

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary
William H. Smith, District Director

Northwest District Headquarters
810 W Maple
Spooner, WI 54801-0309
TELEPHONE 715-635-2101
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TDD 715-635-4001

#04-16-050195

May 8, 1997

Mr. William P. Gustafson
Murphy Oil USA, Inc.
2407 Stinson Avenue
P.O. Box 2066
Superior, WI 54880

RE: Murphy Oil USA, Inc.
December 18/19, 1994 Diesel Fuel Leak Near Amoco Terminal,
Superior, Wisconsin

Dear Mr. Gustafson:

On November 30, 1995, the Department of Natural Resources (WDNR) provided notice to you that contamination related to the release which was identified on December 18/19, 1994 from your finished product pipeline was required to be further investigated and remediated as needed. We have since been informed that the investigation of the release has been accomplished. This matter was presented to the Northwest District Closeout Committee (Committee) to determine whether any additional investigative or remedial actions would be necessary.

Based on the documentation provided, it appears that reasonable efforts were made to investigate and remediate the contamination that resulted from the release identified on December 18/19, 1994. After evaluating the available information, the Committee determined that at this time, per s. NR 708.09, Wis. Adm. Code, no further actions are necessary relating to that release. However, according to s. NR 708.09(3), the WDNR may require that additional response actions be conducted by responsible parties in compliance with the requirements of chs. NR 700 to 726 if additional information indicates that residual contamination related to the release poses a threat to public health, safety or welfare or the environment.

Please keep in mind that the decision of the Committee to require no further action relates only to the release that originated from Murphy's finished product pipeline near the Amoco Oil Company terminal which was identified on December 18/19, 1994.

Your efforts toward remediation of the site are appreciated. Should you have any questions regarding this matter, please contact me at (715)635-4048 or Jim Hosch at (715)392-0802.

Sincerely,



Terry Koehn
R&R Hydrogeologist

cc: Bruce A. Fenske, P.E., Eder Associates, 8025 Excelsior Drive,
Madison, Wisconsin 53717-1900
Jim Hosch, WDNR - Superior, Wisconsin
Rick Demkovich, Amoco Marketing Environmental Services Company,
640 Tamarack Trail, Chesterton, IN 46304
Greg Kimbal, Delta Environmental Consultants, Inc.,
2770 Cleveland Ave., Roseville, MN 55113
Steve LaValley, NOR - Superior

PHONE CONVERSATION RECORD

DATE: 4/30/97
TIME: 9:50 A.M.

CONVERSED WITH: Todd Giff
Delta Environmental
810-489-3003

SUBJECT/PROJECT: Murphy Oil Release adjacent
to Amoco's Superior Terminal

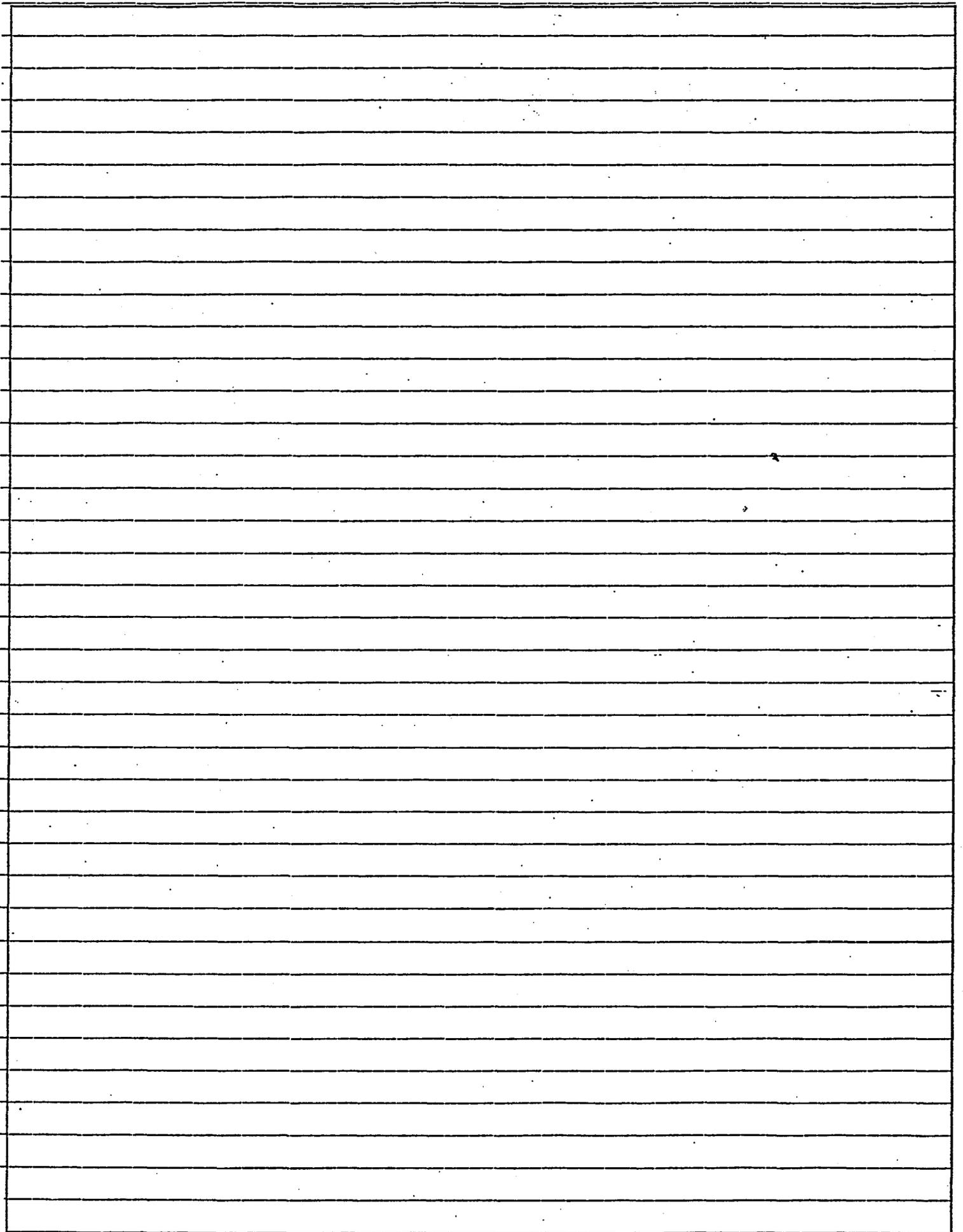
UNIQUE ID#.: _____

I requested the names and addresses of who to send copies of the Murphy no further action letter to. He gave me the following:

Mr. Rick Demkovich, Liability Manager
Amoco Marketing Environmental Services Company
1640 Tamarack Trail
Chesterton, IN 46304
Tel. # 219-926-7695

Mr. Greg Kimbal
Delta Environmental Consultants
2770 Cleveland Avenue
Roseville, MD 55113
Tel. # 612-639-9449

Signature: Kathy Klassen
(please write legibly)



DATE: August 15, 1996 FILE REF:

TO: NWD Closeout Committee
T. Kendzierski NWD/Spooner
J. Dunn NWD/Spooner
J. Prohaska NWD/Spooner
J. Hosch NWD/Spooner

FROM: T. Koehn  NWD/Spooner

SUBJECT: **Murphy Oil - Pipeline Leak, Superior, WI
Closure Consideration**

Background

In December 1994 a leak from a pipeline was detected adjacent to the Amoco Terminal in Superior. A release of approximately 20 barrels of low sulfur diesel resulted in the excavation of an estimated 250 cubic yards of contaminated soil. The WDNR and Murphy were immediately notified by Amoco personnel (confirmation followed from Murphy). Murphy personnel immediately responded to the site. Free product was collected followed by excavation of impacted soil. Two samples of the excavated soil were collected (18700 & 37600 ppm DRO). No samples were collected other than those from the removed soil as it was determined by Murphy that remaining contamination (bottom of excavation) was due to Amoco's release and not from their pipeline leak (based on dye added to their product). At WDNR's request Murphy returned to the site and completed a limited investigation to try and determine if they removed all soil contaminated by their leak and possibly to differentiate impacts of their leak from Amoco's release. The results of Murphy's investigation are presented in the Report dated May 29, 1996 (Eder) which are generally summarized below.

Investigation Summary

Murphy's subsequent investigation consisted of completing five Geoprobe holes (with sampling) near the base and sidewalls of the excavation. Probehole GP-1 was completed along the East side of the excavation to a depth of seven (7) feet. Probehole GP-2 was also completed along the East side of the excavation to a depth of six (6) feet. GP-3 was completed at the South end of the excavation to a depth of six (6) feet. GP-4 was completed at the North end of the excavation to a depth of six (6) feet. GP-5 was also completed at the North end of the excavation to a depth of six (6) feet. A soil sample was collected from each boring and each analyzed for DRO and GRO. Additionally, samples from GP-1, GP-3 and GP-4 were analyzed for PVOCs and PAHs.

Each of the soil samples collected from the borings indicated the presence of petroleum related contamination. NR-720 standards were exceeded in several of the samples. The DRO RCL was exceeded in sample GP-2 (1870 ppm). The benzene RCL was exceeded in samples GP-1, GP-3 and GP-4. The toluene and xylene RCLs were exceeded in sample GP-4. A few PAH compounds were noted in the samples, however, none of the concentrations observed exceeded the DRAFT RCLs (June 1996) for PAHs. Several fingerprint analyses were also performed, however, the results of this effort appeared to be inconclusive.

Closeout Request

Please consider this spill for closure under NR 708 (Tracked as spill not as an ERP Site).

- 1) Notification of the spill was made as soon as possible.
- 2) Removal of free liquids at the surface was performed.



SUPERIOR REFINERY
P O BOX 2066
SUPERIOR WISCONSIN 54880

6/12/96

June 11, 1996

Mr. Terry Koehn
Wisconsin Department of Natural Resources
Highway 70 West
P.O. Box 309
Spooner, WI 54801

RE: Request for Site Closure of Pipeline Release

Dear Mr. Koehn:

On December 19, 1994, Murphy Oil USA, Inc. (Murphy) repaired a small leak in its pipeline adjacent to the Amoco Oil Company Terminal on Maryland Avenue in Superior, Wisconsin. Murphy excavated approximately 250 cubic yards of soil at the time of the repair and disposed of the soil at Lake Superior Blacktop and Materials, Inc. as soil impacted by diesel fuel. The release and the excavation were documented in letters to Mr. Steve LaValley, Wisconsin Department of Natural Resources-Superior, dated December 21, 1994, and February 23, 1995. Because Murphy did not have soil samples analyzed at a laboratory following the excavation, you requested an investigation to document that the soils impacted by the pipeline had been removed. On November 30, 1995, you approved the work plan for an investigation to document our remediation efforts.

Attached is a copy of the letter report prepared by Eder Associates (EDER) and discussing its findings during a borehole investigation at the site. As you know, this site is in an industrial area impacted by other users. The letter report details our remediation efforts and summarizes the impacts to the site associated with other users. It concludes with a recommendation to close the site of the pipeline release.

We request site closure of Murphy's pipeline along Maryland Avenue as recommended by EDER. If you have any questions, please call me at (715) 398-8217.

Sincerely,

A handwritten signature in black ink, appearing to read "William P. Gustafson", is written over a horizontal line.

William P. Gustafson
Environmental Operations Superintendent

bg.104

Enc.

cc: L. Vail (Murphy-El Dorado)
R. Lewandowski (DeWitt Ross & Stevens)
B. Fenske (EDER)





eder associates
environmental scientists and engineers

May 29, 1996
File #367-77



OFFICES:
Locust Valley, NY
Madison, WI
Ann Arbor, MI
Augusta, GA
Jacksonville, FL
Trenton, NJ
Tampa, FL

Mr. William P. Gustafson
Murphy Oil USA, Inc.
2407 Stinson Avenue
P.O. Box 2066
Superior, WI 54880

04-16-050195

Re: Investigation of Diesel Fuel-Impacted Soils from
Murphy's Pipeline Near Amoco Terminal

Dear Bill:

This letter report summarizes the results of a December 28, 1995, investigation conducted adjacent to a Murphy Oil USA, Inc. (Murphy) pipeline near the Amoco Oil Company (Amoco) terminal in Superior, Wisconsin. The investigation site was approximately 300 feet south of the intersection of Maryland and Winter Streets, as shown on Figure 1. The investigation was conducted to document the removal of all soil impacted by a diesel fuel release from the Murphy pipeline.

Background

On December 19, 1994, a leak of low-sulfur No. 1 diesel fuel was discovered along a Murphy pipeline near the Amoco terminal in Superior. The transfer pipe was immediately shut down, both ends of the pipe were blocked in, and Murphy maintenance personnel removed free-standing liquid that had collected in the roadside ditch near the leak. A contractor then removed approximately 250 cubic yards (125 ft. x 4 ft. x 5 ft.) of soil from around a small hole in the transfer pipe so it could be repaired. Based on visual inspection, the excavated soil appeared to have been contaminated by diesel fuel. Soil removal extended beyond the point of visible contamination about 4.5 feet north and south along the pipeline; about 1.5 feet east and west of the pipeline, to within 1 foot of Maryland Avenue and 1 foot of Amoco's fence, respectively; and about 2.5 feet deeper than the pipeline. Any further excavation to the east or west would have jeopardized the integrity of the roadway or the fence, respectively.

Two soil samples collected from the excavated material showed diesel range organic (DRO) concentrations of 18,700 mg/kg and 37,600 mg/kg, respectively. The excavated soils were thermally treated at Lake Superior Blacktop and Materials, Inc. No soil samples were collected for laboratory analysis from inside the excavation when it was open because of the influence of a nearby Amoco release of gasoline and diesel fuel. As a result, there was no

Continued . . .

Mr. William P. Gustafson
Murphy Oil USA, Inc.
May 29, 1996

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laboratory confirmation at the time of the excavation that all the diesel fuel-impacted soil had been removed.

Amoco Facility

A release of gasoline and diesel fuel at the Amoco terminal is currently under investigation by Delta Engineering of Minneapolis, Minnesota, and is being reviewed by Mr. Terry Koehn of the Wisconsin Department of Natural Resources' (WDNR) Spooner office. The following summary of the investigation to date is based on a review of his files on the investigation.

During a routine assessment of the Amoco facility in February 1988, petroleum contamination was discovered in soil and groundwater at the site, which is located immediately west of the Murphy pipeline. The Amoco facility has been operating as a bulk petroleum storage terminal since 1910. There are 16 vertical aboveground storage tanks (ASTs) and 4 underground storage tanks (USTs) now on the site. The 16 ASTs range in capacity from 595 barrels (24,990 gallons) to 78,000 barrels (3,276,000 gallons). The tanks store various grades of gasoline, kerosene, fuel oil, and ethanol. The four USTs consist of a 500-gallon tank used in association with a vapor recovery system and a 1,000-gallon slop tank, both located at the loading racks, a 7,500-gallon oil/water separator tank located in the northwest corner of the site, and a 58,000-gallon oil/water separator tank near the loading racks. Figure 2 shows the facility layout.

Groundwater and unsaturated soil contamination unrelated to and predating Murphy's pipeline release has been confirmed. Unsaturated soil contamination has been verified near the loading rack, the manifold area, and north of Tank 38. Groundwater contamination has been confirmed both in the free and dissolved phase. There are approximately 4 to 6 feet of free product in ten monitoring wells surrounding the former Murphy soil excavation. In addition, one monitoring well about 200 feet southeast and upgradient of the pipeline reported polynuclear aromatic hydrocarbons in the groundwater. Dissolved-phase contamination in the groundwater was detected underlying most of the Amoco facility. The groundwater contamination consists of gasoline, No. 1 fuel oil, and No. 2 fuel oil. The Amoco documents reviewed did not indicate the total volume of petroleum products released into the subsurface.

The Delta Engineering survey shows that groundwater flow is from the southeast to the northwest, toward St. Louis Bay. Depth to groundwater is approximately 18 to 22 feet below grade. Surprisingly, a review of WDNR records showed that it has not yet received the report

Continued . . .

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Murphy Oil USA, Inc.
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quantifying the soil contamination that is associated with Amoco's petroleum release. A telephone conversation with a Delta Engineering representative confirmed that no soil samples have been submitted to an analytical laboratory for analysis. The only available soil data from Delta comes from screening with a photo-ionization detector (PID), and these readings are geographically limited. Because Delta's PID calibration is not documented and because of the nature of the instrument, PID readings collected during the Amoco investigation cannot be directly compared to the sampling results for the borehole investigation of the pipeline.

Borehole Investigation

On December 28, 1995, Eder Associates (EDER) oversaw a Geoprobe investigation adjacent to the former Murphy excavation. The Geoprobe was supplied and operated by Envirosan Corp., of Rothschild, Wisconsin.

Five probeholes were advanced into soil near the base and sidewalls of the former excavation and sampled to confirm that all diesel-contaminated soils had been excavated. Figure 3 shows the probehole locations. The probehole locations were changed slightly in the field from those indicated in our November 14, 1995, scope of work because snow and underground utilities made access to the original locations difficult.

Probeholes GP-2 through GP-5 were sampled near the sidewalls of the former excavation, and samples were collected from the natural soil surrounding the former excavation at 3 to 6 feet below grade. These borings contained no evidence of the medium-to-coarse sand that had been used to fill the excavation, nor did they contain evidence, either visual or olfactory, of diesel fuel contamination.

A base sample, GP-1, was collected from the southern end of the excavation. Fill composed of medium-to-coarse sand was encountered between 3 and 5 feet, and red-brown clay was encountered from 5 to 7 feet. A sample was collected from the clay. Field observations revealed no evidence that the sample contained diesel contamination. The boring logs are enclosed in Appendix A.

A sample from each probehole was submitted to Envirosan for DRO, gasoline range organic (GRO), and fuel fingerprint analyses. In addition, GP-1, GP-3, and GP-4 were analyzed for polynuclear aromatic hydrocarbons and petroleum volatile organic compounds.

Continued . . .

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Murphy Oil USA, Inc.
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A review of Murphy records verified that its pipeline had contained low-sulfur No. 1 diesel fuel at the time of the leak (see Appendix B). The refinery pumped approximately 1.4 million gallons of low-sulfur diesel fuel from Tank 55 down this pipeline between 4:40 a.m. December 17, 1994, and 6:20 p.m. December 18, 1994. A sample of low-sulfur No. 1 diesel fuel was submitted for fuel fingerprinting analyses so it could be compared to the analytical results for the soil samples. This would allow us to determine whether the analytical results of the soil samples were consistent with the presence of low-sulfur No. 1 diesel fuel.

All Geoprobe equipment was cleaned after it was used in each probehole. All probeholes were abandoned according to Chapter NR 141, Wisconsin Administrative Code procedures.

Sampling Results

Table 1 presents all the analytical results for the soil samples. The results indicate that all soil samples except GP-5 exceeded Chapter NR 720, Wisconsin Administrative Code, soil clean-up standards (CS) for at least one parameter. Of these samples, only GP-2 contained a DRO concentration above the NR 720 CS. The remaining elevated sample results were for benzene, toluene, and xylenes. Complete analytical results are provided in Appendix C.

Discussion of Results

Determining a source for the DRO-impacted soil was difficult because of past confirmed petroleum releases from the adjacent Amoco facility. To help address this issue, a fuel fingerprint analysis was conducted. Enviroscan conducted a fuel fingerprint analysis the goal of which was to compare low-sulfur No. 1 diesel fuel with the same fuel fingerprint analysis for all retrieved soil samples. Enviroscan performed a fuel fingerprint analysis using the Murphy diesel product, and compared it to the No. 1 diesel fuel standard. Appendix D presents the chromatograms for each of these analyses. These chromatograms indicate that the two fingerprints are indistinguishable; the chemical composition of the No.1 diesel fuel standard matches the chemical composition of Murphy's No. 1 diesel fuel. Because Murphy's high quality product is indistinguishable from the fuel standard, identification of the source of the diesel fuel is not possible with standard testing procedures.

Interestingly, No. 2 fuel oil, a confirmed contaminant detected at the Amoco facility, has a very similar chromatogram to Murphy's No. 1 diesel fuel. Comparing the chromatogram of the soil sample retrieved from GP-2 to the No. 2 fuel oil and to Murphy's No. 1 diesel fuel

Continued . . .

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Murphy Oil USA, Inc.
May 29, 1996

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chromatograms, it is apparent the elevated DRO concentration could be a result of a No. 1 diesel fuel and/or a No. 2 fuel oil. This may be the case, because reported DRO concentrations do not distinguish between diesel and fuel oil.

The results of the sampling also must be viewed in the context of the area's history. Because of the lack of laboratory analyses of soil from the Amoco investigation and the direction of groundwater flow indicated by the Amoco investigation, GP-3 best represents background conditions before the pipeline leak. Background conditions show an area impacted by the Amoco release and, as a result, definitive background concentrations of any parameter cannot be established due to the variability of concentrations following a release of the magnitude defined by the Delta survey. In addition, the area near the leak is industrial and is characterized by small manufacturing sites and tank farms. The property across Maryland Avenue was formerly owned and used by Stott Briquette to manufacture charcoal briquettes. Tank farms have been located here for over 30 years. Until they were paved during the late 1960s and 1970s, the roads in the area were only gravel. The city of Superior sprayed a mixture of eighty percent No. 1 and twenty percent No. 2 fuel oils on gravel roads to control dust, a standard road maintenance practice until the early 1960s. The only sample collected that had an elevated DRO result, GP-2, is within 12 inches of Maryland Avenue and could still reflect historical dust control practices. No other borings had elevated DRO levels, indicating that the DRO is only in soil adjacent to the road.

The elevated levels of benzene, toluene, and xylenes are more indicative of gasoline-impacted soils than diesel-impacted soils and are likely due to the gasoline free product observed in monitoring wells around the excavation. Figure 4 shows the extent of Murphy's soil remediation in an area otherwise underlain by free product. Murphy removed soil from an area of about 600 square feet in the midst of a free product plume extending over an area of nearly 440,000 square feet.

Recommendations

We recommend closure of this site. Analytical results indicate that the diesel-impacted soil surrounding Murphy's pipeline **was removed by the December 1994 excavation.** A DRO concentration above NR 720 standards was measured in GP-2, but because of the adjacent release by Amoco, the inconclusive fuel fingerprinting results, and historical road maintenance practices, it is unlikely that Murphy is the source of this impacted soil. The December 1994 excavation removed as much soil along the road as was possible without jeopardizing its

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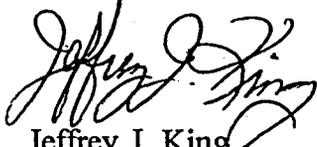
Mr. William P. Gustafson
Murphy Oil USA, Inc.
May 29, 1996

-6-

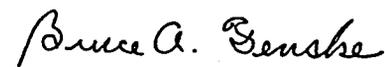
integrity. The location of GP-2 in relation to Maryland Avenue and Amoco's driveway would make excavating any additional soils extremely disruptive and difficult. In addition, the risk posed by the small volume of marginally impacted soils at GP-2 is minor considering that free product in Amoco's monitoring wells, which surround Murphy's excavation, has consistently been 4 to 6 feet in depth. Murphy's actions at the pipeline are most accurately characterized as providing an island of remediation in a pre-existing sea of contamination.

