ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

WATER QUALITY ASSURANCE REVOLVING FUND

PDF VERSION -- REVISED ELIGIBILITY AND EVALUATION FORM (Rev. October 2, 1996)

Date Site Evaluated: 02/04/2016

Scoring Summary Evaluation: Hazel Cox

EMERGENCY ACTION INFORMATION

SITE NAME: Miller Valley Rd and Hillside Ave

EMERGENCY: YES ☐ NO ☑

DESCRIPTION: Tetrachloroethene (PCE) released to groundwater. Two potential source areas identified: former and current Village Cleaners. PCE detected in two private wells used for irrigation water at 34.5 and 418 ppb. Concentrations in groundwater range from <0.5 to 17,000 ppb. Possible DNAPL. Multiple private wells.

FACILITY INFORMATION

SITE NAME: Miller Valley Rd and Hillside Ave SITE CONTACT: Hazel Cox

SITE ADDRESS: 950 Fair St, 939 Fair St, Prescott, AZ

COUNTY: Yavapai LAT/LONG: 35.5533, -112.4816

OWNER NAME/ADDRESS: Village Cleaners, Rick Gilliland, 939 Fair St, Prescott

OPERATOR NAME:

OPERATOR ADDRESS:

SCORING INFORMATION

A. RELEASE EVENT (10 Points)	6
B. SITE AND CONTAMINANT CHARACTERISTICS (30 Points)	23
C. HUMAN EXPOSURE ROUTES (65 Points)	8
D. ENVIRONMENTAL FACTORS (15 Points)	3
TOTAL SCORE	40

SCORING SUMMARY: Miller Valley Rd and Hillside Ave

A. RELEASE EVENT (10 Points)[1]				6
1. SOIL (3 Points)			1	
2. GROUNDWATER (4 Points)			4	
3. SURFACE WATER (3 Points)			1	
B. SITE AND CONTAMINANT CHARACTERISTICS (30 Points)[1]				23
1. CONTAMINANT SPECIFIC (15 Points)			10	
a. Contaminant Hazard (5 Points)		4		
b. Extent of Contamination (4 Points)		1		
c. Mobility (3 Points)		3		
d. Persistence (2 Points)		2		
e. Bioaccumulation (1 Point)		0		
2. SITE SPECIFIC (15 Points)			13	
a. Groundwater (10 Points)		9		
i. DRASTIC Maps (5 Points)	4			
ii. Other Factors (5 Points)	5			
b. Surface Water (5 Points)		4		
i. Slope/Distance (3 Points)	3			
ii. Flood Frequency (1 Point)	1			
iii. Groundwater Recharge (1 Point)	0			
C. HUMAN EXPOSURE ROUTES (65 Points)[1]				8
1. GROUNDWATER (30 Points)			8	
a. Drinking Water Wells Affected (20 Points)		3		
i. Actualð Population (10 Points)	0			
ii. Actualð Standards (5 Points)	0			
iii. Potentialð Population (5 Points)	3			
b. Impacted Production Wells (5 Points)		5		
c. Primary Source of Drinking Water or No Alternative Water Supply (5 Points)		0		
2. SURFACE WATER (20 Points)			0	
a. Population Affected (15 Points)		0		
i. Actualð Population (7 Points)	0			
ii. Actualð Standards (5 Points)	0			
iii. Potentialð Population (3 Points)	0			
b. Uses of Surface Water (5 Points)		0		
3. SOIL (15 Points)			0	
a. Population (5 Points)		0		
b. Sensitive Receptors (5 Points)		0		
c. Accessibility (5 Points)		0		
D. ENVIRONMENTAL FACTORS (15 Points)[1]				3
1. ECOLOGICAL FACTORS (9 Points)			0	
2. RECREATIONAL USES (3 Points)			3	
3. CULTURAL RESOURCES (3 Points)			0	

[1]*Potential Total Points*

A. RELEASE EVENT (10 Points)

If contaminants are present in the groundwater, surface water, or soil, score a known release to the appropriate media. If there is no release to groundwater, surface water, or soil, the remainder of the form should not be completed.

1. SOIL (3 Points)

TOTAL SOIL SCORE (A.1): 1

Please use the following table:

Type of Release	***Soil Score***
Known	**3**
Unknown	**1**
None	**0**

2. GROUNDWATER (4 Points)

TOTAL GROUNDWATER SCORE (A.2): 4

Please use the following table:

Type of Release	***Groundwater Score***
Known	**4**
Unknown	**2**
None	**0**

3. SURFACE WATER (3 Points)

TOTAL SURFACE WATER SCORE (A.3): 1

Please use the following table:

Type of Release	***Surface Water Score***
Known	**3**
Unknown	**1**
None	**0**

Total Release Event Score = A.1 + A.2 + A.3: 6

B. SITE AND CONTAMINANT CHARACTERISTICS (30 Points)

1. CONTAMINANT SPECIFIC (15 Points)

a. Contaminant Hazard

TOTAL SCORE: 4

Contaminant hazard is the ratio (R) of the contaminant concentration to the benchmark for the substance.

