



City of Burlington
Department of Public Works

Office of Planning
645 Pine Street, Suite A
Burlington, VT 05402
802.863.9094 P
802.863.0466 F
802.863.0450 TTY

www.dpw.ci.burlington.vt.us

Chapin Spencer
DIRECTOR OF PUBLIC WORKS

Martha Q. Keenan
Capital Improvement Program Manager

Date: May 18, 2015
To: Board of Finance
From: Martha Keenan, CPM
Capital Improvement Program Manager
Department of Public Works
Subject: Fiscal Year 16 Capital Plan Budget

The City faces an immediate and long-term public infrastructure funding challenge as the 10-Year Capital Plan has made clear. Our work to this point has identified an immediate challenge of \$2,327,000 that should be funded in the FY16 budget. In addition, the Administration is committed to meeting the targets of a Fund Balance Policy in FY16. This memo and the attached materials lay out a path to achieving both of these FY16 goals.

The initial Capital Plan for FY16 had a deficit of over \$9M. Approximately \$7M was moved to outer years. The Capital Plan Committee worked diligently to determine what capital needs were necessary for a multitude of reasons – life safety, imminent failure, public interest, or future cost avoidance – and therefore are important to complete in FY16. It may not be obvious where all these items fall in the various categories; however, after careful consideration by staff, the completion in FY16 of all these items is believed to be critical.

I am requesting that the Board of Finance consider the following two scenarios, both of which assume the FY16 budget surplus of \$1M, 100% of which is applied toward achieving the City's Fund Balance Policy.

Scenario 1 – Phased Full Funding

- We believe the City will have at least \$1M in FY15 General Fund surplus made up of:
 - BED payment to the City of \$750,000; and
 - Remainder of the funds from the sale of City land to the Onion River Coop.These funds should be applied to construction costs in fall 2015.
- After the FY15 audit is completed, any unassigned Fund Balance still to be attributed to FY15 should then be applied to any capital construction to be completed in winter 2015 and then in spring 2016.
- In addition, if the City sells the Browns Court property, any unassigned amount of the revenue should (if needed) be applied to construction projects still remaining for FY16.
- If additional revenue is still needed, then consider looking for new revenues sources.

An Equal Opportunity Employer

This material is available in alternative formats for persons with disabilities. To request an accommodation, please call 802.863.9094 (voice) or 802.863.0450 (TTY).

- If all these possible revenue sources do not yield \$2,327,000, then unfunded construction projects will be pushed out to FY17.

| GF GRAND TOTALS (w/ Expansion Needs) | | FY 2016 |
|--|--|--------------|
| Fall Project Expenditures | | \$ 1,152,201 |
| Spring Project Expenditures | | \$ 1,175,000 |
| Confirmed: BED payment to City | | \$ (750,000) |
| Confirmed: Remainder of sale of City land to Onion River Coop | | \$ (250,000) |
| Potential: unassigned revenues after FY15 audit | | ? |
| Potential: sale of Browns Court property | | ? |
| Potential: FY16 new revenue source | | ? |
| Either fully funded by January 1, 2016 or cuts required | | |

