2293

MDC - TRA. MASS.

FORM A – AREA

DEC 0 5 1989

MASSACHUSETTS HISTORICAL COMMISSION
80 BOYLSTON STREET, BOSTON, MA 02116

Area Letter	Form numbers in this Area
B	B-6, B-1, B-2, B-3, B-4, B-5, B-7

Town Framingham, West Natick, South Natick, Sherborn, Wellesley, Newton

Name of Area (if any) Sudbury Aqueduct

Linear District

Present Use out of service

General Date or Period 1875-1878

period of significance 1875-1926

General Condition poor

Acreage approximately 190 acres

Recorded by Jane Carolan

Organization Louis Berger & Associates

Date February 1988, revised 1989

Photos (3"x3" or 3"x5" black & white) Indicate on back of each photo street addresses for buildings shown. Staple to left side of form.

Sketch Map. Draw a general map of the area indicating properties within it. Number each property for which individual inventory forms have been completed. Label streets including route numbers, if any. Indicate north. (Attach a separate sheet if space here is not sufficient).

UTM REFERENCE

A)19/321780/4688400
B)19/318810/4688710
C)19/316440/4686880
D)19/312900/4684310
E)19/310510/4683540
F)19/307900/4682100
G)19/301990/4682350 H)19/300240/4683080

USGS QUADRANGLE Newton, Natick, Framingham

SCALE 1:25,000

NATIONAL REGISTER CRITERIA STATEMENT (if applicable)

The Sudbury Aqueduct is considered eligible for inclusion on the National Register of Historic Places due to its place in the history of water distribution for the City of Boston. The second in a series of water supply aqueducts, the Sudbury is representative of water technology construction techniques of the late 19th century as well as muncipal architecture of the same period. It retains integrity of location, design, setting, materials, workmanship and feeling and meets Criteria A and C of the National Register of Historic Places.

The boundary of the Sudbury Aqueduct nomination includes the actual aqueduct itself, its earthern embankment retaining walls, as well as the structures on the aqueduct.* The boundary of the Sudbury Aqueduct nomination is shown on the attached map, Sudbury Aqueduct, Metropolitan Water Works, Land Plans, September 1911, updated 1924. Scale 800' = 1".

*The only boundary exception occurs at Chestnut Hill Reservoir (Area E) where the terminal chamber is included in that district.

ARCHITECTURAL SIGNIFICANCE Describe important architectural features and evaluate in terms of other areas within the community.

The Sudbury Aqueduct runs through six towns, Framingham, West Natick, South Natick, Sherborn, Wellesley and Newton. When the aqueduct was constructed these suburban towns were mostly small rural villages and the aqueduct was built in what was then farm land. The Sudbury Aqueduct(B5-1 includes the aqueduct itself, a metering chamber (B5-7), the Farm Pond Gatehouse (B3-6), the Waste Weir A (B5-5) and Waste Weir D (B5-6). Additionally the aqueduct crosses three valleys via iron pipes via the Rosemary Brook Siphon (B5-2), the Waban Bridge (B5-4) and the Charles River Bridge (Also known as the Echo Bridge; NR: 4-9-1980; B5-3).

The aqueduct is horseshoe-shaped in section with a diameter of 8.5 feet and its height is 7'8". Built of brick, set in hydraulic cement, the aqueduct has a foundation of cement concrete with side walls of rubble stone masonry laid in cement mortar. The covering is a brick arch and the sides and bottoms are lined with brick. Exterior dimensions vary according to the aqueduct location. Earthern embankments were made the year previous to actually laying the conduit so they could properly settle. Several were around 50 feet high and in some of the larger embankments iron tie rods were placed in the concrete for additional support. Where the (cont.

HISTORICAL SIGNIFICANCE Explain historical importance of area and how the area relates to the development of other areas of the community.

