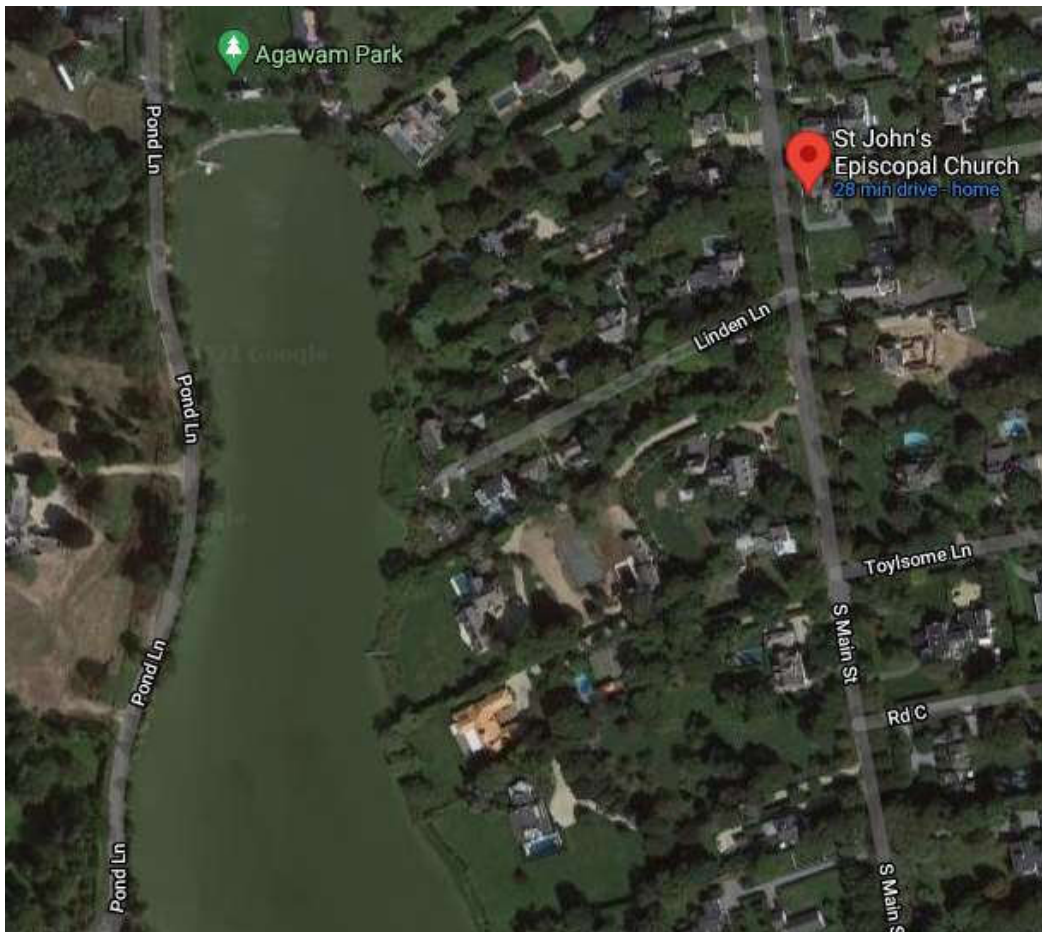


**2023 COMMUNITY PRESERVATION FUND WQIP Grant Application**

**Constructed Wetland Treatment System  
for  
St John's Episcopal Church**





**TOWN OF SOUTHAMPTON**  
**DEPARTMENT OF COMMUNITY PRESERVATION**  
**WATER QUALITY IMPROVEMENT PROGRAM**  
**St John's Episcopal Church - Constructed Wetland Treatment System**

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PROPOSAL SUMMARY

Project Applicant: St John's Episcopal Church  
 Project Title: St John's Episcopal Church - Constructed Wetland Treatment System  
 Project Manager Name: New York State Center for Clean Water Technology at Stony Brook University ("CCWT")

Name	Frank Russo
Title	Associate Director
Organization	CCWT
Address	1000 Innovation Rd, Suite 100, Stony Brook, NY 11794-6044
Phone	631-252-3797
Email	frank.russo.3@stonybrook.edu

Property owner (if different from Project manager organization):

Name	William McCoy
Affiliation	St John's Episcopal Church
Organization	St John's Episcopal Church
Address	100 S. Main St, Southampton, NY 11968
Phone	718-762-6683
Email	<a href="mailto:wemccoy@aol.com">wemccoy@aol.com</a>

Project Address: 100 South main St, Southampton, NY 11968

SCTM #(S)\_0904015000300022000

Type of Project (Check all that apply):  
 Reduction     Remediation     Restoration

**Proposal Summary:**

St Johns Episcopal Church seeks funding to replace an old cesspool system for their Church and Parish Hall with a new innovative/alternative onsite wastewater treatment system (OWTS). This project will be facilitated by the New York Center for Clean Water Technology at Stony Brook University ("CCWT"), with engineering advisory services from Drew Bennett, PE, an independent professional engineering firm. CCWT will be monitoring the system monthly for two years after installation to further basic research on OWTS's and demonstrate the advantages of this type of system.

The new system would be a Constructed Wetland Treatment System ("CWTS"), which is relatively novel technology for the Town of Southampton. This technology uses natural nitrogen cycles in a largely passive configuration to reduce nitrogen from onsite wastewater to levels consistent with the most effective commercial technologies. This project will demonstrate the unique benefits of CWTS's which can handle 2-3 gallons per square foot making them particularly good at absorbing wastewater flows with large surges of urine, characteristic of churches and schools.

The system lies within 250 yards of the highly impaired Agawam Lake. Given the hundreds of Town residents who visit the church annually, this project stands to serve as an excellent public demonstration project for CPF WQIP. This project will reduce Total Nitrogen in wastewater flowing into the Agawam Lake watershed by about 135 pounds/year.



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\*If additional information is needed to describe the project; a project narrative can accompany the application. Please limit the narrative to approximately 3 pages of project description, provide a summary of water quality benefits/objectives of approximately 2 pages and provide a cost estimate of approximately 2 to 4 pages with supporting estimates. Any additional materials should be focused specifically on the proposed project with references to other studies that are pertinent\*

**1. PROJECT TYPE (check all that apply)**

Must meet at least one of the definitions of "Water Quality Improvement Project" per State Law Chapter 551 cited above. Check all that apply.

- Wastewater Treatment
- Improvement Project Non-
- point source abatement and
- control Aquatic habitat
- restoration
- Note: Monitoring costs are only potentially eligible for CPF funding within Aquatic habitat restoration projects.**

**2. PRIORITY AREA(S) (check all that apply)**

Priority areas are defined in the [Water Quality Improvement Project Plan \(WQIPP\)](#).

