HRS DOCUMENTATION RECORD COVER SHEET

Name of Site: Five Points PCE Plume
EPA ID No.: UTN000802654

Contact Person

Site Investigation and
Documentation Record:

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Pathways, Components, or Threats Not Scored

Surface Water Migration Pathway

The most prominent surface water feature potentially subject to site contamination in this area is Mill Creek, which flows approximately 0.55 miles north of the known ground water contamination. There are no identified drinking water intakes along the possible 15-mile target distance limit, although the Farmington Bay Waterfowl Management Area wetlands are located downstream near the Great Salt Lake. The surface water pathway will not be scored as part of this Hazard Ranking System (HRS) package.

Soil Exposure Pathway

Based on the lack of data and a limited number of possible residential targets, the soil exposure pathway will not be scored as part of this HRS package.

Air Migration Pathway

There are insufficient data to satisfy HRS requirements for establishing an observed release of organics to the air in the Five Points tetrachloroethylene (PCE) Plume site. Without an observed release, only the potential to release may be evaluated for this pathway, and this minimally impacts the overall site score. As such, the air migration pathway will not be scored as part of this HRS package.

HRS DOCUMENTATION RECORD

Name of Site:	Five Points PCE Plume	Date Prepared: 3/2007
EPA Region:	Region VIII	
Street Address of Site:*	Approximately 1500 South and State Highway 106 in Woods Cross, Davis County, Utah	
City, County, State, ZIP:	Woods Cross, Davis County, Utah, 84010	
General Location in the State:	Approximately five miles southeast of the Great Salt Lake and approximately three miles west of the Wasatch mountain range (Refs. 5, p. 4; 7, p. 5).	
Topographic Map:	Salt Lake City North, Utah (Ref. 3)	
Latitude: 40° 52' 28.5" North	Longitude: 111° 53' 13.3" West (Ref. 3)	

The Five Points PCE Plume site is located in an area of mostly commercial and residential use on the border of the City of Woods Cross and the City of Bountiful (Refs. 3; 7, pp. 5-6). The northwest corner of the Five Points Mall was used as a point of location for the latitude and longitude. The Five Points PCE Plume site was previously known as the Bountiful Five Points PCE plume, but was renamed to reflect the impact of the plume on Woods Cross municipal wells (Ref. 8, p. 1). The vertical extent of the plume is unknown.

* The street address, coordinates, and contaminant locations presented in this HRS documentation record identify the general area where the site is located. They represent one or more locations EPA considers to be part of the site based on the screening information EPA used to evaluate the site for NPL listing. EPA lists national priorities among the known "releases or threatened releases" of hazardous substances; thus, the focus is on the release, not precisely delineated boundaries. A site is defined as where a hazardous substance has been "deposited, stored, placed, or otherwise come to be located." Generally, HRS scoring and the subsequent listing of a release merely represent the initial determination that a certain area may need to be addressed under CERCLA. Accordingly, EPA contemplates that the preliminary description of facility boundaries at the time of scoring will be refined as more information is developed as to where the contamination has come to be located.

Scores

Air Pathway	0.00
Ground Water Pathway	100.00
Soil Exposure Pathway	0.00
Surface Water Pathway	0.00
HRS Site Score	50.00

WORKSHEET FOR COMPUTING HRS SITE SCORE

		S	S^2
1.	Ground Water Migration Pathway Score (S_{gw}) (from Table 3-1, line 13)	100	10,000
2a.	Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	NS	NS
2b.	Ground water to Surface Water Migration Component (from Table 4-25, line 28)	NS	NS
2c.	Surface Water Migration Pathway Score (S_{sw}) Enter the larger of lines 2a and 2b as the pathway score.	NS	NS
3.	Soil Exposure Pathway Score (S_s) (from Table 5-1, line 22)	NS	NS
4.	Air Migration Pathway Score (S_a) (from Table 6-1, line 12)	NS	NS
5.	Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		10,000
6.	**HRS Site Score** Divide the value on line 5 by 4 and take the square root	50.00	

