# HIDDEN LANE LANDFILL
# SUPERFUND SITE
# STERLING, LOUDOUN COUNTY, VIRGINIA

# RECORD OF DECISION

United States Environmental Protection Agency
Region 3
1650 Arch Street
Philadelphia, PA 19103-2029

June 2019

HIDDEN LANE LANDILL SUPERFUND SITE
STERLING, LOUDOUN COUNTY, VIRGINIA

RECORD OF DECISION

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# RECORD OF DECISION
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## DECLARATION

### Site Name and Location

Hidden Lane Landfill Superfund Site
Sterling, Loudoun County, Virginia EPA ID Number VAD980829030

### Statement of Basis and Purpose

The Hidden Lane Landfill Superfund Site (Site) was a privately owned and operated disposal facility situated north of Virginia Route 7 between the communities of Broad Run Farms, to the west, and Countryside, to the east, in Sterling, Loudoun County, Virginia (Figure 1). For administrative purposes the Site has been separated into two Operable Units. Operable Unit 1 (OU1) addresses the Site-related source area and groundwater clean-up. Operable Unit 2 (OU2) addresses exposure of the public to site-related contaminants in groundwater in residential drinking water wells. This decision document presents the selected interim remedial action for (OU2) at the Site. This interim remedial action was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300. This decision document explains the factual and legal basis for selecting the interim remedial action for the Site. The information supporting this decision is contained in the Administrative Record for this Site. The Administrative Record for the Site can be found at https://go.usa.gov/xQD7r.

The Virginia Department of the Environmental Quality (VADEQ) concurs with the OU2 selected interim remedial action.

### Assessment of the Site

Pursuant to duly delegated authority, I hereby determine, pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606, that actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Interim Remedial Action Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare, or the environment.

### Description of the Selected Remedy

The interim remedial action described here addresses public exposure to site-related groundwater contamination in residential drinking water wells (OU2). The source area, landfill and restoration of contaminated groundwater will be addressed in a future ROD for OU1.

Past landfill operations at the Site have resulted in contamination of groundwater, and nearby domestic-use drinking water wells with trichloroethene (TCE). TCE is present in drinking water wells at concentrations exceeding the federal maximum contaminant level (MCL) of 5 µg/L, promulgated pursuant to Section 1412 of the Safe Drinking Water Act, 42 U.S.C. 300g-1, and codified in 40 C.F.R. § 141.61. MCLs are considered applicable requirements for public drinking water supply under CERCLA Section 121(d) and are required to be met at the tap prior to use. Current concentrations of TCE in drinking water wells down gradient from the Site range from non-detect to 300 µg/L.

The selected remedy consists of extending an existing public waterline into the area of the Broad Run Farms development affected or potentially affected by the Site and will establish land use controls (LUCs) that will insure long-term public protection from contaminated groundwater until it is restored under OU1.

This remedy will also be protective of potential increases above the MCL of TCE breakdown products that may be formed by future groundwater remedial action, or natural breakdown. Potential breakdown products include: 1,1-dichloroethene (1,1-DCE), cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride (VC).

**Statutory Determinations**

The OU2 interim remedial action is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, is cost-effective, and utilizes permanent solutions to the maximum extent practicable.

Because this interim remedial action will result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure, a review will be conducted within five years after commencement of this interim remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment. Such reviews will be conducted a minimum of every five years thereafter, until EPA determines that hazardous substances remaining at the Site do not prevent unlimited use and unrestricted exposure at the Site.

06/13/19

Paul Leonard, Acting Director
Superfund and Emergency Management Division
EPA Region III

Date

# RECORD OF DECISION
# HIDDEN LANE LANDFILL SUPERFUND SITE

# DECISION SUMMARY

## I. SITE NAME, LOCATION, AND DESCRIPTION

The Hidden Lane Landfill Site was a privately owned and operated landfill disposal facility situated north of Virginia Route 7 between the communities of Broad Run Farms, to the west, and Countryside, to the east, in Sterling, Loudoun County, Virginia (Figure 1). The landfill is approximately 30 acres in size and is adjacent to the flood plain of the Potomac River.

The EPA ID number for the Site is VAD980829030. EPA Region 3 is the lead agency for the Site, and the State of VADEQ is the support agency.

## II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

The landfill began accepting a variety of solid wastes including construction and demolition wastes in 1971. The landfill was closed in 1986 by order of the Commonwealth of Virginia. A two-foot clay cover was installed on top of the landfill when it was closed. The landfill is now covered by grass and young trees. The Site is currently not in use. The Site is not fenced, and access is unrestricted except for a locked gate at the Site entrance road.

Based on monitoring conducted by Loudoun County Department of Technical Services, methane gas was identified emanating from the landfill in Countryside in 1986. EPA conducted a Preliminary Assessment of the landfill from 1988 to 1989. Trichloroethene (TCE) contamination was detected in two drinking water wells in the Broad Run Farms community, west of the landfill. No TCE was detected in the three landfill monitoring wells located downgradient of the landfill, landfill seeps, soils or surface water. Based on the information available at the time and the limited scientific understanding of bedrock aquifers, the TCE in drinking water wells was not attributed to the landfill at that time. No further action under CERCLA was recommended.

Over the next 16 years, TCE was found in five new wells installed in the Broad Run Farms community. In March 2005, 67 drinking water wells in the Broad Run Farms community were sampled for TCE by the Loudoun County Health Department. Based on the sampling results, VADEQ installed Point-of-Entry Treatment Systems (POETS) in 22 affected residences to remove the TCE before the well water was distributed in the home plumbing. Three additional residences were provided POETS during the VADEQ period of system maintenance, which continued until June 2008.

EPA reopened its evaluation of the Site in October 2005. A Site Assessment was completed in 2007 which resulted in the Site being proposed to EPA's National Priorities List of contaminated sites (NPL) on September 19, 2007. The Site was listed on the NPL on March

19, 2008. Maintenance of the 25 residential POETS, was transferred from VADEQ to EPA in June 2008. POETS maintenance will continue until the remedy selected in this Interim Remedial Action ROD is implemented. EPA installed additional POETS at residences where Site contaminants were found to pose a risk or potential risk to human health during the remedial investigation. Currently, EPA maintains 36 residential POETS.

Remedial Investigation (RI) activities began in early 2009. The investigation included sampling and analysis of groundwater, surface water, and sediment, as well as landfill gases including methane associated with the landfill. An evaluation of the potential for the migration of site-related vapors into private homes was also conducted. Only human exposure to contaminated groundwater posed any unacceptable risk.

In 2016, EPA began work on a Feasibility Study (FS) at the Site to identify alternatives for a remedial action to address the drinking water well contamination and groundwater contamination. Due to uncertainties concerning the potential source of groundwater contamination and the need for further investigation, EPA and VADEQ in the summer of 2017 decided to propose a permanent remedy to the domestic drinking water wells affected by TCE in groundwater as a separate interim remedial action. The decision resulted in the establishment of OU2. An Interim Remedial Action FS (IRAFS) to address this exposure route was finalized in September 2017. This Interim Remedial Action FS summarizes data collected by EPA during the ongoing RI, as well as data collected by VADEQ and Loudoun County during previous investigations and identifies alternatives for addressing exposure to TCE in residential drinking water wells at concentrations exceeding or potentially exceeding the federal Safe Drinking Water Act MCL of 5 µg/L (Figure 2).

## III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

Pursuant to Section 113(k)(2)(B) of CERCLA, 42 U.S.C. § 113(k)(2)(B), the RI and FS reports, the Proposed Plan, and other documents relating to this Interim Remedial Action ROD were released to the public for comment on April 19, 2018. These documents were made available to the public online at https://go.usa.gov/xQD7r and in the EPA Administrative Record Room at EPA's Region 3 office, and in the Cascades Library, 21030 Whitfield Place, Potomac Falls, VA 20165, phone 703-444-3228. The notice of availability of these documents was published in the *Loudoun Times-Mirror* on April 18, 2018.

A public comment period on the documents was held from April 19, 2018 until June 18, 2018. EPA's standard 30-day comment period was proactively expanded to 60 days following notice of Loudoun County's concern that it would have difficulty in formalizing comments in 30 days. EPA held a public meeting at the Galilee United Methodist Church, 45425 Winding Road, Sterling, VA 20165 on April 26, 2018. Representatives from both EPA and the VADEQ answered questions regarding the Site and the Proposed Plan at the public meeting. The public meeting was well attended and the proposed alternative to extend the existing waterline to the residences affected or potentially affected by TCE and its breakdown products was generally supported. EPA received limited comments during the public comment period. All public comments received support the proposed waterline extension and connection of affected or

potentially affected residences. Information related to the public comment period is summarized in the Responsiveness Summary section of this Interim Remedial Action ROD. Responses to all substantive comments received during the public comment period are provided in the Responsiveness Summary.

## IV. SCOPE OF THE INTERIM REMEDIAL DECISION

Disposal activities at the Hidden Lane Landfill Site resulted in the release of TCE into the bedrock aquifer which supplies drinking water to residential wells in the Broad Run Farms community. This ROD for the OU2 interim remedial action provides a permanent remedy to prevent the exposure of affected residents to Site-related groundwater contaminants via drinking water wells impacted by the Site. A final remedial action for the restoration of groundwater to beneficial use at the Site (OU1) will be the subject of a future proposed plan and ROD following completion of the RI/FS, which addresses all contaminated media at the Site.

## V. SITE CHARACTERISTICS

### A. Geographical, Topographical and Hydrogeological Features

The Site is located in a residential area of Sterling, Loudoun County, Virginia. Residential developments are present to the immediate east, west, and south of the Site. The Hidden Lane Landfill occupies approximately 30 acres of 150 acres of undeveloped property. The property extends from the Potomac River south approximately 5,000 feet to Persimmon Road and separates the Broad Run Farms development from the Countryside development. The landfill is approximately 50 feet high, 400 feet wide, and 2,000 feet long. The area north of the landfill is undeveloped woodland bounded by the Potomac River.

