SITE HAZARD ASSESSMENT
Worksheet 1
Summary Score Sheet

SITE INFORMATION:

Cleanup Site ID: 6056

Phillips 66 Station 070644

Facility/Site ID: 42746846

2800 Martin Luther King Jr Way South

Seattle, King County, WA 98144

Section:	9	Latitude:	47.57760
Township:	24	Longitude:	-122.29300
Range:	4	Tax/Parcel ID:	0003600055

Site scored/ranked for the Hazardous Sites List Publication: February 2018

SITE DESCRIPTION:

The Phillips 66 Station 070644 site (Site) is a former service station located in Seattle, King County, Washington. The 0.25-acre property is located approximately 3,000 feet from Lake Washington, and zoned for neighborhood commercial (NC1) use.

The property is on the southeast corner of the intersection of South McClellan Street and Martin Luther King Junior Way South. Across McCllellan to the north are a commercial property and a residential property. To the east are a commercial property and a residential property. To the south is a retail property. Acros MLKJ Way to the west is a service station. The property is within the Mount Baker Station Overlay District.

The Site is currently operated as a vacant lot awaiting demolition by 2800 MLK LLC 6D9999.

The property was operated as a service station and an auto repair facility under multiple ownerships beginning in 1955. The property previously contained a 4,000-gallon and a 5,000-gallon underground storage tank (UST) each storing gasoline, a 300-gallon UST storing waste oil, and a 500-gallon UST storing heating oil.

SITE BACKGROUND:

A summary of prior operations/tenants at the subject property is presented below.

From	To	Operator/Tenant	Activity
1955	1965	Associated Oil Company/Tidewater Oil Company	Service station
1965	1967	Phillips Gas Station	Service station
1967	1973	Rainier Bonanza Self-Serve Gas	Service station
1974	1986		None
1986	1990	Empire Mobil	Service station
1994	1996	R&R Auto Repair	Auto repair facility
1996	2004	C&K Auto Repair	Auto repair facility
2004	2010		None
2010	2017		Auto detailing facility
2017	2018		None

SITE CONTAMINATION:

SITE HAZARD ASSESSMENT
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Summary Score Sheet

In 2005 the Phillips 66 Station 070644 site was reported to Washington State Department of Ecology (Ecology) and placed on the Confirmed and Suspected Contaminated Sites List (CSCSL).

Petroleum contamination in soil and ground water was presumably caused by service station and auto repair activities on the property, though there are no records of specific releases. Free product has not been observed on the ground water. No soil vapor assessment has been performed, however seasonal fluctuations in dissolved phase hydrocarbons in shallow ground water do sometimes exceed Ecology's screening levels for vapor intrusion.

Thirty-six soil borings have been advanced at the property for sampling purposes; 10 of these were completed as monitoring wells. The maximum soil concentrations of total petroleum hydrocarbons (TPH) in the gasoline range (TPH-G), the diesel range (TPH-D), and the oil range (TPH-O), benzene, toluene, ethylbenzene, and xylenes exceed their Method A cleanup levels (CULs) (Table 1). TPH-O was not evaluated in the site hazard assessment (SHA) because it is redundant with TPH-D and would not affect the scoring. The maximum ground water concentrations of TPH-G, TPH-D, and lead in ground water during three quarters of sampling in 2012, the most recent data available, exceeded their Method A CULs (Table 2).

The property has also been impacted by ground water containing chlorinated solvents orginating from a dry cleaner upgradient to the northeast, Mount Baker Cleaners (CSID 13054, FSID 96127971). A SHA was conducted for Mount Baker Cleaners in 2015. The present SHA addresses only the residual petroleum contamination in soil and ground water at the Phillips 66 Station 070644. For information on the hazards associated with the releases of chlorinated solvents from Mount Baker Cleaners, refer to the 2015 SHA.

REMEDIATION ACTIVITIES:

The two gasoline USTs and the waste oil UST were removed from the northwest corner of the property in 1989. Soil samples collected from the excavation contained concentrations of petroleum analytes below Method A CULs.

In February 2005, other service station equipment, including vehicle hoists, a heating oil UST, and oil/water separator, and a floor drain sump were removed. A 2-inch hole was observed in the bottom of the heating oil UST. One sample from the stockpiled soil contained 2,200 mg/kg TPH-D, which is slightly above the Method A CUL. The excavation was apparently backfilled with the excavated soil.

