INTERIM RECORD OF DECISION

DELFASCO FORGE

GRAND PRAIRIE, DALLAS COUNTY, TEXAS

EPA ID: TXD988034328

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION 6

DALLAS, TEXAS

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LIST OF ACRONYMS AND ABBREVIATIONS

°F	Degrees Fahrenheit
µg/L	micrograms per liter
ARAR	applicable or relevant and appropriate requirement
bgs	below ground surface
BHHRA	baseline human health risk assessment
CAG	community advisory group
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	chemical of concern
DCE	Dichloroethene
DNAPL	dense non-aqueous phase liquid
DO	dissolved oxygen
DPT	direct push technology
EA	EA Engineering, Science, and Technology, Inc.
ELCR	excess lifetime cancer risk
EPA	U.S. Environmental Protection Agency
ESA	environmental site assessment
FFS	focused feasibility study
FS	feasibility study
GAC	granular activated carbon
GWBU	groundwater bearing unit
GW	groundwater
MCL	Maximum Contaminant Level
mg/kg	milligram(s) per kilogram
mg/l	milligram(s) per liter
Mg/yr	Megagrams per year
MW	monitoring well
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operations & Maintenance
OSWER	Office of Solid Waste and Emergency Response (now known as Office of Land and Emergency Management)
OU	Operable Unit

LIST OF ACRONYMS AND ABBREVIATIONS (cont.)

PCE	Perchloroethene or Tetrachloroethene
PRG	preliminary remediation goals
PRP	Potentially Responsible Party
PTW	principal threat waste
PW	private well/ private water well
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI	remedial investigation
ROD	Record of Decision
RSL	Regional Screening Level
SA	Source Area
Site	Delfasco Forge Superfund Site
SVE	soil vapor extraction
TAC	Texas Administrative Code
TCE	trichloroethylene
TCEQ	Texas Commission on Environmental Quality
TDSHS	Texas Department of State Health Services
TPH	total petroleum hydrocarbons
UUUE	Unlimited Use Unlimited Exposure
VC	vinyl chloride
VCP	Voluntary Cleanup Program
VI	vapor intrusion
VIMS	vapor mitigation system
VOC	volatile organic compound

PART 1: THE DECLARATION

1.1 SITE NAME AND LOCATION

The Delfasco Forge Superfund Site (Site) is located in Grand Prairie, Dallas County, Texas (Figure 1). The U.S. Environmental Protection Agency (EPA) Superfund Database Identification Number is TXD988034328. This Interim Record of Decision (ROD) addresses the Source Area of groundwater contamination within Operable Unit 1 (OU 1).

1.2 STATEMENT OF BASIS AND PURPOSE

This decision document presents the interim remedy for trichloroethylene (TCE), tetrachloroethylene (PCE), and their degradation product contamination at the Site. This interim remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S. Code §9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 Code of Federal Regulations (CFR) Part 300, as amended. This decision is based on the administrative record for the Site, which has been developed in accordance with Section 113(k) of CERCLA, 42 U.S. Code §9613(k).

The State of Texas, acting through the Texas Commission on Environmental Quality (TCEQ), was provided the opportunity to review and comment on the interim selected remedy.

1.3 ASSESSMENT OF THE SITE

The response action selected in this Interim ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances from the historic operations at the Site into the environment. Such release or threat of release may present an imminent and substantial endangerment to public health or welfare. On May 17, 2018, the EPA proposed the Delfasco Forge Site for inclusion on the National Priorities List (NPL) of Superfund Sites. The NPL is intended primarily to guide the EPA in determining which sites warrant further investigation. Effective October 15, 2018, EPA listed the Site on the NPL (83 FR 46408).

1.4 DESCRIPTION OF THE SELECTED INTERIM REMEDY

This Interim ROD sets forth the selected interim remedy to address the Source Area for groundwater contamination at the Site. An action to reduce the source contamination is essential for groundwater protection. This historic release has impacted the subsurface soils, and the resulting groundwater contamination has migrated beneath the surrounding residential and commercial properties near the former Delfasco Forge facility. The selected interim remedy was developed to achieve the Site-specific remedial action objectives (RAOs) and address the actual or potential human exposure to the hazardous substances, pollutants or contaminants.

The strategy for addressing the groundwater source within OU 1 includes installation of a soil vapor extraction (SVE) system (Alternative SA-S2) for the removal of volatile chlorinated organic contamination in the vadose zone at the Source Area of the Site. The interim Source Area remedy will also include an In-Situ Groundwater Treatment Barrier (Alternative SA-GW2) (Figure 4).

Alternative SA-S2, the SVE system, will include an activated carbon treatment system for the extracted contamination. The Source Area contamination is located primarily underneath the former Delfasco Forge property. The SVE system will be designed to reduce the Source Area contamination concentrations. The system will also reduce any contamination that may be leaching into the groundwater. Further infrastructure may be needed to implement this interim remedy; construction plans will be detailed in the Remedial Design (RD). This selected interim remedy for the Interim ROD is based on a successful Focused Feasibility Study (FFS) including the:

- Installation of a small-scale Pilot Test SVE system performed in 2014 for the TCEQ to evaluate the effectiveness, impact, and design/operating parameters of a horizontal SVE system.

- Installation of a SVE system as part of the 2020 FFS designed to Site specifications for the removal of PCE, TCE and their degradation products, including 1,1-Dichloroethene (DCE), cis-1-2-DCE, and Vinyl Chloride (VC).

Alternative SA-GW2 includes the design and construction of a reactive barrier infrastructure as the preferred presumptive remedial technology to reduce TCE and PCE concentrations in the groundwater at the Site Source Area. The Focused Feasibility Study (FFS) report concluded that a wider-ranging reactive barrier would be best to prevent progressive chemical of concern (COC) contaminated groundwater migration and plume expansion derived from the Site Source Area. Selection of the groundwater alternative includes drilling 30 to 50 additional borings below the ground surface between the lower clay and upper sand layers and downgradient of pilot study boreholes. The alternative also includes the use of two supplementary activated carbon/zero-valent iron infusions, focused around the northeastern sector of the Site where the added reactive barrier boreholes would be constructed to reduce COCs in the Source Area.

The groundwater plume extends off-Site into an adjacent residential neighborhood NE of the Site. EPA has installed vapor intrusion mitigation systems (VIMS) in some residential structures to address vapor intrusion (VI) exposure to residences overlying the impacted groundwater associated with the Site.

1.5 STATUTORY DETERMINATIONS

The selected interim remedy meets the requirements for remedial action set forth in Section 121 of CERCLA, 42 U.S. Code § 9621. This interim remedy will be protective of human health and the environment. The interim remedy complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial action, is cost-effective, and utilizes

permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable. Wastes generated from the treatment process will be analyzed and disposed according to applicable regulations. This interim remedy may result in hazardous substances, pollutants, or contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure (UUUE).

The selected soil remedy also satisfies the statutory preference for treatment as a principal element of the remedy (i.e., reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment). Pursuant to Section 121(c) of CERCLA, statutory reviews will be conducted no less often than once every five years after the initiation of construction to ensure that the interim remedy is, or will be, protective of human health and the environment as long as the Site contains contamination above levels that allow for UUUE. A review of this Site and remedy will be ongoing as EPA completes the Remedial Investigation (RI) and Feasibility Study (FS) and develops the remedial alternatives for the Site. If a subsequent action reduces the hazardous substances, pollutants, or contaminants on-Site to levels that allow for UUUE, then reviews may be discontinued.

1.6 INTERIM ROD DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of this Interim ROD. Additional information can be found in the Administrative Record file for this Site.

- A discussion of the nature and extent of contamination is included in the "Summary of Site Characteristics" (Section 2.5),
- COCs and their respective concentrations (Sections 2.5),
- Interim risks for human health and the environment represented by the COCs (Section 2.7.1),
- How source materials or highly toxic materials constituting Principal Threat Wastes (PTWs) are addressed (Section 2.11),
- Current and reasonably anticipated land use assumptions and current and potential future beneficial uses of groundwater used in the Interim ROD (Section 2.7),
- Potential land and groundwater use that will be available at the Site as a result of the Selected Interim Remedy (Section 2.6),
- Estimated capital, annual operation and maintenance, total present worth costs and discount rate, and the number of years over which the remedy cost estimates are projected (Section 2.12), and
- Decisive factor(s) that led to selecting the interim remedy (Section 2.10).

1.7 AUTHORIZING SIGNATURE

This Interim ROD documents the selected interim remedy for the chlorinated solvent contamination in the vadose zone and groundwater in the Source Area at the Delfasco Forge Superfund Site. This interim remedy was selected by the EPA after consultation with the TCEQ. The Director of the Superfund and Emergency Management Division (EPA Region 6) has been delegated the authority to approve and sign this Interim ROD.

By: _____ Date: _____

Lisa Price, Acting Director
Superfund and Emergency Management Division

PART 2: THE DECISION SUMMARY

2.1 SITE NAME, LOCATION AND DESCRIPTION

Site Name: Delfasco Forge Site
Site Location: Grand Prairie, Dallas County, Texas
EPA ID No.: TXD988034328

The Site is in the city of Grand Prairie, west of Dallas, Texas. The former Delfasco facility was a metal forging, fabrication, and machining company that operated at 114 NE 28th Street from 1980 to 1998. Delfasco used chlorinated solvents (TCE) and other volatile organic compounds (VOCs) to clean metals as part of its historical operations. The facility had an elongated storm drain and a former sump near the middle of the property, both of which could have been receptors of historical spills. TCE was spilled onto the ground due to poor manufacturing practices and it seeped down through the ground and entered the groundwater beneath the facility.

An area of soil contamination on the property was identified based on soil sampling conducted during a Phase II Environmental Site Assessment (ESA) investigation in September 2002. The exact amount of contaminated soil at the facility is not known. The groundwater carried the TCE to the northeast beneath the residential neighborhood. The affected structures include about 72 residential structures and two commercial buildings, which are regularly occupied by a population of approximately 200 people. The Site covers an area of approximately 40 acres of predominantly residential neighborhood. The Site consists of an area of observed exposure, an area containing structures with indoor air contamination due to subsurface intrusion, in 42 homes near the Source Area. The area of observed exposure was identified based on 21 residential structures which had observed exposure concentrations of TCE obtained through indoor air sampling; the remainder were inferred based on their locations and proximity to known TCE exposures. An additional area of subsurface contamination, an area with structures above the subsurface contamination, was identified with 30 homes and 2 commercial structures that are overlying the leading edge of the contaminated groundwater plume. The area of subsurface contamination was delineated based on groundwater samples meeting observed release criteria for VOC contamination.

The COCs at the Site found within the groundwater plume include PCE, a precursor to TCE, TCE and some of its degradation products, including 1,1-DCE, cis-1,2-DCE, and VC. In addition, 1,1,2-trichlorethane (1,1,2-TCA), 1,2-dichloroethane (1,2-DCA), 1,4-dioxane, and chloroform have been detected in groundwater samples at concentrations above the maximum contaminant level (MCL) and are included as COC's. 1,1-dichloroethane (1,1-DCA) and trans-1,2-dichloroethene (trans-1,2-DCE) have historically been detected in groundwater samples at concentrations below the MCL yet are included as COCs due to their affiliation as degradation products. The COCs are part of a common class of chemicals with known VI characteristics. The subsurface vapors emanating from the source medium, (the soil and groundwater) enter buildings

as a component of gas by migrating through cracks, seams, interstices, and gaps in walls or foundations.

Due to migration of hazardous vapors occurring within residential structures at the Site, several VIMS were installed. In mid-2014, Vapor Mitigation Sciences installed mitigations systems in 30 homes (systems were offered to 87 homeowners). These VIMS consist of sub-slab depressurization systems for homes with slab-on-grade foundations, and crawlspace ventilation systems for homes with pier and beam type foundations. The sub-slab depressurization systems work through use of a fan in either the attic, on the roof, or on an exterior wall of the house that is connected via a vent pipe to one or more "suction points" in the slab foundation. The fan draws air from the sub-slab up through the vent pipe and exhausts it to outdoor air. The crawlspace ventilation system also uses a fan, installed on an exterior wall that is connected to one or more vent pipes that run into the crawl space. The fan draws air through the pipe and vents it to the outside air, which reduces the threat to residents via subsurface VI. EPA continues to offer sampling for indoor air in homes on the perimeter and buffering the plume. EPA continues to offer VIMS at no cost to all homes located immediately over the groundwater plume.

EPA Region 6 is the lead agency for Site activities and is issuing this Interim ROD. The TCEQ is the support agency.

The public participation requirements set out in CERCLA Section 117, 42 U.S. Code § 9617, and 40 CFR § 300.435(c)(2)(ii), have been met for this remedy. This Interim ROD will become part of the Administrative Record per 40 CFR §300.825(a)(2), which has been developed in accordance with Section 113(k) of CERCLA, 42 U.S. Code § 9613(k), and which is available for review at the information repository locations listed in this Interim ROD. As required by 40 CFR § 300.435(c)(2)(i)(B), a Notice of Availability and a brief description of the Interim ROD will be published in the local paper. This Site has not been divided into multiple OUs. This Interim ROD presents the selected interim remedy to address the TCE contamination in the vadose zone and groundwater in the Site Source Area within OU 1. The final remedy for the contaminated groundwater outside the Source Area and any other media or source areas will be addressed in a future ROD (Figure 1).