A 2-foot-thick clay cover was installed over the landfill in 1986. The clay cover has not been maintained. The landfill is currently covered by grass and young trees. The landfill is currently not in use and does not have a perimeter fence. This allows for unrestricted access. Maintenance of the cap will be address in a future decision document.

Topographically, the Site lies within the Triassic Lowlands, a subdivision of the Piedmont Physiographic Province. Apart from the landfill itself, the topography of the Site consists of a series of fluvial terraces and the 100-year floodplain of the Potomac River. The floodplain of the Potomac River extends from the river southward approximately 2,000 feet to near the northern extent of the landfill. Most of this area is designated wooded wetland. The elevation of the Site changes from approximately 240 feet (ft.) above mean sea level (MSL) in the southern portion of the Site to approximately 200 ft. MSL near the Potomac River. The top of the landfill itself is approximately 276 ft. MSL.

The landfill is mounded (50 ft. in height) relative to surrounding grades, is steeply sloping, and has a relatively flat, but irregular topographic top surface.

The Site is located in the Broad Run watershed of the Potomac River Basin. There are several small, un-named tributaries located near the Site. One is located adjacent to the western

boundary of the landfill and the others are located north of the landfill. Broad Run Creek is located approximately 1,500 ft. west of the landfill, and it flows northward into the Potomac River.

Several ponds are located northwest of the Site, and one pond located east of the landfill and north of the Countryside subdivision is known to be sourced by a spring.

Geologically, the Site lies within the Culpeper Basin, the largest of the Mesozoic age rift basins in Virginia. These early Mesozoic basins were formed during downfaulting associated with the continental breakup of Pangaea and are filled with mostly sedimentary rocks. The Culpeper Basin is bound to the west by east-dipping normal faults. The basin shallows to the east, unconformably overlying rocks of the Potomac Terrane, and is bounded locally by an antithetic west-dipping normal fault.

Two major geologic units are found at the Site: unconsolidated alluvium and terrace deposits, and bedrock. The Quaternary alluvium and terrace deposits of the ancestral Potomac River overlie the Triassic Balls Bluff Siltstone. Based on the Geologic Map of Loudoun County, Virginia, overburden on the southern portion of the Site consists of terrace deposits while overburden in the northern portion consists of alluvium. Observations made during the RI field activities determined that the alluvium and terrace deposits near the Site are approximately 7 to 37 ft. thick. Weathered bedrock (saprolite), ranging from 3 to 5 ft. in thickness separate the Quaternary deposits from the underlying bedrock. The bedrock encountered beneath the Site consists of the ancient river (fluvial) and lake (lacustrine) deposits of the Balls Bluff Siltstone. Depth to bedrock range from approximately 16 ft. to 37 ft. bgs.

The Balls Bluff Siltstone is estimated to be approximately 4,000 ft. thick near the Site. The fluvial member is a red-brown silty sandstone interbedded with clayey and sandy siltstone layers. In contrast, the lacustrine member consists of thin-bedded silty and sandy shale interbedded with clayey and sandy siltstone. Siltstone is the predominant rock type encountered near the Site.

Groundwater underlying the Site occurs within a two-aquifer flow system. The two aquifer units are the overburden and bedrock aquifers. The overburden aquifer consists of the soil and saprolite overlying the bedrock. The perched shallow groundwater above the bedrock is not continuous. Near the landfill shallow overburden groundwater appears to be temporarily present during times of precipitation. Closer to the Potomac River, groundwater in the overburden is more widespread and persistent. This is evidenced by the presence of wooded wetland north of the landfill. The direction of groundwater flow within the overburden aquifer is from areas of higher upland elevation north toward lowland elevation near the Potomac River.

Residences in the Broad Run Farms development obtain their water from the bedrock aquifer. The bedrock aquifer is separated from the overburden aquifer by a clay layer at the base of the overburden. The upper 20 ft. of bedrock near the landfill is not saturated with groundwater. The thickness of unsaturated bedrock decreases toward the Potomac River. Groundwater flow within the bedrock is restricted to the secondary openings such as joints

and fractures. Like the overburden aquifer, the preferred direction of groundwater flow is north toward the river. However, the specific pathway is controlled by the orientation and degree of connection of bedrock fractures. This results in a north/northwest direction of groundwater flow in the bedrock.

## B. Sampling Activities and Extent of Contamination

The RI conducted by EPA has been conducted in two parts. The initial RI conducted by EPA included landfill gas monitoring, surface and subsurface soil sampling, surface water and sediment sampling, the installation and sampling of 28 monitoring wells, and residential vapor intrusion sampling.

The results of the RI and associated risk assessments indicate the following:

- TCE and its potential breakdown products are the only contaminants of concern (COCs) at the Site. Potential TCE breakdown products are 1,1-dichloroethene (1,1-DCE), cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride (VC).
- Disposal of TCE within the landfill has resulted in a 207-acre dissolved TCE groundwater plume within the fractured bedrock Balls Bluff formation.
- The plume extends from the southern end of the landfill north/northwest beneath the Broad Run Farms community to the Potomac River. (See Figure 2.)
- No unacceptable risks were identified from exposure to soils, surface water, sediments or vapor intrusion.
- Methane gas generation is no longer a concern at the landfill.

An RI Addendum is currently in development. This will include among other things the source area investigation, vapor intrusion findings and additional metals background discussion.

Since the public meeting, EPA has sampled 167 additional residential wells in Broad Run Farms to better define the buffer zone area around the contaminated plume as part of the selected remedy. EPA has evaluated the sampling data and has not identified any significant changes to the understanding of the nature and extent of the contaminant plume.

## C. Conceptual Site Model

As stated above, the plume extends from the southern end of the landfill north/northwest beneath the Broad Run Farms community to the Potomac River. See Figure 2 for a depiction of the areal extent of the plume of TCE and contours identifying concentrations.

The potential source area for groundwater contamination has recently been identified at the southern end of the landfill near the historic landfill entrance and is under further investigation. The Conceptual Site Model (CSM) that incorporates this new information will be presented in a future decision document that addresses the restoration of the contaminated groundwater and source area under OU1.

## VI. CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES

The Hidden Lane Landfill occupies approximately 30 acres of 150 acres of undeveloped property. Most of the floodplain of the Potomac River, which extends from the river southward approximately 2,000 feet to near the northern extent of the landfill, is designated wooded wetland. Land surrounding the landfill property is zoned residential. The bedrock aquifer is the current source of drinking water for the Broad Run Farms community. An EPA supported, stakeholder-driven reuse visioning process is currently under way in which local stakeholders and residents discuss potential reuse options for the Hidden Lane Landfill Site. The Interim Remedial Action selected in this ROD will be consistent with current and any future land use of the Site property.

## VII. SUMMARY OF SITE RISKS

### A. Human Health Risk Assessment Summary

TCE is present in drinking water wells at concentrations exceeding the federal MCL of 5 µg/L, promulgated pursuant to section 1412 of the Safe Drinking Water Act, 42 U.S.C. 300g-1, and codified in 40 C.F.R. § 141.61. MCLs are applicable requirements for drinking water wells under CERCLA Section 121(d) and are required to be met at the tap prior to use. Current concentrations of TCE in residential wells range from non-detect to 300 µg/L. No other MCL exceedances have been detected in residential or monitoring wells. However, EPA's source area investigation may detect further exceedances.

### B. Summary of Ecological Risk Assessment

No unacceptable ecological risks have been identified at the Site. A further detailed discussion of the ecological risk assessment conducted for the Site will be contained in a future decision document for OU1.

### C. Identification of Contaminants of Concern

EPA and VADEQ have identified TCE and its potential breakdown products (1,1 DCE, cis 1,2 DCE, and VC) as the primary COCs that pose the greatest potential unacceptable risk to human health related to the Site. Potential breakdown products, while currently not present in the groundwater above MCLs, may become elevated due to future groundwater remedial actions, or nature breakdown.

## VIII. REMEDIAL ACTION OBJECTIVES

The Remedial Action Objective (RAO) for this interim remedial action is to:

- Prevent current or future exposure of the public to TCE and its breakdown products in groundwater via drinking water wells at concentrations exceeding MCLs.

EPA guidance states that "[a]n interim action is limited in scope and only addresses areas/media that also will be addressed by a final site/operable unit ROD." This RAO is

designed to support a final remedial action which will comply with CERCLA requirements to cleanup contaminants in groundwater and restore the groundwater to beneficial use. Therefore, the RAO reflects the limited scope of an interim remedial action. By preventing human exposure to contaminated groundwater, the interim remedial action will reduce Site risks by ensuring that, prior to the cleanup of the groundwater, the public is not exposed, or potentially exposed, to contaminants in groundwater at concentrations exceeding MCLs.

## IX. SUMMARY OF REMEDIAL ACTION ALTERNATIVES

EPA, in consultation with VADEQ, developed remedial action alternatives in the Interim Remedial Action FS to address public exposure to COCs in groundwater through consumption of contaminated residential well water at concentrations exceeding MCLs.

The alternatives evaluated below were designed to meet the RAO, as well as support subsequent remedial actions.

| Alternative | Description |
|---|---|
| 1 | No Action |
| 2 | Land Use Controls |
| 3 | Continued Maintenance of POETS with Land Use Controls |
| 4 | Public Waterline with Land Use Controls |

### Alternative 1: NO ACTION

Consideration of this alternative is required by the NCP at 40 C.F.R. § 300.430(e)(6). Alternative 1 requires no additional remedial action to be taken at the Site. The No Action alternative serves as a basis against which each of the other proposed remedial alternatives can be compared. Under this alternative, the existing POETs would no longer be maintained by either EPA or VADEQ.

