HAZARDOUS SUBSTANCES INCIDENT
Initial Report (use back page to complete items)

CON 12-7-1
FO6-UST846

Taken by Ron Kozel Spill Number 03307-RK-1522

1) REPORTED: Date 3/30/87, Time 3:27 AM/PM.

2) DISCOVERED []:
OCCURRED []: Date _____, Time _____ AM/PM.

3) REPORTED BY: Bob Hackman, Phone # (918)660-3035,
Address Amoco Corps Facility, P.O. Box 3385, Tulsa, OK 74102.

4) MATERIAL: leaded gas, Amount unKnown,
Additional material that could become involved _____.

5) INCIDENT LOCATION: Town KeoKuK, County Lee,
Directions to Site 1624 Main.

6) RESPONSIBLE PARTY: Amoco, Phone # (918)660-3035,
Address P.O. Box 3385, Tulsa, OKlahoma.

7) LOCAL OFFICIALS ON SCENE: Fire [], Police [], Sheriff [], Hwy Patrol [], Civil Defense [], Health [], Other [] _____.

8) INCIDENT MODE: Motor Carrier [], Handling or Storage [✓], Pipeline [], Railroad [], Fire [], Other [] _____.

9) INCIDENT TYPE: Petroleum [✓], Ag Chemical [], Other Chemical [], Radiological [], Other [] _____.

10) INCIDENT MEDIUM: Land [], Water [], Air [], Direction of Travel _____, Speed _____.
Resources Threatened: People [], Surface Water [], Water Supply [], Groundwater [✓], Livestock or Food Product [], Other [] _____.
Explain: Underground Leak

11) EVENTS LEADING TO INCIDENT: Have installed Four monitoring wells. Depth of product ranges from .7' to 4.5'.

12) INITIAL INSTRUCTIONS OR CORRECTIVE ACTIONS: Further investigation to define the plume will begin next week.

13) NOTIFICATIONS:

USEPA (913)236-3778
Date _____, Time _____
Region ___ or Central Office ___
Date _____, Time _____

14) WRITTEN REPORT REQUESTED []

Date _____, Time _____
Date _____, Time _____

15) Copies to: a) _____, b) _____, c) _____
Date: _____ _____ _____

bsb/FSW250L05.01 & .02

RECEIVED

APR 3 1987

IOWA DEPARTMENT OF
NATURAL RESOURCES

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

VISIT MEMO
FIELD OFFICE NO. 6

DATE: 12 / 27 / 89

BY: Bill Gross, F.O. 6

LOCATION VISITED: Keokuk Rentals (UST No. 8710401); Amoco Coal tar site 03307-RK-1527
FACILITY NO. LUST Site

OBSERVATIONS:

On December 12, 1989, I met with Scott Behnken (Behnken Labs), Carol Sole (Amoco), and ~~the~~ Craig Foulkes (owner) at the Keokuk Rentals UST site at 1619 Main St. in Keokuk.

Scott and I collected duplicate soil samples from a one ft. layer of contaminated soil (blackish color) at the 13 ft. depth ~~at~~ the south wall of the excavation (see ~~sketch~~). The soil was frozen (10°F) so we had to chip pieces of the soil out of the wall. There was no odor. Two 3000-gal. gasoline, ~~and~~ one 2000-gal. diesel fuel, and one 1000 gal. kerosine tank had been excavated from this site (no tank remained on-site). The stratigraphy of the area included: 0-10 ft. sandy clay with some gravel; 10-13 ft. rubble of red bricks, wood, metal; 13-14 ft. dark clayey loam; 14-18 ft. mixture of rubble, clay, and gravel.

Lover-

XC: Verne Schrunk, LUST Program, DNR
Johanshir Golchin, Uncontrolled Site Section, DNR
Lee Co. UST file
~~Lee Co.~~ Amoco H.S.I file 03307-RK-1527

The analysis results are attached. The petroleum product could not be identified. It seemed to lie somewhere between diesel fuel and motor oil in volatility. Some PAH's were detected.

The Amoco coal tar site is located about 250 ft. upgradient (West) of this Keokuk Rentals site.

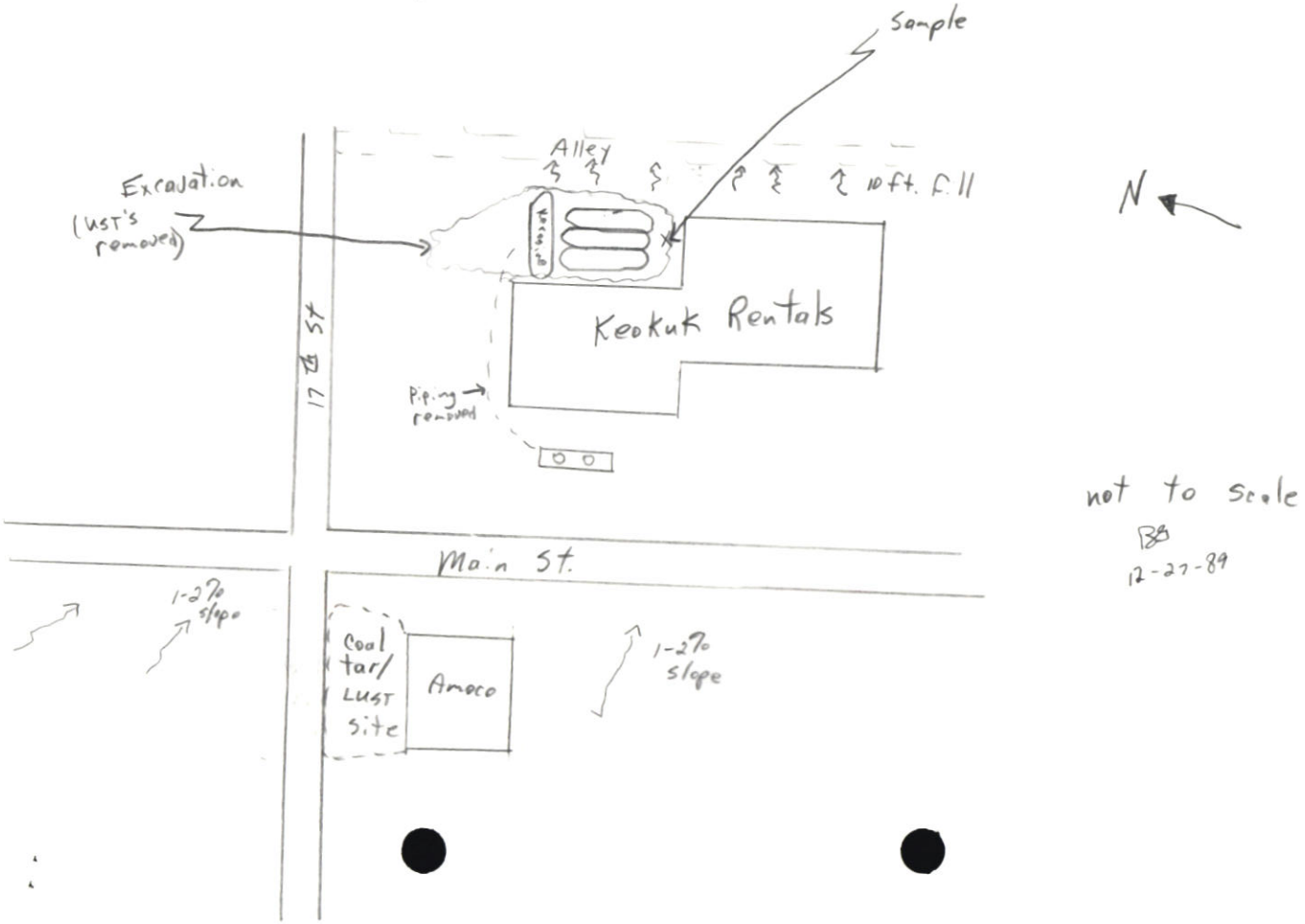
Mr. Behnken stated that soil directly beneath the Keokuk Rentals tanks was clean and the tanks and piping showed no signs of leaking.

It would seem that there are three potential sources of the contamination: 1) Keokuk Rentals UST's

2) Amoco coal tar site

3) Contaminated fill placed on the site previously.

This matter is being referred to the Uncontrolled Site Section, DNR (Johanshir Golchin).



IOWA DEPARTMENT OF NATURAL RESOURCES
RECORD OF TELEPHONE CONVERSATION

DATE	TIME	[✓] INITIATED [ ] RECEIVED	FILE NO	Routing To	Routing Initials
12-7-89	3 PM		Lee Co. UST + Amoco #32		
EMPLOYEE NAME: Bill Gross		PHONE NO.			
BUREAU/DIVISION: F.D. 6					
OTHER PARTY NAME: Scott Behnken		PHONE NO.: 319-524-6431			
FIRM/ADDRESS: Behnken Fabx, Keokuk					
SUBJECT: UST removal / uncontrolled site					

DEPARTMENT | CONVERSATION | OTHER PARTY

- Returning your call

- Yes, we worked on removing some UST's at Keokuk Rentals at 17th and Main in Keokuk. This is across the street from the Amoco (UST / coal tar site (it's also downgrade). The sand backfill of the tanks was clean. I don't believe the tanks leaked. Below the sand is brick rubble. Then we hit a 7-13 in. layer of contaminated material (at 13 ft depth). Below this is a foundation -- probably the original grade (native soil). We tested the contaminated material and found it to be kerosine.

- Did Keokuk Rentals use kerosine?

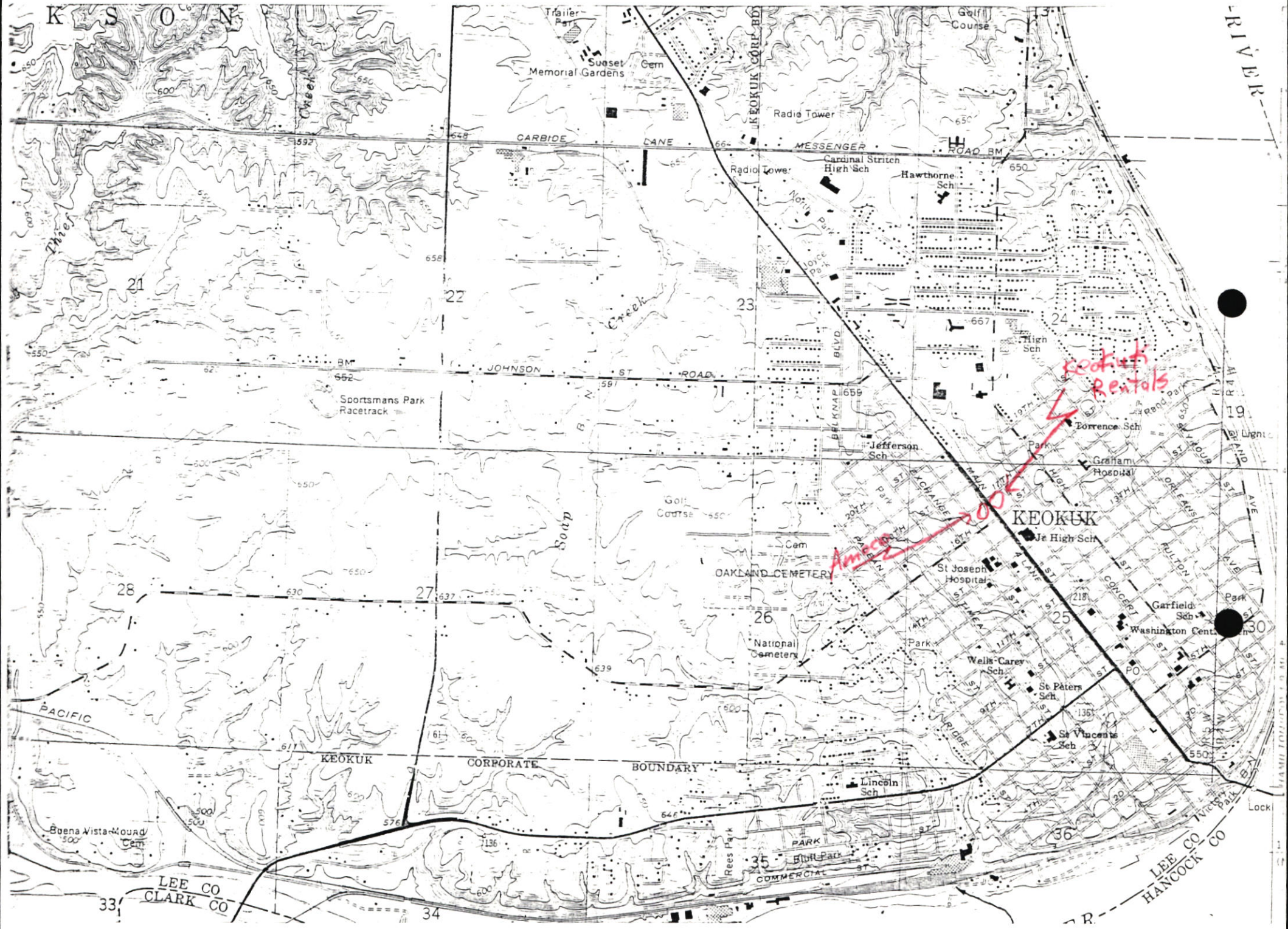
- Yes, but they say they had no leak or spill as this indicates. We'd like you to check it out / sample. We'd like to backfill soon.

- I'll contact Johnshir Golchin (DNR) about the uncontrolled site situation.

3:40 pm: Johnshir said I should collect soil sample (split) and test for PAH, ID, TPH. Amoco monitoring well is about 35 ft deep.

DNR form 68 (Feb.88)

542-3200


K S O N
Trailer Park
Sunset Memorial Gardens Cem
Golf Course
KEOKUK CORP BD
Radio Tower
CARBIDE LANE
MESSENGER ROAD
BM
Radio Tower
Cardinal Stritch High Sch
Hawthorne Sch
North Park
Joyce Park
BELKNAP BLVD
High Sch
Keokuk Rentals
Torrence Sch
Jefferson Sch
Graham Hospital
Pond Park
Park
JOHNSON ST ROAD
Sportsmans Park Racetrack
Golf Course
Cem
OAKLAND CEMETERY
KEOKUK
Jr High Sch
St Joseph Hospital
Garfield Sch
Washington Cent Sch
Park
National Cemetery
Wells-Carey Sch
St Peters Sch
St Vincents Sch
PACIFIC
KEOKUK CORPORATE BOUNDARY
Lincoln Sch
Buena Vista-Mound Cem
Rees Park
Bluff Park
PARK
COMMERCIAL ST
LEE CO
CLARK CO
LEE CO
HANCOCK CO
RIVER
Lock
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The University of Iowa
Iowa City, Iowa 52242

Hygienic Laboratory
Office of the Director

319/335-4500
Telefax: 319/335-4555
Telex: 4909945095 PHN UI



1847

RECEIVED
DEC 20 1989
IOWA DEPARTMENT OF
NATURAL RESOURCES

19 December 1989

Bill Gross
Environmental Protection Division
Department of Natural Resources
Region Office #6
1004 W. Madison
Washington, Iowa 52353

RE: UHL Sample #8912460
Collected 12 December 1989
Keokuk Rentals

Dear Mr. Gross:

Analytical results for the sample listed above are enclosed. This sample was received by our Laboratory for volatile and total extractable hydrocarbon analyses on 13 December 1989.

The University Hygienic Laboratory appreciates this opportunity to provide you with analytical services. Questions should be directed to Ms. Lynn Gockel, Coordinator of our Analytical Services Office.

Sincerely,

Keith L. Cherryholmes, Ph.D.
Assistant Director

KLC/pjp
Enclosure

UNIVERSITY OF IOWA - HYGIENIC LABORATORY

Analytical Report for Sample Number 8912460

Iowa City Laboratory
Oakdale Hall
Iowa City, IA 52242
(319) 335-4500

Des Moines Branch
900 East Grand
H.A. Wallace Building
Des Moines, IA 50319
(515) 281-5371

Date Received: 12/13/89 Date of Report: 12/18/89

Submitter: EPD 6
Address: 1004 W.MADISON
City: WASHINGTON, IA 52353

Sample Location: KEOKUK RENTALS Sample Description: SOIL
Date Collected: 12/12/89 Client Reference:
Collected By: BILL GROSS

RECEIVED
DEC 20 1989
IOWA DEPARTMENT OF NATURAL RESOURCES

Comments

S EXCAV WALL 13' DEPTH 1200 HRS
PAH,TTL PETRO HC,ID OF PETRO/CHEM

--- Listing of Analyses Performed and Results ---

Description: DISSOLVED HYDROCARBON ANALYSIS

ANALYTE	CONC PPB	QUANT LIMIT
VOLATILE HYDROCARBONS	39000	500

Analytical Method: OA-GAS Analyst: JN
Analysis Date: 12/14/89 Verified: MTF

Description: TOTAL EXTRACTABLE HYDROCARBONS

Analyte	Concentration PPM	Quant. Limit
TOTAL EXTRACTABLE HYDROCARBONS	55	3

Comments: THE CHROMATOGRAPHIC PROFILE OF THE SAMPLE EXTRACT DID NOT MATCH THIS LABORATORY'S FUEL OR OIL STANDARDS. QUANTITATION IS BASED ON THE LABORATORY'S DIESEL FUEL STANDARD.

Analytical Method: OA-2 Analyst: SM
Analysis Date: 12/14/89 Verified: MTF

PPM - Parts/Million MG/L - Milligrams/Liter MG/KG - Milligrams/Kilogram
PPB - Parts/Billion uG/L - Micrograms/Liter uG/KG - Micrograms/Kilogram
< - Less than > - Greater than pCi/L - pico Curies/Liter

IOWA DEPARTMENT OF NATURAL RESOURCES

TRANSMITTAL SLIP

DATE 12-27-89

TO: Scott Behnken, Behnken Labs, Keokuk

FROM: Bill Gross, EPD, F.O.6, Washington, IA

[ ] REPLY FOR MY SIGNATURE
[ ] REPLY DIRECT
[ ] REVIEW, COMMENT AND RETURN
[ ] INVESTIGATE AND REPORT
[ ] SEE ME
[X] FOR YOUR INFORMATION

[ ] NOTE AND FORWARD
[ ] FILE
[ ] FOR YOUR SIGNATURE
[ ] FOR YOUR APPROVAL
[ ] PER YOUR REQUEST
[X] PER OUR CONVERSATION
[ ] TAKE ACTION BY _____

COMMENTS:

— Keokuk Rentals soil analysis results.

Contact Johanshir Golchin

515-281-8925

for further guidance.

Bill

DNR 542-0593 (2-89)

Analytical Report for Sample Number 8912460

Description: GC/MS EXTRACTABLES

Analyte	Concentration ug/Kg	Quant. Limit
NAPHTHALENE	790	130
ACENAPHTHYLENE	<130	130
ACENAPHTHENE	<130	130
FLUORENE	<130	130
PHENANTHRENE	550	130
ANTHRACENE	160	130
FLUORANTHENE	850	270
PYRENE	660	270
BENZO(A)ANTHRACENE	700	130
CHRYSENE	620	130
BENZO(B)FLUORANTHENE	460	270
BENZO(K)FLUORANTHENE	470	270
BENZO(A)PYRENE	580	130
INDENO(1,2,3-CD)PYRENE	420	200
DIBENZ(A,H)ANTHRACENE	<200	200
BENZO(G,H,I)PERYLENE	290	200

RECEIVED DEC 20 1989 IOWA DEPARTMENT OF NATURAL RESOURCES

Analytical Method: EPA 8270
Analysis Date: 12/15/89

Analyst: JJY
Verified: TC

PPM - Parts/Million MG/L - Milligrams/Liter MG/KG - Milligrams/Kilogram
PPB - Parts/Billion uG/L - Micrograms/Liter uG/KG - Micrograms/Kilogram
< - Less than > - Greater than pCi/L - pico Curies/Liter

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

ENVIRONMENTAL PROTECTION DIVISION

May 10, 1988

Great River Gas Company
Karol Sole
Design/Systems Engineer
10th & Johnson Streets
Keokuk, Iowa 52632

Amoco Corporation
Ralph Feeney
Superfund Group
7201 E. 38th St. (Space 7253)
Post Office Box 3385
Tulsa, Oklahoma 74102

Union Electric Company
Thomas Siedhoff
Environmental Services Division
1901 Gratiot
Post Office Box 149
St. Louis, Missouri 63166

Dear Sirs and Madame:

This letter is to document the outcome of the meeting held in Des Moines on April 5, 1988, concerning the James Morgan property at 1624 Main St. in Keokuk, Iowa.

Following is the current status of activities under Phase I:

Amoco - Fuel recovery underway. Company estimates 6 months - 1 year to recover all free product. Will have better estimate in about 2 months.

UE/GRE - Have gathered documents to implicate Stone and Webster (company that designed, built and first operated coal gas plant) as substantial responsible party. Have met with S&W twice, with no success in getting them involved in project. UE/GRE needs DNR/EPA assistance in getting S&W to assume their share of responsibility for this site. It is hoped that EPA assistance will not be needed, since EPA would like DNR to maintain total oversight of this project. If EPA assistance is needed, DNR will ask EPA to send S&W a letter requiring a response as to what was done with the hazardous waste generated.

Proposed action to complete Phase I of project:

DNR - Review documents on S&W; send letter to S&W.

Amoco - Continue fuel recovery until all free product has been removed.

UE/GRE - Will hire contractor to implement Phase I.

1st step - gather historical and background info by searching records & interviewing former employees. (There was a tendency to move processes around with improvements in coal gas technology. Suspect more than the one known coal tar pit.)

- document site geology

2nd step - install wells, determine extent of contamination.

3rd step - develop and gain DNR approval of recovery plan.

COMMITMENTS/DEADLINES

DNR - letter to Stone & Webster immediately following review of documents supplied by UE/GRE.

Amoco - submit monthly reports to DNR on fuel recovery.

UE/GRE - Submit work plan by September 1, 1988, for recovery of all known coal tar (assuming Amoco's fuel recovery progresses sufficiently to allow completion of site characterization prior to 9/1/88).

In my opinion, remediation of this site is progressing very well. It is hoped that Stone and Webster can be brought into this project with a minimum amount of disruption and delay.

I must hereby step down as lead worker for DNR on this project, as I will be going to work for Missouri DNR's Spill Team out of Jefferson City in late May. Mr. Al Goldberg, Supervisor of the Washington, Iowa field office will take over where I have left off, and schedule the next meeting as soon as the work plan has been reviewed this fall. I wish all of the parties involved the best of luck in successfully completing the remediation of this site.

Sincerely,

FIELD EVALUATION AND EMERGENCY RESPONSE BUREAU

James A. Patton

James A. Patton
Environmental Specialist III

JAP:jep:\wri\ust\amogrgue.ltr

xc: A.L. Goldberg, Supervisor, Washington Field Office
Morris Preston, Chief, Uncontrolled Sites, DNR-Des Moines
Mike Murphy, Chief, Government Liaison Bureau, DNR - Des Moines
Joe Obr, Chief, FEER Bureau, DNR - Des Moines
Robert Morby, USEPA, Superfund Branch, 726 Minnesota Ave., K.C., KS 66101
James Morgan, RR, Box 120, Keokuk, IA 52632
Suspense File - 9/1/88
File



A BRIEF HISTORY OF GREAT RIVER GAS COMPANY

KEOKUK, IOWA

A BRIEF HISTORY OF GREAT RIVER GAS COMPANY

KEOKUK, IOWA

The City of Keokuk, Iowa, is located in the extreme southeast corner of Iowa, bordered by the State of Illinois and the Mississippi River on the east side, and the State of Missouri and the Des Moines River on the west side. The Des Moines River empties into the Mississippi River at its southern border, thereby making the city a peninsula. The total population of Keokuk is approximately 14,500 people.

Keokuk was first introduced to gas in November 1855 when a Mr. Edward Kilbourne built the gas works in less than 100 days, which was an engineering feat at that time. A company was formed under the name of Keokuk Gas Light and Coke Company. Gas was manufactured by burning coke in a hand-fired furnace, which in turn was fed into a gas main and distributed to the customer. At, this time, Keokuk Gas Light and Coke Company was municipally owned.

Early in the 20th century, Iowa Union Electric Power Company bought out the gas works and made it a part of their system. Iowa Union Electric Company is better known today as the Union Electric Company, with headquarters in St. Louis, Missouri.

In 1945, the gas system was sold to the Dushane and Wrench families by Union Electric for the sum of $75,000. A new company was formed called Keokuk Gas Service Company. It was, and still is today, a privately-owned business.

In 1946, propane gas was introduced into the system in lieu of manufactured gas, and in 1949, natural gas was made available through the construction of a pipeline by Michigan Wisconsin Pipeline Company. Michigan Wisconsin, who changed its name to ANR Pipeline Company in January 1984, is still our major supplier today in Iowa. ANR Pipeline Company's system carries natural gas to the states of Michigan, Wisconsin, Iowa, and some parts of Illinois.

In 1976, Keokuk Gas Service Company purchased from Northern Illinois Gas Company a subsidiary of theirs named Great River Gas Company, located in Hannibal, Missouri, which serves 21 towns and communities in northeast Missouri. This system is supplied by the Panhandle Eastern Pipeline Company of Houston, Texas.

In 1980, Keokuk Gas Service Company changed its name to Great River Gas Company.

STATISTICS OF GREAT RIVER GAS COMPANY

1945

Volumes of Gas Sold	57,553 DTH
Dollar Sales Volume	$70,265
Number of Customers	961
Total Miles of Distribution Main	2.5 Miles

1984

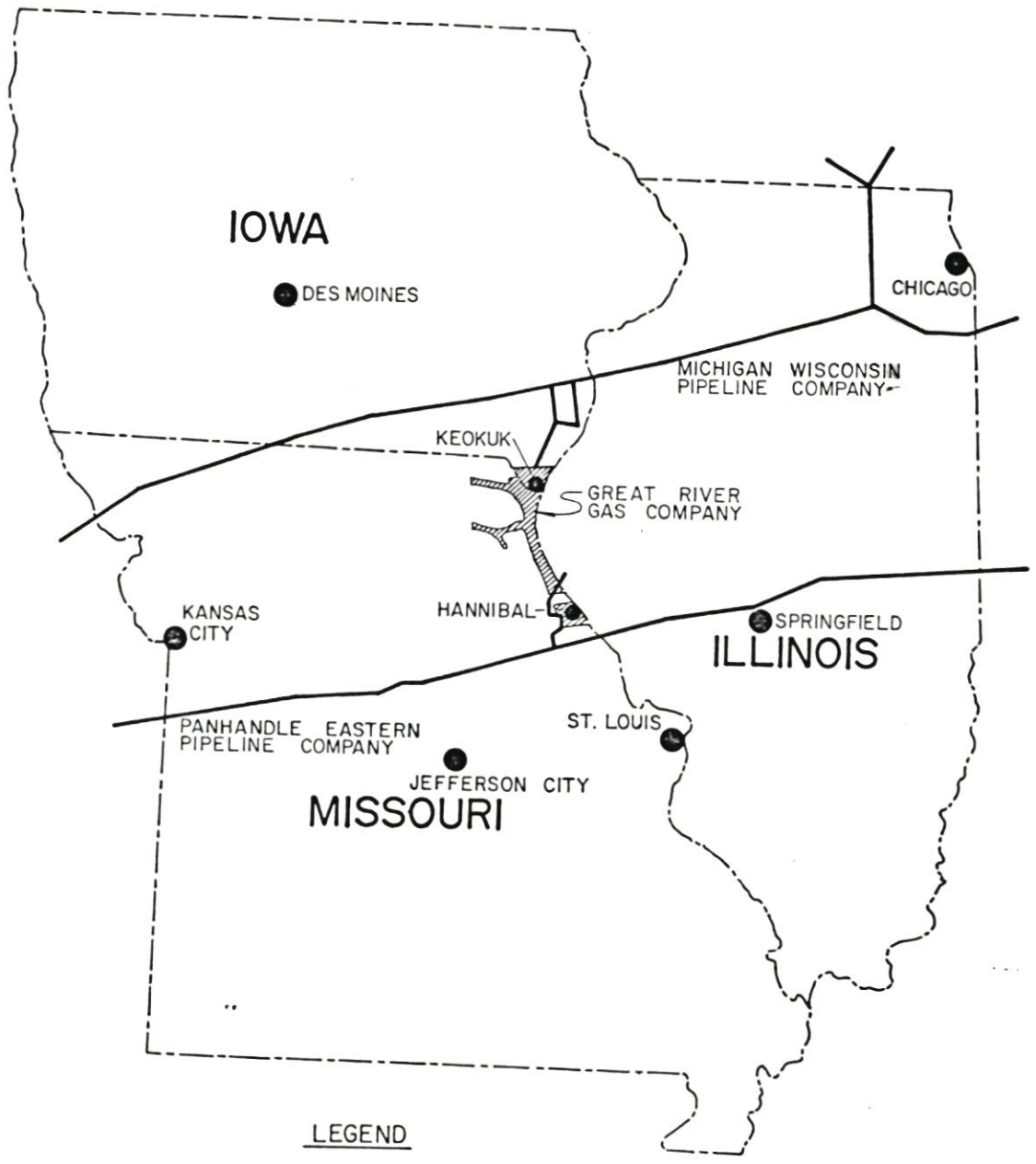
	Iowa	Missouri	Combined
Volumes of Gas Sold	3,397,247 DTH	2,174,168 DTH	5,571,415 DTH
Revenue	$17,325,664	$13,226,325	$30,551,989
Number of Customers	5,000	12,139	17,139
Residential	4,473	10,777	15,250
Large and Small Commercial	512	1,327	1,839
Industrial	15	35	50
Miles of Transmission Main	24	0	24
Miles of Distribution Main	121	328	449
Total Net Utility Plant Investment			$10,288,363

Great River Gas Company is ranked 172nd in size out of approximately 600 distribution companies, including municipally owned gas companies.

Future Prospects of Great River Gas Company:

1. Additional acquisitions in the late 1980's.
2. Interconnection of our two pipelines for flow of gas in either direction to better control the flow of gas pending.
3. CNG marketing in the late 1980's.
4. Remote industrial meter reading equipment in 1984-85.

GREAT RIVER GAS COMPANY
SERVICE AREA LOCATION

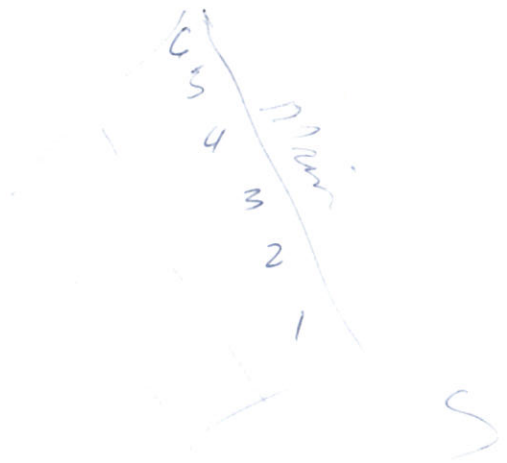


West ½ lot 2

Lot 3 4 5 6

in Block 5

Kilbourn addition



Amoco/UE/GRE Meeting
Wallace Bldg - Des Moines

J Patton
4/5/88

(Summary of 1/15/88 Meeting)

1. Amoco recover fuel
2. UE/GRG PRP search
3. Collaborate

3/3 letter
Reported progress & results of PRP search

Stone & Webster
3rd PRP not in agreement w/ UE+GRG on responsibility

Proposals 4/5/88 Meeting

- Amoco fuel recovery underway
Ralph Feeney Estimate 6mo - 1 yr to recover fuel.
(will have better estimate in ~2 mo.)

- UE/GRG -
John Pozo Will hire contractor to assess site
Phase I gather historical & background info
Early Summer Site goes back to 1840's
There was a tendency to move processes around w/ improvements in coal gas technology. Suspect more than the one pit
- Interview former employees, search records
- Document site geology
Fall Phase II - Install wells, determine extent of contamination
Phase III - Work out recovery plan

American Gas Institute

* UE/GRG need DNR's assistance in getting Stone & Webster (contractor that designed & built coal gas plant) involved as a PRP.

DNR can ask EPA to send Stone & Webster (Mass.) a letter requiring a response as to what was done w/ haz waste generated.

UE/GRG to submit work plan Sept 1, 1988.

Amoco will submit monthly report on fuel recovery.

Actions agreed to:

1. PRP's - let contract for historical search + site ~~assessment~~ characterization
→ ~~Have contractor~~ contact DNR Washington Field Office when contract has been finalized

2. DNR will persue Stone + Webster's committment to participate in project, soon after receiving documents that implicate S+W. (assuming UE is not able to get S+W to agree to participate)

3. persue .

James Morgan Property Meeting - April 5, 1988
Main St. - Keokuk

James Patton, DNR - Washington Field Office
KENT HOLLAND, GREAT RIVER GAS, ATTY.
KAROL SOLE GREAT RIVER GAS
Ralph C. Feeney Amoco, Chicago
Dale M. Iwataki Amoco Corp.
Bob Drustrup DNR, Solid Waste Sec.
Mark Londa DNR, Legal
Tom Siedhoff Union Electric
JOHN POZZO UNION ELECTRIC
George von Stamwitz Union Electric, atty.

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

ENVIRONMENTAL PROTECTION DIVISION

May 10, 1988

Great River Gas Company
Karol Sole
Design/Systems Engineer
10th & Johnson Streets
Keokuk, Iowa 52632

Amoco Corporation
Ralph Feeney
Superfund Group
7201 E. 38th St. (Space 7253)
Post Office Box 3385
Tulsa, Oklahoma 74102

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Thomas Siedhoff
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Sincerely,

FIELD EVALUATION AND EMERGENCY RESPONSE BUREAU

James A. Patton

James A. Patton
Environmental Specialist III

JAP:jep:\wri\ust\amogrgue.ltr

xc: A.L. Goldberg, Supervisor, Washington Field Office
Morris Preston, Chief, Uncontrolled Sites, DNR-Des Moines
Mike Murphy, Chief, Government Liaison Bureau, DNR - Des Moines
Joe Obr, Chief, FEER Bureau, DNR - Des Moines
Robert Morby, USEPA, Superfund Branch, 726 Minnesota Ave., K.C., KS 66101
James Morgan, RR, Box 120, Keokuk, IA 52632
Suspense File - 9/1/88
File

IOWA DEPARTMENT OF NATURAL RESOURCES

RECORD OF TELEPHONE CONVERSATION

DATE 3/21/88	TIME	[ ] INITIATED [ ] RECEIVED	FILE NO.
DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME	PHONE NO.	OTHER PARTY NAME Karol Sole	PHONE NO.
BUREAU/DIVISION		FIRM/ADDRESS Great River Gas	
SUBJECT			

CONVERSATION

Additional PRP

Stone + Webster

Have met w/ them twice. Have not come to agreement on share of responsibility.

They may attend April 5 meeting.

OK

I will ask property owner to attend.

DNR form 68 (Jan 87)

542-3200

IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

RECORD OF TELEPHONE CONVERSATION

DATE 3/7/88	TIME	☐ INITIATED ☐ RECEIVED	FILE NO.

DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME Walter	PHONE NO.	OTHER PARTY NAME Bob Hockman 918	PHONE NO. 660-4440
BRANCH/DIVISION		FIRM/ADDRESS	

SUBJECT Amoco/GREGUE - Keokuk

CONVERSATION

Periodic discharge from ~~the~~ storage Tank to storm sewer. Will be

<5 ppm HC

<25 ppb PAH

Doc Corner installing equipment

I contacted:
- Charlie Pitzcher (pro Fitcher) Supt. Keokuk WWTP (524-3412)
- Scott Felsche, Dir. Public Works (524-2442) & explained cleanup plans.

Please call Charlie & get his permission to discharge to sewer $. (combined)

OK

cc: Morris Preston
LUST File: Amoco - Keokuk

March 3, 1988

Mr. James A. Patton
Environmental Specialist III
Field Evaluation and Emergency
Response Bureau
Iowa Department of Natural Resources
117 North Second Avenue
Washington, Iowa 52353

Re: James Morgan Property

Dear Mr. Patton:

We are writing as representatives of the three companies in attendance at the meeting held in Des Moines on January 15, 1988, concerning the above referenced property. We have delayed until now to respond to your January 21, 1988 letter because we held two meetings with all PRPs identified to date and your letter was an item of discussion.

It is the consensus of the three PRPs who attended the January 15th meeting that we made three commitments to IDNR at that time: (1) Amoco agreed to initiate recovery of the free product at the property; (2) the PRPs agreed to attempt to locate other PRPs; and (3) the PRPs agreed to meet together and decide whether there will be a joint response to IDNR's concerns on the property and report back to IDNR prior to April 1, 1988. We would characterize the additional statements in your letter to be positions taken by IDNR.

We are pleased to report that we are ahead of schedule. The meetings have resulted in agreement in principle to proceed cooperatively as a group in addressing concerns beyond the efforts to recover free product from the site. We are proceeding to develop a conceptual work plan for the initial investigation of the site and would like to discuss our thoughts with you in the near future. After these discussions we will issue a Request for Proposals (RFP) and select a contractor to perform the investigation.

RECEIVED

MAR 7 1988

IOWA DEPARTMENT OF
NATURAL RESOURCES

After reviewing everyone's schedule, we have concluded that April 5 is the first date when all PRPs would be available. Therefore, we are proposing to meet with the DNR at 9:30 a.m. on that date in the DNR offices in Des Moines to discuss our efforts to date and our plans for the future. If this date is acceptable please contact one of us to confirm.

Sincerely,

Ralph C. Feeney
Amoco Corporation

Thomas E. Siedhoff
Union Electric Co.

Karol Sole
Great River Gas Co.

cc: R. L. Morby,
EPA Region VII

M. Preston,
Iowa DNR

RECEIVED
MAR 7 1988
IOWA DEPARTMENT OF
NATURAL RESOURCES

claims for contribution under CERCLA be disallowed under the Bankruptcy Code. The court noted that CERCLA Section 113(f) wholly replaced the federal common law previously developed for contribution claims under Section 107(a)(4)(B), which the court said is therefore no longer viable. The court expressed no opinion on whether private contribution claims constitute restitution.

An argument by NEPACCO that invocation of Section 502(e)(1)(B) depends on a Bankruptcy Court finding that the debtor is entitled to a discharge was characterized as without merit, the court refusing to "graft the proposed limitation on to the statute."

Statutes Do Not Conflict, Court Finds

The appellants also argued that disallowing contingent contribution claims under CERCLA would thwart the superfund law's goal of encouraging private parties promptly to clean up hazardous waste contamination, the court said. Following a method laid down by the U.S. Supreme Court for resolving potential conflicts between bankruptcy law and other law, the court found that the two statutory schemes "do not irreconcilably conflict" because CERCLA's "push to settlement readily harmonizes with the goal of Section 502(e) to ascertain with certainty the amount of a co-debtor's claim."

The court emphasized that its decision did not foreclose any remedy that the Bankruptcy Code may afford Syntex and NEPACCO to pursue reimbursement, contribution, or indemnification at a later date.

Syntex has appealed the decision to the U.S. Court of Appeals for the Eleventh Circuit.

(Charter Co., In re, DC MFla, No. 87-22-Civ-J-12, 12/14/87).

Bankruptcy

UNITED STATES SUPERFUND ACTION MAY PROCEED, DISTRICT COURT RULES, VACATING AUTOMATIC STAY

Superfund cost recovery suits by the United States are not subject to the automatic stay provision of the Bankruptcy Code, according to a federal district court (*U.S. v. Nicolet*, DC EPa, No. 85-3060, 1/12/88).

Vacating a Sept. 1, 1987, order staying the action, the U.S. District Court for the Eastern District of Pennsylvania Jan. 12 ruled that a government suit under the Comprehensive Environmental Response, Compensation, and Liability Act is a "proceeding by a government unit to enforce such governmental unit's police or regulatory power," under 11 USC 362(b)(4). Judge Raymond J. Broderick said such actions are therefore exempt from the automatic stay provision.

Courts have uniformly held that CERCLA actions seeking injunctive relief and those seeking fines and penalties "fall squarely within the paragraph [362(b)] 4 exception," Broderick said, citing three decisions from the U.S. Court of Appeals for the Third Circuit and decisions from federal district courts in Alabama and Colorado.

The court concluded that actions where the United States has instituted cleanup and then seeks to recover its response costs are similarly exempt. The only courts to address the issue concluded that such actions are police or regulatory enforcements, the court said, citing *U.S. v. Mattiace Industries Inc.*, 1 TXLR 746, 73 Bank 816, 819 (DC ENY 1987) and *U.S. v. Mackay*, (DC NIll, No. 85-C-6925, 1986).

Congress' intention to restrict the reach of the automatic stay provision was noted by the U.S. Supreme Court in *Midlantic Nat'l Bank v. N.J. Dept. of Environmental Protection*, 106 SCt 755, 23 ERC 1913, Broderick said, citing the legislative history of the automatic stay provision and its exceptions, and quoting the High Court as saying:

> Between 1973 and 1978, some courts had stretched the expanded automatic stay to foreclose States' efforts to enforce their antipollution laws, and Congress wanted to overrule these interpretations in its 1978 revision [of the Bankrupty Code].

Broderick vacated the stay, ordered the action to be removed from the civil suspense file and placed on the trial list for April, ordered that discovery be completed by Feb. 29, and scheduled a pretrial conference for March 24. The court made its rulings on a United States motion for reconsideration of the order granting the stay.

(U.S. v. Nicolet, DC EPa, No. 85-3060, 1/12/88).

ENFORCEMENT AND SETTLEMENTS

SUPERFUND LITIGATION

Consent Decrees

SHELL OIL AGREES TO 'HISTORIC' ACCORD ON CLEANUP OF ROCKY MOUNTAIN ARSENAL SITE

DENVER — (By a BNA Staff Correspondent) — Shell Oil Co. will pay 50 percent of the first $500 million spent cleaning up the Rocky Mountain Arsenal under terms of an "historic" and "precedent-setting" consent decree filed in federal district court Feb. 1, according to a Justice Department official (*U.S. v. Shell Oil Co.*, DC Colo, No. 83-C-2379, 2/1/88).

The decree settles a four-year-old superfund suit filed by the federal government against Shell "over responsibility for contamination and cleanup at the Rocky Mountain Arsenal," according to Myles Flint, a deputy assistant attorney general at Justice.

Flint told a press conference the proposed decree is "historic" because "it is the largest monetary settlement of an environmental lawsuit to date." Further, "it is precedent-setting in that it establishes a method of division of costs of cleanup," he said.

The U.S. Army, which owns the 27 square-mile site and produced chemical weapons there, will pay the other half of the first $500 million spent cleaning up the site. Shell will pay 35 percent of the next $200 million spent for cleanup and 20 percent of any costs above $700 million.

Shell operated a pesticides manufacturing facility at the Arsenal. The company's operations involved one-third of the Arsenal, according to Gary Dillard, vice-president of public affairs for Shell. Shell's share of the cleanup costs were determined by the volume of wastes it produced and the toxicity of the wastes. Cleanup costs for contamination generated solely by either Shell or the Army will be paid solely by the responsible party.

Colorado's Suit

Colorado has sued the federal government and Shell for response costs it incurred at the site and for natural resource damages (1 TXLR 980). Under the consent decree, the Army and Shell will each pay 50 percent of whatever the state recovers for response costs, though the accord does not resolve how Shell and the Army will apportion natural resource damages that might be awarded to the state. The state is not party to the consent decree.

Under the proposed decree, Shell and the Army must develop a "Technical Program Plan" that will establish "enforceable" deadlines for selecting remedies for areas within arsenal boundaries and for those areas outside arsenal boundaries that were contaminated by releases from the site. The public or any party to the decree may seek to enforce the deadlines of the technical program plan. Stipulated penalties may be imposed upon either Shell or the Army for failure to meet deadlines imposed by the Technical Program Plan.

A committee comprised of representatives from the Army, the Environmental Protection Agency, Shell, and Colorado will be established under the consent decree to coordinate the planning and selection of the permanent remedy. A three-step dispute resolution process is also established to resolve disagreements between the Army, Shell, and EPA concerning planning and selection of the permanent remedy. Ultimately, the EPA administrator will resolve any disputes.

The consent decree also establishes procedures and deadlines for the design and implementation of the remedial action. Failure to meet those deadlines subjects the parties to stipulated penalties.

Estimate of Cleanup Costs

Cleanup at the arsenal is estimated by the Army to cost between $750 million and $1 billion. The Army has already spent $125 million at that site and Shell about $25 million, according to the Justice Department.

Under the consent decree, final cleanup must be sufficient to allow certain land uses, including commercial and industrial development, public recreation, and wildlife preservation. The Army will retain title to the land, under the decree, and residential development will be prohibited at the site.

(U.S. v. Shell Oil Co., DC Colo, No. 83-C-2379, 2/1/88).

Consent Decrees

COMPANIES AGREE TO PAY $3.8 MILLION FOR COSTS OF WESTERN PROCESSING CLEANUP

SEATTLE — (By a BNA Staff Correspondent) — Seven more companies have agreed to pay $3.8 million to the Environmental Protection Agency and Washington for expenses associated with cleanup and other work at the Western Processing superfund site in Kent, Wash. (*U.S. v. Western Processing Co.*, DC WWash, No. C83-252M, 1/21/88).

The agreement, filed Jan. 21 on behalf of Environmental Protection Agency Region X in the U.S. District Court for the Western District of Washington, was announced Jan. 22 by the U.S. Attorney's Office in Seattle.

In the agreement, the seven companies also seek dismissal of complaints filed against them in November 1986 for their refusal to join an agreement by The Boeing Co. and other contributors of hazardous waste to the site. Under the earlier agreement, Boeing and more than 100 other firms agreed to reimburse EPA and the state for work performed at the site (1 TXLR 1332).

The motion seeking dismissal of the complaints does not list two other companies named in the November 1986 complaints, EPA said. Those companies have not yet agreed to reimburse EPA and Washington for work at Western Processing, and complaints against the firms will stand even if complaints against the seven others are dropped, EPA said.

The seven companies involved in the Jan. 21 agreement are Anchor Post Products Inc., Asro Processing Inc., and Northwest Steel Rolling Mills, all of Seattle; Canron Inc., Vancouver, B.C.; Lockheed Shipbuilding Co., Burbank, Calif.; Precision Castparts Corp., Portland, Ore.; and Davis Walker Corp., Kent, Wash.

(U.S. v. Western Processing Co., DC WWash, No. C83-252M, 1/21/88).

TSCA LITIGATION

Polychlorinated Biphenyls

COLORADO UTILITY PCB VIOLATIONS CHARGED IN EPA COMPLAINT SEEKING $84,500 PENALTY

DENVER — (By a BNA Staff Correspondent) — Public Service Co. of Colorado was charged by the Environmental Protection Agency with six counts of violating polychlorinated biphenyl regulations under the Toxic Substances Control Act, the agency's Region VIII said Jan. 12 (*In re Public Service Company of Colorado Inc.*, No. TSCA (PCB) VIII-88-06).

EPA proposed penalties for the alleged violations totalling $84,500.

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0887-7394/88/$0+.50

IOWA DEPARTMENT OF NATURAL RESOURCES

RECORD OF TELEPHONE CONVERSATION

DATE	TIME	[ ] INITIATED [ ] RECEIVED	FILE NO.
2/26/88	10:30am		

DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME	PHONE NO.	OTHER PARTY NAME	PHONE NO.
Garretson		Bob Hakman 918	660-3218
BUREAU/DIVISION		FIRM/ADDRESS	
		Amoco	660-4440
SUBJECT			
Keokuk - Amoco			

CONVERSATION

Looking into using activated carbon filtration for WW discharge. Do we need NPDES

No.

"Doc"
Randy Comer
Maintenance Man

319/359-4212

He's installing recovery system for me. Will go ahead with either infiltration gallery or carbon filtration

DNR form 68 (Jan 87)

542-3200

STATE OF IOWA

03307-RK-1527

TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

ENVIRONMENTAL PROTECTION DIVISION

January 29, 1988

Amoco Oil Company
W.J. Smith
District Engineer
P.O. Box 750
114 East Armour Blvd.
Kansas City, Missouri 64141-0750

Dear Mr. Smith:

This is in response to your September 28, 1987, proposal for gasoline recovery at Amoco Service Station #31698, located at 604 Main Street, Keokuk, Iowa.

As you are aware, this site is also contaminated with coal tar pitch, which resulted from the operation of a coal gas facility between the 1850's and early 1950's, when the gasoline station was constructed. Ordinarily, untreated hydrocarbon contaminated wastewater from a fuel recovery project could not be discharged to the ground. However, due to the fact that the coal tar at the site has released additional contaminants into the groundwater, filtration of the groundwater will be dealt with as Phase II of the cleanup project. It is anticipated that this phase will be a joint effort between your company and the utility companies involved.

This letter constitutes DNR's approval of the above referenced fuel recovery plan. Recovery should begin in the near future. A meeting is planned for mid-April to discuss the location and excavation of the coal tar pits, which, according to Bob Hockman with your company, can proceed without interfering with Amoco's fuel recovery activities.

Prior to the completion of Phase I, another meeting will be held with all responsible parties to develop a groundwater filtration strategy, to be implemented as soon as the sources of contamination have been removed.

Should you have any questions concerning this matter, please contact me at this office.

Sincerely,

FIELD EVALUATION AND EMERGENCY RESPONSE BUREAU

James A. Patton

James A. Patton
Environmental Specialist III

JAP:jep:\wri\ust\amocoltr.ust

xc: Ralph Feeney, Amoco, 7201 E. 38th St. (Space 7253), P.O. Box 3385, Tulsa, OK, 74102
Karol Sole, Great River Gas Company, 10th & Johnson Streets, Keokuk, IA 52632
David Pluhar, Union Electric, 1901 Gratiot, P.O. Box 149, St. Louis, MO 63166
Robert Morby, USEPA, Superfund Branch, 726 Minnesota Ave., Kansas City, KS 66101
Morris Preston, Chief, Uncontrolled Sites, DNR-Des Moines, IA 50319
Mike Murphy, Chief, Government Liaison Bureau, DNR-Des Moines, IA 50319
Joe Obr, Chief, FEER Bureau, DNR-Des Moines, IA 50319
James Morgan, R.R. Box 120, Keokuk, IA 52632
Suspense File 3/1/88
File

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

ENVIRONMENTAL PROTECTION DIVISION

January 21, 1988

U.S. EPA Region 7
Robert L. Morby
Chief, Superfund Branch
726 Minnesota Avenue
Kansas City, Kansas 66101

Great River Gas Company
Karol Sole
Design/Systems Engineer
10th & Johnson Streets
Keokuk, Iowa 52632

Amoco Corporation
Raph Feeney
Superfund Group
7201 E. 38th St. (Space 7253)
Post Office Box 3385
Tulsa, Oklahoma 74102

Union Electric Company
Thomas Siedhoff
Environmental Services Division
1901 Gratiot
Post Office Box 149
St. Louis, Missouri 63166

Dear Sirs and Madame:

This letter is to document the outcome of the meeting held in Des Moines on January 15, 1988, concerning the James Morgan property at 1624 Main St. in Keokuk, Iowa.

The absence of the property owner was discussed briefly, and although it is not anticipated that Mr. Morgan will be held responsible to any degree for the cleanup of this site, it was noted that he could be held responsible, should the other responsible parties fail to provide for cleanup.

The state of the site was discussed, and the DNR's position of expecting the groundwater beneath this site to be returned to potable quality was established, as mandated by the Iowa Legislature for groundwater in general. The State DNR is taking the lead on this project, under authority in the Iowa Code 455B, Division IV, Part 4 - 'Hazardous Conditions', and proposed the following scenario during the meeting:

	AMOCO	UE/GRG/other PRP's
Phase I	Recover Gasoline	Locate & Excavate Coal Tar
Phase II	Joint effort to filter groundwater to 70 ppb benzene; levels for other contaminants to be set by EPA/DNR	

All parties involved agreed on this approach. Amoco is ready to start gasoline recovery, using a series of skimmer pumps in the 2 inch on-site wells, as soon as DNR approves the recovery plan submitted last fall. However, Amoco is not prepared to install a depression/recovery well system until all other coal tar pits have been located and defined. Union Electric and Great River Gas (UE/GRG) feel that they can locate and bring forward additional responsible parties to share in the coal tar location and excavation effort, along with the Phase II effort. Amoco felt it could take between 6 months and 1 year to complete their recovery, and had no objection to the coal tar excavation work taking place before the fuel recovery is complete.

Union Electric committed during the meeting to contact the DNR Washington Office, the first week in April, to report the results of their potential responsible party (PRP) search and any agreement that has been made between UE/GRE and these parties. Another meeting will be arranged at that time to discuss a schedule for accomplishing Phase I of the project and the implementation of Phase II.

I would like to thank everyone involved for making the effort to attend this meeting, and feel it was a very good start to a long and arduous process, which it is hoped can be successfully completed in an expeditious and equitable manner.

I will be in contact early in April to arrange a follow-up meeting. Should you have any questions or concerns, or disagree with any of the commitments stated in this letter, please give me a call.

Sincerely,

FIELD EVALUATION AND EMERGENCY RESPONSE BUREAU

James A. Patton

James A. Patton
ENVIRONMENTAL SPECIALIST III

JAP:jep:\wri\ust\4address.ltr

xc: Dennis Applehons, FEER Bureau, DNR-Des Moines
Pete Hamlin, Chief, Air Quality & Solid Waste Bureau, DNR-Des Moines
Morris Preston, Chief, Abondoned/Uncontrolled Sites Branch, DNR-Des Moines
Bob Drustrup, Abondoned/Uncontrolled Sites Branch, DNR-Des Moines
Mike Murphy, Chief, Government Liaison Bureau, DNR-Des Moines
Mark Landa, Government Liaison Bureau, DNR-Des Moines
James Morgan, R.R. Box 120, Keokuk, Iowa 52632
Ted Faile, Ecology & Environment, Inc., Cloverleaf Bldg, 3, 6405 Metcalf, Overland Park, Kansas 66202
Suspense File - 4/8/88
File

IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

RECORD OF TELEPHONE CONVERSATION

DATE 1/20/88	TIME	☐ INITIATED ☐ RECEIVED	FILE NO.

DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME J Patton	PHONE NO.	OTHER PARTY NAME Denny Appelhans	PHONE NO.
BRANCH/DIVISION		FIRM/ADDRESS	

SUBJECT

CONVERSATION

Amoco not willing to treat GW on their own; will not take full responsibility. Any projects you know of getting by w/o treatment.

OK

① Oil water separator (OWS) if discharge meets 5ppm

② OWS → stripper or ~~carb~~ carbon filtration if needed.

Retterdorf - Timed skimmer pumps in 2" wells:
2-3 gal./min total ~~from~~ wastewater discharge.
OWS meets 5ppm limit to sewer. No stripper & carbon filtration needed.

No wastewater review needed for infiltration gallery - go ahead + get Amoco started on recovering product. Can submit joint GW plan w/ ~~Ex~~ other RP's later

IOWA DEPARTMENT OF NATURAL RESOURCES
WASHINGTON FIELD OFFICE-6
MEMORANDUM

DATE: December 10, 1987

TO: Joe Obr, Chief, FE&ER

FROM: James Patton, Acting Supervisor, F.O #6

RE: Planned meeting concerning the AMOCO/Great River Gas site in Keokuk.

A meeting has been set up for Friday, December 18, at 10:00 a.m. in the west half of the 4th floor conference room in the Wallace Building.

Those invited to attend include:

DNR	-	Yourself Pete Hamlin Morris Preston Myself Mark Davidson
USEPA	-	Pete Culver - Uncontrolled Sites Section Representatives from: Removal Shop Council Enforcement
AMOCO (Tulsa, OK)	-	Ralph Feeney, Superfund Group Council
Great River Gas (Keokuk)	-	Karol Sole, Design/Systems Engineer Wickwire, Gavin & Gibbs, Attorneys, Washington D.C.
Union Electric (St. Louis)	-	David Pluhar, Env. Services Division Thomas Siedhoff, Mgr. Environmental Services John Pozzo, Supervising Environmental Eng. Mike Barnes, Attorney
Property Owner	-	James Morgan - Keokuk

It is hoped that an agreement can be reached on how much responsibility will be assumed by each responsible party, and how to proceed with the cleanup of gasoline and coal tar pitch that is currently under this property at 1624 Main Street in Keokuk.

It is hereby requested that DNR provide council for this meeting, in order to help establish the level of responsibility each of the responsible parties should assume, and provide legal council in general for the Department.

JAP:jep:\WRI\UST\AMOCOGR.MEM

xc: Mike Murphy, Chief, Government Liasion Bureau
Pete Hamlin, Chief, Air Quality & Solid Waste Protection Bureau
Morris Preston, Chief, Abandoned Uncontrolled Sites Branch
Joel Garretson, Washington Field Office

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

ENVIRONMENTAL PROTECTION DIVISION

December 8, 1987

U.S.EPA Region 7
Robert L. Morby
Chief, Superfund Branch
726 Minnesota Avenue
Kansas City, Kansas 66101

Great River Gas Company
Karol Sole
Design/Systems Engineer
10th & Johnson Streets
Keokuk, Iowa 52632

Amoco Corporation
Ralph Feeney
Superfund Group
7201 E. 38th St. (Space 7253)
Post Office Box 3385
Tulsa, Oklahoma 74102

Union Electric Company
David Pluhar
Environmental Services Division
1901 Gratiot
Post Office Box 149
St. Louis, Missouri 63166

Dear Sirs/Madam:

This letter is concerning the James Morgan property at 1624 Main St. in Keokuk, Iowa; formerly leased by Amoco Corporation, Tulsa, Oklahoma, Great River Gas Company, Keokuk, Iowa, and Union Electric Company, St, Louis, Missouri.

As you know, this site is contaminated with gasoline and coal tar pitch from former operations at the property. This department has arranged a meeting at 10:00 AM, Friday December 18, 1987, in the west half of the 4th floor conference room in the Henry A. Wallace Bldg., 900 E. Grand, Des Moines, Iowa (adjacent to the NW corner of the State Capital grounds).

The purpose of this meeting is to establish the level of responsibility each of the responsible parties is to assume in the cleanup project, which is to begin soon with the removal of the gasoline by Amoco Corporation. Enclosed are the correspondence, maps, and sample results generated to date. Also enclosed is the section of the Iowa Code addressing cleanup of contaminated sites, and DNR's criteria for cleanup of contaminated groundwater.

It is anticipated, since this meeting has been prearranged, that all parties involved will be able to attend, and I look forward to a highly productive meeting.

Sincerely,

FIELD EVALUATION AND EMERGENCY RESPONSE BUREAU

James A. Patton

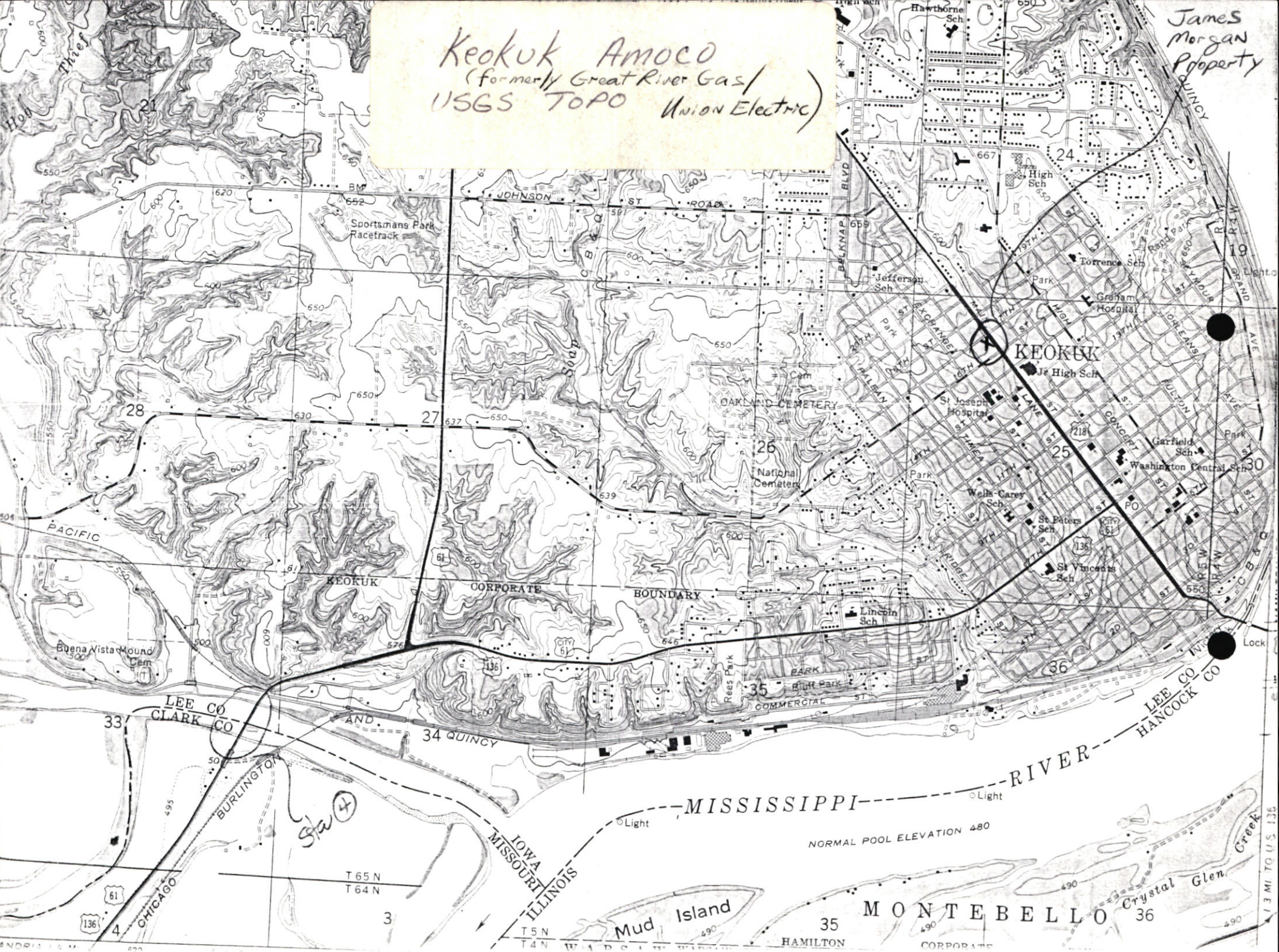
James A. Patton
Acting Field Office #6 Supervisor

Enclosures: USGS Topo Map
Site Sketches (4)
DNR Letter
Amoco Letters (2)
Amoco Sample Results
EPA Sample Results
455B Division IV, Part 4 of the Iowa Code
Groundwater Cleanup Criteria

xc: Joe Obr, Chief, Field Evaluation & Emergency Response Bureau, DNR, Des Moines
Pete Hamlin, Chief, Air Quality & Solid Waste Protection Bureau, DNR, Des Moines
Mike Murphy, Chief, Government Liason Bureau, DNR, Des Moines
Morris Preston, Chief, Abandoned/Uncontrolled Sites Branch, DNR, Des Moines
Joel Garretson, Field Office 6, Washington
James Morgan, R.R. Box 120, Keokuk, Iowa 52632
Ted Faile, Ecology & Environment, Inc., Cloverleaf Bldg, 3, 6405 Metcalf, Overland Park, Kansas 66202

File

\wri\ww\amoco.ltr


Keokuk Amoco
(formerly Great River Gas/
USGS TOPO Union Electric)
James Morgan Property
KEOKUK
MISSISSIPPI RIVER
MONTEBELLO
Mud Island
NORMAL POOL ELEVATION 480
Sportsmans Park Racetrack
OAKLAND CEMETERY
National Cemetery
Buena Vista Mound Cem
Rees Park
Bluff Park
Crystal Glen Creek
KEOKUK CORPORATE BOUNDARY
LEE CO
CLARK CO
HANCOCK CO
IOWA
MISSOURI
ILLINOIS
T65N
T64N
T5N
T4N
HAMILTON
CORPORATE
Graham Hospital
St Joseph Hospital
Jr High Sch
Hawthorne Sch
High Sch
Jefferson Sch
Torrence Sch
Garfield Sch
Washington Central Sch
Wells-Carey Sch
St Peters Sch
St Vincents Sch
Lincoln Sch
Lock
Light
JOHNSON ROAD
QUINCY
PACIFIC
BURLINGTON
CHICAGO
AND QUINCY
COMMERCIAL ST
1.3 MI TO U.S. 136



Joel Garretson
DNR-Washington

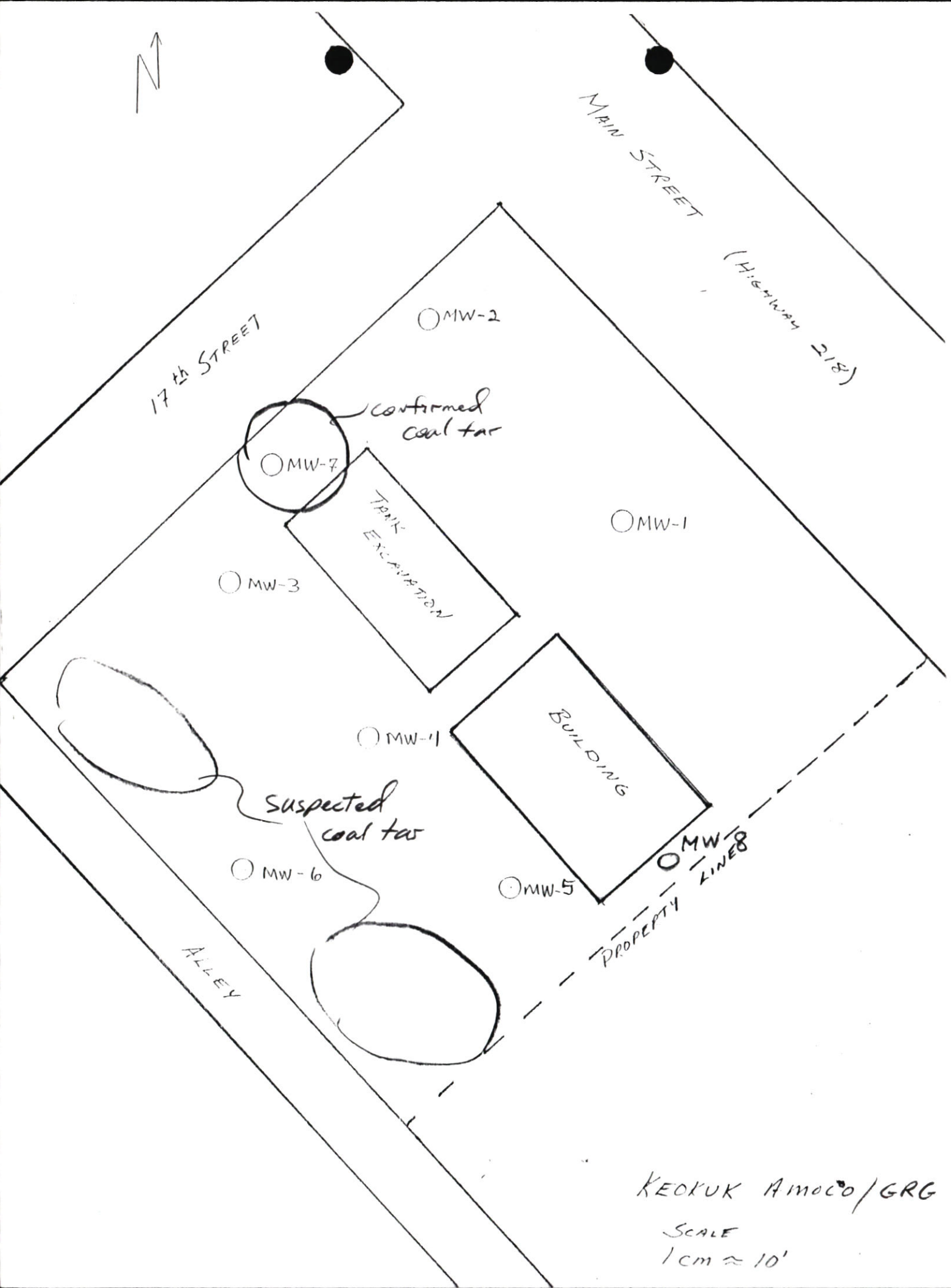
Amoco - 1604 Main
Keokuk

No to Scale

MW-1	0.4'	product
MW-2	3.3'	"
MW-3	4.0'	"
MW-4	5.9'	"
MW-5	< 0.1	
MW-6	0.0	
MW-7	→	combination of oil + coal tar sludge
MW-8	0.0	

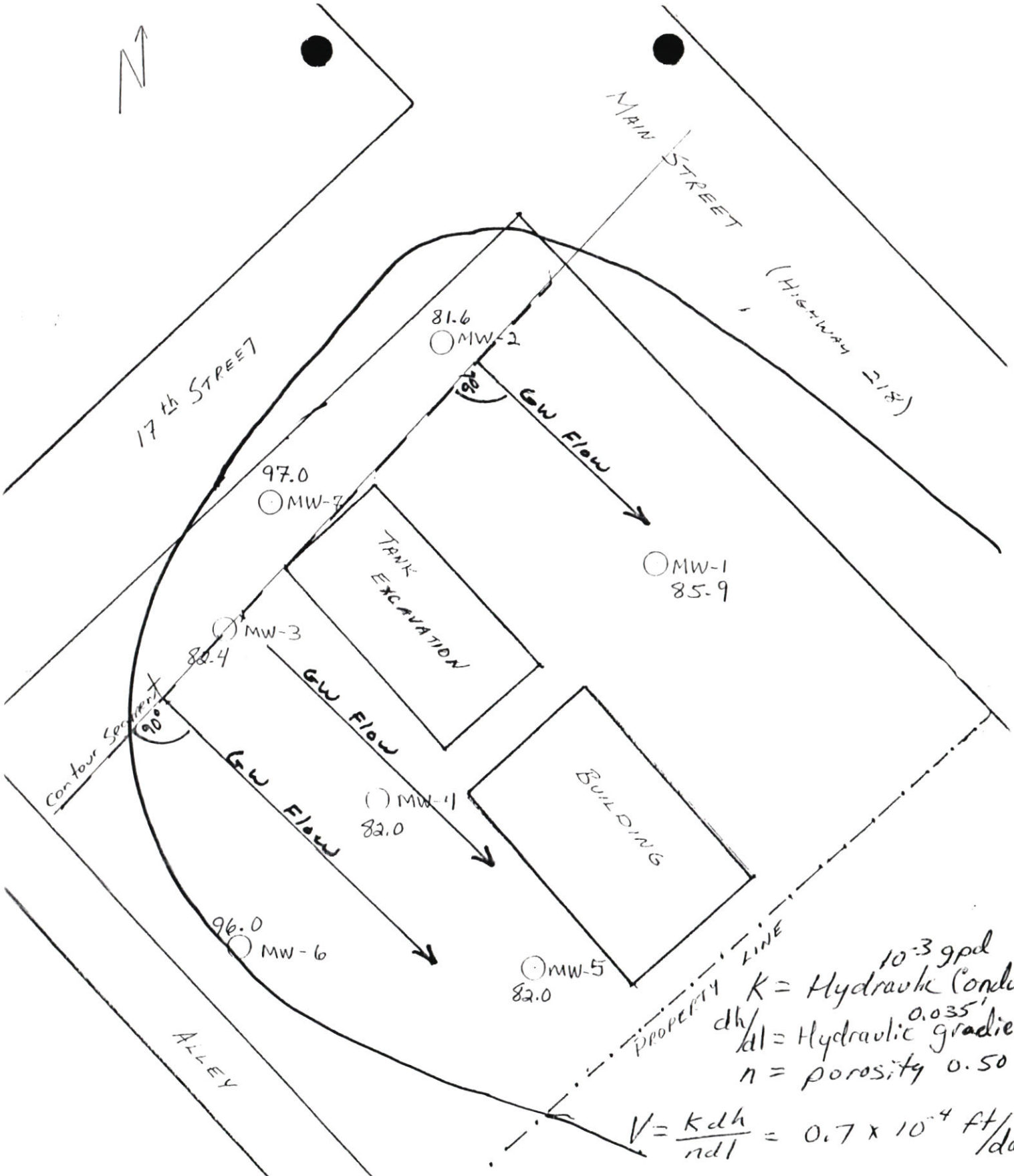
GASOLINE LEVELS

42.182 100 SHEETS
MADE IN U.S.A.
NATIONAL



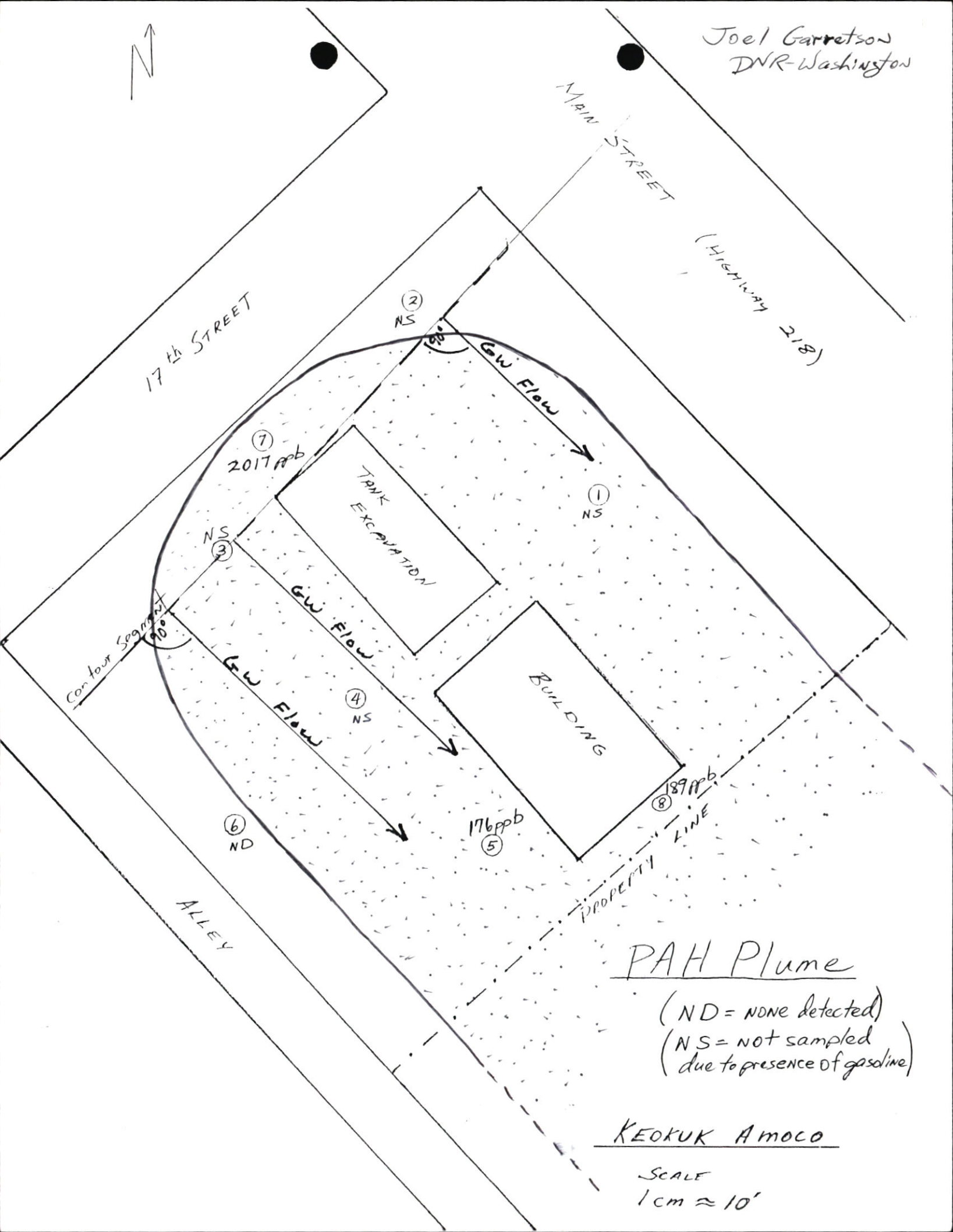
KEOKUK AMOCO/GRG

SCALE
1 cm ≈ 10'



Groundwater Movement
KEOKUK AMOCO/GRG

SCALE
1cm ≈ 10'


Joel Garretson
DNR-Washington
N
MAIN STREET
(HIGHWAY 218)
17th STREET
ALLEY
PROPERTY LINE
TANK EXCAVATION
BUILDING
GW Flow
GW Flow
GW Flow
Contour Segment
90°
90°
① NS
② NS
③ NS
④ NS
⑤ 176ppb
⑥ ND
⑦ 2017ppb
⑧ 189ppb
PAH Plume
(ND = none detected)
(NS = not sampled due to presence of gasoline)
KEOKUK AMOCO
SCALE
1 cm ≈ 10'

XC: Denny A 10/22

Amoco Oil Company
Kansas City District
P.O. Box 750
114 East Armour Blvd.
Kansas City, Missouri 64141-0750
816-968-5493

September 28, 1987

Mr. James A. Patton
Iowa Dept. of Natural Resources
117 N. 2nd Avenue
Washington, Ia. 52353

Dear Mr. Patton:

GASOLINE RECOVERY AT THE
AMOCO SERVICE STATION #31698
604 MAIN ST., KEOKUK, IA.

Amoco Oil Company (AOC) is ready to begin gasoline recovery at Amoco Service Station #31698 located at 604 Main St., Keokuk, Iowa. AOC proposes to design and install a gasoline recovery system using the existing 2-inch diameter wells. No attempt will be made to collect or treat contaminated groundwater at this time. The proposed recovery will include:

1. Installation of an Amoco SWAPS System (Attachment 1) to recover gasoline onsite using the existing 2-inch wells. The SWAPS system will be installed so that it can be moved from well to well as required. And, the design of the system should limit the quantity of water produced during recovery. Initially, the system will be installed in wells Nos. 2,3 & 4. As the gasoline is depleted in these wells, it will be moved to well Nos. 1 & 8 if required (Attachment 2).

2. The gasoline recovery system will be installed and managed so as to produce minimal water. However, some water will still be produced. Thus, all fluids pumped by the SWAPS system will be routed through an oil/water separator. Gasoline and water will then be routed to individual storage tanks (Attachment 3).

3. The gasoline will then be routed to a storage tank. As soon as the storage tank is full, the gasoline will be transferred to a truck and transported to a reuse facility. To prevent overfilling, the storage tank will be outfitted with level detectors that will control the recovery system (Attachment 3).

RECEIVED
OCT 1 1980
IOWA DEPARTMENT OF
NATURAL RESOURCES

4. The water will be added to a storage tank outfitted the same way as the gasoline tank. When full, the tank will be checked for floating gasoline. If no gasoline is detected, the water will be discharged from the bottom of the tank to the upgradient end of the tank excavation. This, coupled with the fact that minimal water will be produced from the system, should limit any migration of contamination (Attachment 3). If floating gasoline is detected, then the water from the tank will be re-routed through the oil/water separator prior to discharge to the excavation.

If you have any questions, please contact Bob Hockman at 918-660-3035.

Sincerely,

W. J. Smith

W. J. Smith
District Engineer

WJS:Amy

cc: R. G. Farmer, Chicago
E. L. Hockman, Tulsa
G. W. Schmidt, "

attachments

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Attachment 1

SWAPS, AN AUTOMATIC LIQUID HYDROCARBON RECOVERY SYSTEM

Lloyd E. Dunlap
Tony Gogel

Amoco Corporation
Tulsa, Oklahoma

Abstract

In many cases, it is feasible to recover immiscible hydrocarbons from two-inch observation wells rather than from a larger diameter recovery well which contains an expensive, double-pump recovery system. Examples include situations where immiscible hydrocarbons may be present in only one or two observation wells, where the quantities of leaked or spilled hydrocarbons are suspected to be minimal, or in relatively impermeable aquifers where recovery operations can be accomplished by pumping from several closely spaced observation wells in lieu of a combination trench/well recovery system.

The Groundwater Management Section, Amoco Corporation, has developed an inexpensive Shallow Well Automatic Pumping System (SWAPS) which is capable of pumping total fluids (ground water and immiscible hydrocarbons) from observation wells. The cost of SWAPS is significantly less than commercially available recovery system equipment. The system uses a diaphragm pump to lift fluids by suction from individual wells. Each well is pumped sequentially for specified periods of time which are determined by the operator. A limiting factor to utilization of the system is the depth to ground water below the pump. The system operates by creating a vacuum in the suction line which extends down the well. Thus, the maximum distance of effective lift is limited to 15 to 17 ft.

Introduction

The Groundwater Management Section, Amoco Corporation, has developed an automatic pumping system for use in recovering subsurface immiscible hydrocarbons. The system is called SWAPS, an acronym for Shallow Water Automatic Pumping System. SWAPS was developed for several potential applications. The system would be appropriate for recovery of immiscible hydrocarbons present in the subsurface in an area of limited extent. SWAPS can also be used in aquifers comprised of materials such as clays

and silts which exhibit low hydraulic conductivity. SWAPS consists of four main parts: a diaphragm pump, a timer panel, a solenoid panel, and various hoses and pipes (Figures 1 and 2). SWAPS recovers the total fluids from the well; therefore, an oil/water separator is required to separate the product from the ground water prior to water disposal.

There are several advantages to the SWAPS for shallow ground water recovery operations. The system 1) costs less than $2,000.00 to construct, 2) is simple to operate, and 3) requires little maintenance. In addition, the system can recover product from observation wells that are as small as 2 inches in diameter, therefore, eliminating the need for a large diameter recovery well and an expensive recovery system.

This report will discuss the design and principle of operation of SWAPS and areas of application.

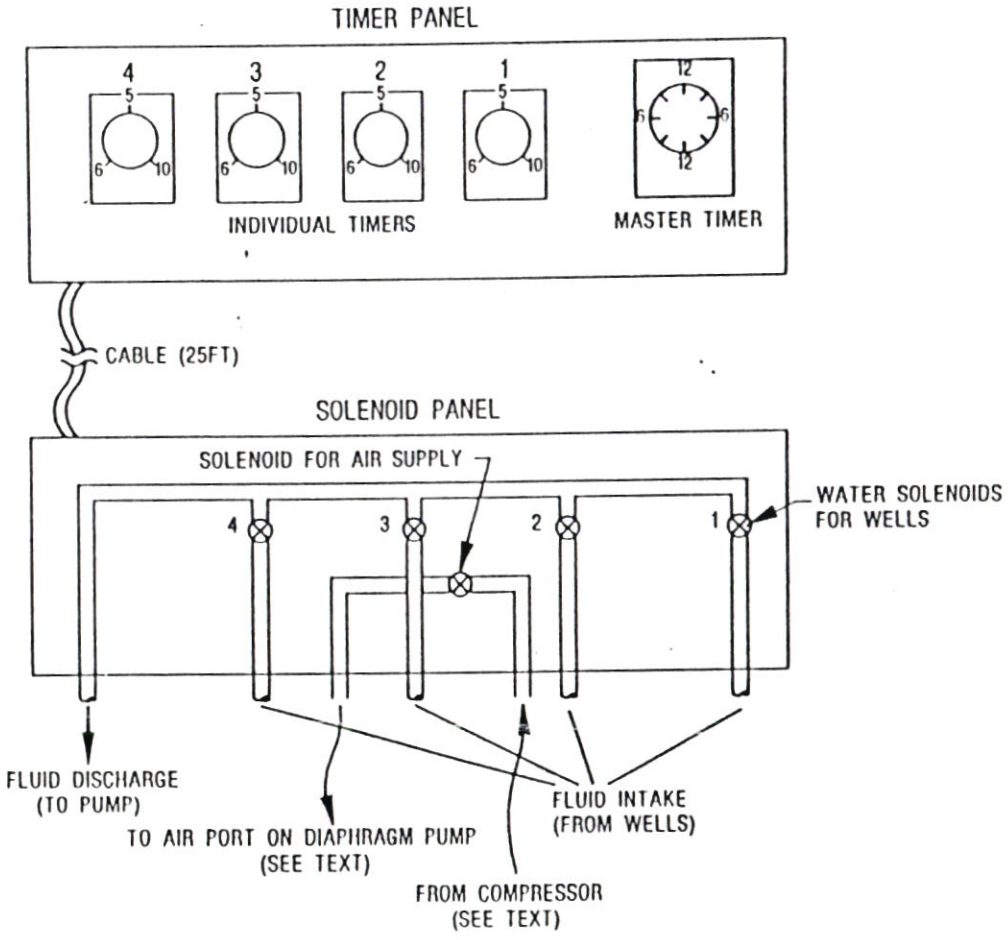


Figure 1. Schematic of SWAPS.

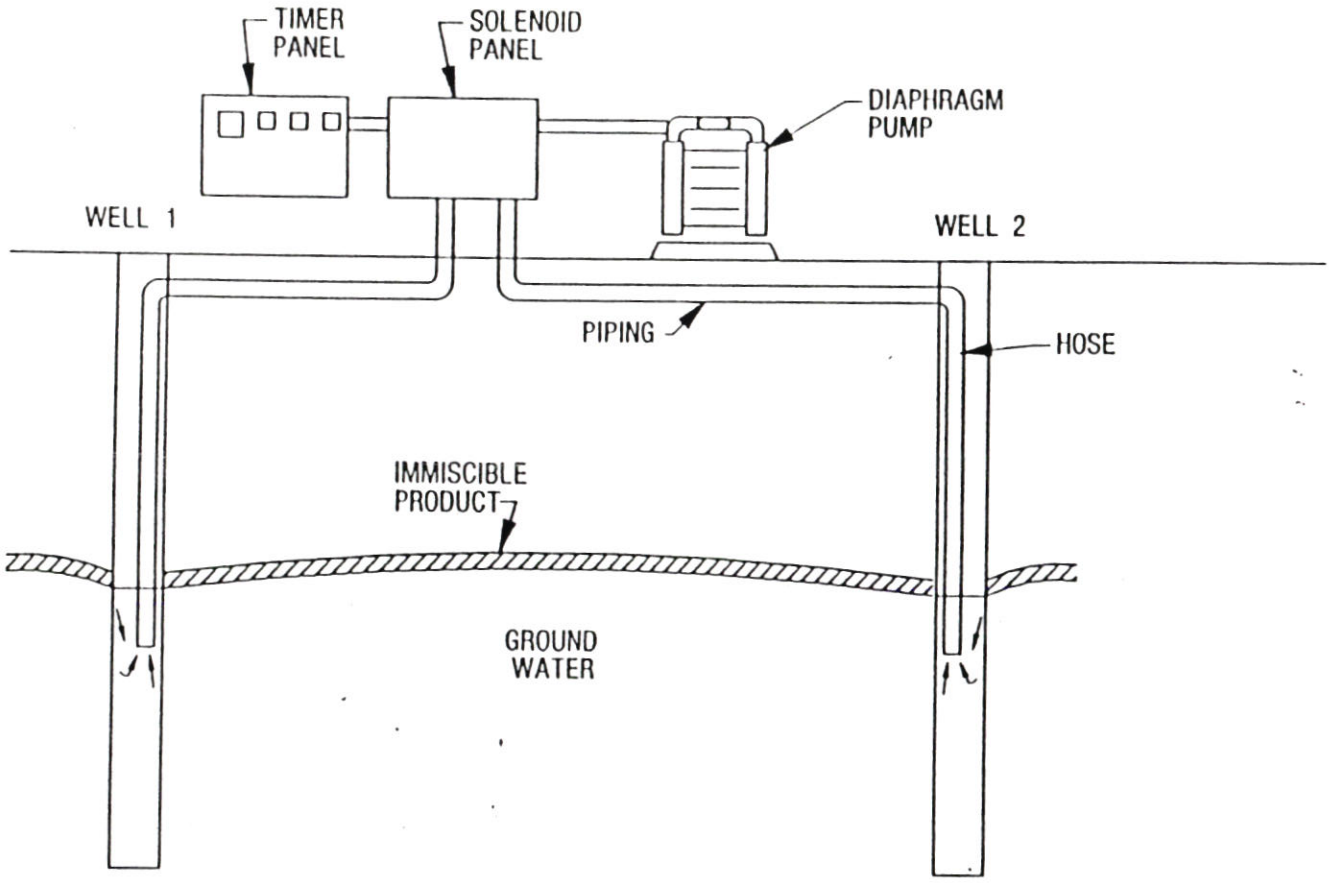


Figure 2. Schematic of SWAPS pumping from two wells

Design and principle of operation

The SWAPS system consists of four main components. A diaphragm pump, operated by compressed air, provides the vacuum necessary to remove total fluids from the well (Figure 2). Because the pump removes fluid from the well by creating a suction lift, the depth to fluid must be within the lift capability of the pump. The practical limit for use of this type of pump is 15 ft to 17 ft, depending upon elevation and the amount of friction loss due to piping. The fluids pumped from the well will be a mixture of the immiscible product and ground water. The GMS has had success using diaphragm pumps that typically have 3/4-inch or 1-inch discharge openings. The pump diaphragms and check valves should be resistant to the fluid pumped from the well. Buna-N or teflon is recommended for gasoline recovery operations.

The timer panel consists of a master timer to activate the SWAPS and several individual timers (Figure 1). The master timer can be set to start the SWAPS as often as once each half hour or as little as once each day. The solenoid panel contains one solenoid valve to control air pres-

sure to the diaphragm pump and individual water solenoid valves to control fluid flow from each well as it is pumped.

As the master timer turns on the air pressure control solenoid opens, allowing compressed air to operate the diaphragm pump. Simultaneously, one of the individual well timers signals a water solenoid valve to open. Suction pressure from the diaphragm pump allows pumping of total fluids from the pertinent well. When the preset time on the individual timer elapses, the water solenoid closes. The second individual timer opens the next water solenoid, and the second well is pumped. This sequence is repeated for each well in the system. As the cycle is completed the master timer turns the SWAPS off. As with the diaphragm pump, the solenoid valves should be resistant to deterioration by any immiscible product pumped from the well.

Piping or hoses connect the solenoid valves to the observation wells. The end of the pipe or hose is placed into the well below the air/fluid contact. Fluids in the well are pumped through the end of the hose by suction pressure established by the diaphragm pump. The pipe diameter of the pipe or hose can range from 1/4-inch to 1-inch in diameter. However, friction loses inherent with the smaller diameter hoses must be considered. Flexible hose is advantageous to have inside the well because it can be easily lowered or raised to compensate for water table fluctuations. The end of the hoses need not have a foot valve because the diaphragm pump does not need to be primed (piping full of fluid) to operate.

Application

SWAPS can be used in several different applications where the depth-to-fluid in the well is within the suction lift capability of the diaphragm pump. One application would be at sites where it is desirable to pump only small quantities of fluids on a non-continuous basis. In these cases only a small diaphragm pump and small diameter hoses are needed.

The SWAPS is also useful for recovering small volume spills encompassing limited areal extent where an expensive, large diameter recovery well is unnecessary. An example of such an application would be the presence of a small amount of immiscible product found to be present in one or more observation wells. The intermittent pumping of the observation wells by SWAPS would be similar to manually bailing or pumping the observation wells several times daily to remove product in the vicinity of the well. In such an application, the end of the intake hose should be lowered into the well until it is several inches below the product/water interface (Figure 3). When the well is pumped, drawdown will occur in the well and the fluid above the end of the intake hose will be recovered. When the pumping level reaches the intake hose, SWAPS will pump air until the timer turns the water solenoid off. However, pumping air for short periods of time will not damage the diaphragm pump. When the pumping cycle stops, the ground water will recover to near static level and any immiscible product in the aquifer near the well will accumulate in the well. This may take from several minutes to several hours. The

master timer can be set to reactivate the SWAPS when sufficient product accumulates in the well.

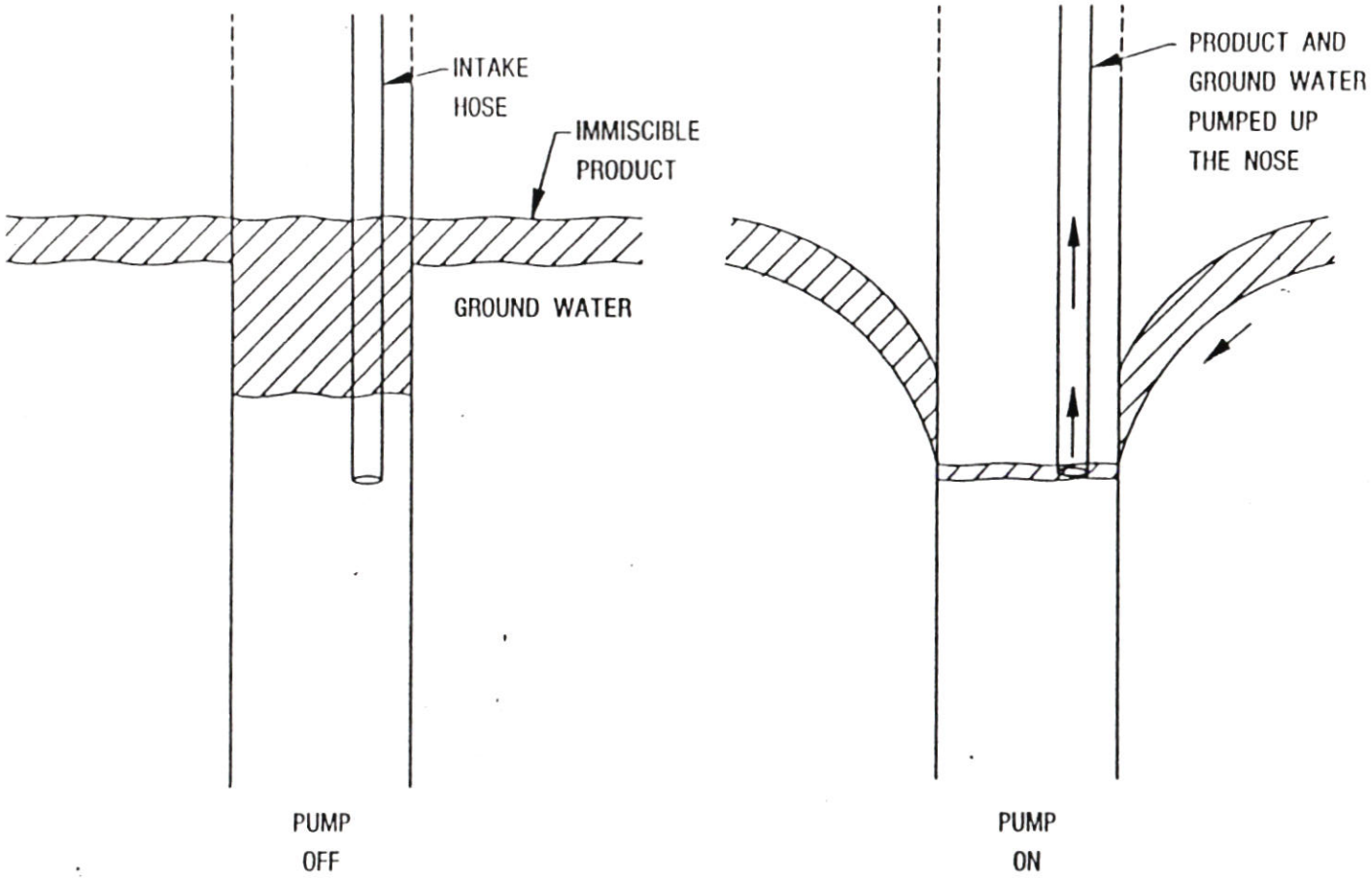


Figure 3. Schematic of fluid intake line in an observation well.

In prolific aquifers it is important that the intake hose not be lowered too far below the product/ground water contact. In such situations, the pumping rate capability of SWAPS may not be able to lower the fluid level in the well sufficiently to allow recovery of immiscible hydrocarbons. The length of time set on the individual timer should be sufficient to allow the diaphragm pump to lower the fluid level in the well to the depth of the intake hose.

SWAPS can be used to create a hydrologic barrier plus recover immiscible product at sites where the aquifer exhibits low hydraulic conductivity, and the aquifer yield of product and water will be low. SWAPS can be set to pump each well to the desired drawdown level before cycling off. Likewise, the system can then be set to cycle on again before the fluid level recovers to static conditions. In this way, SWAPS can maintain a cone of depression of the water table surface, and any immiscible product in the well can be recovered.

Summary

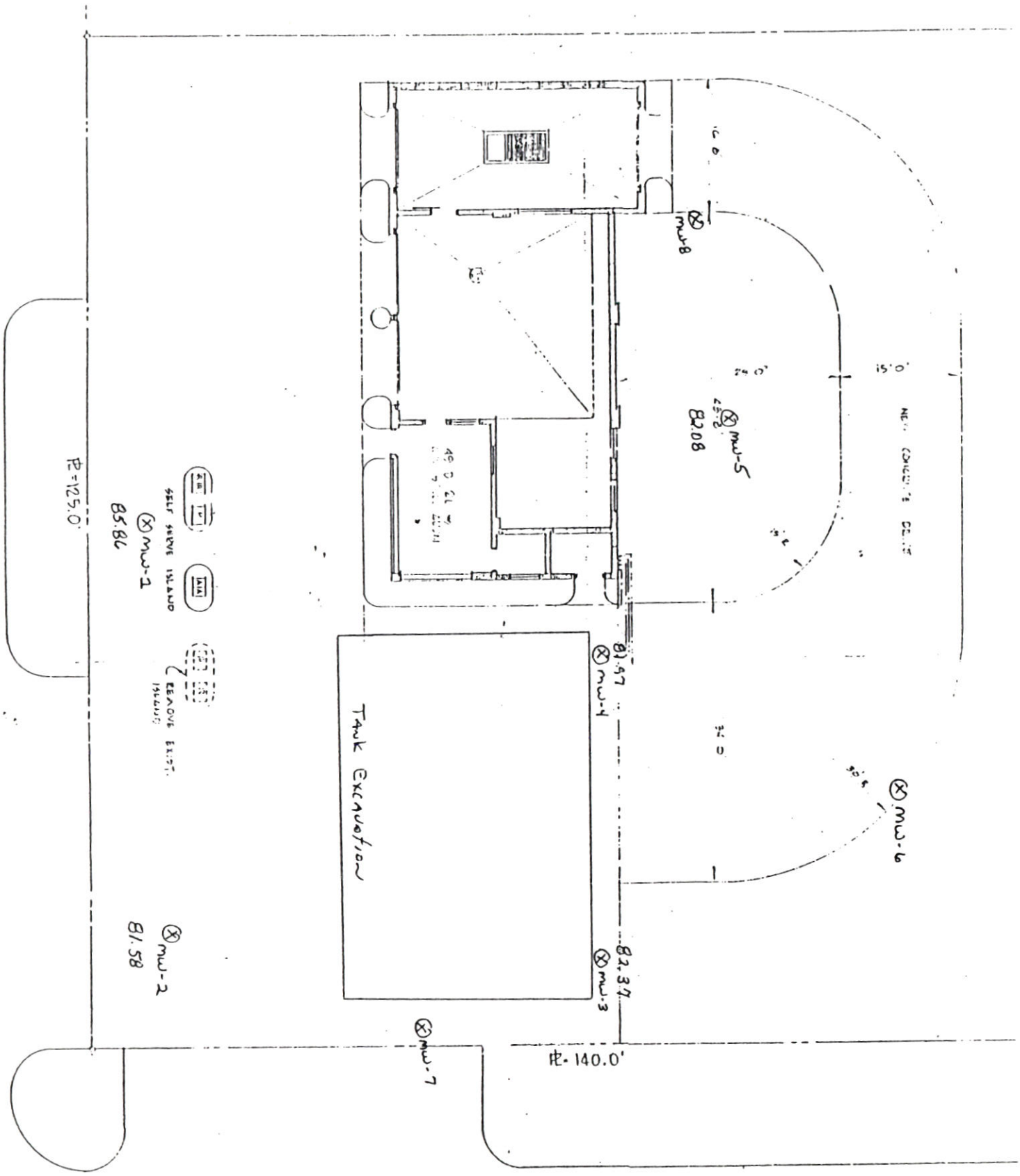
The SWAPS is useful for recovering immiscible hydrocarbons present in areas of limited extent. In addition, SWAPS can be used for creating hydrologic barriers in shallow aquifers which exhibit low hydraulic conductivity. The primary advantages of the SWAPS are: it is simple, inexpensive, and does not require a large diameter recovery well. SWAPS recovers total fluids from the well; therefore, an oil/water separator would be necessary to separate ground water from product.

Biographical sketches

Lloyd E. Dunlap is presently working for the Groundwater Management Section of Amoco Corporation, where he has been involved in ground water and subsurface contamination studies for 4-1/2 years. Previously, he worked for the U.S. Geological Survey in Kansas for five years. Mr. Dunlap received his Bachelor of Science degree in Geology at the University of Kansas and his Master of Science degree in Geology at Kansas State University. He is a Certified Professional Hydrogeologist with the American Institute of Hydrology and a Certified Ground Water Professional with the Association of Ground Water Scientists and Engineers.

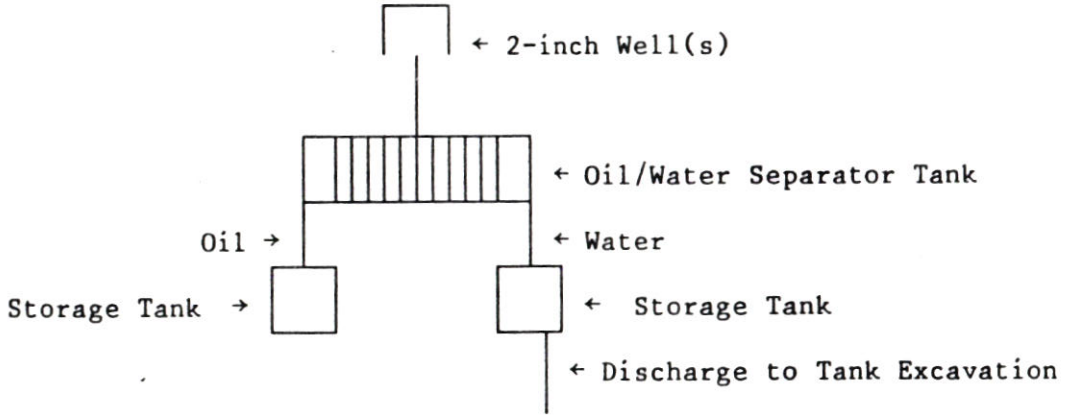
Tony Gogel is a Senior Hydrogeologist with the Groundwater Management Section of Amoco Corporation, where he evaluates ground water conditions for company operations throughout the United States. Previously, he was a Hydrologist with the U.S. Geological Survey for 10 years. During this period he directed a variety of hydrogeological studies principally involving deeply buried aquifers containing saline water and brines. He was graduated from the University of Missouri (B.S. Geology, 1965), the University of Kansas (M.S. Geology, 1969), and since has completed additional graduate hours. He is a Certified Professional Hydrogeologist in the American Institute of Hydrology and a Certified Ground Water Professional with the Association of Ground Water Scientists and Engineers.

Attachment 2



ATTACHMENT 3

Schematic of Recovery System
Amoco Service Station #31698, Keokuk, Iowa



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J. Patton
8/17/87

AMOCO Station - Kookuk

Well #7

Base/Neutral Compound	Concentration (ppb)
Acenaphthene	14
Acenaphthylene	103
Anthracene	167
Benzo (a) anthracene	121
Benzo (a) pyrene	151
Benzo (ghi) perylene	94
Chrysene	114
Fluoranthene	287
Fluorene	118
Indeno (1,2,3-c,d) pyrene	69
Phenanthrene	508
Pyrene	271
Total	2017

NUTRIENTS
EPA REGION VII INORGANIC DATA

TITLE: IK966
DATE: 07/09/87
MATRIX: WATER

PARAMETER: CYANIDE
METHOD: 335.1W03
ANALYST: KLC KLC 7/8/87

	STD. CURVE	READING
1	STD .300	.299
2	STD .200	.202
3	STD .100	.104
4	STD .030	.032
5	STD .003	.002
6	BLK .000	.000

SAMPLE NO.	RESULT MG/L	READING	MULTIPLICATION FACTOR	QC REF	QC %REC
IK966002	2.52	.252	10		
IK966900C	0.104	.104	1		
IK966900A				.112	92.9

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ANALYSIS TYPE: SEMIVOLATILES-PAGE 2

TITLE: KEOKUK
LAB: CENREF
SAMPLE PREP:_____ ANALYST/ENTRY: LEE REVIEWER: JS _____

MATRIX: SEDIMENT
METHOD: 9302M01

UNITS: UG/KG
CASE: 7198
DATE: 07/07/87

	IK966004
2,6-DINITROTOLUENE	170000.U
DIETHYLPHTHALATE	170000.U
4-CHLOROPHENYL PHENYL ETHER	170000.U
FLUORENE	200000.J
4-NITROANILINE	840000.U
4,6-DINITRO-2-METHYLPHENOL	840000.U
N-NITROSODIPHENYLAMINE	170000.U
4-BROMOPHENYL PHENYL ETHER	170000.U
HEXACHLOROBENZENE	170000.U
PENTACHLOROPHENOL	840000.U
PHENANTHRENE	480000.J
ANTHRACENE	140000.J
DI-N-BUTYLPHTHALATE	170000.U
FLUORANTHENE	420000.J
PYRENE	5400000.J
BUTYL BENZYL PHTHALATE	170000.U
3,3' DICHLOROBENZIDINE	350000.U
BENZO(A)ANTHRACENE	70000.J
BIS(2-ETHYLHEXYL)PHTHALATE	170000.U
CHRYSENE	170000.U
DI-N-OCTYL PHTHALATE	170000.U
BENZO(B)FLUORANTHENE	170000.U
BENZO(K)FLUORANTHENE	170000.U
BENZO(A)PYRENE	170000.U
INDENO(1,2,3-CD)PYRENE	170000.U
DIBENZO(A,H)ANTHRACENE	170000.U
BENZO(G,H,I)PERYLENE	170000.U

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SAMPLE PREP:_____ ANALYST/ENTRY: LEE

MATRIX: SEDIMENT
METHOD: 9302M01
REVIEWER: JS _____

UNITS: UG/KG
CASE: 7198
DATE: 07/07/87

	IK966004
PHENOL	170000.U
BIS(2-CHLOROETHYL) ETHER	170000.U
2-CHLOROPHENOL	170000.U
1,3 DICHLOROBENZENE	170000.U
1,4 DICHLOROBENZENE	170000.U
BENZYL ALCOHOL	170000.U
1,2 DICHLOROBENZENE	170000.U
2-METHYLPHENOL	170000.U
BIS(2-CHLOROISOPROPYL)ETHER	170000.U
4-METHYLPHENOL	170000.U
N-NITROSO-DIPROPYLAMINE	170000.U
HEXACHLOROETHANE	170000.U
NITROBENZENE	170000.U
ISOPHORONE	170000.U
2-NITROPHENOL	170000.U
2,4-DIMETHYLPHENOL	170000.U
BENZOIC ACID	840000.U
BIS(2-CHLOROETHOXY) METHANE	170000.U
2,4 DICHLOROPHENOL	170000.U
1,2,4-TRICHLOROBENZENE	170000.U
NAPHTHALENE	1600000.J
4-CHLOROANILINE	170000.U
HEXACHLOROBUTADIENE	170000.U
4-CHLORO-3-METHYLPHENOL	170000.U
2-METHYLNAPHTHALENE	500000.J
HEXACHLOROCYCLOPENTADIENE	170000.U
2,4,6-TRICHLOROPHENOL	170000.U
2,4,5-TRICHLOROPHENOL	840000.U
2-CHLORONAPHTHALENE	170000.U
2-NITROANILINE	840000.U
DIMETHYLPHTHALATE	170000.U
ACENAPHTHYLENE	170000.J
3-NITROANILINE	840000.U
ACENAPHTHENE	30000.J
2,4-DINITROPHENOL	840000.U
4-NITROPHENOL	840000.U
DIBENZOFURAN	90000.J
2,4-DINITROTOLUENE	170000.U

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TITLE: KEOKUK
LAB: CENREF
SAMPLE PREP:_____ ANALYST/ENTRY: LEE REVIEWER: _____JS__

MATRIX: SEDIMENT
METHOD: 9302M01

UNITS: UG/KG
CASE: 7198
DATE: 07/07/87

	IK966004
CHLOROMETHANE	21000.U
BROMOMETHANE	21000.U
VINYL CHLORIDE	21000.U
CHLOROETHANE	21000.U
METHYLENE CHLORIDE	10000.U
ACETONE	39000.
CARBON DISULFIDE	10000.U
1,1 DICHLOROETHENE	10000.U
1,1 DICHLOROETHANE	10000.U
TRANS-1,2,-DICHLOROETHENE	10000.U
CHLOROFORM	10000.U
1,2,DICHLOROETHANE	10000.U
2-BUTANONE	I
1,1,1 TRICHLOROETHANE	10000.U
CARBON TETRACHLORIDE	10000.U
VINYL ACETATE	21000.U
BROMODICHLOROMETHANE	10000.U
1,1,2,2,-TETRACHLOROETHANE	10000.U
1,2-DICHLOROPROPANE	10000.U
TRANS-1,3-DICHLOROPROPENE	10000.U
TRICHLOROETHENE	10000.U
DIBROMOCHLOROMETHANE	10000.U
1,1,2-TRICHLOROETHANE	10000.U
BENZENE	96000.J
CIS-1,3-DICHLOROPROPENE	10000.U
2-CHLOROETHYL VINYL ETHER	21000.U
BROMOFORM	10000.U
2-HEXANONE	21000.U
4-METHYL-2-PENTANONE	21000.U
TETRACHLOROETHENE	10000.U
TOLUENE	250000.J
CHLOROBENZENE	10000.U
ETHYL BENZENE	180000.J
STYRENE	98000.J
TOTAL XYLENES	450000.J

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ANALYSIS TYPE: SEMIVOLATILES-PAGE 2

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SAMPLE PREP:_____ ANALYST/ENTRY: LEE REVIEWER: _____ JS

MATRIX: WATER
METHOD: 9302M01

UNITS: UG/L
CASE: 7198
DATE: 07/06/87

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2,6-DINITROTOLUENE	10.U	1000.U	500.U	10.U
DIETHYLPHTHALATE	10.U	1000.U	500.U	10.U
4-CHLOROPHENYL PHENYL ETHER	10.U	1000.U	500.U	10.U
FLUORENE	17.J	2500.J	990.J	10.U
4-NITROANILINE	50.U	5000.U	2500.U	50.U
4,6-DINITRO-2-METHYLPHENOL	I	5000.U	2500.U	50.U
N-NITROSODIPHENYLAMINE	10.U	1000.U	500.U	10.U
4-BROMOPHENYL PHENYL ETHER	10.U	1000.U	500.U	10.U
HEXACHLOROBENZENE	10.U	1000.U	500.U	10.U
PENTACHLOROPHENOL	I	5000.U	2500.U	50.U
PHENANTHRENE	16.J	5900.J	2900.J	10.U
ANTHRACENE	10.U	1700.J	650.J	10.U
DI-N-BUTYLPHTHALATE	10.U	1000.U	500.U	10.U
FLUORANTHENE	10.U	4400.J	1700.J	10.U
PYRENE	10.U	8100.J	4000.J	10.U
BUTYL BENZYL PHTHALATE	10.U	1000.U	500.U	10.U
3,3' DICHLOROBENZIDINE	20.U	2000.U	1000.U	20.U
BENZO(A)ANTHRACENE	10.U	1000.U	500.U	10.U
BIS(2-ETHYLHEXYL)PHTHALATE	10.U	1000.U	1600.J	10.U
CHRYSENE	10.U	1000.U	500.U	10.U
DI-N-OCTYL PHTHALATE	10.U	1000.U	500.U	10.U
BENZO(B)FLUORANTHENE	10.U	1000.U	500.U	10.U
BENZO(K)FLUORANTHENE	10.U	1000.U	500.U	10.U
BENZO(A)PYRENE	10.U	1000.U	500.U	10.U
INDENO(1,2,3-CD)PYRENE	10.U	1000.U	500.U	10.U
DIBENZO(A,H)ANTHRACENE	10.U	1000.U	500.U	10.U
BENZO(G,H,I)PERYLENE	10.U	1000.U	500.U	10.U

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ANALYSIS TYPE: SEMIVOLATILES-PAGE 1

TITLE: KEOKUK
LAB: CENREF
SAMPLE PREP:_____ ANALYST/ENTRY: LEE

MATRIX: WATER
METHOD: 9302M01
REVIEWER: _____VS_

UNITS: UG/L
CASE: 7198
DATE: 07/06/87

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PHENOL	20.J	11000.J	500.U	10.U
BIS(2-CHLOROETHYL) ETHER	10.U	1000.U	500.U	10.U
2-CHLOROPHENOL	I	1000.U	500.U	10.U
1,3 DICHLOROBENZENE	10.U	1000.U	500.U	10.U
1,4 DICHLOROBENZENE	10.U	1000.U	500.U	10.U
BENZYL ALCOHOL	10.U	1000.U	500.U	10.U
1,2 DICHLOROBENZENE	10.U	1000.U	500.U	10.U
2-METHYLPHENOL	18.J	14000.J	500.U	10.U
BIS(2-CHLOROISOPROPYL)ETHER	10.U	1000.U	500.U	10.U
4-METHYLPHENOL	I	22000.J	500.U	10.U
N-NITROSO-DIPROPYLAMINE	10.U	1000.U	500.U	10.U
HEXACHLOROETHANE	10.U	1000.U	500.U	10.U
NITROBENZENE	10.U	1000.U	500.U	10.U
ISOPHORONE	10.U	1000.U	500.U	10.U
2-NITROPHENOL	10.J	1000.U	500.U	10.U
2,4-DIMETHYLPHENOL	27.J	8700.J	500.U	10.U
BENZOIC ACID	I	5000.U	2500.U	50.U
BIS(2-CHLOROETHOXY) METHANE	10.U	1000.U	500.U	10.U
2,4 DICHLOROPHENOL	I	1000.U	500.U	10.U
1,2,4-TRICHLOROBENZENE	10.U	1000.U	500.U	10.U
NAPHTHALENE	150.J	33000.J	14000.J	10.U
4-CHLOROANILINE	10.U	1000.U	500.U	10.U
HEXACHLOROBUTADIENE	10.U	1000.U	500.U	10.U
4-CHLORO-3-METHYLPHENOL	I	1000.U	500.U	10.U
2-METHYLNAPHTHALENE	74.J	8700.J	6300.J	10.U
HEXACHLOROCYCLOPENTADIENE	10.U	1000.U	500.U	10.U
2,4,6-TRICHLOROPHENOL	I	1000.U	500.U	10.U
2,4,5-TRICHLOROPHENOL	I	5000.U	2500.U	50.U
2-CHLORONAPHTHALENE	10.U	1000.U	500.U	10.U
2-NITROANILINE	50.U	5000.U	2500.U	50.U
DIMETHYLPHTHALATE	10.U	1000.U	500.U	10.U
ACENAPHTHYLENE	12.J	2600.J	280.J	10.U
3-NITROANILINE	50.U	5000.U	2500.U	50.U
ACENAPHTHENE	8.0M	420.J	220.J	10.U
2,4-DINITROPHENOL	I	5000.U	2500.U	50.U
4-NITROPHENOL	I	5000.U	2500.U	50.U
DIBENZOFURAN	10.U	1000.J	500.U	10.U
2,4-DINITROTOLUENE	10.U	1000.U	500.U	10.U

** NOTE: N/A MEANS NOT ANALYZED **
*** I MEANS ANALYZED BUT INVALID DATA ***

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ANALYSIS TYPE: VOLATILES

TITLE: KEOKUK
LAB: CENREF
SAMPLE PREP:_____ ANALYST/ENTRY: LEE REVIEWER: _____JS_____

MATRIX: WATER
METHOD: 9302M01

UNITS: UG/L
CASE: 7198
DATE: 07/06/87

	IK966001	IK966002	IK966003	IK966005F
CHLOROMETHANE	500.U	1000.U	2500.U	10.U
BROMOMETHANE	500.U	1000.U	2500.U	10.U
VINYL CHLORIDE	500.U	1000.U	2500.U	10.U
CHLOROETHANE	500.U	1000.U	2500.U	10.U
METHYLENE CHLORIDE	300.U	580.U	1300.U	18.U
ACETONE	3800.U	8400.U	20000.U	35.U
CARBON DISULFIDE	250.U	500.U	1200.U	5.0U
1,1 DICHLOROETHENE	250.U	500.U	1200.U	5.0U
1,1 DICHLOROETHANE	250.U	500.U	1200.U	5.0U
TRANS-1,2,-DICHLOROETHENE	250.U	500.U	1200.U	5.0U
CHLOROFORM	250.U	500.U	1200.U	5.0U
1,2,DICHLOROETHANE	250.U	500.U	1200.U	5.0U
2-BUTANONE	I	I	I	I
1,1,1 TRICHLOROETHANE	250.U	500.U	1200.U	5.0U
CARBON TETRACHLORIDE	250.U	500.U	1200.U	5.0U
VINYL ACETATE	500.U	1000.U	2500.U	10.U
BROMODICHLOROMETHANE	250.U	500.U	1200.U	5.0U
1,1,2,2,-TETRACHLOROETHANE	250.U	500.U	1200.U	5.0U
1,2-DICHLOROPROPANE	250.U	500.U	1200.U	5.0U
TRANS-1,3-DICHLOROPROPENE	250.U	500.U	1200.U	5.0U
TRICHLOROETHENE	250.U	500.U	1200.U	5.0U
DIBROMOCHLOROMETHANE	250.U	500.U	1200.U	5.0U
1,1,2-TRICHLOROETHANE	250.U	500.U	1200.U	5.0U
BENZENE	1700.J	16000.J	30000.J	5.0U
CIS-1,3-DICHLOROPROPENE	250.U	500.U	1200.U	5.0U
2-CHLOROETHYL VINYL ETHER	500.U	1000.U	2500.U	10.U
BROMOFORM	250.U	500.U	1200.U	5.0U
2-HEXANONE	500.U	1000.U	2500.U	10.U
4-METHYL-2-PENTANONE	500.U	1000.U	2500.U	10.U
TETRACHLOROETHENE	250.U	500.U	1200.U	5.0U
TOLUENE	5700.J	12000.J	49000.J	5.0U
CHLOROBENZENE	250.U	500.U	1200.U	5.0U
ETHYL BENZENE	890.J	1400.J	4000.J	5.0U
STYRENE	250.U	1300.J	1200.U	5.0U
TOTAL XYLENES	6400.J	4200.J	16000.J	5.0U

** NOTE: N/A MEANS NOT ANALYZED **
*** I MEANS ANALYZED BUT INVALID DATA ***

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IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

RECORD OF TELEPHONE CONVERSATION

DATE 7/1/87	TIME	☐ INITIATED ☐ RECEIVED	FILE NO.
DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME J Patton	PHONE NO.	OTHER PARTY NAME Bob Hockman 98	PHONE NO. 660-3035
BRANCH/DIVISION		FIRM/ADDRESS Amoco - Tulsa OK	
SUBJECT			

CONVERSATION PAH samples -

When do you expect your sampling results?

Adding times exceeded, so results may be of limited value. I have complained to the Vice Pres. about poor lab response. I have no idea when results will be done.

In my idea when EPA will have results?

No.

Who is responsible for coal tar sludge?

Keokuk Gas Company

Dissolved HC levels

MW-6 - 1800 ppb

MW-7 24 ppm B, 29 ppm T

8 2 ppm B, 17 ppm T

Well 6 is uphill from pocket of fuel - no gas in well, yet Benzene at 1800 ppb. Indicates to me a high background from coal tar sludge. If that's the case - no sense in filtering GW before coal tar is removed.

I agree.
What do you think about a 2 dose project?
I will talk to Des Moines & get back to you.

We can do that if you can allow reinjection of water.

WAWM form 68 (Aug 10, 83) (Replaces DEQ Form 0A 25, which may not be used)

5300200

RECEIVED

JUL 2 8 1987

IOWA DEPARTMENT OF
NATURAL RESOURCES

RECEIVED

'86 JUL 6 PM 2 5

DEPARTMENT OF
NATURAL RESOURCES

AMOCO SAMPLE RESULTS

ETC TESTING AND CERTIFICATION

JUN 26, 1987

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Acid Compounds - GC/MS Analysis Data (QR02)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
BA9073	AMOCO RESEARCH CENTER	AMOCOKEOK	KEOK-7D			

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l [a]	Second ug/l [a]	Blank Data ug/l [a]	Concen. Added ug/l [a]	% Recov [a]	Unspiked Sample ug/l [a]	Concen. Added ug/l [a]	% Re[redacted] [a]
1A	2-Chlorophenol	ND	4.1	-	-	-	-	-	-	-	-
2A	2,4-Dichlorophenol	ND	3.4	-	-	-	-	-	-	-	-
3A	2,4-Dimethylphenol	68.0	3.4	-	-	-	-	-	-	-	-
4A	4,6-Dinitro-o-cresol	ND	30	-	-	-	-	-	-	-	-
5A	2,4-Dinitrophenol	ND	53	-	-	-	-	-	-	-	-
6A	2-Nitrophenol	ND	4.5	-	-	-	-	-	-	-	-
7A	4-Nitrophenol	ND	3.0	-	-	-	-	-	-	-	-
8A	p-Chloro-m-cresol	ND	3.8	-	-	-	-	-	-	-	-
9A	Pentachlorophenol	ND	4.5	-	-	-	-	-	-	-	-
10A	Phenol	2.77	1.9	-	-	-	-	-	-	-	-
11A	2,4,6-Trichlorophenol	ND	3.4	-	-	-	-	-	-	-	-

[a] Standard QA procedures not applicable to extracts supplied by the client.

JUN 26, 1987

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

BASE/NEUTRAL COMPOUNDS - GC/MS ANALYSIS DATA (QR03)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
BA9073	AMOCO RESEARCH CENTER	AMOCOKEOK	KEOK-7D			

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First a	Second a	Blank Data a	Concen. Added a	% Recov a	Unspiked Sample a	Concen. Added a	% Recov a
1B	Acenaphthene	13.7	2.4	-	-	-	-	-	-	-	-
2B	Acenaphthylene	103	4.4	-	-	-	-	-	-	-	-
3B	Anthracene	167	2.4	-	-	-	-	-	-	-	-
4B	Benzidine	ND	55	-	-	-	-	-	-	-	-
5B	Benzo(a)anthracene	121	9.8	-	-	-	-	-	-	-	-
6B	Benzo(a)pyrene	151	3.1	-	-	-	-	-	-	-	-
7B	Benzo(b)fluoranthene	ND	13	-	-	-	-	-	-	-	-
8B	Benzo(ghi)perylene	94.5	5.1	-	-	-	-	-	-	-	-
9B	Benzo(k)fluoranthene	ND	4.4	-	-	-	-	-	-	-	-
10B	bis(2-Chloroethoxy)methane	ND	6.6	-	-	-	-	-	-	-	-
11B	bis(2-Chloroethyl) ether	ND	7.1	-	-	-	-	-	-	-	-
12B	bis(2-Chloroisopropyl)ether	ND	7.1	-	-	-	-	-	-	-	-
13B	bis(2-Ethylhexyl)phthalate	ND	13	-	-	-	-	-	-	-	-
14B	4-Bromophenyl phenyl ether	ND	2.4	-	-	-	-	-	-	-	-
15B	Butyl benzyl phthalate	ND	13	-	-	-	-	-	-	-	-
16B	2-Chloronaphthalene	ND	2.4	-	-	-	-	-	-	-	-
17B	4-Chlorophenyl phenyl ether	ND	5.3	-	-	-	-	-	-	-	-
18B	Chrysene	114	3.1	-	-	-	-	-	-	-	-
19B	Dibenzo(a,h)anthracene	ND	13	-	-	-	-	-	-	-	-
20B	1,2-Dichlorobenzene	ND	2.4	-	-	-	-	-	-	-	-
21B	1,3-Dichlorobenzene	ND	2.4	-	-	-	-	-	-	-	-
22B	1,4-Dichlorobenzene	ND	5.5	-	-	-	-	-	-	-	-
23B	3,3'-Dichlorobenzidine	ND	21	-	-	-	-	-	-	-	-
24B	Diethyl phthalate	ND	13	-	-	-	-	-	-	-	-
25B	Dimethyl phthalate	ND	13	-	-	-	-	-	-	-	-
26B	Di-n-butyl phthalate	ND	13	-	-	-	-	-	-	-	-
27B	2,4-Dinitrotoluene	ND	7.1	-	-	-	-	-	-	-	-
28B	2,6-Dinitrotoluene	ND	2.4	-	-	-	-	-	-	-	-
29B	Di-n-octyl phthalate	ND	13	-	-	-	-	-	-	-	-
30B	1,2-Diphenylhydrazine	ND	13	-	-	-	-	-	-	-	-
31B	Fluoranthene	287	2.8	-	-	-	-	-	-	-	-
32B	Fluorene	118	2.4	-	-	-	-	-	-	-	-

JUN 26, 19

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

BASE/NEUTRAL COMPOUNDS - GC/MS ANALYSIS DATA (QR03)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
BA9073	AMOCO RESEARCH CENTER	AMOCOKEOK	KEOK-7D			

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First A	Second A	Blank Data A	Concen. Added A	% Recov A	Unspiked Sample A	Concen. Added A	% Recov A
33B	Hexachlorobenzene	ND	2.4	-	-	-	-	-	-	-	-
34B	Hexachlorobutadiene	ND	1.1	-	-	-	-	-	-	-	-
35B	Hexachlorocyclopentadiene	ND	13	-	-	-	-	-	-	-	-
36B	Hexachloroethane	ND	2.0	-	-	-	-	-	-	-	-
37B	Indeno(1,2,3-c,d)pyrene	69.0	5.9	-	-	-	-	-	-	-	-
38B	Isophorone	ND	2.8	-	-	-	-	-	-	-	-
39B	Naphthalene	ND	2.0	-	-	-	-	-	-	-	-
40B	Nitrobenzene	ND	2.4	-	-	-	-	-	-	-	-
41B	N-Nitrosodimethylamine	ND	13	-	-	-	-	-	-	-	-
42B	N-Nitrosodi-n-propylamine	ND	13	-	-	-	-	-	-	-	-
43B	N-Nitrosodiphenylamine	ND	2.4	-	-	-	-	-	-	-	-
44B	Phenanthrene	508	6.8	-	-	-	-	-	-	-	-
45B	Pyrene	271	2.4	-	-	-	-	-	-	-	-
46B	1,2,4-Trichlorobenzene	ND	2.4	-	-	-	-	-	-	-	-

A Standard QA procedures not applicable to extracts supplied by the client.

INNIGAN MAT TARGET COMPOUND ANALYSIS
UANTITATION REPORT FILE: 5870559

Amoco Water Sample Results

ATA: 5870559.TI
6/04/87 16:58:00
AMPLE: KEOK-7D (KEOKUK, IA) (DIL. 1:50) + INT. STDS. 40 PPB (17110-021).
UBMITTED BY: BABCOCK ANALYST: BJK

MOUNT=AREA(HGHT) * REF. AMNT/(REF. AREA(HGHT)* RESP. FACT)
ESP. FAC. FROM AVERAGE OF WHOLE .RL

NO	NAME	Concentration (ppb)	Suspected Origin
1	BROMOCHLOROMETHANE (INTERNAL STANDARD)		
2	METHYL CHLORIDE		
3	METHYL BROMIDE		
4	VINYL CHLORIDE		
5	ETHYL CHLORIDE		
6	BROMOCHLOROMETHANE (INTERNAL STANDARD)		
7	METHYLENE CHLORIDE	201	Coal tar
8	TRICHLOROFLUOROMETHANE		
9	1,1-DICHLOROETHYLENE		
10	1,1-DICHLOROETHANE		
11	TRANS-1,2-DICHLOROETHYLENE		
12	CHLOROFORM	11	"
13	METHYL ETHYL KETONE	204	"
14	1,2-DICHLOROETHANE	410	"
15	1,1,1-TRICHLOROETHANE		
16	CARBON TETRACHLORIDE		
17	2-BROMO-1-CHLOROPROPANE (INTERNAL STANDARD)		
18	BROMODICHLOROMETHANE		
19	1,2-DICHLOROPROPANE		
20	CIS-1,3-DICHLOROPROPYLENE		
21	TRICHLOROETHYLENE	27	"
22	BENZENE	24318	Gasoline
23	DIBROMOCHLOROMETHANE		
24	TRANS-1,3-DICHLOROPROPYLENE		
25	1,1,2-TRICHLOROETHANE		
26	2-CHLOROETHYL VINYL ETHER	116	Coal tar
27	BROMOFORM		
28	1,4-DICHLOROBUTANE (INTERNAL STANDARD)		
29	TETRACHLOROETHYLENE	21	"
30	1,1,2,2,-TETRACHLOROETHANE		
31	TOLUENE	29350	Gasoline
32	CHLOROBENZENE	19	Coal tar
33	ETHYLBENZENE	2355	Gasoline
34	M-XYLENE	2905	"
35	O-XYLENE	3205	"
36	2-BROMO-1-CHLOROPROPANE (INTERNAL STANDARD)		
37	ACETONE	156	Coal tar
38	CARBON DISULFIDE		
39	BROMOCHLOROMETHANE (RTS)	1976	"
40	2-BUTANONE (MEK)	287	"
41	1,4-DIOXANE		
42	ISOBUTYL ALCOHOL		
43	VINYL ACETATE	315	"
44	1,2-DIBROMOETHANE (EDB)	78	"
45	4-METHYL-2-PENTANONE (MIBK)		
46	2-HEXANONE (MBK)		

NO	NAME		
47	1,4-DICHLOROBUTANE (RTS)	2191	Coal tar
48	STYRENE	877	"
49	O-XYLENE	2522	Gasoline
50	BROMOCHLOROMETHANE (INTERNAL STANDARD)		
51	2-BROMO-1-CHLOROPROPANE	2015	Coal tar
52	1,4-DICHLOROBUTANE	2135	"

NO	M/E	SCAN	TIME	REF	RRT	METH	AREA(HGHT)	AMOUNT	%TOT
1	128	353	11:46	1	1.000	A BB	20412.	40.000 UG/L	2.28
2	NOT FOUND								
3	NOT FOUND								
4	NOT FOUND								
5	NOT FOUND								
6	128	353	11:46	6	1.000	A BB	20412.	40.000 UG/L	2.28
7	84	216	7:12	6	0.612	A BB	2536.	4.024 UG/L	0.23
8	NOT FOUND								
9	NOT FOUND								
10	NOT FOUND								
11	NOT FOUND								
12	83	427	14:14	6	1.210	A BB	275.	0.221 UG/L	0.01
13	43	449	14:58	6	1.272	A BB	1320.	4.072 UG/L	0.23
14	62	451	15:02	6	1.278	A BB	6066.	8.202 UG/L	0.47
15	NOT FOUND								
16	NOT FOUND								
17	77	646	21:32	17	1.000	A BB	55676.	40.000 UG/L	2.28
18	NOT FOUND								
19	NOT FOUND								
20	NOT FOUND								
21	130	587	19:34	17	0.909	A BB	506.	0.550 UG/L	0.03
22	78	601	20:02	17	0.930	A BB	802823.	486.359 UG/L	27.73
23	NOT FOUND								
24	NOT FOUND								
25	NOT FOUND								

4/10 1,2 dichloroethan

X 50

24,320 benzene

sample diluted 50:1 to run

ANALYSIS TYPE: TOTAL METAL

TITLE: KEOKUK COAL GAS
LAB: EPA REGION VII
SAMPLE PREP: DNS ANALYST/ENTRY: GSS DNS
MATRIX: WATER
METHOD: 2001W77 7/8/87
REVIEWER: _____ DATE: 06/24/87

SAMPLE NUMBERS

ELEMENT	UNITS	IK966002	
SILVER	UG/L	10.	U
ALUMINUM	UG/L	3900	
ARSENIC	UG/L	58	
BARIUM	UG/L	240	
BERYLLIUM	UG/L	2.	U
CADMIUM	UG/L	5.	U
COBALT	UG/L	20	
CHROMIUM	UG/L	10.	U
COPPER	UG/L	10.	U
IRON	UG/L	15000	
MANGANESE	UG/L	3300	
MOLYBDENUM	UG/L	10.	U
NICKEL	UG/L	40	
LEAD	UG/L	100	
ANTIMONY	UG/L	50	U
SELENIUM	UG/L	50	U
TITANIUM	UG/L	120	
THALLIUM	UG/L	300	U
VANADIUM	UG/L	27	
ZINC	UG/L	68	
CALCIUM	MG/L	260	
MAGNESIUM	MG/L	31	
SODIUM	MG/L	77	
POTASSIUM	MG/L	11	

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ANALYSIS TYPE: TOTAL METAL (CONTRACTOR)

TITLE: KEOKUK
LAB: WILSON
SAMPLE PREP:_____ ANALYST/ENTRY: E06

MATRIX: WATER
METHOD: 9001M06
REVIEWER: _____JSL

UNITS: UG/L
CASE: 7198
DATE: 06/17/87

SAMPLE NUMBERS

COMPOUND	IK966001		IK966003		IK966005F	
ALUMINUM	12000.		180000.		200	U
ANTIMONY	60.0	U	60.0	U	60.0	U
ARSENIC	10.0	U	18.0		10.0	U
BARIUM	180	M	1500.		200	U
BERYLLIUM	5.00	U	11.0		5.00	U
CADMIUM	5.00	U	27.0		5.00	U
CALCIUM	380000.		180000.		5000.	U
CHROMIUM	15.0		300		10.0	U
COBALT	50.0	U	92.0		50.0	U
COPPER	25.0	U	250		14.0	M
IRON	22000.		180000.		100	U
LEAD	22.0		1200.		5.00	U
MAGNESIUM	67000.		66000.		5000.	U
MANGANESE	9100.		4300.		15.0	U
MERCURY	0.2	U	0.4		0.2	U
NICKEL	40.0	U	220		40.0	U
POTASSIUM	10000.		11000.		5000.	U
SELENIUM	2.50	U	14.0	J	5.00	U
SILVER	10.0	U	10.0	U	10.0	U
SODIUM	75000.		180000.		5000.	U
THALLIUM	10.0	U	10.0	U	10.0	U
TIN	200	U	40.0	U	40.0	U
VANADIUM	50.0	U	320		50.0	U
ZINC	66.0		510		20.0	U
CYANIDE	5900.	J	50.0	J	10.0	U

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ecology and environment

ANALYSIS TYPE: TOTAL METAL (CONTRACTOR)

TITLE: KEOKUK
LAB: WILSON
SAMPLE PREP:_____ ANALYST/ENTRY: E07

MATRIX: SEDIMENT
METHOD: 9001M06
REVIEWER: _____JS

UNITS: MG/KG
CASE: 7198
DATE: 06/17/87

SAMPLE NUMBERS

IK966004

COMPOUND		
ALUMINUM	14000.	J
ANTIMONY	39.0	U
ARSENIC	8.40	
BARIUM	150	
BERYLLIUM	3.20	U
CADMIUM	3.20	U
CALCIUM	21000.	J
CHROMIUM	28.0	
COBALT	32.0	U
COPPER	43.0	U
IRON	23000.	J
LEAD	84.0	
MAGNESIUM	2800.	M
MANGANESE	360	J
MERCURY	0.39	
NICKEL	26.0	U
POTASSIUM	3200.	U
SELENIUM	3.20	U
SILVER	6.50	U
SODIUM	3200.	U
THALLIUM	6.50	U
TIN	26.0	U
VANADIUM	31.0	M
ZINC	130	J
CYANIDE	6.50	U

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ecology and environment

Amoco Corporation

7201 East 38th Street (Space 7253)
Post Office Box 3385
Tulsa, Oklahoma 74102

Environmental and Energy Conservation
Environmental Affairs and
Safety Department
918 - 660-3218

Gene W. Schmidt
Director, Groundwater Management

June 12, 1987

GMS 87-462

James A. Patton
IDNR Environmental Protection Division
117 N. 2nd Avenue
Washington, IA 52353

Dear Mr. Patton:

Subject: Subsurface Investigation at the Inactive Amoco Service Station, 604 Main Street, Keokuk, Iowa

As I indicated to you in our telephone conversation of May 29, 1987, Amoco has already installed eight wells (Attachment 1) at the closed service station at 604 Main Street, Keokuk, Iowa. All wells were measured for floating hydrocarbons and four wells were sampled for Priority Pollutants on April 15, 1987.

Several wells onsite (nos. 1, 2, 3, 4, 5, and 8) contain floating gasoline and well no. 7 contains a mixture of gasoline and a black, viscous fluid. The wells show that most of the floating gasoline is located directly adjacent to the tank excavation (Attachment 2). Thus, Amoco plans to install a recovery system in this area to remove the floating hydrocarbons.

However, as you know, sludge from a historic coal gassification facility was discovered during the Amoco site investigation. The presence of this sludge and resultant contamination complicates cleanup and management of water pumped during gasoline recovery. Complicating factors include:

1. Coal gassification sludge has been demonstrated to leach benzene at significant. Your office has established a discharge limitation for benzene of 5-10 ppm for water pumped as a result of gasoline recovery operations and a cleanup standard for groundwater of 70 ppb benzene. Thus, if the sludge and is not removed, it may:

   a. Cause treatment to be more difficult, and

b. Cause treatment to be continued for an indefinite period of time.

2. Coal gassification waste has also been shown to leach constituents not normally associated with gasoline contamination. Due to this, your office has established an additional discharge limitation of 25 ppb for poly aromatic hydrocarbons (PAH) for pumped water. Such discharge limitations are not normally associated with gasoline cleanups.

Thus, Amoco collected groundwater samples from well nos. 5, 6, 7, and 8 for Priority Pollutant analysis. USEPA also sampled both the sludge and several wells for constituent analysis. However, no analytical results from either sampling are available to date. As a result, Amoco cannot develope a cleanup proposal beyond the collection of floating gasoline at this time.

I propose that as soon as either the Amoco or USEPA analytical results become available, we schedule a meeting to review cleanup options for the site. Thus, a cleanup plan for addressing this location can be developed.

Respectfully,

Bob Hockman

ELH:mph
87163ART0027

cc: R. G. Farmer, Chicago
R. C. Feeney, Chicago
J. A. Lamping, Chicago
W. J. Smith, Kansas City
G. W. Schmidt, Tulsa

ATTACHMENT 2

Water Level and Hydrocarbon Thickkness Data (April 16, 1987)

Well No.	Adjusted Water Elevation*	Hydrocarbon Thickness (ft)
1	85.86	0.17
2**	81.58	3.08
3**	82.37	4.49
4**	81.97	6.44
5	82.08	0.10
6	96.12	0.00
7	97.15	1.45***
8	95.16	0.20
9		

Location?

* Adjusted for product thickness

** Adjacent to tank excavation

*** Mixture of gasoline and black, viscious liquid

ELH:mph
87163ART0027

Amoco - 1604 Main
Keokuk

Not to Scale

Attachment 1



Amoco Corporation
7201 East 38th Street (Space 7253)
Post Office Box 3385
Tulsa, Oklahoma 74102
Environmental and Energy Conservation
Environmental Affairs and
Safety Department
918 - 660-3218

Gene W. Schmidt
Director, Groundwater Management

June 12, 1987

GMS 87-462

James A. Patton
IDNR Environmental Protection Division
117 N. 2nd Avenue
Washington, IA 52353

Dear Mr. Patton:

Subject: Subsurface Investigation at the Inactive Amoco Service Station, 604 Main Street, Keokuk, Iowa

As I indicated to you in our telephone conversation of May 29, 1987, Amoco has already installed eight wells (Attachment 1) at the closed service station at 604 Main Street, Keokuk, Iowa. All wells were measured for floating hydrocarbons and four wells were sampled for Priority Pollutants on April 15, 1987.

Several wells onsite (nos. 1, 2, 3, 4, 5, and 8) contain floating gasoline and well no. 7 contains a mixture of gasoline and a black, viscous fluid. The wells show that most of the floating gasoline is located directly adjacent to the tank excavation (Attachment 2). Thus, Amoco plans to install a recovery system in this area to remove the floating hydrocarbons.

However, as you know, sludge from a historic coal gassification facility was discovered during the Amoco site investigation. The presence of this sludge and resultant contamination complicates cleanup and management of water pumped during gasoline recovery. Complicating factors include:

1. Coal gassification sludge has been demonstrated to leach benzene at significant. Your office has established a discharge limitation for benzene of 5-10 ppm for water pumped as a result of gasoline recovery operations and a cleanup standard for groundwater of 70 ppb benzene. Thus, if the sludge and is not removed, it may:

   a. Cause treatment to be more difficult, and

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NATURAL RESOURCES

b. Cause treatment to be continued for an indefinite period of time.

2. Coal gassification waste has also been shown to leach constituents not normally associated with gasoline contamination. Due to this, your office has established an additional discharge limitation of 25 ppb for poly aromatic hydrocarbons (PAH) for pumped water. Such discharge limitations are not normally associated with gasoline cleanups.

Thus, Amoco collected groundwater samples from well nos. 5, 6, 7, and 8 for Priority Pollutant analysis. USEPA also sampled both the sludge and several wells for constituent analysis. However, no analytical results from either sampling are available to date. As a result, Amoco cannot develope a cleanup proposal beyond the collection of floating gasoline at this time.

I propose that as soon as either the Amoco or USEPA analytical results become available, we schedule a meeting to review cleanup options for the site. Thus, a cleanup plan for addressing this location can be developed.

Respectfully,

Bob Hockman

ELH:mph
87163ART0027

cc: R. G. Farmer, Chicago
R. C. Feeney, Chicago
J. A. Lamping, Chicago
W. J. Smith, Kansas City
G. W. Schmidt, Tulsa

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ATTACHMENT 2

Water Level and Hydrocarbon Thickkness Data (April 16, 1987)

Well No.	Adjusted Water Elevation*	Hydrocarbon Thickness (ft)
1	85.86	0.17
2**	81.58	3.08
3**	82.37	4.49
4**	81.97	6.44
5	82.08	0.10
6	96.12	0.00
7	97.15	1.45***
8	95.16	0.20

* Adjusted for product thickness

** Adjacent to tank excavation

*** Mixture of gasoline and black, viscious liquid

ELH:mph
87163ART0027


Amoco - 1604 Main
Keokuk
Not to Scale
Attachment 1
N
17th Street
Main Street
Product thickness
3.1 ft.
mw-2
coal tar
mw-7
1.5 ft.
Gas + coal tar sludge
TANK EXCAVATION
Island
mw-1
0.2 ft.
Amoco station
car wash
mw-3
4.5 ft.
mw-4
6.5 ft.
mw-6
0.0 ft.
mw-5
0.1 ft.
mw-8
0.2 ft.
coal tar
Alley
Bank

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
726 MINNESOTA AVENUE
KANSAS CITY, KANSAS 66101

SEP 01 1987

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. James L. Morgan
Main Street Road
R.R. Box 120
Keokuk, Iowa 52632

Dear Mr. Morgan:

Enclosed is a copy of analytical data, data qualification codes sheet, and field sheets for the samples collected at the former Keokuk Coal Gas facility at 1624 Main Street in Keokuk, Iowa. The samples were collected on April 22, 1987, by Ecology and Environment, Inc., (a contractor for the U.S. Environmental Protection Agency).

The metals, arsenic, lead, cadmium, chromium, iron, lead, manganese, mercury and selenium were found above drinking water standards as indicated in Table 1. Table 1 also shows levels of total metals in the soil/sediment sample.

Sodium was found at levels above 20,000 parts per billion or micrograms per liter (ug/l) which is the recommended maximum level for persons on a sodium restricted diet. If anyone on such a diet were to use the water from these wells for drinking purposes, a physician should be consulted.

Numerous volatile and semi-volatile compounds found at estimated levels are shown in Table 2 and Table 3. Due to the levels of contamination found, water from these monitoring wells should not be used for any purpose.

This information is forwarded to you in accordance with the provisions of the Resource Conservation and Recovery Act (RCRA), Section 3007(a) and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), Section 104(a)(1). If you have any questions regarding this analytical data, please contact Pete Culver of my staff at 913/236-2856.

Sincerely yours,

Robert L. Morby
Chief, Superfund Branch
Waste Management Division

Enclosure

cc: Pete Hamlin, IDNR (w/enclosure)
Darrell McAllister, IDNR (w/enclosure)

1987 SEP -3 AM 11:03

DEPARTMENT OF
NATURAL RESOURCES

Table 1
Keokuk Coal Gas Site
Sample Series IK966
Total Metals

	Water - Monitoring Wells (ug/l)			DWS	Soil/Sediment
Compound	001	002	003	(ug/l)	004
Arsenic		58		50(P)	8.40
Barium			1,500	1000(P)	150
Cadmium			27.0	10(P)	
Chromium			300	50(P)	28.0
Iron	22,000	15,000	180,000	300(S)	23,000J
Lead		100	1,200	50(P)	84.0
Manganese	9,100	3,300	4,300	50(S)	360J
Mercury				2(P)	.39
Selenium			14.0J	10(P)	U
Sodium	75,000	77,000	180,000	20,000*	U
Zinc				5,000(S)	130J

NOTE: Please see Data Qualifications Codes Sheet for explanation of U and J values.

(P) = Primary Drinking Water Standards (established for health reasons)

(S) = Secondary Maximum Contaminant Level (established for aesthetic reasons)

* EPA recommended level for consumers on a sodium restricted diet. If anyone on such a diet were to use this water, a physician should be consulted.

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Table 2
Keokuk Coal Gas Site
Sample Series IK966
Volatile Organic Compounds

	Water - Monitoring Wells (ug/1)			MCL	Soil/Sediment (ug/kg)
Compound	001	002	003	(ug/1)	004
Acetone					39,000
Benzene	1,700J	16,000J	30,000J	5*	96,000J
Toluene	5,700J	12,000J	49,000J	2,000**	250,000J
Ethylbenzene	890J	1,400J	4,000J		180,000J
Styrene		1,300J		140**	98,000J
Total Xylenes	6,400J	4,200J	16,000J	440**	450,000J

NOTE: Please see Data Qualifications Codes Sheet for explanation of J values.

MCL = Maximum Contaminant Level

* = Proposed MCL

** = Proposed recommended MCL

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Table 3
Keokuk Coal Gas Site
Sample Series IK966
Semi-Volatile Compounds

ug/l	Water - Monitoring Wells (ug/l)			Soil/Sediment (ug/kg)
Compared	001	002	003	004
Phenol	20J	11,000J		
2-methylphenol	18J	14,000J		
4-methylphenol		22,000J		
2-nitrophenol	10J			
2,4-dimethylphenol	27J	8,700J		
Naphthalene	150J	33,000J	14,000J	1,600,000J
2-methylnaphthalene	74J	8,700J	6,300J	500,000J
Acenapthhthylene	12J	2,600J	280J	170,000J
Acenaphthene	8.0M	420J	220J	30,000J
Dibenzofuran		1,000J		90,000J
Fluorene	17J	2,500J	990J	200,000J
Phenanthrene	16J	5,900J	2,900J	480,000J
Anthracene		1,700J	650J	140,000J
Fluoranthene		4,400J	1,700J	420,000J
Pyrene		8,100J	4,000J	5,400,000J
Benzo(A)anthracene				70,000J
Bis(2-ethylhexyl)phthalate			1,600J	

NOTE: Please see Data Qualifications Codes sheet for explanation of J and M qualifiers.

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Keokuk Coal Gas Site Keokuk, Iowa

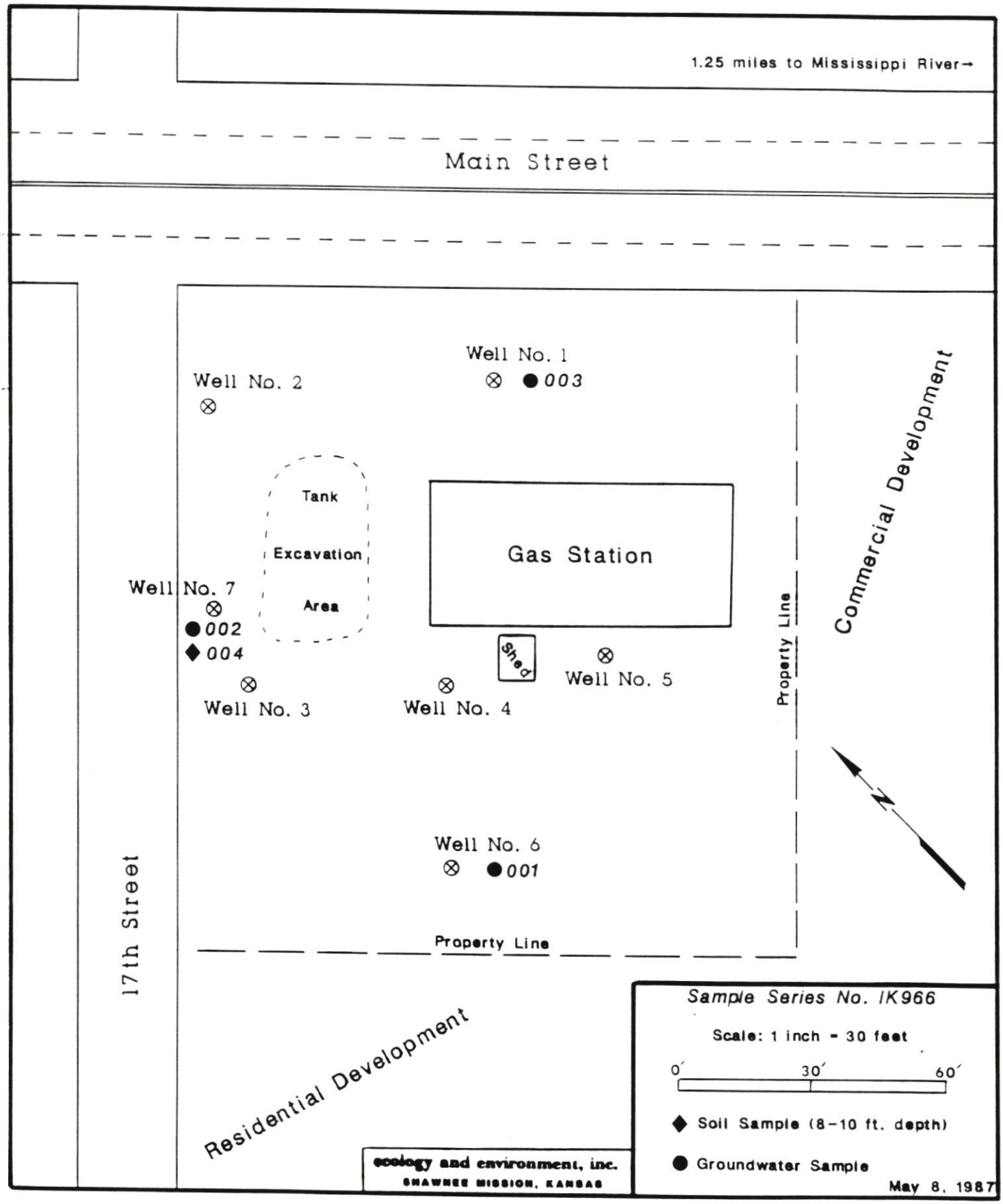


Figure 2 Sample Location Map

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EPA REGION VII
DATA QUALIFICATION CODES

U - Compound was not detected.

M - Compound was qualitatively identified; however, quantitative value is less than contract required detection limits (CLP data); or value is less than limit of quantitation (EPA data).

J - Compound was qualitatively identified; however, compound failed to meet all QA criteria and therefore is only an estimated value.

I - Analysis attempted, but no results can be reported.

O - Sample lost or not analyzed.

L - Value known to be higher than value reported.

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IOWA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
FIELD OFFICE #6
117 N. 2nd AVENUE
WASHINGTON, IOWA 52353
319/653-2135

CERTIFIED MAIL
May 26, 1987

Mr. Robert Hockman
Amoco Corporation
Amoco Corps Facility
P.O. Box 3385
Tulsa, OK 74102

Re: Groundwater Contamination: HSI#03307-RK-1527

Dear Mr. Hockman:

This letter is concerning the release of gasoline from your abandoned Amoco station at 1624 Main, Keokuk, Iowa.

On March 30, 1987, it was reported to this department that a layer of gasoline, ranging from 0.7 ft. to 4.5 ft in thickness, was discovered at this site during your routine closure procedure, which includes the installation of groundwater monitoring wells. Attached is a sketch of the site and the location of the wells installed.

Therefore, under the authority granted in 455B, Division IV, Part 4 of the Iowa Code, the Department is requiring Amoco to take the following measures:

1) Determine the full extent of the soil and groundwater contamination as a result of this leak.

2) Submit for review and approval by this department, a complete hydrogeological assessment report by July 15, 1987.

3) Submit for review and approval by this department, a recovery and clean-up plan, by July 15, for restoration of the soil and groundwater at the site.

4) Respond in writing to this office by June 8, 1987, indicating the action you plan to take in response to items 1 through 3.

Enclosed is a copy of the Department's criteria for clean-up of gasoline contaminated groundwater. All contaminated soil must be excavated and thinly spread in an area not subject to surface runoff and at least 1000 ft. from the nearest inhabited building, and allowed to aerate until all volitiles have vaporized. This may require periodic discing. The soil may be aerated on property under your control, or at a permitted sanitary landfill, with the operator's permission.

After aeration is complete, the soil may be land applied to unpaved roads, work yards, parking lots, or used for cover at a permitted sanitary landfill, with the operator's permission.

Also discovered at this site was an apparent coal tar pit, resulting from the operation of a coal gasification plant prior to the 1930's. As you are aware, the U.S.EPA is taking the lead on this portion of the site assessment. It is noted that the EPA's decision on the fate of this material may affect Amoco's plans for gasoline clean-up at the site.

The Department has established the additional limitation of 25 parts per billion total polyaeromatic hydrocarbons (PAH's) for any discharge from Amoco's recovery and clean-up process.

If you have any questions concerning this matter, feel free to contact me at this office.

Sincerely,

FIELD EVALUATION AND EMERGENCY RESPONSE BUREAU

James A. Patton

James A. Patton
Environmental Specialist III

JAP:jep:\wri\amococor.ltr

xc: Paul Tinder, State Fire Marshall's Office, Hwy 218 So., Mt. Pleasant, IA
Ron Kozel, Emergency Response, DNR - Des Moines
Pete Hamlim, Chief, Air Quality & Solid Waste Bureau, DNR - Des Moines
Pete Culver, Waste Management Division, EPA Region VII, 726 Minnesota Ave
Kansas City, KS 66101
File
Suspense File - 6/8/87 & 7/15/87

FIELD SHEET

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII
ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

Site Name: KEOKUK COAL GAS SITE
Location: KEOKUK IOWA

Site Number:
Site Code:

Collected: YR: 87 MO: 04 Day: 22 Time: 12:45 Leader: TED FAILE

Sample Number: IK96800/

SMO #:

Sample Media (circle one):
SOIL, DUST, RINSATE, SEDIMENT, (WATER), OTHER: _____

Sample Split (circle one): YES (NO)

Sample Container	Tag Color	Preservative	Analysis Requested
1L CUBITAINE	WHITE	5ML HNO3	TOTAL METALS
80 OZ JUG	PURPLE	ICE	B/N A
1L CUBITAINE	GREEN	NAOH	CYANIDE
2-40ML VIALS	LIME	ICE	VOAS

Depth: 12 ft. Par. #: _____ Aliquots: _____

Samplers: T FAILE
K KOTH

COMMENTS OF FIELD PERSONNEL

Site Description: WELL NO. 6 SW (BEHIND STATION)

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FIELD SHEET

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII
ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

Site Name: KEOKUK COAL GAS SITE
Location: KEOKUK IOWA
Site Number:
Site Code:

Collected: YR: 87 MO: 04 Day: 22 Time: 1115 Leader: TED FAILE

Sample Number: IK986002
SMO #:

Sample Media (circle one):
SOIL. DUST. RINSATE. SEDIMENT, (WATER,) OTHER:_____

Sample Split (circle one): YES (NO)

Sample Container	Tag Color	Preservative	Analysis Requested
1L CUBITAINE	WHITE	5ML HNO3	TOTAL METALS
80 OZ JUG	PURPLE	ICE	B/N A
1L CUBITAINE	GREEN	NAOH	CYANIDE
8-40ML VIALS	LIME	ICE	VOAS

Depth: 5 ft. Pan #:_____ Aliquots:_____

Samplers: T FAILE
K KOTH

COMMENTS OF FIELD PERSONNEL

Site Description: Well #7 (NW of Station)

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FIELD SHEET

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII
ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

Site Name: KEOKUK COAL GAS SITE
Location: KEOKUK IOWA

Site Number:
Site Code:

Collected: YR: 87 MO: 04 Day: 22 Time: 2:00 Leader: TED FAILE

Sample Number: IK99600**3**

SMO #:

Sample Media (circle one):
SOIL. DUST. RINSATE, SEDIMENT, (WATER.) OTHER:_____

Sample Split (circle one): YES (NO)

Sample Container	Tag Color	Preservative	Analysis Requested
1L CUBITAINE	WHITE	5ML HNO3	TOTAL METALS
60 OZ JUG	PURPLE	ICE	B/N A
1L CUBITAINE	GREEN	NAOH	CYANIDE
2-40ML VIALS	LIME	ICE	VOAS

Depth: 12 ft. Pan #:_____ Aliquots:_____

Samplers: T FAILE
K KOTH

COMMENTS OF FIELD PERSONNEL

Site Description: Well #1 (IN FRONT (NE) OF STATION)

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U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII
ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

FIELD SHEET

Site Name: KEOKUK COAL GAS SITE
Location: KEOKUK IOWA

Site Number:
Site Code:

Collected: YR: 87 MO: 04 Day: 22 Time: 2:15 Leader: TED FAILE

Sample Number: IK96600 4

SMO #:

Sample Media (circle one):
SOIL, DUST, RINSATE, SEDIMENT, WATER, OTHER:_____

Sample Split (circle one): YES

Sample Container	Tag Color	Preservative	Analysis Requested
8 OZ JAR	WHITE	ICE	METALS
8 OZ JAR	PURPLE	ICE	B/N A
8 OZ JAR	GREEN	ICE	CYANIDE
2-40ML VIALS	LIME	ICE	VOAS

Depth:_____ Par #:_____ Aliquots: 1

Samplers: JOEL GARRETSON*

COMMENTS OF FIELD PERSONNEL

Site Description: Well # 7 (Borehole Cuttings)

* Sample taken by J. Garretson on April 8, 1987 and relinquished to Ted Faile on April 22, 1987.

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FIELD SHEET

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION VII
ENVIRONMENTAL SERVICES DIV. 25 FUNSTON RD. KANSAS CITY, KS 66115

Site Name: KEOKUK COAL GAS SITE
Location: KEOKUK IOWA

Site Number:
Site Code:

Collected: YR: 87 MO: 04 Day: 22 Time: 2:30 Leacer: TED FAILE

Sample Number: IK9560055F

SMO #:

Sample Media (circle one):
SOIL, DUST, RINSATE, SEDIMENT, (WATER), OTHER:_____

Sample Split (circle one): YES (NO)

Sample Container	Tag Color	Preservative	Analysis Requested
1L CUBITAINE	WHITE	5ML HNO3	TOTAL METALS
60 OZ JUG	PURPLE	ICE	B/N A
1L CUBITAINE	GREEN	NAOH	CYANIDE
8-40ML VIALS	LIME	ICE	VOAS

Depth: —

Par #:_____

Aliquots:_____

Samplers: T FAILE

K KOTH

COMMENTS OF FIELD PERSONNEL

Site Description: FIELD BLANK

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DIVISION IV
SOLID WASTE DISPOSAL

PART 4
HAZARDOUS CONDITIONS

455B.381 Definitions.

As used in this part 4 unless the context otherwise requires:

1. "Hazardous substance" means any substance or mixture of substances that presents a danger to the public health or safety and includes, but is not limited to, a substance that is toxic, corrosive, or flammable, or that is an irritant or that generates pressure through decomposition, heat, or other means. "Hazardous substance" may include any hazardous waste identified or listed by the administrator of the United States environmental protection agency under the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976, or any toxic pollutant listed under section 307 of the federal Water Pollution Control Act as amended to January 1, 1977, or any hazardous substance designated under section 311 of the federal Water Pollution Control Act as amended to January 1, 1977, or any hazardous material designated by the secretary of transportation under the Hazardous Materials Transportation Act.

2. "Hazardous condition" means any situation involving the actual, imminent, or probable spillage, leakage, or release of a hazardous substance onto the land, into a water of the state, or into the atmosphere, which creates an immediate or potential danger to the public health or safety or to the environment. For purposes of this division, a site which is an abandoned or uncontrolled disposal site as defined in section 455B.411, subsection 1, is a hazardous condition. (Preceding subsection amended by sec. 1, SF2166, G.A. 1986.)

3. "Toxic" means causing or producing a dangerous physiological, anatomic, or biochemical change in a biological system.

4. "Corrosive" means causing or producing visible destruction or irreversible alterations in human skin tissue at the site of contact, or in the case of leakage of a hazardous substance from its packaging, causing or producing a severe destruction or erosion of other materials through chemical processes.

5. "Irritant" means a substance causing or producing dangerous or intensely irritating fumes upon contact with fire or when exposed to air.

6. "Cleanup" means actions necessary to contain, collect, control, identify, analyze, clean up, treat, disperse, remove, or dispose of a hazardous substance.

7. "Cleanup costs" means costs incurred by the state or its political subdivisions or their agents, or by any other person participating with the approval of the ~~executive~~ director in the prevention or mitigation of damages from a hazardous condition or the cleanup of a hazardous substance involved in a hazardous condition.

(Preceding amended by sec. 1899, SF2175, G.A. 1986.)

8. "Person having control over a hazardous substance" means a person who at any time produces, handles, stores, uses, transports, refines, or disposes of a hazardous substance the release

of which creates a hazardous condition, including bailees, carriers, and any other person in control of a hazardous substance when a hazardous condition occurs, whether the person owns the hazardous substance or is operating under a lease, contract, or other agreement with the legal owner of the hazardous substance.

9. "Release" means a threatened or real emission, discharge, spillage, leakage, pumping, pouring, emptying, or dumping of a hazardous substance into or onto the land, air, or waters of the state unless one of the following applies:

a. The release is done in compliance with the conditions of a federal or state permit.

b. The hazardous substance is confined and expected to stay confined to property owned, leased or otherwise controlled by the person having control over the hazardous substance.

c. In the use of pesticides, the application is done in accordance with the product label.

10. "Waters of the state" means rivers, streams, lakes and any other bodies of surface and subsurface water lying within or forming a part of the boundaries of the state which are not entirely confined and located completely upon lands owned, leased or otherwise controlled by a single person or by two or more persons jointly or as tenants in common. "Waters of the state" includes waters of the United States lying within the state.

455B.382 Administrative agency.

The department shall be the agency of the state to prevent, abate, and control the exposure of the citizens of the state to hazardous conditions as defined in this part 4 of division IV.

455B.383 Powers and duties of ~~commission~~ department.

The ~~commission~~ department shall:

(Preceding amended by sec. 1899B, SF2175, G.A. 1986.)

1. Establish such rules pursuant to the provisions of chapter 17A as are necessary to protect the public from unnecessary exposure to hazardous substances.

2. Develop a comprehensive plan for the prevention, abatement and control of hazardous conditions within the state.

455B.384 Powers and duties of the ~~executive~~ director.

The ~~executive~~ director shall:

(Preceding amended by sec. 1899, SF2175, G.A. 1986.)

1. Provide technical advice and assistance to other state agencies, to political subdivisions of the state and to other persons upon request for the control, abatement, and prevention of hazardous conditions.

2. Collect and disseminate such information, publish such guidelines or reports, and conduct such educational programs deemed necessary to implement the provisions of this part 4 of division IV. Educational programs may be conducted in cooperation with other public or private agencies through agreements concluded pursuant to chapter 28E.

3. Exercise such other powers consistent with the Code and the provisions of this part 4 as the commission may direct.

455B.385 State hazardous condition contingency plan.

All public agencies, as defined in chapter 28E, shall cooperate in the development and implementation of a state hazardous condition contingency plan. The plan shall detail the manner in which public agencies shall participate in the response to a hazardous condition. The ~~executive~~ director may enter into

agreements, with approval of the commission, with any state agency or unit of local government or with the federal government, as necessary to develop and implement the plan. The plan shall be co-ordinated with the office of disaster services and any joint county-municipal disaster services and emergency planning administrations established pursuant to chapter 29C.

(Preceding amended by sec. 1899, SF2175, G.A. 1986.)

455B.386 Notification of spills - penalty.

A person manufacturing, storing, handling, transporting, or disposing of a hazardous substance shall notify the department, the local police department, or the office of the sheriff of the affected county of the occurrence of a hazardous condition as soon as possible but not later than six hours after the onset of the hazardous condition or discovery of the hazardous condition. A sheriff or police chief who has been notified of a hazardous condition shall immediately notify the department. If requested, a person shall submit within thirty days of the department's request a written report of particulars of the incident. A person violating this section is subject to a civil penalty of not more than one thousand dollars.

455B.387 Removal of hazardous substances.

1. When any hazardous condition exists, the ~~executive~~ director may remove or provide for the removal and disposal of the hazardous substance at any time, unless the ~~executive~~ director determines such removal will be properly and promptly accomplished by the owner or operator of the vessel, vehicle, container, pipeline or other facility.

2. The ~~executive~~ director may use any resources available under the hazardous condition contingency plan to provide for the removal of hazardous substances. If the ~~executive~~ director finds that public agencies cannot provide the necessary labor or equipment or if the ~~executive~~ director determines that emergency conditions exist, the ~~executive~~ director may contract with a private person or agency for removal of the hazardous substance. In those cases where equipment or services are obtained from a public or private person or agency under emergency conditions, section 455B.105, subsection 7 does not apply.

3. An action taken by a person to abate, control, or clean up a hazardous substance involved in a hazardous condition shall not be construed as an admission of liability for a hazardous condition.

(Preceding section 455B.387 amended by sec. 1899, SF2175, G.A. 1986.)

455B.388 Injunctions and emergency orders.

1. If it is determined by the ~~executive~~ director that an emergency exists respecting any matter affecting or likely to affect the public health, the ~~executive~~ director may issue any order necessary to terminate the emergency without notice and without hearing. Any such order shall be binding and effective immediately and until such order is modified or vacated at a contested case hearing before the commission or by a court.

2. The ~~executive~~ director may request that the attorney general institute legal proceedings for a temporary or permanent injunction pursuant to section 455B.391 for purposes of enforcing an emergency order.

(Preceding section 455B.388 amended by sec. 1899, SF2175, G.A. 1986.)

455B.389 Judicial review.

Judicial review of any order or other action of the commission or of the ~~executive~~ director may be sought in accordance with the terms of chapter 17A. Notwithstanding the provisions of chapter 17A, petitions for judicial review may be filed in the district court of the county in which the alleged hazardous condition occurred.

(Preceding amended by sec. 1899, SF2175, G.A. 1986.)

455B.390 Jurisdiction limited.

Nothing contained in this part 4 of division IV shall be deemed to grant to the department any authority or jurisdiction under this part 4 with respect to the following:

1. Hazardous conditions existing solely within and which will probably continue to exist solely within commercial and industrial plants, works, or shops under the jurisdiction of chapters 88 and 91.

2. Relations between employers and employees with respect to hazardous conditions except that where such hazardous conditions extend to or affect areas within the scope of the authority granted by this part 4 of division IV, the department may take any action consistent with this part 4 to abate such hazardous condition.

3. The storage, transportation, handling, or use of inflammable liquids, combustibles and explosives control over which is exercised by the state fire marsnal under chapter 100.

4. The storage, transportation, handling or use of pesticides over which control is exercised by the state secretary of agriculture under chapter 206, except when spillage of pesticides creates a hazardous condition.

5. The storage, transportation, handling or use of fertilizers over which control is exercised by the state secretary of agriculture under chapter 200, except when spillage of fertilizers creates a hazardous condition.

455B.391 Duties of attorney general.

1. The attorney general shall, at the request of the department, institute any legal proceedings, including an action for an injunction or temporary injunction, necessary to obtain compliance with the provisions of this part 4 of division IV. In any legal proceedings any previous findings of fact of the ~~executive~~ director or the ~~commission~~ department after due notice and hearing shall be conclusive if supported by substantial evidence in the record when the record is viewed as a whole.

2. The attorney general shall, at the request of the ~~executive~~ director, take appropriate action against the ~~owner or operator of any vehicle, storage or manufacturing facility, vessel, or other source of~~ person having control over a hazardous substance to recover ~~funds expended by the department for the elimination of a hazardous condition~~ for the liabilities resulting under section 455B.392. ~~All such moneys collected shall be credited to the general fund of the state.~~

(Preceding section 455B.391 amended by sec. 1, HF2376, and secs. 1899 and 1899B, SF2175, G.A. 1986.)

455B.392 Liability for cleanup costs.

1. A person having control over a hazardous substance is strictly liable to the state for all of the following:

a. The reasonable cleanup costs incurred by the state as a result of the failure of the person to clean up a hazardous substance involved in a hazardous condition caused by that person.

b. The reasonable costs incurred by the state to evacuate people from the area threatened by a hazardous condition caused by the person.

c. The reasonable damages to the state for the injury to, destruction of, or loss of natural resources resulting from a hazardous condition caused by that person including the costs of assessing the injury, destruction, or loss.

If the failure is willful, the person is liable for punitive damages not to exceed triple the cleanup costs incurred by the state. Prompt and good faith notification to the ~~executive~~ director by the person having control over a hazardous substance that the person does not have the resources or managerial capability to begin or continue cleanup, or a good faith effort to clean up, relieves the person of liability for punitive damages, but not for actual cleanup costs. The ~~executive~~ director shall keep a record of all expenses incurred in carrying out a project or activity authorized by this part.

(Preceding amended by sec. 1899, SF2175, G.A. 1986.)

d. The excessive and extraordinary cost, excluding salaries, incurred by the department in responding at and to the scene of a hazardous condition caused by that person.

(Preceding subparagraph "d" added by sec. 2, HF2376, G.A. 1986.)

Claims by the state under this subsection may be appealed to the commission by the person filing a written notice of appeal within thirty days after receipt of the bill.

(Preceding added by sec. 3, HF2376, G.A. 9186.)

2. Liability under subsection 1 is limited to the following maximum dollar limitations:

a. Five million dollars for any vehicle, boat, aircraft, pipeline, or other manner of conveyance which transports a hazardous substance.

b. Fifty million dollars for any facility generating, storing, or disposing of a hazardous substance.

3. There is no liability under this section for a person otherwise liable if the hazardous condition is solely resulting from one or more of the following:

a. An act of God.

b. An act of war.

c. An act or omission of a third party if the person establishes both of the following:

(1) That taking into consideration the characteristics of the hazardous substance, the person otherwise liable exercised due care with respect to the hazardous substance.

(2) That the person otherwise liable took precautions against the foreseeable acts or omissions of the third party and the foreseeable consequences.

As used in this paragraph, "third party" does not include an employee or agent of the person otherwise liable or a third party whose act or omission occurs directly or indirectly in connection with a contractual relationship with the person otherwise liable.

4. There is no liability under this section for a person otherwise liable if all of the following conditions exist:

a. The liability arises during the transportation of a hazardous substance.

b. The fact that the hazardous substance is a hazardous substance has been misrepresented to the person transporting the hazardous substance.

c. The person transporting the hazardous substance does not know or have reason to know that the misrepresentation has been made.

5. Money collected pursuant to this section shall be deposited in the hazardous waste remedial fund created in section 455B.423 and used in the manner permitted for the fund.

6. This section does not deny any person any legal or equitable rights, remedies or defenses or affect any legal relationship other than the legal relationship between the state and a person having control over a hazardous substance pursuant to subsection 1.

455B.393 Liability of state employees or persons providing assistance.

1. A person employed by the state is not liable for damages incurred as a result of actions taken by the person when acting in the person's official capacity pursuant to this part, rules adopted pursuant to this part and the hazardous condition contingency plan.

2. A person who provides assistance at the request of the department or by previous agreement with the department in the event of a hazardous condition is not liable in a civil action for damages as a result of that person's acts or omissions in rendering the assistance. This section does not relieve a person from civil damages in any of the following circumstances:

a. If the person providing assistance is also the person having control over the hazardous substance which created the hazardous condition.

b. If the person rendered assistance for payment beyond reimbursement for out-of-pocket expenses or with the expectation of such payment.

c. For acts or omissions which result from intentional wrongdoing or gross negligence.

455B.394 Right of entry.

A person shall not refuse entry or access to, or harass or obstruct an authorized representative of the department who seeks entry or access for the purpose of investigating or responding to a hazardous condition. The representative shall present appropriate credentials. Upon a showing of probable cause in writing and made under oath, a judge or magistrate having proper jurisdiction shall issue a suitably restricted search warrant to the representative of the department for the purposes of enabling the representative to investigate or respond to a hazardous condition.

455B.395 Public information.

Information obtained under this part or a rule, order or condition adopted or issued under this part, or an investigation authorized thereby, shall be available to the public unless the information constitutes trade secrets or information which is entitled to confidential treatment in order to protect a plan, process, tool, mechanism, or compound which is known only to the person claiming confidential treatment and confidential treatment is necessary to protect the person's trade, business or manufacturing process.

455B.396 Priority claim of state.

Liability to the state under this part or part 5 of this division is a debt to the state. The debt, together with interest on the debt at the maximum lawful rate of interest permitted pursuant to section 532.2, subsection 3, paragraph "a" from the date costs and expenses are incurred by the department is a lien on real property, on which the department incurs costs and expenses creating a liability and owned by the persons liable under this part or part 5. To perfect the lien a statement of claim describing the property subject to the lien, signed by the executive director and approved by the commission must be filed within one hundred twenty days after the incurrence of costs and expenses by the department. The statement shall be filed with, accepted by, and recorded by the county recorder in the county in which the property subject to the lien is located. The statement of claim may be amended to include subsequent liabilities. To be effective the statement of claim shall be amended and filed within one hundred twenty days after the occurrence of the event resulting in the amendment.

The lien may be dissolved by filing with the appropriate recording officials a certificate, signed by the executive director, that the debt for which the lien is attached, together with interest and costs on the debt, has been paid or legally abated.

(preceding 455B.396 added by HF2336, G.A. 1986)

455B.397 Financial disclosure.

Immediately upon the incurrence of any liability to the state under this part, the debtor shall submit to the executive director a report consisting of documentation of the debtor's liabilities and assets, including if filed, a copy of the annual report submitted to the secretary of state pursuant to chapter 496. A subsequent report pursuant to this section shall be submitted annually on April 15 for the life of the debt. These reports shall be kept confidential and shall not be available to the public.

(preceding 455B.397 added by HF2336, G.A. 1986)

455B.398 Reserved.

455B.399 Cleanup assistance - liability.

1. A person who provides assistance or advice in mitigating or attempting to mitigate the effects of an actual or threatened hazardous condition or in preventing, cleaning up or disposing of or in attempting to prevent, clean up or dispose of a hazardous condition is not liable for damages resulting from the assistance or advice.

2. Subsection 1 does not apply to a person who receives compensation other than reimbursement for out-of- pocket expenses for services in rendering the assistance or advice.

3. This section does not limit the liability of a person for damages resulting from the person's gross negligence or reckless, wanton or intentional misconduct.

455B.400 to 455B.410 Reserved.

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
LARRY J. WILSON, DIRECTOR

VISIT MEMO
FIELD OFFICE NO. 6

DATE: 12 / 27 / 89

BY: Bill Gross, F.O. 6

LOCATION VISITED: Keokuk Rentals (UST No. 8710401); Amoco coal tar site 03307-RK-1527
FACILITY NO. LUST Site

OBSERVATIONS:

On December 12, 1989, I met with Scott Behnken (Behnken Jabs), Carol Sole (Amoco), and ~~the~~ Craig Foulkes (owner) at the Keokuk Rentals UST site at 1619 Main St. in Keokuk.

Scott and I collected duplicate soil samples from a one ft. layer of contaminated soil (blackish color) at the 13 ft. depth ~~of~~ in the south wall of the excavation (see ~~sketch~~). The soil was frozen (10°F) so we had to chip pieces of the soil out of the wall. There was no odor. Two 3000-gal. gasoline, ~~and~~ one 2000-gal. diesel fuel, and one 1000 gal. Kerosine tank had been excavated from this site (no tanks remained on-site). The stratigraphy of the area included: 0-10 ft. sandy clay with some gravel; 10-13 ft. rubble of red bricks, wood, metal; 13-14 ft. dark clayey loam; 14-18 ft. mixture of rubble, clay, and gravel.

Lover-

XC: Verne Schrunk, LUST Program, DNR
Johanahn Golchin, Uncontrolled Site Section, DNR
Lee Co UST file
~~Lee Co~~ Amoco U.S. file 03307-RK-1527

The analysis results are attached. The petroleum product could not be identified. It seemed to lie somewhere between diesel fuel and motor oil in volatility. Some PAH's were detected.

The Amoco coal tar site is located about 250 ft. upgradient (West) of this Keokuk Rentals site.

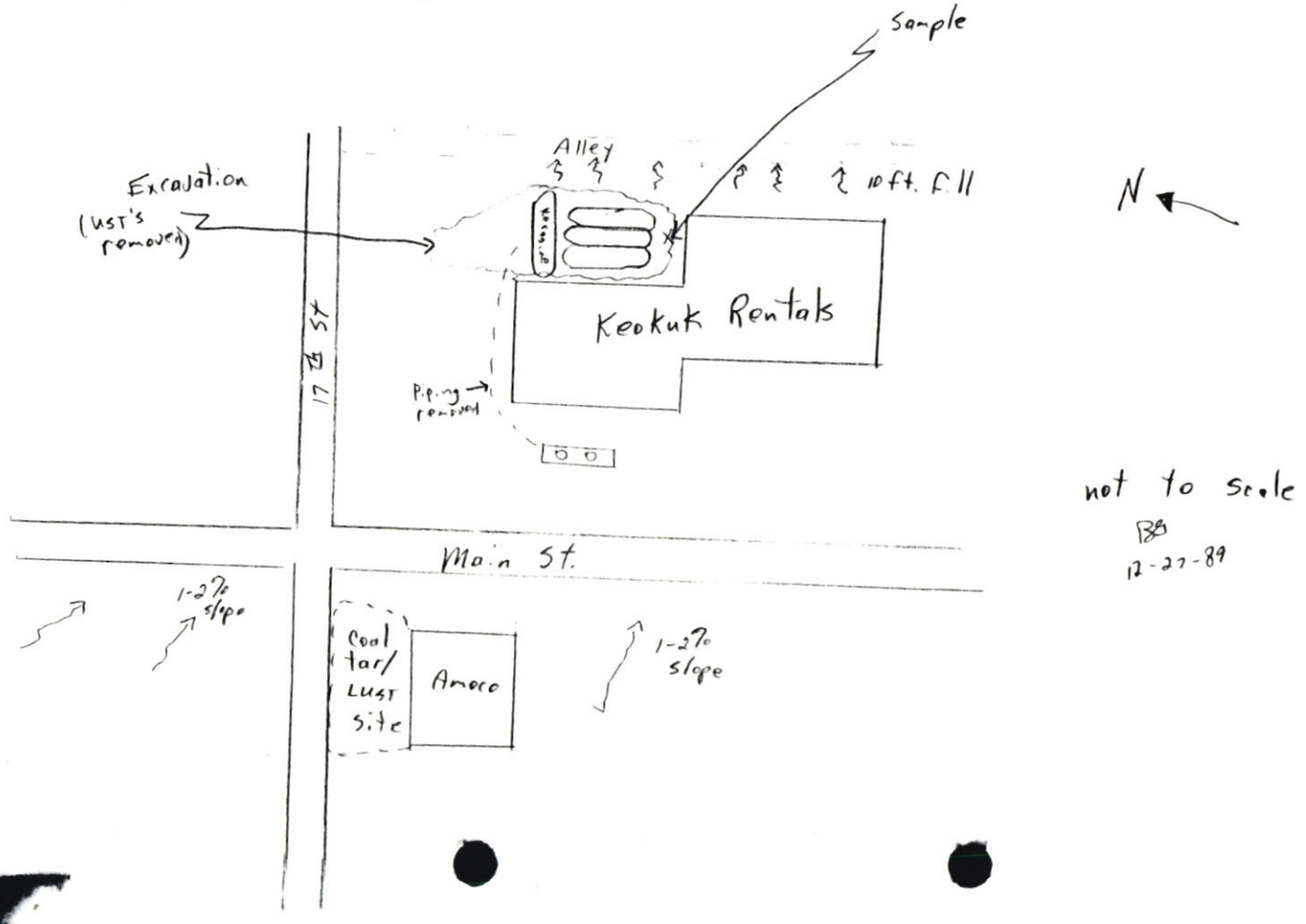
Mr. Behnken stated that soil directly beneath the Keokuk Rentals tanks was clean and the tanks and piping showed no signs of leaking.

It would seem that there are three potential sources of the contamination: 1) Keokuk Rentals UST's

2) Amoco coal tar site

3) Contaminated fill placed on the site previously.

This matter is being referred to the Uncontrolled Site Section, DNR (Johanshir Golchin).




K E S O N
Trailer Park
Golf Course
Sunset Memorial Gardens Cem
Memorial Gardens
KEOKUK CORR BD
Radio Tower
CARBIDE LANE
MESSENGER ROAD BM
Radio Tower
Cardinal Stritch High Sch
Hawthorne Sch
North Park
Joyce Park
Creek
21
22
23
24
BM
JOHNSON ST ROAD
Sportsmans Park Racetrack
BLKNAP BLVD
High Sch
Courts Rentals
Torrence Sch
Park
Jefferson Sch
Graham Hospital
MAIN ST
KEOKUK
Jr High Sch
Golf Course
Cem
OAKLAND CEMETERY
South
28
27
26
25
St Joseph Hospital
Garfield Sch
Washington Central Sch
National Cemetery
Park
Wells-Carey Sch
St Peters Sch
PACIFIC
KEOKUK CORPORATE BOUNDARY
St Vincents Sch
Lincoln Sch
Buena Vista-Mound Cem
Rees Park
PARK
Bldg Park
COMMERCIAL ST
LEE CO
CLARK CO
33
34
35
36
LEE CO
HANCOCK CO
RIVER

UNIVERSITY OF IOWA - HYGIENIC LABORATORY

Analytical Report for Sample Number 8912460

Iowa City Laboratory
Oakdale Hall
Iowa City, IA 52242
(319) 335-4500

Des Moines Branch
900 East Grand
H.A. Wallace Building
Des Moines, IA 50319
(515) 281-5371

Date Received: 12/13/89

Date of Report: 12/18/89

Submitter: EPD 6
Address: 1004 W.MADISON
City: WASHINGTON, IA 52353

Sample Location: KEOKUK RENTALS
Date Collected: 12/12/89
Collected By: BILL GROSS

Sample Description: SOIL
Client Reference:

RECEIVED
DEC 20 1989
IOWA DEPARTMENT OF
NATURAL RESOURCES

Comments

S EXCAV WALL 13' DEPTH 1200 HRS
PAH,TTL PETRO HC,ID OF PETRO/CHEM

--- Listing of Analyses Performed and Results ---

Description: DISSOLVED HYDROCARBON ANALYSIS

ANALYTE	CONC PPB	QUANT LIMIT
VOLATILE HYDROCARBONS	39000	500

Analytical Method: OA-GAS
Analysis Date: 12/14/89

Analyst: JN
Verified: MF

Description: TOTAL EXTRACTABLE HYDROCARBONS

Analyte	Concentration PPM	Quant. Limit
TOTAL EXTRACTABLE HYDROCARBONS	55	3

Comments: THE CHROMATOGRAPHIC PROFILE OF THE SAMPLE EXTRACT DID NOT MATCH THIS LABORATORY'S FUEL OR OIL STANDARDS. QUANTITATION IS BASED ON THE LABORATORY'S DIESEL FUEL STANDARD.

Analytical Method: OA-2
Analysis Date: 12/14/89

Analyst: SM
Verified: MF

PM - Parts/Million
PB - Parts/Billion
< - Less than
MG/L - Milligrams/Liter
UG/L - Micrograms/Liter
> - Greater than
MG/KG - Milligrams/Kilogram
UG/KG - Micrograms/Kilogram
pCi/L - pico Curies/Liter

UNIVERSITY OF IOWA HYGIENIC LABORATORY

Analytical Report for Sample Number 8912460

Description: GC/MS EXTRACTABLES

Analyte	Concentration ug/Kg	Quant. Limit
NAPHTHALENE	790	130
ACENAPHTHYLENE	<130	130
ACENAPHTHENE	<130	130
FLUORENE	<130	130
PHENANTHRENE	550	130
ANTHRACENE	160	130
FLUORANTHENE	850	270
PYRENE	660	270
BENZO(A)ANTHRACENE	700	130
CHRYSENE	620	130
BENZO(B)FLUORANTHENE	460	270
BENZO(K)FLUORANTHENE	470	270
BENZO(A)PYRENE	580	130
INDENO(1,2,3-CD)PYRENE	420	200
DIBENZ(A,H)ANTHRACENE	<200	200
BENZO(G,H,I)PERYLENE	290	200

RECEIVED
DEC 30 1989
IOWA DEPT. OF
NATURAL

Analytical Method: EPA 8270
Analysis Date: 12/15/89

Analyst: JJY
Verified: TC

PPM - Parts/Million
PPB - Parts/Billion
< - Less than

MG/L - Milligrams/Liter
UG/L - Micrograms/Liter
> - Greater than

MG/KG - Milligrams/Kilogram
UG/KG - Micrograms/Kilogram
pCi/L - pico Curies/Liter

IOWA DEPARTMENT OF NATURAL RESOURCES
RECORD OF TELEPHONE CONVERSATION

DATE 12-7-89	TIME 3 PM	[✓] INITIATED [ ] RECEIVED	FILE NO. Amoco HSC Lee Co. UST	Routing To	Routing Initials
EMPLOYEE NAME Bill Gross		PHONE NO.			
BUREAU/DIVISION F.D. 6					
OTHER PARTY NAME Scott ~~Bank~~ Behnken		PHONE NO. 319-524-6431			
FIRM/ADDRESS Behnken Labs, Keokuk					
SUBJECT UST removal / uncontrolled site					

DEPARTMENT | CONVERSATION | OTHER PARTY

-returning your call

-Did Keokuk Rentals use kerosine?

-I'll contact Johnshir Golchin (DNR) about the uncontrolled site situation.

-Yes, we worked on removing some UST's at Keokuk Rentals at 17th and Main in Keokuk. This is across the street from the Amoco (UST / coal tar site (it's also downgrade). The sand backfill of the tanks was clean. ~~But~~ I don't believe the tanks leaked. Below the sand is brick rubble. Then we hit a 7-13 in. layer of contaminated material (at 13ft depth). Below this is a foundation -- probably the original grade (native soil). We tested the contaminated material and found it to be kerosine.

-Yes, but they say they had no leak or spill as this indicates. We'd like you to check it out / sample. We'd like to backfill soon.

3:40pm: Johnshir said I should collect soil sample (split) and test for PAH, ~~TPH~~ TPH

DNR form 68 (Feb. 88) Amoco monitoring well about 35 ft

IOWA DEPARTMENT OF NATURAL RESOURCES

TRANSMITTAL SLIP

DATE 12-27-89

TO: Scott Schnicker, Schnicker Labs, Keokuk

FROM: Bill Gross, EPD, F.O.6, Washington, IA

[ ] REPLY FOR MY SIGNATURE
[ ] REPLY DIRECT
[ ] REVIEW, COMMENT AND RETURN
[ ] INVESTIGATE AND REPORT
[ ] SEE ME
[X] FOR YOUR INFORMATION
[ ] NOTE AND FORWARD
[ ] FILE
[ ] FOR YOUR SIGNATURE
[ ] FOR YOUR APPROVAL
[ ] PER YOUR REQUEST
[X] PER OUR CONVERSATION
[ ] TAKE ACTION BY _____

COMMENTS:

— Keokuk Rentals soil analysis results.

Contact Johanshir Golchin

515-281-8925

for further guidance.

Bill

DNR 542-0593 (2-89)

IOWA DEPARTMENT OF NATURAL RESOURCES

RECORD OF TELEPHONE CONVERSATION

DATE	TIME	[ ] INITIATED [ ] RECEIVED	FILE NO.
12/7/87			

DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME	PHONE NO.	OTHER PARTY NAME	PHONE NO.
		James Morgan	524-6600
BUREAU/DIVISION		FIRM/ADDRESS	

SUBJECT

CONVERSATION

Dug up property to install tanks + to remove tanks.

Also dug up sewer line once. Removed old concrete machine foundations in 1947. Bought it in 1947

Built station in 1951

Did you ever run into any coal tar?

No

Meeting in Des Moines w/ all parties involved + set cleanup underway

Are you interested in attending?

Only if I need to be there.

I will ask Des Moines + get back to you if they feel you should be involved.

OK

IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

RECORD OF TELEPHONE CONVERSATION

DATE	TIME	☐ INITIATED ☐ RECEIVED	FILE NO.

DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME	PHONE NO.	OTHER PARTY NAME	PHONE NO.
BRANCH/DIVISION		FIRM/ADDRESS	

SUBJECT: Keokuk

CONVERSATION

	2nd week in Jan 11-15
→ UE - David Pluhar 314/554-2340	~~15th~~ 11th or (15th)
→ AMOCO - Ralph Feeney 312/856-3618	will call 11th or (15th) (prefer 15th)
→ GRG - Karl Sole 319/524-4752	11th or (15th) OK (will call if not good for attorney)
→ EPA - Pete Culver 913/236-2856	(15th)
→ DNR - Pete Hamlin 8852	11th or (15th) (prefer 15th)
Morris Preston 4968	(15th)
Mark Landa 6243	(15th)
James Morgan 524-6600	?
	4th floor west

WAWM form 68 (Aug 10, 83) (Replaces DEQ Form OA 25, which may not be used)

5300200

IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

RECORD OF TELEPHONE CONVERSATION

DATE	TIME	☐ INITIATED ☐ RECEIVED	FILE NO.
7/1/87			

DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME: J Patten	PHONE NO.	OTHER PARTY NAME: Bob Heckman 98	PHONE NO.: 660-3035
BRANCH/DIVISION		FIRM/ADDRESS: Amoco - Tulsa OK	

SUBJECT

CONVERSATION PAH samples

When do you expect your sampling results?

Adding times exceeded, so results may be of limited value. I have complained to the Vice Pres. about poor lab response. I have no idea when results will be done.

Any idea when EPA will have results?

No.

Who is responsible for coal tar sludge?

Keokuk Gas Company

Dissolved HC levels

MW-6 - 1800 ppb

MW-7 24 ppm B, 29 ppm T

8 2 ppm B, 17 ppm T

Well 6 is uphill from pocket of fuel - no gas in well, yet Benzene at 1800 ppb. Indicates to me a high background from coal tar sludge. If that's the case - no sense in filtering GW before coal tar is removed.

I agree. What do you think about a 2 dose project? I will talk to Des Moines & get back to you.

We can do that if you can allow reinjection of water.

WAWM form 68 (Aug 10, 83) (Replaces DEQ Form OA 25, which may not be used)

5300200

AMOCO + Keokuk | J. Patton 8/87

Gasoline Recovery Plan

1. Install 2" submersible scavenger pumps in each well containing fuel (#1, 2, 3+4)
2. Install recovery well with infiltration gallery as temporary filtering system for wastewater discharge
   (until responsibility for GW cleanup is apportioned out between AMOCO + Great River Gas)
3. Expect activated carbon filtration to be used for completion of cleanup
   (air stripping not effective for PAH's, nor is it acceptable in urban areas)

42-182 100 SHEETS
NATIONAL
Made in U.S.A.

IOWA DEPARTMENT OF NATURAL RESOURCES

RECORD OF TELEPHONE CONVERSATION

DATE 11/23/87	TIME	[ ] INITIATED [ ] RECEIVED	FILE NO.
DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME	PHONE NO.	OTHER PARTY NAME Karl Sole	PHONE NO.
BUREAU/DIVISION		FIRM/ADDRESS Great River Gas	
SUBJECT			

CONVERSATION

meeting 3rd week of Dec.

Union Electric Contact

Any day but Tues.

Gary Duffy - Jeff City, MO

Different attorney than original (Gary Duffy)
Wickwire, Gavin & Gibbs
Washington D.C.

Mike Barnes, Attorney
314/554-2552
St. Louis ?

David Pluhar, Env. Services Dept.
St. Louis
314/554-2340

He & I attended → Seminar re Mgmt. of Manufactured Gas Plants recently.
UE has a study that will be helpful.

DNR form 68 (Jan 87)

542-3200

IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

RECORD OF TELEPHONE CONVERSATION

DATE	TIME	☐ INITIATED ☐ RECEIVED	FILE NO.
11/12/87			

DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME	PHONE NO.	OTHER PARTY NAME	PHONE NO.
		Ralph Feeney 312	856-3618
BRANCH/DIVISION		FIRM/ADDRESS	
		Amoco - Tulsa Okl	

SUBJECT: Amoco - Keokuk

CONVERSATION

I work w/ Bob Hockman. Will be handling situation ~~Ralph~~ for Amoco. I am w/ Superfund Group of Amoco

Scheduled meeting yet?

Can't do it 1st week.

No.

Shooting for 3rd week in December

Will contact EPA and get back to you.

IOWA DEPARTMENT OF NATURAL RESOURCES

RECORD OF TELEPHONE CONVERSATION

DATE	TIME	[ ] INITIATED [ ] RECEIVED	FILE NO.
DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME	PHONE NO.	OTHER PARTY NAME	PHONE NO.
BUREAU/DIVISION		FIRM/ADDRESS	

SUBJECT Amoco Station Keokuk

CONVERSATION

AMOCO - Ok
Ralph Feeney
Morris - Ok

EPA Will call
Pete Culver

Great River Gas - any day but Tues.
Karol Sole

Union Electric - any day but Mon.
David Pluhar

3rd week in Dec.

DNR form 68 (Jan 87) 542-3200

IOWA DEPARTMENT OF NATURAL RESOURCES

RECORD OF TELEPHONE CONVERSATION

DATE 11/22/87	TIME	[ ] INITIATED [ ] RECEIVED	FILE NO.
DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME	PHONE NO.	OTHER PARTY NAME David Pluhar	PHONE NO.
BUREAU/DIVISION ? →		FIRM/ADDRESS Env. Services Division Union Electric, St Louis	
SUBJECT			

CONVERSATION

1901 Gratiot Zip ——
PO Box 149
St Louis MO 63166

All but Mon. OK

- Mgr. of Env. Serv 314/554-2637
Thomas Siedhoff

- John Pozzo 314/554-2280
Supervising Env. Engineer

Will bring
Tom, John + ~~Mark~~ mike

3 phases

Tars - will sink until it hits a confining layer

BTX + Naphthalene will dissolve in GW

In between there will be a mixture of tars and solubles -

Please send me reports and Iowa regs

How long

Oct. 1925 ~~1926~~ Became responsible for site by purchasing ~~Keokuk~~ Gas Co.

mid 40's Sold to Great River Gas

DNR form 68 (Jan 87)

542-3200

IOWA DEPARTMENT OF NATURAL RESOURCES

RECORD OF TELEPHONE CONVERSATION

DATE 11/20/87	TIME	[ ] INITIATED [ ] RECEIVED	FILE NO.
DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME	PHONE NO.	OTHER PARTY NAME Pete Colvin 913	PHONE NO. 236-2856
BUREAU/DIVISION		FIRM/ADDRESS EPA	
SUBJECT KC			

CONVERSATION

GPR study?

Meeting 3rd week of Dec. w/ attorneys for all involved.

12/2/87

10:00 AM
Wallace Bldg.

Ground penetrating radar
Study found some other pits; report not completed yet.

will talk to our people & get back to you.

Dec 3rd

16th or (18th)
Myself
Removal Shop
Council
Enforcement

OK

Half of property owned by Great River Gas (office)
other half (Amoco site) owned by James Morgan

DNR form 68 (Jan 87)

542-3200

Amoco - Keokuk 9/9/87

E + E
Ted Faile
→ Send him Bob H's letter.

Great River Gas Co. - bought coal gas. plant from
Karol Sole Union Electric in mid 40's
Switched to propane 2 yrs.
Andrew "Roy" Fogle after purchase - ceased using
would go there 219 Morgan, Keokuk plant.
work 524-7664

GRG's attorney has been talking to Union Electric's attorney about records

Got E+E report from Paul Daugherty



A BRIEF HISTORY OF GREAT RIVER GAS COMPANY

KEOKUK, IOWA

A BRIEF HISTORY OF GREAT RIVER GAS COMPANY

KEOKUK, IOWA

The City of Keokuk, Iowa, is located in the extreme southeast corner of Iowa, bordered by the State of Illinois and the Mississippi River on the east side, and the State of Missouri and the Des Moines River on the west side. The Des Moines River empties into the Mississippi River at its southern border, thereby making the city a peninsula. The total population of Keokuk is approximately 14,500 people.

Keokuk was first introduced to gas in November 1855 when a Mr. Edward Kilbourne built the gas works in less than 100 days, which was an engineering feat at that time. A company was formed under the name of Keokuk Gas Light and Coke Company. Gas was manufactured by burning coke in a hand-fired furnace, which in turn was fed into a gas main and distributed to the customer. At, this time, Keokuk Gas Light and Coke Company was municipally owned.

Early in the 20th century, Iowa Union Electric Power Company bought out the gas works and made it a part of their system. Iowa Union Electric Company is better known today as the Union Electric Company, with headquarters in St. Louis, Missouri.

In 1945, the gas system was sold to the Dushane and Wrench families by Union Electric for the sum of $75,000. A new company was formed called Keokuk Gas Service Company. It was, and still is today, a privately-owned business.

In 1946, propane gas was introduced into the system in lieu of manufactured gas, and in 1949, natural gas was made available through the construction of a pipeline by Michigan Wisconsin Pipeline Company. Michigan Wisconsin, who changed its name to ANR Pipeline Company in January 1984, is still our major supplier today in Iowa. ANR Pipeline Company's system carries natural gas to the states of Michigan, Wisconsin, Iowa, and some parts of Illinois.

In 1976, Keokuk Gas Service Company purchased from Northern Illinois Gas Company a subsidiary of theirs named Great River Gas Company, located in Hannibal, Missouri, which serves 21 towns and communities in northeast Missouri. This system is supplied by the Panhandle Eastern Pipeline Company of Houston, Texas.

In 1980, Keokuk Gas Service Company changed its name to Great River Gas Company.

Property purchased in 1945 was sold in 1950

STATISTICS OF GREAT RIVER GAS COMPANY

1945

Volumes of Gas Sold	57,553 DTH
Dollar Sales Volume	$70,265
Number of Customers	961
Total Miles of Distribution Main	2.5 Miles

1984

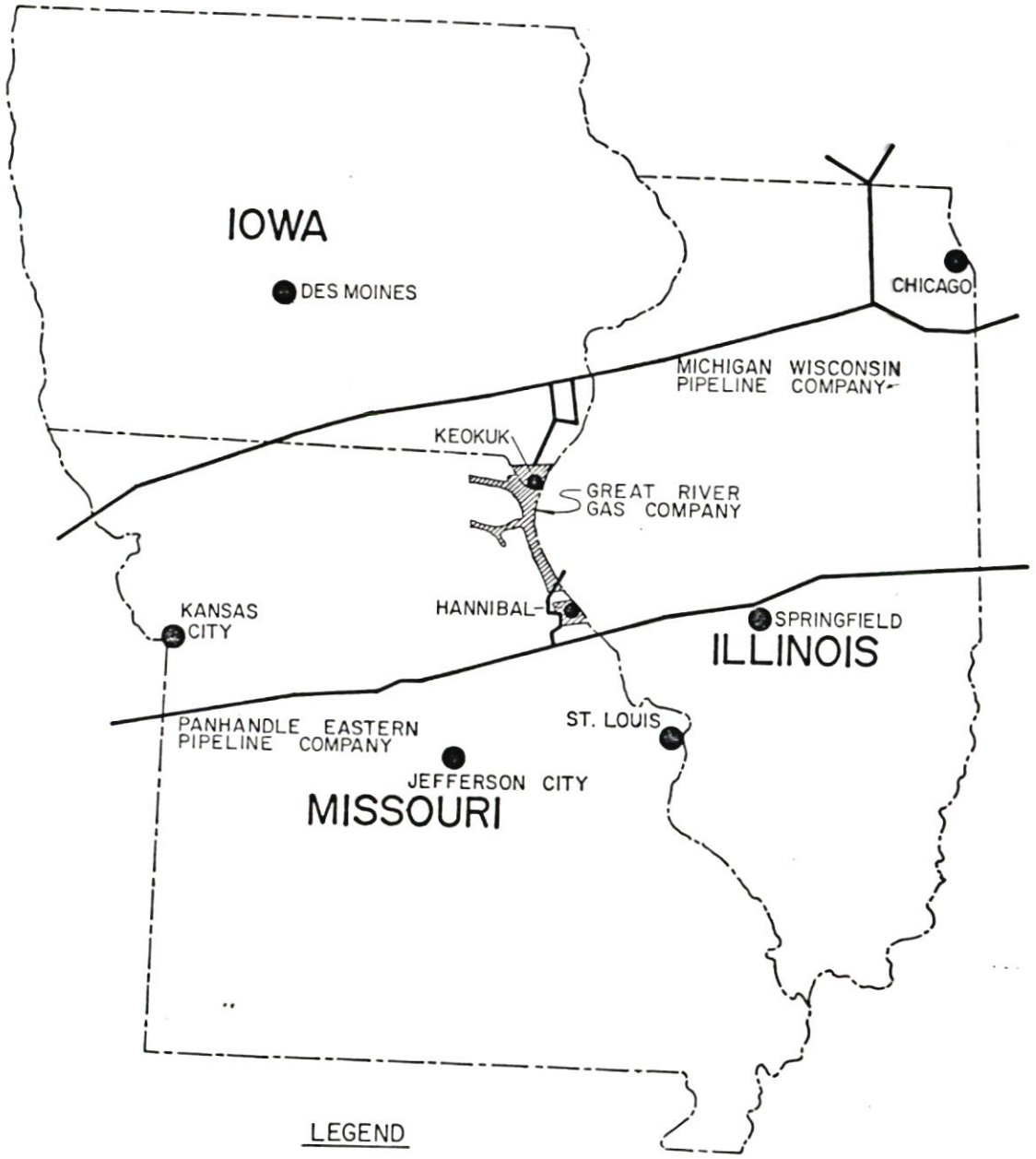
	Iowa	Missouri	Combined
Volumes of Gas Sold	3,397,247 DTH	2,174,168 DTH	5,571,415 DTH
Revenue	$17,325,664	$13,226,325	$30,551,989
Number of Customers	5,000	12,139	17,139
Residential	4,473	10,777	15,250
Large and Small Commercial	512	1,327	1,839
Industrial	15	35	50
Miles of Transmission Main	24	0	24
Miles of Distribution Main	121	328	449
Total Net Utility Plant Investment			$10,288,363

Great River Gas Company is ranked 172nd in size out of approximately 600 distribution companies, including municipally owned gas companies.

Future Prospects of Great River Gas Company:

1. Additional acquisitions in the late 1980's.
2. Interconnection of our two pipelines for flow of gas in either direction to better control the flow of gas pending.
3. CNG marketing in the late 1980's.
4. Remote industrial meter reading equipment in 1984-85.

GREAT RIVER GAS COMPANY
SERVICE AREA LOCATION



JUN 26, 1987

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

Acid Compounds - GC/MS Analysis Data (QR02)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
BA9073	AMOCO RESEARCH CENTER	AMOCOKEOK	KEOK-7D			

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First ug/l [a]	Second ug/l [a]	Blank Data ug/l [a]	Concen. Added ug/l [a]	% Recov [a]	Unspiked Sample ug/l [a]	Concen. Added ug/l [a]	% Recov [a]
1A	2-Chlorophenol	ND	4.1	-	-	-	-	-	-	-	-
2A	2,4-Dichlorophenol	ND	3.4	-	-	-	-	-	-	-	-
3A	2,4-Dimethylphenol	68.0	3.4	-	-	-	-	-	-	-	-
4A	4,6-Dinitro-o-cresol	ND	30	-	-	-	-	-	-	-	-
5A	2,4-Dinitrophenol	ND	53	-	-	-	-	-	-	-	-
6A	2-Nitrophenol	ND	4.5	-	-	-	-	-	-	-	-
7A	4-Nitrophenol	ND	3.0	-	-	-	-	-	-	-	-
8A	p-Chloro-m-cresol	ND	3.8	-	-	-	-	-	-	-	-
9A	Pentachlorophenol	ND	4.5	-	-	-	-	-	-	-	-
10A	Phenol	2.77	1.9	-	-	-	-	-	-	-	-
11A	2,4,6-Trichlorophenol	ND	3.4	-	-	-	-	-	-	-	-

[a] Standard QA procedures not applicable to extracts supplied by the client.

