

September 7-8, 2023

Town of Westford Selectboard
1713 VT Route 128
Westford, VT 05494

Stone Project No. 20231007

Subject: Westford Community Wastewater Project Description, Costs, Funding, and Bonding Authority Recommendation

Dear Members of the Selectboard,

Stone Environmental (Stone), in collaboration with Birchline Planning LLC, is pleased to provide a description of the Westford Community Wastewater Project, summary of project cost information and State and Federal project funding secured to date, and recommendations for the bonding authority the Selectboard may include in a *Resolution of Necessity for Capital Construction Project* and *Official Warning, Special Town Meeting of the Town of Westford*, to be held on November 7, 2023.

In order to maintain the Town's Village Wastewater State American Rescue Plan Act (ARPA) grant award, which agreement contains aggressive interim deadlines including for holding a bond vote and for completion of final design and permitting by September 30, 2024, it is a necessity that the Town move forward with the proposed November 7, 2023 Special Town Meeting as further justified below.

Westford Community Wastewater Project Description

Wastewater system improvements within the State Designated Village Center and its adjacent buffer, namely, septic tank effluent pump (STEP) stations with electrical connections, low-pressure service force mains connecting to low pressure force main within roadway rights-of-way, and equalization and dosing station and control building on Brookside Road with in-ground disposal system of 24,300 gallons per day design capacity adjacent to the Maple Shade Town Forest. The project is further described in the engineering plan titled *Westford Community Wastewater Plans – 30% Design, Stone Environmental, Inc (August 2023)*.

Construction and Total Project Cost Estimates

Preliminary Opinions of Probable Cost for collection and treatment system construction (\$1,641,000); control building, equalization tanks, dosing station, and disposal system construction (699,800); construction contingency (\$702,300); non-construction costs (\$823,800); and total project cost (\$3,866,900) are documented in the attached technical memo titled *Westford Community Wastewater - Revised Construction and Total Project Cost Estimates (August 15, 2023)*. Construction cost contingency was set at 30% due to observed volatility in the construction sector, sustained supply chain and labor issues, and following consultation with and guidance from Vermont DEC Water Investment Division (WID) personnel.

State and Federal Grant Funds Awarded

The Town of Westford has secured project funding via grants from a range of local, State, and Federal sources, totaling approximately \$4,035,300, as summarized in the attached document *Community Wastewater Project - Funding Stack (August 29, 2023)*.

Following completion of the funding stack, the Town Planner, Stone, and Birchline consulted with Vermont DEC – Water Investment Division personnel to determine eligibility and matching requirements amongst the multiple awards. The outcome of this consultation is documented in the attached *Town of Westford, Community Wastewater Disposal System – Project Cost Summary (PCS) spreadsheet, August 30, 2023*. The Town’s Community Restoration and Revitalization Program (CRRP) grant is not Federally designated, and thus may be utilized as the 50% match for the Federal Northern Borders Regional Commission, Economic Development Administration (NBRC or NBRC/EDA) grant.

Bonding Authority Recommendation

Of the grant funding awarded, approximately \$4,009,000 is presently eligible. Awarded funding is thus approximately \$142,000 above estimated total project cost, as documented in the attached summary *Westford Community Wastewater Disposal System Project Costs, Funding, and Bond Recommendation, August 31 and September 5, 2023*.

In the 2023 construction season, Stone’s engineers are observing sustained volatility in the bidding environment, supply chain issues, and contractor responses to bid requests well in excess of engineers’ construction cost opinions. Vermont DEC WID personnel confirmed that these issues remain widespread, with projects funded via the Clean Water State Revolving Fund reporting construction bids for water and wastewater system construction or replacement coming in 50% or more above the engineers’ construction cost estimates. We thus recommend planning for a project funding contingency of at least 50% of construction cost and thus that the Selectboard request the voters approve a minimum bond amount of \$326,000 or other bonding authority not to exceed \$400,000.00.

Sincerely,



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August 15, 2023

Melissa Manka
 Westford Town Planner
 1713 VT Route 128
 Westford, VT 05494
 802-878-4587

Submitted via e-mail to planner@westfordvt.us

Stone Project No. 20231007

Subject: Westford Community Wastewater - Revised Construction and Total Project Cost Estimates

Dear Melissa,

We are pleased to present revised construction and total project cost estimates for the Westford Community Wastewater Disposal System. Green Mountain Engineering (GME) submitted the Supplemental Preliminary Engineering Report (PER) in March 2022. Upon receiving notice to proceed with preliminary engineering in March 2023, Stone Environmental, Inc. (Stone) advanced topographic and utility survey, bedrock probes, and interior structure inspections. In parallel with design work, we updated construction unit costs and quantities to reflect the proposed design. We also engaged On Point Engineering & Consulting, LLC to provide a third party audit of construction material quantities and unit costs.

