

STATE OF NEW HAMPSHIRE
BEFORE THE
NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION

RE: PENNICHUCK WATER WORKS, INC.

DW 10-091

PRE-FILED DIRECT TESTIMONY

OF

DONALD L. WARE

MAY 2010

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**Pre-Filed Direct Testimony of Donald L. Ware
DW 10-091**

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1 **Professional and Educational Background**

2 **Q. What is your name and what is your position with Pennichuck Water Works,**
3 **Inc.?**

4 **A.** My name is Donald L. Ware. I am the President of Pennichuck Water Works, Inc.
5 (the "Company"). I have been employed with the Company since April 1995. I am
6 a licensed professional engineer in New Hampshire, Massachusetts and Maine.

7 **Q. Please describe your educational background.**

8 **A.** I have a Bachelor in Science degree in Civil Engineering from Bucknell University
9 in Lewisburg, Pennsylvania. I have a Masters in Business Administration from the
10 Whittemore Business School at the University of New Hampshire.

11 **Q. Please describe your professional background.**

12 **A.** Prior to joining the Company, I served as the General Manager of the Augusta
13 Water District in Augusta, Maine from 1986 to 1995. I served as the District's
14 engineer between 1982 and 1986.

15 **Q. What are your responsibilities as President of the Company?**

16 **A.** As President of the Company, I am responsible for the overall operations of the
17 Company, including water quality and supply, distribution, engineering and water
18 system capital improvements. With regard to capital improvements overseen by
19 the Company's Engineering Department, I work directly with the Company's Chief
20 Engineer and each of the Company's Department managers in the selection and
21 implementation of new capital improvement projects.

22 **Q. What is the purpose of your testimony?**

1 **A.** I will be providing details of the Company's capital expenditures that were made in
2 2008 and during the test year and are included in the Company's rate request. I
3 will also describe non revenue producing capital improvements that will be made
4 in 2010 that form the basis for the Company's request for a step increase for
5 assets being placed into service as of December 2010. I will also provide
6 testimony supporting the Company's request for a Water Infrastructure and
7 Conservation Adjustment (WICA) charge.

8 **Overview of Capital Expenditures**

9 **Q. Did the Company make capital expenditures during 2008 that were not part**
10 **of the step increase in rates granted by the Commission in DW 08-073?**

11 **A.** Yes. The Company made capital expenditures in 2008 that were not included in
12 the Company's last rate case, DW08-073. By way of background, in the
13 Company's last rate case, the Company was awarded a step increase for
14 significant additions to the Company's water treatment plant that were placed into
15 service during 2008 and early 2009. These additions included the rebuilding and
16 upgrading of two of six filters (filters 4 and 5) at the Company's water treatment
17 plant, and the replacement of the Fifield tank.

18 **Q. How much did the Company spend, in total, for capital expenditures during**
19 **2008 that was not captured in the step increase granted as part of DW 08-**
20 **073?**

21 **A.** The Company added \$2.6 million of new non CIAC assets that were not included
22 in the step increase granted in DW08-073 (excluding retirements). Of the total,
23 approximately \$1.3 million was invested in the installation of radio meter readers.

1 This investment will be described in more detail later in my testimony. The
2 remaining approximately \$1.3 million was invested primarily in maintenance
3 capital for mains, meters, services, hydrants and vehicles.

4 **Q. How much did the Company spend, in total, for capital expenditures during**
5 **2009?**

6 **A.** The Company added \$12.0 million in new assets during 2009 of which \$8.0 million
7 were not included in the step increase granted in DW 08-073 (excluding
8 retirements). Of the \$8.0 million in additions, \$6.8 million of those assets were
9 non revenue producing assets.

10 **Q. What do you mean by non-revenue producing assets?**

11 **A.** Non-revenue producing assets are related to projects that do not result in new
12 customers or additional revenues to the Company. Examples of typical non-
13 revenue producing projects are projects that are the result of government
14 regulations such as the Safe Drinking Water Act (SDWA), the City of Nashua's
15 sanitary and storm water separation project sometimes referred to as the
16 combined sewer overflow project (CSO), City and State road reconstruction
17 projects and other State or Federal mandates. Capital expenditures to enhance
18 customer service or replacements of aging infrastructure are also examples of
19 non-revenue producing projects.

20 **Q. Are all of the capital expenditures completed during 2008 and 2009 (and**
21 **described further below) currently used and useful?**

22 **A.** Yes.

1 **Q. What were the major focal points of the Company's capital projects in 2008**
2 **and 2009?**

3 **A.** The Company's focus continues to be multifaceted and included the completion of
4 the water treatment plant reconstruction to insure compliance with all State and
5 Federal Drinking Water Regulations, the replacement aging infrastructure,
6 primarily water mains and services, completing water supply and water quality
7 improvement projects for its community water systems and completing the
8 installation of radio meter readers in the Company's core water system. The
9 Company spent a total of \$10.6 million on capital improvements within these
10 areas during 2008 and 2009 that were not part of the step increase granted in DW
11 08-073. Each of the major project areas for 2009 is described in more detail
12 below.

13 **SDWA Compliance Capital Expenditures**

14 **Q. Can you please describe the work that the Company completed during 2009**
15 **at the Water Treatment plant in order to maintain compliance with the Safe**
16 **Drinking Water Act (SDWA)?**

17 **A.** Yes. The projects listed below were completed as part of the Water Treatment
18 plant upgrades during 2009 in order to meet SDWA requirements:

- 19 1. The last of the plant's six water filters was rebuilt.
- 20 2. The second of two pulsators was rebuilt.
- 21 3. Plant Security was enhanced to include fencing and new cameras to put
22 the plant's security measures in compliance with the recommendations of
23 the vulnerability assessment completed for the US EPA.

1 **Q. How much did the Company invest in the above referenced improvements to**
2 **the water treatment plant during 2009?**

3 A total of \$4.3 million was expended by the Company during 2009 to complete the
4 upgrades to its water treatment plant. The costs of the projects described above
5 are included in the asset detail on Schedule 3, Attachment A, Exhibit 2.

6 **Q. In your testimony in DW 08-073, you referenced Contract 6 which entailed**
7 **the rebuild of the Merrimack River Intake. Did the Company complete the**
8 **rebuild the Merrimack River Intake?**

9 **A.** Yes. The Company bid the construction of the two new 350 HP pumps to be used
10 at the Merrimack River Intake in February of 2008. The installation of the new
11 pumps increased station capacity from 16.8 to 22.0 MGD. The station upgrade
12 also increased the station capacity, with the largest pump out of service, from 11.6
13 MGD to 22.0 MGD. The station was completed and operational in July of 2009.
14 The final cost of the Merrimack River Intake rebuild was just over \$0.6 million.

