

ENTERED
6-18-98

go

UST # 2069
UST # 3643

Martin Oil Bulk Plant

Skagit Co / Mt. Vernon

RESULTS OF
PHASE I SITE ASSESSMENT

NORTHWEST FUEL CO./
MARTIN OIL FACILITY
1489 AVON CUTOFF ROAD
MOUNT VERNON, WASHINGTON 98273

PREPARED FOR:

NORTHWEST FUEL COMPANY
2800 ROEDER AVENUE
BELLINGHAM, WASHINGTON

RECEIVED

JUN 10 1998

DEPT. OF ECOLOGY

PREPARED BY:

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
17411 N.E. UNION HILL ROAD, SUITE 220
REDMOND, WASHINGTON

MARCH 11, 1991

DEPARTMENT OF ECOLOGY	
NWRO/TCP TANKS UNIT	
INTERIM CLEANUP REPORT	<input checked="" type="checkbox"/>
SITE CHARACTERIZATION	<input type="checkbox"/>
FINAL CLEANUP REPORT	<input type="checkbox"/>
OTHER _____	<input type="checkbox"/>
AFFECTED MEDIA: SOIL	<input checked="" type="checkbox"/>
OTHER _____ GW	<input checked="" type="checkbox"/>
INSPECTOR (INITIALS) <i>[Signature]</i>	DATE 6-17-98

Table of Contents

	Page
1.0 Summary of Site Assessment	1
1.1 Summary of Site and Business Description	1
1.2 Overall Risk Rating	2
1.3 Conclusions and Recommendations Concerning Sudden and Gradual Known or Potential Environmental Impairment	2
2.0 Site Description	3
2.1 Historical Use of Property and Surroundings	3
2.2 Current Business Operations and Facilities	4
2.3 Environmental Characteristics of the Site	5
2.3.1 Site Topography and Drainage	5
2.3.2 Local Drinking Water Supply	6
2.3.3 Air Quality	6
2.3.4 Surface Water Quality	6
2.3.5 Regional Geology	7
2.3.6 Site Hydrogeology	7
3.0 Analysis of On-Site Contamination Risks	8
3.1 Surface Releases	8
3.2 Subsurface Releases	8
3.3 Recommendations to Reduce On-Site Contamination Risks	9
4.0 Analysis of Off-Site Contamination Risks	9
4.1 Surface Releases	9
4.2 Subsurface Releases	10
4.3 Potential Off-Site Sources of Contamination	10
5.0 Site and Environmental Setting Risk Ranking	11
5.1 Ranking of Potential for On-Site Contamination from UST Releases or Off-Site Sources	11
5.2 Ranking of Potential for Off-Site Property Damage or Bodily Injury	11
5.3 Ranking of Potential for Non-Petroleum Product Potential Environmental Releases to Contaminate UST Excavation and Piping Areas	12
5.4 Ranking of Environmental Setting Characteristics to Mitigate the Consequences of a Petroleum Product Release	12

1.0 SUMMARY OF SITE ASSESSMENT

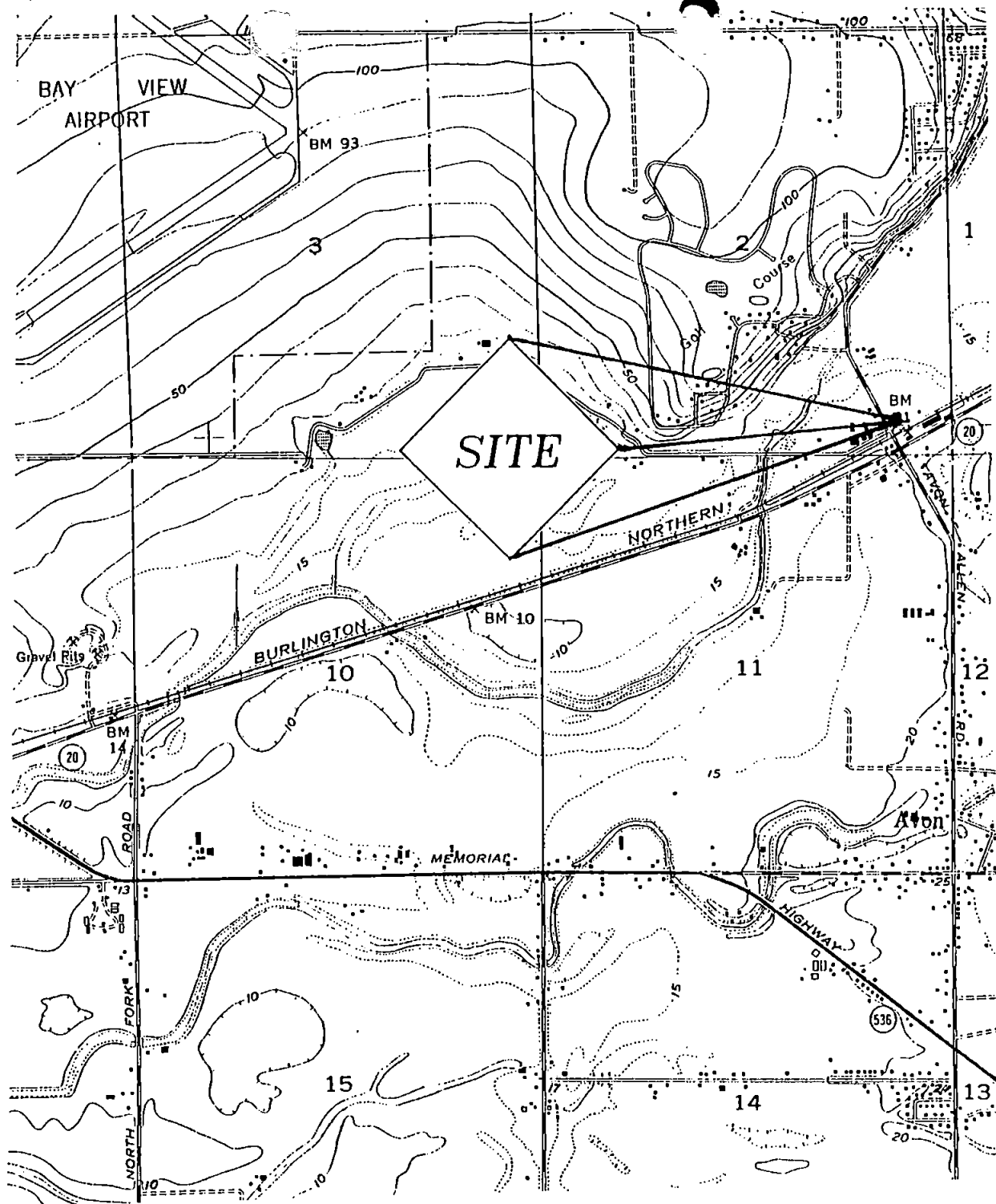
This report presents the results of a Phase I Site Assessment conducted by Environmental Science & Engineering, Inc. (ESE) for a Northwest Fuel Company (NW Fuel) Facility located at 1489 Avon Cutoff (State Route 20) in Mount Vernon, Washington (Figure 1 - Site Location Map). This Phase I Site Assessment was performed to fulfill the requirements for site assessments as outlined by the Front Royal Insurance Company (Front Royal).

