

Spill ID Number
04-16-046052
Y Y M M D D 0-99

Date of Incident 7-12-91	Day of Week Fri.	Time of Incident 2:10	<input checked="" type="checkbox"/> A.M. <input type="checkbox"/> P.M.	Reported By (Name) Dave Zeug	Telephone Number (715) 635-4151
Date Reported 7-12-91	Day of Week Fri.	Time Reported 8:10	<input checked="" type="checkbox"/> A.M. <input type="checkbox"/> P.M.	Agency or Firm Reporting WI DNR	Reported thru Div. Emergen. Gov't. <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Substance Involved unleaded gas		Quantity 2100	Units gallons	Person or Firm Responsible Murphy Oil	
Substance Involved		Quantity	Units	Contact Name Joe McLaughlin	Telephone Number (715) 398-3533

Physical Characteristics	Address - Street or Route P.O. Box 2066
<input type="checkbox"/> Solid <input checked="" type="checkbox"/> Liquid Color <u>reddish</u>	City, State, Zip Code Superior, WI 54880
<input type="checkbox"/> Semisolid <input checked="" type="checkbox"/> Gas Odor <u>gas</u>	

Cause of Incident malfunction of tank gauge	Action Taken By Spiller
Exact Location Description (intersection, mileage, etc.) Tank #59	<input type="checkbox"/> No Action Taken <input type="checkbox"/> No Notification <input type="checkbox"/> Investigate
County Location Douglas	<input checked="" type="checkbox"/> Containment; Type <u>dyked</u>

Groundwaters Affected	<input checked="" type="checkbox"/> Cleanup; Method <u>suctioned up w/portable pump and absorbent pads</u>
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Potential	<input checked="" type="checkbox"/> Amount Recovered <u>95% & 5% evaporated</u>
	<input type="checkbox"/> Monitor

DNR Dist NWD	DNR Area Brule	Surface Waters Affected	Name of Surface Water
		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Potential	

Date District Notified 7-12-91	Day of Week Fri.	Time District Notified 8:00	<input checked="" type="checkbox"/> A.M. <input type="checkbox"/> P.M.
District Person Notified Dave Zeug		Telephone Number (715) 635-4151	

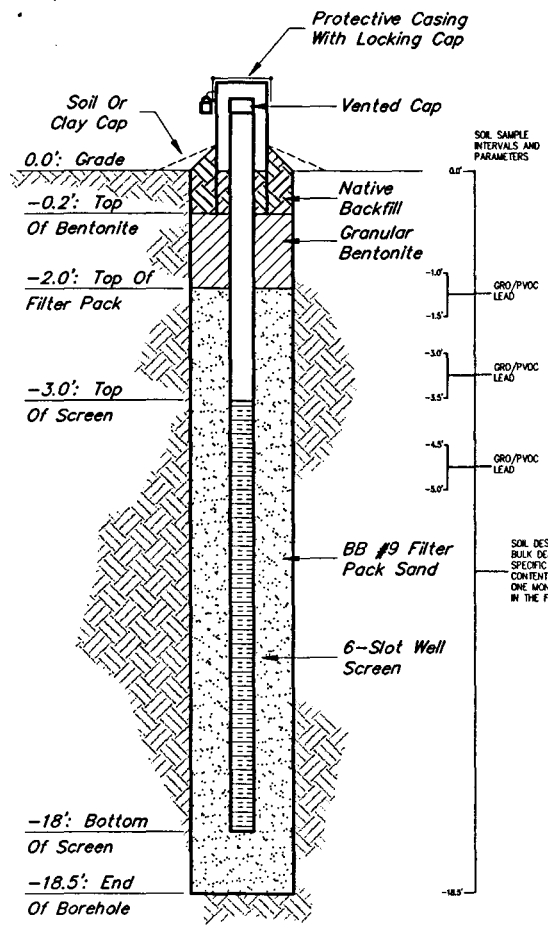
Date Investigated 7-12-91	Day of Week Fri.	Time Investigated 11:00	<input checked="" type="checkbox"/> A.M. <input type="checkbox"/> P.M.
Person Investigating Joe Davidowski		Telephone Number (715) 392-7988	