15 **Other Capital Improvements**

16 **Q. Can you please describe the other types of capital improvements that**
17 **Pennichuck completed in 2009?**

18 **A.** Yes. The Company spent a total of \$1.0 million to replace aging water mains,
19 services, valves and hydrants in 2009. This work resulted in the replacement of
20 66 steel water services and 3,616 lineal feet of water main during 2009.

21 **Q. The amount of water main replaced in 2009 was substantially less than the**
22 **Company has replaced in the past. What is the reason for this and what are**

1 **the Company's plans in the future relative to the replacement/rehabilitation**
2 **of water main?**

3 **A.** The Company installed less replacement water main in 2009 for several reasons.
4 First, the City of Nashua did not have an active CSO or Sewer replacement
5 program during 2009. Consequently the planned joint water and sewer
6 replacement projects that had helped reduce paving costs associated with water
7 main replacement projects for the Company in previous years was not available.
8 The City has restarted both its CSO and sewer main replacement work in 2010
9 and the Company is partnering with the City on those projects. The scope of the
10 coordinated Company and City projects in 2010 is discussed later in my
11 testimony.

12 **Q.** **Please describe the water supply and water quality projects completed**
13 **during 2009.**

14 **A.** The Company spent over \$0.8 million in 2009 on new and replacement equipment
15 for projects to maintain or improve water quantity or and/or water quality.

16 **Q.** **Please describe the major water quantity projects.**

17 **A.** The largest water quantity projects involved developing new sources of supply for
18 the Sweet Hill and Twin Ridge Community Water Systems. The Company spent
19 \$0.2 million to locate and develop a new well for Sweet Hill to improve the output
20 of the existing Twin Ridge wells and to activate an existing well at Twin Ridge that
21 had not been in use since 1998.

22 **Q.** **Why were these projects necessary?**

1 **A.** Both the Twin Ridge and Sweet Hill water systems had been under total irrigation
2 bans in each of the past two years (2008, 2009) due to a shortage of well
3 production. The new wells will allow these systems to allow for odd/even irrigation
4 practices to occur. Additionally, there was only one well at Sweet Hill. If the well
5 pump or well failed at any point in time the system would have been out of water
6 without a back up well.

7 **Q. Please describe the major water quality projects.**

8 **A.** There were two major water quality projects completed during 2009; one project
9 involved installing iron and manganese treatment at the Autumn Woods
10 Community Water System at a cost of \$0.1 million and the other involved the
11 interconnection of the Ashley Commons Community Water System with the Town
12 of Milford water system via a 4,440 LF water main at a cost of just over \$0.5
13 million. The final cost for Ashley Commons included approximately \$19,000 for
14 cost of removal of the existing pump house and capping of the existing well in
15 accordance with NH DES regulations.

16 **Q. Please describe the need for the Ashley Commons interconnection with the**
17 **Town of Milford water system.**

18 **A.** Please see the prefiled testimony of Donald L. Ware in DW 09-063 and Order No.
19 24,957, American Recovery and Reinvestment Plan of 2009 SRF Financing,
20 which is incorporated herein by reference. In DW 09-063, the need and
21 alternatives to this project were described in detail.

1 those mains are considered a priority in the Company's WICA plan in the event
2 the City is not performing CSO or sewer replacement work that would drive the
3 replacement/rehabilitation of unlined cast iron.

4 **Q. If you are not experiencing breaks, colored water or other service issues**
5 **with the unlined cast iron water main why are you recommending its**
6 **replacement or rehabilitation?**

7 **A.** The tuberculation on the inside of unlined cast iron provides great protection for
8 bacteria and results in bacterial regrowth that in turn can result in system
9 outbreaks of bacteria. Additionally, the tuberculation is the result of oxidizing the
10 cast iron with chlorine. The presence of unlined cast iron makes it difficult to
11 maintain proper chlorine residuals in the distribution system. Lastly, this type of
12 water main does yield colored water during certain flow conditions that is
13 disruptive to businesses and residential customers. The industry universally
14 recognizes the need to replace or rehabilitate unlined cast iron water mains.

15 **Q. What is the basis of deciding to rehabilitate a main versus replace a water**
16 **main?**

17 **A.** The Company has developed a plan to replace/rehabilitate its unlined cast iron
18 and steel water mains based on a review of the break history of the water main,
19 an assessment of the existing water main's ability to deliver the fire protection
20 flows stipulated by the Insurance Service Organization (ISO), and the types of
21 soils in the area of the water main (to assess whether they are corrosive or not to
22 the exterior of the cast iron water main). If the water main being evaluated for
23 replacement versus rehabilitation has had a low break history and when cleaned

1 and lined can deliver the ISO required fire flows, and test pits and area soils maps
2 show the surrounding soils are non corrosive to the existing water main, the
3 Company will elect to clean and line the existing cast iron water main instead of
4 replacing it. The cost of cleaning and lining an existing water main is about \$80
5 less per lineal foot than replacing the existing water main.

6 **Q. Why would you rehabilitate a 100+ year old water main? Even though it is**
7 **less expensive to rehabilitate the water main than to replace, won't a new**
8 **line have a substantially longer service life than the rehabilitated water main**
9 **and in the end isn't the extra cost of replacement justified?**

10 **A.** Older, pit cast water mains are less subject to exterior corrosion than ductile iron
11 water main and have more than double the wall thickness of ductile iron water
12 main. The cast iron water mains are expected to have service lives more than
13 twice that of new ductile iron water mains. The industry expects that rehabbed
14 100+ year old cast iron water main will have a remaining service life that will
15 match or exceed that of a newly installed ductile iron replacement water main.

16 **Q. Is the Company requesting that any other costs of infrastructure**
17 **replacement besides water main replacement or rehabilitation be included in**
18 **its WICA charges?**

19 **A.** Yes. The Company believes that the WICA charge should cover the
20 replacement/rehabilitation of water main, water services, water gate valves, fire
21 hydrants and water meters.

22 **Q. What are the rate increase parameters that the Company is requesting for its**
23 **WICA plan?**

1 **A.** The Company is requesting a WICA adjustment of up to a maximum of 2% per
2 year and no more than 7.5% total between rate cases.

