 sets of 4 chunks each of different colored clay (see YouTube activity)
- Canola oil
- Yogurt cups or other containers for oil-can use small amount per pair of students

Instructional Tips/Strategies/Suggestions:

- Using context clues to decipher meaning
- Re-"read" for deeper understandings

- Synthesize readings to form new learning and challenge misconceptions
- Summarize and sequence
- Practice classroom procedures and collaborative skills for large group discussions
- Demonstrate learning verbally, through drawing, and through writing
- Organize thinking in order to compare and contrast
- Make sure no students have allergies to canola oil before doing activity

Historical Question/Essential Question: How are fault-block mountains formed? How do we tell stories? What places are important to me?

Lesson 3 Details

Lesson Opening
Teacher reviews RAN Chart as reminder of how we filled it out in previous lessons. Teacher introduces *Mountains* by asking students how they think it will differ from or be the same as the Deeptime Story: ● Who tells or writes the story ● Where do they get their knowledge
Introduce vocabulary words that students might not know. Ask if students know and can tell other students. Give a heads-up that we will listen for these words and attempt to define using contextual clues. • **Fault-block mountain**: formed above fault when one plate shifts and huge blocks of rock rise or fall • **Fault**: spots on Earth where two tectonic plates or large rocks collide or slide against each other
During the Lesson
Read pp. 8, 10, and 12 of Seymour Simon's *Mountains.* (Pages are not numbered so teacher will need to count out.) • Have students do activity with piece of paper on p. 10. (Hold a piece of paper at either end and slowly push towards the middle until it buckles, demonstrating the pressure that builds and pushes mountains up in the Earth's crust.)
Teacher will show Fault Block Mountains video, (disregard last 20 seconds of video) and then lead students in performing the activity.
Lesson Closing
As a group, verbally outline the action in the story using 7 frames, and the Teacher

writes these up on 7 pieces of butcher paper.
Teacher and Librarian ask students if we have confirmed anything that we know about how mountains are formed. This is noted in the "Confirmed" column on the RAN chart. Teacher and Librarian also ask students if we have uncovered any "Misconceptions" and note these in the RAN CHART.
Teacher and Librarian ask students to close their eyes and think of a place that is important to them. A few students can share with the group what they see. Students are told that they will be illustrating the story frames in art class this week.

LESSON 4 – Comparing and Contrasting

Materials/Resources Tools:

- Group RAN chart
- Class set of blank graphic organizers

Instructional Tips/Strategies/Suggestions:

- Synthesize readings to form new learning and challenge misconceptions
- Practice classroom procedures and collaborative skills for large group discussions
- Organize thinking in order to compare and contrast

Historical Question/Essential Question: How are Deeptime stories and scientific explanations of landforms similar or different? How do we tell stories? What places are important to me?

Lesson 4 Details

Lesson Opening
Discuss how the two stories, scientific and Wequamps, are similar and different so that students can fill out their graphic organizers. (Teacher should make sure that some version of similarities/differences from below are included in the RAN.) **Similarities:** ● mountain/landform/natural phenomena is a big part of the story (main

character?)
- they both tell how the landform/phenomena got there
- both stories have an end 'product'

Differences:
- mountains/landforms/natural phenomena (like thunder) are animals or beings who talk
- people have a part in the Deeptime creation of the landform
- there is a 'shaper', god, or creator who 'makes' the landform

Teacher will help students find one or two similarities and differences on the RAN chart to start them off. Teacher will model circling one or two similarities (in orange) or differences (in green) as an example for filling out their graphic organizers.

During the Lesson

Introduce graphic organizers that students will fill out.

Students fill out their individual graphic organizers.

Lesson Closing

Tell students we will be retelling our two stories; Deeptime and scientific explanation. Ask for a show of hands to see if half of the students gravitate towards the scientific retelling and half want to retell the Deeptime story. If not, let them know that we will randomly draw students for each group for our next meeting.

Lesson 5: Retelling

Materials/Resources Tools:
- Audio recordings of Marge Bruchac (Abenaki) telling Wôbanakiak: Amiskwôlowôkoiak – the People of the Beaver-tail Hill (duration: 5:26 minutes)
- Seymour Simon's *Mountains*
- 7 chunks of Deeptime story on large paper and 7 chunks of scientific telling on large paper (written out in previous lessons)

Instructional Tips/Strategies/Suggestions:
- Using classroom procedures to facilitate collaboration

Historical Question/Essential Question: How do we tell stories? What places are important to me?