The Sudbury Aqueduct was construction in 21 sections from 1875 to 1878. The aqueduct begins at Farm Pond in Framingham and runs for 16½ miles to Chestnut Hill Reservoir (Area E) in Boston. A conduit connects Framingham Reservoir #1 (3-2) to the aqueduct in Farm Pond. Built at an incline toward Boston of one foot per mile, at capacity the aqueduct carried 80,000,000 gallons/day. The aqueduct was built to service the ever increasing population of Boston which had a significance increase in population as a result of the annexation, in 1874, of five surrounding towns. The Sudbury Aqueduct was part of a larger system to supply the City of Boston with water from the Sudbury River. The first components of the system were the constructin of Framingham Reservoirs # 1 (3-2), #2(3-3), and #3 (3-4) all built from 1876 to 1878. Farm Pond was developed as well at this time but soon taken out of service because of poor water quality. The aqueduct itself was constructed between 1875 and 1878. In 1885 Reservoir #4, the Ashland (4-3) was completed to supply more water for the aqueduct and in 1889 to 1894 Reservoir #6, the Hopkinton (4-4) was completed as well. Finally in 1898 the largest reservoir in the Sudbury Supply system was completed, the Sudbury Reservoir (see Area F).

Engineers for construction of the aqueduct were J.P. Davis, City Engineer and A. Fteley, Resident Engineer of the Sudbury Supply. Lobdell and Phelps were the contractors. George Clough, City Architect, designed the Waste Weirs, Farm Pond Gatehouse and the Terminal Chamber. The siphon was constructed by C. McClallan & Sons, Chicopee, MA; the Charles River Bridge by George W. Phelps, Springfield, MA; and the Waban Bridge by the Boynton Brothers of Boston & Providence. The aqueduct has remained remarkedly intact with few changes although it was taken out of service in 1974 because of poor quality water but it is used occassionally to dump water into the Charles River via Lake Cochituate and the Cochituate Aqueduct when the Charles is too low.

BIBLIOGRAPHY and/or REFERENCES

Additional Supply from the Sudbury River, 1882.
Internal Report on the Sudbury River Works, by Desmond Fitzgerald to F.P. Stearns, 15 June 1898.
Boston Water Board Reports, 1877, 1878, 1879, 1880.

MASSACHUSETTS HISTORICAL COMMISSION
Office of the Secretary, Boston

Community: Framingham, West Natick, South Natick, Sherborn, Wellesley, Newton	Form No: B5-2, B-1, B5-2, B-3, B-4, B-5, B-6
Property Name: Sudbury Aqueduct	

Indicate each item on inventory form which is being continued below.

ARCHITECTURAL SIGNIFICANCE:

aqueduct crossed muddy areas, the mud was excavated and replaced with gravel filling. The aqueduct was four tunnels which were necessary to support the aqueduct where it passes through a variety of rocky soil and boulder fields. The tunnels are one foot larger at the sides and top then the interior section of the brick aqueduct to allow for a one foot masonry lining. The westernmost tunnel is the Rockland Street Tunnel, in Natick, which is 1,754' long through red granite. A 700' length had to be lined in 1877, with brick, because the rock was crumbling. Badger Hill Tunnel, South Natick, is 1,642' long, excavated mostly in granite and lined with brick for over 1,000'. Newton Center Tunnel is 525' long. It was excavated in some granite, but mostly in gravel with boulders. The fourth tunnel, the Beach Street Tunnel, is in Newton. It is 4,635' long and was excavated primarily in areas of Roxbury conglomerate ston The bottom is lined in concrete; in 1877 some brick arching was added and in 1889 to 1892 a concrete lining, 1,182 feet long was added. In 1884 because of the poor quality of the water in Farm Pond, an additional section of conduit was added to the aqueduct to by-pass the pond.

