


COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ENVIRONMENTAL CLEANUP PROGRAM

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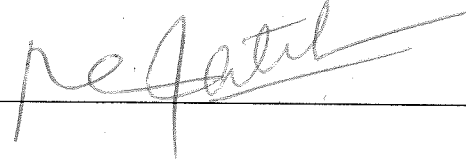
Subject: Analysis of Alternatives and Proposed Response
Easton Road PFC HSCA Site
Doylestown, Buckingham and Plumstead Townships
Bucks County

To: Patrick Patterson, Regional Director
Pennsylvania Department of Environmental Protection
Southeast Regional Office


From: Joshua Crooks, Project Officer 
Hazardous Sites Cleanup Program
Southeast Regional Office

Attached are the Analysis of Alternatives and Proposed Response for the Easton Road PFC HSCA Site.

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_____ Concur 10/7/2019 Date
_____ Do not Concur _____ Date

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COMMONWEALTH OF PENNSYLVANIA

Department of Environmental Protection
Hazardous Sites Cleanup Program

Easton Road PFC HSCA Site
Doylestown, Buckingham & Plumstead Townships
Bucks County

ANALYSIS OF ALTERNATIVES AND PROPOSED RESPONSE

The purpose of this Analysis of Alternatives and Proposed Response document is to outline the decision-making process involved in the selection of the proposed response and to provide a description of the proposed response. This document will be included in the Administrative Record which will be compiled for this response pursuant to Section 506 of the Pennsylvania Hazardous Sites Cleanup Act, Act of October 18, 1988, P.L. 756, No. 108 (HSCA), 35 P.S. Section 6020.506.

The Pennsylvania Department of Environmental Protection (DEP) proposes the installation and maintenance of whole-house filtration systems combined with restrictions on the use of groundwater as an Interim Response to address the per- and poly-fluorinated alkyl substance (PFAS) contamination above the United States Environmental Protection Agency's (EPA) published lifetime Health Advisory Limit (HAL) in private drinking water wells at the Easton Road PFC HSCA Site.

I. SITE INFORMATION**A. SITE LOCATION AND DESCRIPTION**

The Easton Road PFC HSCA Site ("Site") is located in parts of Doylestown, Buckingham and Plumstead Townships, Bucks County. The area is a mix of residential homes with various recreational, commercial, and industrial properties nearby. The Doylestown, Buckingham, and Plumstead Township municipal boundaries intersect the Site area. Pine Run Creek also bisects the Site area.

B. SITE HISTORY

In May 2016, the Doylestown Township Municipal Authority (DTMA) conducted sampling for PFAS on a local public supply well in Doylestown Township, in accordance with EPA's Unregulated Contaminant Monitoring Rule 3¹ (UCMR3) protocol. Results of this sampling documented combined concentrations of Perfluorooctanoic acid (PFOA) and Perfluorooctane sulfonate (PFOS) of 267 parts per trillion (ppt), which is above the HAL of 70 ppt. Once notified, DEP took immediate action to begin a thorough investigation of the surrounding area.

¹ Available at <https://www.epa.gov/sites/production/files/2017-02/documents/ucmr3-data-summary-january-2017.pdf>.

In order to determine the extent of drinking water contamination resulting from the impact of PFOA and PFOS, DEP established a 1-mile radius around the impacted DTMA supply well. DEP identified approximately 375 private drinking water wells located within a 1-mile radius and mailed private well questionnaires to all of the properties identified. Due to the high number of private wells identified and the limited laboratory capacity for analyzing these samples, the sampling was conducted in a phased approach, beginning with the homes closest to the impacted DTMA supply well. To date, approximately 350 residential and commercial wells located within the Site area have been sampled by DEP. PFOA and PFOS are the primary contaminants of concern (COC) for this Site, and were the only chemicals analyzed during sampling of the private wells. The original 1-mile radius has since been expanded in specific areas to the northwest and southeast to identify the boundaries of private drinking water wells impacted by PFOA and PFOS contamination.