Action Taken By DNR	Spill Location
<input type="checkbox"/> No Action Taken <input checked="" type="checkbox"/> Investigation <input type="checkbox"/> Supervise/Conduct Cleanup	<input type="checkbox"/> Industrial Facility/Paper Mill/Chem. Co.
<input type="checkbox"/> Spiller Required To Take Action; Type _____	<input type="checkbox"/> Gas/Service Station/Garage, Auto Dealer, Repair Shop
<input type="checkbox"/> Contractor Hired By DNR; Name _____	<input type="checkbox"/> Ag Coop/Facility/Cheese Factory/Creamery
<input type="checkbox"/> Amount Recovered _____	<input type="checkbox"/> Other Small Business (bank, grocery, insurance co., etc.)
<input type="checkbox"/> 29.29 Enforcement	<input type="checkbox"/> Public Property (city, county, state, church, school, etc.)
Other Agencies on Scene	<input type="checkbox"/> Utility Co., Power Generating/Transfer Facility
Local _____	<input type="checkbox"/> Private Property (home/farm)
State <u>DNR</u>	<input checked="" type="checkbox"/> Pipeline, Terminal, Tank Farm, Oil Jobber/Wholesaler
Federal _____	<input type="checkbox"/> Transportation Accident, Fuel Supply Tank Spill
	<input type="checkbox"/> Transportation Accident, Load Spill
	<input type="checkbox"/> Construction, Excavation, Wrecking, Quarry, Mine
	<input checked="" type="checkbox"/> Other <u>Oil refinery</u>

Spilled Substance Destination
<input type="checkbox"/> Air
<input type="checkbox"/> Soil
<input type="checkbox"/> Groundwater
<input type="checkbox"/> Surface Water
<input type="checkbox"/> Storm Sewer
<input type="checkbox"/> Sanitary Sewer
<input checked="" type="checkbox"/> Contained/Recovered
<input type="checkbox"/> Other <u>pumped back to refinery crude thru slop system</u>

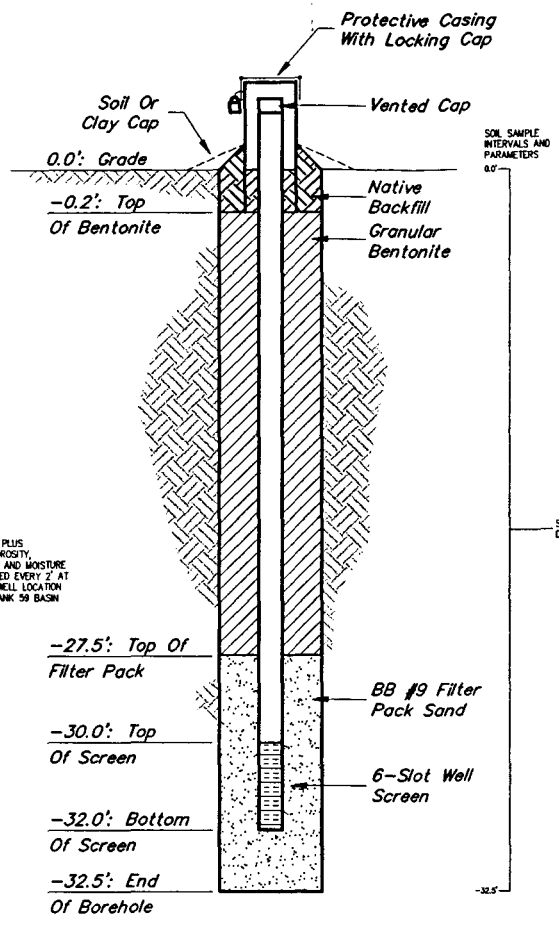
Person Filing This Report (print name) Joe Davidowski	Date Signed 7-13-91
Signature <i>Joe Davidowski</i>	

Additional Comments:
Jim Kowitz of Murphy Oil reported the spill to the Superior DNR office on 7-12-91 at 9 a.m., but we had already been notified by Dave Zeug.