In July through October of 2005, the remaining facilities except the garage were removed from the property. Approximately 15 tons of suspected petroleum-affected soil were removed from the area surrounding the pump islands and beneath abandoned product lines. Confirmation soil samples following excavation contained concentrations of petroleum analytes below Method A.

In August 2005, an ozone treatment system was installed. The system was supplemented with a horizontal pipe for in-situ chemical oxidation in December 2006. It was shut down in June 2007.

CURRENT SITE CONDITIONS:

The surface of the property is covered by asphalt, gravel, and a building.

Ecology's Confirmed and Suspected Contaminated Sites List includes 18 sites within a half mile of the property. The closest are Mount Baker Properties (CSID 13054, FSID 96127971) directly across South McClellan Street and Chevron 90333 (CSID 6018) 450 feet west.

A football field and track are 230 feet south of the property. A high school is 800 feet southeast of the property. A green belt is 900 feet southwest of the property.

Drinking water for the area is provided by Seattle Public Utilities, which obtains water primarily from the Tolt River and Cedar River watersheds. There are no records of wells within a two-mile radius of the property used for either drinking water or irrigation. Although low yield might prevent ground water at the property from being used as a drinking water supply, the ground water was assumed to be useable for the purposes of SHA scoring

SITE HAZARD ASSESSMENT
Worksheet 1
Summary Score Sheet

The approximate depth to groundwater is 9.5-13.5 feet below ground surface, with groundwater flowing to the southwest. Subsurface soils are dense silty sands and sandy silts.

SPECIAL CONSIDERATIONS:

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

☐ **Surface Water**

No observed releases

☑ **Air**

Volatile chemicals in soil and ground water

☑ **Groundwater**

Ground water concentrations above Method A

ROUTE SCORES:

Surface Water/ Human Health:		Surface Water/ Environment:	
Air/ Human Health:	47.6	Air/ Environment:	2.2
Groundwater/ Human Health:	44.4		

Overall Rank: 1

REFERENCES:

1 Connestoga-Rovers Associates. 2013. Remedial Investigation and Feasibility Study Work Plan, Phillips 66/Former Tidewater Site. December 2.

2 Ecology. 2015. Site Hazard Assessment, Mount Baker Cleaners, Seattle, WA. August 15

3 GHD. 2016. First Quarter 2016 Groundwater Monitoring and Sampling Report, Former Tidewater Site, Phillips 66 Site 5173, Chevron Site 301233. August 11.

4 G-Logics. 2005. Cleanup Action Report, Former Gas Station, 2800 Martin Luther King Way South. October 31.

5 G-Logics. 2005. Phase I Environmental Site Assessment, Former Gas Station, 2800 Martin Luther King Way South. January 11.

6 G-Logics. 2005. Phase II Environmental Site Assessment, Former Gas Station, 2800 Martin Luther King Way South. March 17.

7 Stantec. 2012. Soil and Groundwater Assessment Report, Former Tidewater Service Station, ConocoPhillips Site 5173, Chevron Site 301233. March 14.

SITE HAZARD ASSESSMENT
Worksheet 2
Route Documentation

Cleanup Site ID: 6056 Phillips 66 Station 070644

Facility/Site ID: 42746846

1. SURFACE WATER ROUTE

List those substances to be considered for scoring:

Not evaluated

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

List those management units to be considered for scoring:

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

2. AIR ROUTE

List those substances to be considered for scoring:

Gasoline (benzene), toluene, ethylbenzene, and xylenes

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

Concentrations above Method A

List those management units to be considered for scoring:

Soil

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

Concentrations above Method A

3. GROUNDWATER ROUTE

List those substances to be considered for scoring:

Gasoline (benzene), diesel (naphthalene), and lead

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

Concentrations above Method A

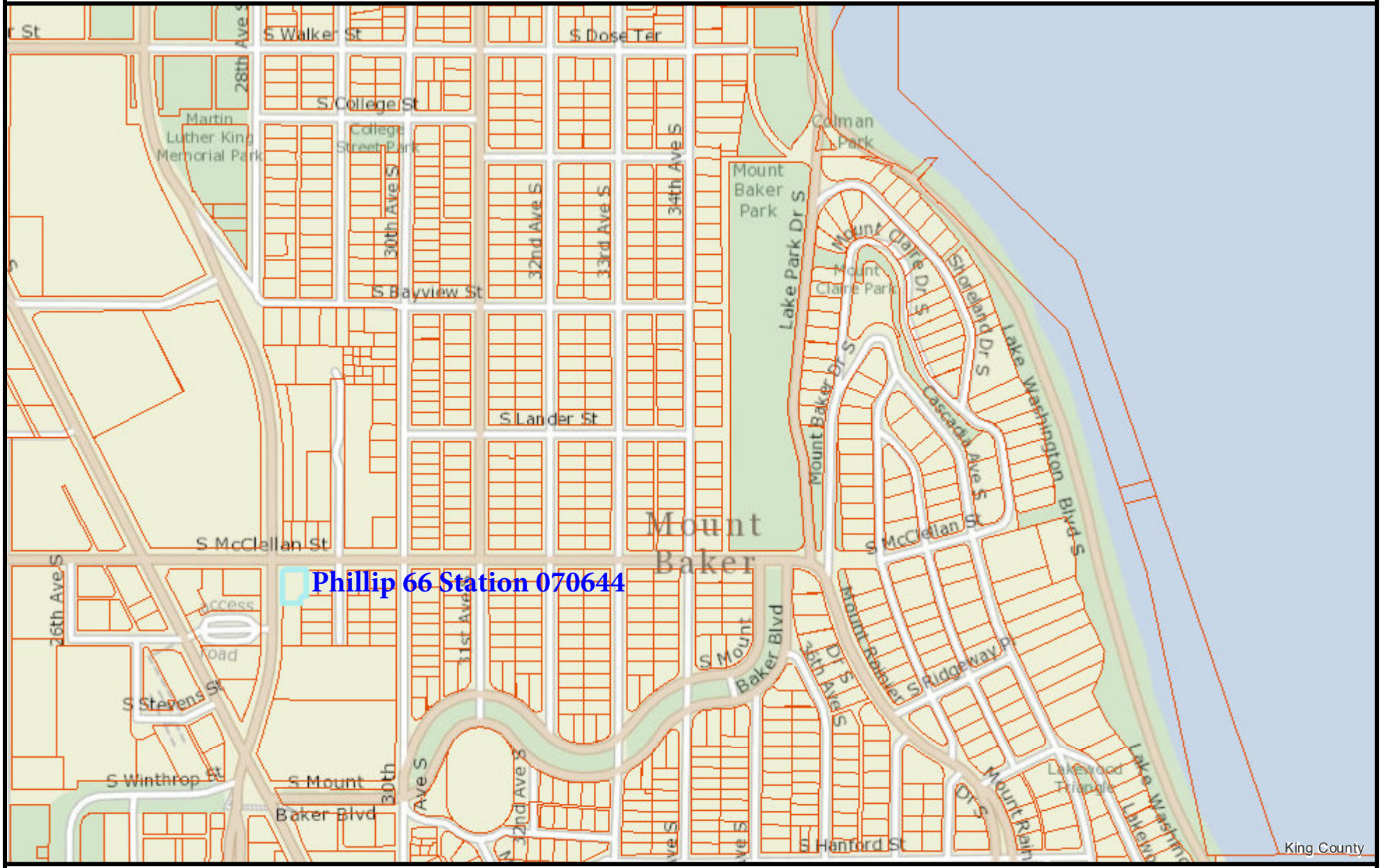
List those management units to be considered for scoring:

Ground water

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

Concentrations above Method A

Figure 1. Location Map, Phillips 66 Station 070644



Date: 10/4/2017 Notes:

N

King County GIS Center

Figure 2. Vicinity Map, Phillips 66 Station 070644

Date: 10/4/2017 Notes:

King County
GIS Center

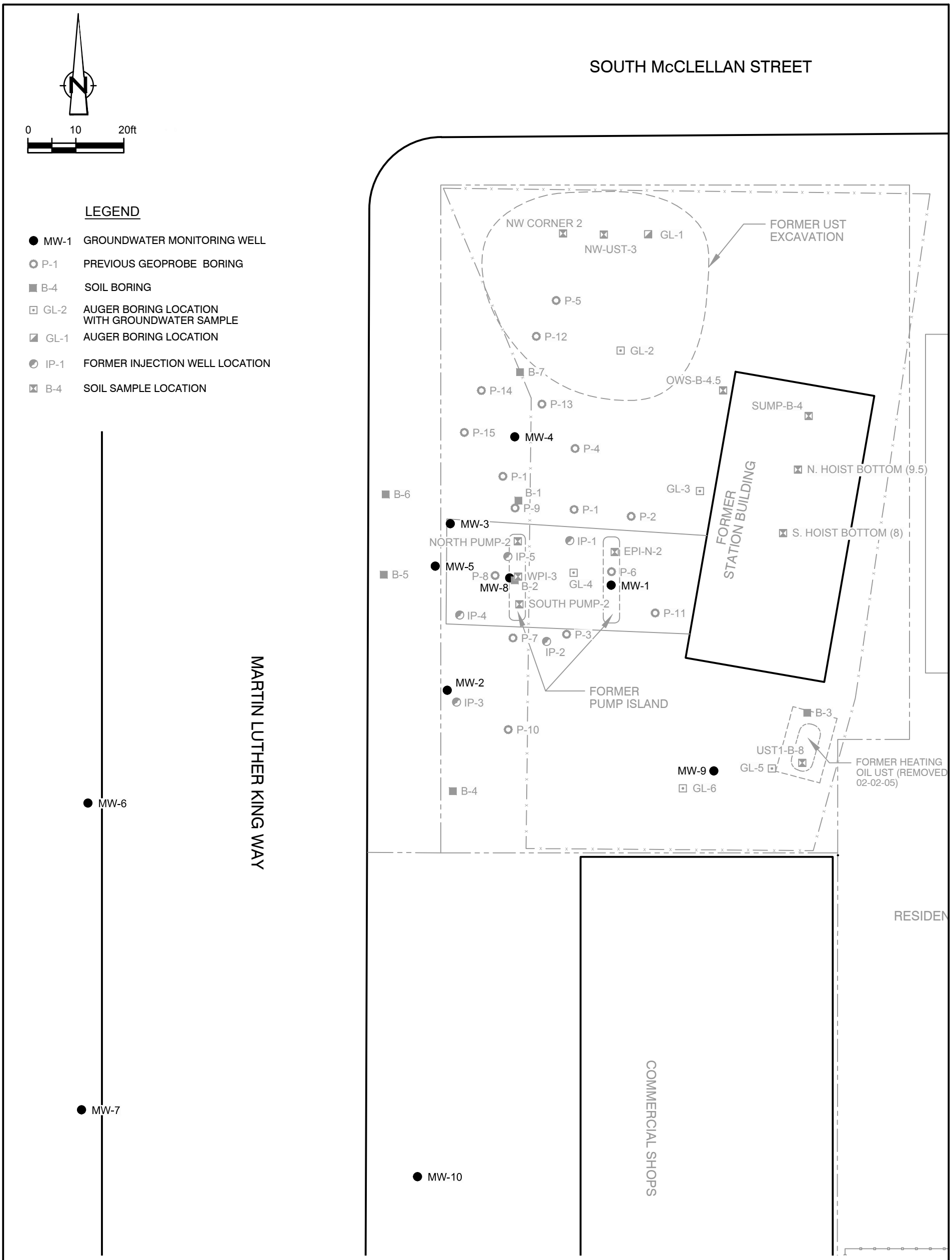


figure 2

SITE PLAN
FORMER TIDEWATER SERVICE STATION
PHILLIPS 66 SITE 5173
CHEVRON SITE 301233
2800 MARTIN LUTHER KING WAY SOUTH
Seattle, Washington

CRA

61992-2012(004)GN-WA002 OCT 28/2013

Table 1. Maximum Detected Soil Concentrations, Phillips 66 Station 070644

Analyte	Maximum Concentration (mg/kg)	Location	Depth (feet bgs)	Method A (mg/kg)
TPH-G	6,000	P7	18	30
TPH-D	10,000	B-3	10	2,000
TPH-O	13,000	MW-9	10	2,000
Benzene	25	P7	18	0.03
Toluene	18	P7	18	7
Ethylbenzene	120	P7	18	6
Xylenes	390	P7	18	9

Table 2. Maximum Detected Ground Water Concentrations in February 2016, Phillips 66 Station 070644

Analyte	Maximum Concentration (µg/L)	Location	Method A (µg/L)
TPH-G	7,900	MW-8	1,000
TPH-D	910	MW-8	500
Lead	31.7	MW-7	15

Worksheet 4
Surface Water Route

CSID: **6056**

Site: **Phillips 66 Station 070644**

Not evaluated.