Combined concentrations of PFOA and PFOS above the HAL have been found in the private drinking water wells of 8 residential properties. The highest combined concentration detected was 229 ppt. DEP identified a localized area of concern within Doylestown Township where the highest concentrations of PFOA and PFOS have been discovered. No source area has been identified. DEP has continued to sample homes affected by the contamination on a regular basis. DEP is supplying bottled water to 4 residential properties that are exceeding the HAL; the other 4 properties elected to privately install filtration systems at their own expense.

There are businesses within the site area that have private wells impacted by PFOA and PFOS. However, they are either regulated as permitted public water supplies or do not use their well water as a potable water supply and are therefore not subject to this response under HSCA.

C. RELEASE OF HAZARDOUS SUBSTANCES AND CONTAMINANTS

The compounds identified above are considered "contaminants" as that term is defined by Section 103 of HSCA, 35 P.S. § 6021.103, and Section 101 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S. Code § 9601. Exposure to concentrations of PFOS and PFOA above the HAL pose a threat to human health when ingested.

Health effects associated with long-term exposure to these chemicals may include developmental delays, decreased function of the liver, damage to the immune system and increased risk of certain cancers.

PFAS are man-made chemicals and not found naturally in the environment. PFOA and PFOS are two of the PFAS chemicals that have been the most extensively produced and studied. They have been used to make cookware, carpets, clothing, fabrics for furniture, paper packaging for food, and other materials that are resistant to water, grease, or stains. They are also used in firefighting foams and in a number of industrial processes.

II. RESPONSE CATEGORY

The proposed response is an Interim Response, which is defined in Section 103 of HSCA, 35 P.S. § 6020.103, as a response which does not exceed 12 months in duration or \$2,000,000 in cost.

An interim response may exceed these limitations only where one of the following applies:

- (1) Continued response actions are immediately required to prevent, limit or mitigate an emergency.
- (2) There is an immediate risk to public health, safety or welfare or the environment.
- (3) Assistance will not otherwise be provided on a timely basis.
- (4) Continued response action is otherwise appropriate and consistent with future remedial response to be taken.

III. CLEANUP STANDARDS

This proposed response is not a final remedial response pursuant to Section 504 of HSCA, 35 P.S. § 6020.504. Additional response action(s) may be needed to achieve a complete and final cleanup for the Site.

IV. APPLICABLE, RELEVANT, and APPROPRIATE REQUIREMENTS (ARARs)

A. ARARs

Hazardous Sites Cleanup Act, Act of October 18, 1988, P.L. 756, No. 108, *as amended*, 35 P.S. §§ 6020.101 *et seq.*

- Gives the DEP the authority to perform investigations, initiate cleanups, and provide replacements for contaminated water supplies.
- Establishes a fund to cover the costs of such activities.
- Provides administrative procedures for conducting response actions.
- Defines a “contaminant” and “hazardous substance” as any substance defined as such by CERCLA.

Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S. Code §§ 9601 *et seq.*

- Defines a “contaminant” as any element, substance, compound, or mixture, which when released to the environment and upon ingestion, may reasonably be anticipated to cause disease, cancer and other harm to humans and other organisms.

Land Recycling and Environmental Remediation Standards Act, Act of May 19, 1995, P.L. 4, 35 P.S. §§ 6026.101 *et seq.*, and the regulations promulgated thereunder at 25 Pa. Code Chapter 250.

- Provides that, for regulated substances where no Maximum Contaminant Level (MCL) has been established by DEP or the EPA, the Medium-Specific Concentrations for groundwater are the Lifetime HAL.
- Provides remedial standards to be considered as applicable, relevant and appropriate requirements under CERCLA and HSCA.

Pennsylvania Safe Drinking Water Act, Act of May 1, 1984, P.L. 206, No. 43, *as amended*, 35 P.S. §§ 721.1 *et seq.*, and the regulations promulgated thereunder at 25 Pa. Code Chapter 109.

- Establishes a state program to oversee the provision of safe drinking water to the public.
- Sets forth drinking water quality standards and provides requirements for public water systems, including permit design, construction, source quality, and siting requirements.