Scenario 2 – Partial Funding

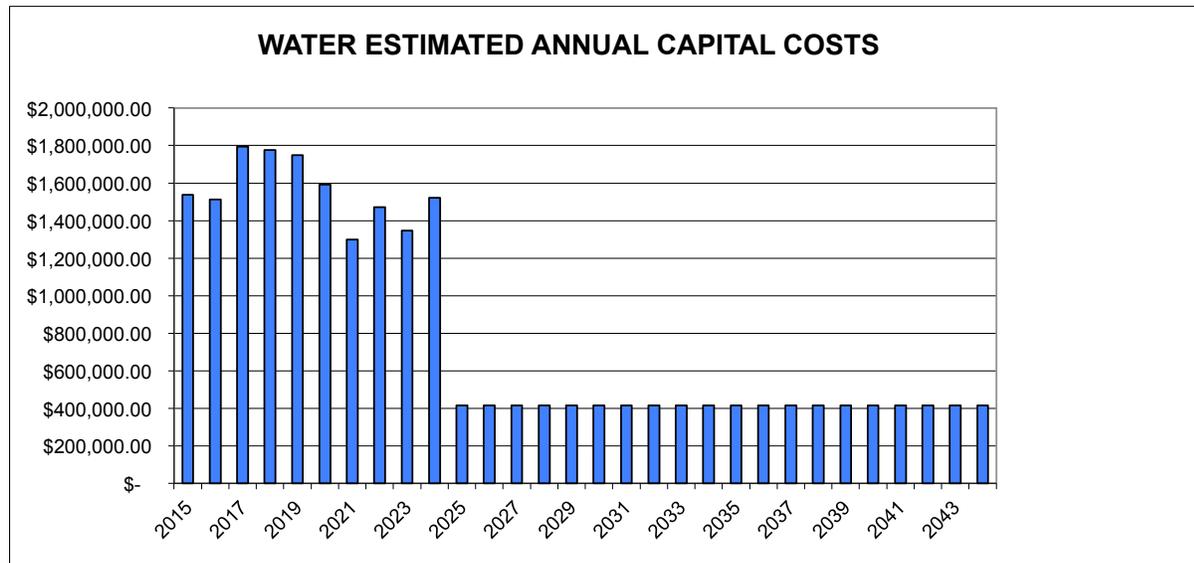
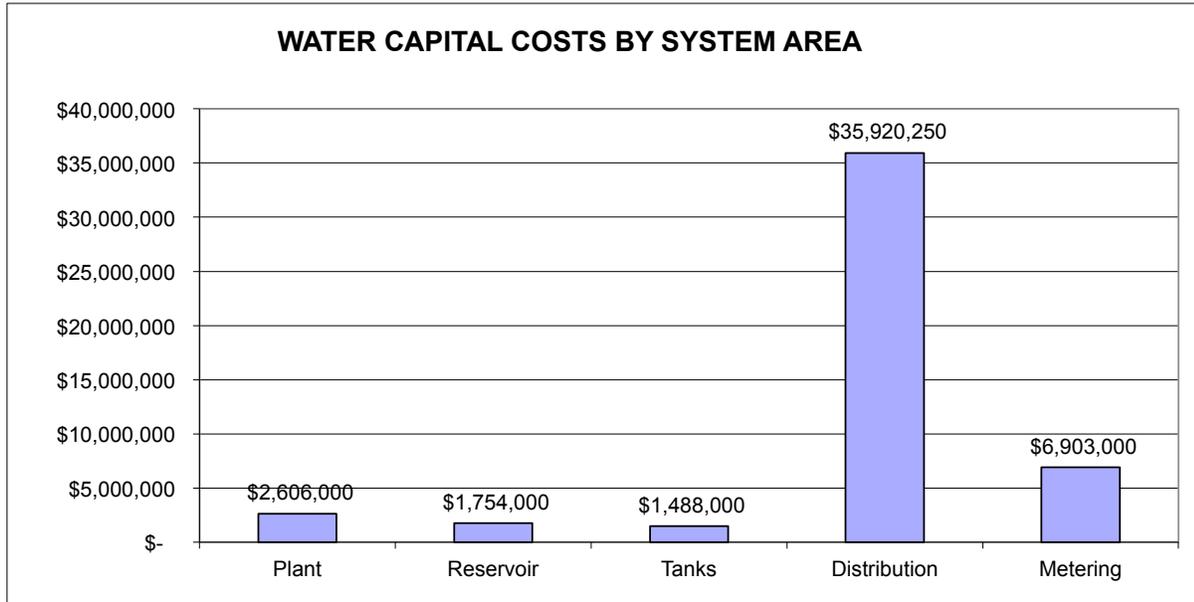
- \$1M Bike Path expansion is funded
- \$1.327M capital needs are cut

| GF GRAND TOTALS (w/ Expansion Needs) | | FY 2016 |
|---|--|--------------|
| Total Expenditures with Expansion | | \$ 2,327,201 |
| Cut items | | \$ (97,502) |
| Cut sidewalks and streets new additions and expansion | | \$ (761,860) |
| Cut cost avoidance items on list | | \$ (467,839) |
| Confirmed: BED payment to City | | \$ (750,000) |
| Confirmed: Remainder of sale of City land to Onion River Coop | | \$ (250,000) |