2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

This section provides background information on past activities that have led to the current contamination at the Site, and federal and state investigations and cleanup actions conducted to date under CERCLA.

2.2.1 *Historical Activities*

The property at 114 NE 28th Street was first developed in the 1950s and on-site activities consisted of munitions manufacturing and a forge operation. The Delfasco Forge Division acquired the subject property in 1980 and began forge operations at that time. Detailed historical operations prior to Delfasco's acquisition are not known.

TCE was reportedly used on-site by Delfasco as a degreaser during the manufacturing process. Historical information indicates TCE was used in on-site operations in small quantities by spot hand application. Used and unused TCE were stored in 55-gallon drums on-site. There is no documentation of spills, large releases or improper disposal during Delfasco's operations at the facility between 1980 and 1998. The specific source, extent, and date of release are unknown. In 1998, Delfasco vacated the facility and all on-site operations ceased at that time.

2.2.2 *Pre-CERCLA Investigations*

Under the direction of Delfasco, EnSafe, Inc conducted a Phase II ESA in September 2002 with a direct-push technology (DPT) rig. The Phase II ESA included collecting soil and groundwater samples on-site. Soil samples were collected and analyzed for VOCs, Resource Conservation and Recovery Act (RCRA) 8 Metals, and total petroleum hydrocarbons (TPH). Groundwater samples were collected and analyzed for VOCs and TPH. VOC analysis indicated that a historical TCE release likely occurred on-site and TPH analysis revealed petroleum hydrocarbons had been released on-site. Metals analysis yielded results below calculated Site-specific TCEQ Tier 2 critical Protective Concentration Levels and do not constitute COCs in connection with the Delfasco Forge facility. The historical metals determination was made while the Site was regulated under the TCEQ Voluntary Cleanup Program (VCP), which Delfasco entered the Site into in April 2003. The EPA Remedial Investigation and Risk Assessment will assess metals concentrations to see whether they are below the EPA risk threshold and review the earlier TCEQ/VCP determination that metals are not COCs.

Between September 2002 and November 2005, Delfasco collected numerous surface and subsurface soil samples as part of Site investigation activities. Soil samples were collected using both DPT rigs and hollow-stem augur drill rigs. Soil data collected indicated that soils within the former Delfasco facility boundary had been impacted at depths ranging from one foot below ground surface (bgs) to 35 feet bgs. Soil samples analyzed for VOCs yielded detections in surface and subsurface soils for chlorinated solvents (PCE, TCE and degradation products). Maximum concentrations of TCE were 2.38 milligrams per kilogram (mg/kg) within the Delfasco facility boundary to 1.3 mg/kg to the east of the facility boundary. Maximum concentrations of PCE were 0.0154 mg/kg within the Delfasco facility boundary to 0.017 mg/kg to the east of the facility boundary. Maximum concentrations of cis-1,2-DCE were 2.79 mg/kg within the Delfasco facility boundary to 0.9 mg/kg to the east of the facility boundary. The maximum concentrations for 1,1-DCE and VC within the Delfasco facility boundary were 0.00446 mg/kg and 0.0148 mg/kg, respectively.

In July 2008, owners of Delfasco Forge filed for bankruptcy and the Site's participation in the TCEQ VCP was subsequently terminated. EPA Region 6 conducted a VI investigation of the neighborhood in 2008, sampling 16 homes and two commercial structures with the EPA Trace Atmospheric Gas Analyzer mobile lab and evacuated canisters (sampled sub-slab, crawl spaces, and indoor air). Ten of the 18 structures had measurable levels of TCE in indoor air. Based on these results, in November 2008, EPA installed VIMS in the four homes with the highest TCE vapor concentrations.

In August 2008, the EPA installed passive soil gas samplers at 86 locations along NE 28th Street, NE 29th Street and MacArthur Boulevard, overlying the groundwater plume. TCE and/or PCE were detected in fourteen samples collected NE of the former Delfasco Forge facility, on NE 29th Street and MacArthur Boulevard. The maximum amount of TCE detected in a sample was 21,702 nanograms.

In 2009, the Texas Department of State Health Services (TDSHS) and Texas Environmental Health Institute, in consultation with EPA, the Agency for Toxic Substances and Disease Registry, and the Centers for Disease Control and Prevention conducted an exposure investigation of the Delfasco area. Tap water, soil vapor, indoor air, and biological tissue (blood and urine) were tested for TCE. There was a relationship established between soil gas levels, indoor air levels, and blood levels of TCE. TCE blood levels measured in people living in homes with detectable levels of TCE in indoor air were highly correlated with indoor air levels.

In August 2011, using the funds collected under the bankruptcy settlement, the TCEQ collected seven groundwater samples, including one field duplicate, from two public supply wells and four monitoring wells (MW), and six soil samples, including one field duplicate, from the Delfasco property. Groundwater samples collected from four of the seven MWs contained TCE concentrations above the Hazard Ranking System groundwater exposure pathway benchmark. TCE was not detected in the two groundwater samples collected from the public supply wells. Four of the soil samples contained TCE at a concentration above detection limits.

In March 2013, using funds collected under the bankruptcy settlement, the TCEQ's contractor, EA Engineering, Science, and Technology, Inc (EA) conducted groundwater sampling to determine the extent of the release from the Delfasco Forge facility. Twenty-one MWs were sampled for VOCs. Of the 21 wells sampled, 14 had detectable concentrations of TCE with the highest concentration observed in MW 11 at 974 micrograms per liter (µg/L). VC, 1,1-DCE, and trans-1,2-DCE were also detected in some samples.

In 2014, Tetra Tech acting on behalf of Delfasco's Chapter 7 trustee, subcontracted with Vapor Mitigation Sciences to install VIMS with oversight from the EPA. Tetra Tech conducted pre-mitigation indoor air monitoring at 19 homes (and 2 duplicated) using evacuated canisters with the EPA Houston lab conducting the analyses. 15 of the homes contained concentrations of TCE above detection limits, and 14 of the homes contained concentrations above the subsurface intrusion component benchmark of 4.78×10^{-4} mg/m^3 for cancer risk and 2.09×10^{-3} mg/m^3 for non-cancer risk.

In mid-2014, Vapor Mitigation Sciences installed VIMS in 30 homes, systems were offered to 87 homeowners (one residential property had a second system placed on a second structure totaling 31 mitigated structures). A total of 38 VIMS were installed due to the complexity of homes' construction (i.e., combination of multiple separated crawl spaces and crawl space/slab foundation mixes). Approximately one month later, Tetra Tech conducted post-mitigation indoor air monitoring using evacuated canisters with flow controllers and 24-hour time-integrated samples. EPA Houston lab analyzed the samples, and the results were mixed with some samples showing lower concentrations and some higher. Additional sampling was conducted in May 2016 to verify sample results.

In 2014, using the funds collected under the bankruptcy settlement, the TCEQ's contractor, EA conducted a SVE pilot test for TCEQ Superfund to investigate the effectiveness of SVE on the VOCs at the Site. Over a one-month test period, 66.74 pounds of VOCs were recovered from existing MWs on the former Delfasco Forge property. No VOCs in the effluent samples were detected, demonstrating no VOC breakthrough associated with the activated carbon vessels being used for off gas treatment during the pilot test. Although the test showed that COCs could be recovered using SVE, sufficient data was not collected to further the design of an SVE system that could be utilized for Site remediation. A supplemental SVE pilot test was recommended that includes installation of observation wells prior to constructing a full-scale SVE system at the Site.

In May 2016, the EPA collected 23 air samples from six residential properties where VIMS were installed in 2014. The objective was to determine the effectiveness of the operating VIMS and determine if VIMS modifications would be necessary by the trustee's contractor. Overall, the results indicated that the VIMS appeared to be functioning as required.

In 2020, EPA conducted a FFS and Pilot Test which supported the use of SVE and an in-situ treatment barrier to address TCE in the SA groundwater. In 2022, EPA hosted a Proposed Plan Public Meeting, analyzed the soil gas surrounding Fannin Middle School, and the indoor air at one residential home. The samples collected from the school and the home did not contain Site COC's at concentrations higher than EPA's Regional Screening Level (RSL). The screening level was based on the most conservative standards, assuming residential use, a cancer screening of 10^{-6} and a non-cancer hazard quotient of 1. The RSLs for cancer and non-cancer are protective of both children and adult residents.

2.2.3 *National Priorities List*

The Site was proposed for listing on the NPL List on May 17, 2018 (83 FR 22918) and was placed on the list effective October 15, 2018 (83 FR 46408).

2.2.4 *Efforts to identify additional owners and/or operators*

Efforts were made to identify potentially responsible parties (PRPs) associated with the Site and to compel such PRPs to undertake and/or contribute to the investigation and cleanup of the Site. Deed and title searches were conducted and CERCLA 104(e) information requests were issued. Superfund Enforcement identified Delfasco, Inc./David B. Lilly Company as the current owner. The property was originally bought in 1980 by David B. Lilly Company, Inc. which became Delfasco, Inc. in 1998. No other PRPs have been identified to date. Delfasco, Inc. filed for Chapter 11 bankruptcy on July 28, 2008. After mediation with EPA, Department of Justice, and counsel for Delfasco, a trust was set up to be used by the Chapter 7 Trustee to fund cleanup liabilities. At this time, limited funds remain in the trust account.

2.3 COMMUNITY PARTICIPATION

EPA met with the City of Grand Prairie from 2018 to 2022 to work together on investigation and outreach efforts. In 2019 EPA conducted door to door visits to homes over and around the plume

to get residents signed up for testing or VIMS. Due to the COVID-19 pandemic in 2020, phone calls were made to citizens to further efforts. In 2021 and 2022 mailers were sent, and door hangers were placed at homes over and around the plume. In 2022, EPA also attended National Night Out at the Tony Shotwell Life Center, distributing information in both Spanish and English.

The EPA held an open house on sampling results and general Site information in February 2022 and conducted the Proposed Plan Public Meeting in June 2022 at the Tony Shotwell Life Center. The Proposed Plan was made available to the public and a 30-day public comment period began on June 20, 2022, closing on July 20, 2022. The Proposed Plan highlights key information from the Site investigations and the FFS reports for the Site, but it is not a substitute for these detailed reports. At the public meeting, EPA gave a formal presentation of the Site history, the preferred interim remedial action for the identified Source Area, and the status of the ongoing Site investigation. The Responsiveness Summary in Part 3 provides the public comments received during the 30-day public comment period and the Agency responses. The recorded meeting transcript from the public meeting is included in the Administrative Record.

The results of the sampling activities and an assessment of the potential exposure risks at the Site Source Area are presented in the Administrative Record File. The development and evaluation of an interim remedial alternative to address Site Source Area contamination is presented in the FFS report. For a complete source of information, please refer to these reports, which are in the Administrative Record File located at the repositories listed below. The EPA encourages the public to review these documents to gain a comprehensive understanding of (1) the Site Source Area and Sitewide Superfund activities that have been conducted there, and (2) the environmental remediation alternatives that have been developed and evaluated to address and reduce the hazardous vapor-forming chemicals at the Site Source Area in the immediate future. The EPA also encourages the public to participate in the Superfund decision-making process for the Site by reviewing the Administrative Record File, including important Site documents such as the FFS report, sampling reports, historical information, and the Proposed Plan.

2.3.1 *Community Involvement Plan*

The Community Involvement Plan (CIP) is central to Superfund community involvement. It specifies the outreach activities that the EPA undertakes to address community concerns and expectations. As a continuation to the significant community interaction to date, with the Site now listed on the NPL, the 2008 CIP that was developed during the removal response was reviewed and updated in 2022 to include specific interim remediation activities that will be ongoing at the Site. The CIP also includes background information on the community, community issues and concerns, community involvement activities, communication strategy, official contact list, and local media contacts. The CIP was also translated into Spanish and is available as part of the Administrative Record.

2.3.2 *Community Meetings and Fact Sheets*

The EPA has conducted community meetings since 2008; TCEQ has attended meetings since 2013. Community participation thus far has been conducted through community meetings, Site updates to the Grand Prairie City Council, outreach coordinated with the City of Grand Prairie,

and calls to residents. Flyers in the form of mailers and door hangers have also been sent to residents with information about the Site, upcoming meetings, and contacts. EPA project managers have also responded individually to community requests for information about the Site.

In addition, factsheets detailing Site activities have been published periodically since the Site was identified for Superfund Response Actions and are available in the Administrative Record.