NS = Not Scored

TABLE 3-1
GROUND WATER PATHWAY SCORE SHEET

	Factor Categories and Factors	Maximum Value	Value Assigned
	Likelihood of Release to an Aquifer		
1.	Observed Release	550	550
2.	Potential to Release:		
	2a. Containment	10	NS
	2b. Net Precipitation	10	NS
	2c. Depth to Aquifer	5	NS
	2d. Travel Time	35	NS
	2e. Potential to Release [lines 2a(2b+2c+2d)]	500	NS
3.	Likelihood of Release (higher of lines 1 and 2e)	550	550
	Waste Characteristics		
4.	Toxicity/Mobility	a	100
5.	Hazardous Waste Quantity	a	100
6.	Waste Characteristics	100	10
	Targets		
7.	Nearest Well	50	50
8.	Population		
	8a. Level I Concentrations	b	25,376.7
	8b. Level II Concentrations	b	0
	8c. Potential Contamination	b	0
	8d. Population (lines 8a + 8b + 8c)	b	25,376.7
9.	Resources	5	0
10.	Wellhead Protection Area	20	20
11.	Targets (lines 7 + 8d + 9 + 10)	b	25,446.7
	Ground Water Migration Score for an Aquifer		
12.	Aquifer Score [(lines 3 x 6 x 11)/82,500][c]	100	100
	Ground Water Migration Pathway Score		
13.	Pathway Score (S_{gw}), (highest value from line 12 for all aquifers evaluated)[c]	100	100

a Maximum value applies to waste characteristics category
b Maximum value not applicable
c Do not round to the nearest integer
NS Not scored

REFERENCES

Ref.
No. Description of the Reference

1. U.S. Environmental Protection Agency (EPA), December 14, 1990, 40 CFR Part 300, Hazard Ranking System (HRS). 2 pages, excerpt.

2. U.S. Environmental Protection Agency (EPA). Superfund Chemical Data Matrix. January 27, 2004. 7 pages, excerpt.

3. Maps (3). U.S. Geological Survey (USGS). 7.5-minute Series Topographic Quadrangle Map of Salt Lake City North, Utah. 1998. 1:24,000 scale. 1 map. Sheet 2, Plume Location Map (sources: Bountiful Peak, Farmington, Fort Douglas, and Salt Lake City North USGS 7.5' quads). Sheet 3, Well Location Map (sources: Farmington and Salt Lake City North USGS 7.5' quads). 3 sheets.

4. Reference Reserved.

5. Utah Department of Environmental Quality (UDEQ), Division of Environmental Response and Remediation (DERR). Innovative Assessment/Analytical Results Report: Bountiful 5 Points PCE Plume, Bountiful, Utah, by Terry Hawkins. March 31, 1999. 161 pages.

6. URS Operating Services, Inc. (UOS) on behalf of U.S. EPA. Sampling Activities Report: Bountiful Five Points PCE Plume, Bountiful, Davis County, Utah, by Jerry Goedert. April 12, 2000. 99 pages.

7. URS Operating Services, Inc. (UOS) on behalf of U.S. EPA. Sampling Activities Report: Bountiful 5-Points PCE Plume Site, Bountiful, Davis County, Utah, by Jerry Goedert. October 14, 2003. 119 pages.

8. Utah Department of Environmental Quality (UDEQ), Division of Environmental Response and Remediation (DERR). Site Inspection Analytical Results Report: 5-Points PCE Plume, Davis County, Utah, UT0008921894, by Craig Barnitz. October 20, 2006. 128 pages.

9. Utah Department of Natural Resources. Ground-Water Conditions in the East Shore Area, Box Elder, Davis, and Weber Counties, Utah, 1960-69. E. L. Bolke and K. M. Waddell. 1972. Technical Publication No. 35, Salt Lake City, Utah. 11 pages, excerpt.

10. Utah Department of Natural Resources. *Ground-Water Resources and Simulated Effects of Withdrawals in the East Shore Area of Great Salt Lake, Utah.* David W. Clark, Cynthia L. Appel, Patrick M. Lambert, and Robert L. Puryear. 1990. Technical Publication No. 93. 26 pages, excerpt.

11. Utah Department of Natural Resources. *Ground-Water Resources and Simulated Effects of Withdrawals in the Bountiful Area, Utah.* David W. Clark. 1991. Technical Publication No. 95, Salt Lake City, Utah. 32 pages, excerpt.