The Committee believes all the projects within the FY16 Capital Plan are important to complete. An integral part of a capital plan is minimizing the overall risk to the City by addressing the most pressing needs in a proactive manner.

If you have any questions, please feel free to contact me at mkeenan@burlingtonvt.gov or 802-540-0701.

CHARTS OF COSTS BY AREA AND ESTIMATED ANNUAL EXPENDITURES



**BURLINGTON PUBLIC WORKS
WATER DIVISION**

WATER CAPITAL PLAN

DRAFT

btv_water_capital_2014.xls

Original Date: 2/12/08

Revised Date: 2/17/15

ADJUSTED

PROBABILISTIC

RISK ASSES-

MENT [P X R]

| DEFICIENCY DESCRIPTION | AREA | SUBAREA | EST. CAPITAL COST (2014 \$) ENR = 9870 | PROBABILITY OF FAILURE [P] (1 high to 5 low) | TREATMENT OR SUPPLY RISK [R] (1 high to 6 low) | ADJUSTED PROBABILISTIC RISK ASSESSMENT [P X R] | ASSESSMENT COMMENTS |
|--|---------------------|------------------|---|---|---|--|---|
| Reduce voltage and replace pump with 400 HP unit | Plant | Finished Pumping | \$ 262,000 | 1 | 1 | 1 | Project underway. |
| Replace influent valves and operators | Plant | Filtration | \$ 111,000 | 1 | 1 | 1 | Most valves 20+ years old. |
| Replace backwash valves and operators | Plant | Filtration | \$ 95,000 | 1 | 1 | 1 | Most valves 20+ years old. |
| Check hot water circ pump capacity and add a redundant unit | Plant | HVAC | \$ 5,000 | 1 | 1 | 1 | One pump part of cost-saving measure when constructed. |
| Replace existing blower and add backup unit | Plant | Filtration | \$ 39,000 | 1 | 1 | 1 | Critical equipment, needs backup. |
| Replace windows | Plant | Pump Building | \$ 36,000 | 1 | 1 | 1 | |
| Replace filter flow meters (venturi/dp cell) | Plant | Instrumentation | \$ 17,000 | 1 | 1 | 1 | Include with control system upgrade. Best done in-house. |
| Replace flow control valve in moore plant flow vault | Plant | Finished Pumping | \$ 16,000 | 1 | 1 | 1 | This valve is critical and has been recently replaced. |
| Replace headloss sensors | Plant | Instrumentation | \$ 16,000 | 1 | 1 | 1 | Include with control system upgrade. |
| Review and replace level probes | Plant | Instrumentation | \$ 5,000 | 1 | 1 | 1 | Include with control system upgrade. |
| Replace chlorine alarms with something that doesn't leak | Plant | Disinfection | \$ 3,000 | 1 | 1 | 1 | Look into alternative to DigiPulse alarms. |
| Replace Moore plant clearwell transducer | Plant | Instrumentation | \$ 2,000 | 1 | 1 | 1 | Units 20+ years old, no repair parts available. |
| Repair HWS&R line insulation across alley | Plant | HVAC | \$ 1,000 | 1 | 1 | 1 | Heat loss wastes energy. |
| Reservoir Interior Relining (North & South) | Reservoir | Storage | \$ 450,000 | 1 | 1 | 1 | Leakage = water loss. Proposal using XR3-PW liner. |
| Oakland Terrace - replace 6" w/8" to hydrants, 2" around. | Distribution | Mains | \$ 45,000 | 1 | 1 | 1 | Replacement before Street Capital Program. |
| Morgan Street - Replace 2" galvanized with CTS. | Distribution | Mains | \$ 20,000 | 1 | 1 | 1 | Replacement before Street Capital Program. |
| Pine Street - Howard to Lakeside (before Champlain Parkway) | Distribution | Mains | \$ 530,000 | 1 | 2 | 2 | Replacement based upon break history and planned street upgrade. |
| Replace roof over office, lab, and control room | Plant | Main Building | \$ 64,000 | 1 | 2 | 2 | Potential damage to equipment if not replaced. |
| So. Cove Rd - ALL | Distribution | Mains | \$ 293,250 | 2 | 1 | 2 | Replacement based upon break history. |
| Replace drain valves and operators | Plant | Filtration | \$ 83,000 | 2 | 1 | 2 | Most valves 20+ years old. |