2.3.3 *Information Repositories*

The Administrative Record File is available at the following repositories:

TCEQ Central File Room
12100 Park 35 Circle Building E
First Floor Room 103
Austin, TX 78753

Tony Shotwell Life Center
2750 Graham Street
Grand Prairie, Texas 75050
972-237-5730

EPA Site Webpage

www.epa.gov/superfund/delfasco-forge

2.4 SCOPE AND ROLE OF RESPONSE ACTION

The interim remedy will be the first remedial action at the Site and is intended to address the TCE Source Area that is serving as an ongoing source of TCE contamination to the underlying groundwater. The TCE Source Area identified is present in the vadose zone and underlying groundwater. Interim action is necessary to limit continued migration of the TCE from the vadose zone to the underlying groundwater, and to minimize the VI pathway into homes overlying the plume. A phased approach to site cleanup is appropriate when the site characterization is not yet completed and when the site data is not yet sufficient to develop and evaluate cleanup alternatives to address risks posed by the entire site.

This interim action is intended to mitigate the migration of the TCE into the groundwater and reduce human exposure through VI until such time as EPA selects a final remedy for the Site. The use of early actions, including interim actions and removal actions, can expedite the overall timeline for site cleanup. The EPA will propose additional alternatives to address the TCE contamination in the groundwater after additional investigations are completed at the Site. A removal action may also be appropriate to address current human exposure and the immediate risks posed through an exposure pathway. This interim response action will not be inconsistent with, nor preclude implementation of a final remedy, and is not intended to address fully the threats to human health and the environment posed by the contamination at this Site. This interim

remedy addresses the Source Area within OU 1, the Site has not been divided into any additional OUs and the final Sitewide ROD will address all areas and media within the Site and any unacceptable risks posed to human health and the environment.

2.5 SUMMARY OF SITE CHARACTERISTICS

This section presents a brief, comprehensive overview of the Site. This section has been divided into three subsections that include physical characteristics, conceptual site model, and the nature and extent of contamination.

2.5.1 *Physical Characteristics*

This subsection provides a summary of Site (1) surface features, (2) climate, (3) regional geology and hydrogeology, (4) local geology and hydrology, and (5) habitats. Detailed information on these topics can be found in the Administrative Record.

(1) Surface Features

The Site is comprised of an area with documented indoor air contamination, and within structures overlying groundwater contaminated by the release of TCE and other VOCs from the Delfasco Forge facility. The Site covers an area of approximately 40 acres of predominantly residential neighborhood. The potentially affected structures include 72 residential structures and two commercial buildings which are regularly occupied by a population of approximately 200 people.

The contamination at the Site is from past operations performed at the former Delfasco Forge facility located at 114 NE 28th Street in Grand Prairie (Dallas County), Texas. The Delfasco Forge property includes an office building and an adjacent shop and a separate warehouse building. The property is bounded to the North by residential properties, to the East by residential and commercial, to the South by a vacant lot, and to the west by 28th Street and then a manufacturing facility. The topography of the Site is a gentle slope in a southwestern direction towards Mountain Creek Lake. The shallow subsurface is highly variable and consists of inter-bedded clay, silt, and sand units.

(2) Climate

The Dallas/Fort Worth Metroplex (including Grand Prairie, Texas) is located in North Central Texas, approximately 275 miles north of the Gulf of Mexico. It is near the headwaters of the Trinity River, which lie in the upper margins of the Coastal Plain. The rolling hills in the area range from 500 to 800 feet in elevation.

The climate is humid subtropical with hot summers. It is also continental, characterized by a wide annual temperature range. Precipitation also varies considerably, ranging from less than 20 to more than 50 inches. Winters are mild, but northers occur about three times each month, and often are accompanied by sudden drops in temperature. Periods of extreme cold that occasionally occur are short-lived, so that even in January mild weather occurs frequently. The highest temperatures of summer are associated with fair skies, westerly winds and low humidity.

There are only a few nights each summer when the low temperature exceeds 80°F. Summer daytime temperatures frequently exceed 100°F. Air conditioners are recommended for maximum comfort indoors and while traveling via automobile.

Throughout the year, rainfall occurs more frequently during the night. Usually, periods of rainy weather last for only a day or two and are followed by several days with fair skies. A large part of the annual precipitation results from thunderstorm activity, with occasional heavy rainfall over brief periods of time. Thunderstorms occur throughout the year but are most frequent in the spring.

Hail falls on about two or three days a year, ordinarily with only slight and scattered damage. Windstorms occurring during thunderstorm activity are sometimes destructive. Snowfall is rare.

The average length of the warm season (freeze-free period) in the Dallas/Fort Worth Metroplex is about 249 days. The average last occurrence of 32°F or below is in mid-March and the average first occurrence of 32°F or below is in late November.

(3) Regional Geology and Hydrogeology

The Site and the surrounding area overlies shallow Holocene soils and Quaternary fluviatile terrace deposits. The unconsolidated section was deposited on the underlying Cretaceous Eagle Ford Shale, the confining unit. This confining unit overlies the regional water-bearing Woodbine Formation and the major aquifers of the Trinity Group. The following discussion is from the 2005 Affected Property Assessment Report and was developed from Site soil boring and MW logs and other published sources.

(3a) Soil

The area around the Site includes multiple regional soil assemblages: the Houston Black-Urban Land complex and the Lewisville-Urban Land complex. These soils include urban land and slope clays and silty clay typically consisting of gray, dark gray to black, alkaline, low permeability clays, and silty clay loams. The buildings of the Delfasco Forge facility sit on Houston Black-Urban Land complex soils. The Houston Black-Urban Land complex is gray to dark gray, deep, moderately well-drained clay soil found on nearly level and gently sloping ground. The Lewisville-Urban Land complex is located on one to two blocks north of the facility and is a deep, well-drained silty clay soil.

(3b) Quaternary Fluviatile Terrace Deposits

The Quaternary terrace deposits consist of predominantly sands and silty sands with some silty clay and clays that merge with the overlying soils. The fluvial alluvium terrace deposits consist of mixed layers of sand, gravel, and clay deposited through stream deposition in several fining upward sequences.

The contact between unconsolidated terrace deposits and the underlying Eagle Ford Shale frequently contains clayey sands, gravel, and platy, fissile, weathered shale and hard clay. Groundwater is generally encountered at depths of 40 to 45 feet bgs.

(3c) Eagle Ford Shale

The Eagle Ford Shale is a marly, calcareous shale unit of the Eagle Ford Group. The shale is generally bituminous, selenitic, and micaceous. The first shale encountered is usually hard and does not display many fractures. The shale becomes progressively harder with depth. The rest of the Eagle Ford Group includes sandstone and limestone beds that are burrowed and bentonitic. This confining unit does not typically yield water to wells. The Eagle Ford Shale was encountered at depths between 52.5-feet and 73-feet during drilling activities at the Site.

(3d) Woodbine Formation

The Woodbine Formation is predominantly a sandstone formation with some shale and clay. The Woodbine is divided into three parts: the Upper, Middle, and Lower based on well logs. Fine-grained sandstone is typically well sorted, tuffaceous, and marked by ripples and cross bedding. The upper and lower portions especially can contain clay and shale. The Woodbine is considered to be a minor aquifer that can be useful for irrigation and industrial users.

(3e) Trinity Group

The Trinity Group consists of the Paluxy and Twin Mountains Formations. It is separated from the Woodbine by the Washita Group and the Fredericksburg Group, both non-water bearing units. Groundwater from the Trinity Group has low total dissolved solids and is used to supplement surface sources for public water supplies on a regional scale.

(4) Local Geology and Hydrogeology

The shallow subsurface is highly variable and consists of inter-bedded clay, silt, and sand units. The vadose zone varies from approximately 10 feet bgs to 45 feet bgs. Inorganic clays, gravely clays, sandy clays, and lean clays exist to approximately 10 feet bgs. Clays in this area of Texas are identified as high-swelling clays. These clays may crack as they dry and shrink, resulting in pathways for water and vapor migration. Underneath the clays lie sands, silty sands, and clayey sands, with lenses of clay, to a depth of approximately 50-55 feet bgs.

Beneath the Site, the upper sand unit has high moisture content and gives yield to a shallow groundwater bearing unit (GWBU), likely through infiltration of the vadose zone. The shallow GWBU is approximately 20 to 38 feet bgs and is underlain by an intermediate clay layer. The lithology of the shallow GWBU is comprised primarily of sand. An additional GWBU is located deeper in the formation from approximately 40 to 73 feet bgs and underlain by the Eagle Ford Shale. The deeper GWBU is comprised of sand and gravel with clay lenses present intermittently. Water level elevations are encountered at approximately 17 to 20 feet bgs in the shallow and deep GWBU, suggesting communication between GWBUs. This higher permeable unit is generally conducive to groundwater migration. Water moves laterally north east from the Delfasco facility through these sands. The highest TCE concentrations in groundwater are situated in a shallow GWBU. Above this perched GWBU, sandy units are also present in the vadose zone, which may be conducive for migration of soil vapors. However, the shallow units, favorable for creating the perched GWBU/ sandy vadose zone conditions, appear to “pinch out”

within an area bounded by MW-30S, MW13, MW-31S, and DPT-01. The Eagle Ford Shale acts as a confining unit to aquifers located beneath.

(5) Habitats Overview

There are no surface water bodies located within approximately 0.75-miles of the Delfasco Forge property. The nearest surface water body is Bluebonnet Lakes located down-gradient to the north by approximately 0.75-miles. Due to the distance of Bluebonnet Lakes and because there are no storm water conveyances on the Delfasco Forge property that lead to a storm water system, Bluebonnet lakes is unlikely to be impacted. The surface of Bluebonnet Lakes is approximately 77 acres.

Approximately 90 percent of the Delfasco Forge property surface is covered by concrete and asphalt. The remainder of the property is covered by gravel, grass or trees. The property is bounded to the North by residential areas, to the East by residential and commercial, to the South by a vacant grass lot, and to the west by 28th Street and then a manufacturing facility.

2.5.2 *Nature and Extent of Contamination*

Environmental investigations at the Site began with a 2001 Phase I Environmental Site Assessment. Soil contamination was first documented in a Phase II ESA conducted in September 2002. Additional investigations focused on soil, groundwater, passive soil gas, and indoor air.

The COCs at the Site and found within the groundwater plume include PCE, a precursor to TCE, TCE and some of its degredation products, including 1,1-DCE, cis-1,2-DCE, and VC. In addition, 1,1,2-trichlorethane (1,1,2-TCA), 1,2-dichloroethane (1,2-DCA), 1,4-dioxane, and chloroform have been detected in groundwater samples at concentrations above the MCL and are included as COC's. 1,1-dichloroethane (1,1-DCA) and trans-1,2-dichloroethene (trans-1,2-DCE) have historically been detected in groundwater samples at concentrations below the MCL yet are included as COCs due to their affiliation as degradation products. Investigations conducted from 2003 to 2005 indicated that these chemical solvents and substances were released onto the ground and surface areas at the facility. Subsequently, these solvents migrated into the groundwater.

The highest TCE concentrations in groundwater are situated in a shallow GWBU from approximately 20 to 38 feet bgs. The TCE contamination can be found primarily in the shallow GWBU, which has not yet been fully delineated. The contaminant plume extends for approximately 2,500 feet NE and is up to 1,100 feet wide at the widest point in the deep zone (Figure 3).

Based on 2016 sampling by TCEQ, TCE ranged in concentration from 0.00068 milligrams per liter (mg/L) to 16.1 mg/L and was detected in 21 of the 31 groundwater samples. The presence of dense non-aqueous phase liquid (DNAPL) is indicated by the highest concentration of TCE in groundwater from an on-site well (MW-27S). The zone of greatest contamination in the shallow GWBU correlates to the on-site SA wells MW-05S, MW-26S, and MW-27S. The MCL for TCE is 0.005 mg/L. The COCs are volatile compounds which are part of a common class of chemicals with known VI characteristics.

2.5.3 *Chemical Fate and Transport*

The highest concentrations of TCE are present on the former Delfasco Forge property and proceeding downgradient, to the NE, of the property. The presence of DNAPL is suggested by the residual concentrations of TCE in groundwater from an on-site well.

The presence of the degradation products cis-1,2-DCE, 1,1-DCE, and VC indicate some degradation is occurring. However, the 2016 sampling by TCEQ showed dissolved oxygen (DO) levels greater than 1 mg/L, indicating that oxygen is enriched, and conditions are not favorable for anaerobic degradation of PCE and TCE. Some individual wells presented relatively low levels of DO which indicates some degradation could occur. Consistent sample results for degradation byproducts over the years indicates that the degradation process may be limited, which indicates minimal progress for natural attenuation.

Previous passive soil gas sampling in 2017 (Figure 5) and groundwater sampling in 2014 showed the highest levels of TCE closest to the former Delfasco facility. However, groundwater sampling completed in 2020 showed the highest concentrations of TCE have migrated to the northeast end of the Site. Increased levels of TCE were also detected in a MW in 2020 located farther away from the former Delfasco facility. Both of these observations lend support to the continued migration of contaminants within the groundwater, downgradient and to the northeast.