Very truly yours,

EDER ASSOCIATES



Jeffrey J. King
Staff Hydrogeologist

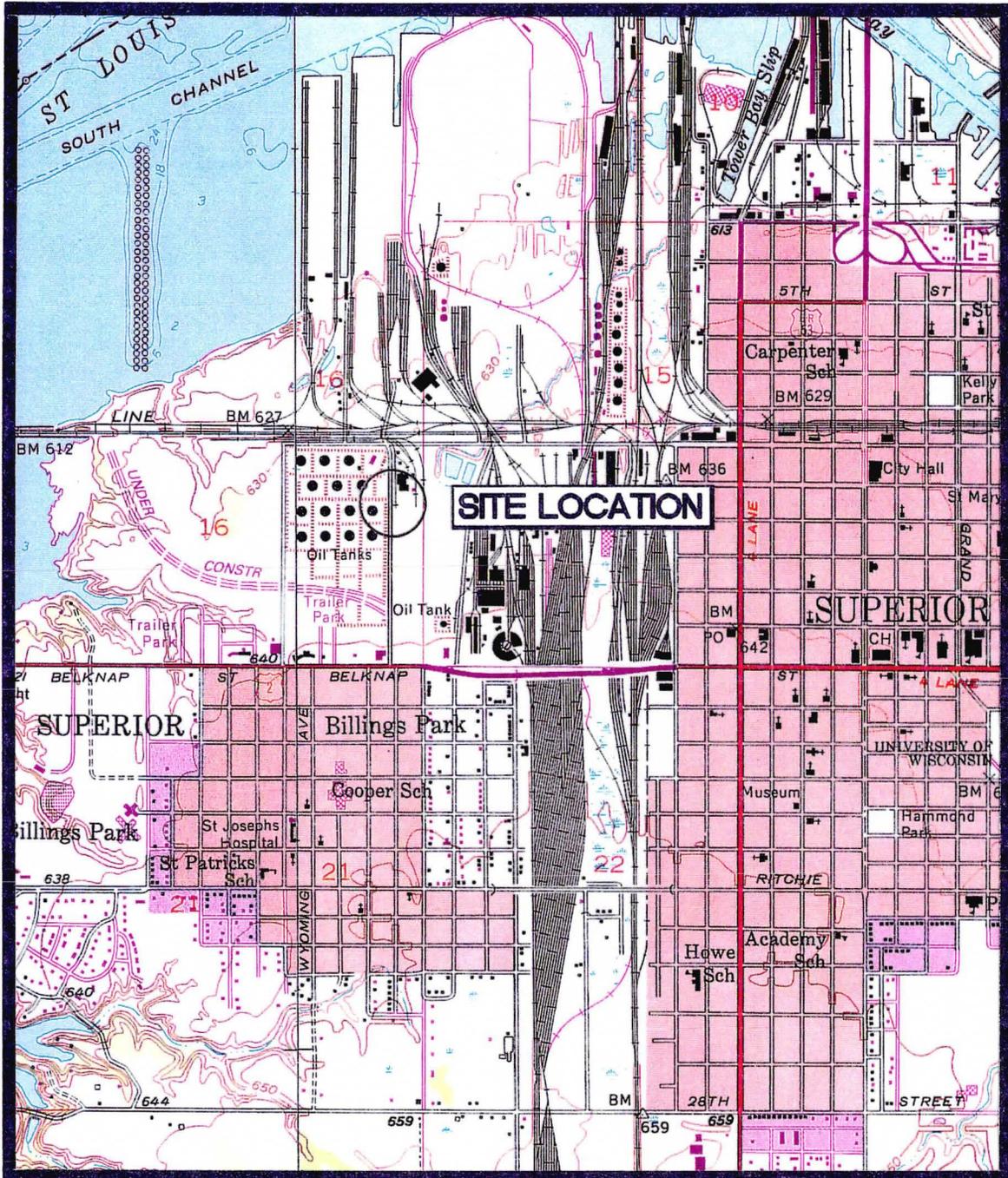


Bruce A. Fenske, P.E.
Senior Project Manager

BAF/skk
Enc.

cc w/ enc: M. Miller (Murphy-Superior)
L. Vail (Murphy- El Dorado)
F. Inyard (EDER-New York)

BAF4L367-77.002



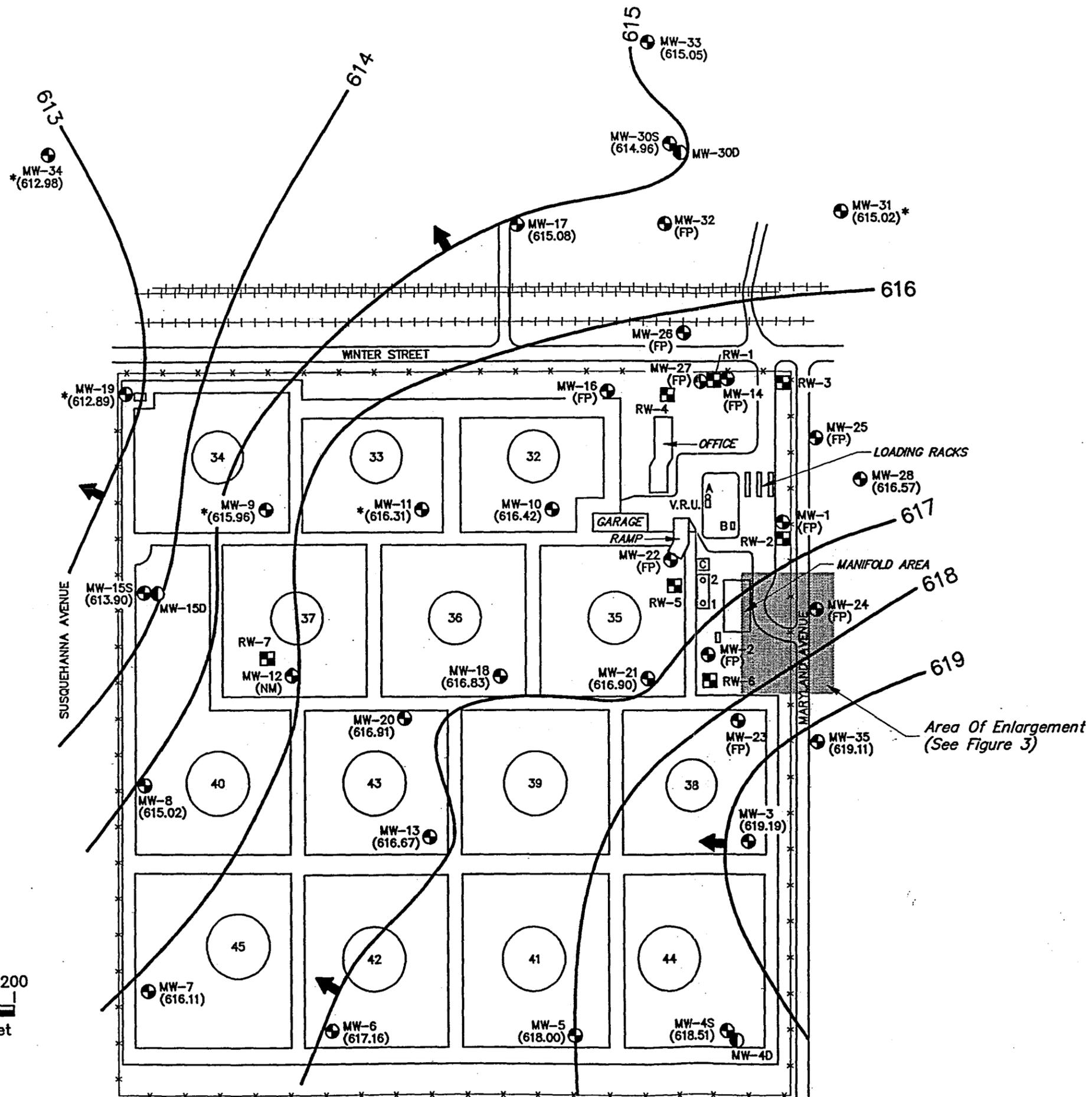
SCALE: 1 INCH = 2000 FEET



7.5 MIN TOPOGRAPHIC MAP
SUPERIOR, WIS.-MINN.
WEST DULUTH, MINN.-WIS.
PHOTOREVISED 1983



LOCATION MAP
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN



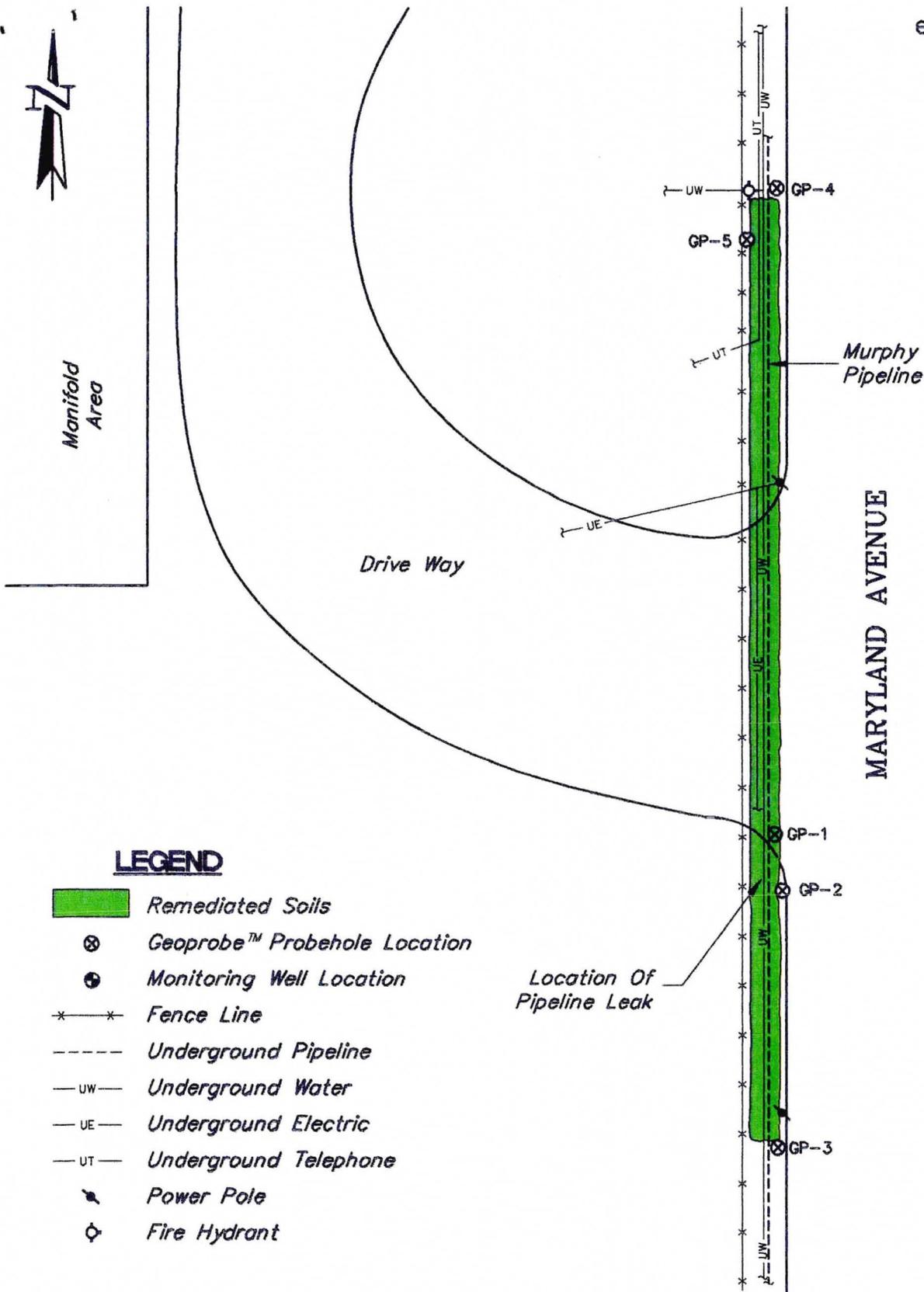
LEGEND

- Groundwater Contour With Flow Direction
- (615.05) Groundwater Elevation
FP-FREE PHASE HYDROCARBONS PRESENT
NM-NOT MEASURED
*-EXCEEDS TOP OF SCREEN ELEVATION
- Monitoring Well Location
- Deep Monitoring Well Location
- Recovery Well Location
- Fence Line
- Underground Storage Tank
- Aboveground Storage Tank

NOTE:

April 1995 Report Prepared
On Behalf Of Amoco Oil Company

**GROUNDWATER
CONTOUR MAP
(APRIL 14, 1995)**
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN



LEGEND

- Remediated Soils
- X Geoprobe™ Probehole Location
- Monitoring Well Location
- Fence Line
- Underground Pipeline
- Underground Water
- Underground Electric
- Underground Telephone
- ⚡ Power Pole
- ⊕ Fire Hydrant



**GEOPROBE PROBEHOLE
LOCATIONS**

MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN



MW-34

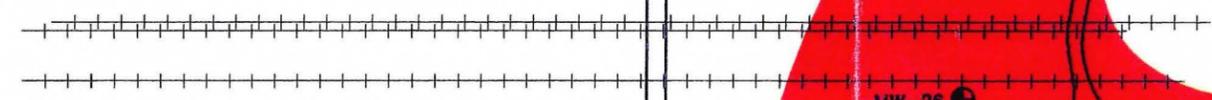
MW-33

MW-30S MW-30D

MW-31

MW-17

MW-32

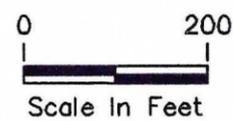


WINTER STREET



LEGEND

- Pre-Existing Free Product Plume
- Remediated Soils
- Monitoring Well Location
- Deep Monitoring Well Location
- Recovery Well Location
- Fence Line
- A Underground Storage Tank
- 34 Aboveground Storage Tank



**PRE-EXISTING
FREE PRODUCT PLUME**
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

TABLE 1

ANALYTICAL RESULTS FOR SOIL SAMPLES (mg/kg)

PIPELINE RELEASE NEAR AMOCO TERMINAL

DECEMBER 28, 1995

Parameter	Sample ID						NR 720 Soil Clean-Up Standards
	GP-1	GP-2	GP-3	GP-4	GP-5	Murphy Fuel	
DRO	72.3 ⁽¹⁾	1,870 ⁽¹⁾	115 ⁽¹⁾	66.6 ^(1,2)	51.7 ^(3,4,5)	NA	250
GRO	56.1 ^(6,7)	182 ^(6,7)	15.4 ^(6,7)	80.9 ⁽⁸⁾	<5.0	NA	250
TPH	15.8	357	10.7	<5.0	9.53	3,370	NS
Benzene	0.21	NA	0.48	4.5	NA	NA	0.0055
Ethylbenzene	0.28	NA	0.24	2.0	NA	NA	2.9
MTBE	<0.026	NA	<0.025	<0.025	NA	NA	NS
Toluene	0.18	NA	<0.025	11	NA	NA	1.5
1,2,4-TMB	1.2	NA	0.39	4.1	NA	NA	NS
1,3,5-TMB	0.31	NA	0.17	1.2	NA	NA	NS
Xylenes	1.16	NA	0.25	10.4	NA	NA	4.1
Fluorene	0.0133	NA	0.103	<0.0035	NA	NA	NS
1-Methyl Naphthalene	0.0502	NA	0.0412	<0.0066	NA	NA	NS
Naphthalene	0.0349	NA	0.0405	0.0125	NA	NA	NS

Table 1 Continued . . .

NOTES:

Results in bold exceed applicable NR 720 Soil Clean-Up Standards.
Only detectable PAH concentrations included in table.

NR 720 Soil Clean-Up Standards	=	Wisconsin Administrative Code NR 720 Soil Clean-Up Standards.
NA	=	Not Analyzed.
NS	=	No current standard.
<0.026	=	Analyzed but not detected at 0.026 mg/kg detection limit.
Murphy Fuel	=	Low-sulfur No. 1 diesel fuel.

FOOTNOTES:

- (1) The chromatogram is characteristic for a fuel oil/diesel.
- (2) The chromatogram is characteristic for a light petroleum product.
- (3) The chromatogram is not characteristic for diesel. It has the characteristics of a product which has significant peaks within the DRO window.
- (4) The chromatogram is characteristic for a heavier petroleum product other than diesel.
- (5) The chromatogram contained significant peaks and a raised baseline outside the DRO window.
- (6) The chromatogram is not characteristic for either gasoline or aged gasoline. However, it has a reportable concentration of peaks/area within the GRO window.
- (7) The chromatogram contains a significant number of peaks and a raised baseline outside the GRO window.
- (8) The chromatogram is characteristic for gasoline.

APPENDIX A

SOIL BORING LOGS FOR PIPELINE INVESTIGATION

NEAR AMOCO TERMINAL

Facility/Project Name Murphy Oil USA, Inc.			License/Permit/Monitoring Number		Boring Number GP-1	
Boring Drilled By (Firm name and name of crew chief) Enviroscan (Doug Schubring)			Date Drilling Started 12/28/95		Date Drilling Completed 12/28/95	
DNR Facility Well No.		WI Unique Well No.	Common Well Name		Final Static Water Level Feet MSL	Surface Elevation Feet MSL
						Borehole Diameter 1.5 Inches
Boring Location State Plane 1/4 of 1/4 of Section 16 T 49 N,R 14 W			N, E T 49 N,R 14 W		Local Grid Location (If applicable) Lat 0' " <input type="checkbox"/> N <input type="checkbox"/> E Long 0' " Feet <input type="checkbox"/> S Feet <input type="checkbox"/> W	
County Douglas			DNR County Code		Civil Town/City/ or Village Superior	

Number	Sample Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments				
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200					
3-5	12		1-3															
			3-4	Fill Medium to coarse sand														
5-7	24		4-7	Red-brown clay Plastic	CH													
			7	End of boring Abandoned with granular bentonite														

I hereby certify that the information on this form is true and correct to the best of my knowledge.

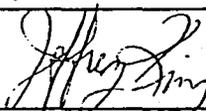
Signature 	Firm Eder Associates 8025 Excelsior Drive Madison, WI 53717 Tel: (608)836-1500 Fax: (608)831-3337
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This form is authorized by Chapters 144, 147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

Facility/Project Name Murphy Oil USA, Inc.			License/Permit/Monitoring Number		Boring Number GP-2	
Boring Drilled By (Firm name and name of crew chief) Enviroscan (Doug Schubring)			Date Drilling Started 12/28/95		Date Drilling Completed 12/28/95	
DNR Facility Well No.		WI Unique Well No.	Common Well Name		Final Static Water Level Feet MSL	Surface Elevation Feet MSL
						Borehole Diameter 1.5 Inches
Boring Location State Plane 1/4 of 1/4 of Section 16			N, E T 49 N,R 14 W		Local Grid Location (If applicable)	
			Lat 0' "		<input type="checkbox"/> N <input type="checkbox"/> E	
			Long 0' "		Feet <input type="checkbox"/> S Feet <input type="checkbox"/> W	
County Douglas			DNR County Code		Civil Town/City/ or Village Superior	

Sample Number	Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	
3-5	12		1 2 3		CH							D		
5-6	12		4 5 6	Red-brown clay Plastic								D		
				End of boring Abandoned with granular bentonite										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm Eder Associates 8025 Excelsior Drive Madison, WI 53717 Tel: (608)836-1500 Fax: (608)831-3337
--------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------

This form is authorized by Chapters 144, 147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

Facility/Project Name Murphy Oil USA, Inc.			License/Permit/Monitoring Number		Boring Number GP-3	
Boring Drilled By (Firm name and name of crew chief) Enviroscan (Doug Schubring)			Date Drilling Started 12/28/95		Date Drilling Completed 12/28/95	Drilling Method Geoprobe
DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level Feet MSL		Surface Elevation Feet MSL	Borehole Diameter 1.5 Inches
Boring Location State Plane 1/4 of 1/4 of Section 16 T 49 N,R 14 W			Lat 0 " N	Long 0 " W	Local Grid Location (If applicable) <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
County Douglas		DNR County Code	Civil Town/City/ or Village Superior			

Number	Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200		
3-5	12		1-3		CH										
5-6	12		3-5	Red-brown clay Plastic											
			5-6	End of boring Abandoned with granular bentonite											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

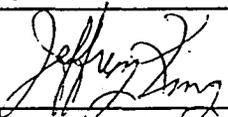
Signature 	Firm Eder Associates 8025 Excelsior Drive Madison, WI 53717 Tel: (608)836-1500 Fax: (608)831-3337
---------------	-------------------------------------------------------------------------------------------------------------------

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Facility/Project Name Murphy Oil USA, Inc.			License/Permit/Monitoring Number		Boring Number GP-4	
Boring Drilled By (Firm name and name of crew chief) Enviroscan (Doug Schubring)			Date Drilling Started 12/28/95		Date Drilling Completed 12/28/95	Drilling Method Geoprobe
DNR Facility Well No.	WI Unique Well No.	Common Well Name	Final Static Water Level Feet MSL		Surface Elevation Feet MSL	Borehole Diameter 1.5 Inches
Boring Location State Plane 1/4 of 1/4 of Section 16 T 49 N,R 14 W			N, E	Lat 0' "	Local Grid Location (If applicable)	Long 0' "
County Douglas			DNR County Code	Civil Town/City/ or Village Superior		

Sample Number	Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	
3-5	18		1-3		CH					M				
5-6	12		3-5	Red-brown clay Plastic						M				
			5-6	End of boring Abandoned with granular bentonite										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm Eder Associates 8025 Excelsior Drive Madison, WI 53717 Tel: (608)836-1500 Fax: (608)831-3337
--------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------

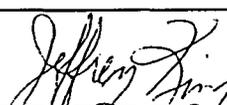
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- Route To:
- Solid Waste
 - Emergency Response
 - Wastewater
 - Haz. Waste
 - Underground Tanks
 - Water Resources
 - Other