Estimated collection and treatment system construction, disposal system construction, and total project costs are summarized below.

	Feb. 2022 Supplemental PER	August 2023 Preliminary Design
Collection System Construction	\$1,544,300	\$1,641,000
Control Building and Subsurface Drip Disposal Construction	\$541,000	\$699,800
Construction Contingency	\$208,500	\$702,300
Total Construction Cost	\$2,293,800	\$3,043,100
Total Project Cost	\$2,848,200	\$3,866,900

All cost values in this table rounded to nearest \$100.

Construction cost contingencies applied: 10% in Feb. 2022 Supplemental PER, 30% in August 2023 Preliminary Design.

The attached, preliminary Opinions of Probable Cost for the collection and treatment system, drip disposal system, and total project cost follow the format and level of detail provided in the February 2022 Supplemental PER. The following major changes are reflected in the August 2023 cost estimates:

- Bedrock probing completed in June 2023 allowed reduction in the total quantity of removal required. However, unit cost increases for bedrock removal led to a similar construction cost.

- Increased costs for concrete resulted in increased unit cost for septic tank effluent pump (STEP) tanks and control building/equalization tanks. Equalization tank sizes were also increased in consultation with vendors.
- A centralized pump station near the Town Common was removed from the design, and the collection system layout was simplified, following consultation with Orenco Systems and that vendor's completion of hydraulic grade line analysis for the proposed collection system.
- Material and labor costs increased for building and electrical connections at the control building and disposal area pump station.
- Construction cost contingency was increased from 10% to 30% due to observed volatility in the construction sector and following consultation with and guidance from Vermont DEC Water Investment Division personnel.

Though still preliminary in nature, the work undertaken to advance preliminary design has refined many of the substantial unknown factors remaining from GME's preliminary engineering work. We look forward to discussing the revised opinions of probable cost with you, the Planning Commission, Selectboard, and other stakeholders in the coming weeks.

Sincerely,



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Town of Westford
Westford Community Wastewater Disposal System - 24,300 GPD
Opinion of Probable Cost - Collection System
8/15/2023

Description	Unit	Quantity	Unit Price	Total Amount
A - Sewers				
A1 - 3" HDPE DR11 LPS	LF	1,300	61.00	79,300.00
A2 - 4" HDPE DR11 LPS	LF	3,300	63.50	209,550.00
A3 - 2" HDPE DR11 LPS	LF	4,000	36.00	144,000.00
A4 - 4" Gravity Sewer Services	LF	900	58.00	52,200.00
SUBTOTAL				485,050.00
B - Sewerline Appurtenances				
B1 - Air Release Valve and Enclosure	EA	4	10,287.00	41,148.00
B2 - Clean out assembly	EA	4	1,650.00	6,600.00
B3 - 2" Shut-off	EA	24	385.00	9,240.00
B4 - Sewer Stub	EA	6	600.50	3,603.00
B5 - 3" Isolation Valve	EA	3	1,056.00	3,168.00
B6 - Crossing Sleeve	LF	70	74.00	5,180.00
B7 - Cleanouts	EA	24	94.50	2,268.00
B8- 1,500 Gallon STEP Tanks	EA	21	12,127.00	254,667.00
B9 - 2,000 Gallon STEP Tanks	EA	3	13,502.00	40,506.00
B10 - 2,500 Gallon STEP Tanks	EA	1	16,083.00	16,083.00
B11 - 5,000 Gallon STEP Tank	EA	1	39,098.50	39,098.50
SUBTOTAL				421,561.50
C - Earthwork				
C1 - Bedrock Removal	CY	1,000	197.00	197,000.00
C2 - Boulder Excavation	CY	54	31.50	1,701.00
C3 - Misc. Extra and Below Grade Excavation	CY	34	42.50	1,445.00
C4 - Excavation & Replace Contaminated Soils	TON	230	192.50	44,275.00
C5 - Fine Grading / Mulching / Grass Seed	SY	9,225	7.00	64,575.00
SUBTOTAL				308,996.00
D - Roadwork				
D1 - Permanent Bit. Pavement Repair	SY	700	104.50	73,150.00
D2 - Permanent Gravel Road & Drive Repair	SY	3,200	27.50	88,000.00
SUBTOTAL				161,150.00
E - Incidental Work				
E1 - Class B Concrete	CY	10	550.00	5,500.00
E2 - Calcium Chloride	TON	2	880.00	1,760.00
E3 - Rigid Insulation	LF	9,005	6.50	58,532.50
E4 - Uniform Traffic Officers	HRS	20	93.00	1,860.00
E5 - Traffic Control	HRS	700	66.00	46,200.00
E6 - Silt Fence	LF	406	1.50	609.00
E7 - Degradable Erosion Control Blankets	SY	160	3.00	480.00
E8 - Temporary Stone Check Dams	EA	5	115.00	575.00
E9 - House Replumbs	EA	3	1,650.00	4,950.00
E10 - Septic Tank Deactivation	EA	26	1,320.00	34,320.00
SUBTOTAL				154,786.50
F - Lump Sum Items				
F1 - Tree Removal / Arborist	LS	1	9,900.00	9,900.00
F2 - Preparation of Site and Miscellaneous Work (5% of construction)	LS	1	76,577.00	76,577.00
F3 - Bonds (1.5% of construction)	LS	1	22,973.00	22,973.00
F4 - Contingency (30% of all)	LS	1	492,298.00	492,298.00
SUBTOTAL				601,748.00
TOTALS				2,133,292.00
USE				2,134,000.00