### Alternative 2: LAND USE CONTROLS (LUCs)

This action would eliminate exposure to contaminated groundwater through the use of land use controls such as local ordinances. These restrictions would prohibit the use of groundwater for potable use (drinking, bathing, or cooking) within the area of Site-related groundwater contamination, including a buffer zone. The buffer zone is intended to address any potential future migration of contaminants into unaffected areas where residences will not be connected to the waterline as part of this interim remedial action. The final boundary of the buffer zone has been determined based on historic and additional residential well sampling results since release of the proposed plan. The definition of the buffer zone can be found on Figure 4 which illustrates Alternative 4: PUBLIC WATERLINE with LUCs.

EPA would work with the local county government to implement these controls. It should be noted that the final language and implementation of local ordinances will be at the discretion of the county government. These controls may be removed after contaminated groundwater is restored to allow unlimited use and unrestricted exposure.

**Alternative 3: CONTINUED MAINTANENCE OF POINT-OF-ENTRY TREATMENT SYSTEMS (POETS) with LUCs**

This action would continue the use of POETS to treat contaminated groundwater in residences before it reaches human receptors. Thirty-six POETS are currently installed at residences in the Broad Run Farms community at locations where TCE has exceeded or could potentially exceed the MCL of 5 µg/L (Figure 3) in private wells. POETS consist of two carbon units located in series (primary and back-up) that capture the TCE, followed by an ultra violet (UV) light to remove any potential bacteria that may grow in the system. This alternative would commit VADEQ to the continued maintenance of these systems until the groundwater plume is restored to safe drinking water standards. This action would include quarterly sampling of drinking water wells and POETS, periodic replacement of carbon units, annual replacement of UV bulbs, pre-filter cartridge replacement as needed and non-routine repairs of treatment units. Based on residential well sampling results during the remedial design, this alternative would also potentially expand use of POETS to other residences which may potentially become impacted at concentrations exceeding the MCL. LUCs, as described in Alternative 2, would provide for the protection of the OU2 remedy by prohibiting actions that would interfere with the POETS.

**Alternative 4: PUBLIC WATERLINE with LUCs**

This action would prevent exposure to contaminated groundwater by providing a permanent alternative clean drinking water supply to properties currently using drinking water wells within the area of site-related groundwater contamination. Under this alternative, properties with drinking water wells that are currently contaminated with TCE above the MCL would be connected to the existing Loudoun Water system. Additionally, residences that potentially could become impacted by TCE at concentrations exceeding the MCL based on their location within or adjacent to the aerial extent of the groundwater contamination plume would also be connected to the existing Loudoun Water system. This alternative would include both the extension of existing water mains and construction of the lateral connections to affected or potentially affected residences. Figure 4 depicts the initial layout of the waterline and final outline of the buffer zone for potentially impacted residences. Any developed property with a private water system at the time of construction that the buffer zone line passes through will be connected to the waterline by EPA. This definition currently includes 124 properties. Existing wells would either be abandoned or completely disconnected from the residential drinking water system. Disconnected wells could be used for non-potable purposes under certain conditions or used as monitoring wells to help further investigate groundwater conditions, as agreed to by EPA and VADEQ. It should be noted that the waterline layout depicted in Figure 4 is conceptual, has changed since the Proposed Plan was published based on recent sampling, and may be altered and refined during design. The waterline design would also be informed and guided by any existing underground utilities, other encumbrances, and potential easement corridors through private property that have been identified and surveyed. In addition, LUCs, as described in Alternative 2, would be implemented that protect the remedy by prohibiting actions that would interfere with the public waterline and to prohibit withdrawal of contaminated groundwater at the site.

## X. COMPARATIVE ANALYSIS OF ALTERNATIVES

### A. Criteria Used to Compare Cleanup Alternatives

This section compares the remedial alternatives summarized above to each other using the nine criteria set forth in 40 C.F.R. § 300.430(e)(9)(iii). In the remedial decision-making process, EPA describes the relative performance of each alternative against the evaluation criteria and notes how each alternative compare to the other alternatives under consideration. A more detailed analysis of alternatives can be found in the Interim Remedial Action FS, which is in the Administrative Record file for the Site.

These evaluation criteria relate directly to requirements of Section 121 of CERCLA, 42 U.S.C. § 9621, for determining the overall feasibility and acceptability of a remedy. The nine criteria fall into three groups described as follows:

***Threshold criteria*** must be satisfied for a remedy to be eligible for selection.
***Primary balancing criteria*** are used to weigh major tradeoffs between remedies.
***Modifying criteria*** are considered after public comment is received on the Proposed Plan.

| Evaluation Criteria for Superfund Remedial Alternatives | |
|---|---|
| ***Threshold Criteria*** | **1. Overall Protection of Human Health and the Environment** determines whether an alternative can adequately protect human health and the environment by eliminating, reducing, or controlling exposures to hazardous substances, pollutants or contaminants to levels that do not pose an unacceptable risk. |
| | **2. Compliance with ARARs** evaluates whether an alternative meets Federal and more stringent State environmental laws or facility siting laws, or whether a waiver is justified. |
| ***Primary Balancing Criteria*** | **3. Long-term Effectiveness and Permanence** considers the ability of an alternative to maintain protection of human health and the environment over time. |
| | **4. Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment** evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present. |
| | **5. Short-term Effectiveness** considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation. |
| | **6. Implementability** considers the technical and administrative feasibility of implementing an alternative, including factors such as the relative availability of goods and services. |

| | |
|---|---|
| | **7. Cost** includes the estimated capital and annual operation and maintenance costs, as well as present worth cost of an alternative. Present worth cost is the total cost of an alternative over time in today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent. |
| ***Modifying Criteria*** | **8. State/ Support Agency Acceptance** considers whether the State agrees with EPA's analyses and recommendations, as described in the Interim Action Feasibility Study and Proposed Plan. |
| | **9. Community Acceptance** considers whether the local community agrees with EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance. |

## B. Detailed Analysis of Proposed Remedial Alternatives

1. Overall Protection of Human Health and the Environment

Alternative 1 (No Action) does not include measures to prevent current and future receptors from using contaminated groundwater and being exposed to contaminants exceeding MCLs in drinking water. This alternative assumes that the existing POETS maintained by EPA would not be maintained by either EPA or VADEQ in the future. If action is not taken, contaminated groundwater could potentially be drawn into private drinking water wells and expose the resident to unacceptable levels of site-related contaminants. This alternative would not be protective of human health and the environment. The No Action alternative fails this threshold criterion and is therefore eliminated from further consideration under the remaining eight criteria.

Alternative 2 (Land Use Controls) would prohibit the use of contaminated groundwater for potable purposes (drinking, bathing, cooking). Land use controls would not prohibit the use of groundwater for non-potable use, such as irrigation, etc., under certain conditions as agreed to by EPA and VADEQ. Because continued maintenance of the POETS would not be a part of this alternative, this alternative would not include a means to provide safe drinking water to those members of the public whose wells are impacted by site-related contaminants. This alternative does not provide impacted residents with an alternative potable clean water source and, thus, would not be protective of human health and the environment. The land use controls alternative fails this threshold criterion and is therefore eliminated from further consideration under the remaining eight criteria. It is, however, retained as a component of Alternatives 3 and 4.

Alternative 3 (Continued Maintenance of POETS with Land Use Controls) would protect human health by removing Site-related contaminants prior to potable use. The POETS, as long as they are monitored and maintained, would continue to prevent human consumption and use of groundwater impacted with TCE, and its breakdown products exceeding the MCL. Land use controls, as described in Alternative 2, would ensure that untreated groundwater at the Site is not used for potable purposes. Alternative 3 would satisfy the threshold criterion of protection of human health and the environment. Figure 3 shows the location of existing POETS and the approximate outline of the land use

controls.

Alternative 4 (Public Waterline with Land Use Controls) would protect human health by providing a permanent alternative source of drinking water to affected or potentially affected residences by eliminating the need to use contaminated groundwater from drinking water wells in the impacted area as a drinking water source. Land use controls, as described in Alternative 2, would ensure that contaminated groundwater containing TCE or its breakdown products at concentrations exceeding the MCL is not used for drinking, bathing or cooking. Land use controls would not prohibit the use of groundwater for non-potable use, such as irrigation, etc., under certain conditions as agreed to by EPA and VADEQ. Alternative 4 would satisfy the threshold criterion of protection of human health and the environment. Figure 4 shows the layout of the proposed waterline and the approximate outline of the land use controls.

2. Compliance with ARARs

Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), and the NCP at 40 C.F.R. § 300.430 (f)(1)(ii)(B), require that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate Federal and State requirements, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law, which are collectively referred to as "ARARs," unless such ARARs are waived under Section 121(d)(4) of CERCLA, 42 U.S.C. § 9621(d)(4), and the NCP at 40 C.F.R. § 300.430(f)(1)(ii)(C).

"Applicable" requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility-siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site. Only those State standards that are identified by a State in a timely manner and that are more stringent than Federal requirements may be applicable.

"Relevant and appropriate" requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility-siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. Only those State standards that are identified by a State in a timely manner and that are more stringent than Federal requirements may be relevant and appropriate.

Section 121(d)(4)(A) of CERCLA provides that EPA may select an action that does not meet an ARAR if the selected action "is only part of a total remedial action that will attain such level or standard of control when completed." The selected remedy is an interim remedial action and will be part of a total remedial action to return contaminated groundwater to its most beneficial use as drinking water at the Site. While the final remedial action at the Site will seek to restore the aquifer to beneficial use, this interim remedial action seeks to implement limited action to prevent human exposure to

contaminated groundwater. The selected interim remedial action will support the total remedial action. The final remedial action will be selected to address remaining unacceptable risks presented by the Site in a future decision document, following EPA seeking community comment on a preferred alternative.