Facility/Project Name Murphy Oil USA, Inc.			License/Permit/Monitoring Number		Boring Number GP-5	
Boring Drilled By (Firm name and name of crew chief) Enviroscan (Doug Schubring)			Date Drilling Started 12/28/95		Date Drilling Completed 12/28/95	
DNR Facility Well No.		WI Unique Well No.	Common Well Name		Final Static Water Level Feet MSL	Surface Elevation Feet MSL
						Borehole Diameter 1.5 Inches
Boring Location State Plane 1/4 of 1/4 of Section 16 T 49 N,R 14 W			N, E Lat 0' 0" Long 0' 0"		Local Grid Location (If applicable) <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
County Douglas			DNR County Code		Civil Town/City/ or Village Superior	

Sample Number	Length (in) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200		
3-5	12		1-3		CH										
5-6	12		3-6	Red-brown clay Plastic											
			6	End of boring Abandoned with granular bentonite											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm Eder Associates 8025 Excelsior Drive Madison, WI 53717 Tel: (608)836-1500 Fax: (608)831-3337
--------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------

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APPENDIX B

CONTENTS OF MURPHY PIPELINE DOCUMENTATION

TANK INFORMATION

JAN 1995

TANK NO.	PRODUCT	TANK SIZE	BBL FT	BBL IN	USABLE TOP	TOT WK CAP	TOT INV CAP	BOT LEV	TANK BOTT
GASOLINE:									
30	NAPHTHA	55,000	1399	117	36.6	44083	51068	5.0	6985
40	NAPHTHA	5,300	224	19	23.4	5000	5300	1.4	300
41	NAPHTHA	10,000	253	21	36.0	8751	10000	5.0	1249
57	UNLEADED REG	39,000	2014	167	43.6	77581	87008	5.0	9427
58	UNLEADED REG	55,000	1399	117	36.6	44063	51055	5.0	6992
59	UNLEADED REG	55,000	1399	117	36.6	44066	51058	5.0	6992
63	LT STR RUN	8,475	283	23	29.0	6798	8195	5.0	1397
64	LT STR RUN	8,400	283	23	29.0	6794	8129	5.0	1395
65	LT STR RUN	16,400	567	47	25.0	11665	14215	4.6	2550
56	ETHANOL	16,400	568	47	25.0	11639	14189	4.6	2550
68	SUPER UNLEAD	52,000	1399	117	36.0	43332	50117	5.0	6735
69	SUPER UNLEAD	52,000	1398	116	36.0	43109	49909	5.0	6800
70	UNLEADED REG	55,800	1399	117	36.6	44766	51561	5.0	6795
71	SUBGRADE	52,000	1397	116	36.0	43103	49903	5.0	6800
72-77	BUTANE	1,000	HORZ TKS		8.8	877	877	0	0
107-111	PROPANE	750	HORZ TKS		8.1	710	710	0	0
79	SOUR WATER	10,000	253	21	36.0	7835	9084	5.0	1249
TERMINAL TANKS:									
21	FUEL OIL	24,000	503	42	47.7	23241	24016	1.6	775
22	FUEL OIL	24,000	503	42	47.8	23238	23950	1.6	712
23	UNLEADED REG	54,248	1133	94	44.6	45327	50281	4.6	4954
211	FUEL OIL		894	74	47.0	40299	41988	2.0	1689
212	FUEL OIL		685	57	47.0	30868	32204	2.0	1336
213	FUEL OIL		687	57	47.0	30865	32201	2.0	1336
215	FUEL OIL		682	57	47.0	30854	32054	2.0	1200
LIGHT OILS:									
13	CSD	3,500	142	12	24.7	3206	3490	2.0	284
14	CSD	3,500	142	12	24.7	3196	3480	2.0	294
26	NO 2 FUEL OIL	216,000	4534	378	47.7	209292	214576	1.5	5284
27	NO 1 FUEL OIL	216,000	4534	378	47.7	209292	214576	1.5	5284
29	NO 1 FUEL OIL	55,900	1399	117	36.6	44099	51013	5.0	6914
31	NO 1 FUEL OIL	5,400	215	18	23.3	4710	5000	1.4	290
32	NO 2 FUEL OIL	5,400	224	19	23.3	4930	5200	1.3	270
33	NO 2 FUEL OIL	5,400	224	19	23.3	4910	5200	1.4	290
38	NO 2 FUEL OIL	15,000	502	42	29.0	13727	14516	1.8	789
39	NO 2 FUEL OIL	15,000	503	42	29.0	13580	14535	2.0	955
67	NO 1 FUEL OIL	20,100	502	42	39.0	15950	19600	1.3	650
42	NO 2 FUEL OIL	56,000	1399	117	35.6	42658	49650	6.0	6992
55	LOW-SULF DSL	55,722	1399	117	38.6	51092	53740	2.0	2648
56	LOW-SULF DSL	55,744	1399	117	38.6	51113	53761	2.0	2671
62	LOW-SULF DSL	35,600	894	74	39.0	33370	34760	1.3	1390

DAILY TRANSFER REPORT

From 5 A.M. 12-17 to 5 A.M. 12-18 1994

From Tank No.	Time	GAUGE						Initial	To Tank No.	Time	GAUGE						Initial
		OPENING			CLOSING						OPENING			CLOSING			
		Ft.	In.	Temp.	Ft.	In.	Temp.				Ft.	In.	Temp.	Ft.	In.	Temp.	
1 3	0400	43	0 ³ / ₄		43	0 ³ / ₄		DL AT	LDG	0400							DL AT
TRANSFER 1 LINE UP																	
2 38		2	7		27	9											
TRANSFER 2 LINE UP																	
3 51		11	10		18	2											
TRANSFER 3 LINE UP																	
5 52		20	0		19	4											
TRANSFER 4 LINE UP																	
5 53		14	3		14	0											
TRANSFER 5 LINE UP																	
6 55		35	0 ¹ / ₂		22	9											
TRANSFER 6 LINE UP																	
7 58		19	6		16	10 ¹ / ₄											
TRANSFER 7 LINE UP																	
8 66		5	6		5	5											
TRANSFER 8 LINE UP																	
9 67		18	1		21	9											
TRANSFER 9 LINE UP																	
10 69		25	2 ¹ / ₂		24	11 ¹ / ₂											
TRANSFER 10 LINE UP																	
11 300			72			81											
TRANSFER 11 LINE UP																	
12 LKHD		-	SUPT	716	-				25	18.00	6	9 ¹ / ₂		19	11 ¹ / ₂		DL AT
TRANSFER 12 LINE UP																	
13 57		41	8		41	4			WPL	0440	-			-			DL AT
TRANSFER 13 LINE UP																	
14 55	0440	35	0 ¹ / ₂		22	9			WPL	0400							DL AT
TRANSFER 14 LINE UP																	

DAILY TRANSFER REPORT

From 5 A.M. 12-18 to 5 A.M. 12-19 19 94

From Tank No.	Time	GAUGE						Initial	To Tank No.	Time	GAUGE						Initial	
		OPENING			CLOSING						OPENING			CLOSING				
		Ft.	In.	Temp.	Ft.	In.	Temp.				Ft.	In.	Temp.	Ft.	In.	Temp.		
1 3	0400	43	0 1/4		43	0		DLAT	LDG	0400							DLAT	
TRANSFER 1 LINE UP																		
2 38		27	9		23	10												
TRANSFER 2 LINE UP																		
3 51		18	2		18	2												
TRANSFER 3 LINE UP																		
52		19	4		25	8												
TRANSFER 4 LINE UP																		
5 53		14	0		12	9												
TRANSFER 5 LINE UP																		
6 55		22	9		13	7												
TRANSFER 6 LINE UP																		
7 58		16	10 1/4		15	11 1/2												
TRANSFER 7 LINE UP																		
8 66		5	5		5	4 3/4												
TRANSFER 8 LINE UP																		
9 67		21	9		26	5												
TRANSFER 9 LINE UP																		
10 69		24	11 1/2		24	9 1/4												
TRANSFER 10 LINE UP																		
11 300			81			93												
TRANSFER 11 LINE UP																		
12 LKHD	0340	— SYN 131 —							48	1215	19	5 1/2		31	4			NF CO
TRANSFER 12 LINE UP																		
13 55	0400	22	9		13	7 1/2			WPL	1820	—						DLAT	
TRANSFER 13 LINE UP																		
14 53	0800	14	0		8	11		NF CO	52	1445	19	2		26	3		NF CO	
TRANSFER 14 LINE UP																		

TANK INFORMATION

JAN 1995

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57	UNLEADED REG	39,000	2014	167	43.6	77581	87008	5.0	9427
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59	UNLEADED REG	55,000	1399	117	36.6	44066	51058	5.0	6992
63	LT STR RUN	8,475	283	23	29.0	6798	8195	5.0	1397
64	LT STR RUN	8,400	283	23	29.0	6794	8129	5.0	1395
65	LT STR RUN	16,400	567	47	25.0	11665	14215	4.6	2550
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71	SUBGRADE	52,000	1397	116	36.0	43103	49903	5.0	6800
72-77	BUTANE	1,000	HORZ TKS		8.3	877	877	0	0
107-111	PROPANE	750	HORZ TKS		8.1	710	710	0	0
79	SOUR WATER	10,000	253	21	36.0	7835	9084	5.0	1249
TERMINAL TANKS:									
21	FUEL OIL	24,000	503	42	47.7	23241	24016	1.6	775
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212	FUEL OIL		685	57	47.0	30868	32294	2.0	1336
213	FUEL OIL		687	57	47.0	30865	32201	2.0	1336
215	FUEL OIL		682	57	47.0	30854	32054	2.0	1200
LIGHT OILS:									
13	CSO	3,500	142	12	24.7	3206	3490	2.0	284
14	CSO	3,500	142	12	24.7	3196	3480	2.0	294
26	NO 2 FUEL OIL	216,000	4534	378	47.7	209292	214576	1.5	5284
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29	NO 1 FUEL OIL	55,900	1399	117	36.6	44099	51013	5.0	6914
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56	LOW-SULF DSL	55,744	1399	117	38.6	51113	53761	2.0	2671
62	LOW-SULF DSL	35,600	894	74	39.0	33370	34760	1.3	1370

DAILY TRANSFER REPORT

From 5 A.M. 12-17 to 5 A.M. 12-18 1994

From Tank No.	Time	GAUGE						Initial	To Tank No.	Time	GAUGE						Initial
		OPENING			CLOSING						OPENING			CLOSING			
		Ft.	In.	Temp.	Ft.	In.	Temp.				Ft.	In.	Temp.	Ft.	In.	Temp.	
1 3	0400	43	0 ³ / ₄		43	0 ¹ / ₄		DL AT	LDG	0400							DL AT
TRANSFER 1 LINE UP																	
2 38		2	7		27	9											
TRANSFER 2 LINE UP																	
3 51		11	10		18	2											
TRANSFER 3 LINE UP																	
4 52		20	0		19	4											
TRANSFER 4 LINE UP																	
5 53		14	3		14	0											
TRANSFER 5 LINE UP																	
6 55		35	0 ¹ / ₂		22	9											
TRANSFER 6 LINE UP																	
7 58		19	6		16	10 ¹ / ₄											
TRANSFER 7 LINE UP																	
8 66		5	6		5	5											
TRANSFER 8 LINE UP																	
9 67		18	1		21	9											
TRANSFER 9 LINE UP																	
10 69		25	2 ¹ / ₂		24	11 ¹ / ₂											
TRANSFER 10 LINE UP																	
11 300			72			81											
TRANSFER 11 LINE UP																	
12 LKHD			-	SUST	716	-			25	18.00	6	9 ¹ / ₂		19	11 ¹ / ₂		DL AT
TRANSFER 12 LINE UP																	
13 57		41	8		41	4			WPL	0440							DL AT
TRANSFER 13 LINE UP																	
14 55	0440	35	0 ¹ / ₂		22	9			WPL	0400							DL AT
TRANSFER 14 LINE UP																	

DAILY TRANSFER REPORT

From 5 A.M. 12-18 to 5 A.M. 12-19 19 94

From Tank No.	Time	GAUGE						Initial	To Tank No.	Time	GAUGE						Initial	
		OPENING			CLOSING						OPENING			CLOSING				
		Ft.	In.	Temp.	Ft.	In.	Temp.				Ft.	In.	Temp.	Ft.	In.	Temp.		
1 3	0400	43	0 1/4		43	0		DLAT	LDE	0400								DLAT
TRANSFER 1 LINE UP																		
2 38		27	9		23	10												
TRANSFER 2 LINE UP																		
3 51		18	2		18	2												
TRANSFER 3 LINE UP																		
52		19	4		25	8												
TRANSFER 4 LINE UP																		
5 53		14	0		12	9												
TRANSFER 5 LINE UP																		
6 55		22	9		13	7												
TRANSFER 6 LINE UP																		
7 58		16	10 1/4		15	11 1/2												
TRANSFER 7 LINE UP																		
8 66		5	5		5	4 3/4												
TRANSFER 8 LINE UP																		
9 67		21	9		26	5												
TRANSFER 9 LINE UP																		
10 69		24	11 1/2		24	9 1/4												
TRANSFER 10 LINE UP																		
11 300			81			93												
TRANSFER 11 LINE UP																		
12 LKHD	0340	— SYN 131 —							48	1215	19	5 1/2		31	4			NF CO
TRANSFER 12 LINE UP																		
13 55	0400	22	9		13	7 1/2			WPL	1820	—							DLAT
TRANSFER 13 LINE UP																		
14 53	0800	14	0		8	11		NF CO	SZ	1445	19	2		26	3			NF CO
TRANSFER 14 LINE UP																		

APPENDIX C

ANALYTICAL REPORTS AND
CHAIN OF CUSTODY RECORDS

ENVIROSCAN

January 17, 1996

Eder Associates
8025 Excelsior Drive
Madison, WI 53717-1900

RECEIVED		
EDER ASSOC. MADISON, WI		
'JAN 19 1996		
FILE NO. 367-77		
WJC _____	SLM _____	BAF _____
DFK _____	DRG _____	
DJO _____	EJW _____	<i>JFK</i>

ENVIRONMENTAL AND
ANALYTICAL SERVICES

Attn: Jeff King/ Bill Gustafson

Re: Analytical Results Project #367-77

Please find enclosed the analytical results for the samples received December 30, 1995.

All analyses were completed in accordance with appropriate EPA methodologies. Methods and dates of analysis are included in the report tables. The Diesel Range Organics (DRO) analysis was completed using the WI. DNR Modified DRO Method. The Gasoline Range Organics (GRO) analysis was completed using the WI. DNR Modified GRO Method.

The chain of custody document is enclosed.

If you have any questions about the results, please call. Thank you for using Enviroscan Corp. for your analytical needs.

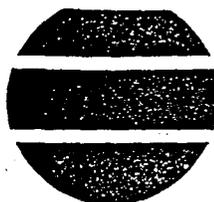
Sincerely,

Enviroscan Corp.



Gregory P. Flak
Analytical Chemist

ANALYTICAL REPORT



Eder Associates
8025 Excelsior Drive
Madison, WI 53717-1900

CUST NUMBER: 367-77
SAMPLED BY: Client
DATE REC'D: 12/30/95
REPORT DATE: 01/17/96
PREPARED BY: GPF *GRK*
REVIEWED BY: *JK*

Attn: Jeff King/ Bill Gustafson

Modified Diesel Range Organics (DRO)
Parameter # 78919

	<u>DRO</u>	<u>Qualifiers</u>	<u>Date Ext</u>	<u>Date Analyzed</u>	<u>Analytical No.</u>
GP-1	72.3	D1	12/30/95	01/11/96	58028
GP-3	115.	D1	12/30/95	01/11/96	58030
GP-4	66.6	D2A D1	12/30/95	01/11/96	58031
GP-5	51.7	D2 D2B D5	12/30/95	01/12/96	58032
Reporting Limit	5.0				
GP-2	1,870.	D1	12/30/95	01/12/96	58029
Reporting Limit	40.0				
Units	mg/kg				

Results calculated on a dry weight basis.

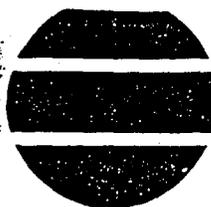
Qualifiers: Only above indicated qualifiers apply.

- (D1) The chromatogram is characteristic for a fuel oil/diesel. (i.e. #1 or #2 Diesel, jet fuel, kerosene, aged or degraded diesel, etc.)
- (D2) The chromatogram is not characteristic for diesel. It has the characteristics of a product which has significant peaks within the DRO window.
- (D2A) The chromatogram is characteristic for a light petroleum product (i.e. gasoline, aged or degraded gasoline, mineral spirits, etc.)
- (D2B) The chromatogram is characteristic for a heavier petroleum product other than diesel (i.e. motor oil, hydraulic oil, etc.)
- (D3) The chromatogram is not characteristic for diesel or any single common petroleum product.
- (D4) The chromatogram contained significant peaks outside the DRO window.
- (D5) The chromatogram contained significant peaks and a raised baseline outside the DRO window.

The entire area within the DRO window was quantitated.

The replicate spike recovery of this batch of samples was found to be 104.% and 85.6%.

ANALYTICAL REPORT



Eder Associates
8025 Excelsior Drive
Madison, WI 53717-1900

CUST NUMBER: 367-77
SAMPLED BY: Client
DATE REC'D: 12/30/95
REPORT DATE: 01/17/96
PREPARED BY: GPF GPF
REVIEWED BY: *[Signature]*

Attn: Jeff King/ Bill Gustafson

Total Petroleum Hydrocarbon (TPH) Analysis Fuels Fingerprint

<u>Sample ID</u>	<u>GC Diesel</u>		<u>Analytical No.</u>
	<u>CAL. METH</u>	<u>Qualifiers</u>	
GP-1	15.8	T2	58028
GP-2	357.	T2	58029
GP-3	10.7	T2	58030
GP-4	X		58031
GP-5	9.53	T6 SL	58032

Reporting Limit 5.0

Units mg/kg

PRODUCT-FUEL 3,370,000. T2 58034

Reporting Limit 50,000.

Units $\mu\text{g/l}$

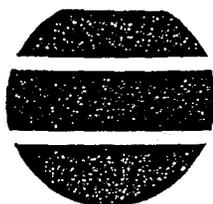
Date analyzed- 01/11/96

X = Analyzed but not detected.
Results calculated on a dry weight basis.

Qualifiers: Only above indicated qualifiers apply.

- (T1) The chromatogram is distinct for gasoline.
- (T2) The chromatogram is distinct for diesel.
- (T3) The chromatogram is distinct in showing that the contaminant is a mixture of both gasoline and diesel.
- (T4) The chromatogram is not distinct for either gasoline or diesel. It has more characteristics of aged gasoline and was therefore calculated as gasoline.
- (T5) The chromatogram is not distinct for either gasoline or diesel. It is being reported as diesel, but there is the possibility it is aged and/or degraded gasoline.
- (T6) The chromatogram is not distinct for either gasoline or diesel. It is reported as diesel, but it appears it may be a heavier petroleum product. (ie. Motor oil, hydraulic oil, etc.)
- (T7) The chromatogram does not show contamination of gasoline or diesel as defined by the California Method, but there appears to be contamination by a heavier petroleum product (ie. motor oil, hydraulic oil, etc.).

ANALYTICAL REPORT



Eder Associates
8025 Excelsior Drive
Madison, WI 53717-1900

CUST NUMBER: 367-77
SAMPLED BY: Client
DATE REC'D: 12/30/95
REPORT DATE: 01/17/96
PREPARED BY: GLS *ML*
REVIEWED BY: *JS*

Attn: Jeff King/ Bill Gustafson

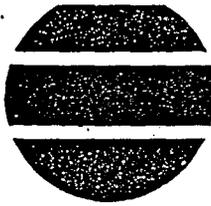
	<u>Units</u>	<u>Reporting Limit</u>	<u>GP-1 12/28/95</u>	<u>Qualifiers</u>	<u>Date Analyzed</u>
<u>EPA 8021</u>					
Benzene	mg/kg	0.026	0.21		01/03/96
Ethylbenzene	mg/kg	0.026	0.28		01/03/96
Methyl tert Butyl Ether	mg/kg	0.026	X	SPH	01/03/96
Toluene	mg/kg	0.026	0.18		01/03/96
1,2,4-Trimethylbenzene	mg/kg	0.026	1.2		01/03/96
1,3,5-Trimethylbenzene	mg/kg	0.026	0.31		01/03/96
m- & p-Xylene	mg/kg	0.026	0.90		01/03/96
o-Xylene & Styrene	mg/kg	0.026	0.26		01/03/96
<u>EPA 8310</u>					
Acenaphthene	mg/kg	0.0048	X		01/11/96
Acenaphthylene	mg/kg	0.0061	X		01/11/96
Anthracene	mg/kg	0.0048	X		01/11/96
Benzo (a) Anthracene	mg/kg	0.0022	X		01/11/96
Benzo (a) Pyrene	mg/kg	0.0044	X		01/11/96
Benzo (b) Fluoranthene	mg/kg	0.0035	X		01/11/96
Benzo (k) Fluoranthene	mg/kg	0.0035	X		01/11/96
Benzo (ghi) Perylene	mg/kg	0.0071	X		01/11/96
Chrysene	mg/kg	0.0026	X		01/11/96
Dibenzo (a, h) Anthracene	mg/kg	0.0088	X		01/11/96
Fluoranthene	mg/kg	0.0065	X	DUP	01/11/96
Fluorene	mg/kg	0.0035	0.0133 ✓		01/11/96
Indeno (1,2,3-cd) Pyrene	mg/kg	0.0075	X		01/11/96
1-Methyl Naphthalene	mg/kg	0.0065	0.0502 ✓	S2H DUP	01/11/96
2-Methyl Naphthalene	mg/kg	0.0039	X	S2H DUP	01/11/96
Naphthalene	mg/kg	0.0039	0.0349 ✓		01/11/96
Phenanthrene	mg/kg	0.0039	X	DUP	01/11/96
Pyrene	mg/kg	0.0065	X		01/11/96
LUST Soil Org Ext - PNAs		-	COMP		01/05/96

Analytical No.:

58028

X = Analyzed but not detected.
Results calculated on a dry weight basis.