- 303(d) Impaired
- High
- Medium
- Outside High and Medium priority areas\*

\*If Outside High and Medium priority areas, explain how the project is relevant to WQIPP goals.

Agawam Lake - Subwatershed Plan Final Rank 1 (highest)

**3. PROJECT DESCRIPTION**

**3a. Existing conditions of applicable groundwater/sub-watershed/waterbody and most recent and relevant data available (provide sources).**

For the past twenty years, monitoring by the Gobler Laboratory has demonstrated that Lake Agawam is plagued with annual, reoccurring toxic cyanobacterial blooms, also known as blue green algae. The specific cyanobacteria forming blooms in Lake Agawam including Microcystis and Anabaena that makes the toxins microcystin and anatoxin-a, which are gastrointestinal and neurotoxins, respectively. When first identified in the 20th century, these toxins were identified as fast death factor and very fast death factor, respectively, due to their ability to cause rapid mortality in mammals. NYSDEC has a comprehensive, blue-green algae monitoring program that tracks blooms in all 62 counties of NY from May through November. Since 2014, no lake in all of NYS has had blooms of blue-green algae more consistently than Lake Agawam. Given microcystin is a potent toxin of concern, it is regulated at the federal level by US EPA. In 2018, US EPA set a guideline threshold level of below 8 micrograms per liter for recreating in a water body. Since 2003, there have been more than 200 weeks during which Lake Agawam has exceeded this level, all during the months individuals might recreate within the Lake (May through October). In 2004, the fillets and visceral of fish



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caught in Lake Agawam were analyzed for microcystin and both types of tissue were found to contain microcystin above guideline level set by the World Health Organization (WHO). Experimental research performed in Lake Agawam since 2005 has consistently demonstrated that excessive nitrogen loading promotes the growth of Microcystis, cyanobacterial and the levels of microcystin in Lake Agawam (Gobler et al., 2007; Davis et al., 2010; Jankowiak et al., 2019). Modeling studies performed in 2008, 2017, and 2019 performed by the Gobler Laboratory have all demonstrated that 70% of nitrogen to Lake Agawam is from on-site septic systems within its watershed. The church was built long ago and the existing condition of its large capacity cesspool is non-compliant.

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**3b. How the proposed solution addresses the issue in the context of Reduction, Remediation and/or Restoration as per the CPF Water Quality Project Plan. Note all remediation and restoration projects must assure that reduction measures are also addressed.**

High nitrogen levels lead to algal blooms. (Gobler et al., 2004, 2011). CWTS's have demonstrated the capacity to remove total nitrogen in wastewater from average influent levels of 45-65 mg/L to effluent levels of 6-8 mg/L.

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**3c. Describe the proposed technology and its demonstrated efficacy in similar settings. May include published data.**

Constructed wetlands are a type of onsite wastewater treatment technology consisting of a septic tank, a recirculating wetland underlain by a gravel bed and, as proposed for this installation, a denitrifying sand/woodchip biofilter. Such configurations or components thereof have been used successfully to remove total nitrogen (TN) in wastewater at commercial and residential sites in many ecologically sensitive areas. A chart of the TN removal performance of a constructed wetland installed at Sylvester Manor on Shelter Island is included below.

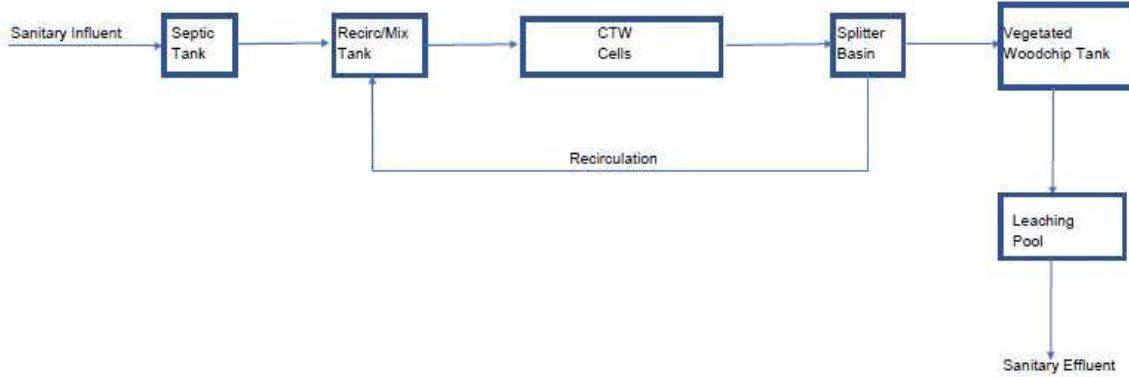
The treatment process in the proposed wetland relies on coupled nitrification and denitrification together with uptake of nutrients by plants. After solids settle-out in a septic tank, wastewater is pumped through a gravel bed overlaid by indigenous plants that promote both nitrogen removal and aeration / nitrification. As the wastewater is cycled thru the gravel bed, ammonia, urea and other reduced forms of nitrogen are oxidized to nitrate. A portion of the nitrate is cycled back to a chamber immediately downstream of the septic tank where it is denitrified (i.e. converted to inert N<sub>2</sub>- ~80% of the earth's atmosphere) and another portion is cycled to a drain field, consisting of sand and woodchips which also acts as a denitrifying biofilter.



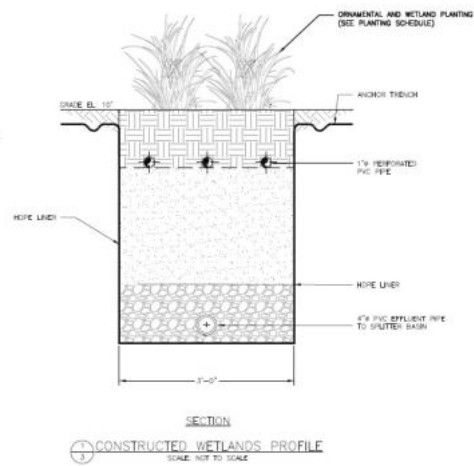
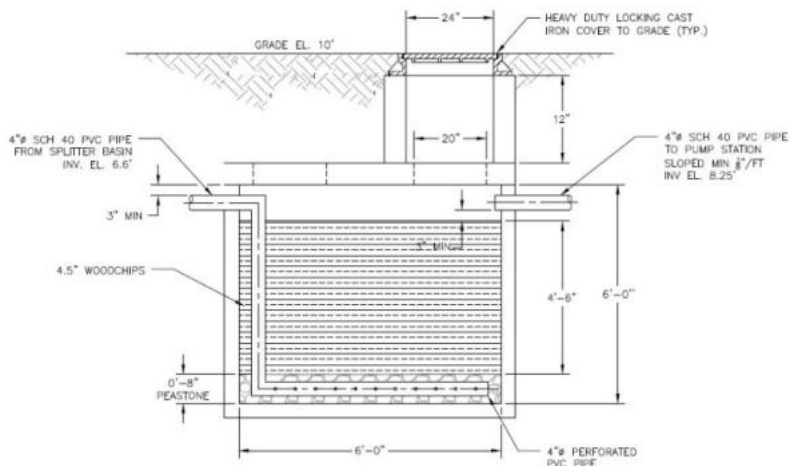
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TYPICAL PROCESS FLOW DIAGRAM FOR CONSTRUCTED TREATMENT WETLANDS