3 **Q. How would the Company finance the WICA improvements?**

4 **A.** The Company will fund WICA projects with a mix of equity and debt. Initial debt
5 would come from the Company's short term line of credit. Once a sufficient
6 amount of short term debt had been accrued that it makes sense to refinance with
7 long term debt, the Company will seek debt financing approval of the selected
8 long term debt instrument from the Commission at that time.

9 **Q. When would the Company begin the main replacement/rehabilitation
10 program?**

11 **A.** The Company proposes that the first year of its WICA program will be 2011.

12 **Q. Please explain why the Company believes that a conservation adjustment is
13 not required as part of its WICA.**

14 **A.** Today's plumbing fixture standards, the cost of water, the cost of the energy
15 associated with heating water and the cost of disposing of waste water have
16 created an economic based drive to conservation at both the residential and
17 commercial level. The average winter time consumption (February through April)
18 for the Company's core residential customers has dropped from 6.59 CCF to 5.98
19 CCF per month, or a drop of 9.3%, between 2006 and 2009. Multifamily
20 residential winter time consumption over the same time frame has dropped 37.35
21 CCF to 33.25 CCF per month or a drop of 11.0%. Commercial winter time
22 consumption over the same time frame has dropped 40.42 CCF to 37.59 CCF per
23 month or a drop of 7.0%. Industrial winter time consumption over the same time

1 frame, exclusive of Anheuser Busch, had dropped from 139.39 CCF to 91.92 CCF
2 or a drop of 34.1% (this drop is due in part to more efficient operations but
3 primarily due to a loss of industrial customers as manufacturing has moved out of
4 the State and Country). This data points to a naturally occurring conservation
5 effort driven by the factors detailed above and clearly points to the fact that a
6 conservation adjustment is not necessary but would be counter productive in that
7 it would further lower consumption resulting in the need for additional rate
8 increases to recover the lost rates.

9 **Q. Does this complete your testimony?**

10 **A.** Yes.

Pennichuck Water Works
WICA Calculation
4/12/2010

Schedule DW-1

Data:

Depreciation Rate on Water Mains -	1.25%
2010 Nashua Mil Rate - \$	17.40 per \$1,000
2010 State Wide Utility Tax Mil Rate - \$	6.60 per \$1,000
Maximum Annual WICA adjustment -	2.00%
2010 ROI -	0.0781 as filed with Case
2010 Tax Rate (Federal and State) -	0.6039
Projected Revenues after "2010 step" - \$	28,802,091
Maximum Increase per year allowed by WICA - \$	576,042
Allowed WICA \$\$ per year - \$	3,756,973

Projected WICA Expenses (From Capex Budget)*

Annual Cleaning and Lining - \$	801,900			
Annual Water Main Replacement - \$	1,826,550			
Annual Meter Replacement - \$	19,635	based on	500 rebuilds per year @	\$ 39.27 per rebuild
Annual Service Replacement - \$	69,300	based on	35 services per year	\$ 1,980.00 per replacement
Total Estimated WICA projects per year - \$	2,717,385			
Projected Rate impact per year - \$	450,613			
Percent increase required -	1.56%	Based on projected 2010 Step rates		

*Based on replacing/rehabbing 14,850 of unlined CI or Steel watermain per year
Based on 40% of the water main being cleaned and lined.
Based on 60% of the water main being replaced.

Pennichuck Water Works
 Water Infrastructure and Conservation Adjustment Target List
 Unlined Cast Iron and Steel Water Main By Area
 Project Year - 2010

Schedule DW-2

Street Name	Street Type	Install date	Material	Size	Length	% of ISO Flow	Number of Breaks	Critical Customers	Limits
ARLINGTON	STREET	1887	CAST IRON	6	1265			City Paving	BURKE ST. TO MCKEAN ST. (Burke St to Underhill is a parallel main about 550')
ARLINGTON	STREET	1887	CAST IRON	6	688			City Sewer	
BATCHELDER	STREET	1950	CAST IRON	1.25	114			City Sewer	ARLINGTON ST EASTERLY
AMHERST	STREET	1888	CAST IRON	8	699			City Sewer	FAIRMOUNT ST. TO 27' N. OF MITCHELL ST.
BEECH	STREET	1903	CAST IRON	6	45			City Sewer	338.3 N. OF MULBERRY ST. TO W. HOLLIS ST.
BEECH	STREET	1928	CAST IRON	6	338			City Sewer	MULBERRY ST. N.
BEECH	STREET	1897	CAST IRON	6	465			City Sewer	W. HOLLIS ST TO PLEASANT ST
PALM	STREET	1897	CAST IRON	6	935			City Parkway	W. HOLLIS ST. N'LY
PALM	STREET	1905	CAST IRON	6	358			City Parkway	KINSLEY ST. N'LY
PALM	STREET	1887	CAST IRON	4	354			City Parkway	358' N. OF KINSLEY ST. N. LINE TO W. HOLLIS ST. 16" LINE
WILDER	STREET	1887	CAST IRON	4	656		1	City Sewer	69' S. OF W. HOLLIS ST. 12" LINE S'LY TO KINSLEY ST.
WILDER	STREET	1909	CAST IRON	6	69			City Sewer	W. HOLLIS ST. 12" LINE S'LY
HOLMAN	STREET	1929	Cement Lined	2	253			2009 ARRA	CROSS ST WESTERLY TO GROVE ST.
GROVE	STREET	1929	Cement Lined	1	253			2009 ARRA	HOLMAN ST NORTHERLY
JEFFERSON	STREET	1888	CAST IRON	4	315			2009 ARRA	6X4 REDUCER 14' W. OF TOLLES ST W'LY TO KENDIRCK ST.
JEFFERSON	STREET	1888	CAST IRON	4	240			2009 ARRA	CROSS ST EASTERLY TO 4" LINE
JEFFERSON	STREET	1892	CAST IRON	4	258			2009 ARRA	6X4 REDUCER 17' W. OF CHANDLER ST W'LY TO LESSARD ST
JEFFERSON	STREET	1898	CAST IRON	6	143			2009 ARRA	29' E. OF TOLLES ST EASTERLY TO LESSARD ST
GRANITE	STREET	1888	CAST IRON	4	612			City Paving	LOCK ST TO SUMMER ST (GOING WEST) (OPB 627)
NORTON	STREET	1887	CAST IRON	4	345			2009 ARRA	SUMMER ST. N'LY TO #23 NORTON ST.
NORTON	STREET	1896	CAST IRON	4	222			2009 ARRA	323' N. OF LOCK ST. N'LY TO SUMMER ST. E'LY
NORTON	STREET	1914	CAST IRON	6	323			2009 ARRA	LOCK ST. N'LY
CROSS	STREET	1888	CAST IRON	6	593			2009 ARRA	HOLMAN ST. N'LY TO LOCK ST.
CROSS	STREET	1891	CAST IRON	6	915			2009 ARRA	LOCK ST. TO SHATTUCK ST.
LOCK	STREET	1887	CAST IRON	6	916			2009 ARRA	46' E. OF CONCORD ST. 24" LINE E'LY TO DOW ST.
LOCK	STREET	1887	CAST IRON	6	805			2009 ARRA	DOW ST. TO SALEM ST. N'LY
LOCK	STREET	1887	CAST IRON	6	173			2009 ARRA	SALEM ST. E'LY TO COUPLING W. OF TOLLES ST.
LOCK	STREET	1887	CAST IRON	6	467	84.4%		2009 ARRA	COUPLING E. OF TOLLES ST E'LY TO COUPLING W. OF CHANDLER ST.
LOCK	STREET	1919	CAST IRON	6	226			2009 ARRA	ATHERTON AVE. E'LY
LESSARD	STREET	1892	CAST IRON	4	187			2009 ARRA	JEFFERSON ST. S'LY
LESSARD	STREET	1892	CAST IRON	4	287			2009 ARRA	LOCK ST. N'LY
SHATTUCK	STREET	1888	CAST IRON	6	574			2009 ARRA	20' E OF NORTON ST EASTERLY
SUMMER	STREET	1896	CAST IRON	6	674			2009 ARRA	CROSS ST TO NORTON ST (GOING SOUTH)
SUMMER	STREET	1906	CAST IRON	6	192			2009 ARRA	NORTON ST (GOING WEST) TO GRANITE ST
					14959				

