## SITE NAME: Big Rock Grocery

#### Rank: 4

Cleanup Site ID: 10822

Facility/Site ID: 85494711

Ranked for inclusion on the February 2019 Hazardous Sites List.

# LOCATION OF SITE

14779 State Route 9	Township34N, Range 04E, Section 14
Mount Vernon, Skagit County, WA 98273	Latitude, Longitude: 48.43024, -122.26410
Tax Parcel ID: P24749, P24693	

# SITE DESCRIPTION

#### Within Currently Defined Site Boundaries

Based on currently available information, the Big Rock Grocery site (Site) includes two parcels: 1) the 0.7-acre tax parcel listed above that is zoned for Urban Reserve Commercial-Industrial use and 2) a 3.62-acre, Skagit County-owned parcel to the north-northeast zoned for Rural Reserve and Agricultural Natural Resource Lands. Contamination of the 0.7-acre parcel was discovered and reported to Ecology in March 1997 when Tank 4, a 1,000 gallon gasoline underground storage tank (UST) was closed in place. Since that time, the property owner and UST system operator has changed multiple times. Using Skagit County assessor and Ecology UST database records, Randy Audette was an owner and/or operator from the time the original release was reported until 2012. Otherwise, there is conflicting information in Ecology records about when other parties played a role. The Historical Owners and Operators section below summarizes these relationships as accurately as possible.

The Site rests on the northeast corner of a roundabout for State Highways 9 and 538 (Figures 1 and 2). The current building operates as a restaurant/bar and has been standing since the early 1900s, according to the business lessee. The existing UST system installed north of the restaurant in 1997 is operated by Associated Petroleum Products (Figure 3).

The Site receives its drinking water from the City of Mount Vernon, has an onsite septic system, and has stormwater managed by Skagit County's NPDES stormwater permit.

#### Historical Owners and Operators

<u>From</u>	<u>To</u>	Owner/Operator	Site Uses
1989	1995	APT Associates (owner) APT Associates (property owner)	unknown
1995	1996	RAD Partnership (owner)	unknown
1996	2012	Marsha and Randy Audette (operator and/or owner)	gas station, restaurant/bar
1997	2003	Rainier Petroleum (operator)	gas station, restaurant/bar
1998	at least 1999	Skagit Petroleum/Western Pioneer (operator)	gas station and unknown

2003	current	Associated Petroleum Products (operator)	gas station, restaurant/bar
2012	current	Big Rock MV LLC (owner)	gas station, restaurant/bar

#### Area Surrounding the Site

The area immediately surrounding the Site is wooded with the exception of the property to the east, that includes a truck repair shop and construction equipment storage, and to the south, where a fire station is located (Figure 3). Otherwise, within a 2-mile radius, the area is developed for farming and residences. Less than 250 feet north of the property, Nookachamps River, a seasonal creek, flows northwest through forested/shrub or emergent wetlands towards Barney Lake. This lake varies in size on most maps, however the National Wetlands Inventory describes a small footprint of permanent surface water with the majority of the "lake" being a wetland (Figure 4).

Within one tenth of a mile to the southeast, Glenns Diesel is the nearest site on Ecology's Hazardous Sites List awaiting cleanup.

# SITE CHARACTERIZATION AND/OR REMEDIATION

During the permanent closure-in-place of Tank 4, Pinner Engineering conducted a site assessment. Three soil samples collected around the tank at six feet below ground surface (bgs) were analyzed for WTPH-G and/or BTEX (Figure 5). Laboratory results indicate a release of gasoline-range petroleum hydrocarbons (250-2200 mg/kg) with detections of ethylbenzene (13 mg/kg) and xylenes (77 mg/kg) at levels exceeding MTCA Method A cleanup standards.

In 2002 and 2015, Ecology requested updated information from Randy Audette and Big Rock MV LLC, respectively, about any additional remedial activities that may have occurred but were not reported to the agency. Ecology did not receive responses to either of these requests.