ANALYTICAL REPORT



Eder Associates
8025 Excelsior Drive
Madison, WI 53717-1900

CUST NUMBER: 367-77
SAMPLED BY: Client
DATE REC'D: 12/30/95
REPORT DATE: 01/17/96
PREPARED BY: GLS
REVIEWED BY: *[Signature]*

Attn: Jeff King/ Bill Gustafson

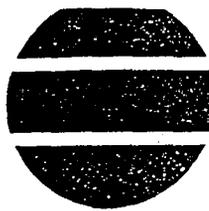
	<u>Units</u>	<u>Reporting Limit</u>	<u>GP-3 12/28/95</u>	<u>Qualifiers</u>	<u>Date Analyzed</u>
<u>EPA 8021</u>					
Benzene	mg/kg	0.025	0.48		01/03/96
Ethylbenzene	mg/kg	0.025	0.24		01/03/96
Methyl tert Butyl Ether	mg/kg	0.025	X	SPH	01/03/96
Toluene	mg/kg	0.025	X		01/03/96
1,2,4-Trimethylbenzene	mg/kg	0.025	0.39		01/03/96
1,3,5-Trimethylbenzene	mg/kg	0.025	0.17		01/03/96
m- & p-Xylene	mg/kg	0.025	0.25		01/03/96
o-Xylene	mg/kg	0.025	X		01/03/96
<u>EPA 8310</u>					
Acenaphthene	mg/kg	0.0051	X		01/11/96
Acenaphthylene	mg/kg	0.0064	X		01/11/96
Anthracene	mg/kg	0.0051	X		01/11/96
Benzo (a) Anthracene	mg/kg	0.0023	X		01/11/96
Benzo (a) Pyrene	mg/kg	0.0046	X		01/11/96
Benzo (b) Fluoranthene	mg/kg	0.0037	X		01/11/96
Benzo (k) Fluoranthene	mg/kg	0.0037	X		01/11/96
Benzo (ghi) Perylene	mg/kg	0.0074	X		01/11/96
Chrysene	mg/kg	0.0027	X		01/11/96
Dibenzo (a, h) Anthracene	mg/kg	0.009	X		01/11/96
Fluoranthene	mg/kg	0.0068	X	DUP	01/11/96
Fluorene	mg/kg	0.0037	0.103 ✓		01/11/96
Indeno (1,2,3-cd) Pyrene	mg/kg	0.0078	X		01/11/96
1-Methyl Naphthalene	mg/kg	0.0068	0.0412 ✓	SPH DUP	01/11/96
2-Methyl Naphthalene	mg/kg	0.0041	X	SPH DUP	01/11/96
Naphthalene	mg/kg	0.0041	0.0405 ✓		01/11/96
Phenanthrene	mg/kg	0.0041	X	DUP	01/11/96
Pyrene	mg/kg	0.0068	X		01/11/96
LUST Soil Org Ext - PNAs		-	COMP		01/05/96

Analytical No.:

58030

X = Analyzed but not detected.
Results calculated on a dry weight basis.

ANALYTICAL REPORT



Eder Associates
8025 Excelsior Drive
Madison, WI 53717-1900

CUST NUMBER: 367-77
SAMPLED BY: Client
DATE REC'D: 12/30/95
REPORT DATE: 01/17/96
PREPARED BY: GLS/MLH
REVIEWED BY:

Attn: Jeff King/ Bill Gustafson

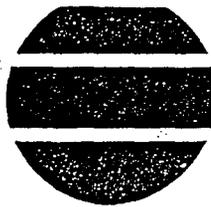
	<u>Units</u>	<u>Reporting Limit</u>	<u>GP-4 12/28/95</u>	<u>Qualifiers</u>	<u>Date Analyzed</u>
<u>EPA 8021</u>					
Benzene	mg/kg	0.025	4.5		01/03/96
Ethylbenzene	mg/kg	0.025	2.0		01/03/96
Methyl tert Butyl Ether	mg/kg	0.025	X	SPH	01/03/96
Toluene	mg/kg	0.025	11.		01/03/96
1,2,4-Trimethylbenzene	mg/kg	0.025	4.1		01/03/96
1,3,5-Trimethylbenzene	mg/kg	0.025	1.2		01/03/96
m- & p-Xylene	mg/kg	0.025	7.4		01/03/96
o-Xylene & Styrene	mg/kg	0.025	3.0		01/03/96
<u>EPA 8310</u>					
Acenaphthene	mg/kg	0.0049	X	SL	01/11/96
Acenaphthylene	mg/kg	0.0062	X	SL	01/11/96
Anthracene	mg/kg	0.0049	X	SL	01/11/96
Benzo (a) Anthracene	mg/kg	0.0022	X	SL	01/11/96
Benzo (a) Pyrene	mg/kg	0.0045	X	SL	01/11/96
Benzo (b) Fluoranthene	mg/kg	0.0035	X	SL	01/11/96
Benzo (k) Fluoranthene	mg/kg	0.0035	X	SL	01/11/96
Benzo (ghi) Perylene	mg/kg	0.0071	X	SL	01/11/96
Chrysene	mg/kg	0.0026	X	SL	01/11/96
Dibenzo (a, h) Anthracene	mg/kg	0.0088	X	SL	01/11/96
Fluoranthene	mg/kg	0.0066	X	SL DUP	01/11/96
Fluorene	mg/kg	0.0035	X	SL	01/11/96
Indeno (1, 2, 3-cd) Pyrene	mg/kg	0.0075	X	SL	01/11/96
1-Methyl Naphthalene	mg/kg	0.0066	X	SL SPH DUP	01/11/96
2-Methyl Naphthalene	mg/kg	0.0039	X	SL SPH DUP	01/11/96
Naphthalene	mg/kg	0.0039	0.0125	SL	01/11/96
Phenanthrene	mg/kg	0.0039	X	SL DUP	01/11/96
Pyrene	mg/kg	0.0066	X	SL	01/11/96
LUST Soil Org Ext - PNAs		-	COMP		01/05/96

Analytical No.:

58031

X = Analyzed but not detected.
Results calculated on a dry weight basis.

ANALYTICAL REPORT



Eder Associates
8025 Excelsior Drive
Madison, WI 53717-1900

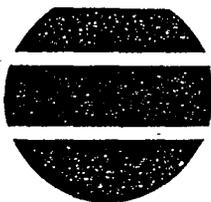
CUST NUMBER: 367-77
SAMPLED BY: Client
DATE REC'D: 12/30/95
REPORT DATE: 01/17/96
PREPARED BY: GLS *MM*
REVIEWED BY: *[Signature]*

Attn: Jeff King/ Bill Gustafson

Qualifier Descriptions

SPH	The matrix spike included with this analytical batch had a high recovery. Since that sample matrix appears similar to your sample, your result may also be high.
DUP	Result of duplicate analysis in this quality assurance batch exceeds the limits for precision. Sample results may also show a degree of variability.
S2H	Matrix spike duplicate recovery of this sample was high. Result for sample may also be biased high.
SL	Recovery of surrogate was low. Result for sample may also be biased low.

ANALYTICAL REPORT



Eder Associates
8025 Excelsior Drive
Madison, WI 53717-1900

CUST NUMBER: 367-77
SAMPLED BY: Client
DATE REC'D: 12/30/95
REPORT DATE: 01/17/96
PREPARED BY: EPM *ew*
REVIEWED BY: *[Signature]*

Attn: Jeff King/ Bill Gustafson

Modified Gasoline Range Organics (GRO)
Parameter # 78920

	GRO	Qualifiers	Date Analyzed	Analytical No.
GP-1	56.1	G3 G6	01/03/96	58028
GP-2	182.	G3 G6	01/05/96	58029
GP-3	15.4	G3 G6	01/03/96	58030
GP-4	80.9	G1	01/05/96	58031
GP-5	X		01/03/96	58032
Reporting Limit Units	5.0 mg/kg			
MEOH BLANK	X		01/03/96	58033
Reporting Limit Units	2.5 mg/l			

X = Analyzed but not detected.
Results calculated on a dry weight basis.

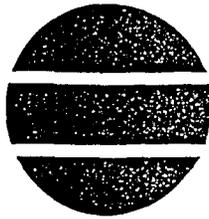
Qualifiers: Only above indicated qualifiers apply.

- (G1) The chromatogram is characteristic for gasoline.
- (G2) The chromatogram has characteristics of an aged gasoline sample.
- (G3) The chromatogram is not characteristic for either gasoline or aged gasoline. However, it has a reportable concentration of peaks/area within the GRO window.
- (G4) The chromatogram contains a single compound which accounts for most of the GRO result.
- (G5) The chromatogram contains a significant number of peaks outside the GRO window.
- (G6) The chromatogram contains a significant number of peaks and a raised baseline outside the GRO window.
- (G7) The chromatogram is characteristic for gasoline, however either additional peaks are present or PVOC peaks are not proportional to gasoline, indicating the presence of additional compounds.
- (G8) The chromatogram is characteristic for aged gasoline, however either additional peaks are present or PVOC peaks are not proportional to aged gasoline indicating the presence of additional compounds.

The entire area within the GRO window was quantitated.

The replicate spike recovery of this batch of samples was found to be 1014.%, 116.%, 120.%, and 106.%.

REQUEST FOR SERVICES



303 W. MILITARY RD. ROTHSCHILD, WI 54474 1-800-338-SCAN

REPORT TO:
 Name: Jeff King
 Company: Eder Associates
 Address: 8025 Excelsior Drive
Madison, WI 53717
 Phone: (608) 836-1500
 P.O. # _____
 Project # 367-77 Quote # 3066-8

BILL TO: (if different from Report To info):
 Name: Bill Gustafson
 Company: Murphy Oil USA Inc
 Address: 2407 Stinson Ave. P.O. Box 2066
Spartan, WI 54880
 Phone: (_____) _____

ANALYTICAL REQUESTS

(use separate sheet if necessary)

- Sample Type**
 (Check all that apply)
- Groundwater
 - Wastewater
 - Soil/Solid
 - Drinking Water
 - Oil
 - Vapor
 - Other
- Turnaround Time**
- Normal
 - Rush (Pre-approved by Lab)
- Date Needed _____
 Approved By _____

LAB USE ONLY		DATE	TIME	No. of Containers		SAMPLE ID	ANALYTICAL REQUESTS					REMARKS
				COMP	GRAB		GRO SOLID/OIL	DRO SOLID/OIL	S-PMOL-low det. NORMAN	PAH S-LPMA	Fuel fingerprint diesel	
18058028		12/24/95	PM		5	GP-1 ✓	✓	✓	✓	✓	✓	Soil
18058029			PM		3	GP-2 ✓	✓	✓		✓		
18058030			PM		5	GP-3 ✓	✓	✓	✓	✓		
18058031			PM		5	GP-4 ✓	✓	✓	✓	✓		
18058032			PM		5	GP-5 ✓	✓	✓		✓		
18058033					1	Trip Blank-Meth ✓	✓					liquid
18058034						Product-fuel				✓		liquid product diesel

EDER ASSOCIATES MURPHY OIL

CHAIN OF CUSTODY RECORD

SAMPLERS: (Signature) Jeff King

Del'v: Hand (Comm) Y
 Ship: Cont. OK? Y N/A
 Samples leaking? Y N/A
 Seals OK? Y N/A
 Rec'd on ice? Y N/A °C

Comments: _____

RELINQUISHED BY: (Signature) Jeff King

DATE/TIME
12/24/95 17:00

RECEIVED BY: (Signature) _____

RELINQUISHED BY: (Signature) _____

DATE/TIME

RECEIVED BY: (Signature) _____

RELINQUISHED BY: (Signature) _____

DATE/TIME

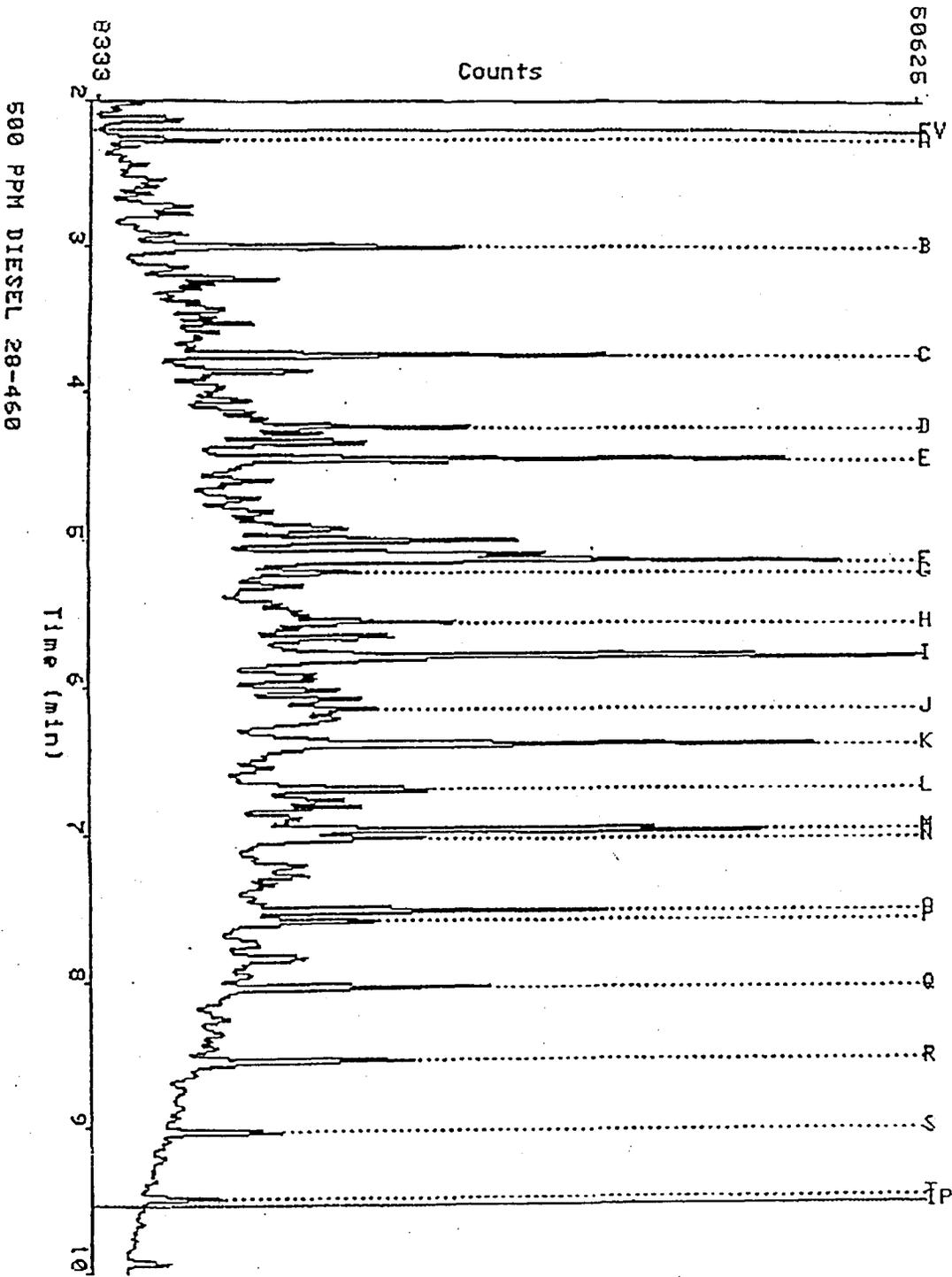
RECEIVED FOR LABORATORY BY: (Signature) [Signature]

DATE/TIME
12/24/95 11:10 AM

APPENDIX D

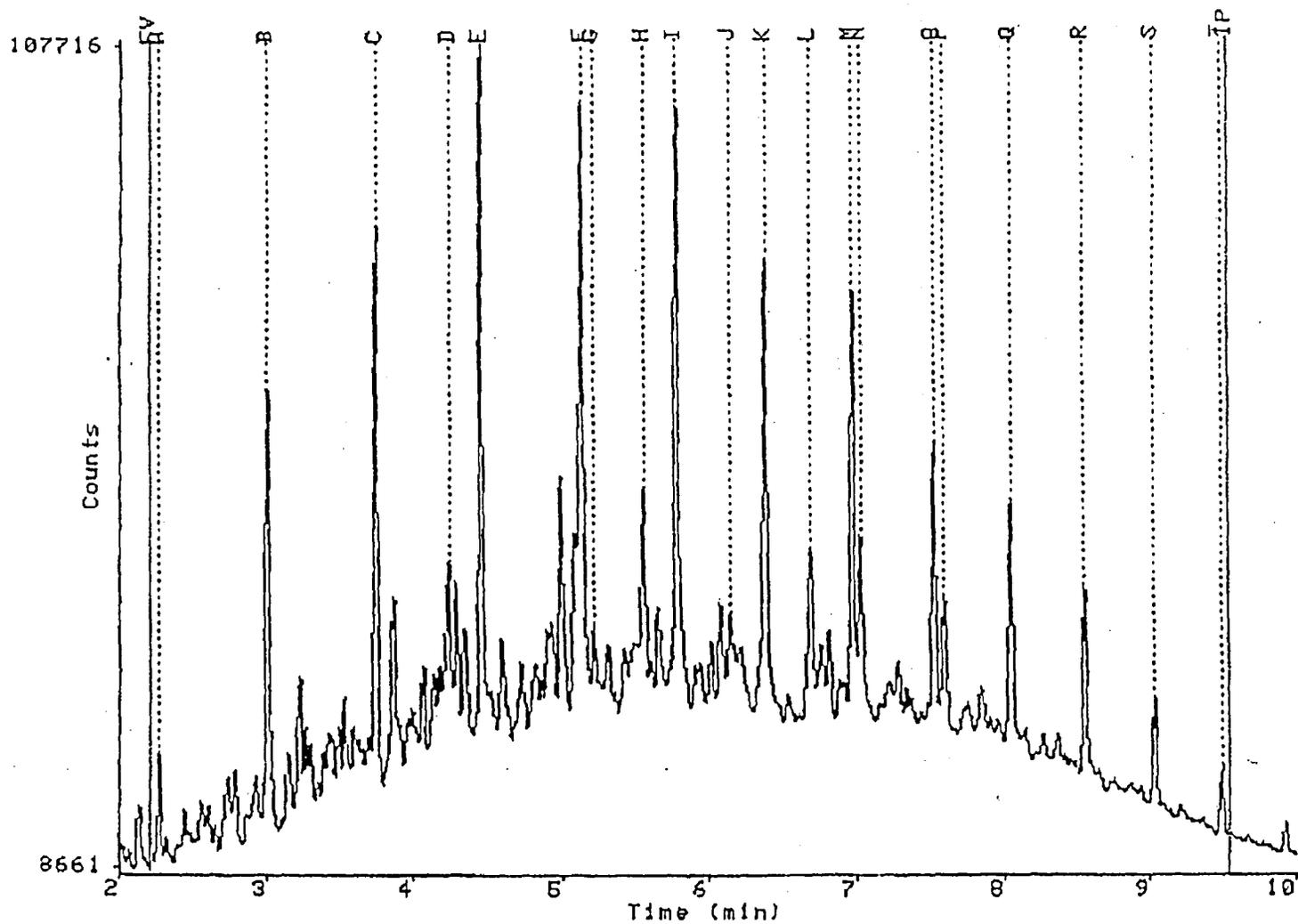
SELECTED CHROMATOGRAMS

Data file: USER\$DISK3:[CHROM.SEMI.GC7]14TPHAW587
Report: 421377
Acquired: 11-JAN-1996 20:03:43
Time range: 2.00-10.00
Vert. scale/offset: 1.0/0



Chromatogram of Generic No. 1 Diesel Fuel

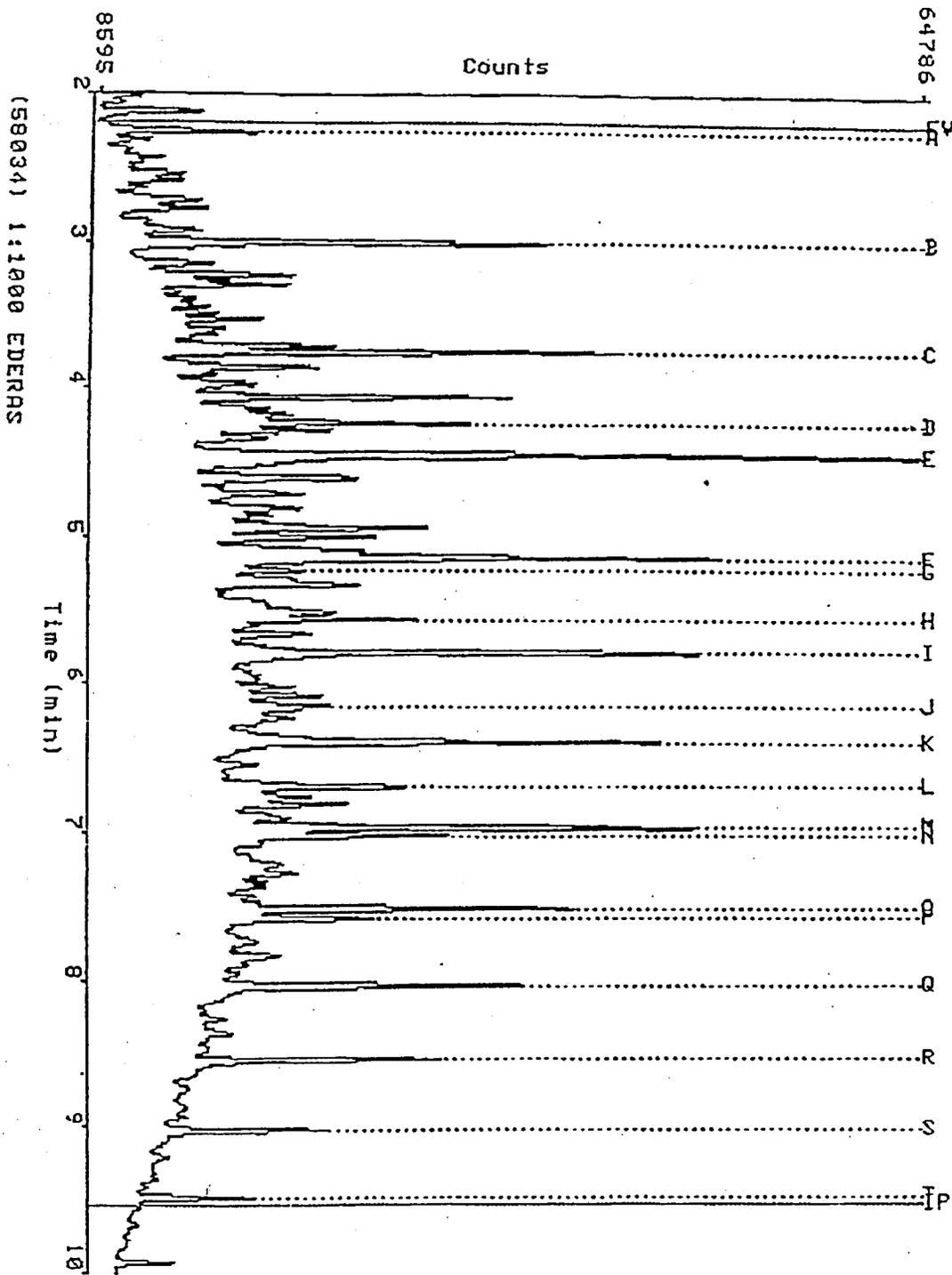
Data file: USER\$DISK3:[CHROM.SEMI.GC7]14TPHAW595
Report: None
Acquired: 12-JAN-1996 00:13:00
Time range: 2.00-10.00
Vert. scale/offset: 1.0/0



