



FY23 Through FY27

Capital Improvement Program

Engineering, Highway and Stormwater Requests

AYER DEPARTMENT OF PUBLIC WORKS

PRESENTED

NOVEMBER 17, 2021

DPW Capital Improvement Plan Objectives

The Ayer DPW continues to be committed to the ongoing maintenance and repair of capital assets, recognizing the critical value of civic infrastructure to the economic, aesthetic and functional viability of the Town.

The Five-Year Capital Improvement Plan includes projects that continue major rehabilitation of Town assets and new investments in capital infrastructure.

Capital Project Criteria

Proposed Ayer DPW Capital Improvement Program is based on:

- Regulatory Requirements
- Public Safety and Public Health
- Maintaining Level of Service (Asset Management Based Approach)
- Reducing Operations Costs
- Integration With Other Town Projects
- Implementing resiliency and sustainability in infrastructure
- Grant Funding Opportunities
- Promoting Economic Development
- **IMPROVING THE COMMUNITY**

DPW Capital Issues

- Aging Infrastructure

- Reliable water supply is critical to our community
- Water pipes 120 years old
- Sewer pipes 70 years old
- Drainage pipes are various ages, materials and sizes
- Bridges and culverts failing
- WWTP built in 1982
- DPW – Highway Garage built in 1970
- Main Street was reconstructed in 1985

- Road & sidewalk improvements funded with Chapter 90, annual capital budget and other grants

- American Rescue Plan Act (ARPA) and Infrastructure Investment and Jobs Act are potential opportunities for Ayer

DPW Capital Issues

- PFAS Contamination of water supply has had a significant impact on the DPW capital and operating budgets as well as staff time
- New Wastewater Discharge Permit issued by EPA with New Limits and Collection System Requirements
 - WWTP Upgrades
 - Collection System and I/I Improvements
- 2018 Stormwater Permit was issued by EPA
 - Outfall Improvements
 - Drainage Infrastructure
- DPW applies for grants to reduce costs
- DPW Director and Town Engineer perform in-house engineering and value engineering to reduce costs & save money

American Rescue Plan Act (ARPA)

Potential uses of ARPA funds:

- Supporting public health expenditures
- Addressing negative economic impacts
- Premium pay for essential workers
- Water, wastewater, and broadband infrastructure
- Replace lost public sector revenue



Total Ayer ARPA Funds = \$2,449,840*

Executive Bi-Board voted to recommend to Select Board:

- Authorize usage for Westford Road Sewer Replacement.
- Include in Capital Planning directive for possible source of funds for eligible projects.

*Must be committed by December 31, 2024 and spent by December 31, 2026

Infrastructure Investment and Jobs Act (IIJA)

What we know so far:

MA \$9B

How will the money be distributed?



1. NON-COMPETITIVE FUNDING ALLOCATION PROCESSES

- States receive money based on formulas (population, etc.) and make decisions about which projects deserve funding.
- Specifically for Water, Wastewater, Stormwater – 10-30% allocated through SRF process by the State. 50% is set-aside for rural and financially distressed communities.

2. EARMARKS AND COMPETITIVE GRANT PROCESSES

Infrastructure Investment and Jobs Act (IIJA)



Which projects will qualify for funding?

- Roads, Bridges, & Major Projects: \$110B
- Passenger and Freight Rail: \$66B
- Safety and Research: \$11B
- Public Transit: \$39.2B
- Broadband: \$65B
- Airports: \$25B
- Ports and Waterways: \$17.4B
- Water/Wastewater/Stormwater Infrastructure: \$54B
- Power and Grid: \$65B
- Resiliency: \$46B
- Low-Carbon and Zero-Emission School Buses & Ferries: \$7.5B
- Electric Vehicle Charging: \$7.5B
- Reconnecting Communities: \$1B
- Addressing Legacy Pollution: \$21B

What Did We Do Last Year?

- Replaced poor condition water main on Wright Road
- Replaced sidewalks, curbing and repaved High Street
- Completed construction of water and sewer on Groton Shirley Road, repaved the road and installed a water quality swale
- Began implementation of the Stormwater Asset Management Grant
- Continued East Main Street Reconstruction (MassDOT)
- Replaced failed culvert on Old Sandy Pond Road
- Replaced sidewalks, curbing and repaved Washington Street from Highland Ave to Main Street
- Completed and Activated Grove Pond WTP PFAS Treatment
- Completed School Street Sidewalk from Main Street to Pirone Park
- Designed and started construction of Phase 3 Wastewater Treatment Plant upgrade

What Did We Do Last Year?