# ADDITIONAL INFORMATION COLLECTED BY THE SITE HAZARD ASSESSOR

On September 19, 2018, the Ecology Site Hazard Assessor conducted a site visit to visually inspect the Site and surrounding area. The Site was functioning as a gas station and restaurant/bar. The business lessee provided the name of the property owner (Mark Hesch) and information about drinking water and the septic system.

As part of the SHA document review process, Ecology discovered well logs of soil borings completed by G-Logics at the Site in 2012. Based on this information, Ecology contacted G-Logics in order to determine if soil and/or groundwater investigations were documented. On December 11, 2018, Ecology received a copy of a Site Exploration report, which summarized sampling results for three tanks previously removed or closed-in-place in 1997 along with findings of 2002, 2011 and 2012 soil and groundwater investigations. None of the site investigation information had previously been reported to Ecology. The following is a summary of information found in this report.

Soil samples collected by Pinner Engineering during March and April 1997 tank closures of Tanks 1, 2 and 3 found no detections of diesel, gas, benzene, toluene, ethylbenzene and/or xylenes (collectively, BTEX).

In 2002, Environmental Associates completed a limited Phase II site assessment of the property in which four soil borings (B1-B4) were advanced in the area of Tanks 1 and 2. Gasoline was confirmed present in sample B4, collected from 9-10 feet bgs, at 110 mg/kg. A site diagram from the Site Exploration report indicates six soil borings (SP1-SP6) were completed on the north side of the building in February 2011 by Environmental Associates. Lab results confirm gasoline (100 mg/kg) and diesel (280 mg/kg) were detected in sample SP1, collected between 7-18 feet bgs. A water sample collected from SP6 confirms the presence of petroleum hydrocarbons. Environmental Associates conducted additional soil and groundwater investigations in the upper eight feet of soils in 2011. They concluded that "the full extent of petroleum impacted soil/groundwater at this locality was not determined" (Figure 6).

To better understand soil and groundwater contamination at the site in areas identified as formerly having USTs,

G-Logics completed 12 soil borings to depths ranging from 7 to 16 feet bgs in May 2012 (Figure 7). Three borings were completed as groundwater monitoring wells. Well logs document clay and small gravels in the top 12 feet of soil with groundwater discovered between 2.8 and 5.5 feet bgs. Soil and groundwater samples were collected and analyzed for gasoline, diesel, oil, BTEX, methyl tertiary-butyl ether (MTBE), ethylene dibromide (EDB), 1,2-dichloroethane (EDC), polychlorinated biphenyls (PCBs), total lead and/or dissolved lead. In its report, G-Logics identified three distinct areas on the Site to be investigated (Figures 6 and 7). Investigations and soil sampling results from these areas are summarized below and displayed in Tables 1 and 2.

The report documents a 1,000-gallon, gasoline UST (Tank 4) closed in place in November 1997 in an area "West of Café", which appears to be the tank closed-in-place by Pinner Engineering. Four soil borings (GL1, GL2, GL3 and GL11) were completed and analyzed for gas and BTEX at 4 feet bgs. Fremont Analytical confirmed gasoline-range petroleum hydrocarbons and benzene present in this area at levels exceed MTCA Method A cleanup standards.

G-Logics completed five borings (GL-4 through GL7 and GL12) in the area "Southeast of Café" where Tank 1, a 1,000-gallon diesel tank system was removed in 2011. Soil samples were analyzed for gas, diesel, heavy oil, BTEX, MTBE, EDB, EDC, and/or naphthalene. With the exception of sample GL4, the lab detected gas, benzene, diesel, heavy oil and total lead in all of these samples, however, contaminants exceeding Method A cleanup standards were limited to gas and benzene.

Three borings (GL8 through GL10) were drilled "North of Café" in the area where Tanks 2 (a 1,000-gallon diesel UST) and Tank 3 (a 4000-gallon gasoline UST) were removed and three USTs are currently installed. The only soil sample with contamination was from location GL10 with detections of gas, diesel, heavy oil and total lead at 6 feet bgs. Gasoline-range petroleum hydrocarbons (at 125 mg/kg) were the only constituents exceeding Method A cleanup standards.

