

ATTACHMENT A

Application Form

Round 2 Grants for Reimbursement or New Costs for Planning and Design of PFAS Treatment Systems in PFAS-Impacted Communities (PFAS Treatment Grant)

Round 2 Grant/Reimbursement Program Application

Overview: The Massachusetts Department of Environmental Protection (MassDEP) is seeking proposals from public or private MassDEP approved Community or Non-Transient Non-Community Public Water Systems (PWSs) that are impacted by PFAS6 contamination. The purpose of this funding is to provide grant funds and/or reimbursements to support new or completed planning and design of treatment facilities to address PFAS6 contamination. Only projects that meet the specific requirements of the PFAS6 program outlined in this Round 2 Grant/Reimbursement Opportunity will be considered for funding.

PLEASE COMPLETE THIS PAGE AND INCLUDE IT WITH YOUR RESPONSE

Applicant Information (NOTE: Applicant must be authorized by the specified organization to submit this application and commit to the proposed project).

Applicant Name: James McKay, Director of Public Works

PWS registration number: 2187000

Type of system: X COM NTNC Public Private

Affected Community: Town of Millis Number of users: 8629

Applicant's project manager: James McKay Title: Director of Public Works

Address: 900 Main Street, Millis MA 02054

Phone: 508-376-5424 Email: jmckay@millisma.net

Grant Request:

Amount of Reimbursement Request: \$ _____

Amount of New Work Request:	\$ 197,990
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Amount of Match Provided (optional): \$

Is this a resubmittal of a Round 1 application that did not receive funding? (Y/N) YES

Did the Applicant receive Round 1 Funding? (Y/N): if Yes, then indicate the Round 1 proposal/project submitted, and describe (in Project Description below) how the Round 2 proposed project is separate/distinct from the Round 1 project. NO

SECTION 1: ELIGIBILITY/ABILITY TO PERFORM PROPOSED PROJECT

This is a re-application from round 1, during which Millis was not awarded PFAS Grant Funding.

The Town of Millis has a community water system recently found to be impacted by PFAS at levels over the 20 ng/L MCL for PFAS6. Millis seeks financial assistance for conducting planning, pilot testing, and 30% design for treatment to reduce PFAS6 to below 10 ppt at the Millis D'Angelis Water Treatment Plant, which serves Well 1 and Well 2 and is currently offline. It is particularly critical to install treatment at the D'Angelis WTP because PFAS6 has been detected in every Millis well, with Well 3 also exhibiting concentrations consistently over 10 ng/L

The Town discovered the issue after Town Meeting appropriation deadlines had passed. Without receiving a Grant Award, the proposed work may need to be delayed to FY22, or may require an emergency appropriation.

If awarded a PFAS Treatment Grant, Millis will be able to enter into a contract with MassDEP within 60 days. This Grant Application was an agenda item discussed at the Town of Millis Select Board meeting on June 23, 2020. The Select Board voted unanimously to authorize the Director of Public Works to submit an Application for funding. The Millis DPW Director and Town Administrator have been working closely with its consulting engineer and with MassDEP staff and since the PFAS issue came to light. Millis and Kleinfelder have worked together to prepare this Grant Application and Kleinfelder has recently completed a similar study for the Town of Barnstable. If awarded this Grant, Millis will be able to enter into a design contract within several weeks of the Town entering into a contract with MassDEP. Work proposed herein can be completed before June 30, 2021 (see Schedule in Application).

SECTION 2: APPLICATION**a) Project Description****a.1. Background Information and Extent of PFAS6 Contamination**

The Town of Millis's water system operates six overburden groundwater wells serving approximately 8,600 residential customers. The wells and associated water treatment facilities are shown in Table 1. Existing treatment consists of disinfection, fluoridation, and pH /corrosion control. In addition, the D'Angelis WTF has an air stripper to remove volatile organic compounds (VOCs).

Table 1: Summary of Millis Supply Wells and Existing Treatment

Well #	Location	Year Constructed	Screen Diameter (inches)	Depth (feet)	Actual Yield ⁽³⁾ (MGD)	Water Management Act Permit Maximum Daily Rate (MGD)	Treatment Facility and Capacity (MGD)
1	7 Water St.	1952	24	60	0.173	0.72	Angelis WTF 1 MGD
2	7 Water St.	1961	24	50	0.098	0.50	
3	Birch St.	1972	24	60	0.259	0.75	Well 3 WTF 0.74 MGD
4	Orchard St.	1983	24	53	0.115	0.86	S. End Pond WTF 0.86 MGD
5	Norfolk Rd.	1999	24	57	0.134 ⁽²⁾	1.50 ²	Norfolk WTF 1.5 MGD
6	Norfolk Rd.	1999	24	62			

