STATE OF NEW HAMPSHIRE

BEFORE THE

PUBLIC UTILITIES COMMISSION

Re: Petition of Pennichuck Water Works, Inc. for Approval of Financings Under the State Revolving Loan Fund For Water Main Improvements in the Nashua Core Water System and Timberline Booster Station Upgrades

DW 14-021

DIRECT PREFILED TESTIMONY OF JOHN J. BOISVERT

February 28, 2014

Professional and Educational Background

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

A. My name is John J. Boisvert. I am the Chief Engineer of Pennichuck Water Works, Inc. (the "Company" or "PWW"). I have worked for the Company since February 1, 2006. I am a licensed professional engineer in New Hampshire and Maine.

Q. Please describe your educational background.

A. I have a Bachelor of Science degree and a Master of Science degree in Civil Engineering from the University of New Hampshire in Durham, New Hampshire. I also have a Master's degree in Environmental Law and Policy from Vermont Law School in South Royalton, Vermont.

Q. Please describe your professional background.

A. Prior to joining the Company, I served as a Team Leader for Weston & Sampson Engineers of Portsmouth, New Hampshire in their Water Practices Group from 2000 to 2006. Prior to Weston & Sampson I was employed by the Layne Christensen Company of Shawnee Mission, Kansas as Regional Manager for their Geosciences Division in Dracut, Massachusetts from 1994 to 2000. I completed graduate school in 1992 and was employed by Hoyle, Tanner, & Associates of Manchester, New Hampshire as a Project Engineer from 1992 to 1994. Prior to entering full time graduate programs at the University of New Hampshire and Vermont Law School I was employed by Civil Consultants of South Berwick, Maine as a Project Engineer from 1986 to 1989 and by Underwood Engineers of Portsmouth, New Hampshire as a project Engineer from 1985 to 1986.

Q. What are your responsibilities as Chief Engineer of the Company?

A. As Chief Engineer, I am responsible for the planning, design, permitting, construction, and startup of major capital projects, including pipelines, reservoirs/dams, building structures, pumping facilities, treatment facilities, and groundwater supplies. I provide regular technical assistance to PWW's Water Supply Department, Operations Department, Customer Service Department, and Senior Management.

Q. What is the purpose of your testimony?

A. I will be describing two projects. The first project, the Nashua Core water main replacement effort, is part of an ongoing effort to replace aging distribution infrastructure. The Core system is encompassed by the EPS identification number 1621010. The second project, Upgrades to the Timberline Booster Station, includes the replacement and upgrade to the pumps, piping, surge controls, along with the associated electrical system and the addition of an emergency standby generator. The Company seeks approval to finance the two projects with proceeds of two loans issued by the New Hampshire Department of Environmental Services ("NHDES") through the State Revolving Loan Fund ("SRF"). Please see Exhibit JJB-1 for the NHDES letter offering SRF Loan funds for these two projects.

Q. What are the terms of the SRF loans?

A. The NHDES is offering a $2,640,000 loan with a 20-year term with level total payments and a current interest rate of 2.72% per annum to fund the Nashua Core water main replacement project. The NHDES is offering a $330,000 loan with a 20-year term with level total payments and a current interest rate of 2.72% per annum to fund the Timberline Booster Station project.

Q. Are either of these projects eligible for Principal Forgiveness?

A. No. Median Household Incomes in Nashua exceed those that would qualify these projects for principal forgiveness.

Nashua Core System Water Main Replacement

Q. Please describe the work in the Nashua Core System Water Main Replacement project for which the Company is seeking SRF financing.

A. The work contemplated under this project is consistent with the Company's projects included in the application for the Water Infrastructure and Conservation Adjustment ("WICA") program in DW 13-358. As of the end of 2013, the Company had about 265,000 linear feet ("LF") of unlined cast iron water main, about 26,900 LF of steel water main, and about 220,300 LF of Asbestos-Cement ("A-C") water mains in its Core distribution system. The Company has developed a plan to replace or rehabilitate water mains over the next thirty-five to fifty years, or approximately 10,000 to 15,000 LF per year. The Company's 2014 projects are based on the coordination of the Company's core system replacement work with road and sewer projects of the City of Nashua (the "City") and the Town of Amherst (the "Town"). Absent a corresponding City or Town project, replacements of other water mains are evaluated using the following considerations:

(1) Water main break history;

(2) Water quality problems;

(3) Fire protection flows;

(4) Key customers; and

(5) Geographical proximity of mains to be replaced/rehabilitated.

It is important when the City or Town is working on a street where Pennichuck has an unlined cast iron, steel, or A-C water main for the Company to replace the water main

even though it may not be the Company's highest priority. There are significant cost savings in the areas of pavement repair and traffic control associated with completing joint projects with the City or Town. It is rare that the City or Town can replace sewers or storm drains and not undercut the existing water main. Often, the water main is located in the same trench as the sewer main, with the sewer main being installed first and the water main laid higher in the trench. This generally makes it impossible to replace the sewer main without replacing the water main. Unlined cast iron, steel, and A-C water main usually cannot survive loss of soil support or the vibration of heavy construction equipment without experiencing high levels of breakage. The new water main placed in its own trench ten feet or more (when physically possible) away from sanitary sewers and sufficient distances from other utilities to minimize conflicts between them and allow maintenance in the future. The water main replacement projects slated to be supported by the proposed SRF financing are detailed in Exhibit JJB-2.