Major ARARs for the selected interim remedial action include**:**

- National Primary Drinking Water Standards: 40 C.F.R. §§ 141.50 and 141.61 establish health-based standards (i.e., MCLs) for public drinking water. These requirements are also relevant and appropriate for private drinking water wells
- Virginia Regulations Governing the Construction and Use of Wells: 12 VAC 5-590-840B(14)(c) contains requirements governing the abandonment of all wells and associated pumping equipment.
- Virginia Ambient Air Quality Standards - Particulate Matter: 9 VAC 5-30-60 establishes standards for particulate matter in ambient air during excavation activities.
- Virginia Regulations – New and Modified Stationary Sources – Visible and Fugitive Dust Emissions: 9 VAC 5-50-60 thru 120 establishes standards for particulate matter in ambient air during excavation activities.
- Virginia Erosion and Sediment Control Regulation: 9 VAC 25-840-40 relating to erosion and sedimentations controls during excavation activities related to installation of the waterline.

Alternative 3 (Continued Maintenance of POETS with Land Use Controls) would decrease TCE concentrations in drinking water systems to meet the MCLs. The POETS would be maintained until concentrations of TCE and its breakdown products in the drinking well water are below the MCLs. Land use controls would further prevent contact with groundwater containing TCE and its breakdown products at concentrations greater than MCLs. Alternative 3 would comply with the chemical-specific ARARs (MCLs) at the tap, however, achievement of chemical-specific ARARs in groundwater within the aquifer would be addressed in a future decision document that addresses the restoration of groundwater.

Alternative 4 (Public Waterline with Land Use Controls) would provide a permanent alternative source of drinking water that meets the applicable chemical-specific ARARs (MCLs) and action-specific ARARs for the construction. Land use controls would further prevent contact with groundwater containing TCE at concentrations above MCLs. Wells would be abandoned in accordance with Virginia regulation 12 VAC 5-590-840B(14)(c). Techniques would be utilized to control fugitive dust emissions in accordance with Virginia regulations 9 VAC 5-30-60 and 5-50-60 thru 120. Appropriate erosion and sedimentation controls would be utilized during excavation activities to address sediment run-off during precipitation events. Achievement of chemical-specific ARARs in groundwater within the aquifer will be addressed in a future decision document that addresses the restoration of groundwater.

3. Long Term Effectiveness and Permanence

Alternative 3 (Continued Maintenance of POETS with Land Use Controls) would be effective in protecting human health for as long as the systems are monitored and maintained regularly. However, the POETS require conscientious maintenance and oversight to ensure they are functioning correctly. Additionally, there may be times when individual POETS are not functioning properly, and not noted until the next scheduled sampling event results are assessed. This situation could lead to limited short-term exposure, even when diligent sampling, maintenance and oversight are performed. Sampling and maintenance would be required for, as long as groundwater remains contaminated above MCLs. Therefore, Alternative 3 would be moderately effective in satisfying this criterion.

Alternative 4 (Public Waterline with Land Use Controls) would be effective in protecting human health for the long term. Connection to a public water supply would provide a long-term, permanent alternative potable water source that complies with chemical-specific ARARs. Additionally, land use controls would prevent use of site groundwater until ARARs (MCLGs, or MCLs) are met in groundwater throughout the plume. Therefore, Alternative 4 effectively satisfies this criterion better than Alternative 3 because connection to a public waterline will permanently provide potable water to the residences more effectively and with less long-term maintenance than Alternative 3.

4. Reduction of Toxicity, Mobility, or Volume through Treatment

Alternative 3 (Continued Maintenance of POETS with Land Use Controls) would treat contaminated groundwater from drinking water wells via use of carbon to meet MCLs, prior to its use as drinking water, and therefore satisfies the criteria for OU2. This alternative does not address the groundwater aquifer and does not satisfy the criterion for OU1. Restoration of groundwater under OU1 will be addressed in a future decision document.

Alternative 4 (Public Waterline with Land Use Controls) would not involve any treatment to remove TCE or its breakdown products from contaminated groundwater. The public waterline with land use controls would eliminate the exposure pathway to residences and provide a permanent potable alternative water source for OU2. The public waterline does not, however, include treatment as an element of the remedy. Reduction of the toxicity, mobility or volume of the source area and restoration of groundwater under OU1 will be addressed in a future decision document.

Neither Alternative 3 or 4 would affect the toxicity, mobility, or volume of TCE or its breakdown products within the groundwater aquifer. Treatment of TCE in groundwater will be addressed in the future final remedial action for the Site.

5. Short-Term Effectiveness

For Alternative 3 (Continued Maintenance of POETS with Land Use Controls), minimal human health concerns are associated with maintenance of the POETS or

implementation of land use controls. POETS are already in-place for wells currently identified as impacted by site contaminants. Therefore, the RAO for protection of human health has already been met in the short term where POETS have been installed. There is minimal short-term exposure to samplers and workers maintaining the units. This alternative satisfies this criterion.

For Alternative 4 (Public Waterline with Land Use Controls), some short-term worker and community safety concerns may be associated with the installation and construction of water supply lines to provide public water. These concerns would be addressed through best management and safe work practices during construction. Extension of the public water supply could be completed within two years. POETS would be maintained until the waterline is in place to ensure protectiveness in the short term. Alternative 4 poses more risk to workers than Alternative 3. However, construction necessary to connect residences to public water and well abandonment would be conducted in accordance with well-established worker protection procedures and safe construction practices to protect workers.

There are no short-term risks associated with implementation of the LUCs, but the timeframe for implementing LUCs depends on the coordination between multiple agencies which could take some time.

6. Implementability

Alternative 3 (Continued Maintenance of POETS with Land Use Controls) is easily implementable. POETS are already installed and undergoing regular monitoring and maintenance, and installation of additional POETS would be readily implementable. Alternative 3 would not require construction but would require regular maintenance for as long as is required to remediate the groundwater (presumed to be 30 years for purposes of estimating cost).

Alternative 4 (Public Waterline with Land Use Controls) is implementable. Other communities in the area are already connected to public water. This alternative would require installation of approximately four miles of new waterlines and connection of affected or potentially affected residences. Implementation of Alternative 4 would require significant initial construction activities but would be completed relatively quickly (two years).

Land use controls to limit groundwater use are implementable and may requires significant coordination between multiple agencies.

7. Cost

Cost estimates for Alternatives 3 and 4 over a presumed 30-year period is presented below. Detailed cost estimates and associated assumptions are included in Tables 1 and 2, using a 7% discount rate. These preliminary cost estimates are anticipated to be from within -30 percent to +50 percent of the actual costs for implementing each alternative.

| Alternative | Description | Capital | Annual O&M | Present Worth |
|---|---|---|---|---|
| 3 | Continued Maintenance of POETS with Land Use Controls | $99,203 | $333,223 | $10,095,896 |
| 4 | Public Water Supply with Land Use Controls | $7,370,850 | $0 | $7,370,850 |

8. State Acceptance

The Commonwealth of Virginia concurs with the selected interim remedial action.

9. Community Acceptance

EPA received a limited number of comments and questions concerning the proposed extension of the waterline into the Broad Run Farms community. Loudoun County Board of Supervisors and four community members expressed support. The Board of Supervisors and one local resident who supported the waterline thought that public water should be provided to the entire Broad Run Farms community and that the buffer zone be as large as possible. Loudoun County also expressed the desire that EPA acknowledge that the adoption of local ordinances is at the discretion of the county government. Another local resident with an existing POETS system in their home verbally expressed a desire for Alternative 3 but was pleased to know that residents connected to the waterline could keep their wells and POETS at the resident's expense. No resident expressed opposition to the selected interim remedial action. One resident proposed an alternative layout of the waterline. EPA considered and incorporated the alternative layout in the conceptual layout shown in Figure 4.

## XI. SELECTED REMEDY

The selected remedy for interim remedial action at the Hidden Lane Landfill Site is Alternative 4, Public Waterline with Land Use Controls. The selected interim remedial action will connect properties whose wells are currently contaminated with TCE, or its breakdown products above the applicable MCL, and those properties which are likely to become impacted based on proximity to the groundwater contamination plume, to an extension to the existing Loudoun Water supply system. Existing POETS will be maintained until connection to the public water supply line is completed. Neither EPA or VADEQ will maintain the POETS after the waterline is completed and deemed fully functional. Existing drinking water wells will be completely disconnected from the drinking water system. Disconnected wells will either be abandoned or could be used for non-potable purposes only under certain conditions as agreed to by EPA and VADEQ. Land use controls will be established to ensure that residents are not exposed to unacceptable levels of site-related contaminants in groundwater and to prevent cross connection with the public water supply. The LUCs for groundwater may be removed once groundwater is remediated.

## A. Summary of the Rationale for the Selected Remedy

The selected interim remedial action will be more protective of human health than Alternative 3 because extension of the public water supply will permanently eliminate the need to use contaminated groundwater as a drinking water source. This is an important distinction, given the fact that the POETS can fail and result in short-term exposure until maintenance is performed. Moreover, the selected interim remedial action is estimated to cost more than $3 million less than Alternative 3 over the possible total period of groundwater remediation and, thus, the selected interim remedial action is more cost effective than Alternative 3.

Although Alternative 4 would pose some risk to the community and site workers in the short-term during the construction of the waterline, safeguards to protect workers and the community while undertaking subsurface work to install public waterlines are well-established. The selected interim remedial action requires more surface disturbance and significant coordination between agencies, but installation of public water supply lines is readily and quickly implementable. Also, this consideration is outweighed by the more-reliable protection of the public from exposure to TCE in drinking water together with greater cost efficiency.

