Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming

August 2015

Five Points PCE Plume Superfund Site

Proposed Plan / Notice of Public Comment Period

The United States Environmental Protection Agency and Utah Department of Environmental Quality announce the Preferred Alternative for addressing the Five Points PCE Plume Site Davis County, Utah

Region 8
1595 Wynkoop St.
Denver CO 80202

UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY

Introduction

The U.S. Environmental Protection Agency (EPA) and the Utah Department of Environmental Quality (UDEQ) seek public comment on the proposed cleanup plan for the Five Points PCE Plume Site (Site), located in Woods Cross and Bountiful, Davis County, Utah. This Proposed Plan summarizes the cleanup alternatives that were evaluated and presents the Preferred Alternative for addressing the tetrachloroethene (PCE) contamination in groundwater.

EPA and UDEQ encourage the public to review the Proposed Plan and provide comments or concerns before the final remedy selection.

Based on the information available at this time, EPA's and UDEQ's Preferred Alternative for addressing PCE contamination in groundwater is Containment at Plume Core and Plume Toe (Alternative 4).

The Proposed Plan summarizes information that can be found in greater detail in the Remedial Investigation (RI) and the Feasibility Study (FS) Reports. These documents can be found in the Administrative Record File for this Site at the Davis County Library, South Branch or other repository locations listed on page 3. Additionally, the RI and FS Reports are available through the internet at *http://www2.epa.gov/region8/five-points-pce-plume.*

In order to gain a comprehensive understanding of the Site, EPA and UDEQ invite the public to review documents in the Administrative Record for the Site.

This Proposed Plan fulfills the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §117(a) and National Oil and Hazardous Substances Contingency Plan (NCP) §300.430(f)(2).

EPA and UDEQ will select a final remedy for the Site after reviewing and considering all comments and information submitted during the public comment period. Based on the public comments and/or new information, EPA and UDEQ may modify the Preferred Alternative or select another alternative presented in this Proposed Plan.

EPA and UDEQ will issue a document with responses to

Mark Your Calendar!

Public Comment Period:

July 31, 2015 to
August 31, 2015

Public Meeting

Wednesday August 19, 2015
6:30 p.m.—8:00 p.m.
Woods Cross Municipal Building
1555 South 800 West
Woods Cross, UT 84087

Thursday August 20, 2015
6:30 p.m.—8:00 p.m.
North Salt Lake City Hall
10 E. Center Street
North Salt Lake City, UT 84054

Written or oral comments will be accepted at the meeting

Send Written Comments to:

Tony Howes
Project Manager
Utah Department of Environmental Quality (UDEQ)
Division of Environmental Response and Remediation
P.O. Box 144840
Salt Lake City, UT 84114-4840
E-mail: thowes@utah.gov

Written comments must be postmarked by August 31, 2015

public comments, called a responsiveness summary, when it issues its final cleanup decision.

Site Background

The Site is located in northern Utah, on the boundary of Woods Cross City and Bountiful City (Figure 1-1) and consists of a groundwater plume contaminated with PCE. The likely source of the PCE contamination is Your Valet Cleaners (YVC), a dry-cleaning facility in Bountiful, Utah which used PCE between 1964 and 2002.

PCE levels greater than the federal and state standards for drinking water, the maximum contaminant level (MCL) of 5 micrograms per liter (µg/L) were observed in a Woods Cross City municipal drinking water well in 1996. As a result of this observation several investigations were completed in order to determine the extent and source of the contamination.

An assessment was completed by UDEQ in 1998-1999 and included the installation of two monitoring wells and sampling of two Woods Cross City municipal wells. This assessment found PCE levels in groundwater as high as 310 µg/L and established