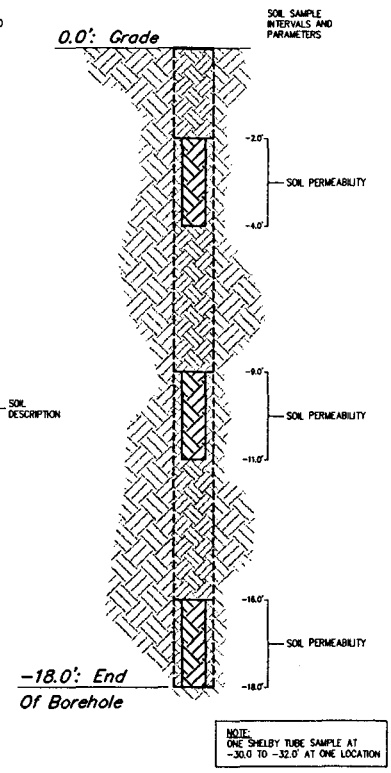
NOTE
This Boring/Well Will Be Completed At Two Locations In The Tank 59 Basin.

Not To Scale
PROPOSED MONITORING WELL AND SAMPLE INTERVALS



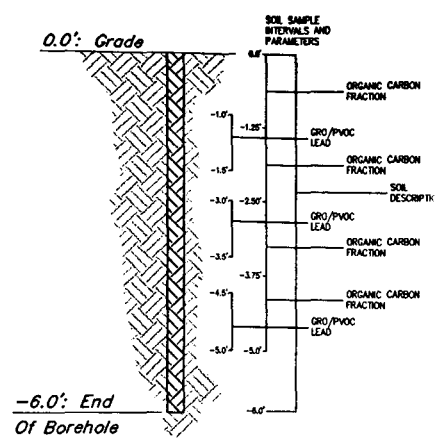
NOTE
This Boring/Well Will Be Completed At One Location In The Tank 59 Basin.

Not To Scale
PROPOSED PIEZOMETER AND SAMPLE INTERVALS



NOTE
Shelby Tube Borings Will Be Completed At Two Locations In The Tank 59 Basin. One Boring Will Be Near Former GP-7 And The Other At The Nested Well Location.

Not To Scale
PROPOSED SHELBY TUBE SAMPLE INTERVALS



NOTE
This Boring Will Be Completed At Seven Locations In The Tank 59 Basin. Organic Carbon Fraction Will Be Sampled At Two Locations; Near Former GP-7 And At The Nested Well Location.

Not To Scale
PROPOSED SOIL BORING AND SAMPLE INTERVALS

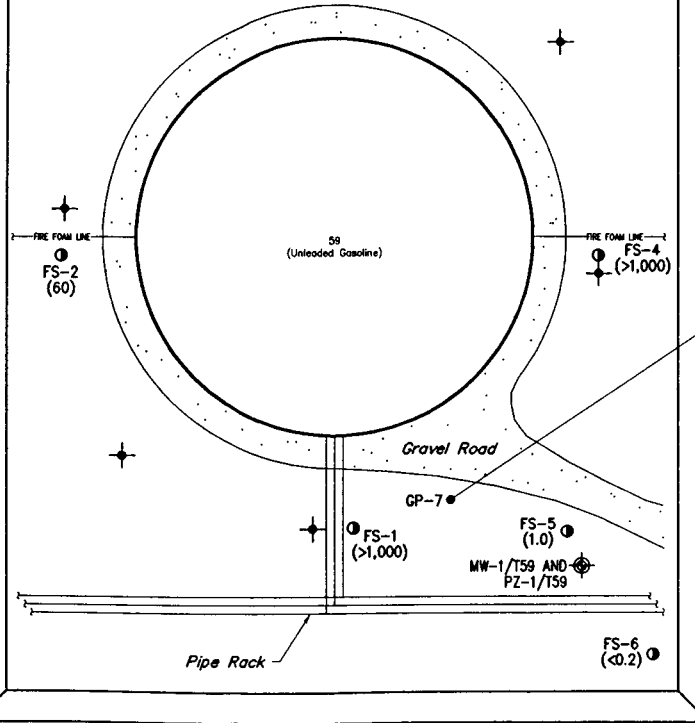
BOREHOLE AND WELL DETAILS AT TANK 59 INVESTIGATION
MURPHY OIL USA, INC.
SUPERIOR, WISCONSIN