12. Reference Reserved.

13. City of Woods Cross Public Works. Telecommunication between Scott Anderson, Director of Public Works, and Bryan Williams of URS Operating Services, Inc. (UOS), October 19, 2006. Subject: Request for Drinking Water Sources and Distribution. 12 pages.

14. U.S. Census Bureau. Davis County Quickfacts. Http://quickfacts.census.gov/qfd/states/49/49011.html. Accessed October 19, 2006. 2 pages.

15. City of Woods Cross Public Works. Telecommunication between Scott Anderson, Director of Public Works, and Bryan Williams of URS Operating Services, Inc. (UOS), January 16, 2007. Subject: Additional Drinking Water Sources and Distribution Information. 1 page.

16. City of Woods Cross Public Works. Fax from Scott Anderson, Director of Public Works, to Bryan Williams of URS Operating Services, Inc. (UOS), February 9, 2007. Subject: Woods Cross Well #1 Analytical Sampling Laboratory Sheets. 8 pages.

2.2 SOURCE CHARACTERIZATION

2.2.1 SOURCE IDENTIFICATION

Source Number: 1

Source Type: Ground water plume

Description and Location of Source (with reference to a map of the site):

The Five Points PCE Plume site consists of a contaminated ground water plume (Ref. 5, p. 4). Due to the number and close proximity of possible sources of the PCE contamination, including possible former sources, it is improbable to identify and reasonably attribute with confidence the ground water contamination to any known source. Per the HRS, the plume itself will be considered the source (Ref. 1, Sec. 1.1, p. 51587). The extent of this plume has not been completely delineated at this time but has been characterized by data from permanent monitoring wells and City of Woods Cross municipal supply wells to be approximately five acres in size (Ref. 6, p. 6).

The Five Points PCE Plume site is located near the intersection of 1500 South and State Highway 106 in Woods Cross, Utah, a northern suburb of Salt Lake City. The site is beneath residential and commercial properties and is located approximately five miles southeast of the Great Salt Lake and approximately three miles west of the Wasatch mountain range (Refs. 5, p. 4; 7, p. 5).

From September through November 1998 the UDEQ performed sampling for the EPA in the Five Points area that included installing two monitoring wells and sampling them, as well as sampling three other monitoring wells installed in September, and finally sampling three existing ground water wells (two used for potable supplies by the city of Woods Cross) (Ref. 5, pp. 4, 5, 7). Of the eight wells sampled, two were non-detects (one of them the background); the remaining wells were found to contain PCE at concentrations ranging from 1.4 to 310 micrograms per liter (µg/L) (Ref. 5, pp. 7, 9, 18, 135-148).

A sampling event performed by UOS for EPA in November 1999 detected PCE in two Woods Cross municipal water supply wells (Woods Cross well #1 and Woods Cross well #2), although Woods Cross records show contamination first appeared in the wells beginning in 1988 (Refs. 6, pp. 6, 13, 55, 57; 13, pp. 1, 9, 12). During this investigation, Woods Cross well #1 contained PCE detected at 4.0 micrograms per liter (µg/L) (Ref. 6, p. 57). Woods Cross well #1 was taken out of service in February 1999 due to PCE contamination detected at a concentration of 16.4 µg/L (Refs. 7, p. 5; 13, p. 3; 16, p. 2).

EPA and UOS performed additional sampling in 2003 centered on investigating soil contamination in the plume area. The 2003 subsurface soil sampling was performed during the construction of a parking garage for the Five Points Mall and included sampling of several properties in the immediate area as well as the collection of a single ground water sample (Ref. 7, pp. 7, 12-15, 18). This sampling showed the presence of PCE in soils, but could not determine the vertical limit of contamination in the study area (Ref. 7, pp. 10, 14-17). More definitive ground water work was performed when the UDEQ conducted well sampling in 2006 (Refs. 7, pp. 5, 7; 8, p. 1).