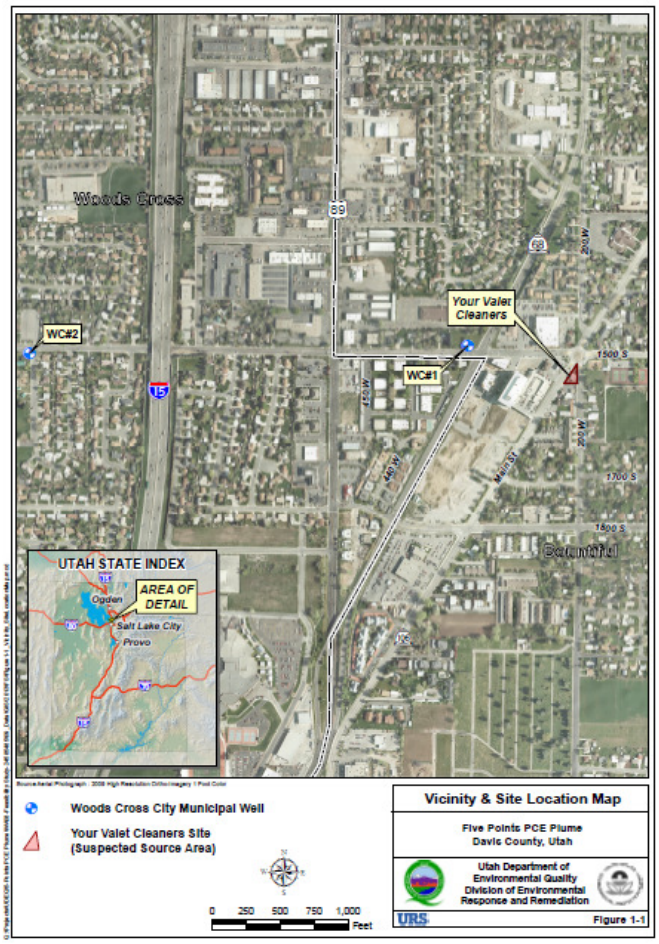

Figure 1-1 Location of the Five Points PCE Plume Site

YVC as the likely source for the PCE contamination.

Two removal assessments were completed by EPA and UDEQ in November 1999 and July 2003. The agencies collected groundwater and sampled soil. These removal assessments confirmed the presence of PCE contamination in two Woods Cross City municipal drinking water wells and nearby monitoring wells. Soil samples collected during the July 2003 assessment found PCE contamination in subsurface soils at the YVC property.

In April 2001 the UDEQ completed an Abbreviated Preliminary Assessment Report. This Report consolidated and summarized information from previous investigations and determined that further assessment was needed under CERCLA.

In October and November 2004, UDEQ conducted a Site Inspection which included the installation and sampling of two downgradient monitoring wells. This inspection provided information to support the site's placement on the National Priorities List (NPL). This investigation confirmed the presence of PCE concentrations greater than the MCL in a Woods Cross City municipal drinking water well and nearby monitoring wells. As a result of PCE contamination in groundwater, the EPA placed the Site on the NPL in September 2007.

In September 2007 YVC, under an agreement with EPA, completed a Removal Action at their dry cleaning property. The purpose of the Removal Action was to investigate and address possible PCE source areas at the YVC property. The Removal Action included completion of a ground penetrating radar survey, sample collection, excavation and disposal of contaminated soil with PCE levels greater than 3,000 micrograms per kilogram µg/kg and the removal of an underground storage tank.

The EPA and UDEQ conducted an RI from July 2009 through April 2013. Work to support the RI was performed in phases and a total of 17 monitoring wells were installed and four soil borings were completed.

Soil boring results from the RI showed that PCE levels in soil at the YVC property were now well below the removal action level of 3,000 µg/kg and would no longer represent a continued source to groundwater. Based on PCE concentrations in soil, cleanup alternatives presented in this Proposed Plan are for groundwater. The highest PCE concentration found in groundwater during the RI was 46 µg/L.

Site Characteristics

The Site is located in an area of residential and com-

mercial use. The Site was previously known as the Bountiful Five Points PCE Plume Site, but was renamed to reflect the impact of the plume on municipal wells in Woods Cross City.

The Five Points PCE Plume is approximately 1,360 feet wide by 6,080 feet long and extends from monitoring well MW-1-2004 in the east to the Freda Well, a North Salt Lake City municipal drinking water well, in the west (Figure 1-2). The plume is approximately 109 feet below ground surface in the eastern portion of the Site and descends downward to a depth of approximately 330 feet below ground surface in the western portion of the Site. The downward descent of the plume is likely due to current and historic pumping of nearby municipal water supply wells located near the toe or western edge of the plume.