Uniform Environmental Covenants Act, Act of December 18, 2007, P.L. 450, No. 68, 27 Pa. C.S. §§ 6501 *et seq.* (“UECA”), and the regulations promulgated thereunder at 25 Pa. Code Chapter 253.

- Provides a standardized process for creating, documenting and assuring the enforceability of activity and use limitations on contaminated sites.
- Requires an environmental covenant whenever an engineering or institutional control is used to demonstrate the attainment of an Act 2 remediation standard for any cleanup conducted under an applicable Pennsylvania environmental law.

B. TO BE CONSIDERED

In addition to the ARARS listed above, the following documents are relevant to the response actions proposed herein, though they do not create any statutory or regulatory obligations.

Standard Operating Procedure for the Hazardous Sites Cleanup Program, HSCA Handbook, Division of Site Remediation, Bureau of Environmental Cleanup and Brownfields, January 2013.

Guidance for Commonwealth-Funded Water Supply Response Actions, November 21, 2015, Department of Environmental Protection, Bureau of Environmental Cleanup and Brownfields, document number 262-5800-001.

- Outlines implementation of Commonwealth-funded water supply responses, including procedures for providing temporary or permanent response actions for impacted private water supplies.

- Details specific work related to response actions that may be financed via the HSCA fund.
- Explains operation and maintenance duties of response actions, including the appropriate parties that should conduct such activities.
- Describes the use of institutional controls as part of the response action process.

V. ANALYSIS OF ALTERNATIVES

Pursuant to its authority under Section 501 of HSCA, 35 P.S. § 6020.501, DEP will implement an Interim Response action at the Easton Road PFC HSCA Site. In order to achieve the objective of eliminating the threats posed by ingestion of PFOA and PFOS in the drinking water, DEP considered the following four potential alternatives:

1. No Action.
2. Continued delivery of bottled water combined with restrictions on the use of groundwater.
3. Installation and maintenance of whole-house filtration systems combined with restrictions on the use of groundwater.
4. Installation of a public water supply waterline combined with restrictions on the use of groundwater.

ALTERNATIVE 1: No Action

Description of the Alternative:

The no further action alternative serves as a baseline to compare against other proposed response action options. Under this alternative DEP would take no further action and would not continue providing bottled water to affected residents.

Protection of Human Health and Environment:

This alternative would not eliminate the ingestion exposure pathway for PFOS and PFOA above the HAL.

Compliance with ARARs:

This alternative would not comply with ARARs. The public would be exposed to concentrations of PFOS and PFOA in the groundwater and drinking water above the HAL established by the EPA.

Feasibility, Effectiveness, Implementability and Permanence:

This alternative would be feasible and implementable because no action is being taken, but it would not be effective or permanent in addressing the health threats to the public.

Costs and Cost Effectiveness:

There is no cost associated with this alternative.

ALTERNATIVE 2: Continued Delivery of Bottled Water Combined with Restrictions on the Use of Groundwater**Description of Alternative:**

Under this alternative, DEP would continue to supply bottled water to the residential properties at the Site that have untreated privately-owned potable wells with concentrations of PFOS and PFOA above the HAL. Bottled water would be supplied for the duration of DEP's ongoing investigation. DEP would sample wells with combined concentrations above 40ppt over this period to determine if PFOS and PFOA exceed the HAL.

If this Alternative is selected as a final response, pursuant to Section 512 of HSCA, 35 P.S. § 6020.512, and Section 6517(a)(2) of UECA, 27 Pa.C.S. § 6517(a)(2), DEP would ensure that future property owners are aware of the contamination and that future exposure to PFOS and PFOA at any property is eliminated by requiring that a limitation on groundwater usage be included in an environmental covenant recorded at the local recorder of deeds. An administrative order under Section 512 of HSCA could be issued to enforce deed restrictions in instances when DEP is unable to secure a signed covenant.

Protection of Human Health and Environment:

This alternative would effectively eliminate the ingestion exposure pathway for PFOS and PFOA above the HAL.

Compliance with ARARs:

This alternative would comply with ARARs as the bottled water that DEP uses to supply affected residential properties does not have PFOS and PFOA above the HAL. DEP's contractor provided documentation to demonstrate that the bottled water that is being supplied was sampled to verify that it does not have PFOS and PFOA above the HAL.