(58029) 96-0199 EDERAS

Chromatogram of GP-2

Data file: USER\$DISK3:[CHROM.SEMI.GC7]14TPHAW604
 Report: 421397
 Acquired: 12-JAN-1996 04:53:47
 Time range: 2.00-10.00
 Vert. scale/offset: 1.0/0



Chromatogram of Murphy No. 1 Diesel Fuel

(58034) 1:1000 EDERAS

Date file:

USER\$DISK3:[CHROM.SEMI.GC7]14TPHAP703

Report:

None

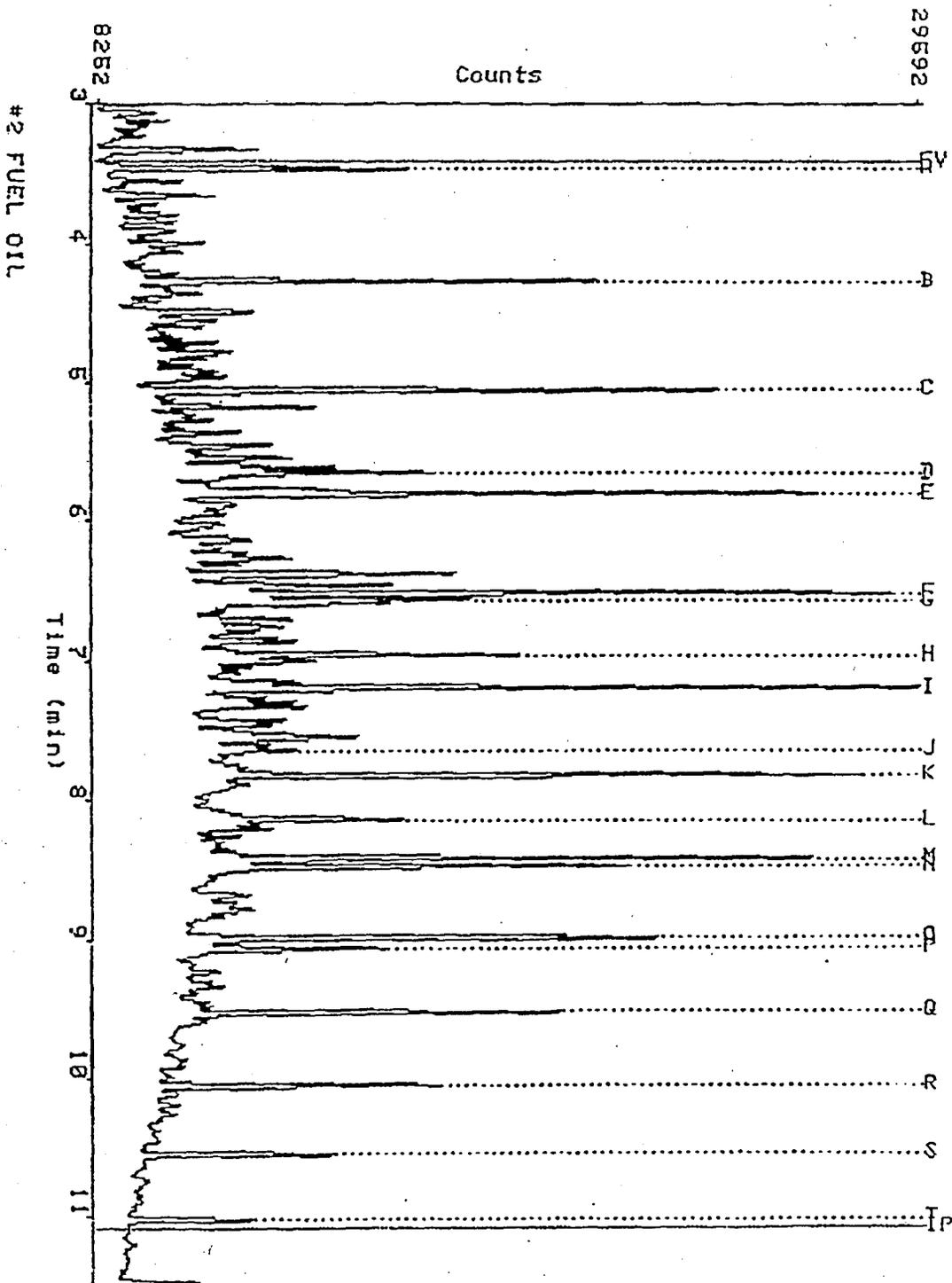
Acquired:

4-APR-1995 03:05:08

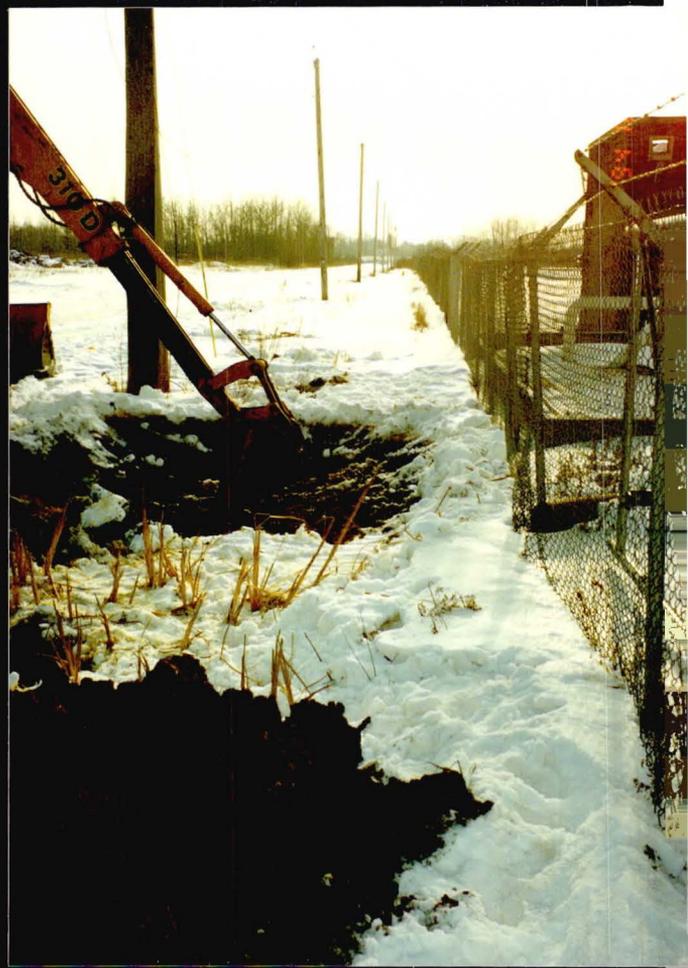
Time range:

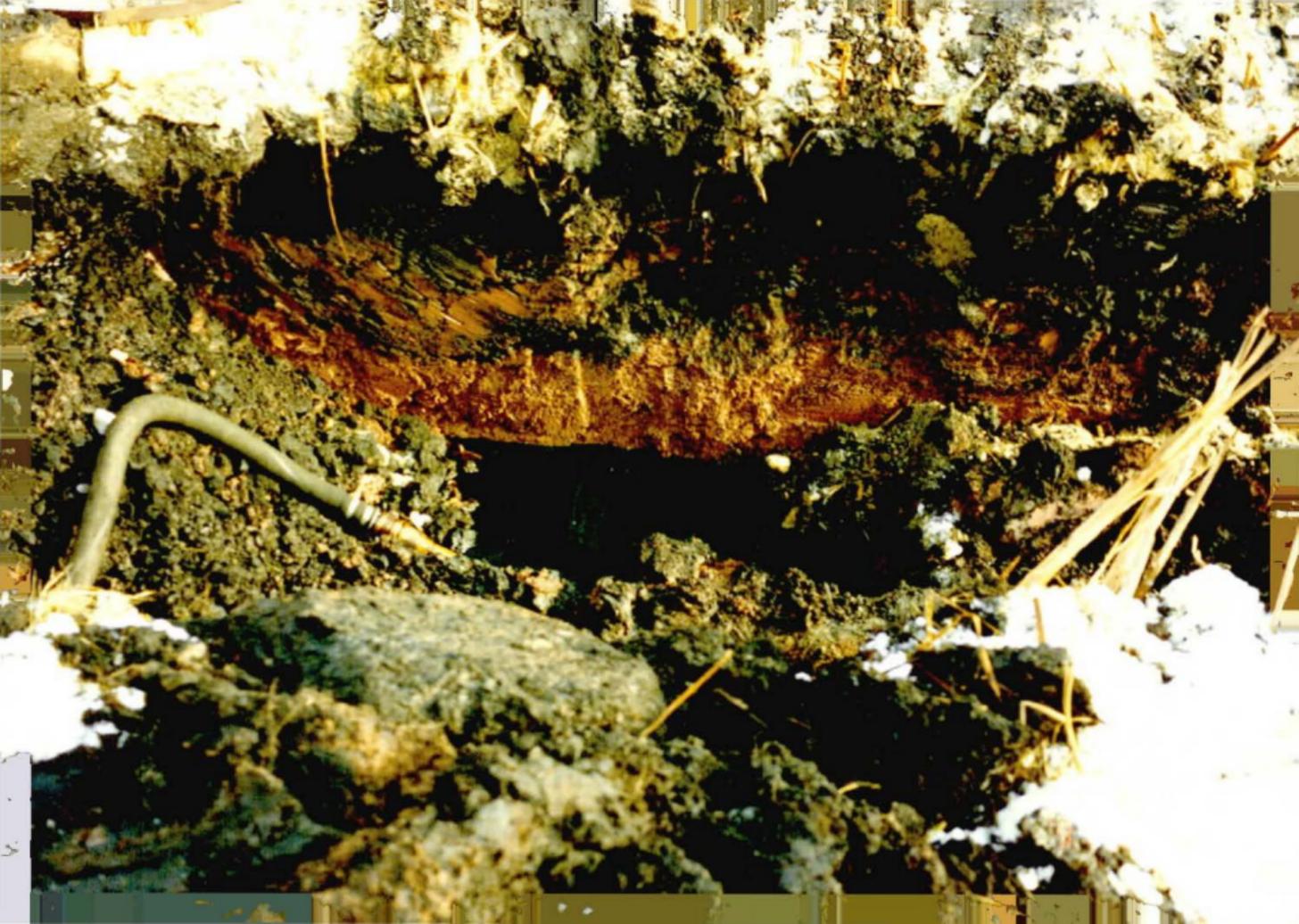
3.00-11.50

Vert. scale/offset: 1.0/0



Chromatogram of Generic No. 1 Fuel Oil







George E. Meyer, Secretary
William H. Smith, District Director

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

NORTHWEST DISTRICT HEADQUARTERS

P.O. Box 309
STH 70 West & First Street
Spooner, Wisconsin 54801
TELEPHONE 715-635-2101
TELEFAX 715-635-4013

November 30, 1995

Mr. William P. Gustafson
Murphy Oil USA, Inc
Superior Refinery
P.O. Box 2066
Superior, Wisconsin 54880

Re: **Finished Product Pipeline Leak**
Superior, WI

Dear Mr. Gustafson:

Thank you for your letter of November 16, 1995 with the attached workplan of November 14, 1995, prepared by Eder Associates. This letter provides notice that the proposed workplan is approved for implementation subject to the comments noted below. Additionally, your responsibilities to address the subject release are described in this letter.

Workplan Comments

1. The completion of the six proposed soil probes appears to be appropriate to document the effectiveness of the excavation efforts previously performed.
2. The sampling proposed is expected to be adequate to determine if the soils impacted by the released low sulfur diesel and gasoline mixture were fully removed during your initial spill response. This statement is based on the assumption that the depths stated for sample collection are appropriate for the depth of the pipeline and limits of the excavation.
3. The proposed analytical parameters are suitable for determining if removal of soils impacted by the release of the diesel/gasoline mixture was complete. However, please include analysis for PAHs and PVOCs for a minimum of two of the proposed samples.
4. The fuel fingerprinting effort should be useful toward distinguishing between diesel from the pipeline release and any previously existing gasoline impacted soils in the area. Analysis of a sample of the low sulfur diesel, directly from the refinery, should assist in this effort.
5. Review of the WDNR's files on the adjacent Amoco property should be performed as indicated. It may be helpful to give me a call prior to the date you would like to go through the files.

Responsibilities

Copies of your letters to Steve LaValley of the Wisconsin Department of Natural Resources (WDNR), dated December 21, 1994 and February 23, 1995, document that a release occurred on December 18/19, 1995 from your finished product pipeline. Your letters also documented that refinery personnel were called to the scene to collect free product present at the surface, as well as excavating approximately 250 cubic yards of impacted

soils and repairing the leak that caused the release. Your timely response to the immediate problem was appreciated as well as your prompt notification of the WDNR of this occurrence. However, your letters did not document that all impacts to soil and/or groundwater from the release were addressed, the WDNR believes that additional investigation/documentation is needed to resolve the issue. As you are aware there is significant petroleum related contamination identified at the adjacent Amoco Terminal and your continued efforts in regard to your spill should take this into account. Submittal of the November 14, 1995 workplan and your desire to complete this work in the near future are also appreciated.

Based on the information currently available regarding this spill, as provided by your letters, the WDNR believes you are responsible for restoring the environment at this site under Section 144.76, Wisconsin Statutes., known as the hazardous substances spills law. Your responsibilities include investigating the extent of the contamination and then selecting and implementing the most appropriate remedial action.

Legal Responsibilities

Your legal responsibilities are defined both in statute and in administrative codes. The hazardous substances spill law, Section 144.76 (3) Wisconsin Statutes, states:

- * **RESPONSIBILITY.** A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall take the actions necessary to restore the environment to the extent practicable and minimize the harmful effects from the discharge to the air, lands, or waters of the state.

Wisconsin Administrative Codes chapters NR 700 through NR 728 establish requirements for emergency and interim actions, public information, site investigations, design and operation of remedial action systems, and case closure. Chapter 708 includes provisions for immediate actions in response to limited contamination. Wisconsin Administrative Code chapter NR 140 establishes groundwater standards for contaminants that reach groundwater.

Steps to Take

The longer contamination is left in the environment the further it can spread and the more it may cost to clean up. Quick actions, as were taken, may lessen damage to your property and to neighboring properties and reduce your costs in investigating and cleaning up the contamination. To ensure that your clean up complies with Wisconsin's laws and administrative codes, you should hire a professional environmental consultant who understands what needs to be done. The first steps to take include:

1. Hiring an environmental consultant to complete the investigation. This step has been accomplished.
2. Submit a workplan and a schedule for conducting the investigation. This step has also been completed.
3. Please keep us informed of what is being done at your site. You or your consultant must provide us with a brief report at least every 90 days, starting after your workplan is submitted. These quarterly reports should summarize the work completed since the last report. Quarterly reports need only include one or two pages of text, plus any relevant maps and tables. However, please note that should conditions at your site warrant, you may receive a letter requiring more frequent contacts with the WDNR.
4. When the site investigation is complete, your consultant must submit a full report on the extent and degree of soil and/or groundwater contamination and a proposal for cleaning up the contamination as necessary.

Due to the number of contaminated sites and our staffing levels, we may not be able to respond to each report. To maintain your compliance with the spills law and chapters NR 700 through NR 728, do not delay the investigation and clean up of your site by waiting for WDNR responses. We have provided detailed technical guidance to environmental consultants. Your consultant is expected to be familiar with our technical procedures and administrative codes and should be able to answer your questions on meeting Wisconsin's clean up requirements.

Your correspondence and reports regarding this site should be sent to the WDNR at the following address:

Wisconsin Department of Natural Resources
Northwest District Headquarters
Attn: Terry Koehn, ERRP Hydrogeologist
P.O. Box 309
Spooner, WI 54801

Unless otherwise requested, please send only one copy of all plans and reports.

Information for Site Owners

If you are interested in obtaining the protection of limited liability under s. 144.765, Stats., you may call (800) 367-6076 (instate long distance) or (608) 264-6020 (local or out of state) for more information. The liability exemption under s. 144.765, Stats., is available to persons who meet the definition of "purchaser" in s. 144.765(1)(c) and receive WDNR approval for the response actions taken at the property undergoing cleanup. The WDNR will determine eligibility for this program on a case-by-case basis, prior to the "purchaser" developing a scope of work for conducting a chapter NR 716 site investigation at the property.

If you have any questions about this letter or your responsibilities, please call me at (715) 635-4048. Additionally, I would like to thank you for meeting with me at the site on May 4, 1995 to discuss this situation.

Thank you for your cooperation.

Sincerely;



Terry Koehn
ERRP Hydrogeologist

cc: T. Kendzierski/G. LeRoy
J. Hosch
S. LaValley
Mr. Bruce Fenske

NWD/Spooner
NWD Spooner
NWD/Superior
Eder Associates
8025 Excelsior Dr.
Madison, WI 53717-1900



SUPERIOR REFINERY
P O BOX 2066
SUPERIOR WISCONSIN 54880

11/22/95

RECEIVED
NOV 17 1995
DNR - SPOONER

November 16, 1995

DNR Northwest District
Mr. Terry Koen
Highway 70 West
P.O. Box 309
Spooner, WI 54801

Dear Terry:

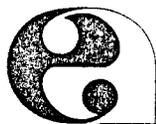
Included with this cover letter is the work plan regarding the Murphy Oil release at the AMOCO Terminal in Superior Wisconsin. Please review and comment as necessary. Murphy Oil would like to start this work as soon as possible.

If you have any questions regarding this matter, please call me at (715) 398-3533.

A handwritten signature in black ink that reads "William Gustafson". The signature is fluid and cursive, with the first name "William" and last name "Gustafson" clearly legible.

William Gustafson
Environmental Operations Superintendent





eder associates
environmental scientists and engineers



OFFICES:
Locust Valley, NY
Madison, WI
Ann Arbor, MI
Augusta, GA
Jacksonville, FL
Trenton, NJ
Tampa, FL

November 14, 1995
File #367-77

Mr. William P. Gustafson
Murphy Oil USA, Inc.
2407 Stinson Avenue
P.O. Box 2066
Superior, WI 54880

Re: Work Plan to Document Removal of Diesel Fuel-Impacted Soils from Murphy's Pipeline
Near the Amoco Terminal

Dear Bill:

As we discussed on October 9, 1995, a leak of low-sulfur No. 1 diesel fuel was discovered along the Murphy Oil USA, Inc. (Murphy) pipeline near the Amoco Oil Company (Amoco) terminal in Superior on December 19, 1994. The transfer pipe was shut down immediately, both ends of the pipe were blocked in, and maintenance personnel removed free-standing liquid that had collected in the roadside ditch near the leak. A contractor then removed approximately 250 cubic yards (125 ft x 4 ft x 5 ft) of soil contaminated by diesel fuel, based on visual inspection, from around the small hole in the transfer pipe so it could be repaired.

Two soil samples from the excavated material showed diesel range organics (DRO) concentrations of 18,700 mg/kg and 37,600 mg/kg.¹ The excavated soils were thermally treated at Lake Superior Blacktop and Materials, Inc. No soil samples were collected for laboratory analysis from inside the excavation when it was open because of the influence of a nearby Amoco release of gasoline. As a result, there is no laboratory confirmation that all the diesel fuel-impacted soil was removed. When you spoke with Mr. Steve LaValley, Wisconsin Department of Natural Resources (WDNR), he said that it was not surprising that you smelled gasoline in the excavation because Amoco had a release of gasoline on its property adjacent to the excavation. Amoco is currently investigating the release of up to 100,000 gallons of gasoline.² Mr. Terry Koen, WDNR, Spooner, has asked Murphy to document that all soil impacted by the release of fuel from the pipeline has been removed.

¹ The February 23, 1995, letter to Steve LaValley, WDNR, documented DRO, GRO, cadmium, lead, VOC, PCB, and PAH levels in the excavated soil.

² Mr. Terry Koen, WDNR, Personal communication, October 31, 1995.

Continued . . .

Mr. William P. Gustafson
Murphy Oil USA, Inc.
November 14, 1995

-2-

Work Plan

The following plan outlines the work necessary to characterize the subsurface soil conditions along the base and sidewalls of the former excavation. All soil sampling procedures will meet WDNR sampling requirements. To confirm site remediation, we will:

- Advance six soil probe holes using a Geoprobe™ and collect soil samples to confirm that soils near the base and sidewalls of the former excavation do not contain diesel fuel. Figure 1 shows the proposed probe hole locations.
- Sample the four sidewall probe holes at a depth of two to four feet and the two mid-excavation probe holes for base samples at a depth of five to seven feet.
- Submit one sample from each sidewall probe hole and each base probe hole to Enviroscan, a WDNR-certified laboratory, for gasoline range organics (GRO), diesel range organics (DRO), and fuel fingerprint analyses. All samples will be stored and shipped at 4°C.
- Submit one sample of low-sulfur No. 1 diesel fuel collected at the refinery for GRO, DRO, and fuel fingerprinting analyses for comparison with the analytical results for the soil samples. This will allow us to determine whether the analytical results for the soil samples are consistent with the presence of low-sulfur diesel fuel in the samples.
- Review WDNR records on the Amoco gasoline release to document background conditions.

After receiving the analytical results, we will prepare a letter report summarizing the findings and submit it to the WDNR. The report will include:

- Dates and descriptions of field activities.

Continued . . .

Mr. William P. Gustafson
Murphy Oil USA, Inc.
November 14, 1995

-3-

- A description of the soil sampling procedures.
- A table presenting the analytical results.
- An interpretation of the analytical results.
- Figures showing the site layout and sampling locations.
- Laboratory report and chain of custody records.
- Results of the review of WDNR records on background conditions following the Amoco release.
- A review of refinery records to document pipeline contents at the time of the release.

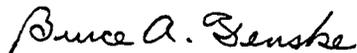
Project Schedule

We anticipate that field work can begin within one week of project start-up. A letter report discussing the soil investigation and its findings will be sent out within one week of receiving the soil sampling results from the laboratory. We anticipate that it will take five to six weeks to complete the project.

I will call you in a few days to discuss any questions you may have about this work plan.