Worksheet 5
Air Route

CSII 6056

Site Phillips 66 Station 070644

1.0 SUBSTANCE CHARACTERISTICS

1.1 Introduction

No scoring in Section 1.1.

1.2 Human Toxicity

Substance	Amb. Air Stnd. Value (ug/m^3)	Score	Acute Toxicity Value (mg/m^3)	Score	Chronic Toxicity Value (ug/m^3)	Score	Carcinogenicity Adj. CPFi (risk/mg/kg-day)	Score
Gasoline (benzene)	0.0345	10	31947	3	8.57E-03	8	2.73E-02	5
Toluene	5000	1	--	X	1.43E+00	3	--	X
Ethylbenzene	0.4	10	--	X	2.86E-01	3	--	X
Xylenes	--	X	21714	3	0.0286	5	--	X

Maximum score: 10

Bonus points: 2

Human Toxicity Score: 12

Source: WARM Toxicity Database

Range: 1-12

1.3 Mobility

Gaseous Mobility

Substance	Vapor Pressure Value (mm Hg)	Score	Henry's Law Value (atm-m3/mol)	Score
Gasoline (benzene)	9.50E+01	4	5.56E-03	4
Toluene	2.80E+01	4	6.63E-03	4
Ethylbenzene	7.00E+00	3	7.88E-03	4
Xylenes	1.00E+01	3	6.80E-03	4

Maximum score: 4

Source: WARM Toxicity Database

Particulate Mobility

Soil type:

Erodibility factor:

Climatic factor:

Mobility value:

Mobility Score: 4

Source:

Range: 0-4

1.4 Human Toxicity/Mobility

Source: WARM Scoring Manual

Human Tox/Mobil Score: 24

Range: 1-24

1.5 Environmental Toxicity/Mobility

Substance	Acute Value (ug/m^3)	Score
Gasoline (benzene)	3.19E+04	3
Toluene	--	X
Ethylbenzene	--	X
Xylenes	21714	3
Maximum score	3	

Source: WARM Toxicity Database

Environmental Toxicity Score: 3

Range: 1-10

Environmental Tox/Mobil Score: 6

Range: 1-24

1.6 Substance Quantity

Quantity: 10,780 sq ft

Basis: 1/3 of 0.25-acre site remains contaminated; 3-foot thickness

Source: Estimated from CRA (2013) Figure 2

Substance Quantity Score: 5

Range: 1-10

2.1 Containment

Description: Soil cover > 2 feet thick; no vapor collection system

Basis: Site reports

Containment Score: 5

Range: 0-10

SUBSTANCE PARAMETER CALCULATIONS

Human Health Pathway

SUB (Human Tox/Mobil + 5) x (Containment +1) + Substance Quantity 179.0

Environmental Pathway

SUB (Environ. Tox/Mobil + 5) x (Containment +1) + Substance Quantity 71.0

3.0 TARGETS

3.1 Nearest Population

Description: Residence southeast of property

Distance (ft): 65

Source: iMap

Nearest Population Score: 10

Range: 0-10

3.2 Nearest Sensitive Environment

Description:	Sports field south of property		
Distance (ft):	230	Nearest Sensitive Environment Score:	10
Source:	iMap	Range:	0-7

3.3 Population within One-Half Mile

Number:	5,658	Population within Half Mile Score:	75.0
Source:	MO CDC	Range:	0-75

TARGET PARAMETER CALCULATIONS

Human Health Pathway

TAR Nearest Population + Population within Half Mile: 85.0

Environmental Pathway

TAR Nearest Sensitive Environment: 10.0

4.0 RELEASE

Evid. of release?	None observed		
Source:	Site reports	Release Score (REL):	0.0
		Range:	0 or 5

AIR ROUTE CALCULATIONS

Human Health Pathway

AIR$_h$ (SUBh x 60/329) x {REL + (TARh x 35/85} / 24: 47.6

Environmental Pathway

AIR$_e$ (SUBe x 60/329) x {REL + (TARe x 35/85} / 24: 2.2

Range: 0-100

Worksheet 6
Groundwater Route

CSID: 6056

Site: Phillips 66 Station 070644

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human toxicity

Substance	Drink. Wat. Stnd Value (ug/L)	Score	Acute Toxicity Value (ug/L)	Score	Chronic Toxicity Value (ug/L)	Score	Carcinogenicity Adj. CPFo (risk/mg/kg-day)	Score
Benzene (gasoline)	5	8	3,306	3	4.00E-03	3	5.50E-02	5
Naphthalene (diesel)	--	X	490	5	2.00E-02	1	--	X
Lead	15	6	<0.001	10	--	X	--	X