2.6 CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES

This section summarizes the current and reasonably anticipated future land and resource use at the Site and surrounding the Site. This information forms the basis for the exposure assessment assumptions and risk characterization conclusions discussed in Section 2.7.

2.6.1 *Land Use*

Current land use at the former Delfasco Forge property is primarily light industrial and commercial use. The area around the property consists of commercial and light industry to the south along Main Street and west along NE 28th Street, residential to the north, and residential and commercial to the east. Moving farther from the Site, the amount of residential land use increases. Additionally, Fannin Elementary School is located northwest of the Site. The future land use is not anticipated to be different from the current land use.

2.6.2 *Groundwater Use*

Three private water wells (PW) and one public supply well were identified within 0.5 miles of the Site. Two of the three PWs were dry on inspection in August 2004. The third PW contained water and was sampled for VOCs in August 2004. TCE and degradation products were detected in this well at low-levels. TCE exceeded the MCL in the sample from PW-02. Owners reported that none of the three PWs had been used for at least 10 to 20 years. A notification letter was sent to the resident of the property containing this well, which summarized the findings and provided recommendations regarding future use of the water well.

The identified public supply well belongs to the City of Grand Prairie and is registered on the Texas Water Development Board database as an active well. The City indicated that this well is

only used during times of peak water demand and was confirmed to be steel cased to a depth of approximately 2,000 feet bgs and screened at the bottom of the casing (2,163 bgs). This well is located beyond the northern edge of the affected groundwater plume.

In February 2007, Delfasco was informed that the City of Grand Prairie identified an additional PW within the groundwater plume boundary. Two of the owners of the four PWs consented to having their wells plugged, and the City of Grand Prairie was working to assist with this activity.

In 2011, TCEQ commissioned an updated Water Well Survey. The survey confirmed that three PWs were used for irrigation purposes only. No plumbing exists from these wells to any residences. Additionally, all residences are connected to the City of Grand Prairie's public water supply system. This supply system pulls water from treated surface water and supply wells. The supply well nearest to the Site was sampled and did not contain any Site COC's. The City of Grand Prairie's supply wells EPA and TCEQ certified to be safe drinking water.

2.7 SUMMARY OF SITE RISKS

- Risk to residents in homes next to the Site Source Area where indoor air TCE concentrations exceed EPA's RSLs,
- Risk to commercial workers occupying an on-site building,
- Risk from VI to occupants at homes in the path of migrating TCE-contaminated groundwater plume deriving from the Site Source Area, and
- Risk of on-site groundwater plume expansion into off-site areas and further aquifer degradation.

The EPA will complete a baseline human health risk assessment (BHHRA) during the final RI/FS phase of the Superfund process to confirm the current and potential future public health and environmental exposure risk conditions at the Site. The need for Sitewide remedial action will be evaluated and established in part based on the results of the completed BHHRA and ecological risk assessments and documented in the final ROD.

2.7.1 *Summary of Human Health Risk Assessment*

There is evidence of VI to indoor air from TCE-contaminated soil and groundwater at homes next to and downgradient of the Delfasco facility and at a commercial building overlying the Site SA. RI activities found that concentrations of TCE in indoor air in the on-Site commercial building corresponded to an excess lifetime cancer risk (ELCR) greater than 1 in 10,000 (10^{-4}). At a home next to the Site Source Area, concentrations of TCE in indoor air correspond to ELCR values between 10^{-4} and 1 in 100,000 (10^{-5}). Concentrations of TCE in indoor air environments at and near the Site Source Area are above EPA Region 6 protective benchmarks and could have a Hazard Index greater than 1. These risk metrics reveal that consideration of the VI pathway is warranted because vapor-forming chemicals at the Site Source Area could continue to negatively impact the public health at adjacent homes.

The selected interim remedial actions are designed (1) for SVE to mitigate the migration of TCE vapors at the Site Source Area from groundwater into indoor air and (2) for the in-situ

groundwater barrier to treat impacted groundwater at the Site Source Area to reduce mobility and concentration of the COC's.

Investigations conducted by former Site owners, the TCEQ, and EPA have found concentrations of TCE and PCE in the Site Source Area groundwater are more than their respective Safe Drinking Water Act established MCLs. In the final BHHRA, EPA will consider that residential use of groundwater around the Site Source Area might become a future drinking water source. The comprehensive BHHRA will be completed and used to substantiate the Sitewide remedy described in the final ROD.

2.7.2 *Risk Assessment Conclusion and Basis for Response Action*

Based on current data, it is the EPA's determination that the selected interim remedy is necessary to protect public health and the environment from actual or threatened releases of hazardous substances, pollutants or contaminants from this Site, which may present an imminent and substantial endangerment to public health or welfare.

2.8 REMEDIAL ACTION OBJECTIVES

Under the NCP at 40 CFR § 300.430(e)(2)(i), EPA plans to establish RAOs specifying contaminants and media of concern, potential exposure pathways, and remediation goals. Remediation goals shall establish acceptable exposure levels (i.e., contaminant concentration levels) that are protective of human health and the environment, and shall be developed considering certain factors, including Applicable or Relevant and Appropriate Requirements (ARARs), which represent the cleanup standards a remedy must attain, as specified in the NCP.

RAOs provide a general description of what a Superfund cleanup is designed to accomplish. Because there are no federal or state cleanup levels for TCE-contaminated soil or groundwater that is a source of contaminants to indoor air, EPA establishes short-term Preliminary Remediation Goals (PRGs) for the Site SA predicated on information evaluated by EPA Regional risk assessors. EPA will establish long term, Sitewide PRGs for groundwater contamination in the future, in the final BHHRA.

PRGs will be developed for TCE and PCE in Site Source Area soil and groundwater, using a residential land use scenario and an ELCR for a receptor of $1x10^{-6}$ (where remediation goals are not determined by ARARs, EPA may use an ELCR of $1x10^{-6}$ as a point of departure for establishing PRGs for carcinogens) or a hazard index of 1.

Following are the RAOs which will serve as the interim remedial action PRGs established to address and control unacceptable human health risks from VI and begin reducing subsurface vapor sources at the Site Source Area.

- Prevent or minimize further migration of COCs in the vadose zone at the Site Source Area that could result in further groundwater contamination that could continue to source contaminants to indoor air.
- Reduce the concentrations of COCs in the Site Source Area groundwater that could continue to source contaminants to indoor air.

- Minimize migration and expansion of COCs in groundwater at concentrations exceeding federal MCL's or applicable Tap Water Screening Levels at the Site Source Area.

COC	MCL
PCE	5 µg/L
TCE	5 µg/L
1,1-DCE	7 µg/L
cis-1,2-DCE	70 µg/L
VC	2 µg/L
1,1,2-TCA	5 µg/L
1,2-DCA	5 µg/L
1,4-dioxane	4.6 µg/L*
chloroform	80 (G) µg/L
1,1-DCA	28 µg/L*
trans-1,2-DCE	100 µg/L

MCLs listed are based off of the EPA May 2023 RSL table.
G Represents Maximum Contaminant Level Goal.
* Represents Tap Water Screening Level (1.0E-05) Carcinogenic Target Risk.

The EPA guidance states that "an interim action is limited in scope and only addresses areas/media that also will be addressed by a final site/OU ROD." These RAOs are 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 RAOs in this Interim ROD reflect the limited scope of an interim remedial action. By preventing or minimizing the continued migration of COCs from the vadose zone to the underlying groundwater and reducing COC concentrations in the Site Source Area groundwater, the interim remedial action prioritizes Site Source Area reduction and treatment so that aquifer restoration can begin during subsequent response actions.

This selected remedy is an interim remedial action under CERCLA as EPA continues to investigate the nature and extent of contamination at the Site. The selected interim remedy is intended to serve as a source control action and specific numeric cleanup standards or goals will not be established at this time. The general strategy for assessment of performance and closure of the SVE system will be based on four components considered integral to the successful operations: (1) site characterization, (2) system design, (3) performance monitoring, and (4) mass flux to and from the groundwater. These four components form converging lines of evidence regarding performance of the interim action. Each component is interrelated and requires continuous evaluation during the system operation. The use of converging lines of evidence for evaluating continued operation of the SVE system is outlined in EPA's "Development of Recommendations and Methods to Support Assessment of Soil Venting Performance and Closure" (EPA/600R-01/070, September 2001).

2.9 DESCRIPTION OF ALTERNATIVES

Interim remediation alternatives for Site Source Area soil and soil vapor and groundwater are summarized in Table 1 and discussed further in the following sections. The interim remedial action alternatives are numbered to correspond with those prescribed in the FFS report.

TABLE 1: SUMMARY OF REMEDIAL ALTERNATIVES

Area and Media	FFS Designation	Description
SOURCE AREA (SA) SOIL & SOIL VAPOR	SA-S1	No Action
	SA-S2	**Soil Vapor Extraction**
SOURCE AREA GROUNDWATER (GW)	SA-GW1	No Action
	SA-GW2	***In-Situ* Groundwater Treatment Barrier**

2.9.1 *Source Area Soil and Soil Vapor Alternatives*

This section describes the remedial alternatives that were developed in the FFS report to address COC-contamination in the Site Source Area vadose zone.

(1) Alternative SA-S1: No Action

Estimated Capital Cost $0
Estimated Average Annual Operations & Maintenance (O&M) Costs: $0
Estimated Total O&M Costs: $0
Estimated Construction Timeframe: None

Regulations governing the Superfund Program generally require that a "no-action" alternative be evaluated to establish a baseline for comparison. Under this alternative, EPA would take no action at the Site to reduce COC concentrations in the vadose zone.

(2) Alternative SA-S2: Soil Vapor Extraction

- This is EPA's preferred alternative to reduce COC's in the vadose zone.

Estimated Capital Cost: $1,260,000
Estimated Average Annual O&M Costs: $102,214
Estimated Periodic Costs: $90,000
Estimated Present Worth Cost: $3,650,000

Estimated Construction Timeframe: 6 months

Soil Vapor Extraction – Since TCE and PCE are the primary contaminants identified at the Site Source Area, SVE was the preferred presumptive remedy selected for application of a field-scale study to study and evaluate its implementability as an effective technology to use at the Site. The FFS report supports its use as a tried and proven method to reduce COCs in the vadose zone. SVE works by applying a vacuum to the contaminated soil. SVE wells are drilled and screened in the most contaminated zones in the soil and connected to a vacuum pump through conveyance pipes. The vacuum pump draws vapor-forming chemicals from the soil surrounding individual wells and passes them through an off-gas treatment system before discharge. The extraction of COCs from the soil also induces further vaporization of other vapor-forming chemicals in the groundwater. Over a period of sustained SVE, a substantial amount of contaminant mass can be removed at the Site Source Area. The SVE system is anticipated to operate for approximately two years based on the removal of 2,000 pore volumes of air from the target zone.

2.9.2 *Source Area (SA) Groundwater Alternatives*

Regulations governing the Superfund Program generally require that the "no-action" alternative be evaluated to establish a baseline for comparison. Under this alternative, EPA would take no action at the Site to prevent exposure or to reduce COC concentrations in Site Source Area groundwater. (1) SA-GW1: No Action (2) SA-GW2: Soil Vapor Extraction

(1) Alternative SA-GW1: No Action

Estimated Capital Cost: $0
Estimated Average Annual O&M Costs: $0
Estimated Periodic Costs: $0
Estimated Present Worth Cost: $0
Estimated Construction Timeframe: None

(2) Alternative SA-GW2: In-Situ Groundwater Treatment Barrier

- This is EPA's preferred interim measure for reducing COC-contaminated GW migration and expansion.

Estimated Capital Cost: $2,550,000
Estimated Average Annual O&M Costs: $62,000
Estimated Periodic Costs: $90,000
Estimated Present Worth Cost: $4,020,000
Estimated Construction Timeframe: 8 to 12 months

- Since there are no identified private drinking water wells developed in the Site Source Area vicinity, no immediate current risk is posed by exposure to groundwater. However, groundwater containing COCs at concentrations exceeding the MCLs or applicable Tap Water Screening Levels in the shallow alluvial aquifer underlying the Site Source Area might pose potential future risk if the local aquifer is ever developed as a future drinking water supply for the

community. The current Site risk is VI to buildings immediately above the contaminated groundwater plume. Following is a brief description of the interim remedial action alternative selected to reduce COC-contaminated groundwater migration and plume expansion from the Site Source Area. SA-GW2 helps achieve interim RAOs and remedial goals by: (1) Preventing or minimizing further migration of COCs in the vadose zone at the Site Source Area that could result in further groundwater contamination that could continue to source contaminants to indoor air. (2) Reducing the concentrations of COCs in the Site Source Area groundwater that could continue to source contaminants to indoor air. (3) Minimizing migration and expansion of COCs in groundwater at concentrations exceeding federal MCLs or applicable Tap Water Screening Levels at the Site Source Area.