LEGEND

- ⊕ Proposed Monitoring Well Location
- ⊕ Proposed Well Nest Location
- ⊕ Proposed Soil Boring Location
- Hand-Auger Soil Sample Location (July 1998)
- (<0.2) Field-Screening Results In Parts Per Million
- Geoprobe Soil Sample Location (July 1998)
- ▨ Liner

58



PARAMETER	SAMPLE DEPTH		
	1-1.5'	1.5-2'	4.5-5'
DRO	1,800	540	28
GRD	4,000	3,200	140
BENZENE	110	210	13
ETHYLBENZENE	170	220	3.1
TOLUENE	840	980	23
XYLENES	1,270	1,410	9.8
MTBE	<3.6	<36	<0.090
1,2,5-TMB	490	570	7.8
1,3,5-TMB	200	220	3.2
EDB	<2.8	<2.8	<0.070
LEAD	12.6	NA	NA
NAPHTHALENE	21	NA	3.6

NOTE:
Results (mg/kg) In Bold
Exceed NR 720 General RCLs.

**INVESTIGATION
SAMPLING LOCATIONS
AND RESULTS
TANK 59 RELEASE
MURPHY OIL USA, INC
SUPERIOR, WISCONSIN**

September 22, 1998
File #34265.009 / 367-18.9

Mr. James Hosch
Wisconsin Department of Natural Resources
1705 Tower Avenue
Superior, WI 54880

Re: Work Plan for Investigation-Tank 59 Release
Murphy Oil USA, Inc., Superior, Wisconsin
PECFA Claim #54880-0456-07-K

Dear Mr. Hosch:

This letter provides the proposed work plan for an investigation to determine the degree of unsaturated soil contamination within the diked area of Tank 59 at Murphy Oil's Superior refinery, where a release of about 200 gallons of unleaded gasoline was reported in July 1991, and to collect additional data on the soil's physical parameters in order to refine and calibrate our fate and transport modeling work. We will also install two water table wells and a piezometer within the diked area in order to assess groundwater quality at this location. This work plan is a part of the Phase 3 investigation that is outlined in the recommendations section of the Phase 1 and 2 investigation report we submitted to you on September 10, 1998.

An important goal of this investigation will be to gather sufficient physical and chemical data to develop, through modeling, a technically supportable benzene residual contaminant level (RCL) specifically for the Tank 59 release site. During a September 17th meeting between Murphy Oil and WDNR representatives in Madison, it was agreed that work at this site would serve as a pilot for developing a methodology that can be used to establish tank-specific benzene RCLs for other release sites at Murphy.

Previous Work

Gannett Fleming used a hand auger to collect shallow (1 to 1.5 feet below grade) soil samples from six locations within the diked area of Tank 59 in early July 1998. These samples were field-screened with a flame-ionization detector. The hand-auger sampling locations and the field-screening results are shown on Figure 1. Based on the field-screening results, in late July we used a Geoprobe to

collect soil samples from a location (GP-7) between the two samples with the highest field-screening results (FS-1 and FS-4). Soil samples were collected from GP-7 at three different depths and analyzed for gasoline range organics (GRO), diesel range organics (GRO), petroleum volatile organic compounds (PVOCs), and polycyclic aromatic hydrocarbons (PAHs). All the samples contained GRO, DRO, and/or PVOCs above the NR 720 generic RCLs. The location of GP-7 and the analytical results for the soil samples are also shown on Figure 1.

Proposed Scope of Work

Gannett Fleming proposes to drill a minimum of nine boreholes within the diked area at Tank 59 in order to better define the degree of gasoline contamination in the unsaturated soils in this area. Seven borings will be drilled to 6 feet, and two borings will be drilled to 18 feet. Water table wells will be installed in the two 18-foot borings. One additional boring will be drilled to 32 feet, and a piezometer will be installed in it. Groundwater samples will be collected from these three wells. The proposed locations for these borings and wells are shown on Figure 1. Based on field observations, we may also drill additional borings in order to collect unsaturated soil samples.

In addition to collecting samples for chemical analysis, we will also collect soil samples for testing of physical parameters; these results will be used for modeling. Figure 2 is a graphic presentation of the borings and wells, along with the chemical and physical parameter samples that will be collected from each one.

Soil Sampling (Chemical Parameters)

All the borings will be drilled with a conventional rotary drill rig using hollow-stem augers. While drilling each borehole, we will collect continuous soil samples using a stainless steel, split-spoon sampler. The samples will be visually classified and logged. Samples from 1 to 1.5 feet, 3 to 3.5 feet, and from 4.5 to 5 feet below grade in each of the boreholes, except the piezometer borehole and two Shelby tube boreholes, will be placed in laboratory-supplied containers; preserved as necessary; placed on ice; and shipped to Commonwealth Technology, Inc. (CTI), a Wisconsin-certified laboratory in Baraboo, Wisconsin, for analysis of GRO, PVOCs, and lead.

Mr. Jim Hosch
Wisconsin Department of Natural Resources
September 22, 1998

-3-

Soil Sampling (Physical Parameters) and Monitoring Well Construction

Soil samples from each 1.25-foot interval to a depth of 5 feet in the borehole for the water table well next to the piezometer and in the borehole near former GP-7 will be shipped to CTI for analysis of organic carbon fraction. Separate borings will also be drilled at these same two locations for the purpose of collecting Shelby tube samples at depths of 2 to 4 feet, 9 to 11 feet, and 16 to 18 feet below ground surface. At the piezometer location, an additional Shelby tube sample will be collected at 30 to 32 feet. The Shelby tube samples will be shipped to a qualified laboratory for falling head permeability testing. Samples from every 2-foot interval in the two water table well borings will be tested for bulk density, porosity, specific gravity, and moisture content. The permeability and organic carbon results will be used to calibrate the model, as discussed in our September 10, 1998, report.

The monitoring wells will be drilled using 4¼-inch-ID hollow-stem augers. The well casings and screens will be constructed of 2-inch Schedule 40 PVC with flush-threaded joints, and each well will have a vented cap. The slot size of the well screens will be 0.006 inches (0.15 mm). The water table wells and piezometer will have screen lengths of 15 feet and 2 feet, respectively. The water table wells will be screened from a depth of 3 to 18 feet, while the piezometer will be screened from 30 to 32 feet.

A BB-#9 (0.22 mm ave) well sorted, silica-based sand will be used as the filter pack. The filter pack will begin 6 inches beneath the bottom of all wells and extend to 6 inches above the top of the well screen. The filter pack seal will consist of BB-#9 sand and will extend to 2 feet above the top of the piezometer screen and to 6 inches above the top of the filter pack. The shortened lengths for the filter pack and filter pack seal are necessary to allow for the placement of a minimum of 2 feet of annular space sealant.

Granular bentonite will be used as the annular space sealant. It will extend from the top of the filter pack seal to 2 inches below the ground surface. Native soil will be used to fill the final 2 inches of space; it will extend several inches above the ground surface and will slope away from the wells. A 4-inch-diameter steel protective casing with a locking cap will be installed over each of the wells. The protective casing will extend a minimum of 24 inches above the ground surface and be no more than 4 inches above the top of the well casing. The protective pipe will not extend beneath the annular space seal.

Mr. Jim Hosch
Wisconsin Department of Natural Resources
September 22, 1998

-4-

Well Development

Because the existing groundwater monitoring wells at the site can be purged dry, the new wells will be developed by slowly purging them until they are dry. A new single-use PVC bailer will be used to purge each well. The wells will be developed without surging or the addition of any water.

Drill Cuttings and Development Water

All drill cuttings will be collected and placed inside Murphy Oil's contaminated-soil stockpile building for characterization and proper disposal. All well development water will be containerized and discharged to Murphy's wastewater treatment system.

Project Documentation, Surveying, and Groundwater Sampling

The following required forms will be completed and submitted to the WDNR with the investigation report:

- Soil boring log information (Form 4400-122).
- Monitoring well construction (Form 4400-113A).
- Monitoring well development (Form 4400-113B).
- Groundwater monitoring well information (Form 4400-89)

The top of the PVC casing and the ground surface next to each well will be surveyed to the mean sea level datum.