- Designed and constructed Alum Pacing at WWTP
- Revised Ayer's Stormwater Bylaws and Regulations to meet 2018 MS4 Permit
- Completed Tree Inventory and Management Plan Grant and Study
- Obtained and Implementing Park Street Design Grant with AOECD
- Designed and constructed FY21 Sewer I/I rehab
- Replaced section of collapsed sewer on Westford Road
- Designing Main Street TIP Project
- Designed and bid MassWorks West Main Street Reconstruction
- Permitted Jonathan Drive Cross-Country Water Main, passed Town Meeting vote for Easement with DCR
- Replaced Well 1 at Spectacle Pond with Well 1A
- Permitted and bid Nashua Street Culvert Replacement, 132 Oak Ridge Drive Rain Garden, and 43A Groton Harvard Outfall Improvement
- Obtained & implemented Shared Streets Grant (Rail Trail X-ing and Wayfinding)

Ongoing Capital (Draft)

TOWN OF AYER CAPITAL BUDGET STATUS - November 2021 DEPARTMENT OF PUBLIC WORKS

Division	Item Requested	Amount	Status
Administration	Main St & Columbia Street Design Engineering	\$200,000	25% design drafted. Working with MassDOT for design exception for bike lanes.
Highway	Road Paving	\$200,000	Combining with Chapter 90 - High Street, Groton Shirley Road, have \$50,000 allocated toward West Main MassWorks
Highway	Barnum Rd Bridge Repair Engineering	\$30,000	Requires additional funding
Highway	West Main St Bridge	\$1,200,000	Project was bid and low bid was \$2.25M. DPW is evaluating alternatives
Stormwater	Stormwater Utility Implementation	\$25,000	Will begin with new Town Engineer
Stormwater	Stormwater Asset / Master Plan Grant	\$40,000	Field Work complete. Consultant reviewing data and developing Master Plan.
Water	Spec Pond PFAS Treatment	\$6,200,000	Under construction
Water	Annual Water Main Replacements	\$250,000	Completed water main replacement for Wright Road
Water	Filter Media Replacement	\$350,000	Completed Grove Pond Filter Plant, Spec Pond Filter Plant in procurement phase - waiting for PFAS plant construction to be out of the way
Wastewater	Inflow/ Infiltration Repairs	\$750,000	Apply remainder toward Westford Road Sewer Replacement
Wastewater	WWTP Upgrades	\$3,800,000	Under construction
Wastewater	Central Ave / Main Pumping Station Vale and Piping Upgrades	\$100,000	Preparing for Bid

Capital Issue - West Main St Bridge

West Main St Bridge was bid and was over budget (Oct 2020)

- Low bid - \$2,547,000
- Including engineering and contingencies total funding needed - \$3,170,000
- Funding available - \$1,700,000 (includes MassDOT Small Bridge Grant)

DPW is evaluating options

- Appropriate more funding and rebid as designed
- Modify design to reduce cost, rebid and appropriate additional funding at future TM

West Main St Bridge Potential Cost Savings

Eliminate staged construction (requires detour)– savings \$750K

- Change foundation design – savings \$200k to \$400K

Alternative designs:

- Reduce the bridge span – Design is 26 ft and current culvert is 10.5 ft.
- Steel beam type bridge instead of a precast concrete bridge
- Deep Pile foundation type design

DPW General Fund Capital Plan

Engineering Division

	Item Requested	FY23	FY24	FY25	FY26	FY27
1	Main Street Decorative Street Light Upgrades	\$0	\$70,000	\$0	\$0	\$0
2	DPW Hybrid SUV (Replace 2010 Ford Escape)	\$35,000	\$0	\$0	\$0	\$0
Yearly Totals		\$35,000	\$70,000	\$0	\$0	\$0

DPW Hybrid SUV (Replace 2010 Escape)

- \$35,000



DPW Hybrid SUV (Replace 2010 Escape)

- \$35,000

Current vehicle is used by the Business Manager and Town Engineer

Vehicle is nearing the end of its useful life, heavily rusted, uptick in maintenance

Price based on State Bid for similar vehicles

DPW General Fund Capital Plan - Highway Division

	Item Requested	FY23	FY24	FY25	FY26	FY27
1	Road Paving	\$85,000	\$85,000	\$85,000	\$85,000	\$85,000
2	1-Ton Pick up truck w/plow	\$60,000	\$0	\$0	\$0	\$0
3	Salt storage facility	\$0	\$0	\$400,000	\$0	\$0
4	Highway Garage Renovate Existing FY23 Design, FY24 Construction	\$400,000	\$4,700,000	\$0	\$0	\$0
5	Highway Garage Roof Repair	\$20,000	\$0	\$0	\$0	\$0
6	6-Wheel Dump Truck w/plow and spreader	\$0	\$0	\$250,000	\$0	\$0
7	W Main St Bridge Replacement - Additional funds	PLACE HOLDER	\$0	\$0	\$0	\$0
8	Barnum Rd Bridge Repairs (Design / Construction)	\$70,000	\$350,000	\$0	\$0	\$0
9	Sandy Pond Road Sidewalk Design	\$25,000	\$0	\$0	\$0	\$0
Yearly Totals		\$660,000	\$5,135,000	\$735,000	\$85,000	\$85,000

