FORM F - STRUCTURE

MASSACHUSETTS HISTORICAL COMMISSION
Office of the Secretary, State House, Boston

In Area no.	Form no.
	908

1. Town Chelmsford

Address 100 meters NE of intersection of Beaver Brook and Rt.110

Name Chelmsford Lime Quarries & Kilns

Present use in ruins

Present owner Town of Chelmsford

2. Photo (3x3" or 3x5")
Staple to left side of form
Photo number _____

3. Type of structure (check one)

bridge	pound
canal	powder house
dam	street
fort	tower
gate	tunnel
kiln	wall
lighthouse	windmill

other x Lime Quarries

4. Map. Draw sketch of structure location in relation to nearest cross streets, buildings, other structures, natural features. Indicate north.

5. Description

Date _____

Source _____

Construction material _____

Dimensions _____

Setting _____

Condition _____

DO NOT WRITE IN THIS SPACE
USGS Quadrant _____

MHC Photo no. _____

6. Recorded by _____

Organization _____

Date _____

(over)

HAER INVENTORY

1. NAME OF STRUCTURE: Chelmsford Lime Quarries & Kilns
2. DATE: 1740
3. NATURE OF STRUCTURE: Quarry
4. INDUSTRIAL CLASSIFICATION: 059
5. LOCATION: STREET & NUMBER: 100 meters NE of intersection of Beaver Brook and Route 110
CITY OR TOWN: Chelmsford
COUNTY: Middlesex
STATE: MA
6. USGS QUAD MAP & UTM GRID REF.: Billerica 19.305700.471820
7. OWNER OF PROPERTY: Town of Chelmsford
ADDRESS:

8. CONDITION: ☐ EXCELLENT ☐ GOOD ☐ FAIR ☐ DETERIORATED ☒ RUINS ☐ UNEXPOSED ☐ ALTERED ☐ ACCESSIBLE TO PUBLIC

9. DESCRIPTION & BACKGROUND HISTORY: NUMBER OF STRUCTURES; DIMENSIONS; FABRIC; STRUCTURE & FORM; SURVIVING MACHINERY, FITTINGS AND EQUIPMENT; APPROX. AREA OF SITE; ALTERATIONS; PRESENT USE; ENGINEER/ ARCHITECT/DESIGNER; IMPORTANT EVENTS & INDIVIDUALS.

These limestone quarries, with accompanying kilns, were put into operation about 1740 and remained in use until about 1830. They supplied the blast furnaces of North Chelmsford and Westford with lime flux. The three quarries have been preserved by the town of Chelmsford as part of a scenic trail. The kilns are in ruins. Two other quarries on the north slope of Robbins Hill were used during the same period.

10. PHOTOGRAPHS & SKETCH MAP ON REVERSE SIDE.

11. RELATED SOURCES OF INFORMATION: HISTORICAL REFERENCES (PUBLISHED ARTICLES, MANUSCRIPTS, REPORTS, DRAWINGS, PHOTOGRAPHIC RECORDS)
CONTACTS: (NAMES & ADDRESSES OF ANYONE WITH EYE-WITNESS ACCOUNTS OR RELEVANT INFORMATION); TAPE RECORDINGS.

H. D. Hurd, History of Middlesex County

12. DANGER OF DEMOLITION OR DAMAGE ☐ YES ☒ NO
NATURE OF THREAT:

13. PRIORITY: 3

14. EXISTING SURVEYS AND DATES: ☐ NHL ☐ NR ☐ HAER ☐ HABS ☐ STATE ☐ COUNTY ☐ LOCAL ☐ OTHER

15. INVENTORIED BY: YOUR NAME: Peter M. Molloy
ADDRESS: 800 Mass. Ave., N. Andover, MA 01845
AFFILIATION: Merrimack Valley Textile Museum
DATE: 4/76

PLEASE RETURN TO THE HISTORIC AMERICAN ENGINEERING RECORD, NATIONAL PARK SERVICE, WASHINGTON, DC 20240

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The Commonwealth of Massachusetts
Office of the Secretary
State House, Boston 33

Kevin H. White
Secretary of the Commonwealth

December 10, 1965

Mrs. E. Newcomb Mills
12 Westford Street
Chelmsford, Massachusetts 01824

Dear Mrs. Mills,

Thank you very much for your letter of December 7, and the area survey form for the Chelmsford Lime Kiln lot.

Not only have we added this site to our inventory, but, being the reason for the Department of Public works request for a listing of all the historic sites and structures on the federally-aided highways, this will form the beginnings of that inventory.

I have taken the liberty of sending a copy of your letter to Mr. Powers of the Department of Public Works so he can remain up-to-date on the situation.

Dr. Hale will be in touch with an archaeologist later this month and will try to find other useful sources of information and material on the subject of these kilns.

Sincerely yours,

Anne R. Wardwell
Administrative Assistant
Mass. Historical Commission

/aw

AREA SURVEY - FORM A
MASSACHUSETTS HISTORICAL COMMISSION
Office of the Secretary, State House, Boston

1. Town Chelmsford Mass
2. Name of area or section Chelmsford Ctr
old lime quarry + kiln -
3. General Date or period: 1740 - 1830
4. Is the area uniform? ____ Uneven ____
In style ____
In condition abandoned
In type of ownership Private
In use (Explain) No.

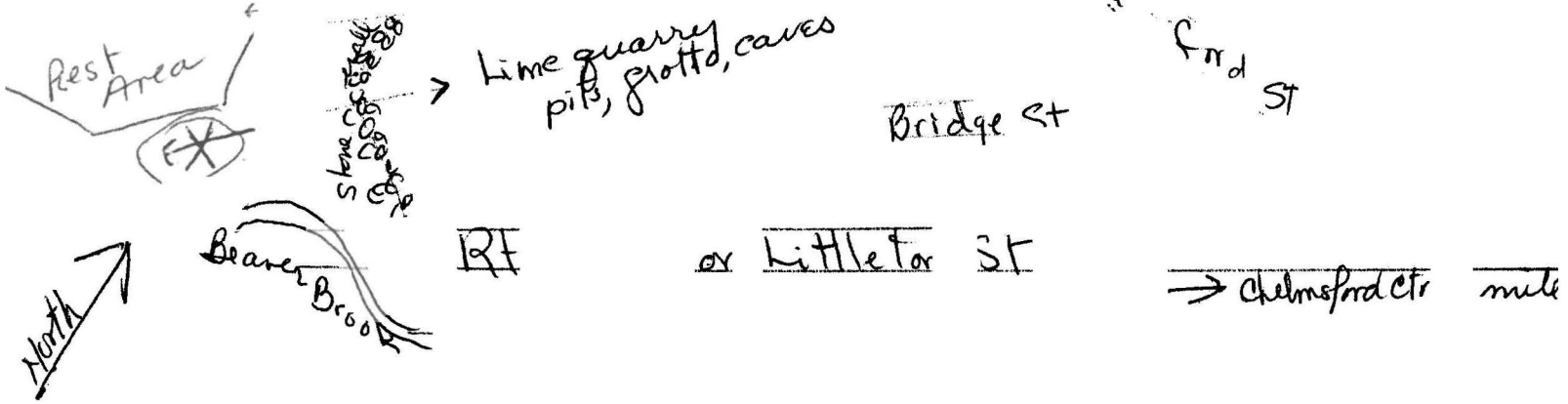
6 Please comment on the Historical or Architectural importance of this area

An early (1740 1830 approxima
lime quarry + kiln area.
+ Lowell rr
Fuel (wood).
2 mills bec
present quarries in
(Diagon Cement) se
This is one of five areas in
Chelmsford History (others gone) was
important early industry - coopers busy
making casks - oxteams used for
transportation. Minerals etc referred
to in this area by Prof Hitchcock's
Geology in Mass.
Besides historic interest - this spot
is attractive for young + old students of
botony + minerals.

5. Is area potentially threatened? Yes
By Zoning ____
By Roads: ____
By Developers X X X X X
By Deterioration ____

7. Draw a general map of the area involved. Please indicate in red any known historic sites on which individual reports are contemplated on Form B. Indicate street boundaries of area.

Rt



Recorder Margaret E. Mills
For Chelmsford Conservation Commission
(Name of Organization) Past Pres. Historical Society

NOTE: Recorder should obtain written permission from Commission or sponsoring organization before using this form.

Lime in Chelmsford
Waters, "History of Chelmsford"

pg. 447 Artemas Parker was an expert in the lime industry. He burned the last kiln of lime in Chelmsford before the business was abandoned, about 1830. After Lowell was built, wood brought too large a price to be burned in lime kilns, and the lime works at Thomaston, Maine, came into competition. Wood was cheaper there and the lime was brought to Massachusetts markets in boats at less cost than it could be made here, though it was not of as good quality. The Chelmsford kilns were operated by the Fletchers and Perhams. George P. Mansfield's father, when a boy, was employed in this indurstry. In some old Chelmsford houses the plaster made of this lime is today almost as hard as tile. It is laid on expanded lath of oak or spruce. There were five lime kilns in Chelmsford.

Chelmsford lime was carried with ox teams to East Chelmsford and used in the construction of mills and corporation buildings.

643 The Geology of Chelmsford, By Clarence H. Knowlton, formerly principal of the Chelmsford High School.

Numerous publications refer in one way or another to the geology of Chelmsford and vicinity. The oldest of these is Hitchcock's Report on the Geology of Massachusetts, published in 1835, which describes the Westford granite and the Chelmsford limestone.....

All the bedrocks of this region are very, very old, running back many millions of years. The limestone is earlier than the Cambrian period of the Palaeozoic age, and is probably Archaean, and other rocks may be equally old.....

The lenses of limestone seem to be closely assocoated with the sedimentary part of the biotitc gneiss, and to be probably of the same general age. They are greatly metamorphosed, the metamorphism being probably due in part to the intrusion of the igneous portion of the gneiss and in part to the great deformation that he rocks have suffered.

.....On the northwest side of Robin's Hill is a lens of the ancient limestone, and another lies north of Littleton street. At both places the old lime kilns and quarries are easily accessible. This limestone is highly crystalline, and a large number of different minerals have been found there. Among these are black serpentine, actinolite, magnesite and scapolite. One form of the latter has been called Chelmsfordite. Professor Hitchcock and Professor Crosby give good accounts of these interesting minerals.

649 Quotations from Hitchcock.

Hitchcock, in "Geology of Massachusetts," 1841, says:

In the bed of the Merrimack, from Chelmsford to Newbury, is a hard slate approaching quartz rock, which I apprehend will answer nearly as well for a road stone as the slate around Boston.....

He mentions two or three beds of limestone, and says the simple minerals imbedded in this limestone are numerous and interesting. The most common and aboundant mineral is scapolite. It occurs both crystallized and compact. The crystallized variety is most aboundant at .....Chelmsford...The crystals are sometimes transparent, more commonly opaque and white having begun to decompose. Sometimes the crystal exhibits the primary form, or a right square prism, acuminated by four planes set on the lateral planes. More commonly, however, the lateral edges are slightly truncated. Some of these crystals are one, or even two inches in diameter; though, in such cases, generally imperfect. Often this mineral is compact, and the color either white or lilac red. This red color, hoever, occurs also in that which exhibits an aggregation of prisms....At Chelmsford, small masses of black serpentine occur in

the limestone, and at Littleton also, of a lively green color..... Very delicate and beautiful amianthus is found in veins in the limestone, about two miles southwest of the center of Chelmsford. The fibres are sometimes two or three inches long, and resemble the finest and most beautiful white silk. (Page 564, Hitchcock).

.....The limestones in Chelmsford are magnesian, and most of them are loaded with earthy impurities.

The limestones of eastern Masschusetts are among the oldest on the globe. The crystaline dolomite of Chelmsford occurs in the midst of gneiss, and is frequently fetid, so as to give a strong odor when struck with a hammer. (Page 568, Hitchcock).

.....Chelmsfordite is the same as Scapolite silicate of aluminum with calcium and sodium.

Color, light: - white, grey, pale blue, greenish or reddish. Streak, uncolored. Transparent to nearly opaque. Hardness, 5 to 6. Sp. Grav. 2.6 to 2.8. Clearage indistinct. Occurs in crystals, or massive, or sub-lamellar.

pg. 660 The Chelmsford limestone quarries before referred to are worthy of mention....for the caves and tunnels from which the limestone was removed warrant treatment of the subject as a mining enterprise of olden days,

Massachusetts possess large deposits of limestone in the western portion of the state, but very small deposits of good quality have been found in this vicinity. The lime used in early colonial building was made from sea-shells, and, being the carbonate of lime, was free from impurities. In 1697, limestone was discovered at Newbury by Ensign James Noyes, and caused great excitement. As many as thirty teams a day came to carry it away, until a town meeting was called to prevent the despoilation, and it was stopped by the sheriff. This may have been the first attempt in this counrty at conservation of our natural resources.