Lesson 5 Details

Lesson Opening
Model storytelling with another Bruchac story from *Keepers of the Earth. "*What are the characteristics of a good storyteller?"
During the Lesson
Break students into two groups. (Teacher and librarian lead the separate groups.) One group will retell the scientific explanation and one group will retell the Deeptime Story.
Pass out chunks (7 pieces of large paper) of each story to the respective groups, and use classroom collaboration procedures to decide who will retell which section. In pairs, students will practice telling their section of the story and giving feedback to their peers. As a group, practice telling the "full" story.
Lesson Closing
The two groups will perform their stories for the rest of the class. Closing group discussion: What did we learn about telling stories out loud? What did we learn about why places are important to different people?

Materials and Sources Used

What primary source(s) is/are being used (full citation)? Please annotate each source.

Bruchac, Marge. "Wôbanakiak: Amiskwôlowôkoiak – the People of the Beaver-tail Hill."

Voices & Songs: Creation Stories. *Raid on Deerfield: The Many Stories of 1704*.

Pocumtuck Valley Memorial Association, 2004. Web. 20 July 2015.

<http://1704.deerfield.history.museum/voices/stories.do>.

From here, you can download and play recordings of Marge Bruchac (Abenaki) telling the Pocumtuck deep-time story of Beaver-Tail Hill.

Caduto, Michael J., Joseph Bruchac, Ka-Hon-Hes, and Carol Wood. "The Earth on Turtle's Back." *Keepers of the Earth: Native American Stories and Environmental Activities for Children*. Golden, CO: Fulcrum, 1988. 24-26. Print.

A collaboration between native and non-native culture-makers, this book provides a broad collection of native traditional tales, extensive background information, and activity ideas for connecting to the tales in ways that honor the traditional meanings. Because this creation story is based on oral tradition and written/re-told by a member of the community from which it comes, we consider it a primary source.

What secondary sources are being used (full citation)? Please annotate each source.

Bruchac, Marge. "The Geology and Cultural History of the Beaver Hill Story." *Raid on Deerfield: The Many Stories of 1704*. Pocumtuck Valley Memorial Association, 2004. Web. 20 July 2015. <http://1704.deerfield.history.museum/voices/transcripts/wob_creation_essay.html>

Marge Bruchac (Abenaki) is a storyteller who provides background information on the relationship between geology and deep-time stories in this essay.

Colleen and Stacey. "Read & Analyze Nonfiction Text with the Rungs of Reading!" Adventures in Literacy Land: Read & Analyze Nonfiction Text with the Rungs of Reading! *Adventures in Literacy Land*, 19 Jan. 2014. Web. 20 July 2015. <http://www.adventuresinliteracyland.com/2014/01/read-analyze-nonfiction-text-with-rungs.html>.

Our NEH Institute 2015 colleague, Michelle Parrish, shared this gem with us. Similar to a KWL chart, the RAN chart, allows students to activate prior knowledge, but also encourages them through a research and learning process whereby their knowledge is

"confirmed", "new learning" can occur, and "misconceptions" are revealed.

Fault Block Mountains. Dir. Lindy Sims. Perf. Lindy Sims. *YouTube*. YouTube, 2 Nov. 2013.

Web. 23 July 2015.

This video demonstrates how to create a representation of a fault block mountain out of clay. After watching the video, students will perform the activity to reinforce understanding of how some mountains are formed.

Mackiewicz, Diana T. "Indigenous Peoples of Turtle Island." NEH: Indigenous Peoples of Turtle

Island/Abenaki and Pocumtuck. NEH Summer Institute *Native Americans of New*

England: A Historical Overview, Aug. 2013. Web. 20 July 2015.

<http://researchdtmack.com/abenakipocumtuck.html>.

Created by an educator and former NEH scholar, this site provides background information and further lesson ideas particularly relevant to the deep-time story about Beaver -Tail Hill. Other resources, such as interactive maps, are compiled here.

Simon, Seymour. *Mountains*. New York: Mulberry, 1997. Print.

What other curricular materials do you plan to use to support the curricular project?

- Graphic organizer - compare and contrast deeptime and geology stories.

Reflection

After teaching the lessons, what suggestions do you have for other teachers who might use this curricular project?

Next step: Writer's workshop focusing on writing our own personal, sacred place folktales.

APPENDIX H

STATE ARCHAEOLOGISTS PERMIT

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

PERMIT TO CONDUCT ARCHAEOLOGICAL FIELD INVESTIGATION

Permit Number 4192 Date of Issue June 8, 2022

Expiration Date June 8, 2023

PAL is hereby authorized to conduct an archaeological field investigation pursuant to Section 27C of Chapter 9 of General Laws and according to the regulations outlined in 950 CMR 70.00.

Townwide Archaeological Reconnaissance Survey, Arlington
Project Location

Brona Simon

Brona Simon, State Archaeologist
Massachusetts Historical Commission

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.state.ma.us/sec/mhc