## B. Summary of the Estimated Remedy Costs

The cost of Alternative 4 is estimated to be $7,370,850, which is less than the estimated $10,095,896 cost of Alternative 3.

## C. Performance Standards

Performance Standards for the selected interim remedial action were developed to address MCL exceedances for TCE and its breakdown products in residential wells posed by the Site groundwater and to comply with ARARs.

The standard for groundwater cleanup is the federal MCL for those groundwater COCs for which an MCL has been established. The COCs with respective MCLs are listed in the table below:

| COC | MCL (µg/L) |
|---|---|
| Trichloroethene (TCE) | 5 |
| 1,1-Dichloroethene (1,1-DCE) | 7 |
| cis-1,2- Dichloroethene (cis-1,2-DCE) | 70 |
| Vinyl Chloride (VC) | 2 |

The performance standard for the selected interim remedial action is to ensure that the drinking water provided to residents does not contain COCs at levels exceeding the applicable MCL.

### D. Expected Outcome of the Selected Remedy

The selected remedy will eliminate risks to human health caused by contact with and consumption of Site-related groundwater contamination.

## XII. STATUTORY DETERMINATIONS

Based on the information available at this time, EPA believes the selected remedy (Alternative 4: Public Waterline with Land Use Controls) meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing criteria. EPA expects the selected remedy to satisfy the following statutory requirements of CERCLA Section 121(b): (1) to be protective of human health and the environment; (2) to comply with ARARs; (3) to be cost-effective; and (4) to utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. While the selected remedy does not satisfy the preference for treatment as a principle element, it does permanently eliminate the exposure pathway to contaminated groundwater. The final remedial action for groundwater, which will be the subject of a future Proposed Plan, will address the use of treatment to clean-up contaminated groundwater to the maximum extent practicable.

### A. Protection of Human Health and the Environment

The selected remedy will protect human health and the environment by eliminating the exposure pathway for contaminated groundwater to current and future residential users and by suppling public water that meets the Performance Standards described above.

### B. Compliance with Applicable or Relevant and Appropriate Requirements

The selected remedy will comply with all Federal and State requirements, standards, criteria, and limitations that are applicable or relevant and appropriate, as required by Section 121(d) of CERCLA, 42 U.S.C. § 9621(d).

The ARARs for the selected interim remedial action are:

- Applicable Requirement - National Primary Drinking Water Standards: 40 C.F.R. § 141.50 and 141.61 establish health-based standards (i.e., MCLs) for public drinking water.
- Virginia Regulations Governing the Construction and Use of Wells: 12 VAC 5-590-840B(14)(c) contains requirements governing the abandonment of all wells and associated pumping equipment.
- Virginia Ambient Air Quality Standards - Particulate Matter: 9 VAC 5-30-60 establishes standards for particulate matter in ambient air during waterline excavation activities.
- Virginia Regulations – New and Modified Stationary Sources – Visible and Fugitive Dust Emissions: 9 VAC 5-50-60 thru 120 establishes standards for

particulate matter in ambient air.

- Virginia Erosion and Sediment Control Regulation: 9 VAC 25-840-40 relating to erosion and sedimentations controls during excavation activities related to installation of the waterline.

## C. Cost Effectiveness

The NCP at 40 C.F.R. § 300.430(f)(l)(ii)(D), requires EPA to evaluate cost-effectiveness by comparing all the alternatives meeting the threshold criteria: protection of human health and the environment; and compliance with ARARs against long-term effectiveness and permanence.

Long-term effectiveness and permanence include reduction of toxicity, mobility or volume through treatment and short-term effectiveness and is collectively referred to as "overall effectiveness." The NCP further states that overall effectiveness is then compared to cost to ensure that the remedy is cost effective.

EPA concludes, following an evaluation of these criteria, that the selected remedy is cost-effective in providing overall protection in proportion to costs and meets all other requirements of the NCP and CERCLA. The estimated present value of the selected remedial action is $7,370,850.

## D. Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable and Preference for Treatment as a Principal Element

The selected remedy is an interim action and is not intended to treat contamination or provide a permanent solution to contamination in groundwater. Treatment of Site-related contamination will be addressed in a future decision document.

## E. Five Year Review Requirements

Section 121(c) of CERCLA and Section 300.430(f)(4)(ii) of the NCP require review of a remedy if the remedy results in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure. Any such review must be conducted no less often than every five years after initiation of the remedial action.

Because hazardous substances will remain at the Site, the review described by Section 121(c) of CERCLA and Section 300.430(f)(4)(ii) of the NCP will be conducted no less often than every five years after initiation of the remedial action.

## F. Documentation of Significant Changes

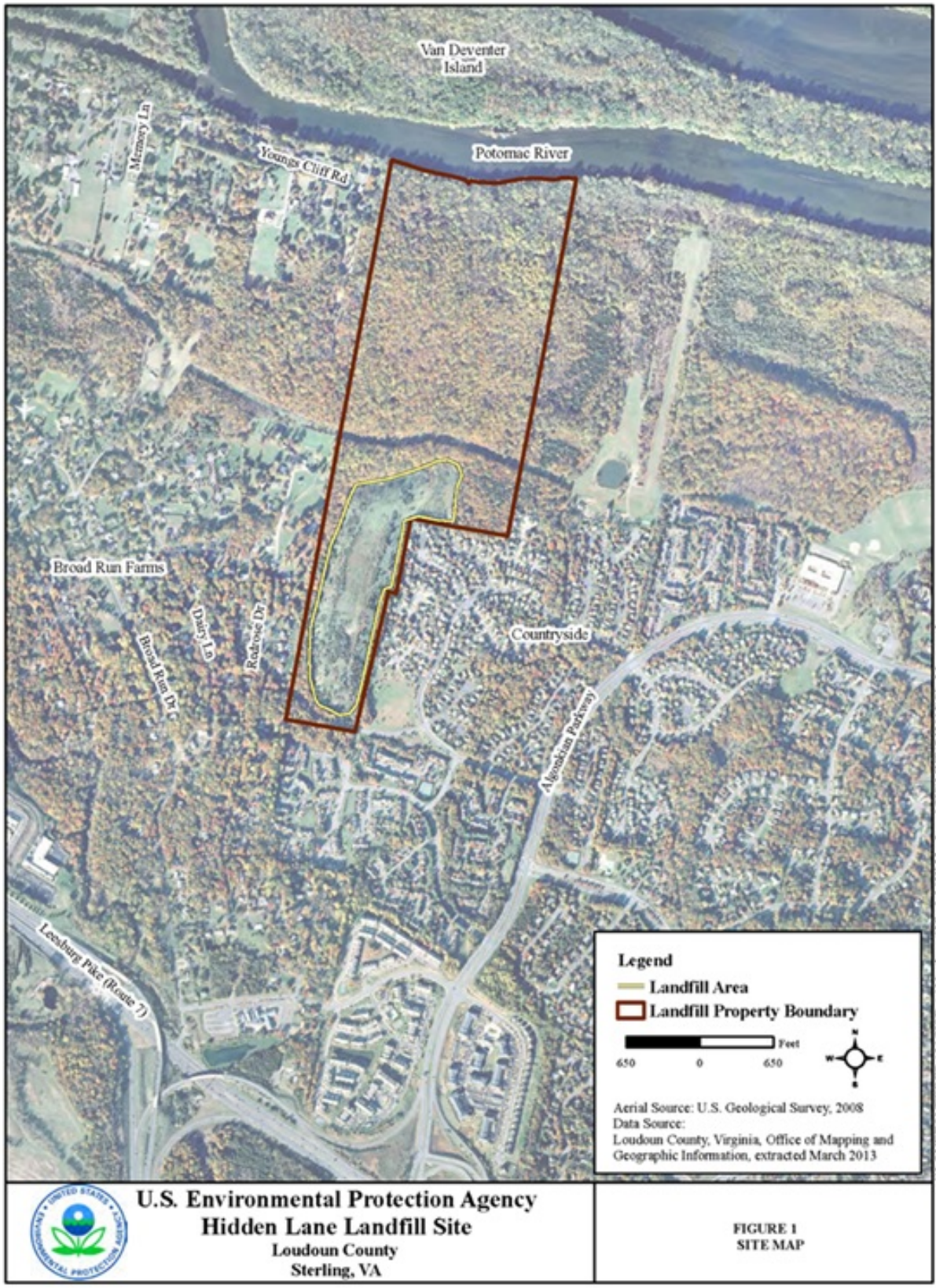
The Proposed Plan for the Site was released for public comment on April 19, 2018. The Proposed Plan identified EPA's preferred alternative as extension of the existing waterline into the area impacted by Site-related groundwater with land use controls. The

remedy selected in this Interim Remedial Action ROD includes no significant changes to the preferred alternative identified in the Proposed Plan.