PFAS TREATMENT GRANT APPLICATION, TOWN OF MILLIS, MA

Well #	Location	Year Constructed	Screen Diameter (inches)	Depth (feet)	Actual Yield ⁽³⁾ (MGD)	Water Management Act Permit Maximum Daily Rate (MGD)	Treatment Facility and Capacity (MGD)
Total Supply					0.779	4.33	
Notes: MGD: million gallons per day (1) Unless otherwise noted, information was obtained from the Town of Millis Water System Master Plan (W&C, 2010). Design capacity information was not available. (2) The WMA permit provides a combined Maximum Daily Rate for Wells 5 and 6; therefore, the values for Wells 5 and 6 are combined for consistency. Calculated from summer 2014 & 2015 daily pumping records provided by the Town of Millis (J. McKay, November 18, 2015). Well 4 was out of service during most of the summer of 2015.							

Knowing that the MassDEP 20 ng/L MCL had been proposed, in April 2020 Millis began voluntarily testing its 6 water wells for PFAS, beginning with the D'Angelis Water Treatment Plant, which treats water blended from both Well 1 and Well 2. Following MassDEP guidance, confirmation samples were collected in May. For both April and May results, the blend of water leaving D'Angelis was below 20 ng/L (range 17 to 18 ng/L).

In May and June, Millis tested Wells 3, 4, and 5 (Well 6 was offline and was not tested); all samples were below 20 ng/L (range 6 to 16 ng/L). In August, Well 6 was back online and was tested with a result of 3 ng/L. During August, Wells 1, 2, and the D'Angelis WTP (Well 1 and 2 blended) were tested again on August 12, with confirmation samples on August 27. **When initial sample results received on Sept. 3 showed that D'Angelis WTP was 21.6 ng/L, the plant (including both Wells 1 and 2) was immediately taken offline** pending the confirmatory results.

With the confirmation results remaining slightly above 20 (20.9 ng/L), **the D'Angelis plant (and both Wells 1 and 2) has remained offline.** The individual well results show that Well 2 is primarily contributing to the exceedance (Well 2's August results average 29.3 ng/L). Meanwhile, also concerning are results for Well 3 which ranged from 12 to 17 ng/L.

Millis quickly undertook a PFAS public outreach campaign in September - October, which included developing a dedicated website <https://www.millisma.gov/public-works-highway-department/pages/pfas-drinking-water-information>, social media posts, an informative and user friendly FAQ sheet, https://www.millisma.gov/sites/g/files/vyhlf901/f/uploads/pfas_faqs_0.pdf and hosting a public forum. This all was undertaken simultaneously with the publication of the MassDEP MCL and needing to comply with newly established Educational Notice forms and protocols.

Millis has continued testing wells in accordance with MassDEP requirements, and updated test results are periodically posted on the Millis PFAS website. The testing results to date are shown on Figure 1 below.