The picture below shows what a CWTS can look like with some added hardscape. The scale elevation drawing below is what is being proposed.

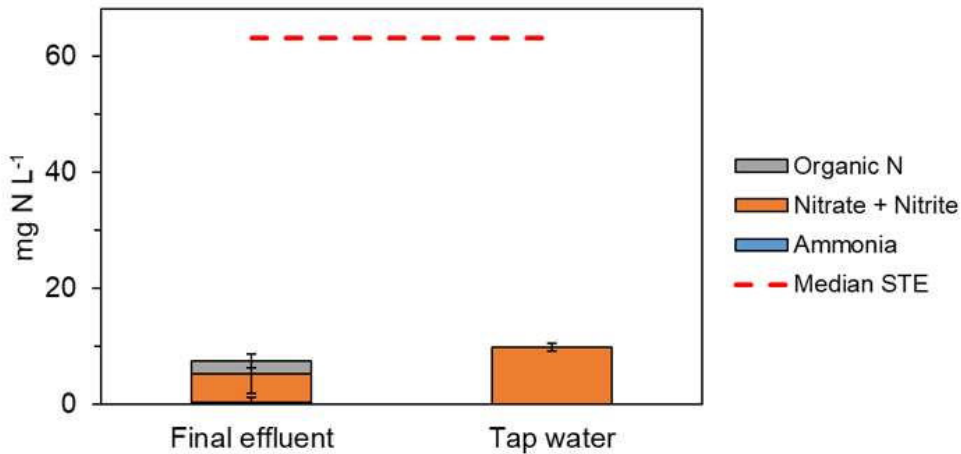




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**Performance summary over 3 years for the Sylvester Manor**



Above is the performance summary over 3 years for the Sylvester Manor constructed wetland located at 80 N Ferry Rd, Shelter Island, NY. Effluent numbers are averaged over the 2018, 2019, and 2021 seasons (plus one data point in 2020). Tap water was only sampled in 2020 and 2021. There is no straightforward influent sampling location, so we have included the median septic tank effluent TN concentration reported by [Lowe et al.](#) in their 2009 monitoring survey (63 mg N/L) as a reference point. This system is reducing N in household wastewater to less than 10 mg/L and even lower than regional tap water meaning this system is helping to protect both surface waters and drinking water on Shelter Island.

**Performance Data for Constructed Treatment Wetland in Brentwood, New York – Quarter 1, 2022**

Sampling Date	Analyte	Influent Concentration (mg/L)	Effluent Concentration (mg/L)
1/21/2022	Nitrogen, Total	23	1.5
2/16/2022	Nitrogen, Total	37	3.5
3/28/2022	Nitrogen, Total	46	2.5

Source: Roux, Inc.

The table above presents recent sampling data for an existing CTW located in Brentwood, New York. The CTW provides secondary treatment for 30,000 GPD of sanitary wastewater. As shown in the table above, sampling events from quarter 1 of last year indicate a total nitrogen removal efficiency of above 90% and those samples were taken during low temperature months.

Please see below for estimated nitrogen removal calculations for St John's Episcopal . Because this project is not yet in the final design phase, Homeport could not run a full model to estimate removal concentrations but based the estimate on available literature as shown below. Based on a design flow rate of 750 gpd, at 65 mg-N/L, the total estimated nitrogen loading to groundwater at St John's Episcopal is approximately 148 lbs/year with the existing sanitary system. Installation of a Constructed Wetlands Treatment System with final effluent of 6 mg/L at this site would potentially reduce the total nitrogen loading at the site by 135 lbs/year.

3d. How the project supports Town of Southampton, Suffolk County, NYSDEC, Long Island Nitrogen Action Plan (LINAP) or other adopted goals/policies (provide references with pages numbers).



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Aside from the immediate reduction in N loadings to local groundwater and Agawam Lake, the primary benefit to Southampton estuaries is in advancing CWTS technology under Suffolk County's Article 19 septic permitting program from Experimental to Pilot and then Provisional phase testing, a critical step to general use status on Long Island. The benefit to water quality is expected because the N removal efficiency of CWTSs represents a substantial improvement over levels achieved by commercial systems provisionally approved by Suffolk County which averaged 15 mg-N L-1.

3e. Review the following statements and indicate whether they are applicable to your project. For all "Yes" responses, please indicate how your project addresses the requirements indicated.

- | YES                      | N/A                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <b>If stormwater system or drainage is proposed:</b> The project must indicate compliance with the New York State Stormwater Design Manual (2015 and as updated).                                                                                                                                                                                                                                                                                                                                                                       |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <b>If project is related to farmland:</b> Describe any Agricultural Stewardship Plan or other long term strategy for Nitro-gen abatement.                                                                                                                                                                                                                                                                                                                                                                                               |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <b>If the project is for habitat restoration:</b> The narrative must address how underlying causes are being ameliorated and expected outcomes for local species populations or other ecological considerations are given.                                                                                                                                                                                                                                                                                                              |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <b>If project is a Sewage Treatment Plant (STP) or cluster treatment system:</b> Fund allocation request is based on cost for reduction of pre-existing conditions and not for purpose of accommodating new density (describe pre-existing density and associated flow (gallons per day) and total projected nitrogen reduction in narrative). Include detailed information on how many homes the system would treat as well as potential for formation of Sewer District, if required by Suffolk County Health Department or Town Law. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <b>If the project is requesting grant match:</b> Include information related to funding program source and purpose of application and any relevant items on this checklist. Note: A Town Board resolution will be required in order to encumber matching funds for grant applications.                                                                                                                                                                                                                                                  |



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#### 4. WATER QUALITY BENEFIT

##### 4a. Identify Nitrogen, Pathogen or Pollutant of Concern (POC) including Existing Condition and Target Reduction.

High nitrogen levels have led to the degradation of salt marshes, which provides buffering against storm surges, as well as to algal blooms. (Gobler et al., 2004, 2011). CWTs will reduce Nitrogen from sanitary wastewater by 80% or greater.

