**COMMONWEALTH OF PENNSYLVANIA**
**DEPARTMENT OF ENVIRONMENTAL PROTECTION**
**ENVIRONMENTAL CLEANUP PROGRAM**
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**Subject:** Analysis of Alternatives and Proposed Response
Ridge Run PFAS HSCA Site
East Rockhill and West Rockhill Townships
Bucks County

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Attached are the Analysis of Alternatives and Proposed Response for the Ridge Run PFAS HSCA Site.

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COMMONWEALTH OF PENNSYLVANIA

Department of Environmental Protection
Hazardous Sites Cleanup Program

Ridge Run PFAS HSCA Site
East & West Rockhill 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 (Department) proposes an Interim Response to the per- and poly-fluorinated alkyl substance (PFAS) contamination above the Health Advisory Limit (HAL) in private drinking water wells at the Ridge Run PFAS HSCA Site.

## I. SITE INFORMATION

### A. Site Location and Description

The Ridge Run PFAS HSCA Site (Site) is located along potions of Old Bethlehem Pike, Bethlehem Pike, Tabor Road, Hill Road and North Rockhill Road in East and West Rockhill Townships, Bucks County. The area is primarily residential with various recreational and several commercial and industrial properties nearby. Recreational properties include community parks, a Veterans of Foreign Wars (VFW) hall, and a state game land. Commercial properties include auto repair facilities, restaurants, a salon, a landscape products business, and a plant nursery. Also within the Site area are a church and school. Industrial properties include a quarry and a salvage yard. The Lawn Avenue Volatile Organic Compound (VOC) HSCA site is also located nearby.

### B. Site History

In August of 2016, the North Penn Water Authority (NPWA) conducted sampling for PFAS in two public water supply wells in East Rockhill Township in accordance with the federal Unregulated Contaminant Monitoring Rule (UCMR3). Analysis of these samples detected combined concentrations of Perflourooctane sulfonate (PFOS) and Perfluorooctanoic acid (PFOA) of 117 ng/L and 70 ng/L in these wells, both at or above the Lifetime Health Advisory

Level (HAL) established by the U.S. Environmental Protection Agency (EPA). Approximately 156 homes have been sampled by the Department in the subsequent investigation of the surrounding area. Twelve properties have been impacted above the HAL. The highest combined concentration detected was 11,320 ng/L. No source area has yet been identified. The Department is continuing to sample homes affected by the contamination on a quarterly basis to monitor concentrations at the Site. In addition to the 12 properties impacted above the HAL, two other properties with combined concentrations above 40 ng/L have continued to be monitored for seasonal fluctuations. The Department has also been providing bottled water to homes impacted above the HAL. The owners of two of the affected homes have installed their own carbon filtration units, which have been effective at reducing the levels of contamination below the HAL.

### C. Release of Hazardous Contaminants

The compounds identified above are considered contaminants as defined in Section 103 of HSCA and 42 U.S. Code § 9601 of the Federal Superfund Act (CERCLA). PFAS pose a threat to human health when present in drinking water supplies. 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.

## II. RESPONSE CATEGORY

Because of the PFAS in private drinking water wells, the Department will conduct an Interim Response, as defined in Section 103 of HSCA, 35 P.S. § 6020.103, to alleviate the threat to public health and safety.

## III. CLEANUP STANDARDS

This proposed response is not a final remedial response pursuant to Section 504 of HSCA, 35 P.S. § 6020.504, and therefore is not required to meet the cleanup standards which apply to final remedial responses. Additional response action may be needed to achieve a complete and final cleanup for the Site.

## IV. APPLICABLE, RELEVANT and APPROPRIATE REQUIREMENTS (ARARs)/ MATERIAL TO BE CONSIDERED (TBC)

The following standards, requirements, criteria or limitations are legally applicable, or relevant and appropriate under the circumstances presented by the Site.

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.* ("HSCA")

- Gives the Department 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 as any substance defined as such by the Federal Superfund Act (CERCLA).

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) 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 under the Land Recycling and Environmental Remediation Standards Act at 25 Pa. Code Chapter 250.

- Provides that, for regulated substances where no Maximum Contaminant Level (MCL) has been established by the Department or the EPA, the Medium-Specific Concentrations (MSCs) for groundwater are the Lifetime Health Advisory Levels (HAL).

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 under the Safe Drinking Water Act 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.
- Requires that bottled water suppliers meet the same water quality standards as public water suppliers.

B. TO BE CONSIDERED (TBC)

In addition to the ARARS listed above, the following document is pertinent to the response actions proposed herein, yet is not statutory or regulatory in nature.

*Guidance for Commonwealth-Funded Water Supply Response Actions*, June 15, 2013, 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 HSCA funds.
- 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

### ALTERNATIVE 1: No Action

**Description of the Alternative:**
The no further action alternative serves as a baseline to compare against other response actions. Under this alternative the Department 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 threats to the public health and safety due to the potential of exposure to Site contaminants.

**Compliance with ARARs**
This alternative would not comply with ARARs. The public would be exposed to concentrations of contaminants in the groundwater in excess of the Health Advisory Limit established by the EPA.

**Feasibility, Effectiveness, Implementability and Permanence**
This alternative would be feasible and implementable because no action is being taken, but would not be effective in addressing the health threats to the public and does not offer a permanent solution.

**Cost Effectiveness:**
There is no cost associated with this alternative.

### Alternative 2. Continued Delivery of Bottled Water (for a 1-year period) with Restrictions on the Use of Groundwater

**Description of Alternative**
Under this alternative, the Department would continue to supply bottled water to the residences in the Site area now relying on untreated private wells with concentrations of contaminants above the Health Advisory Limit. Bottled water would be supplied for a 1-year period from the Statement of Decision. After 1 year, residents would be responsible for securing their own potable water. In addition, environmental covenants would be necessary for properties

contaminated with PFAS above drinking water standards, to limit the use of ground water for domestic purposes.

**Protection of Human Health and Environment**
This alternative would effectively eliminate the consumption of PFAS through drinking water

**Compliance with ARARs**
This alternative would comply with ARARs as the bottled water that the Department uses to supply affected residents meets all safe drinking water standards.

**Feasibility, Effectiveness, Implementability and Permanence**
This alternative is not considered a permanent solution and would require that residents continue to use bottled water for drinking and cooking for an undetermined amount of time.

**Cost Effectiveness**
The estimated cost of continuing to provide bottled water to affected properties over the HAL for 1 year is approximately $6,500.

**Alternative 3. Installation and Maintenance of Whole-House Filtration Systems with Restrictions on the Use of Groundwater**

**Description of Alternative**
Under this alternative, the Department would install and maintain point-of-entry treatment systems (POETs) in the form of whole-house granulated activated carbon (GAC) filters. These systems would be placed in homes in the Site area that now rely on un-treated private wells with contamination above the HAL. The Department would sample the systems over an initial 1-year period to determine if the filters are operating properly. After that period, the responsibility for maintaining the systems would be turned over to homeowners.

Pursuant to the Uniform Environmental Covenants Act (UECA), Act of December 18, 2017, P.L. 450, No. 68, 27 Pa.C.S. §§ 6501 *et seq.*, residents would be required to execute Environmental Covenants to ensure maintenance of their carbon filtration systems, continued post-treatment well water sampling, and acknowledgment of contaminated ground water on their properties. An administrative order under Section 512 of HSCA could be issued to property owners with contamination above the HAL who refuse to sign a covenant.

**Protection of Human Health and the Environment**
This alternative would effectively eliminate the threats to the public health and safety. This alternative would also have the benefit of providing control of the plume and preventing further spread of contamination via the continued pumping of existing wells.

**Compliance with ARARs**
This alternative would comply with ARARs because the filtration systems would reduce PFAS concentrations to below the Health Advisory Level.

