CSID 2449

SITE HAZARD ASSESSMENT
WORKSHEET 1
SUMMARY SCORE SHEET

Site Name/Location (Street, City, County, Section/Township/Range, Facility Site ID Number):

Burlington Northern Railroad Auburn
A Street SE & SE 9th Street
Auburn, WA 98002
King County
T-21N, R-4E, Sec-13
Facility Site ID: 2573
Longitude: 122° 13' 44"
Latitude: 47° 17' 59"
Site Assessed for August 27, 2002 update

Site Description (Include management areas, substances of concern, and quantities):

The Burlington Northern Railroad (BNRR) Auburn site is located on A Street in Auburn, WA. The site extends from Highway 18 on the north end of the property to SE 31st Street on the south end. The site is approximately 800 feet wide and 1.5 miles long and covers about 200 acres. The property is mostly flat and covered by a mix of soil, gravel, railroad bed material, concrete and asphalt. Municipal sewer and water systems serve the area.

The site was developed as a rail yard in the early 1900's and was used for that purpose until 1970 when Northern Pacific Railroad became part of the merger creating the Burlington Northern Railroad. Facilities on the property included a roundhouse for engine repair, car repair shops, fueling facilities, engine wash facilities, waste water disposal ponds and associated rail tracks. Most of the structures were located on the northern portion of the site. The repair and fueling operation buildings were dismantled after the merger in 1970. Presently, there are a few buildings and two active tracks on the western portion of the site.

Along with the structures on the property, the site contained numerous aboveground and underground storage tanks (USTS) which had combined volumes of several hundred thousand gallons. These tanks were used to store bunker fuel, diesel fuel, gasoline and cleaning solvents. During the late 1980's the USTS were removed from the site and several site investigations were started on the property with the majority of the investigative work being done from 1991 to the present. The investigations at the site included a series of backhoe test pits, drilling exploratory borings and installing twenty-four groundwater-monitoring wells.

GeoEngineers conducted the most recent assessment of the site from 1999 to 2001. This assessment included data collected from groundwater monitoring and free product recovery. Groundwater samples were submitted for analysis of diesel and heavy oil range hydrocarbons by testing for Northwest Total Petroleum Hydrocarbons Diesel Extended (NWTPH-Dx) and Volatile Organic Compounds (VOC's) specifically Perchloroethene (PCE) and Trichloroethene (TCE). Both Diesel range hydrocarbons and TCE were detected in groundwater at concentrations exceeding the Model Toxics Control Act (MTCA) Method A cleanup levels. The following chart shows the highest levels of groundwater contamination obtained at the BNRR Auburn site.

	Diesel (ppb)	Trichloroethene (ppb)
Monitoring well results	29,700	9.88
MTCA Method A cleanup level (ppb)	500	5

Several of the monitoring wells on the property also contain free product, which seems to consist mostly of diesel fuel and heavy oil. Free product thickness varies with the seasonal groundwater levels, which range from 15 to 29 feet below ground surface. During December 2000 sampling activities, the maximum apparent free product thickness was 5.6 feet. Free product recovery operations continue at the BNRR Auburn site, which are intended to reduce the amount of source material that is impacting groundwater.

In July of 1995, the Washington State Department of Ecology (Ecology) received a report from BNRR describing the conditions at the BNRR Auburn property. After looking at the site data and visiting the property Ecology decided that further investigation was needed. On April 5, 1996 the BNRR Auburn property was added to Ecology's Integrated Site Information System (ISIS) database.

Carsten Thomsen of Public Health-Seattle and King County (PHSKC) conducted a site hazard assessment (SHA) visit during October of 2001. Since the site is so large with many secured and dangerous areas only a small section of the site was inspected. After visiting the property the Environmental Manager for BNRR was contacted to provide commentary and history relating to the area. BNRR then provided the reports containing the site assessment information mentioned above.

On the basis of this SHA, completed by PHSKC's Environmental Health Division, this site will be scored for the surface water, air and groundwater routes. Though most of the analytical test data collected on this site included only subsurface soil and groundwater samples it is felt that past practices on the site and the fact that the site is mostly open soil also necessitate scoring for the surface water and air routes.

Special Considerations (Include limitations in site file data or data which cannot be accommodated in the model, but which are important in evaluating the risk associated with the site, or any other factor(s) over-riding a decision of no further action for the site): N/A

ROUTE SCORES:

Surface Water/Human Health:	16.1	Surface Water/Environ.:	8.9
Air/Human Health:	39.6	Air/Environmental:	NS
Ground Water/Human Health:	60.7		

OVERALL RANK: 1

WORKSHEET 2
ROUTE DOCUMENTATION

1. SURFACE WATER ROUTE

List those substances to be considered for scoring: Source:2

Trichloroethene
NWTPH-Diesel

Explain basis for choice of substance(s) to be used in scoring.