##### 4b. Describe plans for collecting and reporting on water quality over time.

SCDHS Article 19 regulations for reporting nitrogen levels are required.

In addition, the NYS Center for Clean Water Technology will monitor wastewater analytes for two years in the final effluent of this system once installation is complete and report results to the public broadly including to SC DHS, NYS DEC and as part of design-based articles in engineering journals. Wastewater analytes will include Total Kjeldahl Nitrogen, ammonium, nitrate/nitrite, cBOD5, alkalinity, DO, pH, and temperature (final effluent and air), which will be measured on site. The Center has over four years' experience collecting and measuring these analytes; its labs are certified by the NYS Environmental Laboratory Assessment Program (ELAP) for these analytes.

##### 4c. Indicate useful life of proposed technology (must meet or exceed five years).

The useful life is greater than 15 years. Published articles in scientific journals (e.g., Robertson, Logan & Lombardo 2008; Groundwater Monitoring & Remediation 28) indicate woodchips continue to provide carbon for nitrate removal for at least 15 years; anecdotal evidence suggests woodchips may continue to provide carbon for nitrate removal for decades beyond. The other components of the systems have been widely in use across the United States for decades.

#### 5. COST FACTORS

##### 5a. Explain how you have confirmed that the proposed budget is reasonable, appropriate and necessary. If available, provide third party estimates or other documentation of how costs were determined.

The proposed itemized budget was based on actual costs for installed CWTs across Suffolk County and reviewed by, Frank Russo, PE, an independent professional engineer. Total project cost would be \$164,630. Of that amount, \$29,555 in matching funds would be provided by NYS CCWT. We are requesting \$135,075 from the CPF.

##### 5b. Describe any matching funds to be provided.

CCWT paid for the site evaluation by the professional engineer. Also, as detailed on page 16 below, CCWT will be contributing project management, monitoring services including collection and field sampling, measurement, analysis, and reporting services as in-kind matching funds. CCWT's lab is NYS ELAP certified for measurement of wastewater analytes. We have also included an estimate of the engineering time we will spend to manage the project, assist the engineer, oversee construction, close out the project, and complete this process.



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**5c. Explain:**

- i. Why project cannot proceed and intended benefits cannot be achieved without external funding.
- ii. if funds are awarded at a lower level than requested, or if there are cost overruns, explain how the project will proceed.

CCWT relies on NYSDEC grants to fund these operations. Those grants do not provide funds to install an OWTS for the Church. The Church does not have the funds to make up for lower levels than requested. The CCWT would have to cover cost overruns out of the NYSDEC grants.

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**6. MANAGEMENT, EXPERIENCE, ABILITY**

**6a. Describe applicant's experience in completing similar projects.**

NYS Center for Clean Water Technology at Stony Brook University was founded by NY Governor Andrew Cuomo in 2015 to promote technologies to reduce residential nitrogen inputs to groundwater and marine ecosystems. Since inception, CCWT has facilitated the installation of over 20 onsite, residential wastewater treatment systems (Nitrogen Removing Biofilters) at locations across Suffolk County. To advance its designs to the provisional phase of Suffolk County Department of Health Services (SC DHS) Article 19 permitting process, CCWT plans to install 5 more CWTS's. These installations have all been completed within several days and all but one design is exceeding Article 19 requirements. One system has produced effluent with TN exceeding the 20 mg/L limit but we are looking into what is causing that and are confident that the system will return to producing good water quality. There have been no instances of hydraulic or operating problems.

CCWT has hired Drew Bennett, PE, to evaluate this site, design the system, estimate the budget, submit the permit application, and make sure the system is properly installed.

**6b. Describe community support or opposition to project. If there is opposition, explain how this is to be addressed.**

There is no known opposition for these specific projects at this time. Community support for OWTS's is well established. Community opposition to the Subwatershed Plan is largely about expense. By showing the community how to install this technology, we hope to mitigate some of that expense.

**6c. Describe any permits needed and time frame/status of approvals. If permits are approved, indicate same.**

SCDHS Article 19 compliance is required. SCDHS permitting will be done by P.E Drew Bennett, PE.

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**7. MAINTENANCE, MONITORING, EVALUATION**

**Estimate ongoing maintenance costs and explain how these will be supported. Explain stewardship and monitoring activities planned for ensuring sustainability of the project.**

St John's Episcopal Church (the Owner) will budget for ongoing maintenance and Article 19 reporting compliance by a licensed service provider. CCWT will monitor the performance of the system for research purposes.

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**8. DURATION OF PROJECT**

**8a. Provide a projected project timeline.**

Project will be shovel-ready. CCWT will engage a professional engineer. Survey, soil borings, design drawings and SC DHS permit application are in process. Upon funding, construction will take 5-7 days. CCWT will then commence monitoring wastewater effluent for 24 months.

**8b. If project is multi-year or phased, provide a breakdown of budget and milestones for each year and phase.**

Not Phased.

CCWT will monitor the site, collect and analyze samples, and report results for 24 months after construction as part of matching funds.



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**9. ATTESTATION**

Allocation of CPF funds will not be for the purpose of accommodating new growth, as this is prohibited by State law.

Check box to certify that funds will not be directed for projects for the purpose of accommodating new growth.

Signature:  \_\_\_\_\_ Date 3/3/23

**REQUIRED ATTACHMENTS** Confirm that the following required documents are attached to this application:

- ⑥ Photos of existing conditions
- Location Map
- State Environmental Quality Review Act (SEQRA) Long or Short Environmental Assessment Form (EAF)  
<https://www.dec.ny.gov/permits/6191.html>
- Completed EPA Spreadsheet Tool for Evaluating Pollutant Load (STEPL)  
<https://www.epa.gov/nps/spreadsheet-tool-estimating-pollutant-loads-step1> or similar standardized methodology (describe)
- Project budget (see attached template)
- Ownership commitment is provided via letter of intent (LOI) for non-municipal owners or municipal resolution for municipal owners

**10. OTHER ATTACHMENTS**

List other attachments provided, including cost estimates, bids, plans, documentation of matching funds, and other as appropriate to demonstrate project readiness, quality, feasibility, and cost effectiveness