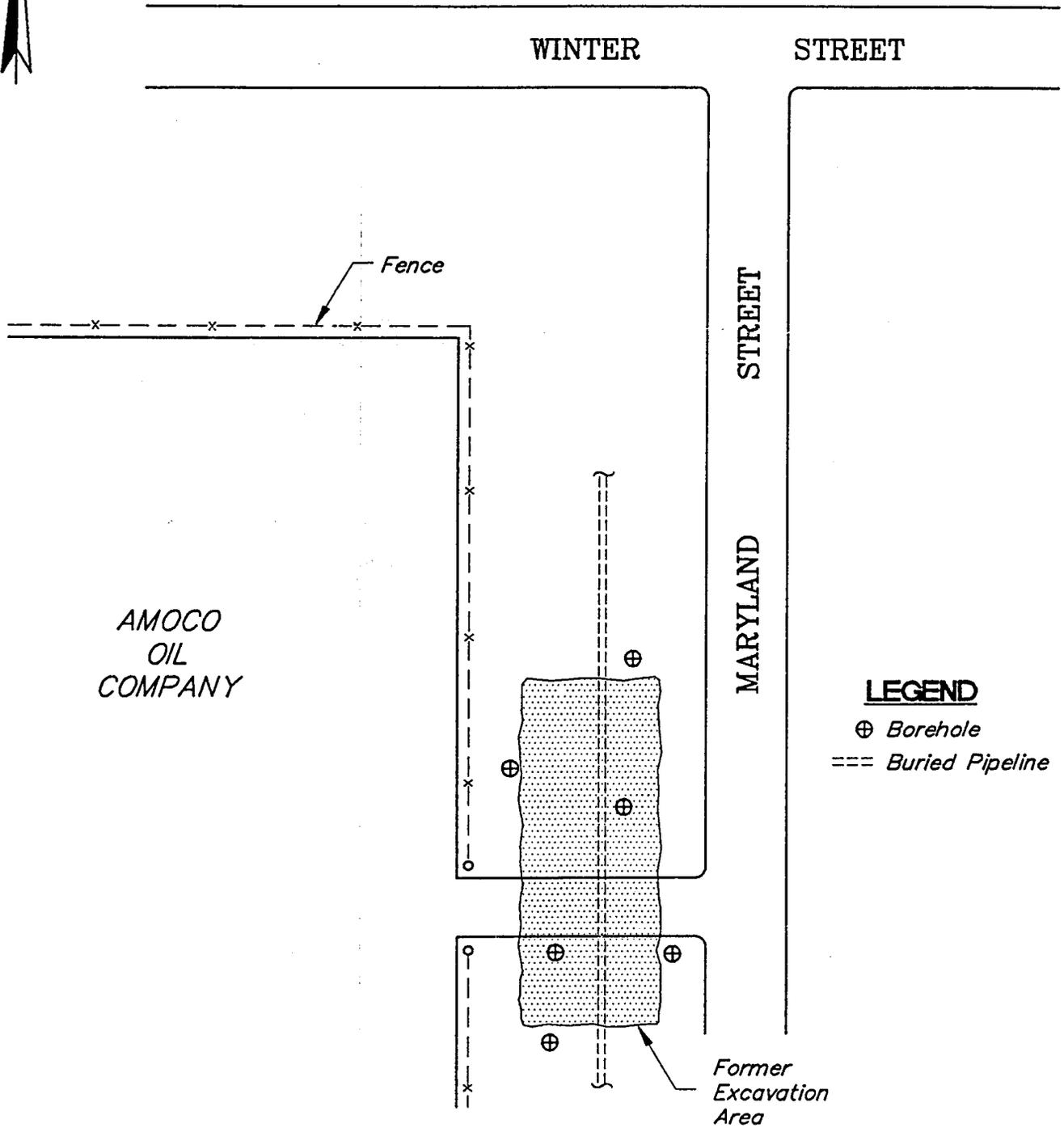
Very truly yours,

EDER ASSOCIATES



Bruce A. Fenske, P.E.

BAF/klj
Enc.



Not To Scale

PROBEHOLE DOCUMENTATION OF
REMOVAL OF IMPACTED SOILS

MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

PHONE CONVERSATION RECORD

DATE: 10/9/95
TIME: _____

CONVERSED WITH: Bruce Fenske

Eden

SUBJECT/PROJECT: Murphy Spill (Pipeline)

Adj to Amoco
UNIQUE ID#: _____
Superior

- Disc on followup for spill.
- Explain we have questions as no followup spls collected regarding extent
 - Understand why wasn't done.
- Explain that Amoco has expressed interest also
 - Look near head of Amoco plume
- Need to address - was impact fully addressed - extent
 - Did this spill (or historically) add to Amoco problem
- Suggest historical review and borings with spiling
 - Does differentiate diesel from gas (Murphy) (Amoco)

Signature: _____

(please write legibly)

PHONE CONVERSATION RECORD

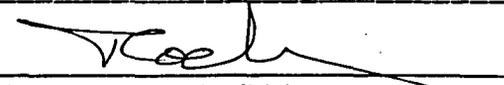
DATE: 10/4/95
TIME: _____

CONVERSED WITH: William Gustafson
715-398-3533
Murphy Oil

SUBJECT/PROJECT: Pipeline Spill

UNIQUE ID#: Next to Amoco

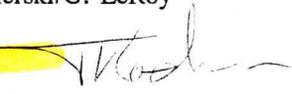
- Advise Gustafson that I have looked over files and discussed situation with management
- Found that we would like them to do some work in area of spill
- Show what is there
- That they cleaned things up
- Try and differentiate things from Amoco
- He understands situation and will contact his consultant - Edger
- They will begin work
- Explain if we do soon possibly sending RP Ltr or if will help facilitate work I have it ready and can send it

Signature: 
(please write legibly)

DATE: September 7, 1995

FILE REF: ERRP/Coor

TO: T. Kendzierski/G. LeRoy NWD/Spooner

FROM: T. Koehn  NWD/Spooner

SUBJECT: Notification for Additional Work - Murphy Oil, Superior

Please review the attached letter (DRAFT) to Murphy Oil regarding a request for additional investigation of their pipeline leak adjacent to the Amoco Terminal in Superior. Your comments regarding this letter and related approach are requested. If you have an alternative approach to obtain completion of additional work by Murphy please let me know.

General Situation

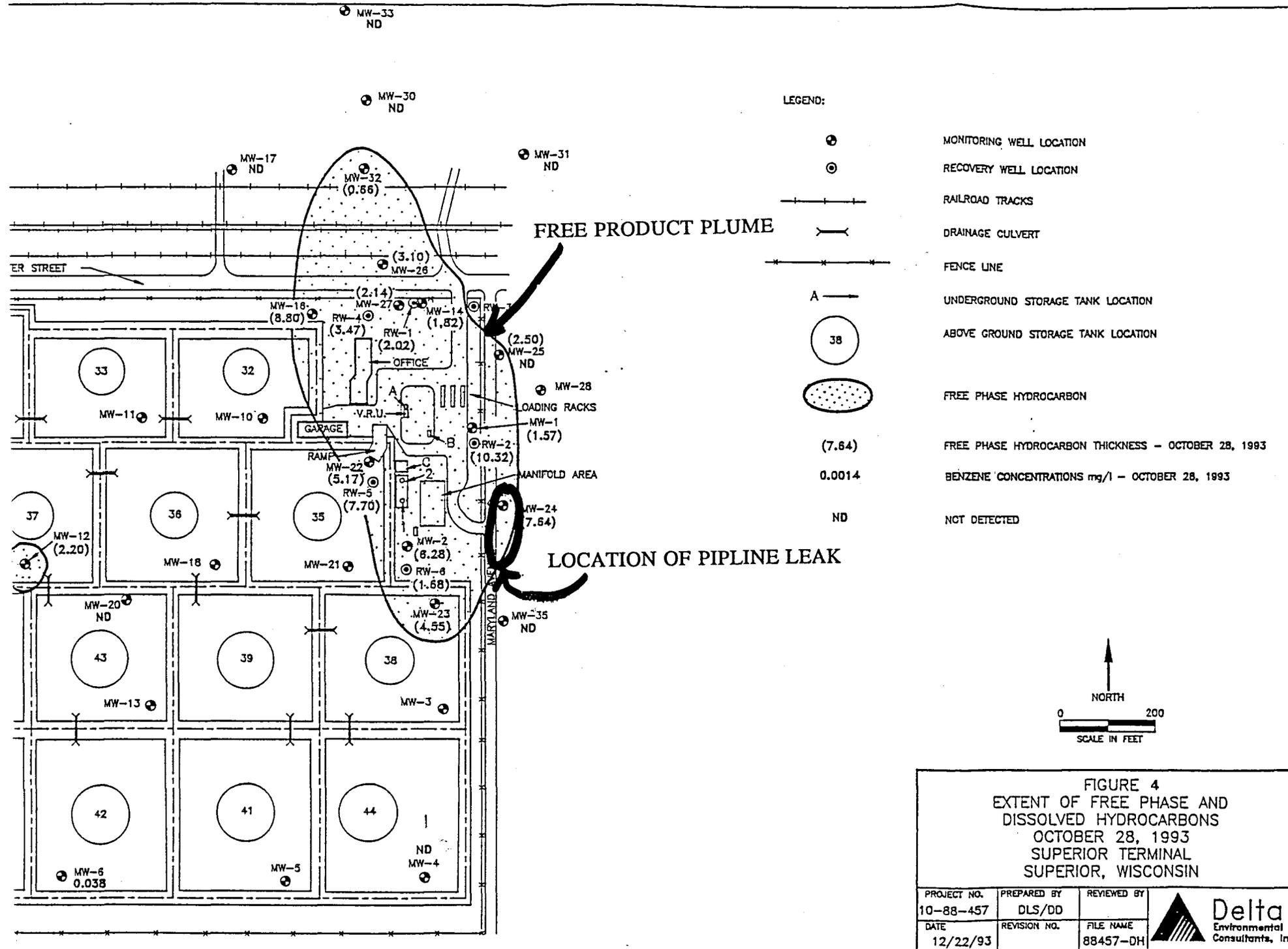
Around midnight on December 18, 1994 an Amoco employee observed free product running in a ditch alongside Amoco's property in Superior. The Amoco employee realized that Murphy's pipeline ran along the ditch. The Amoco employee then reported the spill to the WDNR on December 19, 1994. Murphy was also notified. Murphy Oil then documented the release by letter to the WDNR dated December 21, 1994. Murphy stated that 20 barrels of low sulphur diesel were released from a small leak in their finished product pipeline. Murphy immediately responded to the site, closed down the pipeline, captured free product, excavated obviously impacted soils and repaired the leak. By letter dated February 23, 1995, Murphy advised the WDNR that approximately 250 yards of soil were removed and sent to Lakehead Blacktop for treatment. Other than sampling of the removed soils, no samples were taken from the site of the release. On May 4, 1995 I met with a representative with Murphy Oil at the site. He informed me that they considered the problem resolved and that they would not do any more work unless the WDNR told them to do something.

Complicating Factor

It is my opinion that Murphy may have collected confirmation samples from their excavation, however, Murphy is aware of the problems at the Amoco site. Amoco has been investigating and taking steps toward cleanup of a large petroleum product plume related to their property for the past few years. The plume, of groundwater contamination and free product, delineated by Amoco extends into the same area as the leak from the Murphy pipeline (see attached map). At the May 4, 1995 meeting the Murphy representative indicated that contaminated soil was noted at the bottom of the excavation, but they attributed it to Amoco's problem, hence no sampling and no additional work. Murphy does state in their letter that the product that leaked was dyed and that contamination related to that releases was identifiable. It is unknown if the pipeline leak was a recurring or continuing problem. Amoco has contacted me to ask what we are going to have Murphy do in regard to their leak as far as followup.

Ideas for Additional Work

At this time I would ask that Murphy complete a series of borings to identify soil contamination in the area of their release with sampling. I would also ask that they provide information regarding the potential for previous leaks from the pipeline. If they can determine recent fuel impacts from the subject leak from releases from Amoco's site I would recommend closure on the leak. It may prove to be difficult to differentiate impacts from Murphy's leak from Amoco's problem.



MW-33
ND

MW-30
ND

MW-17
ND

MW-31
ND

MW-32
(0.66)

FREE PRODUCT PLUME

(3.10)
MW-26

MW-18
(8.80)

MW-27
(2.14)

MW-14
(1.82)

MW-25
ND

MW-28

MW-1
(1.57)

MW-22
(5.17)

MW-24
(7.54)

MW-21

MW-23
(4.55)

MW-35
ND

MW-12
(2.20)

MW-20
ND

MW-3

MW-13

MW-42
0.038

MW-5

MW-4
ND

ER STREET

GARAGE

RAMP

V.R.U.

OFFICE

LOCATION OF PIPELINE LEAK

MARYLAND

LOADING RACKS

MANIFOLD AREA

MW-2

MW-8

MW-10

MW-11

MW-14

MW-17

MW-20

MW-23

MW-26

MW-29

MW-32

MW-35

MW-38

MW-41

MW-44

A

38

(7.64)

0.0014

ND

0 200
SCALE IN FEET

FIGURE 4

EXTENT OF FREE PHASE AND
DISSOLVED HYDROCARBONS
OCTOBER 28, 1993
SUPERIOR TERMINAL
SUPERIOR, WISCONSIN

PROJECT NO. 10-88-457	PREPARED BY DLS/DD	REVIEWED BY
DATE 12/22/93	REVISION NO.	FILE NAME 88457-OH





George E. Meyer, Secretary
William H. Smith, District Director

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

NORTHWEST DISTRICT HEADQUARTERS

P.O. Box 309
STH 70 West & First Street
Spooner, Wisconsin 54801
TELEPHONE 715-635-2101
TELEFAX 715-635-4013

September 7, 1995

Mr. William P. Gustafson
Murphy Oil USA, Inc
Superior Refinery
P.O. Box 2066
Superior, Wisconsin 54880

DRAFT

Re: Finished Product Pipeline Leak
Superior, WI

Dear Mr. Gustafson::

Copies of your letters to Steve LaValley of the Wisconsin Department of Natural Resources (WDNR), dated December 21, 1994 and February 23, 1995 have been received by this office. Those letters document that a release occurred on December 18/19, 1995 originating from your finished product pipeline. Your letters also documented that refinery personnel were called to the scene to collect free product present at the surface as well as excavating approximately 250 cubic yards of impacted soils and repairing the leak that caused the release. Your timely response to the immediate problem was appreciated as well as your prompt notification of the WDNR of this occurrence. However, as your letters did not document that all impacts to soil and/or groundwater from the release were addressed, the WDNR believes that additional investigation and possibly remediation is needed to resolve the issue. As you are aware there is significant petroleum related contamination identified at the adjacent Amoco Terminal and your continued efforts in regard to your spill should take this into account.

Based on the information currently available regarding this spill, as provided by your letters, the WDNR believes you are responsible for restoring the environment at this site under Section 144.76, Wisconsin Statutes, known as the hazardous substances spills law. Your responsibilities include investigating the extent of the contamination and then selecting and implementing the most appropriate remedial action. Enclosed is information to help you understand what you need to do to ensure your compliance with the spills law.

The purpose of this letter is threefold: 1) to describe your legal responsibilities, 2) to explain what you need to do to investigate and cleanup the contamination and 3) to provide you with information about cleanups, environmental consultants, possible financial assistance and working cooperatively with the WDNR.

Legal Responsibilities

Your legal responsibilities are defined both in statute and in administrative codes. The hazardous substances spill law, Section 144.76 (3) Wisconsin Statutes, states:

- * **RESPONSIBILITY.** A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance shall take the actions necessary to restore the environment to the extent practicable and minimize the harmful effects from the discharge to the air, lands, or waters of the state.

Wisconsin Administrative Codes chapters NR 700 through NR 728 establish requirements for emergency and interim actions, public information, site investigations, design and operation of remedial action systems, and case closure. Chapter 708 includes provisions for immediate actions in response to limited contamination. Wisconsin Administrative Code chapter NR 140 establishes groundwater standards for contaminants that reach groundwater.

Steps to Take

The longer contamination is left in the environment the further it can spread and the more it may cost to clean up. Quick action may lessen damage to your property and to neighboring properties and reduce your costs in investigating and cleaning up the contamination. To ensure that your clean up complies with Wisconsin's laws and administrative codes, you should hire a professional environmental consultant who understands what needs to be done. These are the first four steps to take:

1. By October 13 1995 please submit written verification (such as a letter from the consultant) that you have hired an environmental consultant. You will have to work quickly to meet this timeline.
2. By November 10, 1995 your consultant must submit a workplan and a schedule for conducting the investigation. The consultant must follow the WDNR's administrative codes and our technical guidance documents. Please include with your workplan a copy of any previous information that has been completed (such as an underground tank removal report or a preliminary soil excavation report).
3. Please keep us informed of what is being done at your site: You or your consultant must provide us with a brief report at least every 90 days, starting after your workplan is submitted. These quarterly reports should summarize the work completed since the last report. Quarterly reports need only include one or two pages of text, plus any relevant maps and tables. However, please note that should conditions at your site warrant, you may receive a letter requiring more frequent contacts with the WDNR.
4. When the site investigation is complete, your consultant must submit a full report on the extent and degree of soil and/or groundwater contamination and a proposal for cleaning up the contamination.

Due to the number of contaminated sites and our staffing levels, we will be unable to respond to each report. To maintain your compliance with the spills law and chapters NR 700 through NR 728, do not delay the investigation and clean up of your site by waiting for WDNR responses. We have provided detailed technical guidance to environmental consultants. Your consultant is expected to be familiar with our technical procedures and administrative codes and should be able to answer your questions on meeting Wisconsin's clean up requirements.

Your correspondence and reports regarding this site should be sent to the WDNR at the following address:

Wisconsin Department of Natural Resources
Northwest District Headquarters
Attn: Terry Koehn, ERRP Hydrogeologist
P.O. Box 309
Spooner, WI 54801

DRAFT

Unless otherwise requested, please send only one copy of all plans and reports. Correspondence should be identified with the assigned WDNR identification number which is listed at the top of this letter.

Information for Site Owners

Enclosed is a list of environmental consultants and some important tips on selecting a consultant. Also enclosed are materials on controlling costs, understanding the cleanup process, and choosing a site cleanup method. This information has been prepared to help you understand your responsibilities and what your environmental consultant needs to do. Please read this information carefully. As you will note some of the enclosed information is related to the Leaking Underground Storage Tank (LUST) program, however, aspects of the material should be helpful.

If you are interested in obtaining the protection of limited liability under s. 144.765, Stats., you may call (800) 367-6076 (instate long distance) or (608) 264-6020 (local or out of state) for more information. The liability exemption under s. 144.765, Stats., is available to persons who meet the definition of "purchaser" in s. 144.765(1)(c) and receive WDNR approval for the response actions taken at the property undergoing cleanup. The WDNR will determine eligibility for this program on a case-by-case basis, prior to the "purchaser" developing a scope of work for conducting a chapter NR 716 site investigation at the property.

Financial Information

Reimbursement from the Petroleum Environmental Cleanup Fund (PECFA) is available for the costs of cleaning up contamination from eligible petroleum storage tanks. The fund is administered by the Department of Industry, Labor and Human Relations (DILHR). Please contact DIHLR at (608) 255-2424 for more information on the eligibility and regulations for this program.

If you have any questions about this letter or your responsibilities, please call me at (715) 635-4048. Additionally, I would like to thank you for meeting with me at the site on May 4, 1995 to discuss this situation.

Thank you for your cooperation.

Sincerely;

DRAFT

Terry Koehn
ERRP Hydrogeologist

Att: Controlling UST Cleanup Costs fact Sheets 1-5
Selecting an Environmental Consultant
Cleanup Process for the ERR Program
Quarterly Updates for Cleanup of Contaminated Properties
Cleanup Methods for Petroleum Contaminated Soil & Groundwater
Wisconsin Administrative Code NR 700

cc:	T. Kendzierski/G. LeRoy	NWD/Spooner	w/o att.
	B. Gothblad	NWD/Spooner	
	J. Hosch	NWD Spooner	
	S. LaValley	NWD/Superior	

NORTH ST DISTRICT
SOLID WASTE MANAGEMENT

By: Sam

Date: _____

District

- LeRoy, G.
- Kendzierski, T.
- Bauer, K.
- Dunn, J.
- Hosch, J.
- Kafura, D.
- Koehn, T.
- Krantz, S.
- Radke, L.
- Spangberg, J.
- Sutton, S.

Cumberland Area

- Germer, B.
- _____
- _____

Park Falls Area

- Ashenbrucker, S
- Freeman, J.
- Laube, S.
- Wasko, W.
- _____

District Management

- DeWitt, T.
- Smith, B.

Superior Office

- LaValley, S.
- _____
- _____

Env Enforcement

- Michaelsen, M.
- Pratt, M.B.

Brule Area

- Saari, C.

Law Enforcement

- Zeug, D.
- _____

Madison

- _____ - SW/3
- _____ - SW/3
- _____ - SW/3
- _____ - SW/3

Wastewater

- Gothblad, R.
- _____

Air Management

- Ross, J.
- _____

Water Resources

- Smith, T.R.
- _____

Water Supply

- Herrick, D.
- _____

- Note & Return
- Route and Recycle
- Route and/or File
- Approval
- For Your Information
- Confer With Me
- Follow Through
- Per Your Request

Thank Sam

Comments: Bill - This is a standard RP
letter for a spill. Sending it by you
because of the overall situation
with Murphy.