The UDEQ performed a site inspection for the EPA in 2006 that included ground water sampling of four wells associated with the Five Points PCE Plume site (Ref. 8, pp. 1, 4). This sampling event (conducted September 11, 2006) resulted in detections of PCE in Woods Cross wells #1 and #2, as well as two monitoring wells down-gradient of the Five Points Mall (MW-1 and MW-2) (Ref. 8, pp. 7-8). It should be noted that two wells associated with the study area were found to be dry (B5P-MW-1 and mall well #1), two

others had been destroyed by construction (mall well #2 and mall well #3) (Ref. 8, p. 5). This sampling event showed PCE to be present in each well at concentrations ranging from 1.8 µg/l to 24 µg/l (Ref. 8, pp. 7, 8, Table 2).

2.2.2 HAZARDOUS SUBSTANCES ASSOCIATED WITH THE GROUND WATER PLUME

Hazardous Substance (CRSC)	Evidence	References
Tetrachloroethylene (PCE) (1.6 µg/l)	max. concentration: 150 µg/l Mall well #1 November 1999	2, p. BII-11; 6, pp. 6, 20

CRSC Cancer Risk Screening Concentration

Source Background Sample Information

B5P-MW-01 is located 750 feet east and up-gradient of the plume and was sampled in November 1999 (Refs. 3, Sheet 3; 6, pp. 6, 9, 18). The water level in the well at the time of sampling was 137 feet bgs and the total depth was observed to be 145 feet bgs (Ref. 6, p. 18). This sample was analyzed for volatile organic compounds (VOCs) (Ref. 6, p. 12). Samples were sent to Datachem Laboratories in Salt Lake City, UT, for VOC analysis using EPA Method 524 (Ref. 6, pp. 11-12). Well B5P-MW-01 was inspected during the 2006 sampling event and found to be dry; as such, no sample was collected (Ref. 8, p. 5).

2.2.3 HAZARDOUS SUBSTANCES AVAILABLE TO A PATHWAY

Containment Description	Containment Value	References
Gas release to air:	NS	
Particulate release to air:	NS	
Release to ground water: Because there is an observed release of a hazardous substance to ground water, a containment value of 10 has been assigned (see Sections 2.2.2 and 3.1.1 of this HRS documentation record).	10	1, Table 3-2, p. 51596
Release via overland migration and/or flood:	NS	

NS= Not Scored

2.4.2 HAZARDOUS WASTE QUANTITY

2.4.2.1.1 Hazardous Constituent Quantity

Description

Insufficient information is available to evaluate Hazardous Constituent Quantity.
Sum (pounds): Not available (NA)

Hazardous Constituent Quantity Assigned Value (C): NA

2.4.2.1.2 Hazardous Wastestream Quantity

Description

Insufficient information is available to evaluate Hazardous Wastestream Quantity.

Sum (pounds): NA
Sum of Wastestream Quantity/5,000 (Table 2-5): NA

Hazardous Wastestream Quantity Assigned Value (W): NA

2.4.2.1.3 Volume

Description

The horizontal and vertical extent of the plume have not been adequately characterized, consequently, a value of >0 is assigned as shown below.

The Hazardous Waste Quantity (HWQ) value per Table 2-5 (Ref. 1) = >0 yd^3 / 2.5 = >0

Volume Assigned Value (V): >0

2.4.2.1.4 Area

Description

Not applicable for source type "other" (Ref. 1, Table 2-5).

Volume Assigned Value (A): Not scored

2.4.2.1.5 Source Hazardous Waste Quantity Value

The source hazardous waste quantity value for Source 1 is >0 for Tier C - Volume (Ref. 1, Table 2-5).

Source Hazardous Waste Quantity Value: >0

SUMMARY OF SOURCE DESCRIPTIONS

Source No.	Source Hazardous Waste Quantity Value	Source Hazardous Constituent Quantity Complete? (Y/N)	Available to Pathway				
			Ground Water (GW)	Surface Water (SW)		Air	
				Overland/ flood	GW to SW	Gas	Particulate
1	>0	N	10	NS	NS	NS	NS

NS Not Scored

2.4.2.2 Hazardous Waste Quantity Factor Value

According to Section 2.4.2.2 of the HRS Rule (Ref. 1, Sec. 2.4.2.2, p. 51592), if the hazardous constituent quantity is not adequately determined for one or more sources, and if any target for the migration pathway under consideration is subject to Level I (or Level II) concentrations, assign either the value from Table 2-6 or a value of 100, whichever is greater, as the hazardous waste quantity factor value for that pathway. Because Level I concentrations are present in a drinking water well at the site (as presented in this documentation record), a hazardous waste quantity factor value of 100 is assigned.