PCE contamination has been found in drinking water wells operated by Woods Cross City and North Salt Lake City and concentrations in those wells have been low. Several other municipal drinking water wells threatened by PCE contamination are located west and downgradient of the groundwater plume. The highest PCE concentration found in a municipal drinking water well during the RI was 5.4 µg/L. Although, PCE concentrations in municipal wells have been low, Woods Cross City built a treatment facility that removes PCE from drinking water.

Summary of Site Risks

EPA and UDEQ performed a Human Health Risk Assessment (HHRA) to evaluate potential risks from exposure to the groundwater contamination at the Site. Ecological risks were not evaluated due to the absence of exposure pathways for ecological receptors since contamination is found in groundwater at depths greater than 100 feet.

The HHRA was completed as part of the RI and identified PCE as the contaminant of concern in groundwater. The HHRA evaluated domestic use of groundwater by child and adult residents. Exposure pathways evaluated in the HHRA were: (1) intentional ingestion of groundwater, (2) dermal exposure to groundwater, and (3) inhalation of contaminants in indoor air from household use of groundwater.

The HHRA determined that there is a potential for unacceptable risk for all three exposure pathways evaluated in the HHRA, as a result of PCE contamination in groundwater. However, culinary water providers are required to meet federal and state standards for drinking water, the MCL of 5 µg/L for PCE.

It is EPA's and UDEQ's judgment that the Preferred Alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect the public from exposure to contaminated groundwater.

Information Repositories

The Proposed Plan and other documents in the Administrative Record are available at the following locations:

Davis County Library, South Branch
725 South Main Street
Bountiful, Utah 840101
801-295-8732

Utah Department of Environmental Quality,
Division of Environmental
Response and Remediation
195 North 1950 West
Salt Lake City, Utah 84114-4840
Hours: M - F, 8 a.m. to 4 p.m.
801-536-4100

EPA Superfund Records Center
1595 Wynkoop Street
Denver, CO 80202-1129
To request copies of administrative record documents call: 303-312-7273 or 800-227-8917 ext. 312-7273 (toll free Region 8 only)

Cleanup Objectives

The cleanup objectives for the Five Points PCE Plume Site are:

- Prevent human exposure to contaminated groundwater;
- Prevent future migration of contaminated groundwater; and
- Restore groundwater to beneficial use (drinking water standards) as a drinking water aquifer.

EPA and UDEQ established a Preliminary Remediation Goal (PRG) for PCE of 5µg/L. The final action level for PCE will be established in the Record of Decision (ROD).

Summary of Remedial Alternatives

The FS identified a number of alternatives, including a No Action Alternative. A detailed evaluation was completed for five alternatives.

The alternatives retained for detailed analysis are presented below. Other alternatives were eliminated because they would not effectively address the