As mentioned previously, G-Logics installed three monitoring wells (GLMW-1, GLMW-2, and GLMW-3) so that groundwater samples could be collected in each of these three areas of concern. At the time of well installation, static water levels ranged from 2.8 to 5.5 feet bgs. Diesel, heavy oil, total lead, gas and/or benzene were confirmed to exceed Method A cleanup standards in these wells.

Two additional water samples (SUMP and RR DRAIN) were collected in areas of concern identified by G-Logics. The first was collected from a sump in the basement of the café; the second from standing water on the far end of a stormwater outfall pipe. Both diesel and heavy oil were detected by the laboratory in the RR DRAIN sample with diesel exceeding cleanup levels. The pool of water was in a former railroad grade north of the existing UST system and parcel boundary.

G-Logics used groundwater elevation data collected from the newly installed wells to determine groundwater flows in a northwest direction which is consistent with surface topograph and hydrology. A recommendation was made to the client to use an in-situ remediation system to reduce the impacts of petroleum hydrocarbons to the Site. As of this date, no such system has been installed.

# SPECIAL CONSIDERATIONS

Checked boxes indicate routes applicable for Washington Ranking Method (WARM) scoring

#### ✓ Surface Water

Based on the elevation change between where diesel contamination was discovered and a nearby stream, there are concerns the diesel may impact nearby surface water.

🗹 Air

Gasoline, which includes volatile organic compounds, is reported to have been released to subsurface soils.

#### Groundwater

As release of gasoline and diesel to subsurface soils has been confirmed in groundwater.

Based on existing basin configuration and topography, including hydrographic divides, a large portion of the 2mile radius area has been excluded from the determination of the number of acres and population served by groundwater wells (Figure 8). Additionally, the Skagit County PUD Water System provides drinking water to nearly the entire 2-mile radius area with the exception of four Group A or B water systems. None of these water systems fall within the smaller area identified as being potentially downstream and hydrographically connected to the Site.

For irrigation use, four water rights are documented as having wells for this purpose within the smaller area. A review of aerial photos dating back to 2006 did not identify marking of irrigation equipment in the subject area. For this reason, the assumption was made that land harvested in this area relies on the localized climate to grow crops.

The Site has not been fully characterized to allow for a good understanding of source quantities. To estimate the volume in the area where contamination is found at the depth of groundwater, it was assumed that an area slightly larger than identified in the Site Exploration Report has been impacted with a three foot groundwater fluctuation. Even less is know about the contaminated area around the off-property drain. With diesel detected in ponded water, it is assumed diesel-range petroleum hydrocarbons are present in the soil beneath the drain pipe to a groundwater depth of five feet bgs.

# **ROUTE SCORES**

Surface Water/ Human Health: 15.4

Air/ Human Health: 10.2

Groundwater/ Human Health: 28.1

Overall Rank: 4

2.8

Surface Water/ Environment: 29.6

Air/ Environment:

## REFERENCES

- 1 Rain Master Control Systems website http://www.rainmaster.com/historicET.aspx
- 2 Salmon Scape (Washington Department of Fish & Wildlife) http://apps.wdfw.wa.gov/salmonscape/map.html#
- 3 Toxicology Database for Use in Washington Ranking Methodcoring (Ecology), January 1992
- 4 US Fish & Wildlife Service National Wetlands Inventory https://www.fws.gov/wetlands/Data/Mapper.html
- 5 Flood Insurance Rate Map Panel 250 of 550
- 6 GWIS application using aerial imagery
- 7 Missouri Census Data Center
- 8 NOAA Atlas 2 http://www.nws.noaa.gov/oh/hdsc/noaaatlas2.htm
- 9 NOAA NCEI Climate Data Online https://www.ncdc.noaa.gove/cdo-web/
- 10 Office of Drinking Water Sentry (DOH)
- 11 Site Assessment Report, Pinner Engineering, Inc., December 8, 1997
- 12 Site Exploration report, G-Logics, Inc., May 25, 2012
- 13 Site Hazard Assessment site visit, September 19, 2018
- 14 Skagit County Assessor records
- 15 The National Map (USGS) https://viewer.nationalmap.gov/advanced-viewer/
- 16 UST database (Ecology)
- 17 Washington Ranking Method manual (Ecology), April 1992
- 18 Water Rights Tracking System (Ecology)
- 19 Weather Atlas https://www.weather-us.com/en/washington-usa/arlington-climate
- 20 Well Log database (Ecology)