| Replace air valves and operators | Plant | Filtration | \$ 75,000 | 2 | 1 | 2 | Most valves 20+ years old. |
| Replace single boiler/pump with dual boiler/pump system | Plant | HVAC | \$ 52,000 | 2 | 1 | 2 | Resize to a smaller, high efficiency boiler. |
| Austin Drive - Redrocks to Home | Distribution | Mains | \$ 140,000 | 1 | 3 | 3 | Replacement based upon break history and planned street upgrade. |
| Brick Repointing on handicap ramp and various entrances | Plant | Main Building | \$ 5,000 | 1 | 3 | 3 | Bricks falling out on south side of handicap ramp. |
| Brick Repointing on reservoir building brick/foundation and redstone building | Reservoir | Building | \$ 5,000 | 1 | 3 | 3 | Requires historic masonry work. |
| Reservoir Roof Replacement (North & South) | Reservoir | Storage | \$ 340,000 | 1 | 3 | 3 | Hypalon roof weathered and cracking |
| Flynn Ave - Pine to Shelb. Rd | Distribution | Mains | \$ 316,000 | 1 | 3 | 3 | Replacement based upon break history. |
| Morse Pl - ALL | Distribution | Mains | \$ 311,000 | 1 | 3 | 3 | Replacement based upon break history. |
| Briggs St - ALL | Distribution | Mains | \$ 263,000 | 1 | 3 | 3 | Replacement based upon break history. |
| So. Union St - Maple to Buell? | Distribution | Mains | \$ 460,000 | 2 | 2 | 4 | Replacement based upon break history. |
| Birchcliff Pkwy - ALL | Distribution | Mains | \$ 407,000 | 1 | 4 | 4 | Replacement based upon break history. |
| Charlotte St - ALL | Distribution | Mains | \$ 285,000 | 2 | 2 | 4 | Replacement based upon break history. |
| Replace existing security hardware with newer equipment | Reservoir | Fire & Security | \$ 55,000 | 1 | 4 | 4 | Outdoor equipment has a reduced service life |
| Replace emergency generator and automatic transfer switch (ATS) | Plant | Electrical | \$ 53,000 | 2 | 2 | 4 | Generator smokes if operating very long. Look at nat. gas unit. |
| Rebuild backwash pumps. Wear rings, impellers, bearings, etc. | Plant | Filtration | \$ 15,000 | 4 | 1 | 4 | |
| Replace Parco flow control valves | Plant | Finished Pumping | \$ 12,000 | 1 | 4 | 4 | Most Parco valves have been repaired. |
| Replace/repair roof over old garage area | Plant | Pump Building | \$ 11,000 | 1 | 4 | 4 | |
| Look into using city water as alternate backwash source | Plant | Filtration | \$ 19,000 | 4 | 1 | 4 | |
| Seal interface between roof and walls | Reservoir | Storage | \$ 5,000 | 1 | 4 | 4 | Prevents roof runoff from dripping into reservoir |
| Repair or replace double door in alley | Plant | Main Building | \$ 3,000 | 1 | 4 | 4 | |
| Add start/stop control for turbines in control room | Plant | Pumping | \$ 1,000 | 2 | 2 | 4 | Saves time, could be automated if desired. |
| Replace filter plant windows that are in poor condition | Plant | Main Building | \$ 36,000 | 1 | 4 | 4 | |
| Pine Street - Lakeside to Flynn | Distribution | Mains | \$ 540,000 | 2 | 2.5 | 5 | Replacement based upon break history. |
| Redstone tank Class A total paint removal and recoat, inside & outside | Tanks | Storage | \$ 425,000 | 5 | 1 | 5 | Redstone coating is now 23 years old and starting to peel |
| Catherine St - ALL | Distribution | Mains | \$ 256,000 | 1 | 5 | 5 | Replacement based upon break history. |
| Replace filter media | Plant | Filtration | \$ 71,000 | 5 | 1 | 5 | Replace media when rebuilding filter. |
| Rebuild 4160V equipment | Plant | Electrical | \$ 15,000 | 5 | 1 | 5 | Not likely to fail but critical. |
| New VFD for pump R4 | Plant | Raw Pumping | \$ 13,000 | 5 | 1 | 5 | Less expensive alternative to R3 upgrade. |
| Install new thermostats on baseboard heaters | Plant | HVAC | \$ 6,000 | 1 | 5 | 5 | Thermostats have failed, human comfort factor. |