Road Paving \$85,000

Road Paving funding is currently from MassDOT Chapter 90 and Town Capital Appropriation

Annual Chapt 90 amount = \$240K

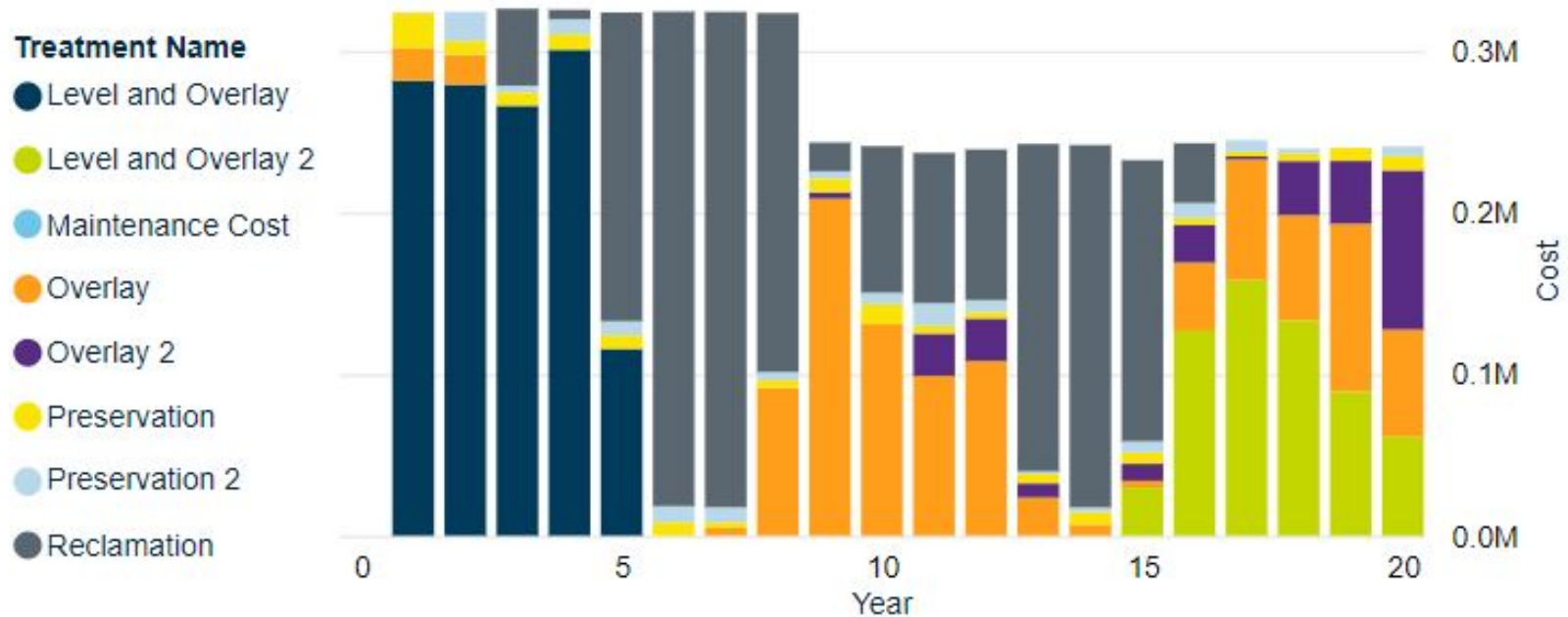
Ayer Pavement Management Model (Predictor)

- Town wide PCI = 72 (out of 100)
- Predictor Pavement Model indicates a budget of \$325,000 will raise PCI to 80 (acceptable) after 8 years and then likely maintain via Chapter 90

Additional funding will allow us to keep up with the Town needs

Paving/preservation projects include Third St, West Main Street, Birch St, Brook St, McDowell St

Road Paving \$85,000



1-ton Pickup with Plow- \$60,000

Replaces 2006 Chevy Silverado

Continues plan to maintain and upgrade fleet

Front-line vehicle for snow plowing operations

Price based on State Bid for similar vehicles and recent quote



DPW Facilities CIP

DPW Garage was constructed in 1970. DPW space needs, operations and building codes have changed significantly.