All of the above substance concentrations are above MTCA Method A cleanup levels.

List those management units to be considered for scoring: Source:2,3

Soil contamination.

Explain basis for choice of unit to be used in scoring. Source:3

Surface soil is exposed to weather with no containment.

2. AIR ROUTE

List those substances to be considered for scoring: Source:2

Trichloroethene
NWTPH-Diesel

Explain basis for choice of substance(s) to be used in scoring.

All of the above substance concentrations are above MTCA Method A cleanup levels.

List those management units to be considered for scoring: Source:2,3

Soil contamination.

Explain basis for choice of unit to be used in scoring. Source:3

Surface soil is exposed with no containment.

WORKSHEET 2
ROUTE DOCUMENTATION

3. GROUND WATER ROUTE

List those substances to be considered for scoring: Source:2

Trichloroethene
NWTPH-Diesel

Explain basis for choice of substance(s) to be used in scoring.

All of the above substance concentrations are above MTCA Method A cleanup levels.

List those management units to be considered for scoring: Source:2,3

Soil contamination.

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

Surface soil is exposed to weather with no containment.

WORKSHEET 3
SURFACE WATER ROUTE

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Standard (ug/l)	Val.	Acute Toxicity (mg/kg-bw)	Val.	Chronic Toxicity (mg/kg/day)	Val.	Carcino-genicity WOE	PF*	Val.
1.Trichloroethene	5	8	2402	3	ND	-	B2	0.011	4
2.NWTPH-Diesel	20	6	490	5	0.004	3	ND	ND	-

*Potency Factor

Source: 1
Highest Value: 8 (Max.=10)
+2 Bonus Points? Yes
Final Toxicity Value: 10 (Max.=12)

1.2 Environmental Toxicity

(X) Freshwater
( ) Marine

Substance	Acute Water Quality Criteria (ug/l)	Value	Non-human Mammalian Acute Toxicity (mg/kg)	Value
1.Trichloroethene	45000	2		

Source: 1 **Value: 2** (Max.=10)

1.3 Substance Quantity: ~ 1 acre

Source: 2 **Value: 8** (Max.=10)

Explain basis: site contamination maps

2.0 MIGRATION POTENTIAL

2.1 Containment: none
Source: 2 **Value: 10** (Max.=10)
Explain basis: spill discharge to ground

2.2 Surface Soil Permeability: silt/sand/clay
Source: 2 **Value: 3** (Max.=7)

2.3 Total Annual Precipitation: 33.8 inches
Source: 4 **Value: 3** (Max.=5)

2.4 Max. 2-Yr/24-hour Precipitation: 1-2 inches
Source: 4 **Value: 2** (Max.=5)

2.5 Flood Plain: not in flood plain
Source: 7 **Value: 0** (Max.=2)

2.6 Terrain Slope: <2 %
Source: 3 **Value: 1** (Max.=5)

3.0 TARGETS

3.1 Distance to Surface Water: 2600 ft. (non-fishery)
Source: 3 **Value: 4** (Max.=10)

3.2 Population Served within 2 miles (See WARM Scoring Manual Regarding Direction): pop.= = 0 Source: 5 **Value:0** (Max.=75)

3.3 Area Irrigated within 2 miles 0.75 no. acres=13
(Refer to note in 3.2.): $0.75\sqrt{13} = 0.75(4) = 3$ Source: 6 **Value:3** (Max.=30)

3.4 Distance to Nearest Fishery Resource: 11,000 Source: 7 **Value:0** (Max.=12)

3.5 Distance to, and Name(s) of, Nearest Sensitive Environment(s) 11,000
White river Source: 7 **Value:0** (Max.=12)

4.0 RELEASE

Explain basis for scoring a release to surface water: not confirmed Source: _____ **Value:0** (Max.=5)

WORKSHEET 4
AIR ROUTE

1.0 SUBSTANCE CHARACTERISTICS

1.1 Introduction (WARM Scoring Manual) - Please review before scoring

1.2 Human Toxicity

Substance	Air Standard (ug/m^3)	Val.	Acute Toxicity (mg/m^3)	Val.	Chronic Toxicity (mg/kg/day)	Val.	Carcino-genicity WOE	PF*	Val.
1.trichloroethene	0.0091	10	15583	3	ND	-	B2	ND	-
2.NWTPH-diesel	166.5	4	ND	-	ND	-	ND	ND	-

