



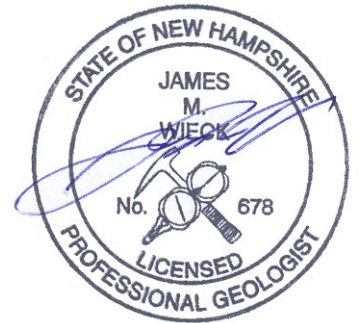
**NHDES Waste Management Division
29 Hazen Drive; PO Box 95
Concord, NH 03302-0095**



**TASK ORDER FOR WORK SCOPE AND
BUDGET ESTIMATION PREPARATION
PFAS Remedial Investigation /
Focused Feasibility Study
Troy Mills Landfill Superfund Site
Troy, New Hampshire 03465**

**NHDES Site No.: 198405082
Project Number: 104**

Prepared For:
NH Department of Environmental Services
Hazardous Waste Remediation Bureau
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Date of Report: October 2023



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MEMORANDUM

To: Michael Summerlin; NHDES, and Gerardo Millan-Ramos; EPA

From: Megan Murphy, James M. Wieck, Steven R. Lamb, and
Katherine McDonald; GZA

Date: October 4, 2023

File No: 04.P000274.24

Re: Task Order for Work Scope and Budget Estimate Preparation
PFAS Remedial Investigation/Focused Feasibility Study
Troy Mills Landfill Superfund Site
Troy, New Hampshire
NHDES Site No. 198405082

As requested, this memorandum was prepared by GZA GeoEnvironmental, Inc. (GZA) to provide the United States Environmental Protection Agency (EPA) and the New Hampshire Department of Environmental Services (NHDES) a Proposed Task Order to prepare a Work Scope and Budget Estimate for a Remedial Investigation (RI) and Focused Feasibility Study (FFS) addressing per- and polyfluoroalkyl substances (PFAS) emanating from the Troy Mills Landfill (TML). Currently, PFAS are not identified as contaminants of concern in the 2005 Record of Decision¹ (ROD) established for TML.

The objective of the ongoing PFAS RI will be to further evaluate and characterize the source(s) of PFAS detected in groundwater samples collected at and in the immediate vicinity of TML and further delineate PFAS in groundwater within and around the TML. The objective of the FFS will be to identify alternative or supplemental remedies that meet the Remedial Action Objectives (RAOs) of the existing remedy per the ROD and eliminate, reduce, or control risk to human health and the environment in a manner that optimizes ecological and economical sustainability over the long-term, and support the potential selection of an additional or alternative approach for groundwater remediation through a CERCLA decision document.

Monitored Natural Attenuation (MNA) is the primary component of the selected remedy to achieve the "Management of Migration" Remedial Action Objective (RAO) identified for TML. The source and extent of PFAS will be determined based on the results of the RI. The scope of the FFS to be established in the RI/FFS Work Scope will be based on the current understanding of the source and extent of PFAS. Consequently, revision of the scope of the FFS may be required following completion of the RI and determination of whether or not the Human Health/Ecological Risk conditions will remain the same (i.e., no potential receptors).

¹ Region 1 Record of Decision, Troy Mills Landfill Superfund Site, Troy, New Hampshire, dated September 30, 2005.



BACKGROUND

Based on the analysis of groundwater samples collected from the groundwater monitoring wells installed during the fall of 2022, perfluorooctanoic acid (PFOA) was detected in groundwater within the eastern portion of the solid waste landfill (MW-901 couplet), in the bedrock groundwater within the lower drum disposal area (MW- 601B), in the overburden groundwater within the northwesterly portion of the solid waste landfill, beyond the Groundwater Management Zone (GMZ) boundaries, and in the overburden groundwater approximately 275 feet downgradient of the northern, downgradient-most point of the GMZ. Based on the recently collected PFAS concentration data, PFAS likely emanates from a source(s) within, and immediately north of, the drum disposal area and within the solid waste landfill (referred to as the Study Area).

Prior to the fall of 2022, few monitoring wells had been installed near the GMZ boundaries, and none had been installed beyond the GMZ boundaries. Even with the installation in 2022 of the well couplets MW-901 through MW-903, the extent of PFAS remains poorly delineated. The concentrations of perfluorooctanoic acid (PFOA), perfluorononanoic acid (PFNA), and perfluorooctane sulfonic acid (PFOS) detected in samples collected from the recently installed monitoring wells document the exceedance of the EPA Site-Specific Regional Screening Levels (RSLs) and/or New Hampshire Ambient Groundwater Quality Standards² (AGQS) beyond the GMZ boundaries and evidence that the downgradient limit of PFOA, PFNA, and PFOS exceeding the EPA RSLs and/or AGQS has not been identified.

PROPOSED TASK ORDER

TASK 1 – PFAS RI/FFS WORK SCOPE AND BUDGET ESTIMATE PLANNING

A Work Scope and Budget Estimate will be prepared to complete the ongoing PFAS RI/FFS. The RI will be used to update the Conceptual Site Model (CSM) and to support the FFS, which will include an evaluation of technologies in support of a review of alternatives which, when combined with the current MNA remedy, can be a comprehensive and sustainable remedy in minimizing the migration of PFAS from TML.

The Budget Estimate for completion of the RI/FFS Work Scope assumes the activities included in the RI/FFS will be phased and may include the components described below. The components and activities listed are presented to convey the current overall concept of the components of the Work Scope RI/FFS and anticipated level of complexity.