Notes: The estimate is based on PRELIMINARY DESIGN phase estimates for construction and engineering. The quantities noted in the estimate are based on survey and GIS scaled unit quantities from scenario's developed by Stone Environmental. The quantities and unit prices will likely vary based on the actual final design.

Town of Westford
Westford Community Wastewater Disposal System - 24,300 GPD
Opinion of Probable Cost - Drip Disposal System
8/15/2023

DESCRIPTION	Unit	Quantity	Unit Price	Total Amount
Silt Fence	LF	600	\$2	\$900
2" HDPE Forcemains, Multi-pipe trench	LF	2,200	\$34	\$73,700
Temporary Road				
1. Excavation	CY	530	\$20	\$10,335
2. Filter Fabric	SY	1,585	\$5	\$7,925
3. Gravel	CY	530	\$47	\$24,910
Mound sand allowance	CY	200	\$69	\$13,800
Topsoil, Fine Grade, Seed and Mulch	SY	7,000	\$7	\$49,000
Oakson Supplies Per Proposal (tubing, header, manifold, pumps etc.)	LS	1	\$198,000	\$198,000
Start-Up/Testing	LS	1	\$3,000	\$3,000
Control Building (16' x 16')	EA	1	\$75,000	\$75,000
Tanks (2) (10,000 Gallons)	L.S.	1	\$112,488	\$112,488
Excavation / Yard Piping	L.S.	1	\$16,500	\$16,500
Controls / Wiring / Telemetry	EA	1	\$22,000	\$22,000
New Electrical Service (new pump station)	EA	1	\$11,000	\$11,000
Backup Generators & Appurtenances	EA	1	\$16,500	\$16,500
Preparation of Site and Miscellaneous Work (8%)	LS	1	\$54,569	\$54,569
Bonds (1.5%)	LS	1	\$10,232	\$10,232
Contingency (30%)	LS	1	\$209,958	\$209,958
SUBTOTAL				\$909,817
USE				\$910,000

Notes: The estimate is based on PRELIMINARY DESIGN phase estimates for construction and engineering. The quantities noted in the estimate are based on survey and GIS scaled unit quantities from scenario's developed by Stone Environmental. The quantities and unit prices will likely vary based on the actual final design.

Town of Westford
Westford Community Wastewater Disposal System - 24,300 GPD
Opinion of Probable Total Project Cost
8/15/2023

Description	Total Cost
Construction	
Wastewater Collection System	\$ 2,134,000
Wastewater Disposal System	\$ 910,000
Construction Subtotal	\$ 3,044,000
STEP I - Preliminary Engineering	
STEP I - Preliminary Engineering Subtotal	\$ 39,050
STEP II - Preliminary and Final Design - GME Step II	
STEP II - Preliminary and Final Design - GME Step II Subtotal	\$ 86,764
STEP II - Preliminary and Final Design Engineering - Stone Step II	
Preliminary Design Standard Engineering Services (Basic and Special)	\$ 48,477
Preliminary Design Non-Standard Services (Basic and Special)	\$ 63,048
Final Design Standard Engineering Services (Basic and Special)	\$ 81,683
Final Design Non-Standard Services (Basic and Special)	\$ 40,430
STEP II - Preliminary and Final Design Subtotal	\$ 233,638
STEP III - Engineering Services	
Standard Engineering Services	\$ 200,000
Non-Standard Engineering Services	\$ 70,000
STEP III - Engineering Services Subtotal	\$ 270,000
Other Costs	
Legal	\$ 30,680
Easement Acquisition/Current Use Penalty	\$ 20,000
Outreach	\$ 5,000
Permit Fees	\$ 6,000
Short term interest	\$ 17,760
Birchline Planning - Step 2	\$ 49,500
Birchline Planning - Step 3	\$ 34,500
Bond Vote - Town expense - printing, tabulator, officials, mailings	\$ 10,000
Single Audit	\$ 20,000
Other Costs Subtotal	\$ 193,440
SUBTOTAL	\$ 3,866,892
USE	\$ 3,867,000

Notes: The estimate is based on PRELIMINARY DESIGN phase estimates for construction and engineering. The quantities noted in the estimate are based on survey and GIS scaled unit quantities from scenario's developed by Stone Environmental. The quantities and unit prices will likely vary based on the actual final design.

Community Wastewater Project - Funding Stack

As of 8/29/23

AWARDED					
Funding Source	Designation	Grant/ Subsidy Award	Town Match/Liability	Requirements & Restrictions	Notes
CWSRF Loan/Subsidy	Non-Federal	\$269,525	\$19,525	N/A	for step 1 & 2 subsidy details: fy19 \$19,525 / fy20 \$125,000 / fy22 \$125,000
NBRC/EDA	Federal	\$466,194	TBD	50% match w/ 80% federal funding cap on total project cost / number represents max amount, unlikely we will spend full award due to fed funding caps / contingent upon successful bond vote	for step 3 (for control building & disposal field only)
State ARPA	Federal	\$2,377,136	TBD	up to 90% of total project cost w/ no fed funding restrictions / partially contingent upon successful bond vote	for step 2 (after subsidy) & 3
CRRP	Non-Federal (must confirm with other programs to use toward match)	\$757,472	\$0	no match required, award 20% of total project cost or 1m, whichever is less	for step 3
Local ARPA	Non-Federal	\$150,000	\$0	contingent upon successful bond vote	for step 3
TOTAL		\$4,020,327	TBD		
PENDING					
Funding Source	Designation	Grant/ Subsidy Award	Town Match/Liability	Requirements & Restrictions	Notes
Pollution Control Grant	Non- Federal	\$15,000	\$0	no match required / grant could be more	for step 0 - 3
TOTAL		\$15,000	\$0		
TOTAL ANTICIPATED GRANT/SUBSIDY FUNDING		\$4,035,327			

CWSRF Step Key:		Status:
Step 1	Preliminary Engineering & Environmental review	Completed in 2022
Step 2	Final Design & Permitting	In Progress
Step 3	Construction	TBD

Step 3 (Construction) Components	Primary Funding	Potential Match Funding
Disposal Field & Control Building	NBRC/EDA	State ARPA, Local ARPA, CWSRF Loan/Bond
Collection System	State ARPA	CRRP, Local ARPA, CWSRF Loan/Bond

* Estimated Total Project Cost, Dated August 15, 2023: \$3,866,900

Westford Community Wastewater Disposal System Project Costs, Funding, and Bond Recommendation

Submitted by Amy Macrellis, Stone Env. and J.B. Hinds, Birchline Planning, August 31, 2023

Project Costs (rounded to nearest \$100)	Total	Calculation Key
Construction Cost (30% Opinion, August 15, 2023)	\$ 2,340,800.00	A
Contingency (30% of Construction Cost)	\$ 702,300.00	A x 30% = B
Non-Construction Costs	\$ 823,900.00	C
Total Project Cost incl. 30% Construction Contingency	\$ 3,867,000.00	A+B+C=D
Design and Construction Project Funding Sources		
NBRC Grant (Federal)*	\$ 454,909.00	
CWSRF Subsidy 1	\$ 19,525.00	
CWSRF Subsidy 2 + 3	\$ 250,000.00	
Local ARPA Funding	\$ 150,000.00	
ARPA Grant	\$ 2,377,136.00	
CRRP Grant	\$ 757,427.00	
Total Funding Awards	\$ 4,008,997.00	E
Project Funding Contingencies - Min. 50% of Construction Cost Recommended		
50% of Construction Cost	\$ 1,170,400.00	A x 50% = F
Awarded Funding Above Total Project Costs	\$ 141,997.00	E - D = G
Construction Cost Contingency	\$ 702,300.00	B
Minimum Recommended Bond Amount	\$ 326,103.00	H = F-G-B

*NBRC grant requires 50% match, maximum grant is \$466,194

Westford Community Wastewater Disposal System Project Costs, Funding, and Bond Recommendation as Percents of Construction Cost

Submitted by J.B. Jinds, Birchline Planning and Amy Macrellis, Stone Env.
per Planning Commission request, Sept. 5, 2023

Project Costs and Funding	Total	% of Construction Cost	Calculation Key
Total Project Cost	\$3,867,000		D
Construction Cost	\$2,340,800		A
30% of Construction Cost	\$702,240	30.0%	B
50% of Construction Cost	\$1,170,400	50.0%	A x 50% = I
Awarded Funding Above Total Project Costs	\$141,997	6.1%	G
Total Funding Awards	\$4,008,997		E

Summary of Bond Recommendations as % of Construction Cost

	Bond Amount	Bond Amount as % Construction Cost (A)	Total Construction Contingency (%)
Minimum recommended bond authority (H)	\$326,103	13.9%	50.0%
\$350,000 bond authority	\$350,000	15.0%	51.0%
\$400,000 bond authority	\$400,000	17.1%	53.2%