*Potency Factor

Source:1
Highest Value:10
(Max.=10)

+2 Bonus Points? no
Final Toxicity Value:10
(Max.=12)

1.3 Mobility (Use numbers to refer to above listed substances)

1.3.1 Gaseous Mobility
Vapor Pressure(s) (mmHg): 1=4 ; ; Source:1
Value:4
(Max.=4)

1.3.2 Particulate Mobility
Soil type: clay/silt/till Source:3
Erodibility: 86 Value:1
Climatic Factor: 1-10 (Max.=4)

1.4 Highest Human Health Toxicity/Mobility Matrix Value (from Table A-7) equals **Final Matrix Value:20**
(Max.=24)

1.5 Environmental Toxicity/Mobility Source:1

Substance	Non-human Mammalian Acute Inhal. Toxicity (mg/m^3)	Value	Mobility (mmHg)	Value	(Table A-7) Matrix Value
1.trichloroethene	ND				
2.					
3.					
4.					
5.					

Highest Environmental Toxicity/Mobility Matrix Value (From Table A-7) equals **Final Matrix Value:NS**
(Max.=24)

1.6 Substance Quantity: 1 acre Source: 2 **Value:6**
Explain basis: site contamination maps (Max.=10)

2.0 MIGRATION POTENTIAL

2.1 Containment: spill/discharge to ground no cover Source: 3 **Value:10**
(Max.=10)

3.0 TARGETS

3.1 Nearest Population: <1000 feet Source: 3 **Value:10** (Max.=10)

3.2 Distance to, and Name(s) of, Nearest Sensitive Environment(s) <1000 feet Source: 3 **Value:7** (Max.=7)
Terminal Park

3.3 Population within 0.5 miles: pop.=√1200= 35 Source: 8 **Value:35** (Max.=75)

4.0 RELEASE

Explain basis for scoring a release to air: Source: 1 **Value:0** (Max.=5)
Not confirmed

WORKSHEET 5
GROUND WATER ROUTE

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Standard (ug/l)	Val.	Acute Toxicity (mg/kg-bw)	Val.	Chronic Toxicity (mg/kg/day)	Val.	Carcinogenicity WOE	PF*	Val.
1.Trichloroethene	5	8	2402	3	ND	-	B2	0.011	4
2.NWTPH-Diesel	20	6	490	5	0.004	3	ND	ND	-

*Potency Factor

Source:1
Highest Value:8
(Max.=10)

+2 Bonus Points? yes
Final Toxicity Value:10
(Max.=12)

1.2 Mobility (Use numbers to refer to above listed substances)
Cations/Anions: 1= ; 2= ; 3= ; 4= ; 5= ; 6= . Source: 1 **Value:3** (Max.=3)

OR
Solubility(mg/l): 1=1.1E+03=3 2=3.0E+01=1

1.3 Substance Quantity: unknown Source: 2 **Value:1** (Max.=10)
Explain basis:

2.0 MIGRATION POTENTIAL

2.1 Containment: no containment Source: 2 **Value:10** (Max.=10)
Explain basis: spill discharge to ground

2.2 Net Precipitation: 19.2 inches Source: 4 **Value:2** (Max.=5)

2.3 Subsurface Hydraulic Conductivity: clay/silt/till Source: 2 **Value:2** (Max.=4)

2.4 Vertical Depth to Ground Water: 15 feet Source: 2 **Value:8** (Max.=8)

3.0 TARGETS

3.1 Ground Water Usage: public supply/alt. sources Source: 5 **Value:4** (Max.=10)

3.2 Distance to Nearest Drinking Water Well: 900 ft Source: 2 **Value:4** (Max.=5)

3.3 Population Served within 2 Miles: pop.=>10,000 Source: 6 **Value:100** (Max.=100)

3.4 Area Irrigated by (Groundwater) Wells
within 2 miles: 0.75 √no.acres=√20 Source: 6 **Value:3**
=0.75 (4.5)=3.4 (Max.=100)

4.0 RELEASE
Explain basis for scoring a release to ground water: documented groundwater contamination Source: 2 **Value:5** (Max.=5)

SOURCES USED IN SCORING

1. Washington ranking Method Toxicological Data-Base
2. Analytical Results, GeoEngineers "Groundwater Monitoring and Free Product Recovery, 1999-2001, Auburn Rail Yard, Auburn, Washington".
3. Site Hazard Assessment, PHSKC, 06/02
4. Nation Weather Service Data
5. Washington State Dept. of Health Public Water Supply Listing
6. Washington State Water Use Data
7. Sensitive Areas Coverage, King Co. Geographic Information System Data
8. Census Data, 1990 census