**List of Attachments:**

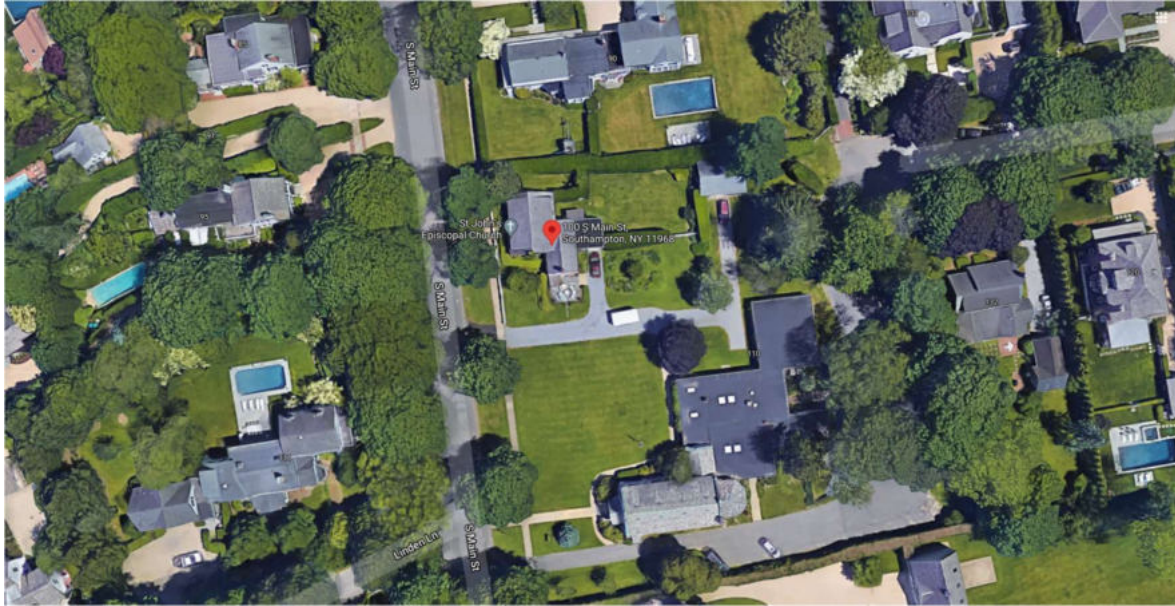
- 1) Photos – pg 12, 20
- 2) Location Map – pg 13
- 3) Project Budget and breakout of CCWT Match – pg 15, 16,17
- 4) Project Site Assessment by Drew Bennett, PE,– pg 18
- 5) Project Schedule - 22
- 6) Assessment of Water Quality in Agawam Lake - 22
- 7) Pollutant Loads in lieu of STEPL Calculation - 22
- 8) Ownership Commitment – LOI – 23



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## Photos



Aerial view of site (system would go in back yard to the right of the red marker)  
See also page 19



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### Location Map

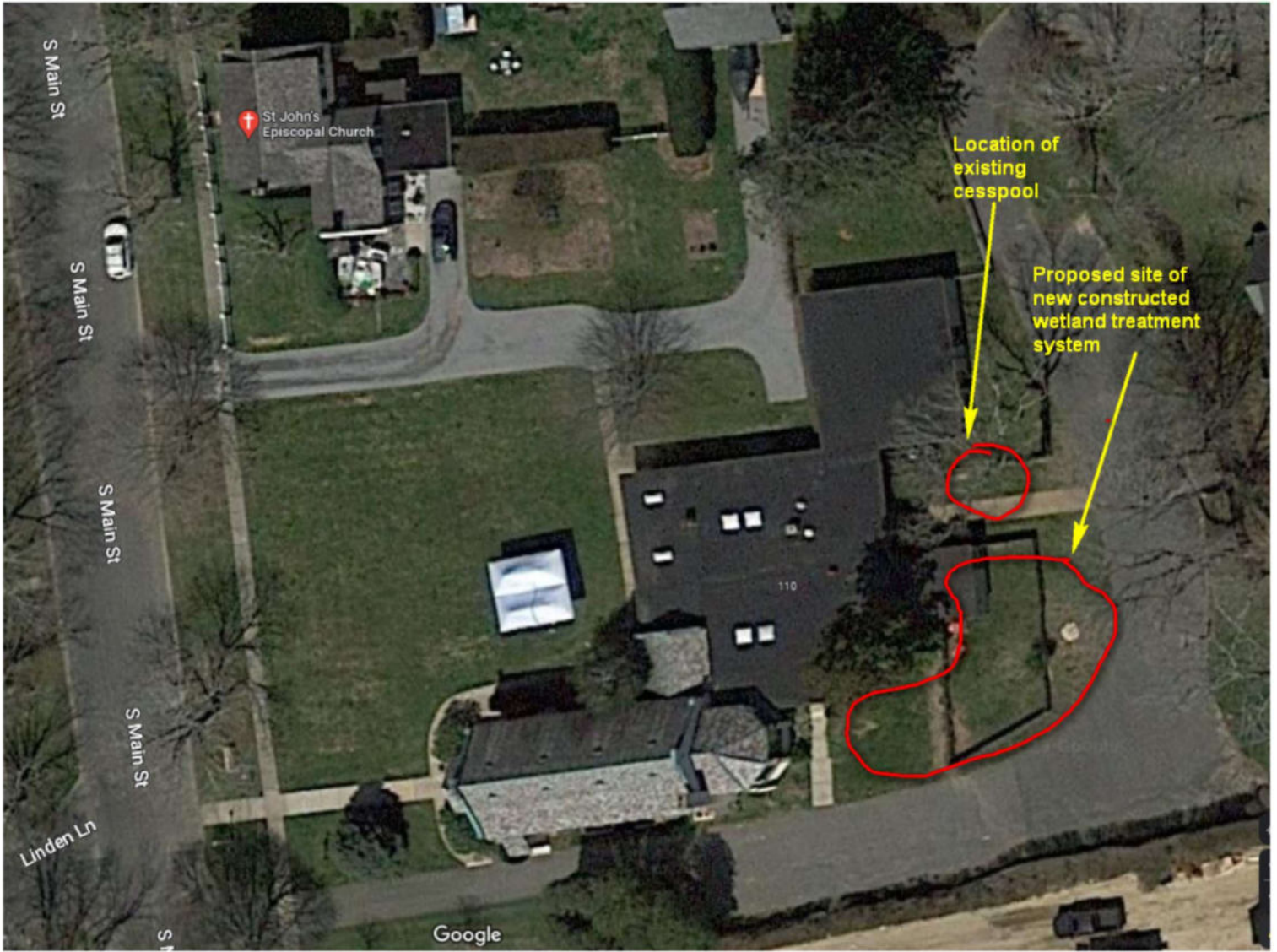
Site is located in High Priority Area (Source: Southampton Town CPF WQIPP)