Timberline Booster Station Upgrades

Q. Please describe the work on the Timberline Booster Station for which the Company is seeking SRF financing.

A. The station provides water service to the Company's "Shakespeare" high service system in the southwest area of the Nashua Core system and provides fire protection to the southeast section of the Nashua Core system. The station pumps to two atmospheric tanks. Pumps will start and stop based on storage tank level. The station has a maximum pumping capacity of 3,300 gallons per minute ("gpm"). The station has two 1,000 gpm pumps and one 3,300 gpm pump. When the larger pump runs the two smaller pumps cannot run as discharge pressure would be too great as well as the draw off the suction

side of the pumps would drop pressure too low. The Timberline Booster station was originally constructed in 1968 as a below ground station. The station was reconstructed in 1980 to an above ground station with the two smaller pumps. As the Shakespeare distribution system expanded the station was expanded as well to add the third larger pump (3,300 gpm) in 1986. The pumps, the flow control valves, motor starters, and some of the piping have reached the end of their design life. The Company is planning to replace the existing three pumps with three new equally sized pumps such that two can meet system demand (3,000 gpm in the summer months) with the third pump in redundant reserve capacity. The existing station does not have any pump redundancy in regards to summer demands. If the largest 3,300 gpm pump fails the two smaller pumps are not capable of meeting the summer demand. An emergency generator will be added to the station. The electrical panels and motor starters/controls will be upgraded to more efficiently start and run the pumps and to allow pump operation with an appropriate sized generator. New surge control valves and pressure relief valves will be provided to minimize water hammer upon pump start up and shut down. The upgrades will utilize the existing building except for the generator which will be placed outside.

Q. Does this system have gravity storage?

A. Yes.

Q. Why is an emergency generator needed if there is storage?

A. The Shakespeare system includes two atmospheric storage tanks with a total combined storage volume of 2.7 million gallons. Average day demand in the Shakespeare service area is approximately 1.7 million gallons per day ("mgd") in the late fall and winter months and approximately 3 mgd in July. Currently no means exists to feed the entire

Shakespeare system, including the storage tanks during a power outage at the Timberline station. The Shakespeare system provides fire protection to the business, commercial, and industrial area in the southeast corner of Nashua along Spit Brook Road and the Daniel Webster Highway. A major fire demand in this area is likely to create a demand of 0.7 to1 million gallons. A power outage of more than one day leaves only 1 million gallons of storage remaining and fire protection is compromised. A power outage lasting less than two days eliminates the ability to provide domestic demand as well as fire protection. Having standby power ensures domestic demand and fire protection are not compromised.

Q. Does the Company intend to complete the two projects in 2014?

A. The ability to complete these projects during 2014 is dependent upon getting the project construction underway in the early summer. To accomplish this, the NHDES and the Company need to close on these loans in early May.

Q. Please describe the estimated timeline required to complete the two projects in 2014.

A. The NHDES would like to finalize the loan documents associated with this loan by May 1, 2014. The NHDES cannot finalize the loan documents without the NHPUC approving the proposed financing for this project. The list below provides an estimated timeline for the two projects:

<u>Regulatory Approvals and Permits (Both Projects) with Estimated Dates</u>

1. Company Board Resolution approving SRF loan (vote by consent) – December 20, 2013. (COMPLETED)
2. File financing petition with Commission – January 22, 2014.
3. NHPUC approval of Financing – April, 2014.

4. Sign SRF Loan Documents for Both Projects - May 1, 2014.

Nashua Core Water Main Replacement Project with Estimated Dates

1. Complete Engineering designs – March 15, 2014.
2. NHDES approval of proposed designs – April 1, 2014.
3. Bid the water main project(s) as required by municipal schedules (Nashua and Amherst) – April 15, 2014.
4. Open Bids for the water main project(s) – May 15, 2014.
5. Construction begins construction on the water main project(s) – June 15, 2014.
6. Water main project substantial completion – November 30, 2014.

Timberline Station Upgrade Project with Estimated Dates

1. Complete Engineering Design – February 15, 2014.
2. NHDES approval of proposed designs – March 15, 2014.
3. Bid the direct purchase of long lead items including pumps (20-24 weeks from date of order) and emergency generator (condition award on the execution of the SRF loan) – March 1, 2014.
4. Open Bids for the direct purchase of long lead time items – April 1, 2014.
5. Award the direct purchase of long lead items upon receipt of the SRF loan.
6. Bid the remainder of station work – June 15, 2014.
7. Open Bids for the remainder of station work – July 15, 2014.
8. Construction begins – September 15, 2014.
9. Project(s) substantial completion – December 31, 2014.

Q. Does this complete your testimony?

A. Yes.

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