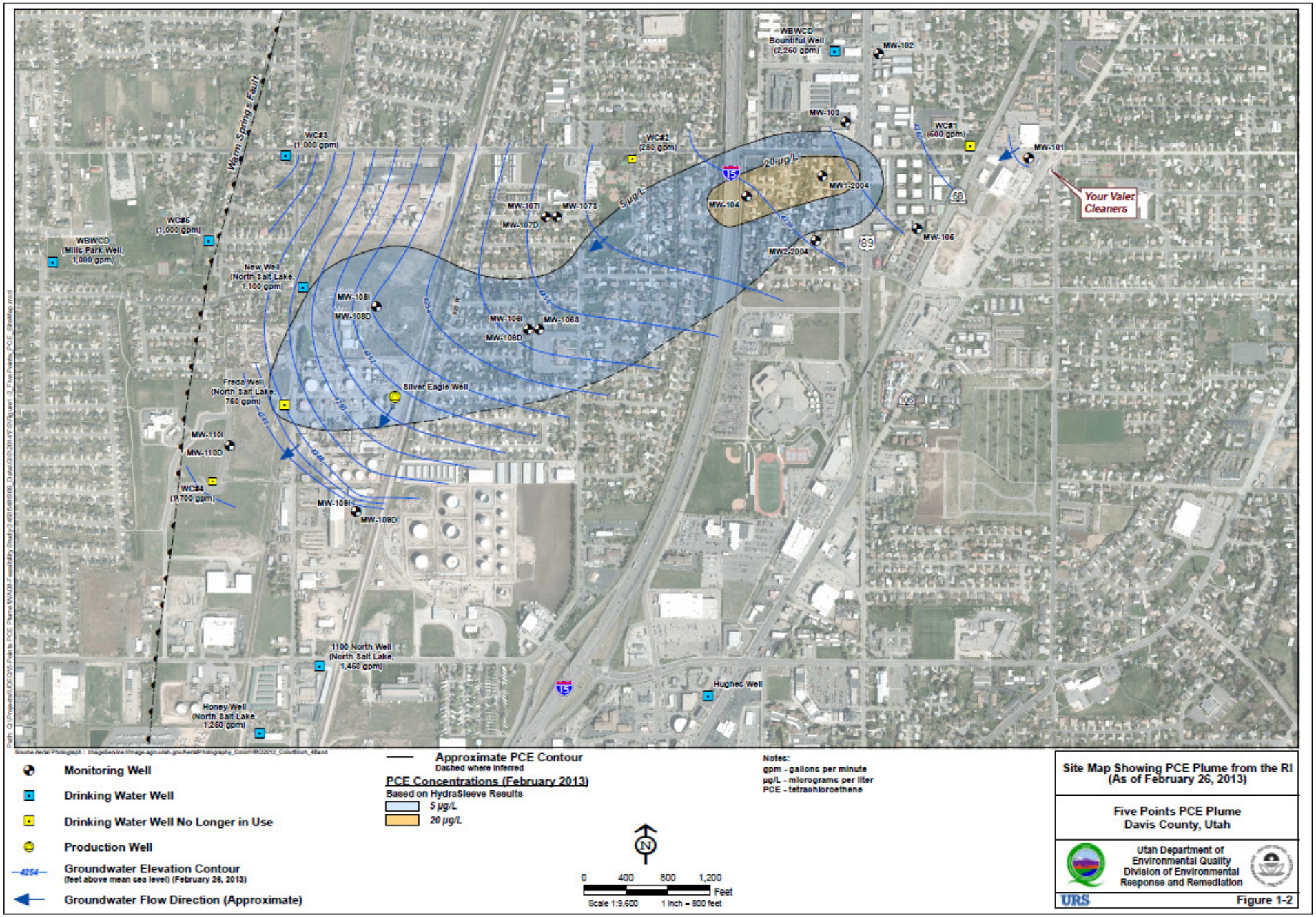

Figure 1-2 Five Points PCE Plume

Contaminant of Concern

Based on the Human Health Risk Assessment, **tetrachloroethene,** also known as **perchloroethylene (PCE)** is the contaminant of concern in groundwater at the Five Points PCE Plume Site. PCE is a solvent used for the dry cleaning of fabrics and for metal-degreasing operations. It is also used as a starting material (building block) for making other chemicals and is used in some consumer products.

PCE can enter the ground in liquid form through spills, leaky pipes, leaky tanks, machine leaks, and from improperly handled waste. If sufficient quantities are released to soils, the PCE percolates down into the water table, where it dissolves into groundwater and forms a "plume" of contaminated groundwater. The contaminant plume then migrates in the direction of groundwater flow.

EPA and the UDEQ consider PCE in drinking water a potential risk to human health. EPA and UDEQ have defined the MCL for PCE as 5 micrograms per liter. Some people who drink water containing PCE in excess of the MCL for many years could have problems with their liver and may have an increased risk of getting cancer.

In addition, exposure to very high concentrations of PCE vapors can cause dizziness, headaches, sleepiness, confusion, difficulty speaking and walking, nausea, unconsciousness, and sometimes death.

contamination, could not be implemented, or would have excessive costs.

The Preferred Alternative for addressing PCE contamination in groundwater is Alternative 4, Containment at Plume Core and Plume Toe.

Five Year Reviews will be required for all the alternatives evaluated, including Alternative 1.

Common elements: With the exception of the No Action Alternative, land use restrictions or Institutional Controls (ICs) preventing the drilling and installation of domestic groundwater wells are required until Remedial Action Objectives (RAOs) are achieved for each alternative in order to prevent unacceptable human exposure to the contaminant of concern. The UDEQ and EPA will work with the Utah Department of Water Rights and local jurisdictions to establish ICs for restricting new domestic well development.