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## BUDGET PROPOSAL

Applicant is not a municipality

PLANNING/ENGINEERING/DESIGN	TOWN CPF REQUEST	MATCHING FUNDS COMMITTED	MATCHING FUNDS PENDING	ESTIMATED TOTAL PROJECT COST
(*For municipal applications provide in-house labor calculations on separate sheet)				
Site Assesment By Drew Bennett, PE	\$ 3,000	\$ 750	\$ -	\$ 3,750
Updated Site Survey	\$ 4,000		\$ -	\$ 4,000
Test Hole/Soil Boring	\$ 800		\$ -	\$ 800
Utility Markout: GPR	\$ 1,200		\$ -	\$ 1,200
Camera Inspection-Church Sanitary	\$ 900			\$ 900
Drafting of Existing Floor Plans for SCDHS	\$ 1,100		\$ -	\$ 1,100
Application Preparation (CCWT Funds)		\$ 2,240		\$ 2,240
SCDHS Permit Fee (upto 1000 GPD)	\$ 1,375		\$ -	\$ 1,375
<b>Subtotal</b>	<b>\$ 12,375</b>	<b>\$ 2,990</b>	<b>\$ -</b>	<b>\$ 15,365</b>
CONTRACTUAL SERVICES	TOWN CPF REQUEST	MATCHING FUNDS COMMITTED	MATCHING FUNDS PENDING	ESTIMATED TOTAL PROJECT COST
Engineer Design, preparation of construction documents and SCDHS Applications	\$ 7,500		\$ -	\$ 7,500
Bidding Services and Bid Recommendation, Eng. Estimate	\$ 2,100			\$ 2,100
Engineering - Construction Inspection	\$ 6,500	\$ -		\$ 6,500
Engineering During Construction	\$ 1,500	\$ 2,000		\$ 3,500
Project Management & Administration	\$ 2,500	\$ 8,000		\$ 10,500
Project Closeout, O&M, Start up	\$ 2,500	\$ 2,000		\$ 4,500
<b>Subtotal</b>	<b>\$ 22,600</b>	<b>\$ 12,000</b>	<b>\$ -</b>	<b>\$ 34,600</b>

Continued on next page



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CONSTRUCTION SERVICES for Construction & Site Improvements	TOWN CPF REQUEST	MATCHING FUNDS COMMITTED	MATCHING FUNDS PENDING	ESTIMATED TOTAL PROJECT COST
Contractor Mobilization & Demobilization	\$ 12,000		\$ -	\$ 12,000
Sampling, Decommissioning and Pumping of Existing Cesspools	\$ 1,500		\$ -	\$ 1,500
Electrical, Control Panel, Upgrade Panel and Power Distribution, Receptacles Installed	\$ 13,500		\$ -	\$ 13,500
Church Run, Yard Piping, Sample Ports, Misc. Valves and Fittings Installed	\$ 6,300		\$ -	\$ 6,300
Backfill, Grading, Surface Restoration, Driveway Bluestone, Top Soil and Seed, Mulch	\$ 12,000			\$ 12,000
Startup, Commissioning, Closeout	\$ 2,400		\$ -	\$ 2,400
<b>Subtotal</b>	<b>\$ 47,700</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 47,700</b>
EQUIPMENT/MATERIALS/SUPPLIES	TOWN CPF REQUEST	MATCHING FUNDS COMMITTED	MATCHING FUNDS PENDING	ESTIMATED TOTAL PROJECT COST
Replace Concrete Septic Tank W/effluent filter & accessories	\$ 3,500			\$ 3,500
Septic Tank Recirculation Chamber, Valves, Flow Inducer, Splitter Basin Installed	\$ 4,500			\$ 4,500
3-Cell Constructed Wetland Installed (Gravel Media, Distribution, Collection Systems, Plantings)	\$ 18,000			\$ 18,000
Effluent Disposal Leaching Galleys Installed	\$ 7,500			\$ 7,500
Denitrification Polishing Filter (Woodchips) Installed	\$ 6,500			\$ 6,500
Pump Stations and Force Mains Installed (2)	\$ 9,000			\$ 9,000
Pan Lysimeters	\$ -		\$ -	\$ -
<b>Subtotal</b>	<b>\$ 49,000</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 49,000</b>
ADDITIONAL COST	TOWN CPF REQUEST	MATCHING FUNDS COMMITTED	MATCHING FUNDS PENDING	ESTIMATED TOTAL PROJECT COST
O & M Manual and As-Built Drawings	\$ 3,400			\$ 3,400
Performance Sampling and Analysis - 3 Years (see detail below)		\$ 11,879	\$ -	\$ 11,879
SUNY Research Foundation Subtotal x 10% IDC Overhead Rate		\$ 2,687		\$ 2,687
<b>Subtotal</b>	<b>\$ 3,400</b>	<b>\$ 14,565</b>	<b>\$ -</b>	<b>\$ 17,965</b>
<b>PLANNING/ENGINEERING/DESIGN COST TOTAL</b>	<b>\$ 38,375</b>	<b>\$ 29,555</b>	<b>\$ -</b>	<b>\$ 67,930</b>
<b>TOTAL PROJECT COST</b>	<b>\$ 164,630</b>			
<b>APPLICANT MATCHING FUNDS COMMITTED</b>	<b>\$ 29,555</b>			
<b>APPLICANT MATCHING FUNDS PENDING</b>	<b>\$ -</b>			
<b>TOTAL CPF FUNDS REQUESTED</b>	<b>\$ 135,075</b>			
SOURCE(S) OF OTHER FUNDS & AMOUNTS:	AMOUNT			
CCWT In-Kind Match for Monitoring & Project Management Services	\$ 29,555			



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**The following Table shows the calculation used to estimate In Kind Contribution Match from CCWT**