Pennichuck Water Works
Water Infrastructure and Conservation Adjustment Target List
Unlined Cast Iron and Steel Water Main By Area

Schedule DW-2

Project Year - 2011

Street Name	Street Type	Install date	Material	Size	Length	% of ISO Flow	Number of Breaks	Critical Customers	Limits
FAIRMOUNT	STREET	1920	CAST IRON	8	1145			City Parkway	CHARLES STREET WESTERLY
BALDWIN	STREET	1938	CAST IRON	8	157			City Parkway	PRESCOTT STREET WESTERLY
BALDWIN	STREET	1938	CAST IRON	8	1076			City Parkway	FAIRMOUNT STREET EASTERLY
HARBOR	AVENUE	1888	CAST IRON	6	1025			City Sewer	BOWERS ST TO E. HOLLIS ST.
HARBOR	AVENUE	1888	CAST IRON	6	1765		1	City Sewer	BURKE ST TO OTTERSON ST
HARBOR	AVENUE	1888	CAST IRON	6	245			City Sewer	OTTERSON ST TO BOWERS ST
PROSPECT	STREET	1888	CAST IRON	4	678			City Sewer	150' W. OF HARBOR AVE. W'LY TO 8X4 ENLARGER 35' E. OF DEARBORN
TYLER	STREET	1888	CAST IRON	4	430			City Sewer	128.5' E OF DEARBORN ST, E TO 396.5' W OF HARBOR AV.
TYLER	STREET	1889	CAST IRON	4	89			City Sewer	39.1 E OF DEARBORN ST EASTERLY 89.4
TYLER	STREET	1905	CAST IRON	6	396			City Sewer	HARBOR AV WESTERLY 396.5'
TYLER	STREET	1931	CAST IRON	8	38			City Sewer	DEARBORN ST EASTERLY
OTTERSON	STREET	1887	CAST IRON	6	948			City Sewer	MAIN ST. E'LY TO POND ST.
OTTERSON	STREET	1892	CAST IRON	6	350			City Sewer	HARBOR AVE. TO POND ST.
POND	STREET	1887	CAST IRON	6	130		1		OTTERSON ST. S'LY
POND	STREET	1904	CAST IRON	6	322				HARBOR AVE. W'LY
POND	STREET	1910	CAST IRON	6	142				322.75' W. OF HARBOR AVE. W'LY 48' THEN EASTERLY 94.5'
POND	STREET	1933	CAST IRON	8	626				BOWERY ST. S'LY
HARBOR	COURT	1959	GALVINIZED	2	176			City Sewer	HARBOR AVE E'LY
HARBOR	COURT	1960	GALVINIZED	2	34			City Sewer	EXT. E'LY
LYONS	STREET	1941	CAST IRON	8	179			City Sewer	MARSHALL ST. W'LY
BOWERY	STREET	1887	CAST IRON	6	325			City Sewer	POND ST. TO HARBOR AVE.
MARSHALL	STREET	1896	CAST IRON	8	1080		1		E. HOLLIS ST. TO BOWERS ST.
NEW	STREET	1921	CAST IRON	6	15			City Sewer	BOWERS ST. W'LY
NEW	STREET	1922	CAST IRON	6	273			City Sewer	15' N. OF BOWERS ST. N'LY
NEW	STREET	1929	Cement Lined	2	203			City Sewer	288' N. OF BOWERS ST. N'LY
CROWLEY	STREET	1920	CAST IRON	4	103			City Sewer	HARBOR AVE. E'LY
KEHOE	AVENUE	1946	Cement Lined	2	181			City Sewer	HARBOR AVE E'LY 181'
KEHOE	AVENUE	1947	Cement Lined	1.25	72			City Sewer	EXT E'LY FROM #5 TO #9-21
HAMMOND	STREET	1946	Cement Lined	2	85			City Sewer	TYLER ST SOUTHERLY
MARSHALL	STREET	1925	CAST IRON	8	100			City Sewer	BOWERS ST. S'LY
DEARBORN	STREET	1915	CAST IRON	8	272			City Sewer	BOWERS ST TO PROSPECT ST.
DEARBORN	STREET	1929	CAST IRON	8	249			City Sewer	BOWERS ST TO OTTERSON ST
PROSPECT	STREET	1904	CAST IRON	6	43			City Sewer	MAIN ST. E'LY
PROSPECT	AVENUE	1909	CAST IRON	4	265			City Sewer	MAIN ST. 24" LINE W'LY
ALLDS	STREET	1888	CAST IRON	6	296		1	City Sewer	20' S. OF THE SL OF NYE AV. S'LY 296'
ALLDS	STREET	1924	CAST IRON	8	117			City Sewer	MCKEAN ST. S'LY
ALLDS	STREET	1930	CAST IRON	8	967			City Sewer	HAINES ST. S'LY 967' TO HARBOR AVE.
					<u>14597</u>				