For Groundwater: *R = C / Drinking Water HBGL*

For Surface Water: *R = C / Drinking Water HBGL*

For Soil: *R = C / Residential HBGL*

Determine a score for each of the three media as follows: First, determine the highest possible value of R for each substance; then add the R values together. Then add together the R values for the three media (groundwater, surface water, and soil). Finally, choose the highest score from the following table:

R Value	***Score***
R < 1	**0**
1 < R < 10	**1**
10 < R < 100	**2**
100 < R < 1,000	**3**
1,000 < R < 10,000	**4**
10,000 < R	**5**

b. Extent of Contamination

TOTAL SCORE: 1

What is the extent of release of the hazardous substance? Use the quantity that yields the highest score. Please use the following table.

Soil Volume (Cubic Yards)	***Groundwater (No. of Wells[1])***	***Rivers/Streams (Miles)***	***Lakes (Surface Acreage)***	***SCORE***
>1,000	> 15	> 1.0	> 100	**4**
101ð 1,000	10ð 15	0.5ð 1.0	26ð 100	**3**
10ð 100	5ð 9	0.2ð 0.5	5ð 25	**2**
< 10	1ð 4	< 0.2	< 5	**1**
Unknown	Unknown	Unknown	Unknown	**0**
[1] Production wells only				

c. Mobility

TOTAL SCORE: 3

The Groundwater Protection Levels (GPLs) are used as a measure of mobility, and onsite soil concentrations (C) will be compared to the GPL. If site-specific data is available, then the GPL will be calculated using the ADEQ model. If site-specific data is not available, then the minimum GPL will be used. Choose the highest score from the following table:

Criteria	***Score***
Groundwater Contamination at the Site	**3**
C > Site Specific GPL	**2**
C > Minimum GPL	**1**
C < Minimum GPL	**0**
No GPL Available	**0**

d. Persistence **TOTAL SCORE:** 2

Persistence is determined by the type of contaminant. Please choose the highest score from the following table:

Criteria	***Score***
Metals, Polycyclic Compounds, and Halogenated Hydrocarbons	**2**
Straight Chain Hydrocarbons, Substituted Ring Compounds and other Ring Compounds	**1**
Easily Biodegradable Compounds	**0**

e. Bioaccumulation **TOTAL SCORE:** 0

Look up the Food Chain Bioaccumulation value in the Superfund Chemical Data Matrix (SCDM). Please use the following table:

Criteria	***Score***
Bioaccumulation Value > 50	**1**
Bioaccumulation Value ≤ 50	**0**

Total Contaminant Specific Score (B.1) = B.1.a + B.1.b + B.1.c + B.1.d + B.1.e: 10

2. SITE SPECIFIC (15 Points)

a. Groundwater (10 Points)

i. DRASTIC Maps **TOTAL SCORE:** 4

The DRASTIC score will be determined from the county DRASTIC map. If pesticides are of concern at the site, use the Pesticide DRASTIC map; otherwise, use the General DRASTIC map. If no DRASTIC map is available, the attached instructions will be used to generate a pseudo-DRASTIC score. The score will be evaluated according to the following table:

Criteria	***Score***
200 ≤ DRASTIC Score	**5**
160 ≤ DRASTIC Score ≤ 199	**4**
120 ≤ DRASTIC Score ≤ 159	**3**
80 ≤ DRASTIC Score ≤ 119	**2**
DRASTIC Score ≤ 79	**1**

ii. Other Factors **TOTAL SCORE:** 5

Other factors include depth from the bottom of contamination to groundwater and the groundwater to surface water flow. Please choose the highest score from the following table:

Criteria		***Score***
Depth from Contamination to Groundwater (feet)	0	**5**
	1ð 25	**4**
	26ð 100	**3**
	101ð 300	**2**
	> 300	**1**
Potential for Groundwater to Reach Surface Water	Groundwater Discharging to Surface Water	**2**
	Groundwater Wells Pumped to Surface Water	**1**

b. Surface Water (5 Points)

i. Slope/Distance **TOTAL SCORE:** 3

Determine the average slope between the site and surface water, and determine the distance to the nearest surface water. Use the following table to determine the slope/distance value:

SLOPE, %	***DISTANCE IN FEET***			
	0—100	***101 –500***	***501—1,000***	***> 1,000***
0—3	**3**	**1**	**1**	**0**
3—5	**3**	**2**	**1**	**1**
5—7	**3**	**3**	**2**	**1**
> 7	**3**	**3**	**3**	**1**

ii. Flood Frequency **TOTAL SCORE:** 1

Score 1 point if the site is located within the 100-year floodplain.

iii. Groundwater Recharge **TOTAL SCORE:** 0

Score 1 point if the site is located in an area of active groundwater recharge.