Sam

ONLY,

THIS IS A NORMAL RP
LETTER ASKING FOR
SOME FOLLOWUP. THERE
ARE SOME COMPLICATIONS
THAT MURPHY WILL HAVE TO
SORT OUT WITH AMOCO.
(NOT OUR PROBLEM). SUGGEST
WE PROCEED WITH THE LETTER
+ USE IT TO ESTABLISH OUR ^{OWN} ~~OWN~~
EXPECTATIONS FOR ^{SOME} ~~SOME~~ RESPONSE
FROM THEM. (10)

DATE: September 7, 1995 FILE REF: ERRP/Coor
TO: T. Kendzierski/G. LeRoy NWD/Spooner
FROM: T. Koehn NWD/Spooner
SUBJECT: Notification for Additional Work - Murphy Oil, Superior

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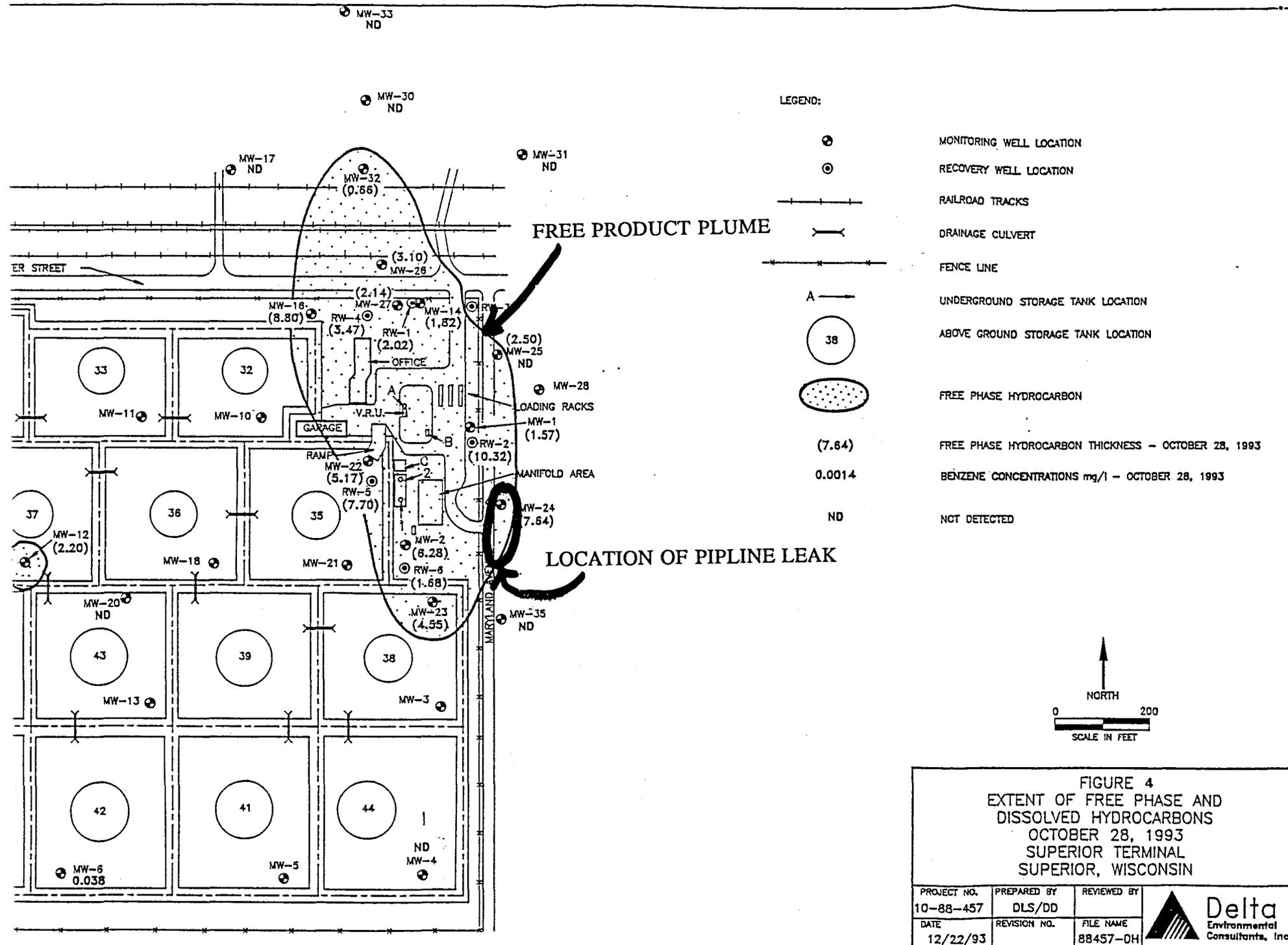


FIGURE 4
EXTENT OF FREE PHASE AND
DISSOLVED HYDROCARBONS
OCTOBER 28, 1993
SUPERIOR TERMINAL
SUPERIOR, WISCONSIN

PROJECT NO. 10-88-457	PREPARED BY DLS/DD	REVIEWED BY
DATE 12/22/93	REVISION NO.	FILE NAME 88457-OH





George E. Meyer, Secretary
William H. Smith, District Director

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

NORTHWEST DISTRICT HEADQUARTERS

P.O. Box 309
STH 70 West & First Street
Spooner, Wisconsin 54801
TELEPHONE 715-635-2101
TELEFAX 715-635-4013

September 7, 1995

Mr. William P. Gustafson
Murphy Oil USA, Inc
Superior Refinery
P.O. Box 2066
Superior, Wisconsin 54880

DRAFT

Re: **Finished Product Pipeline Leak
Superior, WI**

Dear Mr. Gustafson::

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Steps to Take

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2. By **November 10, 1995** your consultant must submit a workplan and a schedule for conducting the investigation. The consultant must follow the WDNR's administrative codes and our technical guidance documents. Please include with your workplan a copy of any previous information that has been completed (such as an underground tank removal report or a preliminary soil excavation report).
3. Please keep us informed of what is being done at your site. You or your consultant must provide us with a brief report at least every 90 days, starting after your workplan is submitted. These quarterly reports should summarize the work completed since the last report. Quarterly reports need only include one or two pages of text, plus any relevant maps and tables. However, please note that should conditions at your site warrant, you may receive a letter requiring more frequent contacts with the WDNR.
4. When the site investigation is complete, your consultant must submit a full report on the extent and degree of soil and/or groundwater contamination and a proposal for cleaning up the contamination.

Due to the number of contaminated sites and our staffing levels, we will be unable to respond to each report. To maintain your compliance with the spills law and chapters NR 700 through NR 728, do not delay the investigation and clean up of your site by waiting for WDNR responses. We have provided detailed technical guidance to environmental consultants. Your consultant is expected to be familiar with our technical procedures and administrative codes and should be able to answer your questions on meeting Wisconsin's clean up requirements.

Your correspondence and reports regarding this site should be sent to the WDNR at the following address:

Wisconsin Department of Natural Resources
Northwest District Headquarters
Attn: Terry Koehn, ERRP Hydrogeologist
P.O. Box 309
Spooner, WI 54801

DRAFT

Unless otherwise requested, please send only one copy of all plans and reports. Correspondence should be identified with the assigned WDNR identification number which is listed at the top of this letter.

Information for Site Owners

Enclosed is a list of environmental consultants and some important tips on selecting a consultant. Also enclosed are materials on controlling costs, understanding the cleanup process, and choosing a site cleanup method. This information has been prepared to help you understand your responsibilities and what your environmental consultant needs to do. Please read this information carefully. As you will note some of the enclosed information is related to the Leaking Underground Storage Tank (LUST) program, however, aspects of the material should be helpful.

If you are interested in obtaining the protection of limited liability under s. 144.765, Stats., you may call (800) 367-6076 (instate long distance) or (608) 264-6020 (local or out of state) for more information. The liability exemption under s. 144.765, Stats., is available to persons who meet the definition of "purchaser" in s. 144.765(1)(c) and receive WDNR approval for the response actions taken at the property undergoing cleanup. The WDNR will determine eligibility for this program on a case-by-case basis, prior to the "purchaser" developing a scope of work for conducting a chapter NR 716 site investigation at the property.

Financial Information

Reimbursement from the Petroleum Environmental Cleanup Fund (PECFA) is available for the costs of cleaning up contamination from eligible petroleum storage tanks. The fund is administered by the Department of Industry, Labor and Human Relations (DILHR). Please contact DIHLR at (608) 255-2424 for more information on the eligibility and regulations for this program.

If you have any questions about this letter or your responsibilities, please call me at (715) 635-4048. Additionally, I would like to thank you for meeting with me at the site on May 4, 1995 to discuss this situation.

Thank you for your cooperation.

Sincerely;

DRAFT

Terry Koehn
ERRP Hydrogeologist

Att: Controlling UST Cleanup Costs fact Sheets 1-5
Selecting an Environmental Consultant
Cleanup Process for the ERR Program
Quarterly Updates for Cleanup of Contaminated Properties
Cleanup Methods for Petroleum Contaminated Soil & Groundwater
Wisconsin Administrative Code NR 700

cc:	T. Kendzierski/G. LeRoy	NWD/Spooner	w/o att.
	B. Gothblad	NWD/Spooner	
	J. Hosch	NWD Spooner	
	S. LaValley	NWD/Superior	

DATE:

5/1/95

SUPERIOR DNR OFFICE
1705 TOWER AVENUE
SUPERIOR WI 54880
PHONE: 715/392-7988
FAX: 715/392-7993

TO BRULE:

TO SPOONER:

L. WIESNER

G. LEROY

D. ANDERSON

D. KAFURA

J. ROSS

X T Kahn

TO BAYFIELD:

TO MADISON:

B. SWANSON

B. HAGMAN - AM/10

S. SCHRAM

J. CONNELLY - SW/3

M. HALVORSON

L. SRIDARAN - SW/3

TO PARK FALLS:

TO OTHER:

W. WASKO

RECEIVED

MAY 01 1995

FROM:

NORTHWEST DISTRICT
HEADQUARTERS

FOR YOUR INFORMATION

FOR YOUR COMMENTS

FOR YOUR APPROVAL

ROUTE AND RETURN TO ME

COMMENTS:

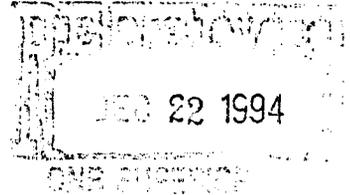
TERRY all I have are Xerox

Copies which suggests that I

have already sent my file

before

December 21, 1994



Steve LaValley
Area Hazardous/Solid Waste Specialist
Department of Natural Resources
1705 Tower Avenue
Superior, WI 54880

RE: Release of Low Sulphur Diesel and Gasoline Mixture

Dear Mr. LaValley:

On behalf of Murphy Oil USA, Inc. I am providing written confirmation of the notification given on December 19, 1994, regarding the release of low sulphur diesel and gasoline mixture.

On December 19, 1994, at midnight, Murphy Oil experience a release of approximately 20 barrels of low sulphur diesel and gasoline mixture. While Murphy Oil was transferring finished product to the Williams Brothers Pipeline, free product was observed in a concrete roadway drainage ditch by a truck driver at the AMOCO terminal. The refinery was notified and the pipeline transfer was shut down immediately and both ends of the pipe were blocked in.

Refinery maintenance personnel were called in to collect the free standing liquid. The product came up out of the ground and traveled along the frozen surface. The product collected in a ditch approximately two feet wide and seventy-five feet long. The product was dyed green and was easily discernible against the snow. Free product was vacuumed up and contaminated snow removed and brought to the refinery and placed into the #1 API oil/water separator for recovery.

Prior to excavation, the pipeline was blown clear of product with the use of nitrogen. A contractor was called in to excavate and remove the contaminated surface soil. During excavation, a small hole in the transfer pipe was found. That section of pipe will be replaced.

Mr. Steve LaValley
December 21, 1994
Page Two

If you have any questions or wish to discuss this matter further,
please call me at (715)398-8217.

Sincerely,

William P. Gustafson, MKA

William P. Gustafson
Environmental Operations Superintendent

bg.069

cc: Jim Gesick
Jim Britt
Jim Kowitz
Rick Lewandowski

Department of Natural Resources

Div. Emergency Gov't. Nat'l. Response Center Chemtrec/Pesticides/Chlorine

(608) 266-3232 (414) 424-8802 (800) 424-9300

Form 100-91

Spill ID Number

Y Y M M D D 0-99

Date of Incident 12-18-94	Day of Week SUN	Time of Incident 23:30	<input type="checkbox"/> A.M. <input checked="" type="checkbox"/> P.M.	Reported By (Name) ED HEYTENS	Telephone Number (715) 392-8294
Date Reported 12-19-94	Day of Week MON	Time Reported 00:42	<input type="checkbox"/> A.M. <input type="checkbox"/> P.M.	Agency or Firm Reporting ED HEYTENS/AMOCO	Reported thru Div. Emergen. Gov't. <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Substance Involved Gas + Fuel oil	Quantity	Units	Person or Firm Responsible Murphy oil - Williams Pipe Line	Contact Name	Telephone Number
Substance Involved	Quantity	Units	Contact Name	Telephone Number	

Physical Characteristics

Solid Liquid Semisolid Gas

Color _____ Odor _____

Address - Street or Route
2904 WINTER

City, State, Zip Code
Superior

Cause of Incident
Leakage in pipeline

Exact Location Description (intersection, mileage, etc.)
@ Amoco

Action Taken By Spiller

No Action Taken Notification Investigate

Containment; Type **BOOM ON DITCH**

Cleanup; Method **jumped up**

Amount Recovered _____

Monitor _____

Contractor Hired; Name _____

Other Action _____

County Location
Douglas

1/4, 1/4, Section, Town, Range
_____, T_____, N, R_____

DNR Dist **NWD** DNR Area **Brule**

Groundwaters Affected Yes No Potential

Surface Waters Affected Yes No Potential

Name of Surface Water
Lake Superior

Date District Notified
12-19-94

Day of Week
MON

Time District Notified
8:10

A.M. P.M.

District Person Notified
STEVE LaBalle

Telephone Number
() FORD

Date Investigated

Day of Week

Time Investigated

A.M. P.M.

Person Investigating

Telephone Number

Action Taken By DNR

No Action Taken Investigated Supervise/Conduct Cleanup

Spiller Required To Take Action; Type _____

Contractor Hired By DNR; Name _____

Amount Recovered _____

29.29 Enforcement

Other Agencies on Scene

Local **Douglas Co. Fire Dept / HAMM**

State _____

Federal _____

Spill Location

Industrial Facility/Paper Mill/Chem. Co.

Gas/Service Station/Garage, Auto Dealer, Repair Shop

Ag Coop/Facility/Cheese Factory/Creamery

Other Small Business (bank, grocery, insurance co., etc.)

Public Property (city, county, state, church, school, etc.)

Utility Co., Power Generating/Transfer Facility

Private Property (home/farm)

Pipeline, Terminal, Tank Farm, Oil Jobber/Wholesaler

Transportation Accident, Fuel Supply Tank Spill

Transportation Accident, Load Spill

Construction, Excavation, Wracking, Quarry, Mine

Other _____

Spilled Substance Destination

Air

Soil

Groundwater

Surface Water

Storm Sewer

Sanitary Sewer

Contained/Recovered

Other _____

Person Filing This Report (print name)
JOHN DANIEL

Signature
John Daniel

Date Signed
12-19-94

Additional Comments:
Murphy oil had shut the line down, boomed the ditch and were proceeding to jump up the oil.

PHONE CONVERSATION RECORD

DATE: 4/28/95
TIME: 1:10

398 3533
Refer
Julie
Radio

CONVERSED WITH: Call To:
William Gustafson
Murphy Oil

SUBJECT/PROJECT: Pipeline Spill
near Amoco
Terminal

UNIQUE ID#.: _____

Not Avail

Lee Wang to call me by Monday

5/1/95 Monday - No Response
Call to Gustafson - Not Avail
- Do Not Lee Wang Again

Soil removed - sent to Kimis
Replaced 20 ft
Fds 23 hr

Signature: _____

(please write legibly)

BG

February 23, 1995

Steve LaValley
Area Hazardous/Solid Waste Specialist
Department of Natural Resources
1705 Tower Avenue
Superior, WI 54880

RE: Analyses and Handling of Petroleum Impacted Soil

Dear Mr. LaValley:

On December 19, 1994, Murphy Oil generated approximately 250 yards of petroleum contaminated soil as a result of clean up operations relating to a leak in Murphy's finished product pipeline located adjacent to the AMOCO Terminal. See Murphy correspondence to the WDNR dated December 21, 1994 for Steve LaValley.

Soil Pile sampling was conducted on January 9, 1995, and sent to Enviorscan Laboratory of Rothschild, Wisconsin for analysis.

During the soil remediation process, you gave Murphy Oil verbal approval to haul this material to Lakehead Blacktop and Materials of Superior for storage.

Murphy Oil would like to thermally treat this soil at Lakehead Blacktop and Materials of Superior batch plant for asphalt incorporation.

On February 10, 1995, Murphy Oil received the analytical results. The chain of custody and Application to Treat or Dispose of Petroleum Contaminated Soil are included.

If you have any questions or wish to discuss this matter further, please call me at (715)398-3533.

Sincerely,



William P. Gustafson
Environmental Operations Superintendent

bg.096

cc: Jim Gesick
Jim Britt
Jim Kowitz
Rick Lewandowski

MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN

Table 1

CALCULATIONS FOR BENZENE, GRO AND DRO FROM AN ASPHALT PLANT

Mass of Soil to be Thermally Treated

$$250 \text{ yd}^3 \times 2,800 \text{ lb/yd}^3 = 7000,000 \text{ lbs}$$

(GRO):

(GRO) concentration in stockpiled soil SS-1 and SS-2

$$\begin{array}{r} 6,510 \text{ ppm} + 3,360 \text{ ppm} \\ \hline \text{2 samples} \end{array} = 4,935 \text{ ppm}$$

$$\begin{array}{r} 4,935 \text{ ppm} \\ \hline \text{1,000,000} \end{array} \times 700,000 \text{ lbs} = 3,450.5 \text{ lbs. for total GRO emissions.}$$

(DRO):

(DRO) concentration in stockpiled soil SS-1 and SS-2

$$\begin{array}{r} 18,700 \text{ ppm} + 37,600 \text{ ppm} \\ \hline \text{2 samples} \end{array} = 28,150 \text{ ppm}$$

$$\begin{array}{r} 28,150 \text{ ppm} \\ \hline \text{1,000,000} \end{array} \times 700,000 \text{ lbs} = 19,705 \text{ lbs. for total DRO emissions.}$$

BENZENE

(Benzene) concentration in stockpiled soil SS-1, and SS-2

$$\begin{array}{r} 2.1 \text{ ppm} + 63.2 \text{ ppm} \\ \hline \text{2 samples} \end{array} = 32.65 \text{ ppm}$$

$$\begin{array}{r} 32.65 \text{ ppm} \\ \hline \text{1,000,000} \end{array} \times 700,000 \text{ lbs} = 22.86 \text{ lbs for total benzene emissions.}$$

ENVIROSCAN

February 8, 1995

Murphy Oil USA
Superior Refinery
2400 Stinson Ave.
Superior, WI 54880

ENVIRONMENTAL AND
ANALYTICAL SERVICES

Attn: Bill Gustafson

Re: 95100136

Please find enclosed the analytical results for the samples received January 10, 1995.

All analyses were completed in accordance with appropriate EPA and Wisconsin methodologies. Methods and dates of analysis are included in the report tables. Also, please note the sample receipt report form that accompanies the data.

The chain of custody document is enclosed. If you have any questions about the results, please call. Thank you for using Enviroscan Corp. for your analytical needs.

Sincerely,

Enviroscan Corp.

Laurie M. Pietrowski
Laurie M. Pietrowski
Analytical Chemist

ENVIROSCAN

February 14, 1995

Murphy Oil USA
Superior Refinery
2400 Stinson Ave.
Superior, WI 54880

ENVIRONMENTAL AND
ANALYTICAL SERVICES

Attn: Bill Gustafson

Re: 95100136

Please find enclosed the DRO results for the samples received January 10, 1995. These results were missing from the report sent to you on February 8, 1995. I am sorry for the inconvenience of this mistake.

The Diesel Range Organics (DRO) analysis was completed using the WI. DNR Modified DRO Method.

If you have any questions about the results, please call. Thank you for using Enviroscan Corp. for your analytical needs.

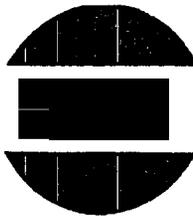
Sincerely,

Enviroscan Corp.



Dominic J. Bush
Senior Analytical Chemist

ANALYTICAL REPORT



Murphy Oil USA
Superior Refinery
2400 Stinson Ave.
Superior, WI 54880

CUST NUMBER: 95100136
SAMPLED BY: Client
DATE REC'D: 01/10/95
REPORT DATE: 02/14/95
PREPARED BY: DJB/QTS
REVIEWED BY: *[Signature]*

Attn: Bill Gustafson

Modified Diesel Range Organics (DRO)
Parameter # 78919

	<u>DRO</u>	<u>Qualifiers</u>	<u>Date Ext</u>	<u>Date Analyzed</u>	<u>Analytical No.</u>
SITE #1	18,700.	D1 D4 CSH	01/10/95	01/17/95	30251
SITE #2	37,600.	D1 D4 CSH	01/10/95	01/17/95	30252

Detection Limit 140.
Units mg/kg

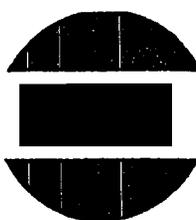
Results calculated on a dry weight basis.

Qualifiers: Only above indicated qualifiers apply.

- (D1) The chromatogram is distinct for diesel.
- (D2) The chromatogram is not distinct for diesel. It has characteristics of a product which has significant peaks within the DRO window.
- (D3) The chromatogram is not distinct for diesel or any common petroleum product. All peaks within the DRO window were quantitated.
- (D4) The chromatogram also contained significant peaks outside the DRO window.
- (D5) The chromatogram also contained significant peaks and a raised baseline outside the DRO window.
- (CSH) The check standard for this sample exhibited a high bias. Sample results may also be biased high. The percent recovery of the end check standard was 121.%. The method control limit is 120.%.

The replicate spike recovery of this batch of samples was found to be 108% and 109.%.