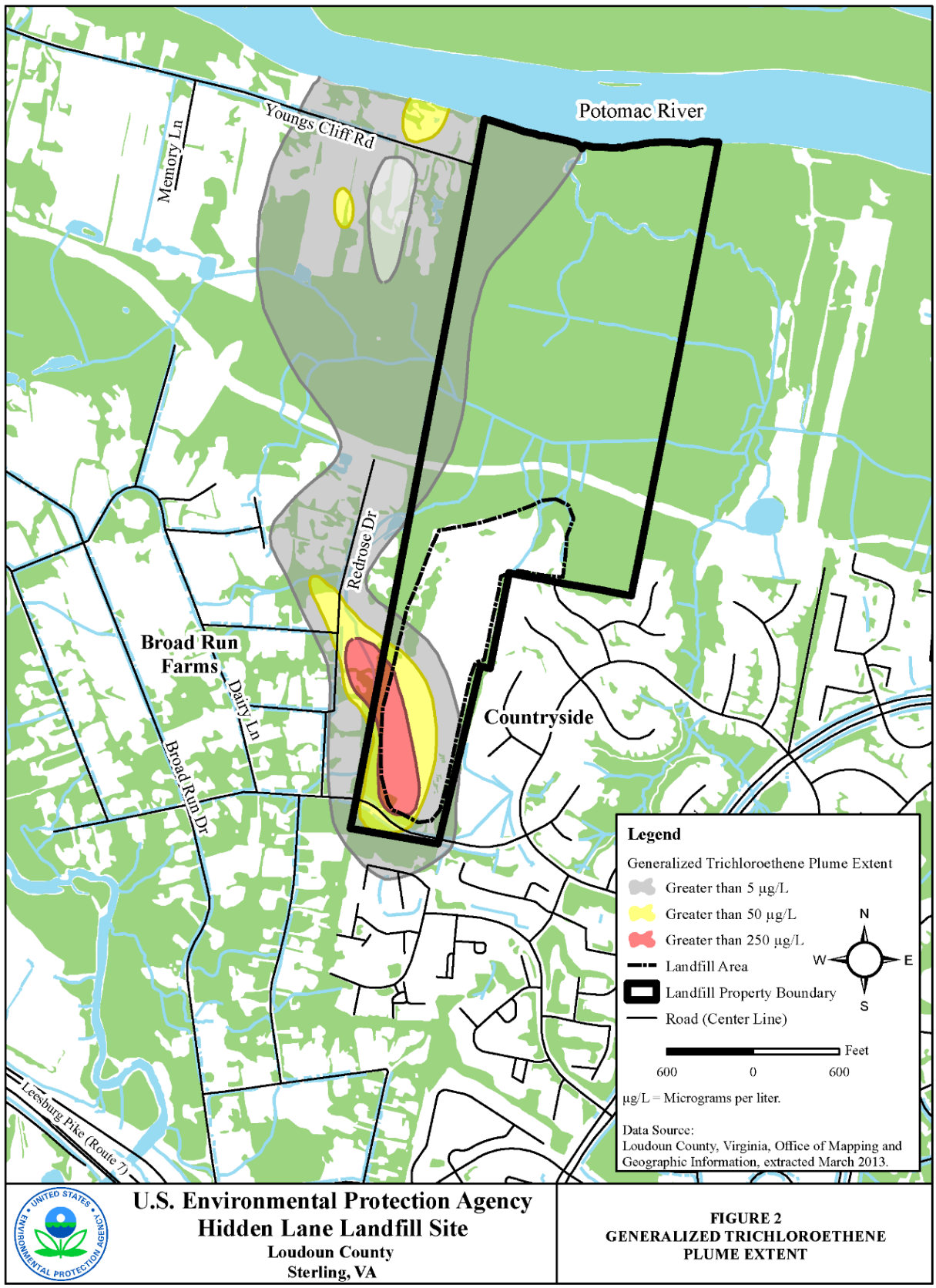
## XIII. RESPONSIVENESS SUMMARY

The 60-day public comment period opened on April 19, 2018 and closed on June 18, 2018. During this time, EPA received limited comments. All written comments were generally in support of the preferred alternative (i.e. public waterline with land use controls). Responses to substantive comments received during the public comment period can be found in the Responsiveness Summary included in this Record of Decision.