Hazardous Waste Quantity Factor Value: 100

Possible Sources of Ground Water Plume

Although the source of the PCE has not been identified, Woods Cross well #1 is located approximately 900 feet downgradient (west-northwest) of Your Valet Cleaners (YVC), which was located at 1501 S. Main St. and used PCE for dry cleaning operations (Ref. 6, p. 6). Sources conflict regarding the period of operation, but may have been from 1963 until 2002 (Refs. 5, p. 5; 6, p. 6; 8, p. 3). Soil borings from the YVC property all contained PCE in varying concentrations (Ref. 6, pp. 6, 13).

Other possible sources of the PCE plume that were identified during the 1998 Innovative Assessment include a former retail gasoline station/automotive garage and two former dry cleaners (in addition to YVC) within the vicinity of the Five Points Mall ground water contamination (Refs. 5, pp. 4-5; 6, p. 7). The former retail gasoline station/automotive garage was located immediately south of YVC at 1545 S. Main St., the present location of George West Quality Autos (Ref. 6, p. 7). According to the property owner at the time of the November 1999 sampling, tanks associated with the gas station were removed with no identified environmental impacts (Ref. 6, p. 7). The Klean Machine dry cleaners was located along the west side of the Five Points Mall and operated from 1969 to 1989 (Ref. 7, p. 6). An additional dry cleaner (The Golden Hangar Dry Cleaners) operated from a location near the southwest corner of the Mall from June 1986 to March 1988 (Ref. 7, p. 6).

The Intermountain Waste Oil (IWO) site is located at 995 South 500 West, approximately 0.4 miles from the Five Points PCE plume. The IWO site was proposed for addition to the National Priorities List in 1999. PCE, 1,1-Dichloroethane (1,1-DCA), and 1,1,1-Trichloroethane (TCA) are ground water contaminants identified at the IWO site. The IWO site is located cross-gradient from the Five Points PCE Plume site (Ref. 6, p. 7).

3.0 GROUND WATER MIGRATION PATHWAY

3.0.1 GENERAL CONSIDERATIONS

Ground Water Migration Pathway Description

Description: The Five Points PCE Plume site is located approximately five miles southeast of the Great Salt Lake and approximately three miles west of the Wasatch Mountain range in what is known as the East Shore Area (Refs. 7, p. 5; 10, Fig. 1). This area is defined as the region bounded by the Great Salt Lake on the west and the Wasatch Mountains on the east, between the Bear River on the north and the Jordan River on the south (Refs. 9, pp. 2, 4; 10, p. 9). This area has been divided into two hydrologic sub-areas: the Weber Delta sub-area in the north, and the Bountiful sub-area in the south (Ref. 10, p. 3, Figure 1). The East Shore Area lies within a fault bounded graben along the Wasatch Fault Zone (and Wasatch Mountain front) to the east, and an inferred and undefined fault zone near the shore of the Great Salt Lake to the west. These faults are regional structural bedrock features, and do not impact the unconsolidated basin sediments adjacent to or overlying them (Ref. 10, p. 3, Figure 2). The Five Points PCE Plume site lies within the Bountiful sub-area (Ref. 10, Fig. 1).

Unconsolidated and semi-consolidated basin fill materials make up the majority of the subsurface (Ref. 11, p. 7). The basin fill material is composed of coarse grained alluvial deposits near the Wasatch Mountains (Ref. 11, p. 7). Moving west from the mountains, the deposits become interbedded gravels, sands, and clays, with fine-grained lacustrine deposits predominating near the Great Salt Lake (Ref. 11, p. 7). Beneath the site, it is believed that inter-beds predominate with the individual beds tending to be finer (i.e., sands to clays) (Ref. 8, p. 9).