Feasibility, Effectiveness, Implementability and Permanence:

This alternative is not considered a permanent or effective solution because it would not allow the existing residential privately-owned potable wells at the Site to be used as potable wells for an undetermined amount of time. Additionally, this alternative would be feasible and implementable, but would be an inconvenience to the residents because of interruptions in service (some due to weather) and the need for residents to lift, move, and store cases of water.

Costs and Cost Effectiveness:

The estimated cost of continuing to provide bottled water to affected residential properties above the HAL is approximately \$1,900 per year. The cost associated with sampling during a one-year period is \$14,080. The total annual cost for this alternative is \$15,980. This alternative is cost effective; however it is not a permanent solution.

ALTERNATIVE 3: Installation and Maintenance of Whole-House Filtration Systems Combined with Restrictions on the Use of Groundwater

Description of the Alternative:

Under this alternative, DEP would install and maintain Whole-House Filtration Systems in the form of point of entry treatment (POET) systems. These systems would be placed in homes at the Site that have untreated privately-owned potable wells with concentrations of PFOS and PFOA above the HAL. DEP would inspect existing POET systems that were privately installed in homes at the Site with concentrations above the HAL, to determine whether they provide a level of protection that is equivalent to that provided by DEP-installed POET systems. If necessary, these systems would be upgraded. DEP would sample the systems to determine if the filters are operating properly. DEP would continue to provide bottled water until the systems have demonstrated that they are reducing PFOS and PFOA concentrations to below the HAL. DEP plans to monitor and maintain the systems it installs for the duration of its ongoing investigation to ensure they are effectively removing the PFOS and PFOA from the water supplies. If this alternative is selected as DEP's final response, then the responsibility for maintaining the systems would be turned over to homeowners.

DEP would also continue to sample select residential properties in the surrounding area during its ongoing investigation of the Site. If necessary, additional POET systems would be installed on any additional residence with combined concentrations of PFOA and PFOS exceeding the HAL.

If this alternative is selected as a final response, then pursuant to Section 512 of HSCA, 35 P.S. § 6020.512, and Section 6517(a)(2) of UECA, 27 Pa.C.S. § 6517(a)(2), DEP would ensure that future property owners are aware of the contamination and that future exposure to PFOS and PFOA at any property is eliminated by ensuring that sampling and maintenance of treatment systems, and acknowledgment and prohibition on the use of groundwater on their properties with concentrations of PFOS and PFOA above the HAL be included in an environmental covenant recorded at the local recorder of deeds. An administrative order under Section 512 of HSCA could be issued to enforce deed restrictions in instances when DEP is unable to secure a signed covenant.

Protection of Human Health and the Environment:

This alternative would effectively eliminate the exposure pathways and, as a result, eliminate exposure to concentrations of PFOS and PFOA in the groundwater above the HAL. This alternative would also have the benefit of potentially providing control of

local groundwater flow direction and preventing further spread of the PFOS and PFOA in groundwater at the Site via the continued pumping of existing wells.

Compliance with ARARs:

This alternative would comply with ARARs because the systems would reduce PFOS and PFOA concentrations to below the HAL.

Feasibility, Effectiveness, Implementability and Permanence:

This alternative can be considered permanent provided that the systems are properly maintained and monitored. This alternative does require ongoing monitoring and maintenance costs for the property owners in order to ensure the systems are effective in eliminating exposure to concentrations of PFOS and PFOA in groundwater above the HAL. This alternative also allows for DEP to quickly and efficiently expand and implement it for a relatively low cost should additional properties be identified in the future as affected by PFOS and PFOA contamination as the investigation continues. Relative to Alternative 4, this alternative can be more quickly implemented.

Costs and Cost Effectiveness:

The cost associated with this alternative include installation, and sampling and maintenance of systems at impacted residential properties for an initial 12-month period. DEP will continue to provide bottled water until the systems demonstrate that they are reducing PFOS and PFOA to below the HAL.