The Bolton limestone was discovered in 1736, but it is not known when limestone was first found in Chelmsford. The lichen covered walls of schist and gneiss, the trees which have grown in the partially filled excavations, and the general appearance of the surroundings would indicate that the Chelmsford deposits were worked at as early a date as those at Bolton. It is said that the "pigs" of limerock turned up by the plow in the cultivation of the land, led to the discovery of these deposits in Chelmsford. The principal quarried were on the westerly slope of Robin's hill, and on the other side of the valley of the Beaver brook, westerly of the Littleton road. The caves and grottoes from which the limestone was taken in the latter locality and the ruins of the old lime kilns are still objects of interest. It took a week or ten days to burn a kiln of lime, and required much skill and care. The making of lime added much to the business of the town, as the kilns used a large amount of fuel, and the coopers were kept busy making casks and barrels for the transportation of the lime. In Allen's History of Chelmsford (1820), it is said that 'in the southwest part of the town, is a bed of limestone, of an excellent quality, extending two miles northeast. It has five kilns upon it, and from which are annually drawn, about a thousand hogsheads, which may be estimated at $5 per hogshead.'

Professor Hitchcock, in his Geology of Massachusetts, written in 1839, groups the beds of limestone in Acton, Bolton, Boxborough, Carlisle, Chelmsford, and Littleton together, because of their similar characteristics (mineral), and describes them as ~~destitute of stratification, highly magnesian,~~ white crystalline limestones, highly magnesian, and almost destitute of stratification, placed between highly inclined strata of gneiss. He even classes them as dolomite, and believed them to be among the oldest on the globe. He says the rock is usually very

much mixed with foreign materials, such as scapolite, serpentine, compact feldspar, etc., and that none of the beds are of any great extent in the direction of their strata, nor is their width more than a few yards in any case.

He gives the following analysis of the Chelmsford limestone:

Carbonate of Lime	56.52
Carbonate of Magnesia	39.38
Peroxide of Iron	.90
Silica, Alumina, etc.	3.20
	100.00

He states the specific gravity as 2.85, and the per cent of quicklime, 31.65. On account of the large percentage of magnesia, the mortar made with this lime was harder and whiter than that made from lime that was purer. It was of good quality, and was used in the construction of many buildings in Chelmsford and early Lowell. It is said that the mortar made with it is so strong and clings so tenaciously, that bricks laid in it are not worth cleaning. Part of a ceiling made with this lime recently fell to the floor in an old Chelmsford house without fracture. The woods in the vicinity of the kilns were in time so cut off as to greatly increase the cost of burning the lime, and the low priced lime from Thomaston, Maine, was brought up the Middlesex Canal and undersold the Chelmsford product in its home market. Mr. Henry S. Perham, who was engaged in writing the history of Chelmsford at the time of his decease, states in the History of Middlesex County, that David Perham, who was his grand-father, operated the largest lime-kiln in Chelmsford and continued the business until 1832. The manufacture of lime at Bolton was carried on as late as 1861.

Although most of these limestone deposits have been exhausted, and none of the quarried have been worked for many years, they are well worth visiting to study the geological story they so plainly reveal, and to acquire a fuller realization of the value of these deposits to the colonists. Lime was a very important article in their day, when the only source of supply was in the shells to be found on the seashore, and their search for limestone was exceedingly thorough. Professor George H. Barton says that in all his geological explorations and field-work in eastern Massachusetts, he has never found a limestone deposit of any size which had not been worked in former days.

These old quarried are rich in the variety of minerals which they contain. At Bolton may be found actinolite, allanite, apatite, boltonite, calcite, chondrodite, petalite, phlogopite, pyroxene, sahlite, scapolite, spinel, and titanite, and other rarer minerals. Many of these may be found in Chelmsford, which also possesses a mineral of its own, a variety of wernerite called chelmsfordite, and amianthus is also found there. Some geologists think they have found in the Chelmsford limestone the fossil of the earliest form of life, the eozoon canadense, while others vigorously oppose this view, and declare the supposed fossil to be nothing but a minute discoloration in the stone. Whatever it may be, it is clearly perceptible as a small green speck or stain imbedded in the white limestone.