Construction of Additional In-Situ Groundwater Treatment Barrier Infrastructure and a Groundwater Monitoring Program- The SA-GW2 interim remedial action alternative includes the implementation of a groundwater monitoring program to assess and verify the performance and effectiveness of the recommended technologies selected under this interim remedial action. Samples for testing and monitoring will be obtained from boreholes drilled to define the Site Source Area groundwater treatment area. New MWs will be installed to document TCE and PCE concentration reductions.

Alternative SA-GW2 includes the design and construction of a reactive barrier infrastructure as the preferred presumptive interim remedial technology to reduce TCE and PCE concentrations in the groundwater at the Site Source Area. The FFS report concluded that a wider-ranging reactive barrier would be best to limit progressive COC-contaminated groundwater migration and plume expansion derived from the Site Source Area. Selection of this interim groundwater alternative includes drilling 30 to 50 additional borings below the ground surface between the lower clay and upper sand layers and downgradient of pilot-study boreholes. The alternative also includes the use of two supplementary activated carbon/zero-valent iron infusions, focused around the NE sector of the Site where added reactive barrier boreholes would be constructed to treat and halt plume migration/expansion.

2.9.3 *Technology and Alternative Development and Screening*

CERCLA and the NCP set forth the process by which remedial actions are evaluated and selected. Office of Solid Waste and Emergency Response (OSWER) Directive: 9355.0-48FS, Presumptive Remedies: Site Characterization and Technology Selection for CERCLA Sites With Volatile Organic Compounds in Soils (EPA, 1993) states that presumptive remedies are preferred technologies for common categories of sites, based on historical patterns of remedy selection and EPA's scientific engineering evaluation of performance data on technology implementation. The objective of the presumptive remedy is to use the program's past experience to streamline site investigation and speed up selection of cleanup actions. The directive identifies SVE as the primary presumptive remedy, as well as thermal desorption or incineration as additional potential presumptive remedies. In evaluating the decision tree for investigating and selecting a remedy at solvent sites, based on the evidence collected at the site, SVE as the best candidate for site remediation.

2.10 EVALUATION OF ALTERNATIVES

The National Contingency Plan (NCP) requires the use of nine criteria to evaluate and compare the remedial alternatives. These criteria include threshold criteria, which each alternative must meet in order to be eligible for selection. Primary balancing criteria are used to weigh major trade-offs among alternatives, and modifying criteria involve state and community acceptance.

The two threshold criteria are: (1) overall protection of human health and the environment, and (2) compliance with applicable or relevant and appropriate requirements.

The five primary balancing criteria are: (3) long-term effectiveness and permanence; (4) reduction of toxicity, mobility, or volume through treatment; (5) short-term effectiveness; (6) implementability; and (7) costs.

The two modifying criteria are: (8) state acceptance, and (9) community acceptance.

The nine criteria are defined in Table 2 below. This section summarizes the comparative analysis performed in the FFS report against the nine criteria. The analysis of each alternative with respect to the nine criteria is presented in the FFS report.

TABLE 2 – EVALUATION CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES
1. ***Overall Protectiveness of Human Health and the Environment*** – determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
2. ***Compliance with ARARs*** – evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.
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 the alternative, including factors such as the relative availability of goods and services.

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

Threshold Criteria:

The selected interim remedy is climate resilient and is not expected to be impacted by any future change in climate.

(1) Overall Protection

The "no action" alternative SA-S1 does not protect human health and the environment. For the Site Source Area vadose zone alternatives, only SA-S2 provides adequate protection of human health and the environment by reducing COC concentrations through SVE and treatment. SA-S2 achieves RAOs by using a presumptive interim remedy and technologies that reduce COC concentrations in the Site SA vadose zone. For the Site Source Area groundwater alternatives, only SA-GW2 provides varying degrees of protection over time for the environment and future public health protection, so the local groundwater aquifer could be used as a potential future drinking water supply.

(2) Compliance with Applicable or Relevant and Appropriate Requirement (ARARs)

The "no action" alternatives SA-S1 and SA-GW1 do not comply with ARARs. Alternative SA-S1 relies on natural environmental degradation processes to reduce COC concentrations in Site Source Area soil and soil vapor. Because sufficient destructive natural attenuation processes have not been observed at the Site, there is no evidence that these alternatives could achieve ARARs. For Site Source Area soil, alternative SA-S2 complies with ARARs through removal of COCs from the vadose zone and utilization of granular activated carbon (GAC) as an emission control prior to atmospheric discharge. The disposal or regeneration of the spent carbon media at an off-site facility effectively removes the COCs from the community and avoids transfer of COCs to another medium. For Site Source Area groundwater alternative, SA-GW2, an in-situ groundwater treatment barrier at the hot-spot will be implemented and meet the identified ARARs.

Since Alternative SA-S1 and SA-GW1 do not meet the threshold criteria, these alternatives are not carried forward for comparison with the remaining seven criteria.

In accordance with the NCP (40 CFR § 300.430(f)(l)(ii)(C)(l), interim actions such as this are not required to comply with ARARs as long as the final remedial action at the Site will attain them. However, EPA expects that SVE and an in-situ groundwater treatment barrier will comply with those federal and state requirements that are applicable or relevant and appropriate to the limited scope of this interim action.

Primary Balancing Criteria:

(3) Long-Term Effectiveness and Permanence

Site Source Area soil alternative SA-S2 is a presumptive interim remedy and is proven technology for removal of TCE and other COCs from the vadose zone. Site Source Area groundwater alternative SA-GW2 is expected to achieve long term protectiveness and permanence by reducing COC concentrations in the groundwater. While there is potential for residual contamination to remain, alternative SA-GW2 will address the highest concentrations of TCE present in the Source Area by targeting specific areas of the groundwater plume core.

(4) Reduction of Toxicity, Mobility, or Volume through Treatment

Alternative SA-S2 will reduce the mobility and volume of the contaminants at the Site Source Area through the extraction of VOCs from the unsaturated zone between the water table and the ground surface. The extracted vapors will be captured and removed from the Site using GAC units that are transported to permitted off-site disposal facilities. Site Source Area groundwater alternative SA-GW2 will reduce the concentrations of COCs in the Site Source Area groundwater through treatment.

(5) Short-Term Effectiveness

Alternatives SA-S2 and SA-GW2 will subject the local community and Site workers to short-term risks during the construction phase. Construction traffic may increase the risk of vehicular accidents. However, adequate planning and compliance with safe work practices will mitigate these risks. Workers will face potential exposure to contaminated media during construction, operation, and maintenance. Compliance with a site-specific health and safety plan will mitigate these risks. Wastes produced during installation of the SVE, and the in-situ groundwater treatment barrier systems include drill cuttings from the well and boring installation and water used to decontaminate the equipment. Wastes generated by the SVE system operation include the spent GAC media and water collected in the knockout drum that are transported for off-site disposal. Mobilization, installation, and start-up of alternative SA-S2 should be accomplished within 12 to 18 months and within 8 to 12 months for alternative SA-GW2.

(6) Implementability

Alternative SA-S2 will be implemented with existing technology and services that are commercially available and have been used at numerous contaminated sites with the same chlorinated VOCs. A SVE treatability field-scale study was conducted to test and evaluate the use of SVE as a viable remediation technology that could rapidly reduce soil contamination at the Site Source Area. The results of the treatability pilot-study indicated that SVE is a practicable

technology that will reduce vapor-forming contaminants from the soil at the Site Source Area. Alternative SA-S2 requires temporary facilities (sewer and power supply) accommodations and selection of a location to set up and secure the SVE unit operations. Site Source Area groundwater alternative SA-GW2 is also readily implementable. Alternative SA-GW2 requires drilling of soil boreholes, and the emplacement of activated carbon and a zero-valent iron slurry. These construction activities pose the greatest technical challenge. There are very few vendors who have the necessary expert bioremediation experience, and this could increase costs and overall implementation schedule.

(7) Cost

Alternative SA-S2 has an estimated present worth cost of $3.75 million. Alternative SA-GW2 has an estimated present worth cost estimated at $3.0 million.

Modifying Criteria:

(8) State and Community Acceptance

The State of Texas, through the TCEQ, as the support agency, has been an active participant in the review and approval of important Site documents, including the FFS report, and in the development and evaluation of remedial alternatives. The State of Texas has provided its support of the Proposed Plan.

(9) Community Acceptance

During the public comment period held from June 20, 2022, to July 20, 2022, for the Proposed Plan, no written comments were received. Questions that were raised at the public meeting on June 20, 2022, concerning the proposed interim remedy were addressed by the EPA staff, and a summary is provided in Part 3: Responsiveness Summary of this Interim ROD. Significant issues or objections were not directed toward the preferred alternatives during the public comment period.

2.11 PRINCIPAL THREAT WASTE

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (NCP at 40 CFR § 300.430(a)(1)(iii)(A)). The “principal threat” concept is applied to the characterization of “source materials” at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, surface water or air, or acts as a source for direct exposure. Contaminated groundwater generally is not considered to be a source material; however, non-aqueous Phase Liquids in groundwater may be viewed as source material. PTWs are those materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. Non-PTW’s are those source materials that generally can be reliably contained and that would present only a low risk in the event of exposure. A PTW has not yet been identified in the SA for this interim remedial action. The presence of DNAPL is suggested by the residual concentrations of TCE in groundwater from an

on-site well.. Concurrent with this interim remedial action, EPA is proceeding with an investigation to identify any other source areas, including DNAPL, and extent of contamination at the Site.

2.12 SELECTED INTERIM REMEDY

Based upon consideration of the requirements of CERCLA, the detailed analysis of the alternatives, and State and public concerns, the EPA has determined that the following interim remedial alternatives best satisfy the requirements of CERCLA Section 121, 42 U.S. Code §9621, and provide the best balance of tradeoffs among the remedial alternatives with respect to the NCP's nine evaluation criteria, 40 CFR § 300.430(e)(9). The Selected Interim Remedy Source Area Alternatives:

- SA-S2, Soil Vapor Extraction; and
- SA-GW2: In-situ Groundwater Treatment Barrier

2.12.1 *Summary of the Rationale for the Selected Interim Remedy*

Alternative SA-S2, is the selected interim remedy to address TCE concentrations in the vadose zone at the identified Source Area. The use of SVE is a presumptive interim remedy for VOCs in sandy soils that will sustain an air flow for effective reduction in the mobility and volume of the contaminants.

Alternative SA-GW2, is the selected interim remedy to address the TCE concentrations in the groundwater at the identified Source Area. The use of the groundwater treatment barrier is a presumptive interim remedy for VOCs in the groundwater and will reduce concentration and mobility of COCs in the Source Area.

The selected interim remedy is a cleanup strategy that is intended to address the threats to human health posed by the presence of VOCs in the vadose zone at this Site. While a PTW has not yet been identified at this Site, Source Area preferred alternatives does satisfy the statutory mandate for permanence and treatment to the maximum extent practicable. The presence of DNAPL is suggested by the residual concentrations of TCE in groundwater from an on-site well.

2.12.2 *Description of the Selected Interim Remedy*

The Selected Interim Remedy is an interim action for the Delfasco Forge Site. It addresses Site related, unacceptable human health risks associated with the continued spread of source material into the groundwater which could cause continued VI and potential growth of an existing groundwater plume. If significant changes to this remedy occur as a result of additional data or information collected during the RD or construction process, the EPA will document the changes using a technical memorandum in the Administrative Record, an Explanation of Significant Differences, or a ROD Amendment, as appropriate and consistent with the applicable regulations.

The SVE wells can be installed in a single construction phase. A sufficient number of SVE wells will be installed with the objective of reducing VOC concentrations in the vadose zone beneath

the former spill area and surrounding property. The RD will be used to determine the actual number and placement of the SVE wells necessary to achieve the VOC concentration reduction in the Source Area.

The second component of interim remedy is the injection of a commercial chemical product to promote continued reductive dechlorination of the PCE, TCE, and cis-1,2- DCE during a seasonal rise in the water table in the upper zone. Injection of the commercial products will target the residual concentrations of chlorinated solvents in the upper zone.

Application or injection of the amendments will follow the RD for the relatively small Source Area. The concentration and mobility of chlorinated VOCs in the Source Area may be reduced with a single treatment event but additional injection events have been included in the remediation time frame and cost estimate. The shape of the groundwater treatment barrier and number of injection points will be determined from the shape and areal extent of the residual Source Area. The injection intervals are based on the saturated thickness above the silty clay zone separating the upper or shallow zone and the lower or deep zone.

2.12.3 Summary of Estimated Remedy Costs

The estimated costs for the selected interim remedy are presented below. The cost estimate summary information is based on past costs for similar projects and anticipated scope of the selected interim remedy. Changes in the cost elements may occur due to changes in the price of materials such as PVC piping, qualifying bids for performance of the remedial action, and progress of the construction activities due to Site and weather conditions. Major changes may be documented in the form of a memorandum in the Administrative Record file, an Explanation of Significant Differences, or a ROD amendment. The total present worth cost is calculated using a 4% discount rate. This is an order-of-magnitude engineering cost estimate that is expected to be within +50 to -30 percent of the actual project cost.