The systems will require periodic maintenance and sampling for the systems to continuously and effectively treat the water. Maintenance or issues related to the systems may arise, which DEP would cover during its ongoing investigation. If this Alternative is selected as DEP's final response, any maintenance issues arising after that selection would be the responsibility of the homeowner.

The total cost for installing filtration systems is estimated at \$40,000. Two sampling events would be provided by DEP per year, costing \$2,640 per system and totaling \$21,120.

The total cost associated with this alternative is estimated to be \$75,200, making it a cost-effective alternative.

ALTERNATIVE 4: Installation of a Public Water Supply Waterline Combined with Restrictions on the Use of Groundwater

Description of Alternative:

Under this alternative, DEP would fund the connection of affected and threatened residential properties to an existing waterline within the area of concern. DEP would

fund: 1) any necessary construction of an extension of existing water line mains, 2) the lateral connections from the main to the affected properties, 3) the connection of the laterals to the existing buildings' plumbing, 4) the repairs to all road surfaces or properties disturbed by the water line construction, and 5) the abandonment of residential privately-owned potable wells.

Groundwater usage would be restricted by a municipal ordinance to ensure residents cannot be exposed to PFOS and PFOA above the HAL. Such an ordinance would require all residential properties with privately owned potable wells with concentrations of PFOS and PFOA above the HAL to abandon those wells and connect to public water. Note that DEP does not intend to seek the restrictions on the use of groundwater unless this alternative is selected as a final response.

Protection of Human Health and Environment:

This alternative would effectively eliminate the exposure pathways for PFOS and PFOA above the HAL.

Compliance with ARARs:

This alternative would comply with ARARs. It would eliminate the exposure to PFOS and PFOA above the HAL in the groundwater. The utility providing the public water would be required to provide their customers with potable water that is below the HAL for PFOA and PFOS and meets all drinking water standards.

Feasibility, Effectiveness, Implementation, and Permanence:

This alternative is effective at eliminating exposure to PFOS and PFOA among the currently identified affected properties and would be permanent in nature. This alternative is not as feasible or quickly implemented as Alternative 3, because it would involve a long period of construction. Finally, this alternative requires that included residential properties abandon their groundwater wells, the process of which could affect groundwater flow and result in the further spread of PFOS and PFOA.

Costs and Cost Effectiveness:

The estimated cost for Alternative 4 is over \$2,000,000. DEP does not consider this a cost-effective alternative since the groundwater conditions at the Site may continue to change if this alternative was implemented and additional properties may be affected in the future. This alternative is cost-prohibitive because the entirety of the area of concern would need to be connected to the waterline to guarantee that no additional properties will be exposed to the groundwater with concentrations of PFOS and PFOA above the HAL.

VI. PROPOSED RESPONSE

DEP has determined, based upon the information contained in this document, that an Interim Response action is justified at the Site in accordance with Section 501 of the Hazardous Sites Cleanup Act, Act of October 18, 1988, P.L. 756, No. 108, 35 P.S. § 6020.501.

DEP proposes the selection of Alternative 3, Installation and Maintenance of Whole-House Filtration Systems Combined with Restrictions on the Use of Groundwater as an Interim Response at the Easton Road PFC HSCA Site. The proposed response is effective in mitigating threats to public health and is cost effective.


The selected alternative provides substantially more protection to human health than Alternatives 1 and 2 and is as protective as Alternative 4 because it eliminates exposure to the contaminants in groundwater. The proposed response abates the threat to human health while allowing for the continued expansion and investigation of the Site area. Additionally, the widespread nature of the Site and number of properties affected makes the implementation of Alternative 4 neither feasible nor cost effective.

DEP considers this type of response to be an interim response as additional actions may be needed to achieve a complete and final cleanup for the site. For that reason, DEP does not intend to seek the restrictions on the use of groundwater included in this proposed response unless this proposed response is selected as a final response. DEP's responsibility under HSCA is to select a remedy that is protective of human health and the environment and complies with all statutory and regulatory requirements.

The selected alternative is protective of human health and will comply with ARARs. The alternative can be implemented quickly and is cost effective.

VII. DEP APPROVALS

FOR THE COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Patrick Patterson
SE Regional Director

10-7-19
Date