| Add parallel chemical feed lines with unions and relabel | Plant | Coagulation | \$ 6,000 | 5 | 1 | 5 | With the exception of hypo, not likely to fail. |
| Install chemical spill containment tank in loading dock area | Plant | Coagulation | \$ 1,000 | 1 | 5 | 5 | Spills are a safety and environmental issue. |
| Robinson Pkwy - ALL | Distribution | Mains | \$ 381,000 | 2 | 3 | 6 | Replacement based upon break history. |
| Caroline St - ALL | Distribution | Mains | \$ 354,000 | 2 | 3 | 6 | Replacement based upon break history. |
| Rebuild/replace underdrains on each filter | Plant | Filtration | \$ 441,000 | 2 | 3 | 6 | Consider repairing one or two filters each year. |
| Prospect Pkwy - ALL | Distribution | Mains | \$ 613,000 | 2 | 3 | 7 | Replacement based upon break history. |
| Ledgemire St - ALL | Distribution | Mains | \$ 129,000 | 2 | 3 | 7 | Replacement based upon break history. |
| Rebuild pumps R1 and R2 with new bearings, wear rings, mech seals, etc. | Plant | Raw Pumping | \$ 47,000 | 3 | 2 | 7 | Want three (3) reliable raw water pumps. |
| Rebuild or replace older high service pump (pump #3) | Reservoir | Pumping | \$ 37,000 | 2 | 3 | 7 | |
| Add TOC analyzer for raw and finished water analysis | Plant | Filtration | \$ 35,000 | 3 | 2 | 7 | If measured, TOC removal can be optimized. Also look at UV254. |
| Replace particle counters | Plant | Filtration | \$ 11,000 | 1 | 6 | 7 | Existing counters not functional. |
| Replace dehumidifier system | Plant | HVAC | \$ 3,000 | 1 | 6 | 7 | Units already failed. More humidity increases metal corrosion. |
| Check service life of fiberglass tanks (Justin tanks 1982, sales order #2483-02) | Plant | Coagulation | \$ 8,000 | 3 | 2 | 7 | Manufacturer states typical service life 20-25 years. |
| Maple St - St. Paul to Willard | Distribution | Mains | \$ 534,000 | 2 | 4 | 8 | Replacement based upon break history. |
| Colchester Ave - High Service | Distribution | Mains | \$ 287,000 | 2 | 4 | 8 | Replacement based upon break history. |
| Batchelder St - ALL | Distribution | Mains | \$ 120,000 | 2 | 4 | 8 | Replacement based upon break history. |
| Replace chainlink fence around UVM and Redstone tanks | Tanks | Fire & Security | \$ 35,000 | 4 | 2 | 8 | Fencing is quite old. Consider electric wire instead of barb wire at top. |
| Improve ventilation in pump station | Plant | Pump Building | \$ 35,000 | 2 | 4 | 8 | Heat is a factor in electrical and electronic failures. |
| Replace diesel motor or install generator that runs on diesel or natural gas | Reservoir | Pumping | \$ 14,000 | 2 | 4 | 8 | Existing engine WWII vintage |
| Shotblast and repaint all painted parts (walls, floors, pipes, etc.) | Plant | Pump Building | \$ 18,000 | 2 | 4 | 8 | |
| Reside wooden part of building | Plant | Pump Building | \$ 5,000 | 2 | 4 | 8 | |
| Install double door entry in lobby | Plant | Main Building | \$ 3,000 | 2 | 4 | 8 | |
| Replace garage door in wooden part of building | Plant | Pump Building | \$ 2,000 | 2 | 4 | 8 | |
| Replace unit heaters in stair wells | Plant | HVAC | \$ 2,000 | 2 | 4 | 8 | These unit heaters were cheaply made. |
| Replace unit heaters in maintenance shop | Plant | HVAC | \$ 1,000 | 2 | 4 | 8 | Look into increasing heater outputs. |
| Ethan Allen Parkway - ALL | Distribution | Mains | \$ 932,000 | 3 | 3 | 9 | Replacement based upon break history. |
| Abandon reservoir building and build new pump station, or rebuild existing station | Reservoir | Building | \$ 479,000 | 5 | 2 | 10 | |
| Crescent Rd - 1/2 | Distribution | Mains | \$ 311,000 | 2 | 5 | 10 | Replacement based upon break history. |