Public Works Feasibility Study determined that Ayer DPW needs 35 to 41K SF

Current facility:

- 8700 SF
- No wash bay, material /parts store room, electrical/mechanical rooms, fluid storage
- No staff locker room or kitchen facilities
- No meeting / training/ conference room
- Poor ventilation / safety / fire suppression

FY2018 Upgrades:

- Highway Storage Garage and DPW Administrative Building Operations Center

Existing DPW Facilities



Existing DPW Facilities



Existing DPW Facilities

FY 2018 IMPROVEMENTS



HIGHWAY STORAGE GARAGE



DPW ADMINISTRATIVE OPS CENTER

Benefits of Upgraded DPW Facility

- Code compliant and safe work environment for Town employees
 - Protect the Town's multi-million dollar investment in vehicles and equipment
 - More efficient workspace and response times
 - Creates a consolidated public works operations improving overall efficiencies for the department
 - Eliminates the need to invest money (band-aids) in the existing substandard facility
-



Highway Garage Renovate Existing FY23 Design, FY24 Construction

Next Phase of DPW CIP

Bring building to code

- Constructed in 1970, office addition in 90's
- Deficiencies include but are not limited to:
 - Plumbing code
 - Fire code
 - OSHA / Safety
 - ADA compliance
 - Mechanical code (insulation and ventilation)
 - Vehicle washing

Building envelope and systems have exceeded their useful life

First phase is design proposed for FY23

Cost is based on Needs Study inflated to present costs

Highway Garage Roof Repair

Highway garage roof is in poor condition, Contractor assessment:

- Leaks
- EPDM membrane tearing/failing due to age and UV exposure
- Failure of termination bars and rotted wood blocking
- Saturated, failed insulation

Failing conditions are a potential safety and structural hazard

Received 3 quotes:

1. Repair areas with current issues = ~\$10k (estimate extend life 3-years)
2. Repair entire perimeter, seal all seams, flashing = ~\$20k (estimate extend life 10-years)
3. Replacement = ~\$70k

Highway Garage Roof Repair



Photo 4

EPDM membrane hanging off perimeter.

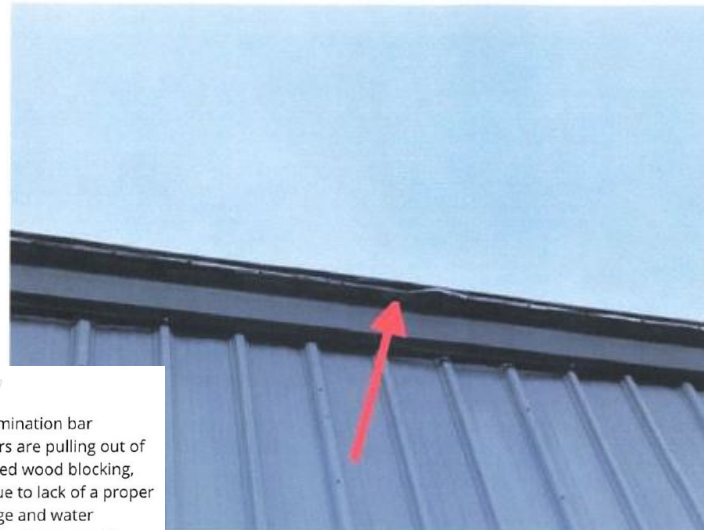


Photo 6

Termination bar/perimeter failure.



Photo 9

The termination bar fasteners are pulling out of the rotted wood blocking, likely due to lack of a proper drip edge and water infiltrating the assembly. The EPDM membrane is also shrinking and tearing from UV exposure.

Barnum Road Bridge Repairs

Bridge is owned by the Town and inspected every two years by MassDOT. (Note: Span is 62-ft = Bridge)

Recent reports identify deficiencies:

- Abutments, wingwalls, timber piles, scour, bridge slab, sidewalk beam

Price is based on an engineering and permitting proposal. Note: \$30,000 previously allocated to design via Capital.

Potential construction funding through IIJA?

Barnum Road Bridge Repairs



Photo 24: Rot to the battered brace pile at the North end of bent #2.



Photo 6: Spall to the center longitudinal joint in span #1 looking East.