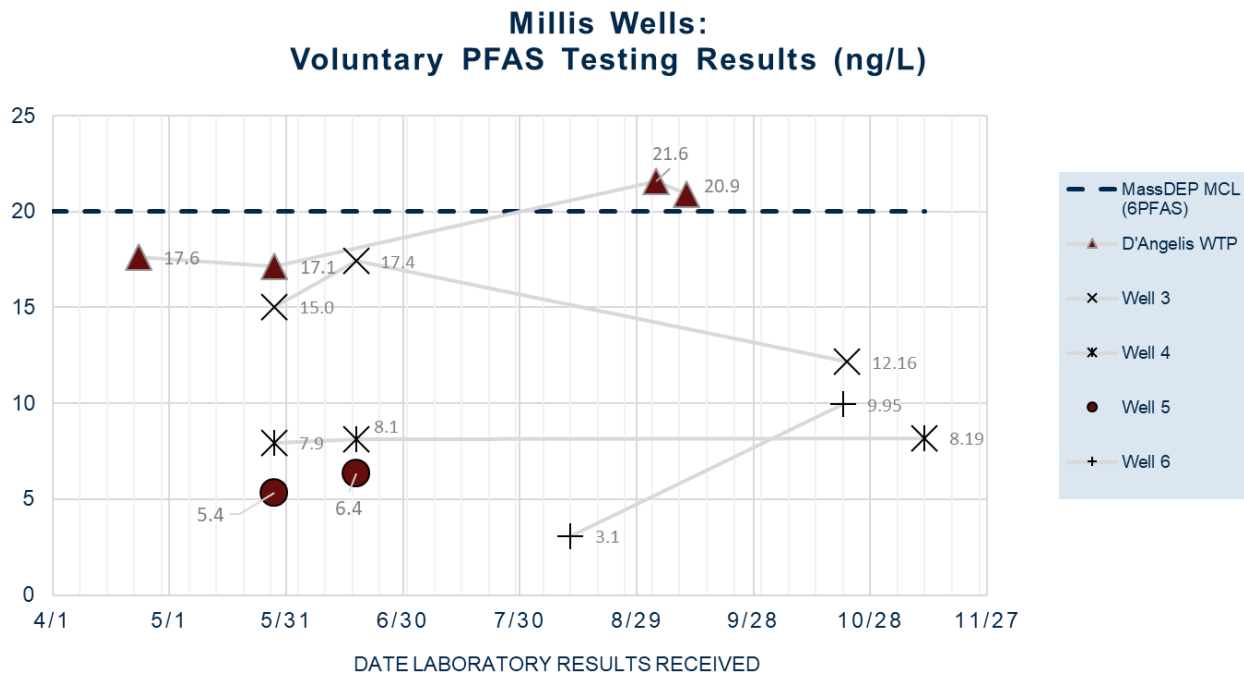


Figure 1- Millis PFAS Testing Results

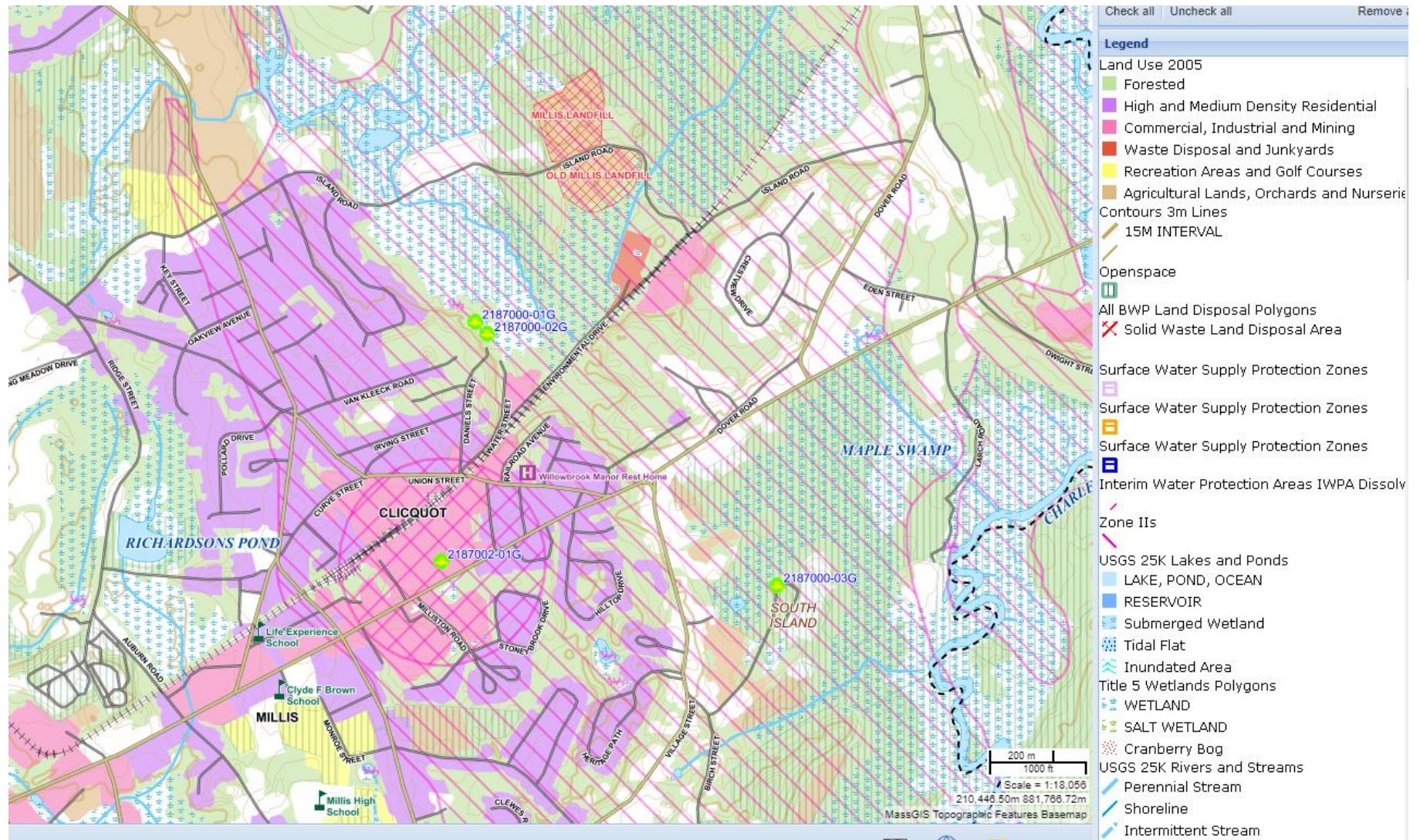
With the D’Angelis WTP offline, Millis may have difficulty meeting demand if any other Wells need to be taken out of service. This could happen as a result of additional PFAS exceedances, or maintenance/repair, or Water Management Act Permit restrictions. As seen in Table 2, based on recent demand and pumping data, Millis may experience a supply deficit without Wells 1 and 2 online. In addition, near term future demand is expected to increase significantly. Recently approved development has included a 100-bed assisted living facility and 375 new homes / condominiums over the past two years.