Tasks included in the performance the site assessment were a site inspection, a site history assessment, and a records review of pertinent data. In conjunction with the Phase I Site Assessment, 5 ground water monitoring wells were installed as required by Front Royal. The field observations during the drilling activities are included in this Site Assessment Report to aid in the site assessment and ranking of the site per Front Royal requirements. The well boring logs, laboratory analyses and other pertinent data are being submitted separately from this Phase I Site Assessment Report, as per Front Royal requirements.

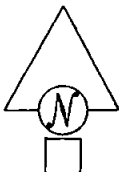
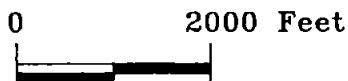
1.1 Summary of Site and Business Description

The site is operated by Martin Oil Company and is located on the northeast corner of the intersection of Avon Cutoff (State Route 20) and Avon Allen Road, at 1489 Avon Cutoff in Mount Vernon, Washington. The property is at an elevation of approximately 20 feet above Mean Sea Level. One building is present at the subject site, which contains offices and a warehouse. Ground water was found during the installation of ground water monitoring wells at depths of 7 to 9 feet below ground surface (bgs).

The facility is an operating petroleum distribution facility which loads trucks for delivery of gasoline, diesel fuel, and heating oil. The site operates a cardlock fuel island and a standard



MAP TAKEN FROM U.S. GEOLOGIC SURVEY
 LA CONNER QUADRANGLE
 WASHINGTON
 7.5 MINUTE SERIES (TOPOGRAPHIC)



NORTHWEST FUEL CO./
 MARTIN OIL
 1489 AVON CUTOFF
 MT. VERNON, WASH.

LOCATION MAP

DATE: 3-08-91	PROJECT NO. 6-91-7095	FIG# 1
SCALE: 1"=2000'	DWG NO.: NFC01A--	SIZE: A
DRAWN BY: M. ARMSTRONG	APPROVED BY: J. BRYSON	REV: -

fuel island dispensing gasoline and diesel fuel. There are currently 12 underground petroleum storage tanks on site (Figure 2 - Site Map). The tanks contain gasoline, diesel fuel, and heating oil. The warehouse is used primarily for storage of petroleum based products in 55-gallon capacity steel drums and plastic 5-gallon buckets.