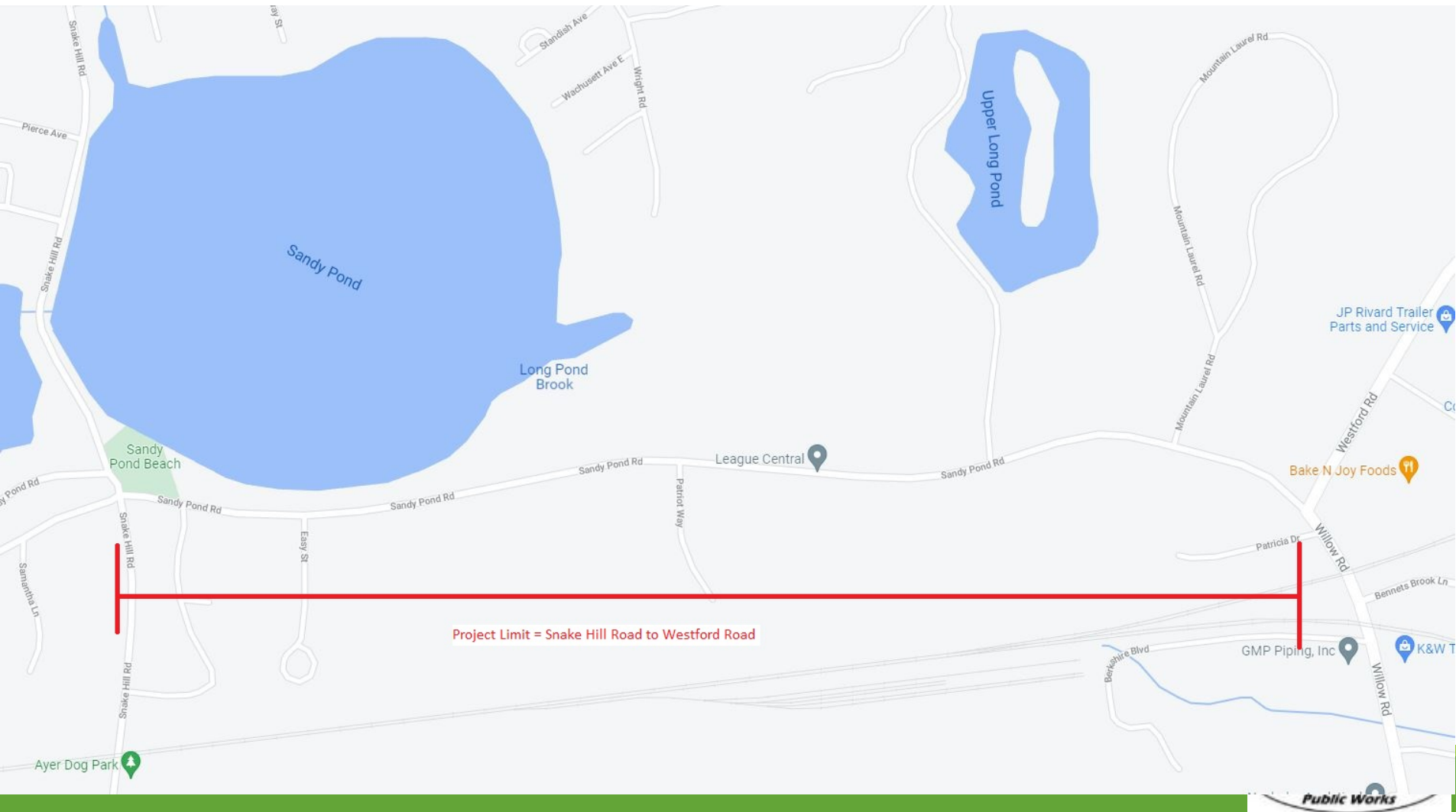


Photo 22: Severe undermining of the East breastwall/wingwall exposing the pile.



Photo 19: Spalls to the underside of the North sidewalk beam in span #3.

Sandy Pond Road Sidewalk Design



Sandy Pond Road Sidewalk Design

Design of a sidewalk from Snake Hill Road to Westford Road.

Project is identified in Town's Complete Streets Prioritization Plan. DPW has also received several requests for a sidewalk in this location.

Funding request will provide preliminary design and cost estimate for the project. The construction would likely be completed separately by submission for Complete Streets Grant funding and/or other available grants.

Design will look at:

- Property/ROW impacts
- Environmental Permitting
- Design Criteria (sidewalk vs multiuse path)

DPW General Fund Capital Plan

Stormwater Capital Plan

	Item Requested	FY23	FY24	FY25	FY26	FY27
1	Stormwater Biofiltration/Outfall Improvements	\$50,000	\$0	\$50,000	\$0	\$50,000
2	Balch Pond Dam Repairs Phase 2- Dam Design & Permitting Phase 3 - Dam Modifications	\$0	\$52,000	\$300,000	\$0	\$0