# SITE HAZARD ASSESSMENT Worksheet 2: Route Documentation

## **Big Rock Grocery**

Cleanup Site ID: 10822

Facility/Site ID: 85494711

# **1. SURFACE WATER ROUTE**

#### List those substances to be considered for scoring:

diesel

#### Explain the basis for choice of substances to be used in scoring:

substance present in ponded water on the ground surface

#### List those management units to be considered for scoring:

surface water

#### Explain basis for choice of unit to be used in scoring:

potential for contaminated ponded water to be transported to the nearby stream due to a significant change in elevation

# 2. AIR ROUTE

#### List those substances to be considered for scoring:

gasoline (as benzene)

#### Explain the basis for choice of substances to be used in scoring:

gasoline-range petroleum products reported released to subsurface soils

#### List those management units to be considered for scoring:

soil vapor

#### Explain basis for choice of unit to be used in scoring:

potential for vapor transport

## **3. GROUNDWATER ROUTE**

#### List those substances to be considered for scoring:

gasoline (as benzene), diesel

#### Explain the basis for choice of substances to be used in scoring:

gasoline- and diesel- range petroleum products are confirmed to have impacted groundwater

#### List those management units to be considered for scoring:

groundwater

#### Explain basis for choice of unit to be used in scoring:

confirmed groundwater contamination



Figure 2: Big Rock Grocery site vicinity



# Figure 3: Big Rock Grocery Site with approximate parcel boundaries (2017 aerial photo)



Figure 4: National Wetlands Inventory surface waters and wetlands



Figure 5: Sampling diagram for Tank 4 (Pinner Engineering 1997)



Figure 6: Site diagram for pre-2012 site investigations (G-Logics 2012)



#### Figure 7: 2012 sampling diagram (G-Logics)



Figure 8: 2-mile radius with surface water bodies mapped and orange polygon indicating an approximation of the smaller area identified to determine where groundwater wells are installed and used for irrigation.



Table 1: Soil sampling results with detections of petroleum-related constituents

Tank/Sample ID	Depth below ground surface (feet)	Gas	Diesel	Heavy Oil	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
UST #4 Sample 1 fill spout (Pinner 1997)	6	2200	na	na	<0.5	2.7	13	77	na
UST #4 Sample 2 south (Pinner 1997)	6	250	na	na	na	na	na	na	na
UST #4 Sample 3 north (Pinner 1997)	6	800	na	na	na	na	na	na	na
B3 (Envr Assoc 2002)	5-6	nd	nd	750	nd	nd	nd	nd	na
B4 (Envr Assoc 2002)	9-10	110	280	nd	nd	nd	0.19	0.11	na
SP1 (Envr Assoc 2011)	7-18	100	280	nd	nd	nd	nd	nd	na
GL3 (G-Logics 2012)	8	279	na	na	0.0629	0.0185	0.779	1.417	na
GL5 (G-Logics 2012)	4	159	89.9	nd	0.4	0.0291	1.89	2.3482	1.64
GL6 (G-Logics 2012)	9	178	71	nd	0.0284	0.0607	0.581	0.4233	na
GL7 (G-Logics 2012)	7	179	nt	nt	nd	nd	nd	nd	na
	6	125	79.7	1490	nd	nd	nd	nd	na
GLIU (G-Logics 2012)	15	81.4	nd	165	nd	nd	nd	nd	nd
GL11 (G-Logics 2012)	8	125	nt	nt	nd	nd	nd	0.329	nd
GL12 (G-Logics 2012	8	548	110-131	nd	0.0887	0.0712	3.9	2.26	4.61
MTCA Method A soi	cleanup standards	30/100	20	000	0.03	7	6	9	5

note: all results in mg/kg

nd: not detected

na: not analyzed

bold: above MTCA Method A cleanup standards

Table 2: Water sampling results with detections of petroleum-related constituents