1.2 Overall Risk Rating

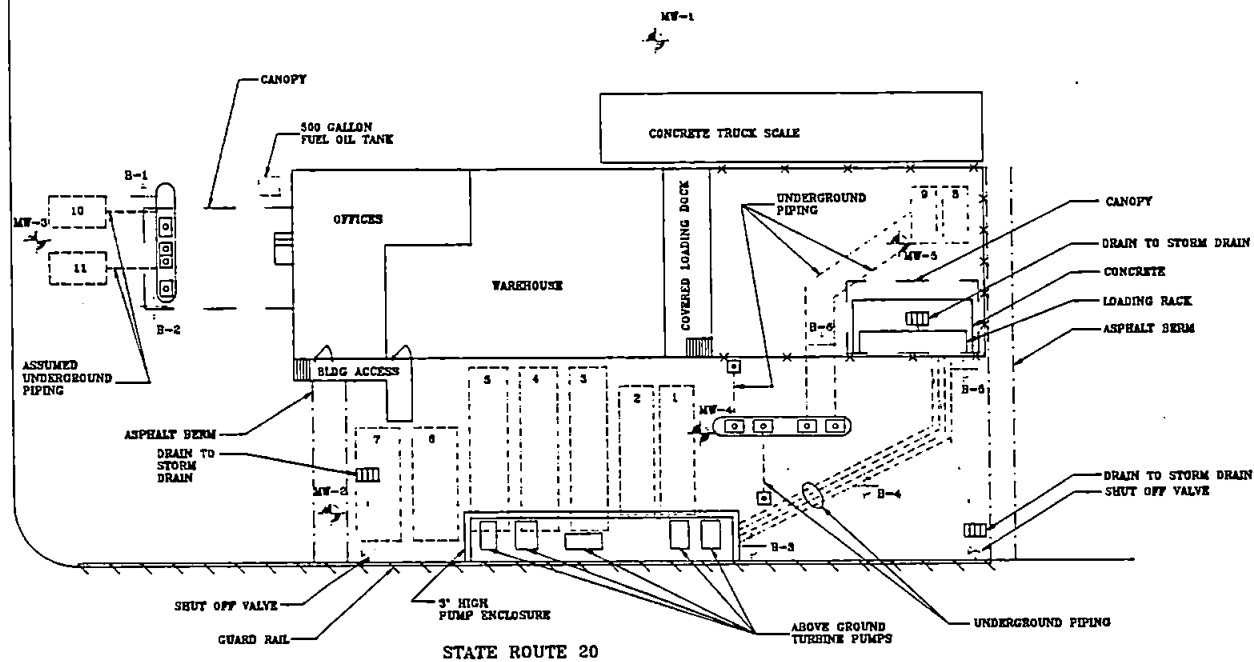
Based on the findings of this Phase I Site Assessment and observations during ground water well installation, ESE has classified the overall risk rating at this site as **above average** in accordance with guidelines included in the document titled Outline for Site Assessments for Non-Retail Petroleum Storage Facilities provided by Front Royal. This ranking is a culmination of all rankings in Section 5.0 of this report and is based on all activities involved with this Phase I Site Assessment, including site inspection, site history assessment, a records review of pertinent data, and observations during drilling activities at the subject site.

1.3 Conclusions and Recommendations Concerning Sudden and Gradual Known or Potential Environmental Impairment

Based on the results of this site assessment, ESE concludes that the soil materials beneath the subject site in the vicinity of the east side of the tank cluster and the loading rack area have been impacted by petroleum hydrocarbons. The impact of petroleum hydrocarbons on the ground water found at the site is unknown at this time; however, if ground water is found to be impacted then the matter must be directed to the Washington Department of Ecology (DOE) for review. At a minimum, ESE recommends that the newly installed ground water wells be outfitted with passive vapor sensors and/or the ground water in the wells be sampled and analyzed for total petroleum hydrocarbons (TPH), at a minimum, on a periodic basis to assess the impact of hydrocarbons on ground water quality.

BURLINGTON NORTHERN RR TRACKS

AVON ALLEN RD.



LEGEND

EXPLANATION:

B-1 --- SOIL BORING LOCATION

MW-1 --- GROUND WATER MONITORING WELL LOCATION

TANK DATA

NO.	CAPACITY (GALLONS)	PROV.
1	10,000	HEATING
2	10,000	HEATING OIL
3	12,000	DIESEL OIL
4	12,000	SUPER U/L
5	12,000	UNLEADED
6	8,000	REGULAR
7	8,000	REGULAR
8	2,000	UNLEADED
9	2,000	REGULAR
10	2,000	UNLEADED
11	2,500	REGULAR

0 20 FEET
SCALE



NORTHWEST FUEL CO./
MARTIN OIL
1489 AVON CUTOFF
MT. VERNON, WASH.

SITE MAP

DATE: 3-05-91	PROJECT NO.: 8-91-7095	FIG# 2
SCALE: 1"=20'	DWG No.: NFC01C--	SIZE B
DRAWN BY: M. ARMSTRONG	APPROVED BY: J. BRYSON	REV. -

Reduced to 65%

2.0 SITE DESCRIPTION

The site (Martin Oil) is located on the northeast corner of the intersection of Avon Cutoff (State Route 20) and Avon Allen Road, at 1489 Avon Cutoff in Mount Vernon, Washington (Figure 1). The Martin Oil site is situated in the SE 1/4; SE 1/4; SE 1/4; Section 2; Township 34 North; Range 3 East of the La Conner, Washington U.S. Geological Survey 7.5 Minute Topographic Quadrangle. One building is present at the subject site, which contains offices and a warehouse. The surface areas adjacent to the building are paved with asphalt or concrete.

2.1 Historical Use of Property and Surroundings

The site has been a bulk petroleum storage facility since 1924. The original facility was replaced in 1971 with the existing facility. The prior facility operated aboveground petroleum storage tanks. Operations at the site prior to 1924 were not investigated. As agreed by Front Royal, aerial photographs were not researched for this site.

The areas adjacent to the property are industrial/residential on the north, east, and west sides and agricultural to the south. Railroad tracks run in an east-west direction immediately to the north of the site between the site and the industrial/residential properties (Figure 2).