The Five Points PCE plume site is located in the southern portion (Bountiful area) of the East Shore Aquifer system (Ref. 10, Fig. 1). The East Shore Aquifer system is primarily confined, with some unconfined areas along the mountain front recharge zone (Ref. 10, p. 24). Unconfined parts of the East Shore aquifer system are generally present only as lateral extensions of the confined aquifers in a small area near the mountain front within the recharge area (Ref. 10, p. 24, Figure 3). In the Bountiful area, where the site lies, all wells greater than 100 feet deep are considered to be completed in the East Shore aquifer system (Ref. 10, p. 24). This area has been previously described as having shallow, intermediate, and deep artesian aquifers, with the shallow being found between 60 to 250 feet below ground surface (bgs); the intermediate 250 to 500 feet bgs; and the deep aquifer greater than 500 feet bgs (Ref. 10, p. 24). These aquifers have not been differentiated because they have neither large vertical head differences, or substantial lithologic difference (Ref. 10, p. 24). Information collected during previous sampling events indicates that ground water flow in the immediate site area is to the west-northwest (Ref. 5, App. F, pp. 59, 60).

The shallow, intermediate, and deep aquifers are hydraulically connected to one another. Where confining layers are thin or more permeable, ground water easily moves vertically through them from one aquifer to another (Ref. 10, p. 21). In addition, all aquifers are connected in the primary recharge area approximately one to two miles east of the site near the Wasatch mountain front, which is underlain predominantly by permeable sands and gravels that enhance the recharge water movement (Ref. 10, p. 26, Figures 2 and 3). Woods Cross wells are documented to be screened from 120 to 325 feet bgs (Woods Cross well #1) and from 92 to 180 feet bgs (Woods Cross well #2) (Ref. 8, App. F, pp. 2-3). Well logs from the DERR monitoring well installation indicate that soils in the immediate site area are mostly sand, silt, and gravel with some clay (Ref. 8, App. F). Depth to ground water at the site is between 76 and 160 feet bgs (Ref. 8, App. E).

3.1 LIKELIHOOD OF RELEASE

3.1.1 OBSERVED RELEASE

Aquifer Being Evaluated: Primary Recharge aquifer

Chemical Analysis

Background Concentrations:

Location	Total Depth/ Screened interval (feet bgs)	Sampling Date	References
November 1999 Sampling Event B5P-MW-01	145/135-145 ft. bgs	11/2/99	5, p. 72; 6, pp. 18, 52

Location	Hazardous Substance	Concentration (µg/L)	Contract Required Detection Limit (µg/L)	References
B5P-MW-01	PCE	0.34 J	0.50	6, pp. 12, 20, 53

J - The associated numerical value is an estimated quantity: presence of analyte is reliable. Detection was below the CRDL.

Contaminated Samples:

Samples used for the evaluation of the Five Points PCE Plume site are listed in the following tables.

The tables below contain data from the 1999 sampling efforts conducted by EPA and START (Ref. 6, p. 6). Data from this sampling event were validated for accuracy (Ref. 6, App. D). Analytical results from ground water samples submitted to the laboratories indicate the presence of PCE (Ref. 6, pp. 12, 20).

With the exception of the background well, contaminants found in the wells listed in the following table were detected at concentrations that satisfy the observed release criteria.

Location	Screened Interval (feet bgs)	Sampling Date(s)	References
B5P-MW-01 (background)	135-145	11/2/99	5, p. 72; 6, pp. 6, 7, 52
B5P-MW-02	114 - 124	11/2/99	5, p. 73; 6, pp. 6, 64
Mall well #1	125 - 135	11/2/99	5, p. 74; 6, pp. 6, 66
Mall well #2	115 - 125	11/2/99	5, p. 75; 6, pp. 6, 60
Mall well #3	123*	11/2/99	5, p. 76; 6, pp. 6, 58

Location	Screened Interval (feet bgs)	Sampling Date(s)	References
Woods Cross #1	120 - 325	11/2/99	5, p. 70; 6, pp. 6, 7, 56; 8, App. F
Woods Cross #2	92 - 180	11/2/99	6, pp. 6-8, 54; 8, App. F

* - Number given is well depth because screened interval is not known.

Hazardous Substance	Location	Concentration (µg/L)	Contract Required Detection Limit (µg/L)	References
PCE	B5P-MW-02	72	0.50	6, pp. 20, 65, App. D
	Mall well #1	150	0.50	6, pp. 20, 67, App. D
	Mall well #2	100	0.50	6, pp. 20, 61, App. D
	Mall well #3	4.4	0.50	6, pp. 20, 59, App. D
	Woods Cross #1	4.0	0.50	6, pp. 20, 57, App. D
	Woods Cross #2	1.2	0.50	6, pp. 20, 55, App. D

Note: µg/L - micrograms per liter.

Additional Supporting Data

The most recent sampling event at the Five Points PCE Plume site was conducted by UDEQ in September 2006 (Ref. 8, pp. 1, 4). Samples were collected from 4 permanent wells, including two monitoring wells installed by UDEQ and two drinking water wells maintained by the City of Woods Cross (Ref. 8, p. 4). Samples collected during this effort were analyzed by Mitkem Corporation (Ref. 8, p. 4). Analytical results from ground water samples submitted to the laboratory indicate the presence of PCE in all four of the wells (Ref. 8, pp. 7, 8, Table 2). These data were validated for accuracy (Ref. 8, App. G). The sample collected from Woods Cross well #1 in 2006 had 6.3 µg/L of PCE; Woods Cross well #2 had 1.8 µg/L of PCE (Ref. 8, p. 8, Table 2). No background data are available for comparison to the 2006 well samples; therefore, the 2006 well sampling data are not used to establish the observed release in the above tables. However, the 2006 well sampling data are sufficient to demonstrate that PCE ground water contamination is still present in the area.

PCE was also detected in Woods Cross well #1 several times from October 1997 through February 1999, at levels up to 16.4 µg/L; during this period Woods Cross well #1 was in use as a municipal supply well (Ref. 16, pp. 2-8).

Level I Sample

Hazardous Substance	Sample ID (Description)	Hazardous Substance Concentration (µg/L)	Benchmark Concentration (µg/L)	Bench-mark	References
PCE	Woods Cross well #1	maximum concentration of 16.4	1.6	CRSC	2, p. BII-11; 6, pp. 20, 57, App. D; 16, pp. 2-8

CRSC Cancer Risk Screening Concentration

Attribution

Due to the number and close proximity of possible sources of the PCE contamination, including possible former sources, it is improbable to identify and reasonably attribute with confidence the ground water contamination to any known source. Because the source is a contaminated ground water plume with no positively identified source of contamination, attribution has not been determined (Ref. 1, Sec. 3.1.1, p. 51595).

Hazardous Substances Released: PCE

Ground Water Observed Release Factor Value: 550

3.2 WASTE CHARACTERISTICS

3.2.1 TOXICITY/MOBILITY

Hazardous Substance	Source No.	Toxicity Factor Value	Mobility Factor Value	Toxicity/ Mobility (Ref. 1, Table 3-9)	References
Tetrachloroethylene	1	100	1	100	1; 2, p. BI-10

Toxicity/Mobility Factor Value: 100
(Ref. 1, Section 3.2.1.3)

3.2.2 HAZARDOUS WASTE QUANTITY

Source Number	Source Hazardous Waste Quantity Value (Section 2.4.2.1.5)	Are source hazardous constituent quantity data complete? (yes/no)
1	> 0	No

The Five Points PCE Plume site has been scored as a site consisting of a contaminated ground water plume with no positively identified source. According to Section 2.4.2.2 of the HRS (Ref. 1, p. 51592), if any target sample for the migration pathway under consideration is subject to Level I (or Level II) concentrations, assign either the value from Table 2-6 (Ref. 1) or a value of 100, whichever is greater, as the hazardous waste quantity factor value for that pathway. Because Level I concentrations were present in a drinking water well (Woods Cross well #1) at the site when the well was in use as a drinking water source, a hazardous waste quantity factor value of 100 is assigned.