Maximum score: 10
Bonus points: 2
Human Toxicity Score: 12
Source: WARM Toxicity Database
Range: 1-12

1.2 Mobility

Substance	Solubility Value (ug/L)	Score
Benzene (gasoline)	1.75E+03	3
Naphthalene (diesel)	3.10E+01	1
Lead	0.1 < K < 1	2

Maximum value: 3
Mobility Score: 3
Source: WARM Toxicity Database
Range: 1-3

1.3 Substance quantity

Quantity: 1,200 cu yd
Basis: 1/3 of 0.25-acre site remains contaminated; 3-foot thickness
Source: Estimated from CRA (2013) Figure 2
Substance Quantity Score: 4
Range: 1-10

2.1 Containment

Description: Observed release in ground water
Source: Site reports
Containment Score: 10
Range: 0-10

SUBSTANCE PARAMETER CALCULATION

SUB = (Human Toxicity + Mobility + 3) x (Containment + 1) + Substance Quantity **202.0**

2.0 MIGRATION POTENTIAL

2.2 Net precipitation

Amount (in.):	37.5	Net Precipitation Score:	4
Source:	Average annual precipitation at SeaTac Airport	Range: 0-5	

2.3 Subsurface Hydraulic Conductivity

Description:	Silty sands and sandy silts		
Source:	Site reports	Hydraulic Conductivity Score:	3
		Range: 1-4	

2.4 Vertical Depth to Aquifer

Depth (ft):	9-15	Depth to Aquifer Score:	8
Source:	Site reports	Range: 1-8	

MIGRATION PARAMETER CALCULATION

MIG = Depth to Aquifer + Net Precipitation + Hydraulic Conductivity **15.0**

3.0 TARGETS

3.1 Aquifer Usage

Description:	Ground water not used, but useable		
Source:	iMap, WDOH Water System Database	Aquifer Use Score:	2
		Range: 1-10	

3.2 Distance to Nearest Drinking Water Well

Distance (ft):	> 10,000	Well Distance Score:	0
Source:	iMap, WDOH Water System Database	Range: 0-5	

3.3 Population Served by Drinking Water Wells within Two Miles — Population Served Score: 0.0

No. of people:	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

2.0

TAR = Aquifer Use + Well Distance + Population Served + Area Irrigated

4.0 RELEASE

Evid. of release?	Yes	Release Score (REL):	5.0
Source:	Site reports	Range:	0 or 5

GROUND WATER ROUTE CALCULATION

44.4

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

Range: 0-100

Washington Ranking Method
Route Scoring Summary and Ranking Calculation

Site Name: **Phillips 66 Station 070644**
Site Address: **5040 148th Avenue NE, Redmond, WA 98052**
CSID: **6056**
FSID: **36542815**

Human Health Route Scores

Pathway	Score	Quintile
Surface water	0.0	
Air	47.6	5
Ground water	44.4	4

Quintile	Value
High (H)	5
Middle (M)	4
Low (L)	

Human Health Pathway Quintiles - February 2015

Quintile	Surface Water		Air		Ground Water	
1	<=	7.9	<=	8.3	<=	23.9
2	8.0	15.4	8.4	15.7	24.0	33.0
3	15.5	21.3	15.8	24.9	33.1	40.2
4	21.4	29.7	25.0	39.0	40.3	50.2
5	>=	29.8	>=	39.1	>=	50.3

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

Human Health Priority Bin Score: 4.1

Environmental Route Scores

Pathway	Score	Quintile
Surface water	0.0	
Air	2.2	3

Quintile	Value
High (H)	3
Low (L)	

Environmental Pathway Quintiles - February 2015

Quintile	Surface Water		Air	
1	<=	11.5	<=	1.2
2	11.6	24.1	1.3	1.5
3	24.2	32.0	1.6	15.2
4	32.1	49.6	15.3	27.7
5	>=	49.7	>=	27.8

$(H^2 + 2L) / 7$

Environmental Priority Bin Score: 1.3

FINAL MATRIX RANKING

Human Health Priority	Environmental 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

Site Rank: 1