The property directly to the north of the site is operated by Agrichem, a fertilizer manufacturing/storage facility. The site directly east of the site is a Nutrena Feeds warehouse. Neither of these properties store petroleum products on site, therefore an in depth search of records regarding the two facilities was not conducted. The property directly south of the site is open pasture for livestock grazing. The only other business

adjacent to the subject site is a small restaurant directly across the intersection to the southwest of the site.

A review of records from the U.S. Environmental Protection Agency (EPA), Comprehensive Environmental Response Compensation and Liability Act (CERCLA) listing of Superfund sites and the Washington Department of Ecology's (DOE) leaking underground storage tank (LUST) list dated February 7, 1991 was conducted by ESE for sites within the vicinity of the subject site. Also the Skagit County Fire Marshall was contacted for information regarding responses to unauthorized releases of petroleum products in the area of the subject site. The results of these records searches are presented in Section 4.3 of this report.

2.2 Current Business Operations and Facilities

The facility is an operating petroleum distribution facility which loads trucks for delivery of gasoline, diesel fuel, and heating oil. Also the site operates a cardlock dispenser and a pump island which supply gasoline and diesel fuel (Figure 2). The building on site contains offices and a warehouse.

The warehouse, attached to the office buildings, has a concrete floor and is used for storage of products such as hydraulic and motor oil in 55-gallon capacity steel drums and plastic 5-gallon buckets, motor oil and lubricants in plastic quart bottles and cases of quart bottles, and a small amount of paint and mineral spirits.

There are 12 underground petroleum storage tanks on site (Figure 2). The tanks store diesel oil, gasoline, and heating oil. The main tank cluster (Tanks 1 - 7, Figure 2) contains seven underground storage tanks: two 10,000-gallon capacity heating oil tanks, one 12,000-gallon capacity diesel oil tank, one 12,000-gallon capacity premium unleaded gasoline tank, one 12,000-gallon capacity unleaded gasoline tank, and two 8,000-gallon capacity regular

gasoline tanks. Tanks 8 and 9 (Figure 2) are both 2,000-gallon capacity underground tanks, one unleaded and one regular gasoline. Tank 10 is a 2,000-gallon capacity regular gasoline tank and Tank 11 is a 2,500-gallon capacity unleaded gasoline tank. Tank 12 is a 500-gallon capacity heating oil tank (Figure 2) for on site use only. All 12 tanks and associated piping are single wall steel construction and were installed in 1971, except Tank #11 which was installed in 1975. There is one other tank on site which is an above ground propane tank, located just north of tanks 8 and 9 (Figure 2).

2.3 Environmental Characteristics of the Site

2.3.1 Site Topography and Drainage

The property is at an elevation of approximately 20 feet above Mean Sea Level. Natural surface water drainage in the area is to the south. The site is approximately 1 mile northwest of the Skagit River and approximately 4 miles east of Indian Slough. The drainage on the south side of the site, around the large tank field and cardlock dispenser, has been altered so that surface water flows into drains on the site. The east and west ends of the tank field have asphalt containment berms so that surface releases are contained within the immediate area. Both drains flow directly into an open drainage ditch running along State Route 20. The surface drain pipes have emergency shutoff valves on them to stop the flow of product releases into the drainage ditch. There is one other surface drain which is below the loading rack on the east end of the site. This drain empties into the same line as the other drain on the east side of the property with the emergency shut off valve (Figure 2). The three drains collect almost all of the surface runoff from the underground tank areas on the site. The western side of the site has no surface drains. The surface runoff from this area flows directly into the storm sewer near the intersection of Avon Allen Road and State Route 20 which then flows into the drainage ditch.

2.3.2 Local Drinking Water Supply

Drinking water in the area is supplied by the Burlington Public Utilities District (BPUD). A surface watershed east of Burlington, is the source of the local drinking water supply. Based on site topography, the water supply surface watershed is assumed to be up gradient of the site, therefore unlikely to be affected by the subject site. A search of the State of Washington Public Water Supply System Listing, dated March 8, 1991, indicated that there are no known water supply wells within a 1/2 mile radius of the subject site.

2.3.3 Air Quality

There are no specific air quality problems associated with industrial activity in the vicinity of the subject site. Seasonal emissions are generated by wood stove usage and agricultural practices. Agricultural activities can produce dust or odors when waste from local food processors is sprayed on the fields.

2.3.4 Surface Water Quality

There is no substantial information on surface water quality near the site. Monitoring is being conducted by the U.S. Geological Survey and the DOE, but data is not ready for analysis or distribution. Seasonal problems are known due to agricultural runoff such as high sediment load, animal waste, pesticides, and fertilizers.

2.3.5 Regional Geology

The subject site is located in the physiographic region known as the Puget Lowlands. The Puget Lowlands are primarily the product of a submarine depositional environment during the late Paleozoic, Mesozoic, and early Cenozoic, with extensive and repeated glaciation during the Pleistocene. Quaternary deposits consist primarily glacial outwash and alluvial deposits (Geology of Washington, Washington Division of Geology and Earth Resources, 1978).