The significant uncertainties in the cost estimates include the following items:

- The total number of SVE wells may be revised based on performance testing during the RD and full-scale implementation during the Remedial Action.
- Changes in the price of biostimulation and bioaugmentation amendments.

SA-S2 Soil Vapor Extraction
Estimated Capital Cost: $3,750,000
Estimated Average Annual O&M Cost: $150,000
Estimated Periodic Costs: $100,000
Estimated Present Worth Cost: $3,750,000
Estimated Construction Timeframe: 12 to 18 months

SA-GW2 In-Situ Groundwater Treatment Barrier
Estimated Capital Cost: $2,250,000
Estimated Average Annual O&M Cost: $62,000

Estimated Periodic Costs: $356,546
Estimated Present Worth Cost: $2,996,546 ($3M)
Estimated Construction Timeframe: 8 to 12 months

2.12.4 Expected Outcomes of Selected Interim Remedy

The selected interim remedy is expected to be a component of the long-term remedial strategy to address VI and groundwater contamination at the Site. The expected short-term outcomes are preventing or minimizing further migration of TCE from the vadose zone to the groundwater in the identified Source Area, reducing the human health risk of VI to homes overlying and bordering the Site Source Area, and reducing the concentration and mobility of TCE in the groundwater at the SA. Approximately 30 months (6 months construction, 24 months operation) are estimated as the amount of time necessary to achieve the short-term goals for reducing or minimizing TCE migrations from the vadose zone to the shallow zone of the GWBU. The interim remedy is not expected to provide socio-economic, or community revitalization impacts due to changes in land use. Design and construction of the interim remedy will attempt to minimize the impact to the residential properties, and nearby industrial facilities. The following cleanup levels provide a numerical criterion that can be used to measure the progress in meeting in the RAOs for the interim remedy. The concentrations listed below are the MCLs in drinking water under the Federal Safe Drinking Water Act.

- TCE: 5 µg/L
- PCE: 5 µg/L
- cis-1,2-DCE: 70 µg/L
- VC: 2 µg/L

The general strategy for assessment of performance and closure of the SVE system will be based on four components considered integral to successful operation: (1) site characterization, (2) system design, (3) performance monitoring, and (4) mass flux to and from the groundwater. These four components form converging evidence regarding performance of the interim action. Each component is interrelated and requires continuous evaluation during the system operation. The use of converging lines of evidence for evaluating continued operation of the SVE system is outlined in EPA's "Development of Recommendations and Methods to Support Assessment of Soil Venting Performance and Closure" (EPA/600/R-01/070, September 2001).

2.13 STATUTORY DETERMINATIONS

Under CERCLA Section 121, 42 U.S. Code § 9621, the EPA must select remedies that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), are cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatments that permanently and significantly reduce the volume, toxicity, or mobility of hazardous wastes as their principal

element. The following sections discuss how the selected interim remedy meets these statutory requirements.

2.13.1 *Protection of Human Health and Environment*

This interim remedy is not intended to be protective of human health and the environment for all Site risks. The action implements proven technologies to reduce the volume of TCE vapor that has accumulated in the vadose zone at the known Source Area and to reduce the concentration and mobility of TCE in the groundwater at the SA. This interim action will abate the potential risk of further migration of TCE into the shallow zone of the GWBU, reduce the human health VI pathway, and reduce the concentration and mobility of TCE in groundwater at the Source Area. The TCE concentrations in the groundwater beneath the source exceed the MCL of 5 µg/L. The selected interim remedy will not pose unacceptable short-term risks during the remedy operation, complies with those Federal and State requirements that are applicable or relevant and appropriate for this limited-scope action, and is cost-effective.

Although this interim action is not intended to address fully the statutory mandate for permanence and treatment to the maximum extent practicable, this interim action does utilize treatment and thus supports that statutory mandate. Because this action does not constitute the final remedy for the Site, the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element, although partially addressed in this remedy, will be addressed by the final response action. Subsequent actions are planned to address fully the threats posed by conditions at this Site.

2.13.2 *Compliance with Applicable or Relevant and Appropriate Requirements*

CERCLA Section 121(d)(4)(A) and 40 CFR §300.430(f)(1)(ii)(C)(1) of the NCP allows EPA to select a remedy that does not meet an ARAR if the remedy is an interim measure that will eventually be part of a remedial action that will meet the ARAR. For this Site, because the groundwater remedy is in an area where the groundwater is considered a drinking water resource, the selected interim remedy would typically be required to restore the groundwater to meet the chemical specific TCE ARAR of 5 µg/L. The interim remedy will instead be measured by achieving the RAO for preventing or minimizing further migration of TCE in the vadose zone that could result in further groundwater contamination in excess of federal or state drinking water standards. The selected alternative will also comply with the other action-specific and location-specific ARARs associated with an interim action. Alternative SA-S2 complies with ARARs through utilization of GAC as an air emission control prior to atmospheric discharge. The disposal or regeneration of the spent carbon media at an off-site facility effectively removes the TCE from the community and avoids transfer of the TCE to another environmental medium.

The NCP, at 40 CFR §§ 300.430(f)(5)(ii)(B) and (C) require that a ROD describe the Federal and State ARARs that the selected interim remedy will attain or provide justification for any waivers. ARARs include substantive provisions of any promulgated Federal or more stringent State environmental standards, requirements, criteria, or limitations that are determined to be legally ARARs for a CERCLA site or action. Applicable requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site.

Relevant and appropriate requirements are requirements that, while not legally "applicable" to circumstances at a particular CERCLA site, address problems or situations sufficiently similar to those encountered at the site that their use is well-suited. There are three categories of ARARs:

- Chemical-specific ARARs are health- or risk-based numerical values or methodologies used to determine acceptable concentrations of chemicals in a medium (e.g., water). When applied to site-specific conditions, the chemical-specific ARAR may result in the development of cleanup standards for a COC.
- Location-specific ARARs are restrictions placed on health-based concentrations of hazardous substances or the conduct of activities because of the special locations, which have important geographical, biological or cultural features. Examples of special locations include wetlands, flood plains, and sensitive ecosystems.
- Action-specific ARARs are technology-based or activity-based requirements or limitations on actions to be taken to handle hazardous wastes. They are triggered by the remedial activities selected to accomplish a remedy. For all CERCLA remedies, the remedial action is exempt from having to obtain permits for on-site activities. However, any substantive requirements of applicable permits, such as discharge limitations, must be met in the remedy.

The selected interim remedy will comply with all ARARs and does not require that any waivers be invoked. The chemical-specific and action-specific ARARs for the interim remedy are presented in the following section. A location-specific ARAR was not identified for the interim remedy. In addition to ARARs, the remedial action activities will comply with the Occupational Safety and Health Act (OSHA) requirements, 29 CFR § 1910.120, for permissible exposure limits and appropriate worker protection or engineering controls, as necessary.

Action-Specific ARAR's

Medium: Hazardous Waste
Authority: Federal Regulatory Requirement
Requirement: 40 CFR §§ 261.20 and 261.30 – RCRA Waste Analysis Requirements
Status: Applicable for determining which wastes are hazardous and potentially subject to the hazardous waste management requirements in Parts 262 - 268.
Summary of Requirement: Identifies those wastes subject to regulation as hazardous wastes
Action to Attain Requirement: Waste generated during the interim remedial action will be sampled and analyzed to determine whether it is a hazardous waste, and appropriate waste storage and disposal practices will be followed.

Medium: Hazardous Waste
Authority: Federal Regulatory Requirement
Requirement: 40 CFR §§ 262.20 and 262.30 - Hazardous Waste Generator Requirements
Status: Substantive management standards are applicable to hazardous waste generated during interim remedial activities.
Summary of Requirement: Specifies standards for manifests, packaging and labeling of hazardous waste by hazardous waste generators.

Action to Attain Requirement: Waste generated during interim remedial activities will be sampled and analyzed to determine whether it is a hazardous waste, and appropriate waste storage and disposal practices will be followed.

Medium: Hazardous Waste
Authority: Federal Regulatory Requirement
Requirement: 40 CFR Part 263 – RCRA Transportation of Hazardous Waste Requirements
Status: Applicable for the use of transporters for disposal of hazardous waste
Summary of Requirement: Specifies requirements for transporters of hazardous waste to obtain an EPA identification number and comply with manifest and spill response procedures.
Action to Attain Requirement: Waste transported from the Site during the interim remedial action will follow appropriate transportation practices.

Medium: Hazardous Waste
Authority: Federal Regulatory Requirement
Requirement: 40 CFR Part 265
Status: Substantive management standards are applicable to remedial activities involving on-site treatment, storage or disposal of hazardous waste.
Summary of Requirement: Specifies standards for generators of hazardous waste for use and management of container storage in Subpart I, use and management of tanks in Subpart J.
Action to Attain Requirement: On-site storage of wastes will not exceed ninety (90) days such that specific storage requirements found at 40 CFR Part 265 will not be invoked for the treatment system in the selected interim remedy as granted under 40 CFR § 262.34.

Medium: Hazardous Waste
Authority: Federal Regulatory Requirement
Requirement: 40 CFR 268 – Land Disposal Restrictions
Status: Applicable to land disposal of listed or characteristic hazardous wastes, and to on-site remedies that include placement of these wastes.
Summary of Requirement: The land disposal restrictions prohibit land-based disposal of listed and characteristic hazardous wastes that do not meet specified treatment standards.
Action to Attain Requirement: Applicable to land disposal of listed or characteristic hazardous wastes generated during the interim remedial action. Waste generated during the interim remedial action will be sampled and analyzed to determine whether it is a hazardous waste, and appropriate waste storage and disposal practices will be followed.

Medium: Hazardous Waste
Authority: Federal Regulatory Requirement
Requirement: 49 CFR Parts 171 and 172 – Rules for Hazardous Materials Transport
Status: Applicable for the use of transporters for disposal of hazardous waste.
Summary of Requirement: Specifies requirements for transporters of hazardous waste including packaging, shipping, and placarding.
Action to Attain Requirement: Waste transported from the Site during the interim remedial action will follow appropriate transportation practices.

Medium: Air

Authority: Federal Regulatory Requirement
Requirement: 40 CFR Part 50 – National Primary and Secondary Ambient Air Quality Standards
Status: Applicable
Summary of Requirement: Establishes ambient air quality standards for protection of public health.
Action to Attain Requirement: Evaluate potential air impacts during interim remedial activities and compliance with State and local rules established pursuant to a State Implementation Plan (SIP).

Medium: Air
Authority: Federal Regulatory Requirement
Requirement: 40 CFR Part 52 – New Source Review and Prevention of Significant Deterioration Requirements
Status: Applicable
Summary of Requirement: New sources or modifications which emit greater than the defined threshold for listed pollutants must perform ambient impact analysis and install controls which meet best available control technology.
Action to Attain Requirement: Compare potential emissions from the selected interim remedy to the emission thresholds for new source review to determine potential application of regulations.

Medium: Air
Authority: State Regulatory Authority
Requirement: Permits by Rule —Waste Processes and Remediation, 30 Texas Administrative Code (TAC) § 106.533 (a), (b), (c), (f), (g), (h), (i)(2), (i)(5), (j)(2)(A)(B)(i-vi)
Status: Substantive provisions are relevant and appropriate
Summary of Requirement: Equipment used to extract, handle, process, condition, reclaim, or destroy contaminants for the purpose of remediation is permitted by rule, provided conditions specified in the rule are met for the site.
Action to Attain Requirement: Monitor VOC emissions from the SVE treatment system and employ control devices, as necessary**.** This ARAR also applies to the groundwater treatment system.

Medium: Air
Authority: Federal Regulatory Requirement
Requirement: 40 CFR 61 Subpart V–National Emission Standards for Hazardous Air Pollutants: Equipment Leaks
Status: Potentially applicable if interim remedial alternative includes regulated compounds or equipment.
Summary of Requirement: Establishes requirements for controlling fugitive emissions of volatile hazardous air pollutants from designated equipment.
Action to Attain Requirement: The selected interim remedy will be designed to control fugitive emissions.

Medium: Air

Authority: Federal Regulatory Requirement
Requirement: 40 CFR 264 Subpart AA – Air Emission Standards for Process Vents
Status: Potentially applicable if RCRA hazardous waste is treated in designated equipment.
Summary of Requirement: Requires total organic emissions from air strippers or steam strippers to be reduced below 1.4 kilograms per hour and 2.8 megagrams per year or that total organic emissions be reduced by 95 percent by weight.
Action to Attain Requirement: Off-gas controls for treatment systems will be designed to meet the emissions reduction requirements.

Medium: Hazardous Waste
Authority: State Regulatory Authority
Requirement: Standards Applicable to Generators of Hazardous Waste, 30 TAC § 331.61 – 70
Status: Applicable
Summary of Requirement: Specifies numerical criteria for designating a waste as a hazardous waste or as one of three classes of solid waste. The criteria are applicable for classification of wastes generated during treatment of the contaminated groundwater.
Action to Attain Requirement: Residue from the SVE recovery system will be properly characterized and labeled prior to shipment to an off-site disposal or regeneration facility. This ARAR also applies to the groundwater treatment system.