In addition to ICs, Alternatives 2, 3, 4, and 5 consist of groundwater extraction, treatment, and discharge to a Publicly Owned Treatment Works (POTW).

Alternative 1—No Action

Capital Cost: $0
Operation & Maintenance Cost: $0
Present Worth Cost (30 year): $0
Construction time frame: None

Federal regulations require that a "no action" alternative be considered in order to provide a comparison between potential remedial alternatives. Under this alternative, no action would be taken to address the contaminated groundwater plume. Groundwater contamination would remain in its current state and risks to human health would remain unchanged.

Alternative 2—Containment at Plume Toe

Capital Cost: $731,000
Operation & Maintenance Cost: $199,000/yr
Present Worth Cost (30 year): $3,370,000
Construction time frame: 3 months
Estimated time frame to achieve cleanup objectives/RAOs: 30 years based on three dimensional groundwater modeling.

This alternative consists of hydraulic containment at the plume edge or toe to prevent further migration of PCE contaminated groundwater.

Alternative 2 includes the installation of one groundwater extraction well for hydraulic containment of the PCE plume, four performance monitoring wells, and the groundwater extraction system including pumps, piping, and facilities. This alternative assumes that two North Salt Lake City drinking water wells would continue to be operated. However, their use is not considered part of the remedy.

Hydraulic containment will be accomplished by extracting groundwater at an estimated rate of 300 gallons/minute. Extracted groundwater will be discharged to a POTW with granular activated carbon (GAC) pretreatment, if necessary.

Operation of the extraction system at the plume toe will prevent contaminated groundwater from flowing to downgradient drinking water wells, thereby containing the contaminated groundwater plume. Effectiveness of the extraction system will be monitored using water level measurements, monitoring well sampling, and system influent/effluent sampling.

Alternative 3—Containment at Plume Core

Capital Cost: $481,000
Operation & Maintenance Cost: $180,000/yr
Present Worth Cost (30 year): $2,725,000

Construction time frame: 3 months
Estimated time frame to achieve cleanup objectives/RAOs: 25 years based on three dimensional groundwater modeling.

This alternative consists of hydraulic containment at the plume core to prevent further migration of higher PCE concentrations (e.g., greater than 20 µg/L).

Alternative 3 includes installation of one groundwater extraction well for hydraulic containment of the plume core, three performance monitoring wells, and a groundwater extraction system including pumps, piping, and facilities.

Hydraulic containment will be accomplished by extracting groundwater at an estimated rate of 200 gallons/minute. Extracted groundwater will be discharged to a POTW with GAC pretreatment, which may be necessary as a result of higher PCE levels found in the plume core.

This alternative will prevent migration of higher PCE concentrations found in the plume core and will reduce the overall plume mass, but does not prevent further migration of PCE concentrations found at the plume toe. This alternative assumes that two North Salt Lake City drinking water wells would continue to be operated. However, their use is not considered part of the remedy. Effectiveness of the system will be monitored using water level measurements, monitoring well sampling, and system influent/effluent sampling.

Alternative 4—Containment at Plume Core and Plume Toe (The Preferred Alternative)

Capital Cost: $1,212,000
Operation & Maintenance Cost: $254,000/yr
Present Worth Cost (30 year): $4,086,000
Construction time frame: 3 to 6 months
Estimated time frame to achieve cleanup objectives/RAOs: 20 years based on three dimensional groundwater modeling.

Alternative 4 is a combination of Alternative 2 and Alternative 3.

This alternative consists of hydraulic containment at the plume edge or toe to prevent further migration of PCE contaminated groundwater and hydraulic containment at the plume core to reduce the overall mass of the plume and prevent further migration of the higher PCE concentrations. This alternative assumes that two North Salt Lake City drinking water wells would continue to be operated. However, their use is not considered part of the remedy.

Alternative 4 includes the installation of two extraction wells for hydraulic containment of the PCE plume, seven monitoring wells, and a groundwater extraction system including pumps, piping, and facilities.

Hydraulic containment will be accomplished by extracting groundwater at an estimated rate of 300 gallons/minute from one well at the plume toe and at an estimated 200 gallons/minute from one well located at the plume core. Extracted groundwater will be discharged to a POTW with GAC pretreatment, if necessary.