The Farm Pond Gatehouse (B3-6), located in Framingham, was designed in a Victorian style by the office of George Clough, Boston City Architect. The small rectangular structure, built of brick, has a double parapet gable trimmed in granite and a gable projecting entrance pavilion. Windows are narrow vertical rectangles. The gatehouse, on the connecting conduit in Farm Pond was originally located 110' nearer the shore of Farm Pond but was moved, in the early 1880s, out into the pond to get a better depth of water through the gates when an additional conduit was constructed. After being moved the structure was placed on wood piles. Today the building is in a state of great disrepair.

The Rosemary Brook Siphon (B5-2), located in Wellesley, consists of two brick siphon chambers and three cast iron pipes which carry the aqueduct water across a steep valley. The siphon, which was built partly in cut and partly on embankments, carries water through two 48" cast iron pipes. A third pipe, 60", was added in 1898. The brick chambers contain gates that make the connection between the brick and iron portions of the conduit. The two chambers are flat-roofed, one story, rectangular brick structures with sandstone trim. The west chamber has a round lookout tower which contains a metal circular staircase.

The Charles River or Echo Bridge (B5-4-0-1[illegible]; B5-3), located in Newton Upper Falls, was considered by Desmond Fitzgerald, one of the water supply system's most distinguished engineers, as "the principal structure to be seen on the line of the aqueduct." The bridge was originally named the Charles River Bridge but because of its unusual acoustical properties was quickly dubbed Echo Bridge. The structure was seven arches; from west to east, the first arch, on the western river bank, is segmental with an 18' radius; the next arch is segmental with a radius of 69' and spans the river with an opening of 130 feet. The next four arches, each with a radius of 36'6", are semi-circular and are on the eastern river bank. The seventh arch, over Ellis Street, is a flat segmental arch with a 26' 6" radius and a 28' span. The bridge has a concrete core with a granite rubble exterior faced with ashlar. The conduit, lined with cement, crosses the bridge in a channel with a flagstone bottom and brick sidewalls which are topped with a decorative iron fence. The conduit section of the bridge is identical to that of Waban Bridge (B5-4).

The Waban Bridge (B5-4) is located in Wellesley. The bridge, over the Charles River, is 536' long, 40' high, and has nine semi-circular arches, each with a 22'4" radius. Built on sand, the bridge has piers constructed on wood pile foundations with timber platforms on top of the piles. The structure has a core of cement with an exterior of rubble stone faced in ashlar. The conduit, lined with cement, crosses the bridge in a well with a flagstone bottom and brick sidewalls which are topped with a decorative iron fence. The conduit section of the (continued)

Staple to Inventory form at bottom

INVENTORY FORM CONTINUATION SHEET 2 of 2

MASSACHUSETTS HISTORICAL COMMISSION
Office of the Secretary, Boston

Community: Framingham, West Natick, So. Natick, Sherborn, Wellesley,	Form No: 33-6, 5-1, 5-2, 5-3, 5-4, 5-5, 5-6
Property Name: Sudbury Aqueduct	

Indicate each item on inventory form which is being continued below.

ARCHITECTURAL SIGNIFICANCE:
bridge is identical to that of the Charles River Bridge (NR:4-9-1980; B5-3).

Sudbury Water Weir A (B5-5) is located in Sherborn. Waste Weir D (B5-6) is located in Newton. Both weirs were constructed to allow sections of the aqueduct to be closed, via gates, for inspection, cleaning, monitoring and repair. The weirs were generally located near streams and had culverts built with them in order to drain water into the streams that may have backed up behind the weir gates. Designed by George A. Clough, Boston City Architect from 1875 to 1883, the weirs are identical in design and are rectangular brick structures with a parapet, gables roof with granite quions and window surrounds. The windows themselves are narrow vertical rectangles, except for an arched window in the gable end.

The small gaging chamber (B5-7), located in Sherborn, was built in 1922 and replaced an earlier, original wooden gaging chamber. The small brick building is rectangular with a hipped roof and center chimney. Three windows on each side elevation are placed quite high on each elevation. The building is red brick with granite trim (quions, door lintel, window sills). The granite was reused, having originally been in the "old dam" (most probably the original 1848 dam) at Lake Cochituate (see Cochituate Aqueduct (A1-4).