Total Site Specific Score (B.2) = B.2.a.i + B.2.a.ii + B.2.b.i + B.2.b.ii + B.2.b.iii: 13

TOTAL SITE AND CONTAMINANT CHARACTERISTICS SCORE (B.1 + B.2): 23

C. HUMAN EXPOSURE ROUTES (65 Points)

1. GROUNDWATER (30 Points)

If there is no release or threat of release to groundwater, do not complete this section (I.C.1)

a. Drinking Water Wells Affected

i. Actual Contamination—Population **TOTAL SCORE:** 0

This will be evaluated if any contamination has been detected in drinking water wells. Please choose the highest score from the following table:

Population Served by Groundwater: Actual Contamination Choose the Highest Score	
Population served by Groundwater	***Score***
0	**0**
1—25	**4**
25—999	**6**
1,000—4,999	**8**
≥ 5,000	**10**

ii. Actual Contamination—Standards **TOTAL SCORE:** 0

Score 5 points if any contamination has been detected in drinking water wells at concentrations exceeding the Maximum Contaminant Levels (MCLs).

iii. Potential Contamination—Population **TOTAL SCORE:** 3

This will be evaluated if (1) contamination has not impacted any drinking water wells, but may impact them in the future or (2) contamination has impacted drinking water wells, and it may spread to other drinking water wells. Choose the highest score from the following table:

Population Served by Groundwater: Potential Contamination Choose the Highest Score				
Population Served	***Distance Down Gradient from Contamination***			
	0—1/4 Mile	***1/4—1 Mile***	***1—4 Miles***	***> 4 Miles***
0	**0**	**0**	**0**	**0**
1—25	**3**	**2**	**1**	**0**
25—5,000	**4**	**2**	**1**	**0**
≥ 5,000	**5**	**3**	**1**	**0**

b. Impacted Production Wells **TOTAL SCORE:** 5

Score 5 points if contamination has been detected in any production wells, including wells closed due to contamination.*

The End Use Subcommittee is presently developing end use water quality standards. After these standards are developed, the Site Prioritization Subcommittee may recommend that 5 additional points be made available for impacted wells in excess of the end use water quality standards. These 5 points are not presently part of the model.

c. Primary Source of Drinking Water/No Alternative Drinking Water Supply **TOTAL SCORE:** 0

Score 5 points for sites where groundwater is the primary source of drinking water or where no alternative drinking water supply is available.

Total Groundwater Score (C.1) = C.1.a.i + C.1.a.ii + C.1.a.iii + C.1.b + C.1.c: 8

2. SURFACE WATER (15 Points)

If there is no release or threat of release to surface water, do not complete this section (I.C.2)

a. Drinking Water Intakes Affected

i. Actual Contamination—Population **TOTAL SCORE:** 0

This will be evaluated if any contamination has impacted drinking water intakes. Please choose the highest score from the following table:

Population Served by Surface Water: Actual Contamination Choose the Highest Score	
Population served by surface water	***Score***
0	**0**
1—25	**3**
25—999	**5**
1,000—4,999	**6**
≥ 5,000	**7**

ii. Actual Contamination—Standards **TOTAL SCORE:** 0

Score 5 points if any contamination has been detected at the drinking water intakes at concentrations exceeding the Maximum Contaminant Levels (MCLs).

iii. Potential Contamination—Population **TOTAL SCORE:** 0

This will be evaluated if (1) contamination has not impacted any drinking water intakes, but may impact them in the future or (2) contamination has impacted drinking water intakes, and it may spread to other drinking water intakes. Choose the highest score from the following table:

Population Served by Surface Water: Potential Contamination ***Choose the Highest Score***			
Population Served	***Distance Down Gradient from Contamination***		
	0—1 Mile	***1—15 Miles***	***> 15 Miles***
0	**0**	**0**	**0**
1—25	**2**	**1**	**0**
25—5,000	**2**	**1**	**0**
≥ 5,000	**3**	**1**	**0**

b. Uses of Surface Water **TOTAL SCORE:** 0

Please choose the highest score from the following table:

Criteria	***Score***
Drinking water or full body contact	**5**
Aquatic and wildlife/warm or cold water fishery or incidental human contact	**4**
Agriculture or livestock watering	**2**
Other uses	**1**
Not Applicable	**0**

Total Surface Water Score (C.2) = C.2.a.i + C.2.a.ii + C.2.b: 0

3. SOIL (15 Points)

If there is no release to soil, do not complete this section (I.C.3). If the contaminant concentration is below the Arizona Human Health-Based Guidance Level (HBGL), score 0 for this section. If the contaminant is not present in the upper 2 feet of soil, score 0 for this section.

a. Population Affected **TOTAL SCORE:** 0

Please choose the highest score from the following table:

Distance from Site	***Population***		
	1—100	***100—500***	***> 500***
0—1/2 mile	**3**	**4**	**5**
1/2—1 mile	**0**	**1**	**2**

b. Sensitive Receptors **TOTAL SCORE:** 0

Sensitive Receptors include schools, day care, hospitals, and nursing homes. Choose the highest score from the following table:

Criteria	***Score***
Sensitive Receptors Onsite	**5**
Adjacent to the Site	**4**
Within 1/4 Mile	**3**
> 1/4 Mile	**0**

c. Accessibility **TOTAL SCORE:** 0

If the contaminant concentration exceeds the HBGL and is present in the upper 2 feet of soil, then choose the highest score from the following table:

Criteria	***Score***
No Fence or Paving	**5**
Non-Maintained Fence or Paving	**3**
Maintained Fence or Paving	**1**
Maintained Fence and VEMUR	**0**

Total Soil Option 1 Score (C.3) = C.3.a + C.3.b + C.3.c: 0

TOTAL HUMAN EXPOSURE ROUTES (C.1 + C.2 + C.3): 8

D. ENVIRONMENTAL FACTORS (15 Points)

1. ECOLOGICAL (9 Points) **Ecological Score:** 0

Evaluate ecological factors for conditions onsite. Choose the highest score from following table:

ECOLOGICAL FACTOR	***SCORE***
Critical habitat[1] for Federal or State designated endangered species Critical areas identified under the Clean lakes Program[2] National or State Park National or State Monument Designated Federal Wilderness Area National Lakeshore Recreational Area	**9**
Special status species[3] documented as occurring in the vicinity of the site National Preserve National Forest National or State Wildlife Refuge Federal land designated for protection of natural ecosystems Administratively proposed Federal Wilderness Area Spawning areas critical[4] for the maintenance of fish/shellfish species within rivers or lakes Migratory pathways and feeding areas critical for maintenance of anadromous fish species within river reaches or areas in lakes in which the fish spend extended periods of time Terrestrial areas utilized for breeding by large or dense aggregations of animals National river reach designated as Recreational	**6**
Federal category 1 or category 2 candidate species or State candidate species documented as occurring in the vicinity of the site Federal or State designated Scenic or Wild River State land designated for wildlife or game management State designated Natural areas Particular areas, relatively small in size, important to maintenance of unique biotic communities	**3**
State designated areas for protection or maintenance of aquatic life	**1**

[1] Critical habitat as defined in 50 CFRÄ24.02

[2] Clean Lakes Program critical areas (subareas within lakes, or in some cases entire small lakes) identified by State Clean Lake Plans as critical habitat (Section 314 of Clean Water Act, as amended)

[3] Federal-listed endangered or threatened species, Federal-proposed endangered or threatened species, State-listed endangered or threatened species

[4] Limit to areas described as being used for intense or concentrated spawning by a given species

2. RECREATIONAL (3 Points) **Recreational Score: 3**

Score 3 points if the site is used for public recreation.

3. CULTURAL RESOURCES (3 Points) **Cultural Resources Score: 0**

Score 3 points if any of the following are present onsite:

HISTORICAL SITES
BURIAL GROUNDS
ARCHAEOLOGICAL SITES
IMPACTS TO OTHER STATES OR INDIAN TRIBAL LANDS

TOTAL ENVIRONMENTAL FACTORS SCORE (D.1 + D.2 + D.3): 3

TOTAL SCORE (A + B + C + D): 40

E&E Rationale

1. A.1. No active soil or soil vapor samples collected from primary source zone. Active soil gas sample taken at secondary source zone = 2400 ppmv, or 25.7 µg/kg (below SRL).
2. A..2. Current PCE concentrations detected at 418 ppb.
3. A.3. An intermittent surface water body runs through the site (Miller Creek).
4. B.1.a. 2006 source zone concentrations indicated NAPL. Downgradient well increased from 270 to 418. No change expected in source, 2006 source data used. PCE Aquifer Water Quality Standard=5 ppb. 17,000/5 = 3400
5. B.1.b. Soil contamination extent estimated from passive soil gas to be >1000 cubic yards.
6. B.1.c. Groundwater impacted with PCE above AWQS and MCL.
7. B.1.d. PCE is a halogenated hydrocarbon.
8. B.1.e. The bioaccumulation value PCE <50 according to the SCDM.
9. B.2.a.i. No DRASTIC maps are currently available for Yavapai County. The calculated DRASTIC score is 160.
10. B.2.a.ii. Site scoring guidance indicates a maximum score of 5 if groundwater contamination is present.
11. B.2.b.i Miller Creek, an intermittent stream, runs through site, adjacent to secondary source zone.
12. B.2.b.ii. Portion of the Site is within 100-year floodplain.
13. B.2.b.iii. The site is not in an area of active groundwater recharge, as Miller Creek is not located above contaminant mass
14. C.1.a.i. AND C.1.a.ii. Contamination not detected in wells currently used for drinking water.
15. C.1.a.iii. At least one (likely two) wells used for drinking water within 1/4 mile. Average number per household in Prescott is 2.05.
16. C.1.b Contamination detected in production wells exempt private wells, currently used for irrigation.
17. C.1.c. City of Prescott gets its drinking water from the Chino Valley aquifer. A area completely seperate from this contamination.
18. C.2. AND C.3. Unknown release to surface water and soils.
19. D.1. AND D.3. No ecological or cultural factors.
20. D.2 Miller Creek is used for recreation. Footpath runs adjacent to creek, families with children observed in contact with water.
21.
22.
23.

Pseudo-DRASTIC SCORING FOR WQARF SITES

If a DRASTIC Score from a "General" DRASTIC Map is available for this site, determine its value using that map and insert the score as specified in Part B.2.a.i. of the E&E form. If there is no DRASTIC MAP available for this site, use this form to establish the pseudo-DRASTIC score and insert the score as specified in Part B.2.a.i. of the E&E form. (Note: Upon receipt of groundwater clean up documentation, the DRASTIC score will reduce to its normal value.) DRASTIC Maps are available for Maricopa, Pima, Santa Cruz, Yuma, LaPaz, and some portions of Pinal County.

Sites without a DRASTIC Score (for those counties without a DRASTIC map):

1. Depth to Groundwater:

RANGE	Rating
0 to 5 feet	10
5 to 15 feet	9
15 to 30 feet	7
30 to 50 feet	5
50 to 75 feet	3
75 to 100 feet	2
100 + feet	1
Unknown	10

Rating: 9 (X5) = **Section 1** Score: 45

2. Impact of Vadose Zone Media:

Media	Range	Rating	Justification
Silt/Clay	1-2		
Shale	2-5		
Limestone	2-7		
Sandstone	4-8		
Bedded limestone, sandstone, shale	4-8		
Sand and gravel with silt and clay	4-8	5	Sand, gravel, silt and clay sediments
Metamorphic/igneous	2-8		
Sand and gravel	6-9		
Basalt	2-10		
Karst limestone	8-10		
Unknown	10		

Rating: 5 (X5) = **Section 2** Score: 25

3. Hydraulic Conductivity of Uppermost Aquifer

Description	Points
Gravel; Karst limestone; cobbles; highly fractured Rocks; or **unknown** K, Darcys value of 1E+3 to 1E+5, or K, gpd/ft2 value of 1E+4 to 1E+6	30
Sands; unfractured sedimentary rocks (except shales and siltstones), K, Darcys value of 1 to 1E+3, or K, gpd/ft2 value of 10 to 1E+4	15
Clayey Sands; silts; clays; shales; Unfractured, non-sedimentary rocks K, Darcys value of 1E-3 to 1, or K, gpd/ft2 value of 1E-2 to 10	3

(Modified from Davis and DeWiest, 1966)

Section 3 Score: 15

4. Recharge

Annual Precipitation (inches)	Points
> 25	30
20-25	25
15-19	20
10-14	15
5-9	10
< 5	5

Section 4 Score: 25

SUMMARY Score for Sections 1-4

Points	
Depth to Groundwater Score	Section 1 Score: 45
Vadose Zone Impact Score	Section 2 Score: 25
Aquifer Hydraulic Conductivity	Section 3 Score: 15
Recharge Score	Section 4 Score: 25
	SUBTOTAL: 110

ADD 50 Points to SUBTOTAL for pseudo-DRASTIC Score: 50

Add 5 points if cultural activities which would increase recharge exist within 100 feet of the release: _____

Pseudo-DRASTIC Score: 160