This alternative will provide hydraulic containment at the plume toe, prevent contaminated groundwater from flowing to downgradient drinking water wells and reduce the risk of direct contact or ingestion of contaminated groundwater through domestic use. Groundwater containment at the plume core will prevent migration of higher PCE concentrations found in the plume core and will reduce the overall plume mass. Effectiveness of the system will be monitored using water level measurements, monitoring well sampling, and system influent/effluent sampling.

Alternative 5—Containment at Plume Toe and ISCO at Plume Core

Capital Cost: $3,364,000
Operation & Maintenance Cost: $220,000/yr
Present Worth Cost (30 year): $9,097,000
Construction time frame: 9 to 12 months
Estimated time frame to achieve cleanup objectives/RAOs: 25 years based on three dimensional groundwater modeling.

This alternative consists of hydraulic containment at the plume edge or toe to prevent further migration of PCE contaminated groundwater and in-situ chemical oxidation (ISCO) treatment at the plume core to reduce the overall mass of the plume and prevent further migration of the higher PCE concentrations. Alternative 5 includes all of Alternative 2 as well as installation of 38 injection wells and four monitoring wells, and injection of a chemical oxidant every three years.

Alternative 5 consists of injecting an estimated 286,000 pounds of a potassium permanganate with approximately 1.7 million gallons of water, and groundwater extraction at an estimated rate of 300 gallons per minute from one extraction well in order to provide hydraulic containment of the plume toe. This alternative assumes that two North Salt Lake

City drinking water wells would continue to be operated. However, their use is not considered part of the remedy.

Operation of the extraction system will result in hydraulic containment at the plume toe, prevent contaminated groundwater from flowing to downgradient drinking water wells and reduces the risk of direct contact or ingestion of contaminated groundwater through domestic use. ISCO treatment at the plume core will prevent migration of the higher PCE concentrations and reduce the overall plume mass.

Effectiveness of the hydraulic containment system will be monitored using water level measurements and system influent/effluent sampling and effectiveness of ISCO would be evaluated based on volatile organic chemical (VOC) concentrations and groundwater geochemistry within and downgradient of the treatment area.

Evaluation of Alternatives

Nine criteria are used to evaluate the different remediation alternatives individually and against each other in order to select a remedy. This section of the Proposed Plan profiles the relative performance of each alternative against the nine criteria, noting how it compares to the other options under consideration. The nine evaluation criteria are discussed below. The "Detailed Analysis of the Alternatives" can be found in the FS. The first two criteria are threshold criteria and only alternatives that meet those threshold criteria can be chosen.

1. Overall Protection of Human Health and the Environment

All of the alternatives except the "no action" alternative would provide adequate protection of human health and the environment. Alternatives 2, 3, 4, and 5 provide protection of human health since hydraulic containment would prevent migration of contaminated groundwater to public drinking water wells and ICs that limit or prohibit well drilling to prevent potential exposures with COC until all RAOs are met. Alternatives 3, 4, and 5 will reduce plume mass and prevent further migration of higher PCE concentrations found in the plume core.

2. Compliance with ARARs

All of the alternatives, except the "no action" alternative, comply with all the Federal or State Applicable or Relevant and Appropriate Requirements (ARARs). Since the Alternative 1 (no action) does not meet the threshold criteria it cannot be chosen and therefore not analyzed in the other criteria below.

3. Long-Term Effectiveness and Permanence

Alternatives 2, 3, 4, and 5 will mitigate risk while the systems are in operation, and once cleanup objectives have been achieved there will be no unacceptable residual risk. Hydraulic containment will prevent contaminated groundwater from migrating to drinking water wells. ICs will effectively limit well drilling and groundwater use. Alternatives 3, 4, and 5 include treatment at the plume core which will reduce the period of time needed to reach cleanup objectives.

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

Toxicity, mobility, and volume of the plume would be reduced as extracted groundwater is treated with GAC or at the POTW in Alternatives 2, 3, 4, and 5 and by ISCO in Alternative 5.