The Sudbury Aqueduct Terminal Chamber (E13-5), located at the Chestnut Hill Reservoir (E15-9), was the terminus for the aqueduct which supplied water to the Chestnut Hill Reservoir. The building was a departure from the stiff, Victorian red brick aqueduct structures of the aqueduct in its geometric massing of main block and wings and multiple hipped roofs and definitive Frank Furness influence. Due to its location and style, the terminal chamber is included in the abutting Chestnut Hill Reservoir Historic District (Area E).

Although all the structures on the aqueduct have survived they vary in their condition ranging from the sad condition of the Farm Pond Gatehouse which has been heavily vandilized to the pristine condition of the Terminal Chamber.

HISTORICAL SIGNIFICANCE:
The structures that make up the district and are described in the Architecture section, combine to perform the basic function of carrying water from its source to distribution points. In this case that is from the Sudbury water shed consisting of Farm Pond, the three Framingham Reservoirs (3-2, 3-3, 3-4) and the Sudbury Reservoir (see Area F). The aqueduct defines and channels the course of water; the chambers provide for access/monitoring, ventilation, diversion or flow control; the bridges and siphons carry the aqueduct over impediments like rivers or roads; waste weirs allow for inspection, cleaning, monitoring or repair. Refer to Overview, Section 7: Aqueducts and Chambers for further information on those topics. Also refer to Section 8, pp. 5-7, 11 for additional information on the history of the aqueduct.

Staple to Inventory form at bottom

NPS Form 10-900-a
(8-86)

OMB Approval No. 1024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number _____ Page _____

Water Supply System of Metropolitan Boston MPS
Middlesex, Norfolk, Suffolk and Worcester Counties, MASSACHUSETTS

		DATE LISTED
	COVER Substantive Review	Beth L. Savage 01-18-90
1.	Ashland Dam and Spillway	Helena Byrne 1-18-90
2.	Framingham Reservoir No. 3 Dam and Gatehouse Substantive Review	Beth L. Savage 01-18-90
3.	Framingham Reservoir No. 2 Dam and Gatehouse	Helena Byrne 1-18-90
4.	Framingham Reservoir No. 1 Dam and Gatehouse	Helena Byrne 1-18-90
5.	Hopkinton Dam and Spillway	Helena Byrne 1-18-90
6.	Lake Cochituate Dam	Helena Byrne 1-18-90
7.	Medford Pipe Bridge	Helena Byrne 1-18-90
8.	Middlesex Fells Reservoirs Historic District Substantive Review	Beth L. Savage 01-18-90
9.	Mystic Dam	Helena Byrne 1-18-90
10.	Mystic Gatehouse Substantive Review	Beth L. Savage 01-18-90
11.	Mystic Pumping Station	Helena Byrne 1-18-90
12.	Sudbury Aqueduct Linear District	Helena Byrne 1-18-90
13.	Sudbury Dam Historic District	Helena Byrne 1-18-90
14.	Weston Aqueduct Linear District	Helena Byrne 1-18-90
15.	Fisher Hill Reservoir and Gatehouse	Helena Byrne 1-18-90
16.	Forbes Hill Standpipe	Helena Byrne 1-18-90
17.	Bellevue Standpipe	Helena Byrne 1-18-90
18.	Chestnut Hill Reservoir Historic District	Helena Byrne 1-18-90
19.	Marlborough Brook Filter Beds Substantive Review	Beth L. Savage 01-18-9

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

REQUESTED ACTION: NOMINATION

PROPERTY NAME: Sudbury Aqueduct Linear District

MULTIPLE NAME: Water Supply System of Metropolitan Boston MPS

STATE & COUNTY: MASSACHUSETTS, Middlesex

DATE RECEIVED: 12/05/89 DATE OF PENDING LIST: 12/19/89
DATE OF 16TH DAY: 1/04/90 DATE OF 45TH DAY: 1/19/90
DATE OF WEEKLY LIST:

REFERENCE NUMBER: 89002293

NOMINATOR: STATE

REASONS FOR REVIEW:

APPEAL:	N	DATA PROBLEM:	N	LANDSCAPE:	N	LESS THAN 50 YEARS:	N
OTHER:	N	PDIL:	N	PERIOD:	N	PROGRAM UNAPPROVED:	N
REQUEST:	N	SAMPLE:	N	SLR DRAFT:	N	NATIONAL:	N

COMMENT WAIVER: N

✓ ACCEPT ___RETURN ___REJECT 1/18/90 DATE Entered in the National Register

ABSTRACT/SUMMARY COMMENTS:

RECOM./CRITERIA_____
REVIEWER_____
DISCIPLINE_____
DATE_____

DOCUMENTATION see attached comments Y/N see attached SLR Y/N

CLASSIFICATION

___count ___resource type

STATE/FEDERAL AGENCY CERTIFICATION

FUNCTION

___historic ___current

DESCRIPTION

___architectural classification
___materials
___descriptive text

SIGNIFICANCE

Period Areas of Significance--Check and justify below

Specific dates Builder/Architect
Statement of Significance (in one paragraph)

___summary paragraph
___completeness
___clarity
___applicable criteria
___justification of areas checked
___relating significance to the resource
___context
___relationship of integrity to significance
___justification of exception
___other

BIBLIOGRAPHY

GEOGRAPHICAL DATA

___acreage ___verbal boundary description
___UTMs ___boundary justification

ACCOMPANYING DOCUMENTATION/PRESENTATION

___sketch maps ___USGS maps ___photographs ___presentation

OTHER COMMENTS

Questions concerning this nomination may be directed to

_____ Phone _____

Signed _____ Date _____

MDC - TRA, MASS.

#5-2

Rosemary Brook Siphon, Wellsley, MA
Jane Carolan / Martha Bowers 1984
Louis Berger & Ass.

Area B: Sudbury Aqueduct

Sudbury Aqueduct Linear District
Water Supply System of Metropolitan Boston MHPS

Farm Pond Gatehouse, Framingham, MA

#3-6

Jane Carolan/Martha Bowers 1984

Louis Berger Ass.