Medium: Hazardous Waste
Authority: State Regulatory Authority
Requirement: 30 TAC §§ 335.91 – Transporters of Hazardous Waste Generator Requirements
Status: Applicable
Summary of Requirement: Requires that hazardous material to be transported off-site be labeled and placarded according to the regulations and that contractors who transport the hazardous waste provide proper documentation.
Action to Attain Requirement: Hazardous wastes transported off-site during interim remedial activities will be labeled and placarded for transportation to an off-site facility.

Medium: Hazardous Waste
Authority: State Regulatory Authority
Requirement: 30 TAC §§ 335.61 – 335.70 - Hazardous Waste Generator Requirements
Status: Substantive management standards are applicable to hazardous waste generated during remedial activities.
Summary of Requirement: Specifies standards for manifests, packaging and labeling of hazardous waste by hazardous waste generators.
Action to Attain Requirement: Wastes generated during interim remedial activities will be sampled and analyzed to determine whether it is a hazardous waste, and appropriate waste storage and disposal practices will be followed.

Medium: Hazardous Waste
Authority: State Regulatory Authority
Requirement: 30 TAC § 327.4, Spill Prevention and Control
Status: Applicable to reportable quantities in the event of a spill or release to the environment.
Summary of Requirement: May apply to possible releases or spills to the environment during remedial action.

Action to Attain Requirement: Notification of any spills in excess of defined reportable quantities will be made as required

Medium: Hazardous Waste
Authority: State Regulatory Authority
Requirement: 30 TAC § 335.431, Land Disposal Restrictions
Status: Applicable to land disposal of listed or characteristic hazardous wastes, and to on-site interim remedies that include placement of these wastes.
Summary of Requirement: Adopts 40 CFR 268 by reference. The land disposal restrictions prohibit land-based disposal of listed and characteristic hazardous wastes that do not meet specified treatment standards.
Action to Attain Requirement: Applicable to land disposal of listed or characteristic hazardous wastes generated during the interim remedial action. Waste generated during the interim remedial action will be sampled and analyzed to determine whether it is a hazardous waste, and appropriate waste storage and disposal practices will be followed.

Medium: Hazardous Waste
Authority: State Regulatory Authority
Requirement: 30 TAC Chapter 335, Subchapter R – Waste Classification
Status: Applicable for determining which wastes are hazardous and potentially subject to the hazardous waste management requirements based on criteria..
Summary of Requirement: Identifies those wastes subject to regulation as hazardous wastes.
Action to Attain Requirement: Waste generated during the interim remedial action will be sampled and analyzed to determine whether it is a hazardous waste, and appropriate waste storage and disposal practices will be followed.

Medium: Water
Authority: State Regulatory Authority
Requirement: 16 TAC § 76.100-102, 76.104, 76.107-108 - Texas Department of Licensing and Regulation
Status: Applicable to drilling activities encountering water injurious to vegetation, land, or other water.
Summary of Requirement: Identifies requirements specific to installation and abandonment of wells associated with penetrating injurious water zones.
Action to Attain Requirement: Non-injurious water zones encountered during drilling or other well activities will be isolated and protected from injurious water zones, and appropriate actions will be met for plugging and abandoning wells at the Site.

Medium: Water
Authority: State Regulatory Authority
Requirement: 30 TAC § 331.131-133 – Underground Injection Control
Status: Applicable to construction and closure of injection wells.
Summary of Requirement: Establishes procedures for the implementation of Class V injection wells.
Action to Attain Requirement: Injection wells on Site will adhere to the regulations outlined above, requires notification for injection of any amendments.

2.13.3 *Cost Effectiveness*

In EPA's judgment, the selected interim remedy for the Source Area is cost-effective and represents a reasonable value for the costs incurred because the remedy costs are proportional to its overall effectiveness (see 40 CFR § 300.430(f)(1)(ii)(D)). The determination was made by evaluating the overall effectiveness of those alternatives that satisfied the threshold criteria (i.e., that are protective of human health and the environment and comply with all federal and any more stringent State ARARs, or as appropriate, waive ARARs). Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination: (1) long-term effectiveness and performance; (2) reduction in toxicity, mobility, and volume through treatment; and, (3) short-term effectiveness. The overall effectiveness of each alternative then was compared to the alternative's costs to determine cost-effectiveness.

The selected interim soil vapor extraction remedy was determined to be most effective and proportional to its costs and a reasonable value for the money to be spent. SVE is a presumptive remedial technology for VOCs in the vadose zone and has been demonstrated to be a successful and cost-effective remediation technology. SVE is effective in the short-term and can achieve reductions in the toxicity, mobility, and volume through treatment.

The selected groundwater remedy was determined to be most effective and proportional to its costs and a reasonable value for the money to be spent. The In-Situ Groundwater Treatment Barrier is a presumptive remedial technology for VOCs in shallow groundwater and has been demonstrated to be a successful and cost-effective remediation technology. This remedy will be effective in the short term and can achieve reductions in the toxicity, mobility, and volume through treatment.

The selected interim remedies also provide a greater return on the capital costs because the response action provides a benefit to the long-term remedial strategy for groundwater cleanup at this Site.

2.13.4 *Utilization of Permanent Solutions and Alternative Treatment (or Resource Recovery) Technologies to the Maximum Extent Practicable*

The EPA has determined that the selected interim remedy provides the best balance of trade-offs in terms of long-term effectiveness and permanence, reduction in toxicity, mobility, or volume achieved through treatment, short-term effectiveness, implementability, and cost, while also considering the statutory preference for treatment as a principal element, the bias against off-site land disposal of untreated waste, and State and community acceptance.

The selected Source Area interim remedy satisfies the criteria for long-term effectiveness and permanence because it combines the use of a proven and effective presumptive remedy for the reduction of VOCs in soils with the in-situ chemical reduction process to enhance the reductive chlorination of VOCs in the shallow zone of the GWBU. The combination of SVE and in-situ groundwater treatment is an effective combination to reduce the volume and toxicity of the

Source Area contamination. The selected interim remedy does not present short-term risks or implementation issues (administrative or technical) different from the comparable alternatives SA-2. The selected remedy provides the most cost-effective solution for the Source Area.

2.13.5 *Preference for Treatment as a Principal Element*

PTW's were not identified within the spill area at the Site, and while contaminated groundwater is not considered a PTW, the selected interim remedy does satisfy the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element. The presence of DNAPL is suggested by the residual concentrations of TCE in groundwater from an on-site well. The selected interim remedy utilizes in-situ chemical reduction to enhance the reductive dechlorination of VOCs in the shallow zone of the GWBU and utilizes SVE as a presumptive technology for the removal of VOCs from the vadose zone above the water table.

2.13.6 *Five-Year Review Requirements*

Because this interim remedy may result in hazardous substances remaining in the groundwater and entering residences through VI that is above levels that allow for UUUE, a statutory review will be conducted within 5 years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

Pursuant to CERCLA Section 121(c), 42 U.S. Code § 9621(c), and as provided in the current guidance on Five Year Reviews [OSWER Directive 9355.7-03B-P, Comprehensive Five-Year Review Guidance (June 2001)], EPA must conduct a five-year review for an interim action that will result in hazardous substances, pollutants, or contaminants remaining in environmental media above levels that allow for UUUE. The initial review will be conducted within five years after initiation of the interim remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment. The five-year reviews will continue no less often than every five years as long as environmental media at the Site contains contamination above levels that allow UUUE. A review of this Site and remedy will be ongoing as EPA completes the RI and FS and develops the remedial alternatives for the Site. If a subsequent action reduces the hazardous substances, pollutants, or contaminants in environmental media to levels that allow for UUUE, then reviews may be discontinued.

2.14 DOCUMENTATION OF SIGNIFICANT CHANGES

There are no significant changes as a result of the public comment period.

PART 3: RESPONSIVENESS SUMMARY

The Responsiveness Summary has been prepared to provide responses to comments from the June 30, 2022, Proposed Plan Public Meeting and submitted to EPA during the 30-day public comment period June 22, 2022 – July 22, 2022 for the Delfasco Forge Superfund Site. The original comments are summarized below and available at the information repositories at the following addresses: Tony Shotwell Life Center, 2750 Graham Street, Grand Prairie, Texas 75050,TCEQ Central File Room 12100 Park 35 Circle Building E, First Floor Room 103, Austin, TX 78753 and on EPA's website at www.epa.gov/superfund/delfasco-forge

Summary of Comments/Responses:
No written comments were received by EPA during the public comment period; however, comments were made during the public meeting. The following is a summary of the comments and responses related to the Proposed Plan for the Delfasco Forge Superfund Site from the public meeting.

Question 1: Will the EPA complete both soil gas sampling and the in-situ barrier? What other remedies did EPA consider?
Response: Yes. The remedies selected in the interim ROD are presumptive remedies for VOCs in vadose zone and groundwater. The final remedy will evaluate a more robust list of potential remedies.

Question 2: Will EPA remove soil or pump the groundwater?
Response: No. This interim remedy focuses on reducing source area contamination and does not include soil removal or pumping groundwater. EPA will consider pump and treat and other remedies as part of the final ROD.

Question 3: What is the level of cleaning this remedy will achieve? How long does it usually take at other sites you've used this remedy?
Response: The selected remedies have been shown to be effective at reducing significant contaminant concentrations at other sites. The construction will take about six months, and the system will run for up to 24 months after construction is complete. This interim remedy is to treat the Source Area.

Question 4: Do the vapors come from the groundwater?
Response: The vapors come from the TCE in the groundwater and evaporate and move towards the surface. To address the vapor, EPA continues to offer VIMS for residences over the groundwater plume.

Question 5: Can renters get indoor air sampling?
Response: For EPA to enter into a home, an access agreement needs to be signed. Renters may provide EPA access to sample indoor air as long as it does not breech their renters' contract.

Question 6: What is the current remedy, if human exposure has been happening at this Site for over 24 years?
Response: The remedy is SVE and an In-Situ Groundwater Treatment Barrier at the contaminant Source Area. EPA continues to offer residences VIMS, which will address potential current exposure to contaminated vapors.

Question 7: Are the VIMS free?
Response: The systems are free, and the installation is free to homes that are over the plume or have had their homes tested and are impacted by VI. The cost of electricity to run the system is the homeowner's responsibility and it can range from $3.00 to $8.00 per month.

Question 8: When was the last time EPA gave any information about VIMS and their availability to the public?
Response: The EPA's offer for homes over the plume to receive VIMS has been ongoing, and we said that in our last public meeting in February 2022. These systems have been offered since 2012.

Question 9: Is the EPA remedy digging and placing a concrete wall in the ground?
Response: No. EPA's interim remedy includes an active barrier to treat contaminated groundwater. As contaminated groundwater flows through the injection barrier it will treat the contamination, reducing contaminant concentrations and contaminant migration.

Question 10: Is the existing building and concrete foundation, including the indoor pits, where the chemicals were historically dumped, going to be removed/demolished as part of the remedy?
Response: No. Please note that the building pits were filled. The EPA interim remedy will address the source by utilizing a soil vapor extraction system and installing a groundwater treatment barrier in the subsurface to impede further migration of contaminants.

Question 11: Will the EPA be excavating the contaminated soil and refilling the Site with new soil as part of the remedy?
Response: No. The interim remedy proposes using a SVE system to mitigate soil vapors at the Site. At this time, the EPA has not proposed excavating the existing soils under the Source Area.

Question 12: What are the costs of the proposed remedies?
Response: For the soil vapor extraction system and the in-situ groundwater treatment barrier, the EPA estimates approximately $6,747,000.

Question 13: Can EPA and the city administration create a community advisory group (CAG)?
Response: Yes, EPA can help the community form a CAG. EPA is always open to working with a CAG for Superfund sites. That would require a group of residents or concerned individuals who live next to the Site to work as a liaison between EPA and the community. CAGs help bring trust between the members of the community and the agency.

Question 14: Will the EPA test the middle school for contamination, and will the public get access to the results?

Response: EPA has conducted soil vapor sampling at the middle school. The results were below RSLs. The screening level was based on the most conservative standards, assuming residential use, a cancer screening of 10^{-6} and a non-cancer hazard quotient of 1. The RSLs for cancer and non-cancer are protective of both children and adult residents.

Question 15: Will the interim plan widen the footprint of MWs to observe the movement of the plume?
Response: In addition to the interim remedy described herein, EPA will be continuing our investigation of the groundwater plume. This investigation will include the installation of additional wells to further characterize the plume.

Question 16: What is the timeline for the interim remedy and final remedy, and when will actions begin?
Response: The interim remedy will focus on treating the Source Area initially, while the subsequent final remedy will focus on addressing the entirety of the Site with an emphasis on groundwater. The EPA will hold another community meeting to receive comments for the Sitewide proposed plan once the Sitewide investigation is complete. EPA is currently in the process of obtaining a contractor to begin working on the interim RD and Sitewide investigation.