Tank/Sample ID	sample type	Gas	Diesel	Heavy Oil	Benzene	Toluene	Ethylbenzene	Xylenes	EDC	MTBE	Total Lead
SP1 (Envr Assoc 2011)	subsurface grab	15000	9000	890	nd	13	120	200	na	nd	na
GLMW-1 (G-Logics 2012)	well	3330	1410	nd	50.1	6.14	132	62.46	nd	nd	nd
GLMW-2 (G-Logics 2012)	well	227	nd	177	1.94	nd	2.57	3.77	1.77	nd	4.19
GLMW-3 (G-Logics 2012)	well	321	3360	nd	nd	nd	nd	3.04	nd	7.76	73.4
RR DRAIN	surface grab	nd	2260	146	nd	nd	nd	nd	na	na	na
MTCA Method A soil cleanup standards		800/1000	5	00	5	1000	700	1000	11	0.1	15

note: all results in ug/kg

nd: not detected

na: not analyzed

bold: above MTCA Method A cleanup standards

# Worksheet 4 Surface Water Route

# CSID: 10822 Site: Big Rock Grocery

#### **1.0 SUBSTANCE CHARACTERISTICS**

## 1.1 Human Toxicity

	Drink. Wa	at. Stnd.	Acute To	oxicity	Chronic T	oxicity	Carcinog	enicity	
	Value		Value		Value		(risk/mg/kg-		
Substance	(ug/L)	Score	(mg/kg)	Score	(mg/kg/day)	Score	day)	Score	
diesel (naphthalen	e)	Х	490	5	2.00E-02	1		Х	
Maximum score:	5								
Bonus points:	0					Hu	man Toxicit	ty Score:	5
Source:	WARM To	xicity Dat	abase				Range	: 1-12	
1.2 Environmental Toxi	city								
Freshwater:	х								
Marine:	n/a								
	Acute \	Nater							
	Quality C	riterion							
	Value								
Substance	(ug/L)	Score							

# diesel (naphthalene)2.30E+032Maximum score:2Environmental Toxicity Score:2Source:WARM Toxicity DatabaseRange: 2-10

# 1.3 Substance Quantity

Amount:	>84-415 cubic yards		
Basis:	Approximate area identified in Soil Ex	ploration Report	
Source:	Site Exploration Report	Substance Quantity Score:	6
		Range: 1-10	

2.1 Containment			
Description:	No runoff control and no cover		
Source:	Site Visit	Containment Score: Range: 0-10	10
SUBSTANCE PARAMETE	R CALCULATIONS		
Human Health Pathway	2) x (Containment + 1) + Substance Quantity		04.0
SOBIT (HUITIAIT TOXICITY +	5) x (Containment + 1) + Substance Quantity		94.0
Environmental Pathway			
SUBe (Environ. Toxicity	+ 3) x (Containment + 1) + Substance Quantity		61.0
2.0 MIGRATION POTEN	TIAL		
2.2 Surface Soil Permeal	bility		
Description:	clay and sand with silt and gravel (0-5')		
Source:	Well logs in Soil Exploration Report	Soil Permeability Score: Range: 1-7	3
2.3 Total Annual Precipi	tation		
Amount (in.):	>30-48	Annual Precipitation Score:	3
Source:	NOAA NCEI Climate Data Online	Range: 1-5	
2.4 Maximum Two-Year	/24-Hour Precipitation		
Amount (in.):	>1-2	24-Hour Precipitation Score:	2
Source:	NOAA Atlas 2	Range: 1-5	
2.5 Flood Plain			
Classification:	not in flood plaint	Floodplain Score:	1
Source:	FEMA map	Range: 0-2	
2.6 Terrain Slope			
Degree of slope:	>8%		
Source:	USGS	Terrain Slope Score: Range: 1-5	5
MIGRATION PARAMETE	R CALCULATION	-	