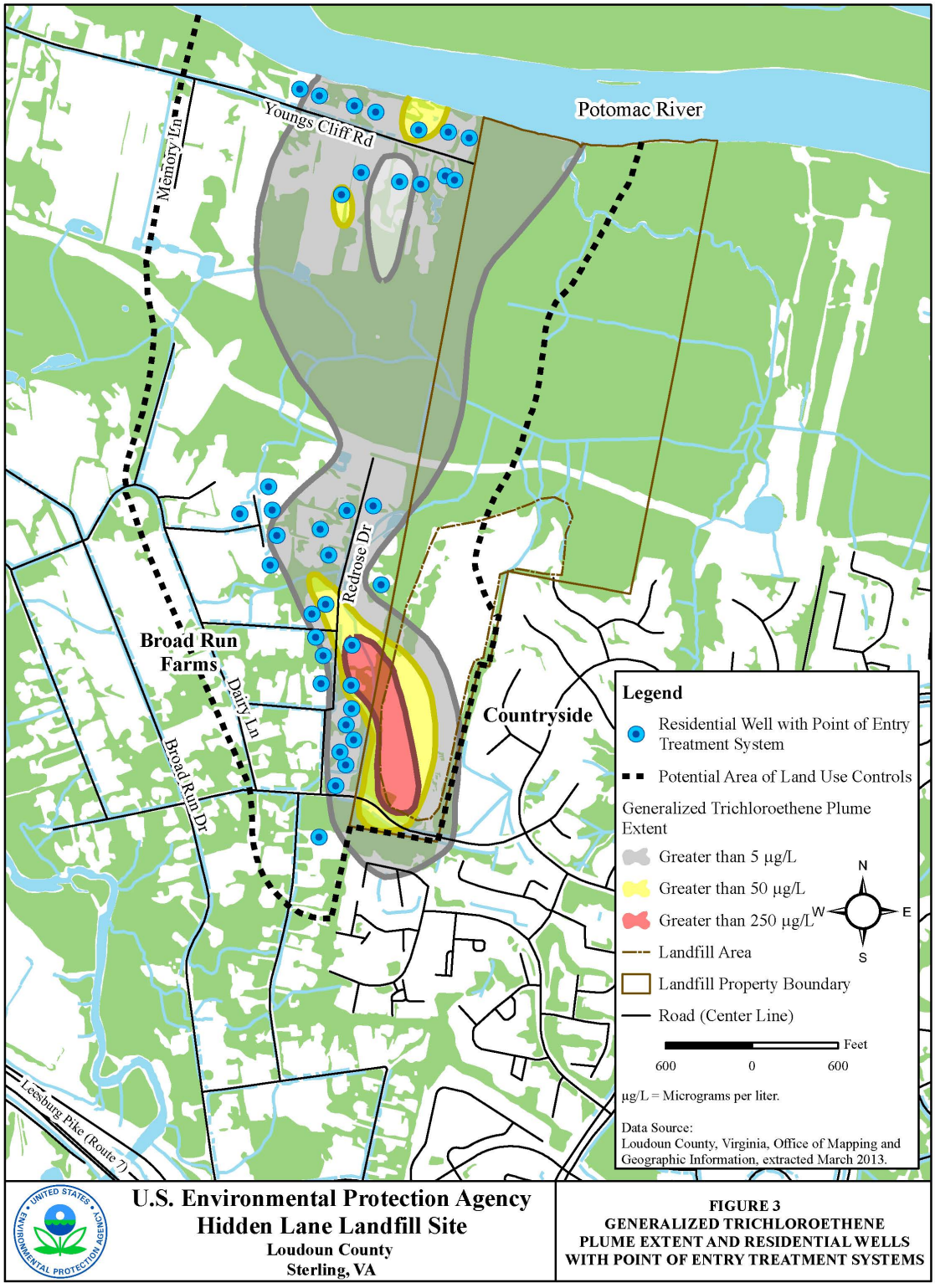
## FIGURES



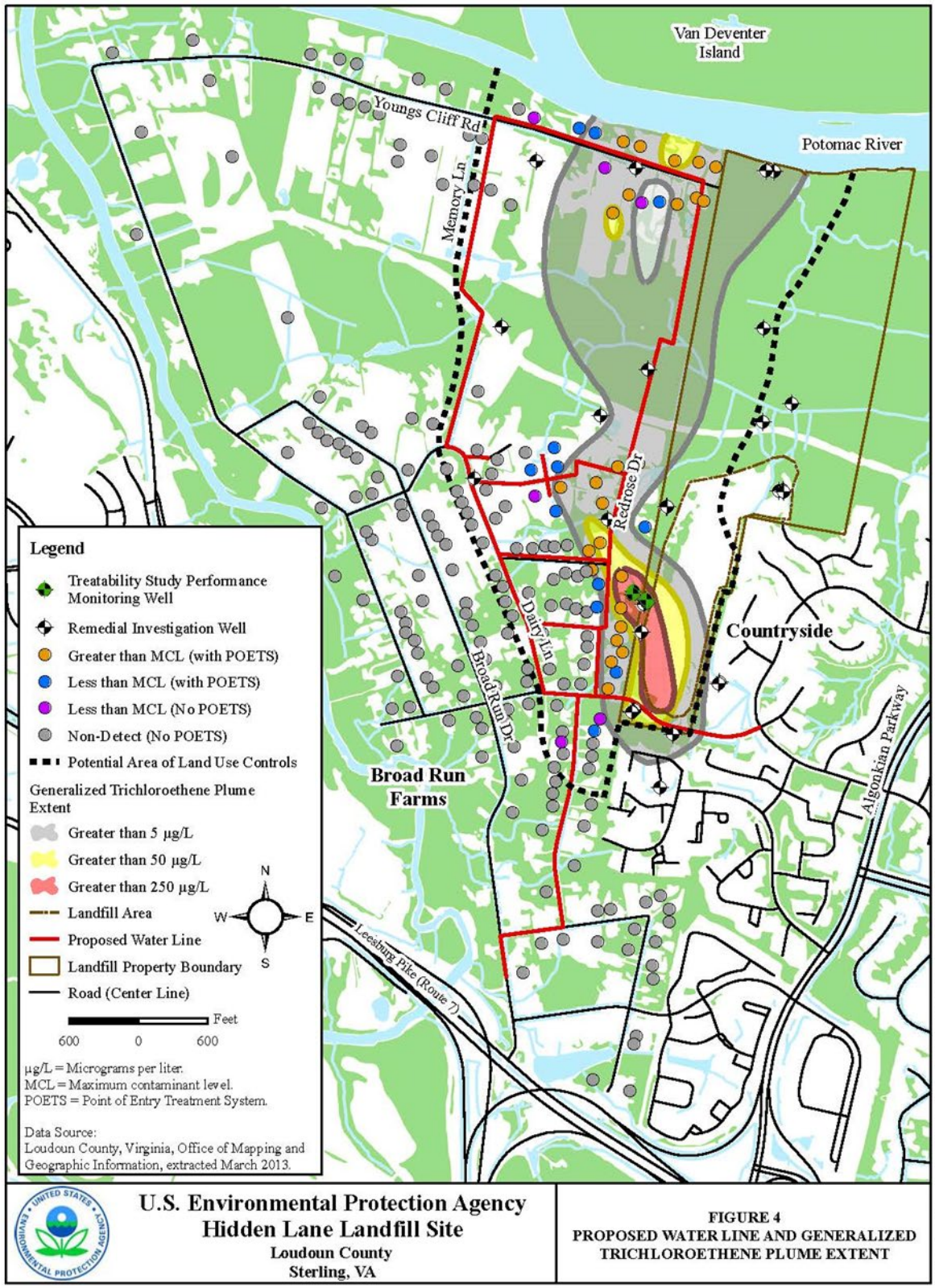

*1 Site Map*




*2 Generalized Trichloroethene Plume Extent*




*3 Generalized Trichloroethene Plume & Residential Point of entry Treatment Systems*




*4 Proposed Waterline and Generalized Trichloroethene Plume Extent*

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# Hidden Lane Superfund Site Responsiveness Summary

## Sterling, Loudoun County, Virginia
## U.S. EPA Region 3

**Completed Date: May 23, 2019**

**Prepared by Cherokee Nation Assurance**

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**Table of Contents**

# 1. Introduction

This Responsiveness Summary provides a summary of significant public comments and concerns regarding the Proposed Plan for the Hidden Lane Landfill Superfund Site (the Site) and provides the U.S. Environmental Protection Agency's (EPA's) responses to those comments. After reviewing and considering all public comments received during the public comment period, EPA has selected a remedy to address the contamination at the Site.

The Proposed Plan and supporting documentation were made available to the public in the Administrative Record at: https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.ars&id=0302762&doc=Y&colid=64528&region=03&type=AR.

EPA provided notice to the public in the Proposed Plan that the Administrative Record could also be viewed at the following locations:

Cascades Library
21030 Whitfield Place
Potomac Falls, VA 20165
703-444-3228
http://library.loudoun.gov

U.S. EPA Region 3 – Public Reading Room
1650 Arch Street – 6th Floor
Philadelphia, PA 19103

EPA issued a public notice in a major local newspaper of general circulation, the *Loudoun Times-Mirror* newspaper, on April 19, 2018. This notice contained a brief analysis of the Proposed Plan, information relevant to the duration of the public comment period, the date of the public meeting, and announced the availability of the Proposed Plan and the entire Administrative Record. The 60-day comment period began on April 19, 2018 and ended at midnight, June 18, 2018.

EPA conducted a public meeting in Sterling, Virginia to inform, interested local officials, citizens and other stakeholders in attendance about EPA's proposed interim action and the Superfund process, to respond to questions and to receive comments on the Proposed Plan. The public meeting was held by EPA on April 26, 2018 at Galilee United Methodist Church, located at 45425 Winding Road, Sterling, Virginia. Responses to the comments received during the public comment period are included in this Responsiveness Summary. Responses to questions and comments raised during the Public Meeting can be found in the Meeting Transcript. The transcripts for the April 26, 2018 meeting can be found in the Site Administrative Record.

This Responsiveness Summary provides a written summary of significant comments, criticisms, and new relevant information received during the public comment period and EPA's responses to each issue. In section 2 on page 5, there is a brief background of the Site. Section 3, on beginning on page 6, contains a list of comments received from the general public along with EPA's responses.

## 2. Background

The Hidden Lane Landfill Site was a privately owned and operated disposal facility situated north of Virginia Route 7 between the communities of Broad Run Farms, to the west, and Countryside, to the east, in Sterling, Loudoun County, Virginia.

The landfill is approximately 30 acres in size and is adjacent to the flood plain of the Potomac River. Starting in 1971, the facility accepted a variety of solid wastes including construction and demolition wastes. The landfill was closed in 1986 by order of the Commonwealth. A two-foot clay cover was installed on top of the landfill when it was closed.

The landfill is now covered by grass and young trees. The Site is currently not in use and has unrestricted access (e.g., does not have a perimeter fence).
Contamination from landfill operation resulted in an approximately 207-acre groundwater plume which has impacted private drinking water wells. EPA currently maintains 36 Point of Entry Treatment System (POETS) at these locations to prevent exposure to contaminated groundwater.

## 3. Comments Received during Public Comment Period

### Comment #1

**Comment**. EPA received written comments from 6 residents of the local community, Loudoun County Board of Supervisors, Loudoun County Health Department and Loudoun County's consultant and a former Virginia Department of Environmental Protection (VADEQ) employee. At some point in their comments, all commenters expressed support for the proposed remedy,

**Response**: EPA thanks the commenters and notes their support for the proposed remedy.

### Comment #2

**Comment**: Loudoun County Board of Supervisor, Loudoun County Health Department, Loudoun County's consultant and a local citizen expressed concerns that the footprint of groundwater contamination may expand when contaminated residential wells are taken off-line and no longer act to contain the contamination. The Board of Supervisors and Loudoun County Health Department remarked that EPA should, therefore, hook-up the entire Broad Run Farms community to the waterline or extend the waterline as far west as allowable. The counties consultant commented that the buffer zone definition lacks clarity and a clear scientific basis. The consultant expressed concern with the accuracy and uncertainty associated with the 5 µg/L iso-contour, which is the foundation of the buffer zone. The consultant also recommended that the buffer zone be 1,600 feet beyond the 1 µg/L iso-contour.

**Response**: EPA recognizes the potential change in the footprint of the contaminated groundwater area due to contaminated residential wells being taken off-line, as a result of the waterline installation, as well as, the inherent uncertainty of subsurface mapping. For these reasons the selected remedy provides for the extension of the waterline not just to those residents whose wells are currently impacted by the contamination, but also to those residences in a designated "buffer zone" beyond that area currently known to be contaminated, which could potentially become contaminated. Potentially impacted residences in the buffer zone are residences with trichloroethene (TCE) detected in well water at levels below the 5 µg/L action level and/or residences close enough to the area of contamination where their well may become contaminated at TCE levels greater than 5 µg/L due to potential changes in plume footprint. EPA is using the 5 µg/L isocontour as the baseline for the buffer zone because 5 µg/L of TCE is the legally appropriate health based standard. Since the April 26, 2018 Public Meeting EPA has sampled 167 additional residential wells in the Broad Run Farms community. Results of this sampling have enabled EPA, in consultation with VADEQ, to delineate and finalize the buffer area to the maximum extent. EPA will continue to monitor groundwater near the plume until groundwater is restored.

### Comment #3

**Comment:** A citizen emailed a comment that he/she didn't understand a part of Section C, Site Characteristics, of the Proposed Plan, which states the following:

- Disposal of TCE within the landfill has resulted in a 207-acre dissolved TCE groundwater plume within the fractured bedrock Balls Bluff formation.

- The plume is approximately 2,500 feet long and 900 feet wide and extends to a depth of approximately 500 feet below ground surface.

The commenter notes that 2,500 ft. x 900 ft. is only 52 acres.

**Response:** The 2,500 ft was a mistake in the Proposed Plan, which should have read that the plume length is 5,000 ft. In addition, the width of the plume is not uniform and ranges from approximately 450 to 1,950 feet. The estimated 207-acre area was calculated by computer mapping software from the plume foot print. The description of the approximate extent of the plume has been corrected in the final ROD.

**Comment #4**

**Comment**: Loudoun County consultant commented, "Bathing and showering potentially exposes residents currently not on POETS to a substantial long-term exposure risk from inhalation and dermal contact" and that the "Connecticut Department of Health Bathing and Showering Guidance for private wells indicates that groundwater used for bathing and showering should not exceed a TCE concentration of 1 µg/L". The consultant recommends that the buffer zone should be based on 1 µg/L concertation rather than the 5 µg/L concentration.

**Response**: EPA Region III does not consider state guidance from outside of the Region, such as the State of Connecticut guidance, as appropriate. However, based on residential well sampling of 167 additional wells since the proposed plan was released, EPA has expanded the buffer zone defined in the ROD and depicted in Figure 4 of the ROD.

**Comment #5**

**Comment**: Loudoun County's consultant commented, "The position of the Buffer Zone must be protective of residents due to potential changes in contaminant concentrations and groundwater quality resulting from future remedial actions to address the TCE contamination and should reflect the uncertainty associated with the character of the HLLF and its contents."

**Response:** EPA agrees that future remedial activities may adversely impact the contaminant concentrations and groundwater quality. This is one of the primary reasons EPA selected the extension of the waterline rather than the continuation of the POETS. It is EPA's expectation that any groundwater remedial activities that might cause adverse changes to the chemistry of the plume will take place within the contaminated plume footprint. EPA's proposal to include a buffer zone in the remedy also recognizes the points made in this comment**.**

**Comment #6**

**Comment:** EPA received an email from a citizen requesting that if public water is brought to his/her house, he/she would like to continue to use the POETS filtration system currently in place

**Response**: Residents who have EPA-maintained POETS (filtration systems) may keep them if they desire or have them removed by EPA and connect to the waterline at no expense. However, EPA/VADEQ will not maintain POETS of residents that choose to keep them once the waterline is operational.