2.3.6 Site Hydrogeology

The subject site is located in the ground water region known as the Puget Sound ground water reservoir. The major geologic components of the aquifer are sedimentary rocks deposited by glaciers or streams. The major source of recharge to the aquifers within the Puget Sound ground water reservoir is infiltration of precipitation and stream flow. The major sources of discharge from the ground water reservoir is through seepage to streams and marine waters, and spring flow along slopes. The ground water reservoir is used mainly to supplement to stream supplies for public use.

During drilling activities ground water was found beneath the site at depths ranging from 7 to 9 feet bgs. The direction of ground water flow in the immediate vicinity of the site is unknown, but based on the topography of the site it is assumed to be to the southwest.

3.0 ANALYSIS OF ON-SITE CONTAMINATION RISKS

3.1 Surface Releases

During the site visit there were no areas with visible evidence of significant surface releases of petroleum products. The ground surface below the loading rack did have minor stains on the concrete and asphalt; however, the staining did not appear to be significant in this area, and is most likely associated with minor spillage during the loading of delivery trucks. The DOE or EPA do not have any records of surface releases at the subject site.

There was no evidence of site conditions or practices that increase the possibility of a surface release on the site. There was evidence of mechanisms and site features that would inhibit the migration of a surface release if one were to occur at the site. The asphalt berms around the large tank field would contain major surface releases associated with the underground tanks in the area or the loading rack as long as the sewer line shut off valves were closed properly. None of the underground gasoline storage tanks on site have any secondary containment or overspill protection. Any significant surface releases outside of the containment area on the south side of the property would pond on site and eventually collect in the storm drain on State Route 20 and eventually be transmitted to the open drainage ditch along State Route 20.

3.2 Subsurface Releases

There was olfactory evidence of petroleum hydrocarbons present in the soil cuttings from four of the five monitoring wells installed on site in February, 1991 (Figure 2). During the drilling of Monitoring Well MW-2, the soil from a depth of approximately 3 to 7 feet bgs had traces of gasoline odors. The soil cuttings from Well MW-3 from 1 to 8 feet bgs also

had slight gasoline odors. The soil cuttings from Well MW-4 had strong gasoline odors from 1 to 7 feet bgs, and moderate gasoline odors below the water table at 7 feet bgs to a depth of approximately 12 feet bgs. The soil cuttings from Well MW-5 had strong gasoline odors from 1 to 8 feet bgs, and moderate gasoline odors below the water table at depths between 8 and 13 feet bgs. The other monitoring well, MW-1, had no visual or olfactory evidence of petroleum hydrocarbons in the soil cuttings.

All 12 underground tanks on site were pressure tested in February; however, ESE does not have this information for inclusion into this report. There are no leak detection systems installed on any of the underground storage tanks.

3.3 Recommendations to Reduce On-Site Contamination Risks

The installation of overspill protection fill pipes and secondary containment manhole covers on the underground storage tanks would greatly reduce the risk of subsurface contamination from tank overspill during tank filling. The installation of passive vapor sensors in the well borings installed adjacent to the tanks could also be beneficial for identifying subsurface product releases more rapidly; however, the presence of vapors already in four of the well borings may make this method inapplicable at this site.

4.0 ANALYSIS OF OFF-SITE CONTAMINATION RISKS

4.1 Surface Releases

The subject site is located in Skagit County, Drainage District 19. Any surface releases that were to leave the subject site would be transmitted to an open drainage ditch along State Route 20. Storm water runoff flows into a large, open drainage ditch on Highway 20.

Water in this ditch flows westward along State Route 20 and enters Indian Slough over a tide gate. There is a pump at the tide gate that operates during high tide. Indian Slough opens onto Padilla Bay.

4.2 Subsurface Releases

The major pathway for subsurface releases of petroleum products to leave the site would most likely be by ground water flow. This is due to the shallow ground water table at the site, approximately 5 feet below grade. The most likely receptors would be Indian Slough and Padilla Bay to the west. The Skagit County Public Utilities District (PUD) supplies drinking water to the area. The source of the water supply is a surface watershed located east of Burlington. A review of the registered water supply wells for Skagit County indicated that there are no water supply wells within a 1/2 mile radius of the subject site.

4.3 Potential Off-Site Sources of Contamination

The Skagit County Fire Marshall's office reported that they had responded to two incidents at the Olympic Pipeline pump station at 1449 Avon Cutoff Road, located approximately 1,500 feet due west of the subject site. The first response was to an approximately 42,000 gallon diesel fuel spill in 1983, and the second incident was a response to an estimated 400,000 gallon diesel fuel spill in 1988. Both discharges were from the above ground pipeline. The DOE had the site listed as an active site immediately after the incident; however, the site is currently listed as a long term monitoring site.

A review of records from the U.S. EPA CERCLA listing of Superfund sites indicated that the closest site with Final status was approximately 11 miles from the subject site. A search of the Washington DOE's LUST list dated February 7, 1991 indicated that there are no reported leaking tank sites within the vicinity of the subject site. The closest reported leaking petroleum tanks are 2 to 3 miles away from the subject site.

5.0 SITE AND ENVIRONMENTAL SETTING RISK RANKING

5.1 Ranking of Potential for On-Site Contamination from UST Releases or Off-Site Sources

Based on the results of this Phase I Site Assessment and field observations during ground water monitoring well installation at the site, ESE has ranked this site as **extremely high** for the potential for on-site contamination from petroleum storage tank releases or off-site sources. This ranking was derived based on the odors observed in the soil materials during well installation, the reported releases at the pumping station approximately 1,500 feet to the west, and the observed high ground water table, approximately 7 feet bgs.