Source Evaluation/Characterization

Anticipated tasks in the Work Scope include sampling and analysis of landfill materials comprising soil and waste to understand the source, as well as sampling of pore water, leachate, overburden and bedrock groundwater, and surface water and evaluation of transport of PFAS from the landfill to estimate the mass flux of PFAS to the environment. Source evaluation and characterization are assumed to include research and testing to identify and demonstrate an effective method to evaluate and characterize waste and related materials within the landfill. Landfill delineation activities will also be considered.

² As established in State of New Hampshire Code of Administrative Rules Env-Or 603.03, Table 600-1.



PFAS Transport Evaluation

Anticipated tasks include the installation and sampling of overburden and bedrock groundwater monitoring wells to evaluate the transport and fate of PFAS, including the delineation of PFAS plumes at concentrations exceeding current RSLs and AGQS. Performance of a fracture fabric analysis, including bedrock geologic mapping, surficial geophysics, and borehole geophysical logging and sampling methods, is needed to assess the bedrock structure and guide the selection of monitoring well installation locations. High-resolution groundwater hydraulic head monitoring and hydraulic testing to evaluate soil and bedrock matrix properties and connectivity will also be considered. Based on the concentrations of PFAS detected in groundwater samples collected downgradient of the GMZ, a phased program of well installation is anticipated to meet the RI objectives. The transport evaluation will be focused on protection of sensitive receptors and include an updated potential receptor survey.

Conceptual Site Model Update

The data collected during the PFAS RI will be used to update the CSM for TML. Updating of the CSM will be a continuous process during the execution of the Scope of Work, and modifications to the Scope of Work may be proposed to NHDES and EPA for consideration during the completion of the RI. The CSM Update will include analytical and/or numerical modeling of groundwater flow and solute transport. The CSM updates will also be used to evaluate the scope of the FFS throughout the completion of the RI.

Risk Assessments Update

The Baseline Human Health Risk Assessment (BHHRA) and the Baseline Ecological Risk Assessment (BERA) will be reviewed in consideration of the current understanding of the CSM. After consultation with EPA and NHDES, consideration will be given to update the BHHRA and BERA to account for potential PFAS exposures to recreators, construction workers, and wildlife in soil, groundwater, and surface water media.

Focused Feasibility Study

A FFS will be developed based on the results of the RI and on the updated CSM. The FFS will include identification of alternative or supplemental remedies that meet the RAOs of the remedy per the ROD, and potential additional RAOs per a CERCLA decision document. The construction of caps and barriers to PFAS transport will likely be considered.

BUDGET ESTIMATE

GZA's estimated budget to prepare the Work Scope and Budget Estimate for the PFAS RI/FFS is \$19,000.75. GZA assumes preparation of the proposed Work Scope and Budget Estimate will include the preparation and submittal for review of up to two drafts of the Work Scope and Budget Estimate. The Budget Estimate includes up to three meetings with NHDES and EPA. The first of these meetings is anticipated to be a kickoff meeting to establish the available budget and overall schedule for completion of the services to be included in the PFAS RI/FFS. Refer to the attached Budget Sheet for a breakdown of personnel and estimated hours anticipated to complete the proposed Work Scope and Budget Estimate. GZA considers the Budget Estimate proposed herein to be a preliminary estimate of cost due to the uncertainties relative to the final complexity of the PFAS RI/FFS Work Scope.

MEM/JMW/SRL: jkm

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Attachment: Budget Sheet

WORK SCOPE BUDGET SHEET - Preparation of Troy Supplemental SRI-FFS Work Scope and Budget

NHDES No.: 198405082
 UST Facility No.: _____
 Date of Submittal: October 2023
 Env-Or 600 Phase Code: SRI

Troy Mills Landfill
 Facility Name: Superfund Site
 Owner: _____
 Town: Troy, NH
 Priority No.: _____

Mailing Address: NHDES
29 Hazen Drive
P.O. Box 95
Concord, NH 03302-0095

GZA Job No. 04.P000274.24
 GZA PM: Megan Murphy

				Overall Breakdown				Breakdown By Class							
Description By Task	Contractor	Description	Class Code	Units	Type	Rate	Cost	Eng./Hydro. Services	Lab	Subsurface	Cont. Soil T&D	GW Treatment/Product Recover	Other	Assumptions	
Task 1. SIR-FFS Work Scope and Budget Development	GZA	Principal	E	16.0	hrs.	\$261.00	\$4,176.00	\$4,176.00	--	--	--	--	--		
		Senior Project Manager	E	24.0	hrs.	\$183.00	\$4,392.00	\$4,392.00	--	--	--	--	--		
		Project Manager	E	40.0	hrs.	\$163.00	\$6,520.00	\$6,520.00	--	--	--	--	--		
		Professional Level III	E	20.0	hrs.	\$153.00	\$3,060.00	\$3,060.00	--	--	--	--	--		
		Drafter	E	4.0	hrs.	\$117.00	\$468.00	\$468.00	--	--	--	--	--		
		Word Processing	E	3.25	hrs.	\$103.00	\$334.75	\$334.75	--	--	--	--	--		
		Expenses/Reproduction, etc.	E	2.0	ea	\$25.00	\$50.00	\$50.00	--	--	--	--	--		
		Task 1 Total:						\$19,000.75	\$19,000.75	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
		TOTAL PROPOSED:							\$19,000.75	\$19,000.75	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Env-Or 600 Phase Code

IRA - Initial Response Action
 FPR - Free Product Removal
 ISC - Initial Site Characterization
 SIR - Site Investigation/Reporting
 RAP - Remedial Action Plan
 RPI - Remedial Plan Implementation
 GMP - GW Monitoring/Permits

Class Codes:

E = Eng./Hydrogeology Services
 L = Laboratory Services
 X = Subsurface Explorations
 S = Cont. Soil Treatment/Disposal
 G = GW Treatment/Product Recovery
 O = Other

Comments:
