

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ENVIRONMENTAL CLEANUP PROGRAM

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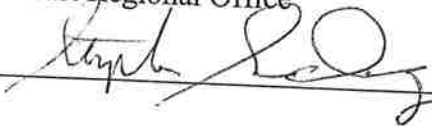
Subject: Analysis of Alternatives and Proposed Response
Midfield VOCs HSCA Site
Horsham Township, Montgomery County

To: Cosmo Servidio, Regional Director
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Attached is the Analysis of Alternatives and Proposed Response for the Midfield VOCs HSCA Site.

Stephen Sinding, Manager
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_____ Concur 2/7/14 Date
_____ Do not Concur _____ Date

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COMMONWEALTH OF PENNSYLVANIA
Department of Environmental Protection
Hazardous Sites Cleanup Program
Midfield VOCs HSCA Site
Horsham Township, Montgomery County, Pennsylvania

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. § 6020.506.

The Pennsylvania Department of Environmental Protection (Department) proposes an Interim Response to abate volatile organic compound (VOC) contamination in private drinking water wells at the Midfield VOCs HSCA Site.

I. SITE INFORMATION

A. Site Location and Description

The Midfield VOCs HSCA Site (Site) is located along portions of Midfield Drive, Park Road, and Davis Grove Road in Horsham Township, Montgomery County. Residential properties in the Site area have been impacted by groundwater contamination. The area is primarily residential with various recreational and commercial properties nearby. Recreational properties include a nearby golf course and community parks. Commercial properties include auto repair facilities, a dry-cleaner, and an equipment rental company, among others. The Limekiln PCE HSCA Site is also located nearby.

B. Site History

In February, 2013, the Department was notified by a property owner on Midfield Drive that private sampling of well water at that location yielded detections of VOCs. The Department subsequently sampled the well and confirmed the presence of 1,1-Dichloroethylene (1,1-DCE), and 1,2-Dichloroethane (1,2-DCA) above maximum contaminant levels (MCLs). Additionally, 1,1-Dichloroethane (1,1-DCA), and 1,1,1-Trichloroethane (1,1,1-TCA) were detected in the well, but in amounts below their respective safe drinking water health standards. Prompted by these results, the Department conducted additional residential well sampling in the immediate area. To

date, the Department has sampled 30 residential wells in the Site area. Eight of the wells tested have had detections above drinking water MCLs of one or more of the following compounds: 1,1-DCE, 1,2-DCA and tetrachloroethylene (PCE). The Department is providing 7 of those properties with bottled water for potable use; the remaining home is unoccupied at this time, and will be provided with bottled water if/when it becomes a primary residence during the Department's investigation. Sixteen of the wells sampled by the Department have exhibited concentrations of one or more of the aforementioned VOCs below their respective drinking water health standards.

C. Release of Hazardous Contaminants

All of the compounds identified above are listed as hazardous substances under 40 CFR Part 302.4. These VOCs pose a threat to human health when present in drinking water supplies. Health effects associated with long term exposure to these chemicals include nervous system disorders, as well as kidney and/or liver disease.

II. RESPONSE CATEGORY

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

The response category is an Interim Response, because it is expected to cost less than Two Million Dollars (\$2,000,000) and be completed in less than one year.

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

National Primary Drinking Water Regulations, 40 CFR §141.1, *et seq.*

- Section 141.61(a) provides a list of federal maximum contaminant levels (MCLs) for organic contaminants in drinking water. Below is a table of Site-related MCLs obtained therefrom.

Contaminant	MCL for groundwater (used aquifer) in micrograms/liter (µg/L)
1,1-DCE	7
1,2-DCA	5
1,1-DCA	Not established
PCE	5
1,1,1-TCA	200

Land Recycling and Environmental Remediation Standards Act, Act of May 19, 1995, P.L. 4, No. 1995-2, 35 P.S. § 6026.101, *et seq.* ("Act 2")

- Section 303 outlines the establishment of statewide health standards and medium specific concentrations (MSCs) for all mediums, including groundwater.

Administration of Land Recycling Program, Chapter 250 (25 Pa. Code §§250.1 - 250.708)

- Appendix A provides MSCs of various contaminants, including those found at the Midfield VOCs Site. These are listed below.