5.2 Ranking of Potential for Off-Site Property Damage or Bodily Injury

The potential for off-site property damage at the subject site is ranked by ESE as **below average**. This ranking is based on the probability that significant surface releases at the site would be contained on site within the containment area. Some petroleum product can be expected to leave the property via the storm drainage system before the valves are closed; however, the amount of product that is likely to leave the site before the valves could be closed is minor. Subsurface migration of product releases could be a significant factor, but the hydrogeology of the site is largely unknown. It can be assumed, based on the topography of the area, that the ground water gradient is low, which could inhibit the migration of petroleum contaminated ground water off site.

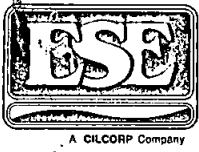
5.3 Ranking of Potential for Non-Petroleum Product Potential Environmental Releases to Contaminant UST Excavation and Piping Areas

The potential for non-petroleum product releases to the environment for the subject site is ranked by ESE as **very low**. This ranking is based on the fact that the business on site does not regularly use large quantities of non petroleum products.

5.4 Ranking of Environmental Setting Characteristics to Mitigate the Consequences of a Petroleum Product Release

The environmental setting characteristics of the site to mitigate the consequences of a petroleum product release is ranked by ESE as **high**. This ranking is based on the following factors:

- The site is graded so that surface releases in the area of the large tank field and the loading rack, the areas of highest petroleum activity on site, are contained in the immediate area by the containment berms,
- The containment area is completely isolated once the shut off valves are closed which greatly reduces the impact to off site areas,
- The soil materials beneath the site appear to be homogeneous which facilitate ground water treatment if required,
- The ground water gradient at the site is assumed to be low due to the low topographic relief of the site, although, the actual hydrogeology of the site is unknown.



Environment
Science &
Engineering, Inc.

CLIENT NW FUEL CO.

PAGE NO. 1 OF

PROJECT NAME MARTIN OIL

DATE 2/19/91 & 2/20/91

PREPARED BY J. BRYSON

PROJECT # 6-91-7095

CHECKED BY _____

ON SITE AT 0800

ESE PERSONNEL: J. BRYSON
P. HONER

WEATHER: 40-45°F, Cloud, rain, Wind-5 mph west

MCGARRETT PERSONNEL: Ken McClanahan, Driller
Jeff, helper

RECEIVED

JUN 10 1998

DEPT. OF ECOLOGY

DELOADED ALL EQUIP PRIOR TO SET UP

SET UP & DRILLED MW-1 0830 - 0900

NO WELL MATERIALS ON SITE, SO LEFT AUGERS IN PLACE & SET UP ON ~~MW-3~~ ^{MW-2}

DRILLED MW-2 1000 - 1030

STAND BY WAITING FOR WELL SUPPLIES 1030 - 1300 < 1HR LUNCH >

COMPLETED WELL MW-2 1300 - 1400

SET UP ON MW-1 AGAIN & COMPLETED WELL MW-1 FROM 1500 - 1600

DRILLERS LEFT SITE AT 1700

COMPLETED HAND BORINGS B-1 THROUGH B-3 ON 2/19/91 TO DEPTHS
OF 3.5' BELOW GROUND SURFACE.

BORING B-2 WAS TAKEN TO 2.5' BELOW GRADE & WATER ROSE IN HOLE TO A DEPTH
OF ~ 6" BELOW GRADE. NO HEADSPACE ANALYSIS WAS POSSIBLE IN B-2

HEADSPACE READINGS FOR MW-1 & MW-2 AND BORINGS B1, B-2, AND B-3
ARE TABULATED ON NEXT PAGE.

LEFT SITE AT 1800



Environment
Science &
Engineering, Inc.

CLIENT NW FUEZ, CO.

PAGE NO. 2 OF 2

PROJECT NAME MARTIN OIL

DATE 2/20/91

PREPARED BY J. Byson

PROJECT # 6-91-7095

CHECKED BY

ON SITE AT 0800

ESE PERSONNEL: J. BYSON
P. HONER
McGARRETT: Ken McClonahan, Driller
Jeff, Helper

Weather: 45-50°F, CLOUDY, SOME RAIN, WIND 5-10 mph West

STARTED DRILLING MW-3 @ 0830, DONG DRILLING MW-3 @ 0930
SET WELL MW-3 FROM 0930-1000

~~DRILLED MW-4 FROM DECONNED AUGERS~~ & DRILLED MW-4 FROM 1000 TO 1100
SET WELL MW-4 FROM 1100 TO 1130

DECONNED AUGERS AND DRILLED MW-5 FROM 1130 TO 1200
SET WELL MW-5 FROM 1200 TO 1230

DECONNED SITE & CLEANED UP, LEFT SITE AT 1300

COMPLETED HAND BORINGS B-4 through B-6 on 2/20/91
HEAD SPACE ANALYSES FROM WELLS & SOIL BORINGS:

MW-1 @ 5'	NA
MW-2 @ 5'	50 ppm
MW-3 @ 5'	20 ppm
MW-4 @ 5'	100 ppm
MW-5 @ 5'	450 ppm

B-1 @ 3'	70 ppm
B-2 @ 3'	—
B-3 @ 3'	10 ppm
B-4 @ 3'	Not detected
B-5 @ 3'	10 ppm
B-6 @ 3'	20 ppm

All wells developed ^{& sampled} on 2/22/91. APPROX 45 gallons taken from each well. Pump was deconned between wells w/Atomox solution & rinsed with tap water.