Question 17: How will this cleanup be funded and is funding secured?
Response: The EPA Superfund program currently receives funding from annual appropriations from Congress and revenues generated from taxes on petroleum and chemical industries.

Question 18: Why has the EPA just now begun making plans to clean up this Site?
Response: This Site was listed on the NPL in 2018, and since then there has been a robust pilot study testing the injection system, which required approximately 30 wells to be added at the Site. The system was started in 2020 and is currently still working.

Question 19: Will implementing the proposed remedy cause disturbances in the soil and/or groundwater that could cause further harm to the community?
Response: The SVE system works like a vacuum, suctioning the vapors/air out of the soils. The remedy will not aggravate the soils or cause any additional contamination. After the vapors are removed from the soil, they are contained within a closed system. The vapors are filtered through carbon filters, treating the air before release. The used carbon filters are disposed of off-site at the appropriate facility. The reactive barrier wall will reduce contaminant concentrations in the source area groundwater.

Question 20: Where can updates be found about the proposed plan and any Site activities?
Response: Results, updates, or documents pertinent to the Site will be posted on the EPA's Site-specific website for Delfasco Forge. www.epa.gov/superfund/delfasco-forge

Question 21: If there is a plan and funding, why is the EPA not taking steps to promptly clean up the Site?
Response: EPA has planned funds for the actions described in the Interim ROD. The EPA is following the steps required by law to select and implement the remedy to clean up the Site.

Question 22: When will that additional investigation occur? Will it be after the conclusion of this interim proposal, or are you going to be doing that in the timeframe that you're still working on?
Response: The EPA has procured a contractor to work on the Site. The Sitewide RI is planned to begin in July 2023. This contract put in place will also include the RD and FS as well

Question 23: Has EPA looked at how different types of circumstances impact the efficiency of this proposed plan, e.g., temperatures, rain, floods, drought, groundwater saturations, or other meteorological circumstances? Do these affect the groundwater plume or have impacts on concentration levels?
Response: The impacts based on water levels are straightforward. The closer you are to the surface, the more likely you are to be impacted. If the groundwater rises the higher potential for vapor impacts. The proposed plan will focus on treating vapors and groundwater. Changes in Site conditions will likely not have a significant impact on the remedial implementation.

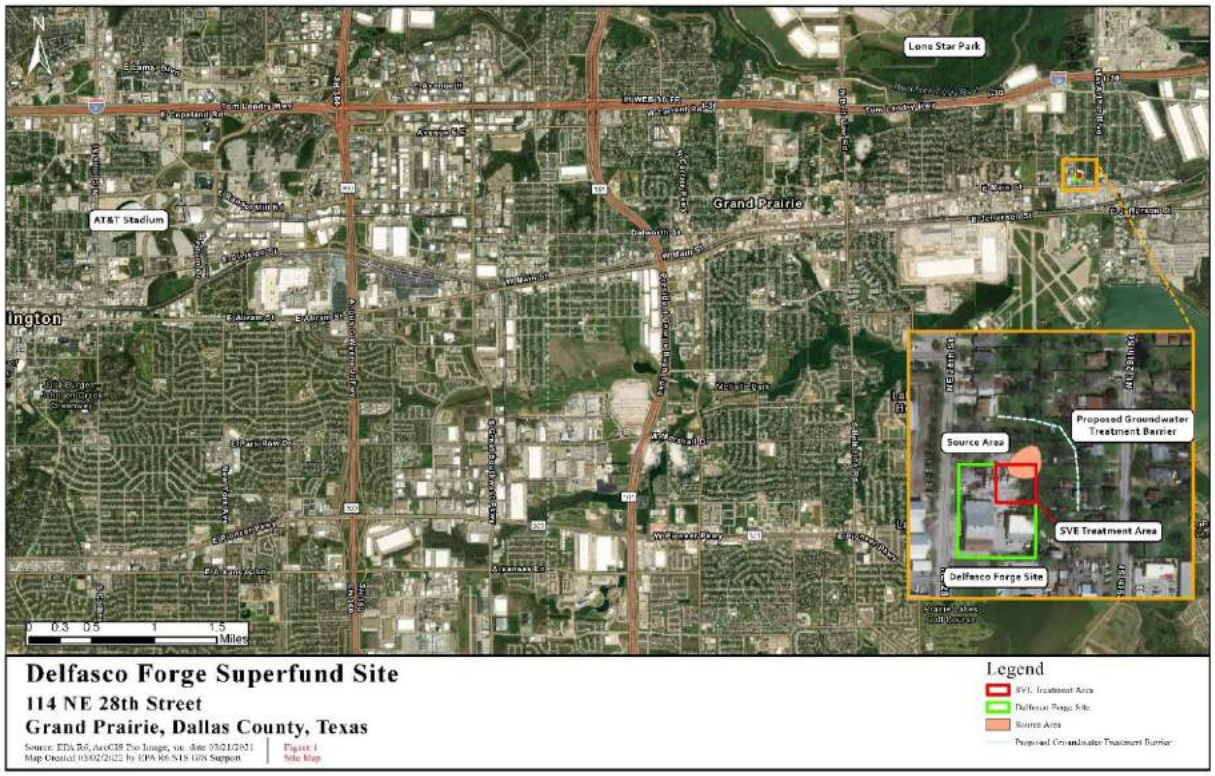
Question 24: Will the interim plan help prevent the plume from spreading?
Response: The interim remedy will help prevent further migration of the groundwater plume because it is aimed at treating the Source Area. Addressing the Source Area will increase the success of stabilizing the groundwater plume. Addressing the Source Area vapor is going to help with the long-term plan to address the groundwater.

Question 25: Is the Site continually leaking contaminants while waiting on the proposed plan to be implemented?
Response: The conduit into the ground has already occurred. The selected alternatives will prevent further migration of contaminants by treating the Source Area. The vapor within the soil is the biggest concern currently and with the technologies that will be implemented the vapors will be removed and treated at the Source Area.

Question 26: Why is the proposed technology to clean up the Site not focusing on the original source of contamination, the building?
Response: The contaminant, TCE, has previously migrated into the groundwater from the original source location. The building is not actively leaking; therefore, remediation efforts are focused on mitigating the groundwater and soil vapors.

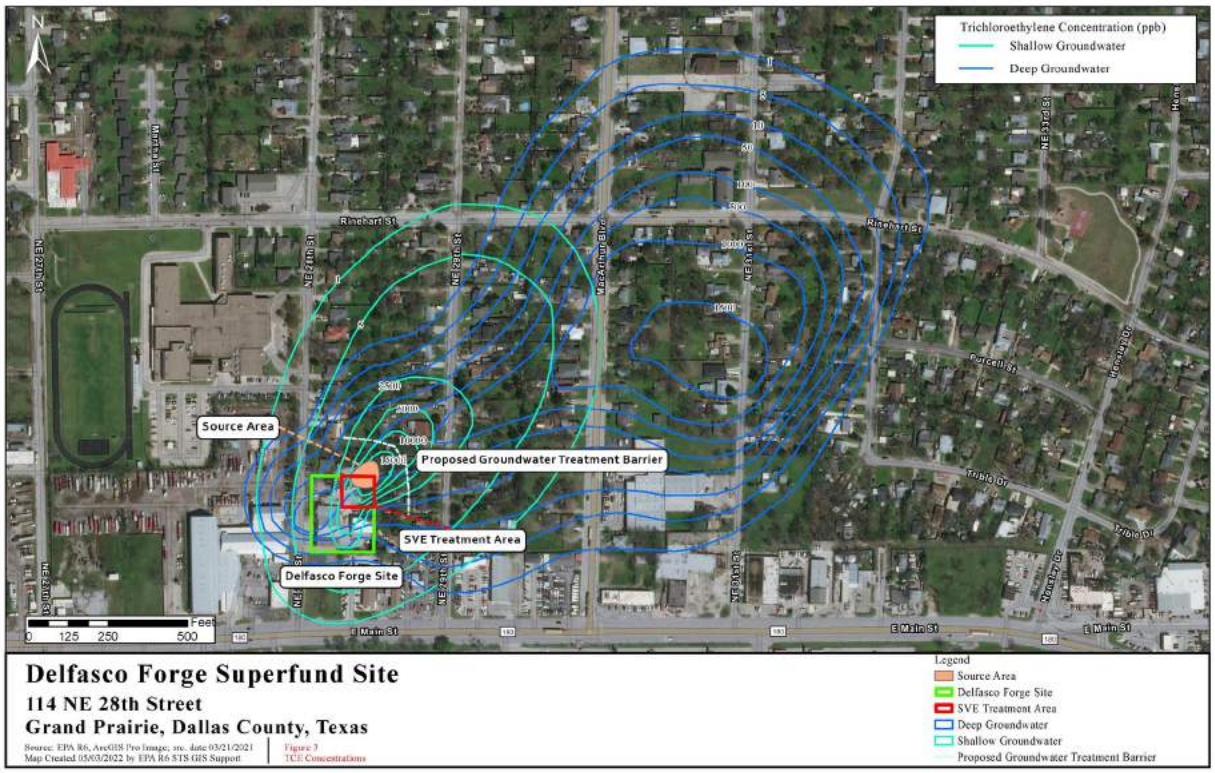
Question 27: How will the EPA effectively remove contaminants from the groundwater? Will they remove the contaminated water in this remedy?
Response: The reactive barrier wall will reduce contamination in the groundwater.

APPENDIX A: FIGURES

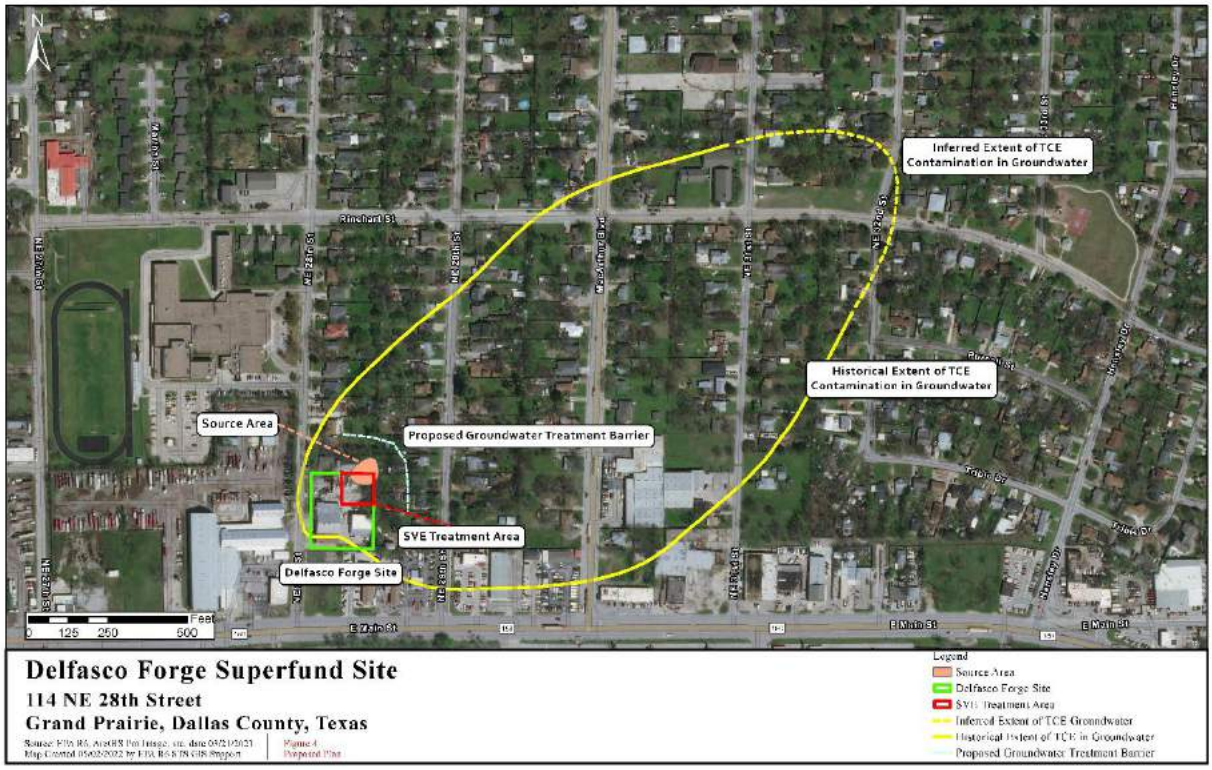


Delfasco Forge Interim ROD Figure 1

Delfasco Forge Interim ROD Figure 2



Delfasco Forge Interim ROD Figure 3



Delfasco Forge Interim ROD Figure 4

Delfasco Forge Interim ROD Figure 5

APPENDIX B: ADMINISTRATIVE RECORD

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12100 Park 35 Circle Building E
First Floor Room 103
Austin, TX 78753

Tony Shotwell Life Center
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Grand Prairie, Texas 75050
972-237-5730

EPA Site Webpage

www.epa.gov/superfund/delfasco-forge