**BURLINGTON PUBLIC WORKS
WATER DIVISION**

WATER CAPITAL PLAN

DRAFT

btv_water_capital_2014.xls

Original Date: 2/12/08

Revised Date: 2/17/15

ADJUSTED

| DEFICIENCY DESCRIPTION | AREA | SUBAREA | EST. CAPITAL COST (2014 \$) ENR = 9870 | PROBABILITY OF FAILURE [P] (1 high to 5 low) | TREATMENT OR SUPPLY RISK [R] (1 high to 6 low) | PROBABILISTIC RISK ASSESSMENT [P X R] | ASSESSMENT COMMENTS |
|---|--------------|------------------|---|---|---|---------------------------------------|---|
| Crescent Rd - 1/2 | Distribution | Mains | \$ 311,000 | 2 | 5 | 10 | Replacement based upon break history. |
| Replace roof on chlorine building | Plant | Main Building | \$ 6,000 | 5 | 2 | 10 | |
| Home Ave - ALL | Distribution | Mains | \$ 620,000 | 4 | 3 | 11 | Replacement based upon break history. |
| Hayward St - ALL | Distribution | Mains | \$ 160,000 | 4 | 3 | 11 | Replacement based upon break history. |
| Install security cameras around tanks | Tanks | Fire & Security | \$ 28,000 | 5 | 2 | 11 | Security issue |
| Restore or replace all windows and doors | Reservoir | Building | \$ 7,000 | 5 | 2 | 11 | |
| Add high and low alarms to day tanks | Plant | Coagulation | \$ 4,000 | 5 | 2 | 11 | Not necessary if operator is paying attention. |
| Clean and Seal SS pipe in pipe gallery | Plant | Filtration | \$ 3,000 | 5 | 2 | 11 | Aesthetic issue. |
| Install dehumidifier in pipe gallery | Reservoir | Building | \$ 3,000 | 5 | 2 | 11 | |
| Repair or replace pipes in gallery | Reservoir | Building | \$ - | 5 | 2 | 11 | |
| Curtis Ave - ALL | Distribution | Mains | \$ 563,000 | 4 | 3 | 12 | Replacement based upon break history. |
| Conger Ave - ALL | Distribution | Mains | \$ 196,000 | 4 | 3 | 12 | Replacement based upon break history. |
| Replace fire alarm system (Simplex, 8 zones) | Plant | Fire & Security | \$ 48,000 | 4 | 3 | 12 | |
| Replace all lighting | Plant | Main Building | \$ 45,000 | 3 | 4 | 12 | |
| Replace sewage pump station | Plant | Main Building | \$ 30,000 | 2 | 6 | 12 | |
| Repaint offices, corridors and lunch room of filter plant (1 coat) | Plant | Main Building | \$ 3,000 | 3 | 4 | 12 | |
| Remove and cover skylights in filter room | Plant | Main Building | \$ 7,000 | 3 | 4 | 12 | |
| Add additional pumps to alum and polymer systems to replace shared backup | Plant | Coagulation | \$ 3,000 | 3 | 4 | 12 | Three (3) pump system is typical. |
| Seal cracks in south clarifier walls in Moore plant corridor | Plant | Clarification | \$ 1,000 | 4 | 3 | 12 | Leaks corrode rebar and can weaken walls. |
| Replace Pressure Treated Retaining Wall | Reservoir | Storage | \$ 359,000 | 4 | 3 | 12 | |
| Spruce St - ALL | Distribution | Mains | \$ 460,000 | 4 | 3 | 13 | Replacement based upon break history. |