SAMPLES COLLECTED WITH SINGLE USE DISPOSABLE ^{PVC} BAILERS & PLACED IN 40ml glass VOA vial with Teflon Septa.


CP-1W

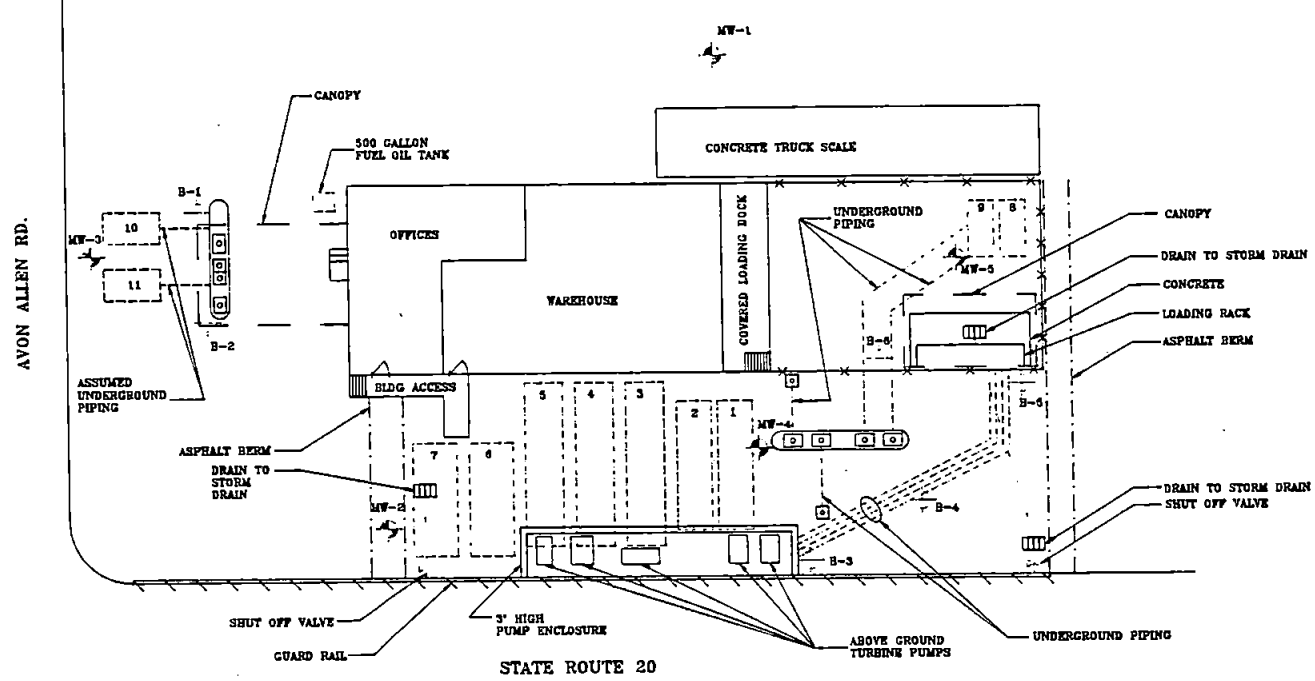
BURLINGTON NORTHERN RR TRACKS

LEGEND

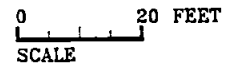

EXPLANATION:

B-1  SOIL BORING LOCATION

MW-1  GROUND WATER MONITORING WELL LOCATION



TANK DATA		
NO.	CAPACITY (GALLONS)	PRO
1	10,000	HEATING OIL
2	10,000	HEATING OIL
3	12,000	DIESEL OIL
4	12,000	SUPER U/L
5	12,000	UNLEADED
6	8,000	REGULAR
7	8,000	REGULAR
8	2,000	UNLEADED
9	2,000	REGULAR
10	2,000	UNLEADED
11	2,500	REGULAR

NORTHWEST FUEL CO.
MARTIN OIL
1489 AVON CUTOFF
MT. VERNON, WASH.