* Move to Operating Budget as recurring cost

FY23 Through FY27
Capital Improvement Program

Water & Wastewater Requests

AYER DEPARTMENT OF PUBLIC WORKS

PRESENTED

NOVEMBER 17, 2021



Proposed 5 Year CIP

Water Division

	Item Requested	FY23	FY24	FY25	FY26	FY27
1	Annual Water Main Replacements	\$300,000	\$300,000	\$300,000	\$350,000	\$350,000
2	Utility Truck with Plow	\$60,000	\$0	\$0	\$0	\$0
3	Washington Street Water Tank Painting	\$0	\$450,000	\$0	\$0	\$0
4	Spec Pond Well 3 New Source Approval	\$120,000	\$0	\$0	\$0	\$0
5	Spec Pond Well 3 Pumping Station and Transmission Main	\$0	\$250,000	\$1,750,000	\$0	\$0
6	Spec Pond GAC Upgrade for Well 3	\$0	\$0	\$0	\$585,000	\$0
7	Spec Pond GAC Media Replacement	\$0	\$0	\$168,000	\$0	\$168,000
8	Grove Pond Well 6 Replacement Well	\$0	\$0	\$0	\$120,000	\$0
9	Grove Pond Well 7 Replacement Well	\$0	\$120,000	\$0	\$0	\$0
10	Grove Pond Well 8 Replacement Well	\$0	\$0	\$0	\$0	\$120,000
11	Spec Pond Well Transmission Main Replacement	\$600,000	\$0	\$0	\$0	\$0
12	Portable Generator - Split with WW	\$75,000	\$0	\$0	\$0	\$0
13	Water Meter Reader Vehicle	\$35,000	\$0	\$0	\$0	\$0
	WATER ENTERPRISE TOTAL	\$1,190,000	\$1,120,000	\$2,218,000	\$1,055,000	\$638,000

*** Move to Operating Budget as recurring cost**

Annual Water Main Replacements

Annual Capital request to replace aging water mains with poor rating

Budget for **\$300K** per year (approx. 2000 ft.)

FY23 projects include Rosewood Ave and Whitcomb Ave

In-house engineering to maximize pipe replacement value

Continue to apply for grant funding



Water Utility Truck (replace 2003 Chevy)