5. Short-Term Effectiveness

Alternatives 2, 3, 4, and 5 are based on reliable and operational technologies that are well understood. Alternatives 2, 3, and 4 will pose no additional risk to the community and a low level of risk to workers during remediation. Alternative 5 poses some short-term risk to workers during use of chemical oxidants. For all alternatives, proper personal protective and safety equipment will mitigate the risk of exposure to workers. Alternative 5 may result in significant disruption of residential neighborhoods during construction and injection. Alternative 4 is estimated to meet RAOs in 20 years, Alternatives 3 and 5 in 25 years, and Alternative 2 in 30 years.

6. Implementability

Construction, operation and maintenance of alternatives 2, 3, 4, and 5 involve standard techniques. Equipment and specialists for Alternatives 2, 3, and 4 are readily available from various sources. Alternative 5 would require specialized injection contractors. Effectiveness of Alternatives 2, 3, 4, and 5 would be evaluated through water level measurements, groundwater sampling and influent/effluent sampling.

Alternatives 2, 3, 4, and 5 would require a moderate level of coordination with the local POTW for groundwater disposal, and state agencies for water rights. Alternative 5 would also require a moderate level of coordination with state, local, and federal agencies for injection. Extracted groundwater treatment is readily available, if required. There would be no ex-situ treatment required for ISCO.

Coordination with Utah Department of Water Rights

and local jurisdictions will be required to implement ICs.

7. Cost

The estimated present worth cost of Alternative 3 ($2,725,000) has the lowest cost, followed by Alternative 2 ($3,370,000), Alternative 4 ($4,086,000), and Alternative 5 ($9,097,000).

8. State/Support Agency Acceptance

UDEQ has been the lead agency in conducting the RI and FS, and agrees with EPA on the Preferred Alternative. However, UDEQ will provide final acceptance of, or comment on the Preferred Alternative after considering public comment.

9. Community Acceptance

Community acceptance of the Preferred Alternative will be evaluated after the public comment period ends and will be described in the ROD for the Site.

Summary of the Preferred Alternative

The Preferred Alternative for cleaning up the Five Points PCE Plume Site is Alternative 4 Containment at Plume Core and Plume Toe. This alternative is recommended because it is expected to meet RAOs sooner than other alternatives. Costs associated with this alternative are comparable or less than other alternatives that were considered and uses relatively simple and effective technology and treatment components.

The Preferred Alternative prevents further migration of the PCE contamination at the plume edge or toe and plume core through hydraulic containment. The extracted groundwater will be treated, thereby reducing toxicity, mobility, and volume of contamination. The Preferred Alternative also uses ICs to reduce the risk of direct contact or ingestion of contaminated groundwater through domestic use until all RAOs are met and uses groundwater pump and treat to reduce the overall plume mass.

Based on information currently available, the EPA and UDEQ believe that the Preferred Alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria.

EPA and UDEQ believe that the Preferred Alternative will be protective of human health and the environment. The Preferred Alternative is expected to comply with ARARs, is cost effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. Based on public comments or new information, EPA and UDEQ may change the Preferred Alternative or select another alternative presented in this Proposed Plan.

List of Acronyms

µg/kg	micrograms per kilogram
µg/L	micrograms per liter
ARARs	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EPA	U.S. Environmental Protection Agency
FS	Feasibility Study
GAC	Granular Activated Carbon
HHRA	Human Health Risk Assessment
ICs	Institutional Controls
ISCO	In-situ Chemical Oxidation
MCL	Maximum Contaminant Level
NCP	National Oil and Hazardous Substances Contingency Plan
NPL	National Priorities List
PCE	Tetrachloroethene
POTW	Publicly Owned Treatment Works
PRG	Preliminary Remediation Goal
RAOs	Remedial Action Objectives
RI	Remedial Investigation
ROD	Record of Decision
UDEQ	Utah Department of Environmental Quality
VOC	Volatile Organic Chemical
YVC	Your Valet Cleaners

Community Participation

EPA and UDEQ are distributing this Proposed Plan for public review and comment. Those who would like to know more about the information that was considered in selecting the Preferred Alternatives may find that information in the Site Administrative Record (see page 3 for locations).

The dates for the public comment period; and the date, location, and time of the public meeting are provided on the front page of this Proposed Plan.

State of Utah
Department of Environmental Quality
Division of Environmental Response and Remediation
195 North 1950 West
P.O. Box 144840
Salt Lake City, Utah 84114-4840

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