SITE MAP

DATE: 3-05-91	PROJECT NO. 6-91-7095	FIG #
SCALE: 1"=20'	DWG NO. NFC01C--	SIZE B
DRAWN BY: M. ARMSTRONG	APPROVED BY: J. BRYSON	REV

Reduced to 65%

Environ. Science & Engineering 17411 N.E.Union Hill Rd, Suite 220 Redmond, WA 98052 Attention: James Bryson	Client Project ID: NW Fuel, Martin Oil, 6-91-7095 Matrix Descript: Water Analysis Method: EPA 5030/8015/8020 First Sample #: 102-0645	Sampled: Feb 22, 1991 Received: Feb 25, 1991 Analyzed: Mar 6, 1991 Reported: Mar 8, 1991
--	--	---

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Purgeable Hydrocarbons $\mu\text{g/L}$ (ppb)	Benzene $\mu\text{g/L}$ (ppb)	Toluene $\mu\text{g/L}$ (ppb)	Ethyl Benzene $\mu\text{g/L}$ (ppb)	Xylenes $\mu\text{g/L}$ (ppb)
102-0645	MW-1	360	N.D.	N.D.	N.D.	N.D.
102-0646	MW-2	100	2.8	N.D.	N.D.	1.9
102-0647	MW-3	4,800	420	29	150	190
102-0648	MW-4	26,000	2,800	290	1,300	5,300
102-0649	MW-5	36,000	2,000	380	2,000	9,300

Detection Limits:	30	0.30	0.30	0.30	0.30
--------------------------	-----------	-------------	-------------	-------------	-------------

Purgeable (low to medium boiling point) Hydrocarbons are quantitated against a gasoline standard.
 Analytes reported as N.D. were not present above the stated limit of detection.

NORTH CREEK ANALYTICAL


Scot Cocanour
Laboratory Director

Environ. Science & Engineering
 17411 N.E. Union Hill Rd, Suite 220
 Redmond, WA 98052
 Attention: James Bryson

Client Project ID: NW Fuel, Martin Oil, 6-91-7095

Sample Matrix: Water
 QC Sample Group: 102-0645 to -0649

Reported: Mar 8, 1991

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene		Ethyl Xylenes	
	Benzene	Toluene	Benzene	Xylenes
EPA Method:	8020	8020	8020	8020
Analyst:	B. Fletcher	B. Fletcher	B. Fletcher	B. Fletcher
Reporting Units:	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Mar 6, 1991	Mar 6, 1991	Mar 6, 1991	Mar 6, 1991
QC Sample #:	102-0654	102-0654	102-0654	102-0654
Sample Conc.:	14	8.1	N.D.	9.8
Spike Conc. Added:	5.0	5.0	5.0	15.0
Conc. Matrix Spike:	18.7	13.0	4.0	21.8
Matrix Spike % Recovery:	94	98	80	80
Conc. Matrix Spike Dup.:	18.1	12.4	3.6	21.1
Matrix Spike Duplicate % Recovery:	82	86	72	75
Relative % Difference:	3.3	4.7	10	3.3

NORTH CREEK ANALYTICAL


 Scot Cocanour
 Laboratory Director

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$

NORTH CREEK ANALYTICAL

18939 120th Avenue N.E., Suite 101 • Bothell, WA 98011
Phone (206) 481-9200 • FAX (206) 485-2992

CHAIN OF CUSTODY REPORT

CLIENT: <i>Environmental Science + Engineering</i>				REPORT TO: <i>James Bryson</i>				TURNAROUND TIME: <i>VERBALS - ASAP</i>									
ADDRESS: <i>17411 N.E. Union Hill rd. Redmond, WA. 98052</i>				BILLING TO: <i>ESE</i>				1-2 DAY		3-5 DAY		10 DAY <input checked="" type="checkbox"/>					
PHONE: <i>(206) 869-8220</i>				PO#/BILLING REFERENCE: <i>6-91-7095</i>													
PROJECT NAME/SITE: <i>Northwest fuel Martin oil - 6-91-7095</i>				ANALYSIS REQUESTED													
SAMPLER: <i>Paul Hohner</i>			DATE: <i>2-23-91</i>			TPH/BTEX-GAS						REMARKS		SAMPLE NUMBER			
SAMPLE ID#/ STATION	SAMPLE DESCRIPTION	NUMBER OF CONT.	TYPE CONT.	SAMPLING TIME/DATE													
<i>MW-1</i>	<i>H₂O</i>	<i>2</i>	<i>vial</i>	<i>2/22/91 / 2:50</i>	<input checked="" type="checkbox"/>											<i>If diesel is evident</i>	
<i>MW-2</i>	<i>H₂O</i>	<i>2</i>	<i>vial</i>	<i>2/22/91 / 2:55</i>	<input checked="" type="checkbox"/>											<i>CALL FOR DIRECTIONS</i>	
<i>MW-3</i>	<i>H₂O</i>	<i>2</i>	<i>vial</i>	<i>2/22/91 / 3:00</i>	<input checked="" type="checkbox"/>												
<i>MW-4</i>	<i>H₂O</i>	<i>2</i>	<i>vial</i>	<i>2/22/91 / 3:05</i>	<input checked="" type="checkbox"/>												
<i>MW-5</i>	<i>H₂O</i>	<i>2</i>	<i>vial</i>	<i>2/22/91 / 3:10</i>	<input checked="" type="checkbox"/>												
RELINQUISHED BY: <i>James P. Bryson</i>				DATE: <i>2/25/91</i>		TIME: <i>8:43</i>		RECEIVED BY: <i>[Signature]</i>				TRAVEL TIME:					
RELINQUISHED BY:				DATE:		TIME:		RECEIVED BY:				ON SITE TIME:					
RELINQUISHED BY:				DATE:		TIME:		RECEIVED IN LAB BY:				OTHER:		WERE SAMPLES:			
												PRESERVED ?		YES		NO	
												IN GOOD CONDITION?		YES		NO	