ANALYTICAL REPORT



Murphy Oil USA
 Superior Refinery
 2400 Stinson Ave.
 Superior, WI 54880

CUST NUMBER: 95100136
 SAMPLED BY: Client
 DATE REC'D: 01/10/95
 REPORT DATE: 02/07/95
 PREPARED BY: GLS
 REVIEWED BY: *[Signature]*

Attn: Bill Gustafson

	<u>Units</u>	<u>Detection Limit</u>	<u>SITE #1</u> <u>01/09/95</u>	<u>Qualifiers</u>	<u>Date Analyzed</u>
EPA 6010					
Cadmium	µg/g	0.22	X		01/26/95
Lead	µg/g	6.4	25.6		01/26/95
EPA 8021					
Benzene	mg/kg	5.2	101.		01/14/95
Bromobenzene	mg/kg	13.	X	CSL	01/14/95
Bromodichloromethane	mg/kg	13.	X		01/14/95
n-Butylbenzene	mg/kg	26.	173.		01/14/95
sec-Butylbenzene	mg/kg	26.	X		01/14/95
tert-Butylbenzene	mg/kg	26.	X	DUP	01/14/95
Carbon Tetrachloride	mg/kg	13.	X		01/14/95
Chlorobenzene	mg/kg	52.	X		01/14/95
Chlorodibromomethane	mg/kg	13.	X		01/14/95
Chloroethane	mg/kg	52.	X		01/14/95
Chloroform	mg/kg	13.	X		01/14/95
Chloromethane	mg/kg	52.	X		01/14/95
o-Chlorotoluene	mg/kg	26.	X		01/14/95
p-Chlorotoluene	mg/kg	26.	X		01/14/95
1,2-Dibromo-3-chloropropane	mg/kg	345.	X	DUP	01/14/95
1,2-Dibromoethane	mg/kg	26.	X		01/14/95
1,2-Dichlorobenzene	mg/kg	26.	X		01/14/95
1,3-Dichlorobenzene	mg/kg	26.	X		01/14/95
1,4-Dichlorobenzene	mg/kg	13.	X		01/14/95
Dichlorodifluoromethane	mg/kg	52.	X		01/14/95
1,1-Dichloroethane	mg/kg	13.	X		01/14/95
1,2-Dichloroethane	mg/kg	13.	X		01/14/95
1,1-Dichloroethylene	mg/kg	10.	X		01/14/95
cis-1,2-Dichloroethylene	mg/kg	13.	X		01/14/95
trans-1,2-Dichloroethylene	mg/kg	13.	X		01/14/95
1,2-Dichloropropane	mg/kg	13.	X		01/14/95
1,3-Dichloropropane	mg/kg	13.	X		01/14/95
2,2-Dichloropropane	mg/kg	52.	X		01/14/95
Ethylbenzene	mg/kg	26.	142.		01/14/95
Hexachlorobutadiene	mg/kg	26.	X		01/14/95
Isopropylbenzene	mg/kg	26.	X	CSH	01/14/95
Isopropyl Ether	mg/kg	26.	X		01/14/95
p-Isopropyltoluene	mg/kg	26.	X	CSH	01/14/95
Methyl tert Butyl Ether	mg/kg	52.	X		01/14/95
Methylene Chloride	mg/kg	65.	X		01/14/95

Analytical No.:

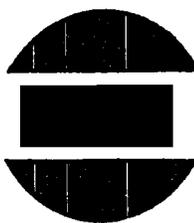
30251

X = Analyzed but not detected.
 Results calculated on a dry weight basis.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

Enviroscan Corp., 303 West Military Rd., Rothschild, WI 54474 1/800/338-SCAN Wisconsin Lab Certification No. 737053130

ANALYTICAL REPORT



Murphy Oil USA
Superior Refinery
2400 Stinson Ave.
Superior, WI 54880

CUST NUMBER: 95100136
SAMPLED BY: Client
DATE REC'D: 01/10/95
REPORT DATE: 02/07/95
PREPARED BY: GLS
REVIEWED BY: *[Signature]*

Attn: Bill Gustafson

	<u>Units</u>	<u>Detection Limit</u>	<u>SITE #1</u> <u>01/09/95</u>	<u>Qualifiers</u>	<u>Date Analyzed</u>
Naphthalene	mg/kg	26.	52.4		01/14/95
n-Propylbenzene	mg/kg	26.	65.8		01/14/95
Tetrachloroethylene	mg/kg	13.	X		01/14/95
1,1,2,2-Tetrachloroethane	mg/kg	26.	X		01/14/95
Toluene	mg/kg	52.	515.		01/14/95
1,2,3-Trichlorobenzene	mg/kg	26.	X		01/14/95
1,2,4-Trichlorobenzene	mg/kg	26.	X		01/14/95
1,1,1-Trichloroethane	mg/kg	13.	X		01/14/95
1,1,2-Trichloroethane	mg/kg	13.	X		01/14/95
Trichloroethylene	mg/kg	5.2	X		01/14/95
Trichlorofluoromethane	mg/kg	26.	X		01/14/95
1,2,4-Trimethylbenzene	mg/kg	26.	308.		01/14/95
1,3,5-Trimethylbenzene	mg/kg	26.	118.		01/14/95
Vinyl Chloride	mg/kg	5.2	X	CSL	01/14/95
m- & p-Xylene	mg/kg	26.	555.		01/14/95
o-Xylene & Styrene	mg/kg	26.	262.		01/14/95
<u>EPA 8080</u>					
PCB-1016	mg/kg	0.42	X	SCR	02/03/95
PCB-1221	mg/kg	0.42	X	SCR	02/03/95
PCB-1232	mg/kg	0.42	X	SCR	02/03/95
PCB-1242	mg/kg	0.42	X	SCR	02/03/95
PCB-1248	mg/kg	0.42	X	SCR	02/03/95
PCB-1254	mg/kg	0.42	X	SCR	02/03/95
PCB-1260	mg/kg	0.42	X	SCR	02/03/95
Extraction Date					01/20/95
<u>EPA 8310</u>					
Acenaphthene	mg/kg	0.44	11.9		01/26/95
Acenaphthylene	mg/kg	1.8	X		01/26/95
Anthracene	mg/kg	0.35	X		01/26/95
Benzo (a) Anthracene	mg/kg	0.18	X		01/26/95
Benzo (a) Pyrene	mg/kg	0.26	0.611		01/26/95
Benzo (b) Fluoranthene	mg/kg	0.13	X		01/26/95
Benzo (k) Fluoranthene	mg/kg	0.35	0.840		01/26/95
Benzo (ghi) Perylene	mg/kg	0.44	X		01/26/95
Chrysene	mg/kg	0.44	X		01/26/95
Dibenzo (a, h) Anthracene	mg/kg	0.47	X		01/26/95
Fluoranthene	mg/kg	0.47	X		01/26/95
Fluorene	mg/kg	0.26	5.13		01/26/95
Indeno (1,2,3-cd) Pyrene	mg/kg	0.44	X		01/26/95
1-Methyl Naphthalene	mg/kg	1.8	41.1		01/26/95
2-Methyl Naphthalene	mg/kg	1.8	98.8	DUP	01/26/95
Naphthalene	mg/kg	0.47	45.1	DUP	01/26/95
Phenanthrene	mg/kg	0.22	15.1		01/26/95
Pyrene	mg/kg	0.44	X		01/26/95
Extraction Date					01/18/95

Analytical No.:

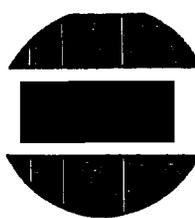
30251

X = Analyzed but not detected.

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Enviroscan Corp., 303 West Military Rd., Rothschild, WI 54474 1/800/338-SCAN Wisconsin Lab Certification No. 737053130

ANALYTICAL REPORT



Murphy Oil USA
Superior Refinery
2400 Stinson Ave.
Superior, WI 54880

CUST NUMBER: 95100136
SAMPLED BY: Client
DATE REC'D: 01/10/95
REPORT DATE: 02/07/95
PREPARED BY: GLS
REVIEWED BY: *[Signature]*

Attn: Bill Gustafson

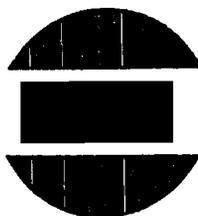
	<u>Units</u>	<u>Detection Limit</u>	<u>SITE #2</u> 01/09/95	<u>Qualifiers</u>	<u>Date Analyzed</u>
<u>EPA 6010</u>					
Cadmium	µg/g	0.22	0.563		01/26/95
Lead	µg/g	6.5	75.9		01/26/95
<u>EPA 8021</u>					
Benzene	mg/kg	2.1	63.6		01/14/95
Bromobenzene	mg/kg	5.3	X	CSL	01/14/95
Bromodichloromethane	mg/kg	5.3	X		01/14/95
n-Butylbenzene	mg/kg	11.	102.		01/14/95
sec-Butylbenzene	mg/kg	11.	11.8		01/14/95
tert-Butylbenzene	mg/kg	11.	X	DUP	01/14/95
Carbon Tetrachloride	mg/kg	5.3	X		01/14/95
Chlorobenzene	mg/kg	21.	X		01/14/95
Chlorodibromomethane	mg/kg	5.3	X		01/14/95
Chloroethane	mg/kg	21.	X		01/14/95
Chloroform	mg/kg	5.3	X		01/14/95
Chloromethane	mg/kg	21.	X		01/14/95
o-Chlorotoluene	mg/kg	11.	X		01/14/95
p-Chlorotoluene	mg/kg	11.	X		01/14/95
1,2-Dibromo-3-chloropropane	mg/kg	141.	X	DUP	01/14/95
1,2-Dibromoethane	mg/kg	11.	X		01/14/95
1,2-Dichlorobenzene	mg/kg	11.	X		01/14/95
1,3-Dichlorobenzene	mg/kg	11.	X		01/14/95
1,4-Dichlorobenzene	mg/kg	5.3	X		01/14/95
Dichlorodifluoromethane	mg/kg	21.	X		01/14/95
1,1-Dichloroethane	mg/kg	5.3	X		01/14/95
1,2-Dichloroethane	mg/kg	5.3	X		01/14/95
1,1-Dichloroethylene	mg/kg	4.2	X		01/14/95
cis-1,2-Dichloroethylene	mg/kg	5.3	X		01/14/95
trans-1,2-Dichloroethylene	mg/kg	5.3	X		01/14/95
1,2-Dichloropropane	mg/kg	5.3	X		01/14/95
1,3-Dichloropropane	mg/kg	5.3	X		01/14/95
2,2-Dichloropropane	mg/kg	21.	X		01/14/95
Ethylbenzene	mg/kg	11.	73.5		01/14/95
Hexachlorobutadiene	mg/kg	11.	X		01/14/95
Isopropylbenzene	mg/kg	11.	X	CSH	01/14/95
Isopropyl Ether	mg/kg	10.	10.9		01/14/95
p-Isopropyltoluene	mg/kg	11.	X	CSH	01/14/95
Methyl tert Butyl Ether	mg/kg	21.	X		01/14/95
Methylene Chloride	mg/kg	27.	X		01/14/95

Analytical No.:

30252

X = Analyzed but not detected.
Results calculated on a dry weight basis.

ANALYTICAL REPORT



Murphy Oil USA
 Superior Refinery
 2400 Stinson Ave.
 Superior, WI 54880

CUST NUMBER: 95100136
 SAMPLED BY: Client
 DATE REC'D: 01/10/95
 REPORT DATE: 02/07/95
 PREPARED BY: GLS
 REVIEWED BY: *[Signature]*

Attn: Bill Gustafson

	<u>Units</u>	<u>Detection Limit</u>	<u>SITE #2</u> <u>01/09/95</u>	<u>Qualifiers</u>	<u>Date Analyzed</u>
Naphthalene	mg/kg	11.	37.3		01/14/95
n-Propylbenzene	mg/kg	11.	36.4		01/14/95
Tetrachloroethylene	mg/kg	5.3	X		01/14/95
1,1,2,2-Tetrachloroethane	mg/kg	11.	X		01/14/95
Toluene	mg/kg	21.	264.		01/14/95
1,2,3-Trichlorobenzene	mg/kg	11.	X		01/14/95
1,2,4-Trichlorobenzene	mg/kg	11.	X		01/14/95
1,1,1-Trichloroethane	mg/kg	5.3	X		01/14/95
1,1,2-Trichloroethane	mg/kg	5.3	X		01/14/95
Trichloroethylene	mg/kg	2.1	X		01/14/95
Trichlorofluoromethane	mg/kg	11.	X		01/14/95
1,2,4-Trimethylbenzene	mg/kg	11.	174.		01/14/95
1,3,5-Trimethylbenzene	mg/kg	11.	62.4		01/14/95
Vinyl Chloride	mg/kg	2.1	X	CSL	01/14/95
m- & p-Xylene	mg/kg	11.	281.		01/14/95
o-Xylene & Styrene	mg/kg	11.	138.		01/14/95
<u>EPA 8080</u>					
PCB-1016	mg/kg	0.43	X	SCR	02/03/95
PCB-1221	mg/kg	0.43	X	SCR	02/03/95
PCB-1232	mg/kg	0.43	X	SCR	02/03/95
PCB-1242	mg/kg	0.43	X	SCR	02/03/95
PCB-1248	mg/kg	0.43	X	SCR	02/03/95
PCB-1254	mg/kg	0.43	X	SCR	02/03/95
PCB-1260	mg/kg	0.43	X	SCR	02/03/95
Extraction Date					01/20/95
<u>EPA 8310</u>					
Acenaphthene	mg/kg	0.45	10.0		01/26/95
Acenaphthylene	mg/kg	1.8	X		01/26/95
Anthracene	mg/kg	0.35	X		01/26/95
Benzo (a) Anthracene	mg/kg	0.18	X		01/26/95
Benzo (a) Pyrene	mg/kg	0.26	1.02		01/26/95
Benzo (b) Fluoranthene	mg/kg	0.13	X		01/26/95
Benzo (k) Fluoranthene	mg/kg	0.35	1.37		01/26/95
Benzo (ghi) Perylene	mg/kg	0.45	X		01/26/95
Chrysene	mg/kg	0.45	X		01/26/95
Dibenzo (a, h) Anthracene	mg/kg	0.48	X		01/26/95
Fluoranthene	mg/kg	0.97	X		01/26/95
Fluorene	mg/kg	0.26	7.46		01/26/95
Indeno (1,2,3-cd) Pyrene	mg/kg	0.45	X		01/26/95
1-Methyl Naphthalene	mg/kg	1.8	61.5		01/26/95
2-Methyl Naphthalene	mg/kg	1.8	112.	DUP	01/26/95
Naphthalene	mg/kg	0.48	43.5	DUP	01/26/95
Phenanthrene	mg/kg	0.23	21.7		01/26/95
Pyrene	mg/kg	0.45	X		01/26/95
Extraction Date					01/18/95

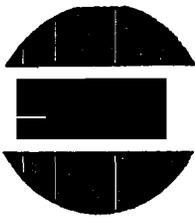
Analytical No.:

30252

X = Analyzed but not detected.

All analyses conducted in accordance with Enviroscan Quality Assurance Program.

ANALYTICAL REPORT



Murphy Oil USA
Superior Refinery
2400 Stinson Ave.
Superior, WI 54880

CUST NUMBER: 95100136
SAMPLED BY: Client
DATE REC'D: 01/10/95
REPORT DATE: 02/08/95
PREPARED BY: LMP *zmp*
REVIEWED BY: *[Signature]*

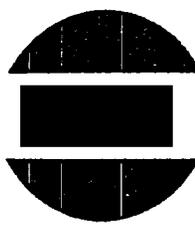
Attn: Bill Gustafson

	<u>Units</u>	<u>Detection Limit</u>	<u>MEOH BLANK 01/09/95</u>	<u>Qualifiers</u>	<u>Date Analyzed</u>
<u>EPA 8020</u>					
Benzene	mg/l	0.05	X		01/19/95
Ethylbenzene	mg/l	0.10	X		01/19/95
Methyl tert Butyl Ether	mg/l	0.20	X		01/19/95
Toluene	mg/l	0.20	X		01/19/95
1,2,4-Trimethylbenzene	mg/l	0.10	X		01/19/95
1,3,5-Trimethylbenzene	mg/l	0.10	X		01/19/95
m- & p-Xylene	mg/l	0.10	X		01/19/95
o-Xylene	mg/l	0.10	X		01/19/95

Analytical No.: 30253

X = Analyzed but not detected.

ANALYTICAL REPORT



Murphy Oil USA
Superior Refinery
2400 Stinson Ave.
Superior, WI 54880

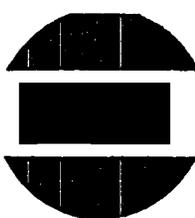
CUST NUMBER: 95100136
SAMPLED BY: Client
DATE REC'D: 01/10/95
REPORT DATE: 02/07/95
PREPARED BY: GLS
REVIEWED BY: *[Signature]*

Attn: Bill Gustafson

Qualifier Descriptions

CSL	Check standard for this analyte exhibited a low bias. Sample results may also be biased low. Non-detects were verified by comparison with a low standard.
DUP	Result of duplicate analysis in this quality assurance batch exceeds the limits for precision. Sample results may also show a degree of variability.
CSH	Check standard for this analyte exhibited a high bias. Sample results may also be biased high. Non-detects were verified by comparison with a low standard.
SCR	Determination for indicated parameter is based on comparison of sample to a low standard at this equivalent concentration.

ANALYTICAL REPORT



Murphy Oil USA
Superior Refinery
2400 Stinson Ave.
Superior, WI 54880

CUST NUMBER: 95100136
SAMPLED BY: Client
DATE REC'D: 01/10/95
REPORT DATE: 02/08/95
PREPARED BY: LMP *z.m.*
REVIEWED BY: *[Signature]*

Attn: Bill Gustafson

Modified Gasoline Range Organics (GRO) Parameter # 78920

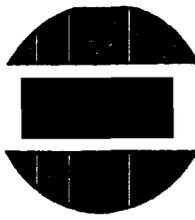
	<u>GRO</u>	<u>Qualifiers</u>	<u>Date Analyzed</u>	<u>Analytical No.</u>
SITE #1	6,510.	G2 G6 XXX	01/12/95	30251
SITE #2	3,360.	G2 G6	01/12/95	30252
Detection Limit Units	5.0 mg/kg			
MEOH BLANK	X		01/12/95	30253
Detection Limit Units	2.5 mg/l			

Results calculated on a dry weight basis.

Qualifiers: Only above indicated qualifiers apply.

- (G1) The chromatogram is distinct for gasoline.
- (G2) The chromatogram is not distinct for gasoline. It has more characteristics of aged gasoline.
- (G3) The chromatogram is not distinct for gasoline. It has characteristics of a product which has significant peaks within the GRO window.
- (G4) The chromatogram is not distinct for gasoline. All peaks within the GRO window were quantitated.
- (G5) The chromatogram also contained significant peaks outside the GRO window.
- (G6) The chromatogram also contained significant peaks and a raised baseline outside the GRO window.
- (G7) Although characteristic of gasoline, the primary peak ratios indicate the presence of additional products or compounds.
- (G8) Although characteristic of aged gasoline, the primary peak ratios indicate the presence of additional products or compounds.
- (XXX) Matrix spike recovery of this batch was low. Sample concentrations may also be biased low. Spike recovery = 68.3%. Control limit is 70-140%.

The replicate spike recovery of this batch of samples was found to be 95.8% and 91.3%.



Sample Receipt Report

Client: Murphy Oil USA, Inc. Date Rec'd: 1/10/95

Analytical No.: 11030251 Thru 11030253

Check all deviations from EPA or WDNR sample protocol.

Sample(s) received at _____°C which is above the EPA and WDNR limit of 4°C.

VOC vial(s) received with headspace. Explain: _____

Sample(s) received in bottles not furnished by Enviroscan. Preservation method, if used, is unknown.

Sample(s) not properly preserved per EPA/WDNR protocol for the following: _____

Sample(s) received beyond EPA holding time for: _____

Sample date/time not supplied by client. Actual holding time unknown.

GRO/DRO (circle appropriate) sample(s) exceed 20 gm, but are within the WDNR stated 1.2 gm tolerance allowed for average vial weight. Sample(s) over-weight: _____

GRO/DRO (circle appropriate) sample(s) exceed 20 gm. Sample(s) over-weight: _____

Other: VOC/PVOC samples 18021 per Bell
cannot recall POC twice - delivered POC from
North Lathrop - will pick up with LSCM. Will speak with
Bell.

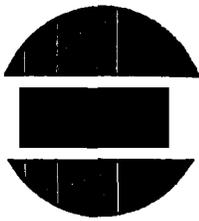
Client Bell Gustafson (contact name) notified of the above deviation(s) on 1/10/95 at 10:30 am/pm by Bruce Ready and the client ordered: _____ (signature)

Proceed with analyses as ordered.

Proceed with analyses after taking the following corrective action: _____

Do NOT proceed with analyses.

REQUEST FOR SERVICES



SCAN

303 W. MILITARY RD. ROTHSCHILD, WI 54474 1-800-338-SCAN

REPORT TO:

Name: BILL GUSTAFSON
 Company: MURPHY OIL USA, INC
 Address: 2400 STINSON AVE
SUPELLOR WI 54880
 Phone: (715) 398-8209
 P.O. # 95100136
 Project # _____ Quote # _____

BILL TO: (if different from Report To info):

Name: _____
 Company: _____
 Address: _____
 Phone: (_____) _____

ANALYTICAL REQUESTS

(use separate sheet if necessary)

Sample Type

(Check all that apply)

- Groundwater
- Wastewater
- Soil/Solid
- Drinking Water
- Oil
- Vapor
- Other

Turnaround Time

- Normal
- Rush (Pre-approved by Lab)

Date Needed _____

Approved By _____

Handwritten notes:
 11/9/95
 11/10/95

Geo/Proc	DEO	VOC/Proc	Pb/cd	Pb/cd	Surficial	5-11-95	Maryland Ave
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LAB USE ONLY	DATE	TIME	No. of Containers		SAMPLE ID	REMARKS									
			COMP	GRAB											
11030251	11/9/95	0800		✓	SITE # 1										Call upon
11030252	11/9/95	0800		✓	SITE # 2										Receipt of
	11/9/95				Temp BLANK										Sample
11030253	11/9/95				METHANOL BLANK										

CHAIN OF CUSTODY RECORD

SAMPLERS: (Signature)
Bill Gustafson

RELINQUISHED BY: (Signature) <i>Bill Gustafson</i>	DATE/TIME 11/9/95 1300	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED FOR LABORATORY BY: (Signature) <i>Bill Gustafson</i>

Deliv. Hand Comm. OK

Ship. Cont. OK? Y N/N/A

Samples leaking? Y N/N/A

Seals OK? Y N/N/A

Rec'd on ice? Y N/N/A

Comments: _____

DATE/TIME
11/10/95 10:00 am



SUPERIOR REFINERY
P O BOX 2066
SUPERIOR WISCONSIN 54880

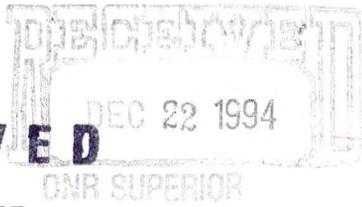
To Sim Hesch NWD

cc: T. Kendziewski NWD

December 21, 1994

Steve LaValley
Area Hazardous/Solid Waste Specialist
Department of Natural Resources
1705 Tower Avenue
Superior, WI 54880

RECEIVED



JAN 9 1995
CUMBERLAND
AREA HQ.

RE: Release of Low Sulphur Diesel and Gasoline Mixture

Dear Mr. LaValley:

On behalf of Murphy Oil USA, Inc. I am providing written confirmation of the notification given on December 19, 1994, regarding the release of low sulphur diesel and gasoline mixture.

On December 19, 1994, at midnight, Murphy Oil experience a release of approximately 20 barrels of low sulphur diesel and gasoline mixture. While Murphy Oil was transferring finished product to the Williams Brothers Pipeline, free product was observed in a concrete roadway drainage ditch by a truck driver at the AMOCO terminal. The refinery was notified and the pipeline transfer was shut down immediately and both ends of the pipe were blocked in.

Refinery maintenance personnel were called in to collect the free standing liquid. The product came up out of the ground and traveled along the frozen surface. The product collected in a ditch approximately two feet wide and seventy-five feet long. The product was dyed green and was easily discernible against the snow. Free product was vacuumed up and contaminated snow removed and brought to the refinery and placed into the #1 API oil/water separator for recovery.

Prior to excavation, the pipeline was blown clear of product with the use of nitrogen. A contractor was called in to excavate and remove the contaminated surface soil. During excavation, a small hole in the transfer pipe was found. That section of pipe will be replaced.



Amoco site right next door
with free product
problem

TC
(Copy retained)