Pennichuck Water Works
 Water Infrastructure and Conservation Adjustment Target List
 Unlined Cast Iron and Steel Water Main By Area
 Project Year - 2012

Schedule DW-2

Street Name	Street Type	Install date	Material	Size	Length	% of ISO Flow	Number of Breaks	Critical Customers	Limits
SPRUCE	STREET	1931	CAST IRON	10	1092		1		E. HOLLIS ST TO TEMPLE ST 1092.9
SCRIPTURE	STREET	1924	CAST IRON	8	458				TEMPLE ST TO WORCESTER ST.
WORCESTER	STREET	1888	CAST IRON	6	220				SCRIPTURE ST TO HOWARD ST 220'
WORCESTER	STREET	1924	CAST IRON	8	167				SCRIPTURE ST WESTERLY 167'
WORCESTER	STREET	1931	CAST IRON	8	187				SPRUCE ST TO 187.5' E OF SPRUCE ST.
HOWARD	STREET	1888	CAST IRON	4	100				WORCESTER ST SOUTHERLY
HOWARD	STREET	1889	CAST IRON	4	243				HOYTS LAND TO WORCESTER ST
HOWARD	STREET	1926	GALVINIZED		98		2		HOWARD ST EASTERLY 98'
HOWARD	STREET	1928	GALVINIZED	2	92				100' S OF WORCESTER ST SOUTHERLY
HOYTS	LANE	1922	CAST IRON	4	71				SCRIPTURE ST EASTRLY
TEMPLE	STREET	1888	CAST IRON	8	1256				AMORY ST TO INTERSECTION AT SOUTH ST.
TEMPLE	STREET	1908	CAST IRON	10	974	82.9%			E. HOLLIS ST TO AMORY ST
UNION	STREET	1909	CAST IRON	4	173				AMORY ST E'LY 173.5'
AMORY	STREET	1887	CAST IRON	8	595	82.9%			BRIDGE ST. TO TEMPLE ST.
WARREN	STREET	1890	CAST IRON	4	262				72' N OF BRIDGE ST NORTHERLY
WARREN	STREET	1890	CAST IRON	6	72				BRIDGE ST NORTHERLY 72'
ROBINSON	COURT	1888	CAST IRON	4	250				BRIDGE ST NORTHERLY 250'
JACKSON	STREET	1928	CAST IRON	2	265				BRIDGE ST NORTHERLY 265'
C	STREET	1931	CAST IRON	10	627				E. HOLLIS ST. TO BRIDGE ST.
D	STREET	1898	CAST IRON	4	452				BRIDGE ST TO E. HOLLIS ST.
D	STREET	1909	CAST IRON	6	47				E. HOLLIS ST. NORTHERLY
E	STREET	1906	CAST IRON	8	380				BRIDGE ST TO E. HOLLIS ST
E. HOLLIS	STREET	1888	CAST IRON	8	480		1		1' W. OF MASON ST. W'LY TO 4' E. OF QUINCY ST.
E. HOLLIS	STREET	1888	CAST IRON	8	411				4' W. OF QUINCY ST W'LY TO 8' E. OF SPRING ST.
E. HOLLIS	STREET	1888	CAST IRON	8	410				4' W. OF SPRING ST. W'LY TO MAIN ST.
E. HOLLIS	STREET	1896	CAST IRON	8	680		1		MARSHALL ST WESTERLY 680'
E. HOLLIS	STREET	1922	CAST IRON	6	124				BRIDGE ST. WESTERLY
CROWN	STREET	1933	CAST IRON	8	11				ALLDS ST. E'LY
CROWN	STREET	1902	CAST IRON	6	297				HOBBS AVE. E'LY
CROWN	STREET	1901	CAST IRON	6	223				ARLINGTON ST. TO W. OF DENTON ST.
CROWN	STREET	1936	CAST IRON	6	66				E. OF COLBURN ST. E'LY
CHASE	STREET	1902	CAST IRON	6	430		1		E. HOLLIS ST. TO CROWN St.
HAVELIN	AVENUE	1947	Cement Lined		116				UNION ST S'LY
HOBBS	AVENUE	1906	CAST IRON	8	493				E. HOLLIS ST TO CROWN ST
COMMERCIAL	STREET	1887	CAST IRON	8	290				TEMPLE ST. S'LY
COMMERCIAL	STREET	1929	CAST IRON	8	15				290.5' S. OF TEMPLE ST. S'LY
SANDERS	STREET	1889	CAST IRON	6	633	42.9%	1		BRIDGE ST NORTHERLY (Could be abandon)
BANCROFT	STREET	1898	CAST IRON	6	715		1		BRIDGE ST. N'LY
					13475				

Pennichuck Water Works
 Water Infrastructure and Conservation Adjustment Target List
 Unlined Cast Iron and Steel Water Main By Area
 Project Year - 2013