MIG = Soil Permability + Annual Precip. + 24-Hour Precip. + Floodplain + Slope

14.0

## **3.0 TARGETS**

3.1 C	istance to Surface W	ater			
	Name:	Nookachamps River			
	Distance (ft):	<1000	Distance to Surfa	ce Water Score:	10
	Source:	GWIS		Range: 0-10	
3.2 P	opulation Served wit	hin 2 Miles			
	Population:	0	Populatio	n Served Score:	0
	Source:	Skagit County PUD		Range: 0-75	
3.3 A	rea Irrigated within 2	Miles			
	Basis:	According to Ecology records, Nookad	champs River		
		has no surface water rights			
	Area (acres):	0	Area	Irrigated Score:	0
	Source:	Ecology's Water Rights Tracking Syste	m	Range: 0-30	
3.4 C	vistance to Nearest Fi	shery Resource			
	Name:	Nookachamps River			
	Distance (ft):	<1000'	Distance t	o Fishery Score:	12
	Source:	іМар		Range: 0-12	
3.5 C	vistance to Nearest Se	ensitive Environment			
	Name:	Nookachamps River (critical habitate	for threatened species)		
	Distance (ft):	<1000'	Distance to Sensitive Envi	ronment Score:	12
	Source:	іМар		Range: 0-12	
TAR	GET PARAMETER CAL	CULATIONS			
Hum	an Health Pathway				
TAR	Dist. to Surface Wat	er + Population Served + Area Irrigated	t		10.0
Envir	onmental Pathway				
TARe	Dist. to Surface Wat	er + Dist. to Fishery + Dist. to Sensit. Er	nviron.		34.0
4.0 R	ELEASE				

Evid. of release?	no	
Source:	n/a	Release Score (REL): 0.0

Range: 0 or 5

#### SURFACE WATER ROUTE CALCULATIONS

Human Health Pathway SWh : (SUBh x 40/175) x [(MIG x 25/24)) + REL + (TARh x 30/115)] / 24

Environmental Pathway SWe = (SUBe x 40/153) x {(MIG x 25/24)) + REL + (TARe x 30/34)} / 24

Range: 0-100



29.6

# Worksheet 5 Air Route

# CSID: 10822 Site: Big Rock Grocery

#### **1.0 SUBSTANCE CHARACTERISTICS**

#### 1.1 Introduction

No scoring in Section 1.1.

#### 1.2 Human Toxicity

	Amb. Air	Stnd.	Acute To	oxicity	Chronic T	oxicity	Carcinoge	enicity	
	Value		Value		Value		Adj. CPFi (risk/mg/kg-		
Substance	(ug/m <sup>3</sup> )	Score	(mg/m <sup>3</sup> )	Score	(mg/kg/day)	Score	day)	Score	
gas (as benzene)	0.0345	10	31,947	3	8.57E-03	8	2.73E-02	5	
Maximum score:	10								
Bonus points:	0					Hun	nan Toxicity	Score:	10
Source:	WARM To:	xicity Da	tabase				Range:	1-12	

#### 1.3 Mobility

Gaseous Mobility

	Vapor Pre	essure	Henry's Law		
	Value	Value Value (a			
Substance	(mm Hg)	Score	m3/ mol)	Score	
gas (as benzene)	9.5E+01	4	5.6E-03	4	
Maximum score:	4				
Source:	WARM Toxicity Database				

## Particulate Mobility

Soil type: Erodibility factor: Climatic factor: Mobility value: Source:

Mobility Score: 4 Range: 0-4

# 1.4 Human Toxicity/Mobility

Source:	WARM Scoring Manual
---------	---------------------

# Human Tox/Mobil Score: 20 Range: 1-24

1.5 Environmental Toxicit	y/Mobility			
	Acut	e		
	Value			
Substance	(mg/m <sup>3</sup> )	Score		
benzene (as gas)	31,947	3		
Maximum score	3		Environmental Toxicity Score:	3
Source:	WARM To	kicity Datab	Se Range: 1-10	
			Environmental Tox/Mobil Score:	15
			Range: 1-24	
1.6 Substance Quantity				
Quantity:	>416-2100	cubic yard		
Basis:	See Specia	l Considera	ons section	
Source:	Estimate b	ased on Sit	Substance Quantity Score:	7
	Exploratio	n Report	Range: 1-10	
2.1 Containment				
Description:	Gasoline-c	ontaminate	soil >2 feet below surface	
Basis:	Site Explor	ation Repo	Containment Score: Range: 0-10	5