**Feasibility, Effectiveness, Implementability and Permanence**

This alternative is considered a permanent solution, given the filter systems are properly maintained and monitored for filter breakthrough. This alternative does require ongoing monitoring and maintenance costs for the property owners in order to ensure the system is effective in removing all contamination. This alternative also allows for the Department to implement the remedy for a relatively low cost on additional properties that may be identified in the future as affected by contamination as the investigation continues, and is more quickly implemented than Alternative 4.

**Cost Effectiveness**

The costs associated with this alternative include installation, sampling and maintenance of carbon filtration systems at 12 impacted properties over a 1-year period. The cost for the installation of filtration systems is estimated at $2,000 per system, totaling $24,000. The cost for sampling one home with a carbon filtration system is estimated at $1,320 per sampling event. Four sampling events would be provided by the Department for the 1-year period, costing $5,280 per system and totaling $63,360. Installation and sampling combined would therefore total $87,360.

Carbon filter media eventually becomes saturated with contaminants, and the canisters require periodic media change-outs for the systems to continuously and effectively treat the water. Changeout of these canisters or plumbing maintenance issues related to the treatment systems may arise in the initial 1-year period following installation, which the Department would cover. An additional estimate of $9,000 for maintenance work on all 12 systems is included to cover such costs.

Overall, the total cost for alternative 3 is estimated at around $96,360 making it a cost-effective option.

**Alternative 4. Extension of an Existing Public Water Line, with Restrictions on the Use of Groundwater**

**Description of Alternative**

Under this alternative, the Department would use money from the Hazardous Sites Cleanup Fund to connect affected and threatened properties to an existing water line in the Site area. The Department 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 private water supply wells.

Groundwater usage would be restricted by a municipal ordinance. Such ordinances typically require all homes with contaminants above Medium Specific Concentrations (MSCs) to abandon private well supplies and connect to public water to ensure residents cannot access contaminated groundwater.

**Protection of Human Health and the Environment**

This alternative would effectively eliminate the threats to the public health and safety.

**Compliance with ARARs**

This alternative would comply with ARARs. It would eliminate the exposure to the contaminants present in the groundwater. The utility providing the public water would be required to provide their customers with clean drinking water.

**Feasibility, Effectiveness, Implementability and Permanence**
This alternative is highly effective at eliminating exposure to contaminants and would be a permanent solution. However, likely and yet unknown changes in groundwater conditions in the area and complex area geology make this alternative less feasible than alternative 3, as the line might have to be extended significantly over time. In addition, this alternative is not as quickly implemented as alternative 3, would involve a long period of construction, and could allow the further spread of contamination if existing private wells are abandoned, possibly changing groundwater flow.

**Cost Effectiveness**
The estimated Departmental cost for alternative 4 is possibly over $2,000,000. The Department does not consider this a cost-effective alternative since the groundwater conditions at the Site may continue to change and additional properties may be affected in the future. This alternative is cost-prohibitive because the entirety of the Site area (over 24,000 feet of main) would need to be connected to the waterline to guarantee no additional properties will be exposed to the contamination.

## VI. PROPOSED RESPONSE

The Department proposes the selection of Alternative 3, installation and maintenance of whole-house filtration systems with restrictions on the use of groundwater. The Department has determined, based upon the information contained in this document, that an Interim Response action is justified at the Site in accordance with Section 505(b) of the Hazardous Sites Cleanup Act, Act of October 18, 1988, P.L. 756, No. 108, 35 P.S. § 6020.505(b).

The third alternative affords substantially more protection to human health than the alternatives 1 and 2, and is as equally protective as alternative 4. Alternative 3, however, abates the threat to human health from ingestion of contaminated water while allowing for the continued expansion and investigation of the Site. Additionally, the widespread nature of the Site and remaining questions regarding the long-term groundwater flow and number of properties affected makes the implementation of alternative 4 neither feasible nor cost effective. This proposed response is effective in mitigating threats to public health, and is a cost-effective alternative.

## VII. DEP APPROVALS

FOR THE COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

5-25-18

Patrick Patterson
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