Schedule DW-2

Street Name	Street Type	Install date	Material	Size	Length	% of ISO Flow	Number of Breaks	Critical Customers	Limits
ARLINGTON	AVENUE	1935	CAST IRON	2	2				EXT. E'LY
ARLINGTON	AVENUE	1926	GALVINIZED	2	62				END OF 4" N'LY 21' THEN E'LY 41'
ARLINGTON	STREET	1887	CAST IRON	6	1403				E. HOLLIS ST. S. TO BOWERS ST
ARLINGTON	AVENUE	1922	CAST IRON	4	200				GILLIS ST. N'LY
CROWN	STREET	1887	CAST IRON	4	595				ALLDS ST. TO ARLINGTON
MCKEAN	STREET	1888	CAST IRON	6	1714				ALLDS ST. TO ARLINGTON ST.
NEWBURY	STREET	1888	CAST IRON	6	603				MCKEAN ST. TO 174' S. OF HAINES ST.
NEWBURY	STREET	1892	CAST IRON	6	371				84' S. OF KING ST. S'LY
NEWBURY	STREET	1892	CAST IRON	6	107				END OF PIPE AT 175' S. OF UNDERHILL RD S'LY TO BURKE ST.
NEWBURY	STREET	1919	CAST IRON	8	117		1		BURKE ST. S'LY
NEWBURY	STREET	1939	CAST IRON	8	290				MCKEAN ST. N'LY
NEWBURY	STREET	1940	CAST IRON	8	370				290' N. OF MCKEAN ST. N'LY TO BOWERS ST.
BARKER	AVENUE	1892	CAST IRON	6	554				BURKE ST. TO KING ST.
UNDERHILL	STREET	1894	CAST IRON	4	134				NEWBURY ST WESTERLY
UNDERHILL	STREET	1921	CAST IRON	6	98				225' W OF NEWBURY ST WESTERLY 98'
UNDERHILL	STREET	1936	CAST IRON	8	194				ARLINGTON ST W'LY
THOMAS	STREET	1908	CAST IRON	6	223				MCKEAN ST SOUTHERLY 223.3'
THOMAS	STREET	1926	CAST IRON	6	226				HAINES ST NORTHERLY TO 6"
WILLIAMS	STREET	1910	CAST IRON	6	228				FROM ALLDS ST. E'LY
WILLIAMS	STREET	1923	CAST IRON	6	96				228' E. OF ALLDS ST. E'LY
WILLIAMS	STREET	1928	CAST IRON	6	470				324' E. OF ALLDS ST. E'LY
WILLIAMS	STREET	1934	CAST IRON	6	6				390'7" W. OF ARLINGTON ST.
WILLIAMS	STREET	1934	CAST IRON	8	695				ARLINGTON ST. W'LY TO 6"
CHERRY	STREET	1926	CAST IRON	4	236				MCKEAN ST. S'LY
COPP	STREET	1907	CAST IRON	6	16				BOWERS ST. N'LY
COPP	STREET	1927	CAST IRON	6	343				16.2' N. OF BOWERS ST. TO GILLIS ST.
GILLIS	STREET	1888	CAST IRON	4	1090		1		ARLINGTON ST TO ALLDS ST
GILLIS	STREET	1888	CAST IRON	4	315				ARLINGTON ST EASTERLY
GILLIS	STREET	1940	CAST IRON	4	10				CONNECTION BETWEEN 4" AND 8" MAINS EAST OF ARLINGTON ST.
GILLIS	STREET	1940	CAST IRON	8	450				ARLINGTON ST E'LY
MILL	STREET	1941	Cement Lined		221				GILLIS ST. N'LY
GRAYS	AVENUE	1907	CAST IRON	6	358				BOWERS ST TO GILLIS ST
HARVARD	STREET	1915	CAST IRON	8	808				ALLDS ST TO ARLINGTON ST
MULVANITY	STREET	1941	CAST IRON	2	11				NONE MENTIONED
MULVANITY	STREET	1940	Cement Lined	2	218				PROCTOR ST. N'LY
MULVANITY	STREET	1954	Cement Lined	2	56				EXT. N'LY
PROCTOR	AVENUE	1922	CAST IRON	1	179				HARBOR AVE. E'LY
PROCTOR	STREET	1930	CAST IRON	8	111				ALLDS ST. W'LY
PROCTOR	STREET	1940	CAST IRON	2	55		1		172' W. OF W. LINE OF ALLDS ST. W'LY
PROCTOR	STREET	1940	CAST IRON	8	95				77' W. OF W. LINE OF ALLDS ST. W'LY
PROCTOR	STREET	1940	CAST IRON		81				172' W. OF W. LINE OF ALLDS ST. W'LY
					13411				

Pennichuck Water Works
 Water Infrastructure and Conservation Adjustment Target List
 Unlined Cast Iron and Steel Water Main By Area
 Project Year - 2014