1 Ton Pickup Truck with Utility Body and Plow

Replaces a 2003 Chevy Utility Truck with 128K miles

Utilized for the operation and maintenance of the water system

Front-line plow vehicle

Upgrade aging fleet

Ensure reliability in response to emergency repairs and snow plowing operations

Purchase off State Bid

Spec Pond Well 3 New Source Approval

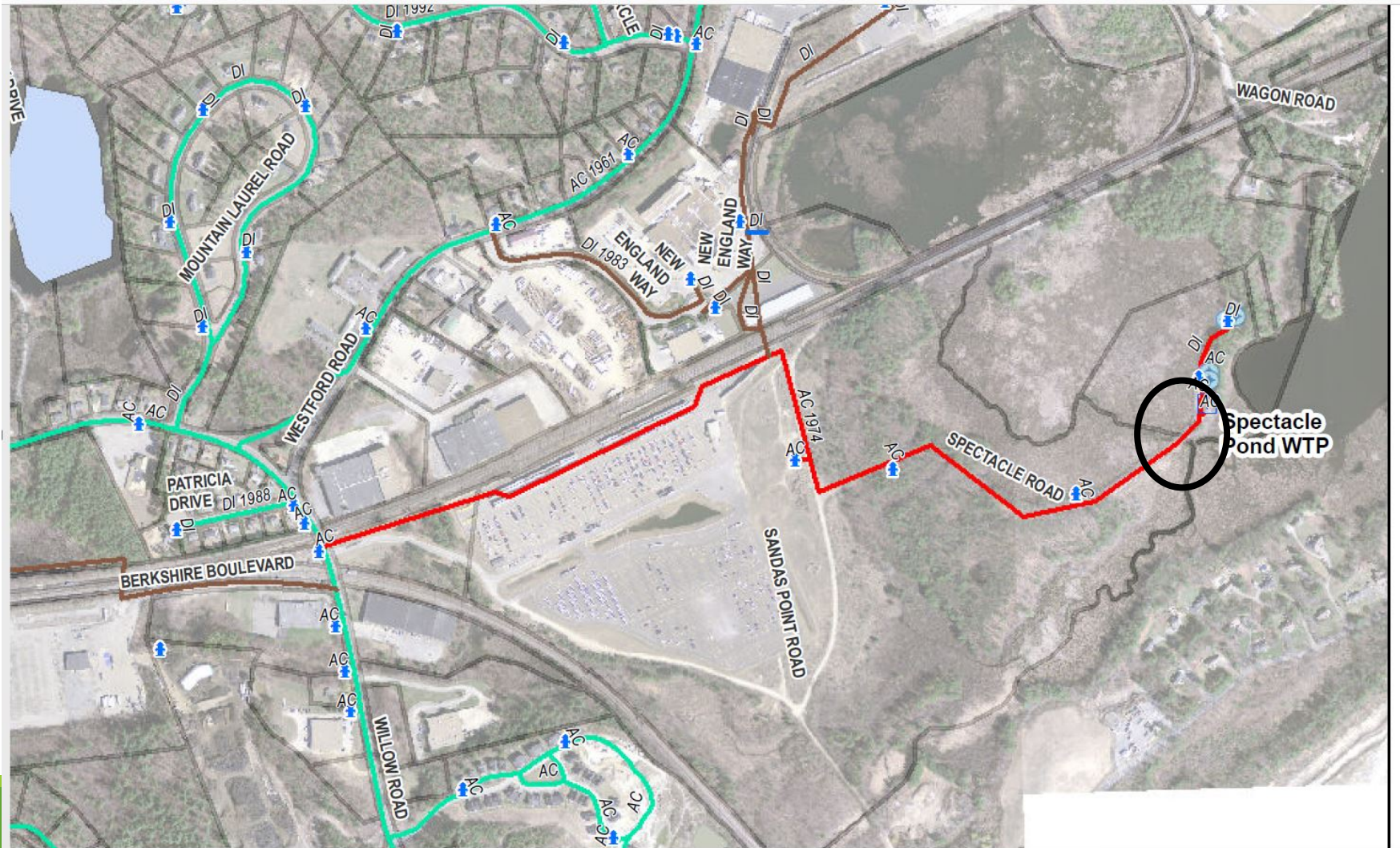
DPW-Water owns parcel Off NEMCO Way

Test well data indicates location is favorable for municipal water supply

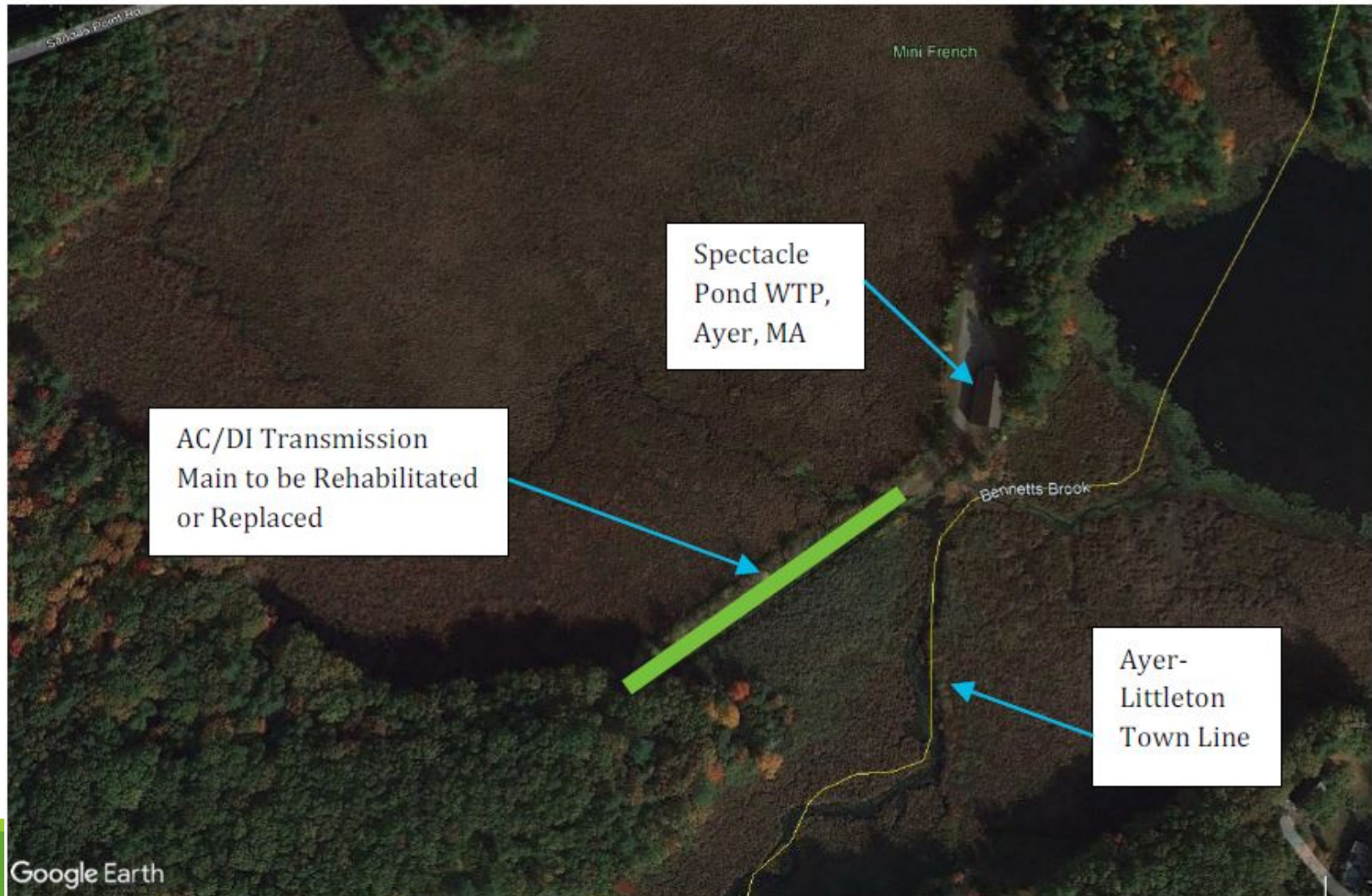
Request is for New Source Approval through MassDEP