Table 2: Millis Supply and Projected Deficit due to PFAS Impacts

Supply and Demand	Actual Yield (MGD)
Total Supply	0.779
Average Daily Demand (2016-2018 avg)	0.64
Supply Deficit With Wells 1 & 2 offline	-0.14
Projected 2025 Supply Deficit for future ADD of 0.8 (planned development)	-0.29

Land use and potential areas of concern in the Zone II areas for Millis’ Wells 1, 2 and 3 are shown in Figure 2. Areas of concern include current and prior industrial and commercial facilities, and Town-owned landfills. With such diversity of potential sources, it is unlikely that Millis will quickly identify a Potentially Responsible Party. **With the PFAS levels so close to the MCL for three of its six wells, Millis wants to proceed with planning, piloting, and design to construct treatment for PFAS removal at the D’Angelis WTF.**

Figure 2: Town of Millis – Land Use in the Zone II for Wells 1, 2, and 3 (source MassGIS Oliver)



a.2. Proposed Project and Mitigation of PFAS Impacts

Proposed Project: This project will consist of the following primary tasks: 1) Existing Conditions Assessment, 2) Pilot Testing / Pilot Report, 3) and Preliminary Design for adding PFAS treatment by granular activated carbon (GAC) at the Angelis WTF. These are the first required steps in implementing a long term solution to ensure that finished water at the Angelis WTF is consistently below the proposed MCL. Currently the feasibility and costs associated with implementing a treatment solution to Millis are largely unknown but are expected to represent a significant unplanned capital expenditure for the Town.

The existing Angelis WTF is located on steeply sloped area adjacent to the property boundary at the Town's Transfer Station (Figure 2). Site constraints with implications for the WTF upgrade include property boundaries and slopes, underlying soil conditions and adjacent wetlands. While PFAS removal technology can often be straightforward and provided by the installation of granular activated carbon filters (GAC), adding filtration units to remove PFAS will require a significant building addition footprint and will require piloting of the technology to comply with MassDEP policy. Determining the feasibility and cost of the addition will require site investigations and development of major conceptual design parameters such as flow, filter sizing, building layout, power requirements, etc.



Figure 3: Town of Millis Wells 1 and 2 and Angelis WTF

Mitigation of Impacts: The treatment goals will be, at a minimum, to remove PFAS to below 5 ng/L and ideally to below detectable levels (2 ng/L). The PFAS in the vicinity of Wells 1 & 2 are potentially associated with a number of watershed sources which are not yet determined. Installing treatment at the Angelis WTF will provide a long term solution to mitigate both existing and potential future PFAS impacts. GAC filtration is proposed as the intended treatment removal process, pending successful piloting. GAC is a well established technology for PFAS removal and is widely used in New England. Based on a preliminary review of the existing water quality, we do not recommend ion exchange for PFAS treatment due to baseline elevated levels of chlorides, which could impact water corrosivity.

Proposed Project Tasks - Angelis WTF PFAS Treatment Preliminary Design:

The proposed project Tasks and Subtasks are listed below. Proposed Budget and Schedule are provided in Sections **g)** and **h)**, respectively.