Schedule DW-2

Street Name	Street Type	Install date	Material	Size	Length	% of ISO Flow	Number of Breaks	Critical Customers	Limits
HAINES	STREET	1934	GALVINIZED		70				ALPINE AVE. W'LY
KING	STREET	1923	CAST IRON	6	473				ARLINGTON ST EASTERLY 473.5
NOTRE DAME	STREET	1960	Cement Lined		50				EXT. N'LY
NOTRE DAME	STREET	1926	GALVINIZED	2	149				KING ST. S'LY
NOTRE DAME	STREET	1927	GALVINIZED	2	51				150' S. OF KING ST. S'LY
MCKEAN	STREET	1888	CAST IRON	6	1714				ALLDS ST. TO ARLINGTON ST.
INGALLS	STREET	1949	Cement Lined		139				END OF 8" S'LY - TO #23
INGALLS	STREET	1921	GALVINIZED		196				BURKE ST S'LY
INGALLS	STREET	1965	GALVINIZED	2	9				AT BURKE ST. 1 1/4" M-S FROM 6" ABANDONED - NEW 2"C.L.
BENSON	AVENUE	1889	CAST IRON	4	315				BURKE ST. S'LY
BENSON	AVENUE	1890	CAST IRON	4	315				315' S. OF BURKE ST. S'LY TO SPAULDING ST.
SPALDING	STREET	1890	CAST IRON	6	363				BENSON AV EASTERLY 363'
SPALDING	STREET	1891	CAST IRON	6	233				363' W OF BENSON AV WESTERLY 233'
SPALDING	STREET	1911	CAST IRON	6	106				596' W OF BENSON AV TO ALLDS RD.
SPALDING	AVENUE	1924	CAST IRON	6	269				SPALDING ST. S'LY 269'
SPALDING	AVENUE	1940	CAST IRON	2	96				242' SOUTH OF S. LINE OF SPALDING ST S'LY
SPALDING	AVENUE	1940	CAST IRON		70				242' SOUTH OF S. LINE OF SPALSING ST S'LY
ALSTEAD	AVENUE	1911	CAST IRON	4	126				SPAULDING ST. N'LY
ALSTEAD	AVENUE	1920	CAST IRON	4	46				ALLSTEAD AVE. (GOING NORTH) E'LY
ALSTEAD	AVENUE	1922	CAST IRON	4	70				E. END OF PIPE EASTERLY
BUCHANAN	STREET	1912	CAST IRON	6	173				NUTT ST. W'LY
BUCHANAN	STREET	1916	CAST IRON	6	237				1735' W. OF NUTT ST. W'LY
BUCHANAN	STREET	1934	CAST IRON	8	176				MAIN ST. E'LY
FAXON	STREET	1906	CAST IRON	6	184				MAIN ST 10" LINE EASTERLY 184'
FAXON	STREET	1908	CAST IRON	6	38				NUTT ST WESTERLY 38'
FAXON	STREET	1908	CAST IRON	6	107				184' E OF MAIN ST 10" LINE, EASTERLY 107'
FAXON	STREET	1911	CAST IRON	6	261				291' E OF MAIN ST 10" LINE TO, 38' WEST OF NUTT ST
FAXON	AVENUE	1940	Cement Lined	2	195		1		FAXON AVE N'LY 209'
FAXON	AVENUE	1940	Cement Lined		14				FAXON AVE N'LY 209'
NUTT	STREET	1890	CAST IRON	4	420				LINCOLN AVE. N'LY
NUTT	STREET	1945	Cement Lined		53				FAXON ST. N'LY
LINCOLN	AVENUE	1889	CAST IRON	6	641				MAIN ST. E'LY
LINCOLN	AVENUE	1915	CAST IRON	6	192				192' W. OF FIFIELD ST.
TAYLOR	STREET	1892	CAST IRON	6	387				FIFIELD ST GOING SOUTH, EASTERLY 387'
TAYLOR	STREET	1906	CAST IRON	6	24				16" LINE IN MAIN ST, TO 12' E OF EASTLINE OF MAIN ST
TAYLOR	STREET	1910	CAST IRON	6	398				12' E OF MAIN ST EASTERLY 398'
TAYLOR	STREET	1919	CAST IRON	6	132				FIFIELD ST GOING SOUTH WESTERLY 132'
TAYLOR	STREET	1922	CAST IRON	6	250				108' W OF FIFIELD ST WESTERLY TO 6' ABT 250
TAYLOR	STREET	1927	CAST IRON	8	304				387' E OF FIFIELD ST GOING SOUTH EASTERLY
TAYLOR	STREET	1940	CAST IRON	6	14				HYDRANT NEAR LYNN ST.
TAYLOR	STREET	1940	CAST IRON	8	218				FROM 4" SERVICE AT HAUG'S LABORATORY E'LY 218'
TAYLOR	STREET	1940	CAST IRON	8	206				FROM 8" x 4" TEE AT MORSE E'LY 206'
RUSSELL	AVENUE	1906	CAST IRON	6	38				16" LINE IN MAIN ST EASTERLY 38'
RUSSELL	AVENUE	1913	CAST IRON	6	186				FIFIELD ST EASTERLY
RUSSELL	AVENUE	1937	CAST IRON	8	724				BETWEEN HYDRANTS
MONTGOMERY	AVENUE	1914	CAST IRON	8	252				MAIN ST. E'LY
MONTGOMERY	AVENUE	1925	CAST IRON	8	96				252' E. OF MAIN ST. E'LY
MONTGOMERY	AVENUE	1930	CAST IRON	8	111				348' E. OF MAIN ST. E'LY
MONTGOMERY	AVENUE	1930	CAST IRON	8	46				FIFIELD ST. W'LY
DICKERMAN	STREET	1923	CAST IRON	6	183				MAIN ST EASTERLY
DICKERMAN	STREET	1926	CAST IRON	6	197				183' E OF MAIN ST EASTERLY

Pennichuck Water Works
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 Unlined Cast Iron and Steel Water Main By Area
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Schedule DW-2

Street Name	Street Type	Install date	Material	Size	Length	% of ISO Flow	Number of Breaks	Critical Customers	Limits
DICKERMAN	STREET	1939	CAST IRON	8	417				FROM 4" SERVICE TO LAUNDRY - E'LY
ORCHARD	AVENUE	1916	CAST IRON	10	703				118' E. OF MAIN ST. E'LY
ORCHARD	AVENUE	1917	CAST IRON	10	128				MAIN ST. E'LY
ORCHARD	AVENUE	1925	CAST IRON	10	72				821' E. OF MAIN ST. E'LY
ORCHARD	AVENUE	1932	CAST IRON	10	100				FIFIELD DR. E. LINE W'LY
MOUNTAIN VIEW	AVENUE	1917	CAST IRON	6	73				TAFT ST. N'LY
MOUNTAIN VIEW	AVENUE	1940	CAST IRON	6	197				ORCHARD AVE. S'LY
TAFT	STREET	1917	CAST IRON	6	289				CLEMENT ST WESTERLY 289'
TAFT	STREET	1917	CAST IRON	6	161				CLEMENT ST TO MOUNTAIN VIEW AV
TAFT	STREET	1936	CAST IRON	6	129				EXT S'LY TWD. MORNINGSIDE DR.
TAFT	STREET	1939	CAST IRON	6	86				EXT. S'LY THROUGH THE INTERSECTION OF MORNINGSIDE DR
CLEMENT	STREET	1917	CAST IRON	6	461				ORCHARD AVE. TO TAFT ST.
CIRCLE	AVENUE	1930	Cement Lined	2	164				NUTT ST. E'LY
					<u>14297</u>				

Pennichuck Water Works
Water Infrastructure and Conservation Adjustment Target List
Unlined Cast Iron and Steel Water Main By Area
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Schedule DW-2