## SUBSTANCE PARAMETER CALCULATIONS

Human Health Pathway SUBh (Human Tox/Mobil + 5) x (Containment +1) + Substance Quantity	157.0
Environmental Pathway SUBe (Environ. Tox/Mobil + 5) x (Containment +1) + Substance Quantity	127.0

## **3.0 TARGETS**

3.1 Nearest Popu	ulation		
Descriptio	n: residence		
Distance (f	t): <450	Nearest Population Score:	10
Source:	iMap	Range: 0-10	

3.2 N	earest Sensitive Envir	onment		
	Description:	Nookachamps River (habitate for th	reatened salmon species)	
	Distance (ft):	<300	Nearest Sensitive Environment Score:	7
	Source:	іМар	Range: 0-7	
3.3 P	opulation within One	-Half Mile		
	Number:	117	Population within Half Mile Score:	10.8
	Source:	MO CDC	Range: 0-75	
TARG	GET PARAMETER CAL	CULATIONS		
Huma	an Health Pathway		-	
TARh	• Nearest Population -	+ Population within Half Mile		20.8
Envir	onmental Pathway		_	
TARe	Nearest Sensitive En	vironment	l	7.0
4.0 R	ELEASE			
	Evid. of release?	no	_	
	Source:	n/a	Release Score (REL):	0.0
			Range: 0 or 5	
AIR R	OUTE CALCULATION	S		
Huma	an Health Pathway		-	
AIRh	: (SUBh x 60/329) x {R	EL + (TARh x 35/85} / 24	I	10.2
Envir	onmental Pathway		_	
AIRe	: (SUBe x 60/329) x {R	EL + (TARe x 35/85} / 24	[	2.8

Range: 0-100

# Worksheet 6 Groundwater Route

# CSID: 10822

Site: Big Rock Grocery

## **1.0 SUBSTANCE CHARACTERISTICS**

# 1.1 Human toxicity

		Drink. Wat	t. Stnd	Acute To	xicity	Chronic To	oxicity	Carcinoge	nicity	
	Substance	Value (ug/L)	Score	Value (mg/kg)	Score	Value (mg/kg/day)	Score	Adj. CPFo (risk/mg/kg-day)	Score	
	gas (as benzene)	5	8	3 <i>,</i> 306	3	4.00E-03	3	5.50E-02	5	
	diesel (as naptha)		Х	490	5	2.00E-02	1		Х	
	Maximum score:	8								
	Bonus points:	0					Hu	ıman Toxicity	Score:	8
	Source:	WARM Toxi	city Data	abase				Range:	1-12	
1.2 M	Aobility									
		Solubil	ity							
		Value	,							
	Substance	(mg/L)	Score							
	gas (as benzene)	1.75E+03	3							
	diesel (as naptha)	3.10E+01	1							
	Maximum value:	3						Mobility	Score:	3
	Source:	WARM Toxi	city Data	abase				Range:	1-3	
1.3 5	Substance quantity									
	Quantity:	>100-1000	cubic yar	ds						
	Basis:	See Special	Consider	rations sect	ion					
	Source:	Site Explora	tion Rep	ort			Substa	nce Quantity	Score:	3
								Range:	1-10	
2.1 (	containment									
	Description:	contaminat	ion confi	rmed in gro	oundwat	er		<b>C 1 1 1 1 1 1 1</b>	<b>C</b>	0
	Source:	Site Assessr	nent Kep	ort				containment	Score:	9
								Range:	0-10	