Spec Pond Well Transmission Main Replacement



Spec Pond Well Transmission Main Replacement



Spec Pond Well Transmission Main Replacement

Sole transmission main from Spec Pond WTP traverses cross-country to Willow Road

Water Main break DATE in the area of a culvert crossing resulting in emergency repair. Challenging repair (depth, dewatering, main size).

Break analysis identified pin hole leaks in pipe due to external corrosion.

Engineering alternative analysis identified \$600k total project cost to replace corroded transmission main.

Criticality of location ranks high – if we do nothing further emergency repairs will likely be required and service interruptions.

ARPA?

Trailer Mounted Emergency Generator – Split with Wastewater

Water and Wastewater have 6 large generators for emergency power. In the past 3 years, we've had generator failures requiring rental of emergency generators.

- Maintain ability to continue to provide water/wastewater service.
- Generator rental requires lead time, causes service interruption.

Price based on dealer costs. Grant opportunities would be sought.



Water Meter Reader Vehicle (replace 2009 Ford)

Vehicle is used to perform meter replacements and reads

Replaces a 2009 Ford Ranger with body rust and mechanical issues

Vehicle will be able to store equipment and tools for the meter reader's work

Ford Transit or similar

Ensure reliability in response to emergency repairs

Upgrade aging fleet

Purchase off State Bid



Proposed 5 Year CIP Wastewater Division

	Item Requested	FY23	FY24	FY25	FY26	FY27
1	Inflow/ Infiltration Repairs	\$0	\$0	\$750,000	\$750,000	\$750,000
2	WWTP Upgrades	\$0	\$0	\$3,500,000	\$0	\$3,300,000
3	Portable Generator - Split with Water	\$75,000	\$0	\$0	\$0	\$0
4	Westford Road Sewer Replacement	\$600,000? \$1,200,000	\$0	\$0	\$0	\$0
5	Sandy Pond Road Sewer Rehabilitation	\$0	\$2,500,000	\$0	\$0	\$0
6	Pickup Truck Replacement	\$0	\$40,000	\$0	\$0	\$0
7	Bennetts Brook Pump Station Upgrades	\$0	\$0	\$0	\$150,000	\$0
WASTEWATER ENTERPRISE TOTAL		\$1,275,000	\$2,540,000	\$4,250,000	\$900,000	\$4,050,000

***FY22 I/I budget can be used toward project**

Westford Road Sewer Repair

Sewer in Westford Road collapsed on March 25, 2021 resulting in costly repair, sewer overflow and property impacts

Pipe is asbestos cement (AC) installed in 1978

Pipe services Mulberry Circle, Loon Hill, Nemco Way, New England Way and Groton interconnection, including Stony Brook pumping station discharge

Flow is between 150,000 and 220,000 gallons per day

AC pipe showed significant internal corrosion due to hydrogen sulfide sewer gas

Westford Road Sewer Repair



Westford Road Sewer Repair



July 2021

WESTFORD ROAD AREA CENTER



The map is created from a subset of data from the Ayer Geographic Information System (GIS) database. The Town of Westford makes no claims, or representations, or warranties concerning the data.

Westford Road Sewer Repair

Repaired collapsed segment from manhole to manhole because CIPP lining not possible in location of break.

Prepared to CIPP line the remaining sections but learned manholes are severely deteriorated, unsafe for entry.

Replacement required (approximately 770 LF)

\$1.2M project cost based on engineer's preliminary estimate.

Note: Bi-Board has recommended \$700,000 for ARPA, remainder would be from current I/I and this appropriation

Thank You for Your Consideration of
These Important Town Infrastructure
Projects



DAN VAN SCHALKWYK, P.E.

DIRECTOR OF PUBLIC WORKS