The depth to groundwater and the dissolved oxygen concentration will be measured in each well before it is sampled. We will collect the groundwater samples using a new single-use, disposable PVC bailer and new polyethylene rope. A field blank and a trip blank will also be prepared and submitted to the laboratory with the samples from the wells. The samples will be placed in laboratory-supplied containers, preserved as necessary, placed on ice, and shipped to CTI for analysis of GRO, lead, volatile organic compounds, and natural attenuation parameters. The samples for lead analysis will be field-filtered, as required by WDNR quality-assurance guidance.

Mr. Jim Hosch
Wisconsin Department of Natural Resources
September 22, 1998

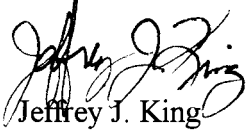
-5-

We plan to do the field work at Tank 59 at the same time we investigate the Tank 66 basin. If you have any questions about this work plan, please call.

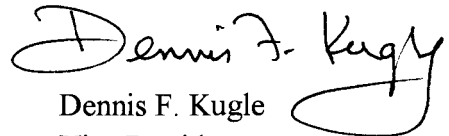
Very truly yours,

GANNETT FLEMING, INC.

Eder Division



Jeffrey J. King
Staff Hydrogeologist

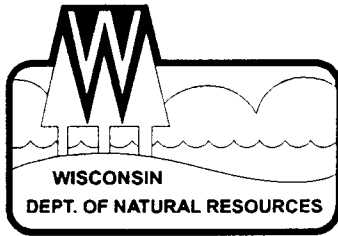


Dennis F. Kugle
Vice President

DFK/reb

Enc.

cc: L. Vail (Murphy)
J. Kowitz (Murphy)
L. Lundmark (Murphy)
K. Melnyk (Murphy)
S. Druckenmiller (WDNR-Madison)
M. Stokstad (WDNR-Rhineland)
R. Lewandowski (DeWitt Ross & Stevens)
S. Laube (Department of Commerce)



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

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

1705 Tower Avenue
Superior, Wisconsin 54880
Telephone 715-392-7988
FAX 715-392-7993

October 1, 1998

Mr. R. Lee Vail
Environmental Affairs Manufacturing Department
P.O. Box 61780
New Orleans, LA 70161-1780

Subject: Work Plan for Investigation - Tank 59 Release
PECFA Claim No. 354880-0456-07-K
Murphy Oil USA, Inc., Superior, Wisconsin

Dear Lee:

This letter is in response to the Work Plan Investigation dated September 22, 1998, submitted on your behalf by Dennis Kugle of Eder Associates. This letter is to provide conditional approval of the proposed work. The report confirms the agreement that was reached during the meeting between Murphy Oil and Department representatives on September 17, 1998, for a pilot project for the development of a benzene site specific residual contaminant level.

The Department approves of the work plan with the following conditions:

1. The results shall be submitted in accordance with NR 716.15, Wis. Adm. Code.
2. The report indicates the organic carbon samples will be collected from the site. We believe that the ranges of two to four percent identified in previous reports are not indicative of uncontaminated clay. The results may be indicative of petroleum contamination. Therefore, a sample must also be collected for organic carbon analysis from a nearby location off the refinery property.
3. Section NR 720.07, Wis. Adm. Code, requires responsible parties to determine the residual contaminant levels or a performance standard for each exposure or migration pathway of concern for each soil contaminant of concern at a site or facility in accordance with ss. NR 720.09 to NR 720.19, Wis. Adm. Code. Polynuclear aromatic hydrocarbons (PAHs) at the Tank 59 site are contaminants of concern in particular, 2-methyl-naphthalene and naphthalene. Samples collected from the site must be analyzed for PAHs and site-specific residual contaminant levels must be proposed. If you wish to read the R&R program's PAH guidance, it is available on our world wide web site.

Please be informed that NR 749, Wis. Adm. Code authorizes the Department to charge fees for certain types of technical assistance, effective September 19, 1998. Since your work plan was submitted after September 19, if you wish to meet to discuss this work plan, you will be required to pay a \$500 fee prior to the meeting.



Printed on
Recycled
Paper

Quality Natural Resources Management
Through Excellent Customer Service