## SUBSTANCE PARAMETER CALCULATION

SUB = (Human To>	<pre>kicity + Mobility + 3) x (Containment + 1 ) + Substance Qua</pre>	antity	143.0
2.0 MIGRATION P	OTENTIAL		
2.2 Net precipitati Amount (in. Source:	ion .): 21.2 in precip - 5.74 in ET = 15.46 net precip Weather Atlas and Rainmaster Control Systems	Net Precipitation Score: Range: 0-5	2
2.3 Subsurface Hy	draulic Conductivity		
Description	: clayey silt or silty clay; sand to gravel		
Source:	Well logs and Site Exploration report	Hydraulic Conductivity Score: Range: 1-4	3
2.4 Vertical Depth	to Aquifer		
Depth (ft):	0 (gw is impacted)	Depth to Aquifer Score:	8
Source:	Well logs	Range: 1-8	
MIGRATION PARA	AMETER CALCULATION		
MIG = Depth to Ac	quifer + Net Precipitation + Hydraulic Conductivity		13.0
3.0 TARGETS			
3.1 Aquifer Usage			
Description	: Groundwater not used, but usable		
Source:	WDOH Water System Database; Skagit PUD	Aquifer Use Score: Range: 1-10	2
3.2 Distance to Ne	earest Drinking Water Well		
Distance (ft	): n/a	Well Distance Score:	0
Source:	WDOH Water System Database; Skagit PUD	Range: 0-5	
3.3 Population Sei	rved by Drinking Water Wells within Two Miles	Population Served Score:	0.0
No. of peop	le: 0	Range: 0-100	
Source:	WDOH Water System Database, Well Log Viewer		
3.4 Area Irrigated	by Wells within Two Miles	Area Irrigated Score:	0.0
Area (acres)	): 0	Range: 0-50	
Source:	Water Resources Explorer		

#### TARGET PARAMETER CALCULATION

	TAR = Aquifer Use +	Well Distance +	<ul> <li>Population Served</li> </ul>	+ Area Irrigated
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## 4.0 RELEASE

Evid. of release?	yes
Source:	Site Exploration Report

#### **GROUND WATER ROUTE CALCULATION**

GW = (SUB x 40/208) x {(MIG x 25/17) + REL + (TAR x 30/165)} / 24

Release Score (REL): 5.0 Range: 0 or 5

Range: 0-100

# 28.1

2.0

# Washington Ranking Method Route Scoring Summary and Ranking Calculation

# CSID: 10822

Site: Big Rock Grocery

Human Healt	th Route Scores
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Pathway	Score	Quintile
Surface water	15.4	3
Air	10.2	2
Groundwater	28.1	2

Quintile	Value
High (H)	3
Middle (M)	2
Low (L)	2

Human Health Pathway Quintiles - based off August 2018 HSL

Quintile	Surface Water		Air		Groundwater	
1	<=	7.9	<=	8.6	<=	24.1
2	8.0	15.1	8.7	16.3	24.2	33.1
3	15.2	21.2	16.4	25.3	33.2	40.4
4	21.3	29.7	25.4	40.1	40.5	49.6
5	>=	29.8	>=	40.2	>=	49.7

 $(H^2 + 2M + L) / 8$ 

Environmental Route Scores					
Pathway	Score	Quintile			
Surface water	29.6	3			
Air	2.8	3			
		_			
Quintile	Value	_			
High (H)	3	-			
Low (L)	3	_			

(H<sup>2</sup> + 2L) / 7

#### **FINAL MATRIX RANKING**

Human Health		Ei	nvironme	ntal Priori	ty	
Priority	5	4	3	2	1	n/a
5	1	1	1	1	1	1
4	1	2	2	2	3	2
3	1	2	3	4	4	3
2	2	3	4	4	5	3
1	2	3	4	5	5	5
n/a	3	4	5	5	5	NFA

n/a - not applicable

NFA - no further action

Human Health Priority Bin Score: 1.9

Environme	ental Pathway Quin	tiles - based off A	ugust 2018 HSL
Quintile	Surface Water	Air	_

Quintile	Surrace	evvalei	A	11
1	<=	11.3	<=	1.2
2	11.4	24.1	1.3	1.5
3	24.2	31.6	1.6	13.8
4	31.7	49.7	13.9	26.5
5	>=	49.8	>=	26.6

Environmental Priority Bin Score: 2.1

2.1

Site Rank: 4