Hazardous Waste Quantity Factor Value: 100
(Ref. 1, Sec 2.4.2.2)

3.2.3 WASTE CHARACTERISTICS FACTOR CATEGORY VALUE

Toxicity/Mobility Factor Value: 100
Hazardous Waste Quantity Factor Value: 100

Toxicity/Mobility Factor Value X Hazardous Waste Quantity Factor Value: 1×10^4

Waste Characteristics Factor Category Value: 10
(Ref. 1, Table 2-7)

3.3 TARGETS

Well ID	Distance From Source	Level I Cont. (Y/N)	Level II Cont. (Y/N)	Pot. Cont. (Y/N)	References
Woods Cross well #1	N/A	Y	N	N	8, App. A, pp. 6-7; 15
Woods Cross well #2	N/A	Y*	Y*	N	8, App. A, pp. 6-7; 15
Woods Cross well #3	1 - 2 Miles	N	N	Y	8, App. A, pp. 6-7; 15

* - PCE has been detected at both Level I and II concentrations in Woods Cross well #2.

3.3.1 NEAREST WELL

Well ID: Woods Cross well #1
Level of Contamination (I, II, or potential): I
If potential contamination, distance from source in miles: Not applicable

Nearest Well Factor Value: 50
(Refs. 1, p. 51603 Table 3-11; 5, p. 7; 8, pp. 7, 8, Table 2; 15)

3.3.2 POPULATION

3.3.2.1 Level of Contamination

3.3.2.2 Level I Concentrations

Level I Well	Population	References
Woods Cross well #1	2,537.67	13, p. 1; 14; 15

Population served by Level I Wells: 2,537.67
Population served by Level I Wells x 10: 25,376.7
Level I Concentration Factor Value: 25,376.7

Calculations:

Both in 2006 and at the time when Woods Cross well #1 was being replaced by Woods Cross well #4, the Woods Cross system consisted of three wells, all of which were in production, and used equally to provide potable supplies to Woods Cross customers (Refs. 13; 15). Contamination first began appearing in well #1 in the late 1980s; Woods Cross Public Utilities constructed an additional well (#4) in the late 1990s to be used to replace well #1, which was taken out of service in 1999 after exceeding MCL values for PCE (Refs. 13; 15; 16, p. 2). As of 2006, Woods Cross is providing potable water to 2,600 connections in their service area. The water is drawn evenly from three wells (well #2, well #3, and well #4) before distribution. Woods Cross neither buys nor sells water to any other service (Ref. 13). At the time of contamination in well # 1, the Woods Cross system was operating under the same criteria, but with 2,300 connections in lieu of the current 2,600 (Ref. 15). The Davis County, Utah average number of persons per household is 3.31 yielding

a total population of 7,613 persons or approximately 2,537.67 persons per well for the period at the time of the Woods Cross well #1 closure (Ref. 14, p. 1).

In 2006, Woods Cross well #2 had 1.8 µg/L of PCE, which is above the benchmark concentration of 1.6 µg/L (Refs. 2, p. BII-11; 8, Table 2). However, Level I concentrations in this well are not being scored due to lack of background data for the 2006 sampling event and because the population associated with Woods Cross well #1 is sufficient to attain the maximum score for the ground water pathway.

Level I Population:	2,537.67
Level I Concentration Factor Value:	25,376.7 (Ref. 1, Table 3-12, p. 51604)

3.3.2.3 Level II Concentrations

Woods Cross well #2 has shown both Level I and II concentrations (Refs. 6, p. 20; 8, Table 2; 13, p. 1; 15), but the targets associated with this well are not scored because the Level I targets associated with Woods Cross well #1 result in the maximum score for the ground water pathway.

Level II Concentration Factor Value:	0

3.3.2.4 Potential Contamination

Potential contamination was not scored for this documentation record.

Potential Contamination Factor Value: 0

3.3.3 RESOURCES

It has not been confirmed whether any well within the four-mile radius may be considered a resource for scoring purposes; as such, Resources have been assigned a value of zero.

Resources Factor Value: 0

3.3.4 WELLHEAD PROTECTION AREA

Because part of the plume lies directly over a Wellhead Protection Area (WPA), a value of 20 points was assigned (Refs. 1, p. 51604, Sec. 3.3.4; 5, p. 161; 8, App. A, p. 7).

Wellhead Protection Area Factor Value: 20