- 1) Task 1 – Existing Conditions / Feasibility Evaluation
 - a) Establish Existing Conditions: Review and document facility and site existing conditions and constraints including:
 - Water supply and pumping records,
 - Existing water quality data
 - Conduct site topographic /property boundary survey
 - Existing facility condition and treatment processes
 - Existing facility power load, feed
 - Environmental site data review
 - Conduct geotechnical and environmental sampling (assume 1 day of borings)
 - b) Establish Design Basis by evaluation of the following parameters:
 - Flow and preliminary hydraulics
 - Site constraints
 - Water quality trends / watershed influences on future quality
 - Regulations – current, anticipated
 - Water quality treatment goals
 - Treatment technology sizing– [assume GAC]
 - c) Design of Pilot Test and Prepare Pilot Test Proposal for MassDEP approval
- 2) Task 2 - Pilot Testing
 - a) Perform 10 day pilot test for granular activated carbon
 - b) Prepare Pilot Test Report for MassDEP approval
- 3) Task 3 - Preliminary Design (~20% design)
 - a) Conceptual Design of Major Facility components
 - Preliminary GAC equipment sizing
 - Process Flow diagrams
 - Preliminary building addition layout
 - Preliminary HVAC requirements
 - Preliminary electrical load / requirements and one-line diagram
 - b) Identify required Permits , Operator licenses

- c) Cost & Schedule
 - AACE Level 5 Construction Cost estimate
 - O&M estimate
 - Engineering Services estimate
 - (1) Final Design
 - (2) Construction phase
 - Identify Funding Sources
 - Schedule, Milestones for Funding
- d) Preliminary Design Report - Draft and Final Report
- 4) Task 4 - Meetings & Presentations
 - a) 3 meetings with DPW (1 kickoff, 2 progress)
 - b) One presentation to Board of Selectmen (Water Commissioners)

b) Vulnerable Populations Protected

The Millis water system serves a number of facilities with vulnerable populations, as shown in Table 4:

Table 4: Facilities with Vulnerable Populations in Service Area

Daycare facilities	Happy Hours Millis Extended Day Program Second Steps Full Circle Farm Preschool Kathy's Family Daycare
Schools	Clyde Brown Elementary Montessori School Millis High School Sparhawk Academy
Senior Housing	Willowbrook Manor

c) Community Economic Profile

Millis is a Tier 1 Community under the Clean Water Trust Affordability Calculation.

d) System Size

Millis has approximately 8,600 water users, of which 89% are residential.

e) Financial Need

The PFAS detections were discovered too late for Millis to add any capital requests into the FY21 budget. The capital costs for implementing treatment solutions are currently unknown but will be established through this project. Millis has already expended approximately \$40,000 in unbudgeted funds to respond to the PFAS testing with consulting support working Kleinfelder, including preliminary testing, MassDEP coordination, investigation of watershed sources, and public outreach planning.

f) Extent of PFAS Contamination - see section 2.a

g) Project Budget

Based on extensive experience with similar projects, Kleinfelder prepared the following Project Budget. For the project tasks and subtasks presented above, the proposed budget breakdown by task is as follows:

Task	Approx. Labor Hours	Engineering Labor Fee	Subconsultants* & Expenses	Total
1 -Existing Conditions	231	\$34,165	\$22,210	\$56,375
2- Pilot Testing	18	\$2,505	\$73,500	\$76,005
3- 30% Design, PDR, Cost Estimate	372	\$48,368	\$8,460	\$56,828
4- Meetings and Presentations	48	\$8,562	\$220	\$8,782
Total	669	\$ 93,600	\$ 104,390	\$197,990
* Drilling, survey, laboratory, piloting contractor				

As mentioned, a PRP has not been identified and a contribution from a PRP is unlikely in the near term. Millis has **already expended approximately \$50,000** in engineering and consulting services associated with PFAS testing and data / land use assessment, regulatory meetings and PFAS public notice and outreach support.

h) Project Timeline

Millis would plan to give Notice to Proceed to its engineering consultant within 2 weeks of receiving a contract from MassDEP. The Town and Kleinfelder commit to completing the proposed work by June 30, 2021.

Task	Start Date	End Date
Contract Notice to Proceed	3/5/21	
1- Existing Conditions	3/5/21	4/4/21
2- Pilot Testing and Report	4/4/21	5/24/21
3- 25% Design and Preliminary Design Report	5/24/21	6/28/21

i) Project Benefit

Installing treatment at the Angelis WTF will provide a long term solution to mitigate both existing and potential future PFAS impacts to two of Millis' important water supply sources from above safe levels to below detection limits. This benefits the public health of the community and helps maintain system reliability / redundancy. Without the water supplied by Wells 1 & 2, Millis' economic growth would also be impacted, as a moratorium on planned developments would likely need to be imposed. Funding for this phase of the project will provide Millis with important support towards that goal.