Area B: Sudbury Aqueduct

Sudbury Aqueduct Lines District

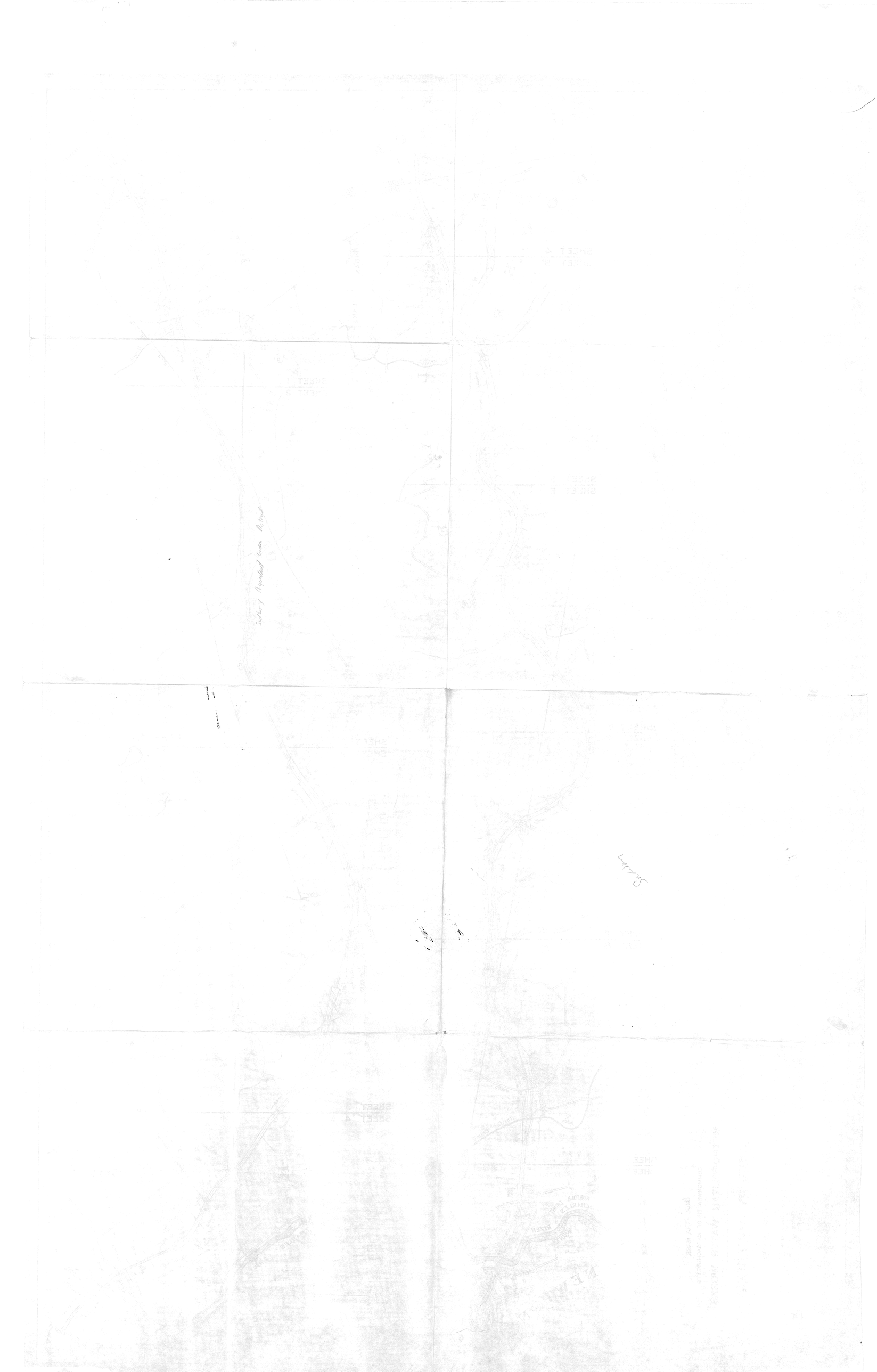
Water Supply System of Metropolitan Boston MPS

Sudbury Aqueduct Corridor Chronology, Framingham, MA
#5-7
Jane Carolan/Martha Bowers 1984
Louis Berger Ass.

Area B: Sudbury Aqueduct

Sudbury Aqueduct Linear District
Water Supply System of Metropolitan Boston MPS


FARM POND
BOSTON & ALBANY R.R.
FRAMINGHAM
DUG POND
SHERBORN
NATICK
CHARLES RIVER
Bacon's Brook
EVERETT
STREET
WABAN LAKE
MIDDLESEX COUNTY
NORFOLK COUNTY
WELLESLEY
DOVER
NEEDHAM
NEWTON
CRYSTAL LAKE
WABAN HILL RES.
BOSTON
CHESTNUT HILL RES.
SUFFOLK COUNTY
BOYLSTON ST.
SHEET 1
SHEET 2
SHEET 3
SHEET 4
SHEET 5
SHEET 6
SHEET 7
SHEET 8
SHEET 9
SHEET 10
SHEET 11
AREA B
MDC - TRA, MASS.
COMMONWEALTH OF MASSACHUSETTS
METROPOLITAN WATER WORKS
SUDBURY AQUEDUCT
LINEAR DISTRICT
LAND PLANS
Scale 800 feet to an inch
SEPTEMBER 1911
(1924)
C 765
INDEX PLAN



Please refer to the map in the Multiple Property Cover Sheet for this property

Multiple Property Cover Sheet Reference Number: 64500254