**Comment #7**

**Comment:** A citizen emailed asking if the proposed remedy is selected and a public water is extended to his/her house, would he/she be allowed to keep his/her well open for possible outdoor use. The commenter also sought advice on the possible negative aspects of using the well for non-human consumption purposes.

**Response:** Homeowners will be able to keep their wells for non-potable uses if they desire. EPA/VADEQ will work with the homeowners who wish to keep their wells for non-potable use to inform them of the potential risks their well water may pose. EPA may also request that some residential wells be sampled or converted to monitoring wells so that they become part of the groundwater monitoring network.

**Comment #8**

**Comment**: Loudoun County noted Land Use Controls may be accomplished through an amendment to the Loudoun County Zoning Ordinance. However, a local Zoning Ordinance amendment would only be effective for prohibiting future groundwater uses and could not be used to prohibit existing groundwater uses. Loudoun County requested the EPA require abandonment of existing wells either contractually, or through incentives for the residences that connect to the public waterline and that EPA acknowledge that the adoption of local ordinances is at the discretion of the county government. A former VADEQ employee expressed the same opinion that residences should not be given the option to retain their private wells.

**Response**: Neither EPA or VADEQ have the authority to require abandonment of existing private residential wells. EPA will work with Loudoun County to develop County Zoning Ordinances to implement appropriate land use controls to insure the protectiveness of the remedy. EPA also acknowledges that adoption of local ordinances is at the discretion of the county government.

**Comment #9**

**Comment**: Loudoun County Health Department commented, "All wells have the potential for bacteriological and chemical contamination. Therefore, the Health Department recommends that all wells in Broad Run Farms be tested for bacterial contamination regularly and for chemical contamination if suspected."

**Response**: Since the April 26, 2018 Public Meeting, EPA has sampled 167 additional residential wells throughout the Broad Run Farms community for Site-related volatile organic compounds (VOCs) as wells as other non-Site-related VOCs. EPA's understanding of the groundwater nature and extent of contamination has not changed based on the results of this sampling. EPA is unaware of any bacteriological contamination associated with the Site. Any bacterial issues not caused by Site related contamination are not addressed by this

remedial action. EPA will maintain and routinely sample an appropriate monitoring well network, which may include converted residential wells, for site related contamination until ground water clean-up is achieved.

**Comment #10**

**Comment**: Loudoun County's consultant, Loudoun Health Department and a former VADEQ employee commented that the 2015 Remedial Investigation (RI) did not adequately address inorganic metals and that arsenic, cobalt, manganese vanadium, etc. should be more thoroughly evaluated and should be contaminants of concern.

**Response:** EPA/VADEQ have continued to evaluate metals in ground water at the Site since the 2015 RI. This evaluation will be documented in a future RI addendum. However, the determination that the levels of metal concentrations detected in the area groundwater are due to natural background conditions has not changed. No detected inorganic metals are above the MCL standard used for this action. Arsenic was detected sporadically above the Region Screening Level (RSL), both within and outside the area of TCE contamination. Regional Screening Levels (RSLs) are generic chemical-specific concentrations for individual contaminants in air, drinking water and soil that are used to identify chemicals that warrant further investigation and evaluation of potential risk. Arsenic detections are attributed to natural geochemical conditions in the wells. Nevertheless, EPA notes that the selected remedy effectively eliminates the exposure to metals for those residents who elect to accept connection to the waterline.

**Comment #11**

**Comment**: Loudoun County's consultant commented, "The Detailed Analysis of Alternative 3 under emphasizes weaknesses and includes errors." Specific concerns expressed by the commenter involve the 30-year time frame used to calculate costs of Alternative 3, and the overall protectiveness of Alternative 3.

**Response**: EPA did not select Alternative 3 for the reasons stated in the Proposed Plan and recognized by the Loudoun County's consultant's comment letter. Also, as stated in the Proposed Plan and at the Proposed Plan Public meeting, as well as, in a meeting between EPA, VADEQ, the County and its consultant, the 30-year cost estimate is a standard cost estimating time frame used to calculate the present worth of the alternative and allow comparison of alternatives. The 30-year time frame is not an estimate of clean-up time. The 30-year present worth time frame is used because projections of inflation rates are uncertain, and 30 years is a commonly accepted time period used for estimation purposes.

**Comment #12**

**Comment**: Loudoun County's consultant stated that the area requiring Land Use Controls (LUC) and the type of LUCs should be more clearly defined in the Proposed Plan and ROD.

**Response:** The area needing LUCs is dependent on the final design of the waterline and the number and locations of properties connected to the waterline. In addition, the type of LUCs will be dependent on the type of LUCs the County is capable and willing to adopt. For these reasons, the area and type of LUCs cannot be determined at this time. EPA will work with VADEQ and the County to more precisely define the areal extent of LUCs upon completion

of construction of the remedy.

**Comment #13**

**Comment**: Loudoun County's consultant remarked, "Loudoun County does not concur with all summary comments pertaining to the Remedial Investigation (RI) in the Proposed Plan." Similar comments were made by a former VADEQ employee. The VADEQ employee specifically referenced the need to evaluate the perched aquifer, vapor intrusion, TCE source area, the possible presence of Dense Non-Aqueous Phase Liquid (DNAPL), groundwater inorganic geochemistry, and the associated establishment of background groundwater conditions.

**Response:** EPA notes these comments. EPA further notes that the RI of the Site is ongoing and that these concerns related to the 2015 RI will be addressed in a future RI Addendum. EPA also agrees with the County's consultant who noted that these concerns were not relevant to this Decision Document. Since 2015, EPA has conducted two rounds of vapor intrusion sampling at the Site and has determined that vapor intrusion is not an issue at the Site. EPA has also conducted additional source area delineation, the results of which will be in the future RI Addendum.

**Comment #14**

**Comment**: A former VADEQ employee commented that the Operable Unit 2 Administrative Record has significant deficiencies and cites EPA Record Management Policy and Administrative Records requirements.

**Response:** The OU2 Administrative Record was prepared in accordance with EPA's Administrative Records requirements and Records Management Policy. The Administrative Record only includes documents that were considered in selecting a remedy. All documents that EPA considered in selecting this remedy have been properly included in the Administrative Record, which was released with the Proposed Plan. These documents are only a subset of the entire Site file, which is maintained in EPA's Region 3 office in Philadelphia, PA.

**Comment #15**

**Comment**: A former VADEQ employee commented that "EPA and DEQ have not adequately identified the ARARs (*) which apply to this Superfund Site in the Final RI, the IAFSR (**) and Proposed Plan." specifically referencing Commonwealth of Virginia standards.

**Response:** Pursuant to the regulations that govern selection of a remedy under CERCLA, the National Contingency Plan (NCP), VADEQ, not EPA, has the responsibility to identify those Virginia standards that qualify as ARARs. EPA and VADEQ worked cooperatively to develop the ARAR list for this interim remedial action in both the IAFSR and Proposed Plan; VADEQ's identified ARARs were included in the Proposed Plan. EPA further notes

* *Federal, state, and local laws, rules or guidance applicable or relevant and appropriate requirements (ARARs)*
** *Interim Action Feasibility Study Report (IAFSR)*

the Commonwealth of Virginia's concurrence with the selected interim remedy as further support that the ARARs identified in the Proposed Plan are accurate. EPA further notes that despite this comment, the commenter agreed with the choice of selected interim remedy.

**Comment #16**

**Comment**: A former VADEQ employee commented that the Proposed Plan failed to define the relationship between the MCL ARAR and the heath-based risk range.

**Response:** The rationale for this action is to eliminate the exposure of residences to TCE concentrations greater than the legally appropriate MCL. The MCL is protective of human health and does fall within EPA's acceptable $10^{-4}$ to $10^{-6}$ cancer risk range. Discussion of the health-based risk range is not required to support the extension of the waterline. A detailed discussion of the health-based risk range for Site related contaminants will be presented in EPA's future final remedial decisions to address groundwater restoration.

**Comment #17**

**Comment:** Via an email a citizen asked if the location of the source of the TCE had been found and if EPA intends to eradicate it by digging it up, taking it away and disposing of it properly.

**Response:** EPA has identified a potential source for the groundwater contamination on the south side of the landfill. EPA's investigation is ongoing. Digging up the source is one of a number of actions EPA will be evaluating.

**Comment #18**

**Comment**: A former VADEQ employee commented that many of his comments on the 2015 RI were not addressed. These include: the failure to characterize the hydrology, failure to account for seasonal changes in water level changes when evaluating groundwater flow, failure to address the integrity of the cap, failure to consider impacts of landfill leachate, failure to consider future development, failure to properly consider impacts to wetlands, concerns about the Risk Assessment's lack of transparency not following guidance, as well as other deficiencies in the RI.

**Response:** EPA first notes that despite these comments, the commenter agrees with the choice of the selected interim remedy, extension of the waterline. EPA also respectfully disagrees with these comments. Pursuant to the NCP, EPA must consider the comments of the VADEQ in finalizing support documents such as the RI, not the comments of any individual employee within the VADEQ, whose personal views do not necessarily represent those of the VADEQ. EPA has worked with VADEQ to resolve any issues VADEQ may have had related to the documents referenced by the commenter. VADEQ concurs with the proposed waterline extension and agrees with EPA's path forward.

**Comment #19**

**Comment**: A former VADEQ employee discussed several VADEQ personnel issues and internal VADEQ processes.

**Response:** These comments do not appear to bear upon the choice of the selected interim remedy, and EPA does not believe that any further response is necessary other than to note that, despite the foregoing, the commenter expressed support for the selected remedy.