<b>In kind Contribution Schedule</b>					
<b>NYS Center for Clean Water Technology</b>					
Analytical Services:		cost/samp	mo. samp	duration (mo)	
NH4+		\$20	2	24	\$960
NO3-/NO2-		\$12	2	24	\$576
NO2-		\$12	2	24	\$576
TkN		\$28	2	24	\$1,344
Alkalinity		\$15	0	0	\$0
BOD5		\$30	0	0	\$0
TOC		\$80	0	0	\$0
TSS		\$20	0	0	\$0
PO43-		\$20	0	0	\$0
1,4 dioxane		\$200	0	0	\$0
Sampling & Analytical Services per site					\$3,456
Sites per project					1
Subtotal Analytical costs					\$3,456
<b>Analysis &amp; Reporting</b>					
			hours	hourly rate	
Wastewater Analyst			96	\$35.79	\$3,436
Field Technician			96	\$25.76	\$2,473
Senior Research Scientist			48	\$52.37	\$2,514
SubTotal Monitoring Labor/yr					\$8,423
Subtotal Technical Costs					\$11,879
<b>Management &amp; Installation Oversight</b>					
Engineering During Construction					\$2,000
Project Management & Administration					\$8,000
Project Closeout, O&M, Start up					\$2,000
Application Preparation (CCWT Funds)			32	\$70.00	\$2,240
Preliminary Site Assessment					\$750
SubTotal Management and Admin Costs					\$14,990
<b>Total NYS CCWT</b>					\$26,869
Stony Brook University Research Foundation Overhead (10% EH IDC Rate)				10%	\$2,687
					\$29,555
<b>Total Matching Funds</b>					\$29,555



**TOWN OF SOUTHAMPTON**  
**DEPARTMENT OF COMMUNITY PRESERVATION**  
**WATER QUALITY IMPROVEMENT PROGRAM**  
**St John's Episcopal Church - Constructed Wetland Treatment System**

2023

## Site Assessment

# D.B. BENNETT

CONSULTING ENGINEER

74 MONTAUK HIGHWAY, UNIT #21 • P.O. BOX 1442 • EAST HAMPTON • NY • 11937  
TEL: 631-907-0023 • FAX: 631-329-0324 • WWW.DB-PE.COM

March 10, 2023

Mr. Frank Russo, PE  
Associate Director  
Center for Clean Water Technology  
1000 Innovation Road, Suite 1000  
Stony Brook, NY 11794-6044

**SUBJECT:** Site Assessment for Proposed Constructed Wetland Treatment System  
**St Johns Episcopal Church & Community Hall**  
110 South Main Street  
Southampton, NY  
SCTM# 904-15-3-22

Dear Mr. Russo,

At your request, we have performed field inspections of the subject site and assessed its suitability for a proposed Constructed Wetland Treatment System to treat sanitary wastewater being discharged from the existing Church and Community Hall.

We are working on a separate project serving the existing Rectory residence on this same property. The Church and Community Hall is one building with multiple uses. These uses include the church, parish office space, meeting rooms, and class rooms.

The Church/Community Hall is currently served by a cesspool. The property is located within the Lake Agwam watershed. Lake Agwam is a nitrogen impaired watershed, and improving septic systems within this watershed is a priority watershed management goal.

In collaboration with CCWT we propose to design and permit a Constructed Wetland Treatment System to serve the subject facility.

The design flow is estimated to be 750 to 1,000 gpd.

In concept we propose to use existing wastewater piping existing the facility in the rear of the building and connect to:

- 2,000 gallon septic tank
- Pre-treatment manhole
- 1,000 gallon Recirc/Mix Tank
- Lined Constructed wetland cells
- Splitter basin with simplex recip pump and RSV
- Vegetated wood chip box, and
- two (2) 8' dia x 12' effective depth leaching pools.



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The facility is served by a 200 amp service. There is adequate electric capacity in the panel to supply the small recirculation pump.

The grade elevation at the rear of the facility where the system would be placed is at an approximate elevation of +25' (NAVD88). A soil boring was drilled on the property on 7/19/21. No groundwater was encountered to a depth of 17 feet below grade. The upper 4 feet of soil consists of loam and silt. Between 4' and 17' below grade, fine sand was detected. These soils are suitable for the proposed system.

Attached is a sketch plan of the proposed layout and a photo of the proposed area for install.

Based on the site inspections, inspections of existing building conditions and concept design/sizing, I have determined that it is technically feasible to install the proposed Constructed Wetland Treatment System to serve the Church/Community Hall.

I trust this information is clear. If you have any questions, please call me at 631-907-0023.

Respectfully submitted,  
D.B. Bennett, P.E., P.C.

*Drew B. Bennett*

Drew B. Bennett, P.E.

**Attachments**

- Site Photos
- Sketch Plan

(118-212)



**TOWN OF SOUTHAMPTON**  
**DEPARTMENT OF COMMUNITY PRESERVATION**  
**WATER QUALITY IMPROVEMENT PROGRAM**  
**St John's Episcopal Church - Constructed Wetland Treatment System**

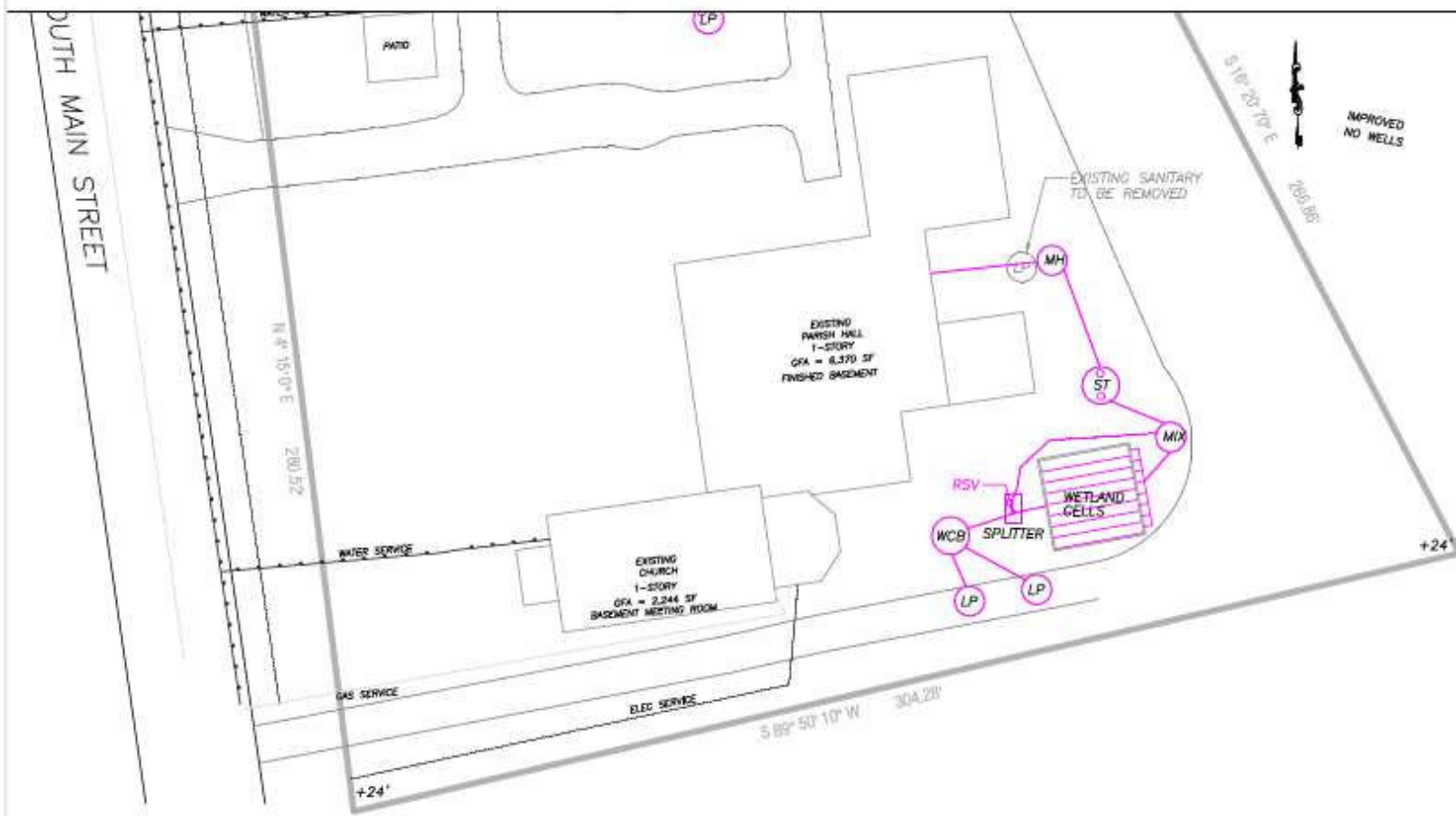
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**D.B. BENNETT**  
CONSULTING ENGINEER  
74 Monticello Highway, Unit #21 • P.O. Box 1942 • East Hampton • NY • 11937  
Tel. 631-867-0023 • Fax: 631-828-0264 • www.dbb-nyc.com