| Lakeside Ave - ALL | Distribution | Mains | \$ 426,000 | 4 | 3 | 13 | Replacement based upon break history. |
| Deforest Hgts - ALL | Distribution | Mains | \$ 419,000 | 4 | 3 | 14 | Replacement based upon break history. |
| Dunder Rd - ALL | Distribution | Mains | \$ 342,000 | 4 | 3 | 14 | Replacement based upon break history. |
| New intake screen for 30" line | Plant | Raw Pumping | \$ 68,000 | 4 | 3 | 14 | Zebra mussels the likely risk. Continue with annual cleaning. |
| Rebuild vacuum system compressors | Plant | Finished Pumping | \$ 4,000 | 4 | 3 | 14 | Units 20+ years old. |
| Upgrade 6" LS on Colchester Ave with 10" to bottom of hill | Distribution | Mains | \$ 344,000 | 5 | 3 | 15 | Age and sized based decision. |
| UVM tank Class A total paint removal and recoat, inside & outside | Tanks | Storage | \$ 1,000,000 | 5 | 3 | 15 | Aesthetic until significant rusting occurs |
| Replace pump R3 with a new pump and VFD | Plant | Raw Pumping | \$ 84,000 | 4 | 4 | 17 | Backup for R1 and R2. |
| Replace lab cabinets and counter tops | Plant | Main Building | \$ 20,000 | 4 | 4 | 17 | |
| Seal cement floors | Plant | Main Building | \$ 19,000 | 4 | 4 | 17 | |
| Replace all ceiling tiles with standard acoustic panels | Plant | Main Building | \$ 24,000 | 4 | 4 | 17 | existing panels are obsolete and irreplaceable |
| Replace vacuum primers for pumps F1, F2 and F3 | Plant | Finished Pumping | \$ 9,000 | 4 | 4 | 17 | Units 20+ years old. |
| Grind down floor and reseal | Plant | Pump Building | \$ 7,000 | 4 | 4 | 17 | |
| Replace blinds in office, control room, lab and lunch room | Plant | Main Building | \$ 6,000 | 4 | 4 | 17 | |
| Replace all worn tile floors and trim | Plant | Main Building | \$ 4,000 | 4 | 4 | 17 | |
| Repaint interior of entire filter plant | Plant | Main Building | \$ 8,000 | 4 | 4 | 17 | |
| Epoxy seal or line containment areas for bulk tanks | Plant | Disinfection | \$ 1,000 | 4 | 4 | 17 | Provides a better seal of containment areas. |
| Add skimmer to filter backwash | Plant | Filtration | \$ 24,000 | 5 | 4 | 19 | Mostly an aesthetic issue. |
| Remove unused steel bulk tanks | Plant | Coagulation | \$ 6,000 | 5 | 4 | 21 | Provides room for other tankage. |
| Seal access hatch and vent bulk tanks to outside | Plant | Coagulation | \$ 4,000 | 5 | 4 | 21 | Alum and polymer do not emit harmful vapors. |
| Install a hot water heater in the chlorine building | Plant | HVAC | \$ 2,000 | 5 | 4 | 21 | Why? |
| Upgrade 8" Pipe on Institute Road to 12" for better feed from N. Transmission to N. Ave | Distribution | Mains | \$ 342,000 | 5 | 5 | 25 | Provides better feed to North Ave. |