Street Name	Street Type	Install date	Material	Size	Length	% of ISO Flow	Number of Breaks	Critical Customers	Limits
LAWNDALE	AVENUE	1927	CAST IRON	6	160				FOWELL AVE. N'LY
LAWNDALE	AVENUE	1927	CAST IRON	6	400				FOWELL AVE. TO STEVENS ST.
LAWNDALE	AVENUE	1931	CAST IRON	8	348				STEVENS ST. SOUTH
LAWNDALE	AVENUE	1937	CAST IRON	6	96				160' N. OF TOWELL AVE. N'LY
LAWNDALE	AVENUE	1940	CAST IRON	6	8				380' S. OF STEVENS ST.
EVERGREEN	STREET	1940	Cement Lined		125				155' SOUTH OF STEVENS TO S'LY 125
EVERGREEN	STREET	1947	Cement Lined		154				STEVENS ST S'LY
EVERGREEN	STREET	1949	Cement Lined		31				251' SOUTH OF S. LINE OF STEVENS ST S'LY
EVERGREEN	STREET	1952	Cement Lined	1	5				AT END OF C.L. MAIN
FERNWOOD	STREET	1924	CAST IRON	6	123				FIELD ST SOUTHERLY
FERNWOOD	STREET	1945	Cement Lined	6	184				95' S OF S. LINE OF FIELD ST - S'LY
FERNWOOD	STREET	1924	GALVINIZED	2	238				FERNWOOD ST TO FIELDS GROVE
FERNWOOD	STREET	1924	GALVINIZED	6 ?	144				FERNWOOD ST TO FIELDS GROVE
FERNWOOD	STREET	1924	GALVINIZED	2	135				FERNWOOD ST TO FIELDS GROVE
FIELD	STREET	1922	CAST IRON	6	306				MAIN ST WESTERLY 306'
FIELD	STREET	1924	CAST IRON	6	71				AT FERNWOOD
FOSSA	AVENUE	1928	CAST IRON	4	12				MAIN ST WESTERLY
FOSSA	AVENUE	1928	CAST IRON	6	282				MAIN ST WESTERLY
MORTON	STREET	1945	Cement Lined		176				STEVENS ST. S'LY
MORTON	STREET	1947	Cement Lined		115				150' SOUTH OF SOUTH LINE OF STEVENS ST. S'LY
MORTON	STREET	1956	Cement Lined		165				STEVENS ST. N'LY
PRATT	STREET	1908	CAST IRON	6	305				NONE MENTIONED
PRATT	STREET	1933	CAST IRON	6	108				ZELLWOOD AVE. E'LY
PRATT	STREET	1945	CAST IRON	6	71				S. CHESTNUT ST. E'LY
PARK	AVENUE	1927	CAST IRON	8	121				SO. CHESTNUT ST. E'LY
PARK	AVENUE	1946	Cement Lined	2	13				EXT. W'LY TO #38
PARK	AVENUE	1927	GALVINIZED	2	141				SO. CHESTNUT ST. W'LY
STEVENS	STREET	1896	CAST IRON	4	384				24' W OF MAIN ST WESTERLY
STEVENS	STREET	1927	CAST IRON	6	94				SO CHESTNUT ST EASTERLY TO 6" LINE 94.4'
STEVENS	STREET	1928	CAST IRON	6	48				658' W OF MAIN ST WESTERLY 48.83'
STEVENS	STREET	1930	CAST IRON	6	24				MAIN ST WEST
STEVENS	STREET	1930	CAST IRON	6	250				408' W OF MAIN ST WESTERLY
ZELLWOOD	STREET	1933	CAST IRON	6	367				PRATT ST. TO FOWELL AVE.
W. ALLDS	STREET	1930	CAST IRON	2	43				MAIN ST 24" LINE
W. ALLDS	STREET	1931	CAST IRON	2	234				MAIN ST WESTERLY
FOWELL	AVENUE	1919	CAST IRON	6	540				MAIN ST WESTERLY
FOWELL	AVENUE	1923	CAST IRON	6	252				505.5' W OF MAIN ST WESTERLY
FOWELL	AVENUE	1924	CAST IRON	6	105				757' WEST OF MAIN ST WESTERLY
FOWELL	AVENUE	1938	Cement Lined	1.5	37		1		W'LY END OF FOWELL AVE.
REVERE	STREET	1921	CAST IRON	6	144				FROM 6" PIPE ON MAIN ST WESTERLY
REVERE	STREET	1923	CAST IRON	6	401				FROM EXISING 144' OF PIPE WESTERLY
REVERE	STREET	1923	CAST IRON	6	84				545' WEST OF MAIN STREET WESTERLY.
REVERE	STREET	1939	CAST IRON	6	85				85' EAST OF LAUNDALE AVE E'LY TO EXISING 6" MAIN
REVERE	STREET	1945	CAST IRON	6	85				LAUNDALE AVE - E'LY
RICE	STREET	1925	CAST IRON	6	208				BURNETT ST WESTERLY
BURNETT	STREET	1925	CAST IRON	6	482				45' N. OF E. DUNSTABLE RD. TO RICE ST.
OAKLAND	AVENUE	1929	Cement Lined	2	210		1		BURNETT ST. W'LY
OAKLAND	AVENUE	1930	Cement Lined	2	63				ROBY ST. E'LY
BIRCH BROW	ROAD	1939	CAST IRON	2	35				S'LY 35' TO EDWARDS AVE.
BIRCH BROW	ROAD	1943	Cement Lined		50				EDWARDS AVE. S'LY
BIRCH BROW	ROAD	1970	Cement Lined	2	58				ROBINSON RD. S'LY

Pennichuck Water Works
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 Unlined Cast Iron and Steel Water Main By Area
 Project Year - 2015 (Continued)

Schedule DW-2

Street Name	Street Type	Install date	Material	Size	Length	% of ISO Flow	Number of Breaks	Critical Customers	Limits
EASTMAN	STREET	1926	CAST IRON	8	757				35' S. OF LEARNED ST TO ROBINSON RD.
DANE	STREET	1930	CAST IRON	6	37				35' S. OF LEARNED ST SE'LY
DANE	STREET	1932	CAST IRON	8	191				ROBINSON RD. TO HATCH ST.
HATCH	STREET	1925	CAST IRON	8	48				LEARNED ST NORTHERLY
HATCH	STREET	1925	CAST IRON	8	228				LEARNED ST SOUTH
HATCH	STREET	1931	CAST IRON	8	306				48' N OF LEARNED ST NORTHERLY 306'
HATCH	STREET	1932	CAST IRON	8	177				21' SE OF EAST DUNSTABLE RD SE 177'
HATCH	STREET	1932	CAST IRON	8	215				DANE ST TO HATCH ST (GOING S)
HATCH	STREET	1925	GALVINIZED	2	253				LEARNED ST SOUTH
HARRIS	STREET	1947	Cement Lined	6	260				LEARNED ST S'LY
EDWARDS	AVENUE	1939	Cement Lined	1.25	278				BIRCH BROW - W'LY 278'
LYNN	STREET	1939	CAST IRON	8	337				466.8' E. OF TAYLOR RD. E'LY
LYNN	STREET	1940	CAST IRON	8	682				WAVERLEY ST. W'LY
LYNN	STREET	1941	CAST IRON	6	4				730' E. OF TAYLOR RD.
LYNN	STREET	1941	CAST IRON	8	482				TAYLOR RD. E'LY
WAVERLEY	STREET	1940	CAST IRON	8	246				LYNN ST S'LY 246.6'
WAVERLEY	STREET	1941	CAST IRON	6	4				32' SOUTH OF LYNN ST.
VIRGINIA	DRIVE	1929	CAST IRON	8	180				121.5' E. OF SO. CHESTNUT ST. E'LY
					13005				
			Total		83744				