Lime Kiln and Quarry, Littleton Road and Beaver Brook

8/28/2004 F. Merriam

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Littleton Road Lime Quarry

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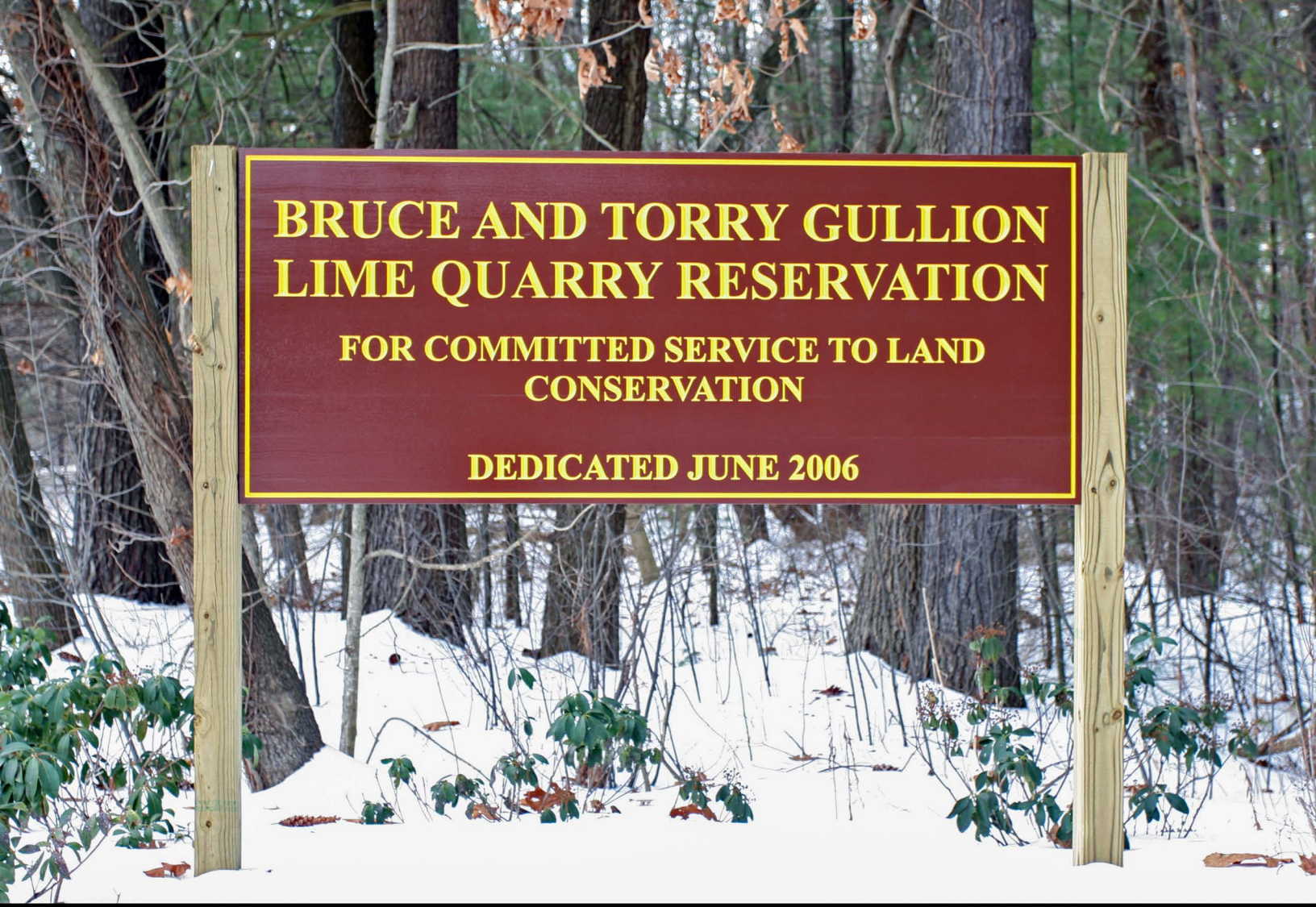

Littleton Road - Gullion Lime Quarry Reservation 2/18/2007 F. Merriam