| Future Regulation Requirements | Plant | Regulations | \$ 599,000 | 5 | 6 | 30 | Assumes plant upgrade to meet future regulations. |
| Add backflush capabilities to 24" intakes for use a backup intakes | Plant | Raw Pumping | \$ 53,000 | 5 | 6 | 30 | Use raw water pumps or hydrant to backflush old intakes. |
| Install new valve operator in Moore plant flow vault | Plant | Finished Pumping | \$ 16,000 | 5 | 6 | 30 | This valve is no longer used. |
| Replace all 4" Pipe | Distribution | Mains | \$ 3,832,000 | 5 | 5 | 1 to 30 | Age and sized based decision. |
| Small Diameter Galvanized Domestic Service on Dead End Streets | Distribution | Mains | \$ 1,796,000 | 5 | 6 | 1 to 30 | Annual budget allowance |
| Exercise/Replace Broken Valves (Annual Replacement) | Distribution | Valves | \$ 3,592,000 | 5 | 6 | 1 to 30 | Assumes 20 valves replaced per year. |
| Water Share of Service Replacement (Main to Curbstop) | Distribution | Services | \$ 2,694,000 | 5 | 6 | 1 to 30 | Assumes 30 services replaced per year. |
| Replace Old and Broken Fire Hydrants (Annual Replacement) | Distribution | Hydrants | \$ 1,796,000 | 5 | 6 | 1 to 30 | Assumes 10 hydrants replaced per year. |
| 5/8" Water Meter Replacement | Metering | Res. Meters | \$ 1,683,000 | 5 | 6 | 1 to 30 | |
| Replace Neptune R900 remote boxes | Metering | Remotes | \$ 1,611,000 | 5 | 6 | 1 to 30 | |
| Replace batteries on Neptune R900 remote boxes | Metering | Remotes | \$ 647,000 | 5 | 6 | 1 to 30 | |
| 2" Water Meter Replacement | Metering | Comm. Meters | \$ 350,000 | 5 | 6 | 1 to 30 | |
| 3/4" Water Meter Replacement | Metering | Res. Meters | \$ 242,000 | 5 | 6 | 1 to 30 | |
| 1" Water Meter Replacement | Metering | Comm. Meters | \$ 156,000 | 5 | 6 | 1 to 30 | |
| 1-1/2" Water Meter Replacement | Metering | Comm. Meters | \$ 146,000 | 5 | 6 | 1 to 30 | |
| 3" Water Meter Replacement | Metering | Comm. Meters | \$ 54,000 | 5 | 6 | 1 to 30 | |
| 4" Water Meter Replacement | Metering | Comm. Meters | \$ 51,000 | 5 | 6 | 1 to 30 | |
| 6" Water Meter Replacement | Metering | Comm. Meters | \$ 13,000 | 5 | 6 | 1 to 30 | |

NOTES:

1. Shaded rows indicate work completed as of the above revision date.
2. Estimated capital costs adjusted for 2014 using ENR Construction Index.
3. Probabilistic Risk Assessment (PRA) and suggested schedule for capital work are equivalent (years 1 through 30).
4. According to sources, older cast iron pipe is inherently more corrosion-resistant than ductile pipe. Pipe failures most likely attributed to aggressive soil conditions or poor pipe bedding rather than age.
5. Reservoir subtotal includes new pump house and repair of historic building in lieu of pipe gallery work.