IMPROVED  
NO WELLS

CONSTRUCTED WETLAND TREATMENT SYSTEM  
PARTIAL SKETCH PLAN FOR CHURCH/COMMUNITY HALL  
ST JOHN'S EPISCOPAL CHURCH - SOUTHAMPTON, NY  
SCALE: 1" = 30'-0"



**TOWN OF SOUTHAMPTON**  
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### **Project Schedule**

(subject to Town schedule and performance by third parties)

Mar, '23	P.E. Site Assessment Completed with Budget Estimate
Jul, '23	Survey, Soil Boring, Ground Penetrating Radar completed
Aug, '23	Town Board Approval
Sep, '23	Receive notice of CPF grant award
Nov, '23	Receive grant contract from Town
Nov, '23	Review completed Design from Drew Bennett, PE with Owner
Nov, '23	Submit permit application to Suffolk County Dept of Health Services
Dec, '24	Put out RFP to installers
Jan, '24	Begin Construction
Jan, '24	Complete Construction

Monthly after that for 24 months, CCWT to monitor site, collect samples, lab analyze samples, produce reports.

### **ASSESSMENT OF WATER QUALITY IN Agawam Lake**

SOURCE: FINAL REPORT for Shellfish Pathogen TMDLs for 27 303(d)-listed Waters

Prepared for:

U.S. Environmental Protection Agency, Oceans and Coastal Protection Division and New York State Department of Environmental Conservation

Division of Water

Prepared by Battelle, 397 Washington Street, Duxbury, MA 02332, July 2007

### **Pollutant Loads In lieu of a STEPL calculation**

CCWT used a Nitrogen Loading Model (NLM) described in Bowen, et al (2007). This method has recently been used by Suffolk County. That model shows very strong correlation to actual measurements and that within Agawam Lake, alone, cesspools/septic systems and atmospheric deposition contribute the highest nitrogen loads.



**TOWN OF SOUTHAMPTON**  
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**COMMUNITY PRESERVATION FUND (CPF)**  
**WATER QUALITY IMPROVEMENT PROGRAM**  
**LETTER OF INTENT**

**APPLICANT'S INFORMATION**

Owner: St John's Episcopal Church Southampton \_\_\_\_\_  
 Contact First and Last Name: William McCoy \_\_\_\_\_  
 Contact Address: 100 South Main St, Southampton, NY 11968 \_\_\_\_\_  
 Contact Phone: 718-762-6683, 631-537-0758 \_\_\_\_\_  
 Contact Email: wemccoy@aol.com \_\_\_\_\_

**CONTRACT RECIPIANT INFORMATION**

Name/Organization: Same \_\_\_\_\_  
 Contact Person/Officer: \_\_\_\_\_  
 Contact Address: \_\_\_\_\_  
 Contact Phone: \_\_\_\_\_  
 Contact Email: \_\_\_\_\_

**PROJECT INFORMATION**

Project Title: Constructed Wetland Treatment System for St John's Episcopal Church  
 Project Location: 100 South Main St, Southampton, NY 11968  
 Project Description (1-3 sentences): Facilitated by the CCWT, St John's Episcopal Church seeks funding to replace their cesspool system with a Constructed Wetland Treatment System at the church building in Southampton, NY. The church is located near a High Priority Area, about 200 yards from Agawam Lake. The new system is capable of bringing total nitrogen in the residential wastewater from this home down below 6 mg/L, the best performance of any I/A system currently available in Suffolk County.

**ANTICIPATED PROJECT TIMELINE**

Begin: Nov, 2023  
 Complete: Jan, 2024  
 Notes: Project will only take a few days to construct once the site survey, engineering, and permit are obtained which we plan to do before Town Board approval. Timing will also depend on the Town Board approval and Town contracting processes. The site is shovel ready.



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**2023**

May 11, 2021

Town of Southampton  
Department of Community Preservation  
24 W Montauk Hwy  
Hampton Bays, NY 11946

Attention: Jacquie Fenlon

Regarding: Letter of Intent for CPF Grant Application

To Whom it May Concern,

I am writing to confirm the intention of St Johns Episcopal Church Southampton located at 100 South Main St in Southampton, NY, a 501 3C non-profit organization, to proceed with planning and installation of a nitrogen reducing biofilter septic system, assuming the terms and conditions of the various parties are acceptable to the church.

I am a duly authorized officer of the church.

Our contact information, a brief description of the project, and the intended timeline are in the attached form.

Thank you,

Signature: William E. McCoy

Name: WILLIAM E. MCCOY

Title: WARDEN/TREASURER

Organization: ST-JOHN'S EPISCOPAL CHURCH

Date: 11 MAY 2021