Contaminant	MSC for groundwater (used aquifer) in micrograms/liter (µg/L)
1,1-DCE	7
1,2-DCA	5
1,1-DCA	31
PCE	5
1,1,1-TCA	200

Pennsylvania Safe Drinking Water Act, Act of May 1, 1984, P.L. 206, No. 43, 35 P.S. § 721.1, *et seq.*

- Establishes a state program to oversee the provision of safe drinking water to the public

Regulations promulgated under the Safe Drinking Water Act, 25 Pa. Code §§109 et. seq.

- Sets forth drinking water quality standards and provides requirements for public water systems including; permit design, construction, source quality, and siting requirements
- Section 109.1002(a) mandates 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 Further 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.

Compliance with ARARs:

This alternative would not comply with ARARs because it does not prevent exposure to VOCs above the statewide health standard in drinking water in the affected private wells in the area.

Costs and 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 the Alternative:

Under this alternative, the Department would continue to supply bottled water to the residences in the site area now relying on un-treated private wells with concentrations of contaminants above safe drinking water standards. 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 VOCs above drinking water standards, to limit the use of ground water for domestic purposes.

Compliance with ARARs:

This alternative would comply with ARARs as bottled water meets safe drinking water standards.

Costs and Cost Effectiveness:

The cost of the Department's delivery of bottled water to the affected homes in the site area is estimated to be approximately \$5,100 per year. This amount is based on the 7 homes that currently have VOCs in their well supplies over safe drinking water standards, using the current fees of the Department's contracted bottled water provider for the Site. This alternative is cost effective.

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

Description of the 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 statewide health standard. The Department would sample the systems over an initial one 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 No. 68 of 2007, 27 Pa.C.S. §§6501-6517, residents would be required to execute Environmental Covenants to ensure maintenance of their carbon filtration systems, continued well water sampling, and acknowledgment of contaminated ground water on their properties. An administrative order could be issued to property owners with contamination above the statewide health standard, who refuse to sign a covenant.

Compliance with ARARs:

This alternative would comply with ARARs because the filtration systems would reduce VOC concentrations to levels within safe drinking water standards, preventing the ingestion of contaminated drinking water.

Costs and Cost Effectiveness:

The costs associated with this alternative include installation, sampling and maintenance of carbon filtration systems at 8 impacted properties over a one year period. The cost for the installation of filtration systems is estimated at \$2,000 per system, totaling \$16,000. The cost for sampling one home with a carbon filtration system is estimated at \$900 per sampling event. Two sampling events would be provided by the Department for the one-year period, costing \$1,800 per system and totaling \$14,400. Installation and sampling combined would therefore total \$30,400.

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. Based on the concentrations of VOCs that have been found in the affected wells at the Site, breakthrough of contaminants would be unlikely to occur within the first year of filter operation. Maintenance in the form of carbon change-outs would therefore be limited. However, other filter or plumbing maintenance issues related to the treatment systems may arise in that period, which the Department would cover. An additional estimate of \$3,000 for maintenance work on all 8 systems is included to cover such costs.

Overall, the grand total for alternative 3 is estimated at \$33,400 making it a cost-effective alternative.

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.

An extension of the water main would be required along Midfield Drive in order to service homes located on that street. Park Road, however, already has a water main, so construction there would be limited to lateral connections.

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

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 routinely monitor water quality, and comply with established drinking water regulations.

Costs and Cost Effectiveness

The estimated Departmental cost for alternative 4 is \$400,000. The Department considers this a cost-effective alternative since over 20 homes would likely be included in the project, and the action would result in eliminating access to the contaminated water.

VI. PROPOSED RESPONSE

The Department proposes the selection of Alternative 4, extension of an existing public water line 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 fourth alternative affords substantially more protection to human health than the alternatives 1 and 2, and is as equally protective as alternative 3. Alternative 4, however, abates the threat to human health from ingestion of contaminated water without the need for routine maintenance of a treatment system. Additionally, the nearby existing public water infrastructure makes the proposed project relatively easy to implement. 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


Cosmo Servidio
SE Regional Director

2-5-14
Date