JUN 26, 1987

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

BASE/NEUTRAL COMPOUNDS - GC/MS ANALYSIS DATA (QR03)

Chain of Custody Data Required for ETC Data Management Summary Reports

ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
BA9073	AMOCO RESEARCH CENTER	AMOCOKEOK	KEOK-7D			

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First	Second	Blank Data	Concen. Added	% Recov	Unspiked Sample	Concen Added	% Recov
1B	Acenaphthene	13.7	2.4	-	-	-	-	-	-	-	-
2B	Acenaphthylene	103	4.4	-	-	-	-	-	-	-	-
3B	Anthracene	167	2.4	-	-	-	-	-	-	-	-
4B	Benzidine	ND	55	-	-	-	-	-	-	-	-
5B	Benzo(a)anthracene	121	9.8	-	-	-	-	-	-	-	-
6B	Benzo(a)pyrene	151	3.1	-	-	-	-	-	-	-	-
7B	Benzo(b)fluoranthene	ND	13	-	-	-	-	-	-	-	-
8B	Benzo(ghi)perylene	94.5	5.1	-	-	-	-	-	-	-	-
9B	Benzo(k)fluoranthene	ND	4.4	-	-	-	-	-	-	-	-
10B	bis(2-Chloroethoxy)methane	ND	6.6	-	-	-	-	-	-	-	-
11B	bis(2-Chloroethyl) ether	ND	7.1	-	-	-	-	-	-	-	-
12B	bis(2-Chloroisopropyl)ether	ND	7.1	-	-	-	-	-	-	-	-
13B	bis(2-Ethylhexyl)phthalate	ND	13	-	-	-	-	-	-	-	-
14B	4-Bromophenyl phenyl ether	ND	2.4	-	-	-	-	-	-	-	-
15B	Butyl benzyl phthalate	ND	13	-	-	-	-	-	-	-	-
16B	2-Chloronaphthalene	ND	2.4	-	-	-	-	-	-	-	-
17B	4-Chlorophenyl phenyl ether	ND	5.3	-	-	-	-	-	-	-	-
18B	Chrysene	114	3.1	-	-	-	-	-	-	-	-
19B	Dibenzo(a,h)anthracene	ND	13	-	-	-	-	-	-	-	-
20B	1,2-Dichlorobenzene	ND	2.4	-	-	-	-	-	-	-	-
21B	1,3-Dichlorobenzene	ND	2.4	-	-	-	-	-	-	-	-
22B	1,4-Dichlorobenzene	ND	5.5	-	-	-	-	-	-	-	-
23B	3,3'-Dichlorobenzidine	ND	21	-	-	-	-	-	-	-	-
24B	Diethyl phthalate	ND	13	-	-	-	-	-	-	-	-
25B	Dimethyl phthalate	ND	13	-	-	-	-	-	-	-	-
26B	Di-n-butyl phthalate	ND	13	-	-	-	-	-	-	-	-
27B	2,4-Dinitrotoluene	ND	7.1	-	-	-	-	-	-	-	-
28B	2,6-Dinitrotoluene	ND	2.4	-	-	-	-	-	-	-	-
29B	Di-n-octyl phthalate	ND	13	-	-	-	-	-	-	-	-
30B	1,2-Diphenylhydrazine	ND	13	-	-	-	-	-	-	-	-
31B	Fluoranthene	287	2.8	-	-	-	-	-	-	-	-
32B	Fluorene	118	2.4	-	-	-	-	-	-	-	-

JUN 26, 1

TABLE 1: QUANTITATIVE RESULTS and QUALITY ASSURANCE DATA

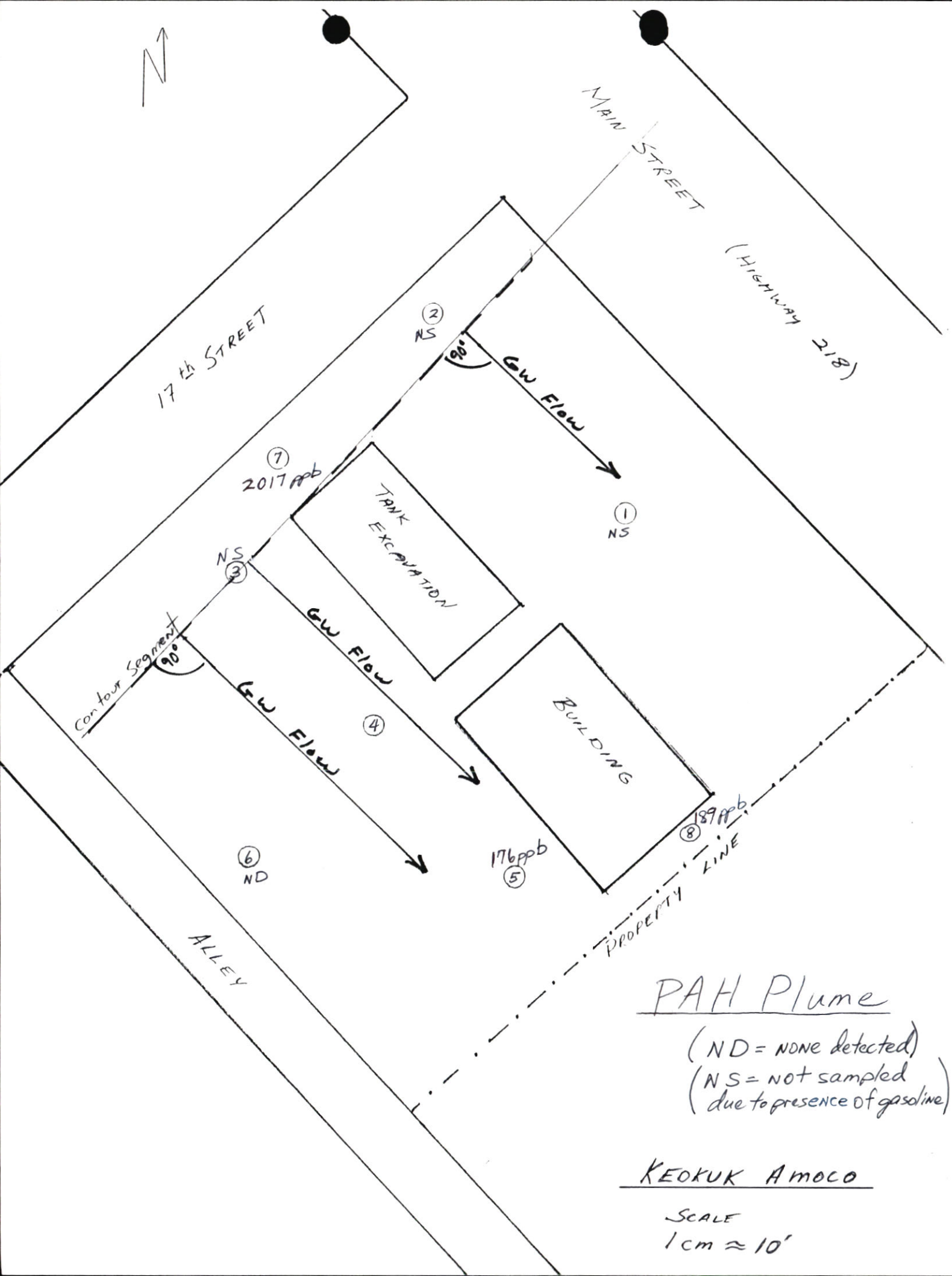
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ETC Sample No.	Company	Facility	Sample Point	Date	Time	Elapsed Hours
BA9073	AMOCO RESEARCH CENTER	AMOCOKEOK	KEOK-7D			

NPDES Number	Compound	Results		QC Replicate		QC Blank and Spiked Blank			QC Matrix Spike		
		Sample Concen. ug/l	MDL ug/l	First A	Second A	Blank Data A	Concen. Added A	% Recov A	Unspiked Sample A	Concen. Added A	% Recov A
33B	Hexachlorobenzene	ND	2.4	-	-	-	-	-	-	-	-
34B	Hexachlorobutadiene	ND	1.1	-	-	-	-	-	-	-	-
35B	Hexachlorocyclopentadiene	ND	13	-	-	-	-	-	-	-	-
36B	Hexachloroethane	ND	2.0	-	-	-	-	-	-	-	-
37B	Indeno(1,2,3-c,d)pyrene	69.0	5.9	-	-	-	-	-	-	-	-
38B	Isophorone	ND	2.8	-	-	-	-	-	-	-	-
39B	Naphthalene	ND	2.0	-	-	-	-	-	-	-	-
40B	Nitrobenzene	ND	2.4	-	-	-	-	-	-	-	-
41B	N-Nitrosodimethylamine	ND	13	-	-	-	-	-	-	-	-
42B	N-Nitrosodi-n-propylamine	ND	13	-	-	-	-	-	-	-	-
43B	N-Nitrosodiphenylamine	ND	2.4	-	-	-	-	-	-	-	-
44B	Phenanthrene	508	6.8	-	-	-	-	-	-	-	-
45B	Pyrene	271	2.4	-	-	-	-	-	-	-	-
46B	1,2,4-Trichlorobenzene	ND	2.4	-	-	-	-	-	-	-	-

A Standard QA procedures not applicable to extracts supplied by the client.



PAH Plume

(ND = none detected)
(NS = not sampled due to presence of gasoline)

KEOKUK AMOCO

SCALE
1 cm ≈ 10'

IOWA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
FIELD OFFICE #6
117 N. 2nd AVENUE
WASHINGTON, IOWA 52353
319/653-2135

DATE: April 15, 1987

TO: James Patton, ES III/Program Supervisor

FROM: Joel H. Garretson

RE: 1624 Main Street Amoco - Keokuk, IA

HSI #: 03307-RK-1527

It is Amoco's policy to install monitoring well after abandonement of each facility. J & R Drilling installed 4 wells initially and product depths ranging from .7' to 4.5' were discovered at this Amoco station at the corner of 17th Street and Main Street in Keokuk. Additional wells were installed on April 8, 1987 to aid in defining the plume configuration.

According to local sources, this site was used for a coal gasification project for a number of years. Well #7 revealed a black sludge with an odor of creosote. Samples were taken of the sludge and will be forwarded to Ted Fale of Ecology and Environment in Kansas City. EPA will be responsible for supervising the clean up of the coal tar sludge, pending the analysis of the sludge for PAH.

Amoco will be required by DNR to initiate a groundwater clean up plan for the recovery of the gasoline.

Upon development of the wells, samples will be taken by Amoco the week of the 13-17 of April, 1987. The results will be forwarded to Field Office 6.

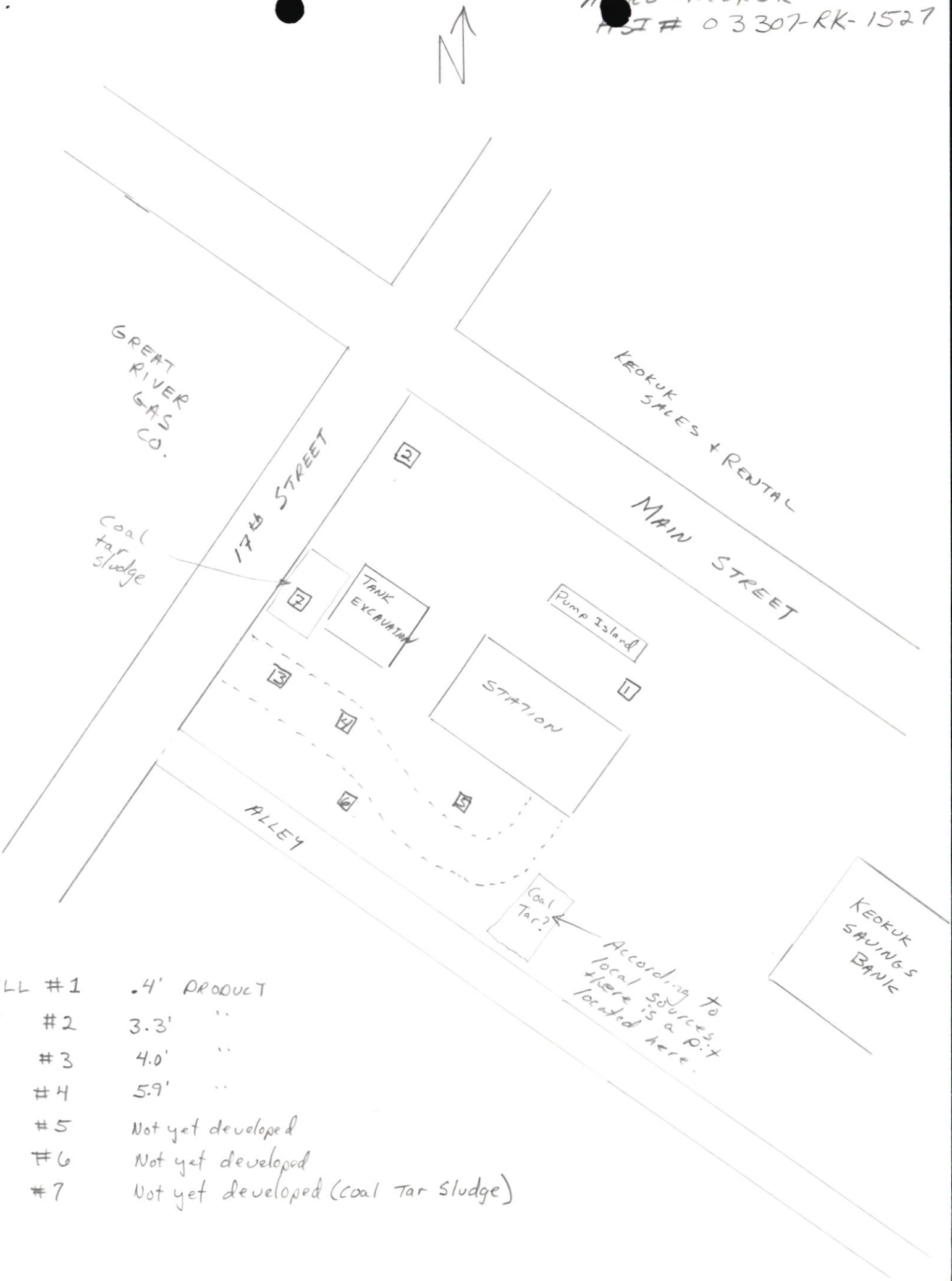
Persons Contacted: Bob Hockman - Amoco, Tulsa, OK
Ray Coons - J & R Drilling, Des Moines, IA
Ted Fale - Ecology and Environment, Kansas City, MO

Enc. Site Sketch

JHG:jep:\WRI\UST\AMOCO.UST

xc: Bob Hockman - Amoco Corporation, Amoco Corps Facility, P.O. Box 3385
Tulsa, OK 74102
Ted Fale - Ecology and Evnironment, Kansas City, MO
Ron Kozel - DNR, Des Moines
Paul Tinder - State Fire Marshal's Office, Hwy 218 South, Mt. Pleasant, IA
Pete Hamlin - DNR, Des Moines
Keokuk Public Works Director - 415 Blondeau, Keokuk, IA

Amoco-Keokuk
ASI # 03307-RK-1527



WELL #1	.4'	PRODUCT
" #2	3.3'	"
" #3	4.0'	"
#4	5.9'	"
#5	Not yet developed	
#6	Not yet developed	
#7	Not yet developed (coal Tar Sludge)	

IOWA DEPARTMENT OF NATURAL RESOURCES

RECORD OF TELEPHONE CONVERSATION

DATE 9/8/87	TIME	[ ] INITIATED [ ] RECEIVED	FILE NO.
DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME	PHONE NO.	OTHER PARTY NAME Bob Hockman	PHONE NO.
BUREAU/DIVISION		FIRM/ADDRESS	
SUBJECT Amoco - Keokuk			

CONVERSATION

S.W.A.P.S.

- Vacuum system in 2" wells.
- Oil water separator tank
- 1000 gal. storage tank
- Infiltration gallery

SWAPS system is an automated system

Proposal will come from Bill Smith hopefully this week.

DNR form 68 (Jan 87)

542-3200

IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

RECORD OF TELEPHONE CONVERSATION

DATE	TIME	☐ INITIATED ☐ RECEIVED	FILE NO.
9 4 87			

DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME	PHONE NO.	OTHER PARTY NAME	PHONE NO.
[illegible]		Gary Kepko	
BRANCH/DIVISION		FIRM/ADDRESS	
		EPA - KC	

SUBJECT: AMOCO - Keokuk

CONVERSATION

Ground penetrating radar survey to be done by:

Ted Faile, E+E

913/432-9961

Scheduled for 9/9

James - call

Bob Hockman

Amoco - 918-660-3035

9/8/87

WAWM form 68 (Aug 10, 83) (Replaces DEQ Form OA 25, which may not be used)

5300200

IOWA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
FIELD OFFICE #6
117 N. 2nd AVENUE
WASHINGTON, IOWA 52353
319/653-2135

UNDERGROUND STORAGE TANK INVESTIGATION

DATE: May 21, 987

TO: James Patton, ESIII

FROM: Joel Garretson

RE: Amoco, 1624 Main, Keokuk, IA

HSI # : 03307-RK-1527

Bob Hockman of Amoco reported a release of gasoline from an abandoned Amoco station in Keokuk. The leak was discovered during tank closure proceedings. Four of the original monitoring wells contained product depths ranging from 0.7' to 4.5'. More wells were installed to further define the plume. MW #7 contained a black substance with an odor similar to creosote. The lot was formerly occupied by a coal gasification plant operated up until the 1930's. Coal for waste was commonly disposed by dumping in pits on site. Very little information is availabe as to the location of the pits and whether the coal tar had been removed from this site.

The U.S. EPA was contacted, prompting further investigation by Ted Faile and Karen Koth of Ecology and Environment. Samples were drawn from several mw's. Soil samples taken during the well drilling were submitted to Faile for a PAH analysis.

Recovery techniques used by Amoco will have to take into consideration the interference caused by the constituents of the coal tar. A limit of 25 ppb totals PAH has been established by our department for any discharge from Amoco's recovery and cleanup processes.

Amoco is presently waiting on the total PAH analysis of mw #7 before designing and submitting plans for cleanup to our department.

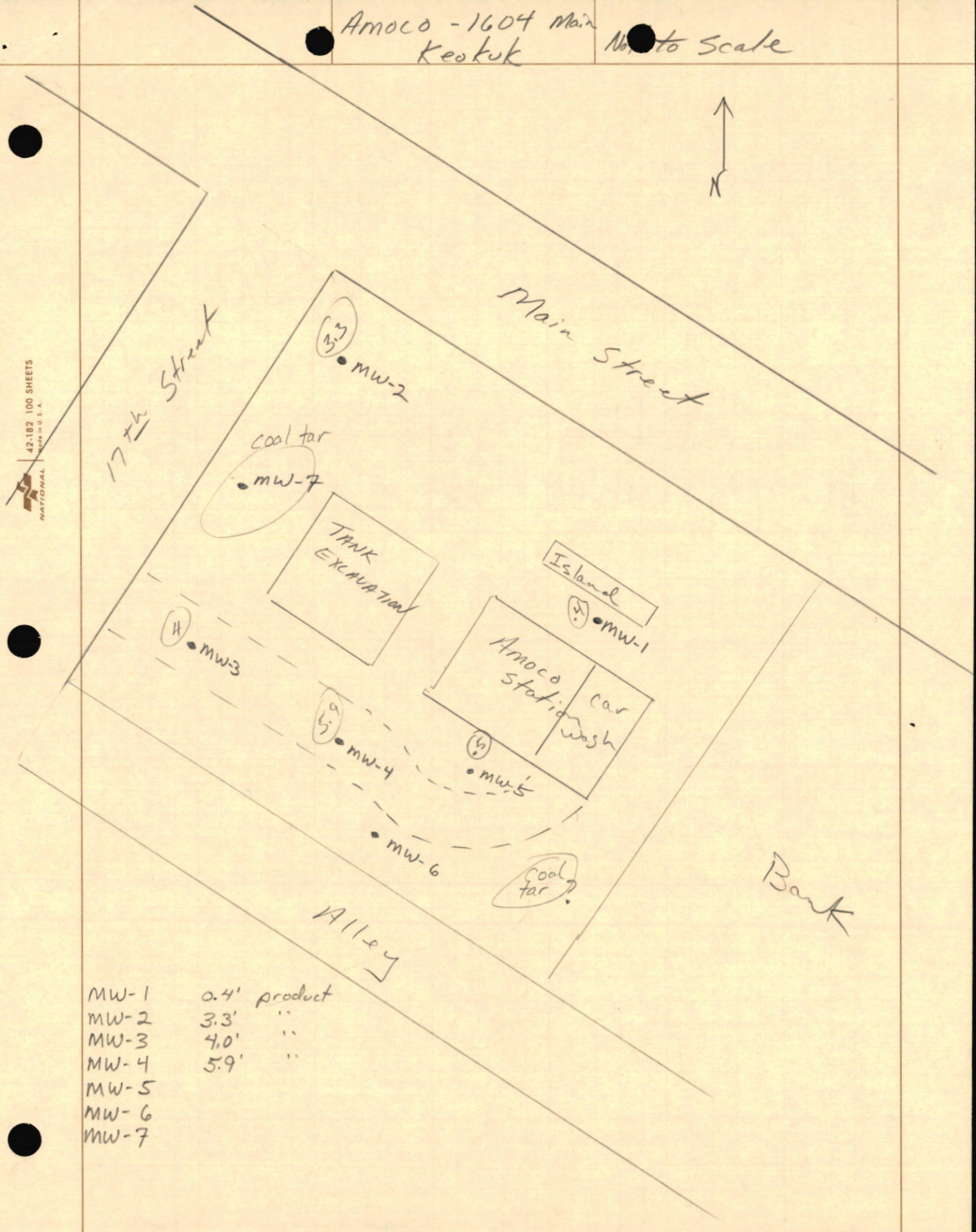
JHG:jep:\WRI\UST\AMOCO2.UST

Enc. site map

xc: Bob Hockman - Amoco Corps Facility, P.O. Box 3385, Tulsa, OK 74102
Paul Tinder - State Fire Marshal's Office, Hwy 218 So., Mt. Pleasant, IA
Bob Drustrup - DNR, Des Moines
Ron Kozel - DNR, Des Moines

Amoco - 1604 Main
Keokuk

Not to Scale



MW-1	0.4'	product
MW-2	3.3'	"
MW-3	4.0'	"
MW-4	5.9'	"
MW-5		
MW-6		
MW-7		

42-182 100 SHEETS
NATIONAL
Made in U.S.A.

IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

RECORD OF TELEPHONE CONVERSATION

DATE 8/25/87	TIME	☐ INITIATED ☐ RECEIVED	FILE NO.
DEPARTMENT		Gary Kepko OTHER PARTY	
EMPLOYEE NAME	PHONE NO.	OTHER PARTY NAME Mark Roberts	PHONE NO.
BRANCH/DIVISION		FIRM/ADDRESS EPA Kansas City	
SUBJECT			

CONVERSATION

Results of sampling?

Contact w/ Great River Gas?

Plans for cleanup?

Charlie Hensley's shop

913/236-3888

Gary Kepko

E+E should submit report in ~2 weeks.

Have scheduled to do some ground penetrating radar week of 9/8

Probably travel 9/8,

Indicates
Soil types
Level of GW

Down to 60 ft.

I think

WAWM form 68 (Aug 10, 83) (Replaces DEQ Form OA 25, which may not be used) 5300200

IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

RECORD OF TELEPHONE CONVERSATION

DATE 8/12/87	TIME	☐ INITIATED ☐ RECEIVED	FILE NO.

DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME J Patton	PHONE NO.	OTHER PARTY NAME Bob Hockman	PHONE NO.
BRANCH/DIVISION		FIRM/ADDRESS	

SUBJECT Soil vapor / extractable HC correlation

CONVERSATION

U of Massachusetts
Gary Robins
Attempting to model correlation between soil sample vapors and extractable HC's

Option to interceptor trench
- Vacuum walls
limit of 22-23 ft. due to hydraulic lift.

API soils expert
Bruce Bauman

202/682-8224

Companys have vapor/extractable correlation data, but don't make it available because correlation not successful.

WAWM form 68 (Aug 10, 83) (Replaces DEQ Form OA 25, which may not be used)

5300200

IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

RECORD OF TELEPHONE CONVERSATION

DATE 8/12/87	TIME	☐ INITIATED ☐ RECEIVED	FILE NO.

DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME Patton	PHONE NO.	OTHER PARTY NAME Bob Hockman	PHONE NO.
BRANCH/DIVISION		FIRM/ADDRESS	

SUBJECT

CONVERSATION

Why was station closed?
Inventory records show loss?
Evidence of leakage/excess water?

Static levels of wells?
(Go over cleanup levels.)

Options for beginning removal of free product
① Interceptor trench w/ skimmer pump
② Infiltration (Flooding) gallery or other system not classified as reinjection well by EPA (DNR can review + decide)
③ Reinjection well - DNR has no authority to allow - must be approved by EPA.

Economics? I'll have to check

Option to trench is vacuum well - hydraulics limits depth to 22-23 ft.
UIC definition: deeper than it is wide

I will submit proposal for infiltration gallery.
In the meantime will look into installing automatic bailers in wells.

Keokuk Amoco

USDA Soil Survey



IOWA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
FIELD OFFICE #6
117 N. 2nd AVENUE
WASHINGTON, IOWA 52353
319/653-2135

CERTIFIED MAIL
May 26, 1987

RETURN TO
SUSPENSE FILE
6/8/87 + 7/15/87
OK

Mr. Robert Hockman
Amoco Corporation
Amoco Corps Facility
P.O. Box 3385
Tulsa, OK 74102

Re: Groundwater Contamination: HSI#03307-RK-1527

Dear Mr. Hockman:

This letter is concerning the release of gasoline from your abandoned Amoco station at 1624 Main, Keokuk, Iowa.

On March 30, 1987, it was reported to this department that a layer of gasoline, ranging from 0.7 ft. to 4.5 ft in thickness, was discovered at this site during your routine closure procedure, which includes the installation of groundwater monitoring wells. Attached is a sketch of the site and the location of the wells installed.

Therefore, under the authority granted in 455B, Division IV, Part 4 of the Iowa Code, the Department is requiring Amoco to take the following measures:

1) Determine the full extent of the soil and groundwater contamination as a result of this leak.

2) Submit for review and approval by this department, a complete hydrogeological assessment report by July 15, 1987.

3) Submit for review and approval by this department, a recovery and clean-up plan, by July 15, for restoration of the soil and groundwater at the site.

4) Respond in writing to this office by June 8, 1987, indicating the action you plan to take in response to items 1 through 3.

Enclosed is a copy of the Department's criteria for clean-up of gasoline contaminated groundwater. All contaminated soil must be excavated and thinly spread in an area not subject to surface runoff and at least 1000 ft. from the nearest inhabited building, and allowed to aerate until all volitiles have vaporized. This may require periodic discing. The soil may be aerated on property under your control, or at a permitted sanitary landfill, with the operator's permission.

After aeration is complete, the soil may be land applied to unpaved roads, work yards, parking lots, or used for cover at a permitted sanitary landfill, with the operator's permission.

Also discovered at this site was an apparent coal tar pit, resulting from the operation of a coal gasification plant prior to the 1930's. As you are aware, the U.S.EPA is taking the lead on this portion of the site assessment. It is noted that the EPA's decision on the fate of this material may affect Amoco's plans for gasoline clean-up at the site.

The Department has established the additional limitation of 25 parts per billion total polyaeromatic hydrocarbons (PAH's) for any discharge from Amoco's recovery and clean-up process.

If you have any questions concerning this matter, feel free to contact me at this office.

Sincerely,

FIELD EVALUATION AND EMERGENCY RESPONSE BUREAU

James A. Patton

James A. Patton
Environmental Specialist III

JAP:jep:\wri\amococor.ltr

xc: Paul Tinder, State Fire Marshall's Office, Hwy 218 So., Mt. Pleasant, IA
Ron Kozel, Emergency Response, DNR - Des Moines
Pete Hamlim, Chief, Air Quality & Solid Waste Bureau, DNR - Des Moines
Pete Culver, Waste Management Division, EPA Region VII, 726 Minnesota Ave
Kansas City, KS 66101
File
Suspense File - 6/8/87 & 7/15/87


ACTION TAKEN
DATE
INITIALS
COMMENTS

IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

RECORD OF TELEPHONE CONVERSATION

DATE 8/14/87	TIME	☐ INITIATED ☐ RECEIVED	FILE NO.
DEPARTMENT		**OTHER PARTY**	
EMPLOYEE NAME	PHONE NO.	OTHER PARTY NAME Pete Culver	PHONE NO.
BRANCH/DIVISION		FIRM/ADDRESS	
SUBJECT			

CONVERSATION

Pete Culver

913/236-2856

Coal tar - Superfund/RCRA

Gasoline - ~~RCRA~~ DNR Haz Condition regs.

Coal tar part of problem

still in ER shop.

WAWM form 68 (Aug 10, 83) (Replaces DEQ Form OA 25, which may not be used)

5300200

Bob Dustman

insoluble

Benzo - Pyrene - Most concerned with
also comes from charcoaling

2.8 ppt



acute toxicity

total PAH 25 ppb

Use - carbon filtration
absorbtion

air stripping - then carbon filtration

10 sanitary
5 storm

300 ppt roots

PAH commonly found
occurs in soils, forest fires

UNDERGROUND STORAGE TANK INVESTIGATIO

DATE:

TO: James Patton, ES III/Program Supervisor

FROM: Joel Garretson

RE:

HSI #:



IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

RECORD OF TELEPHONE CONVERSATION

DATE	TIME	☐ INITIATED ☑ RECEIVED	FILE NO.
3/30/87	3:45		

DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME: EM	PHONE NO.	OTHER PARTY NAME: Ron Kozel	PHONE NO.
BRANCH/DIVISION: DNR-FPD		FIRM/ADDRESS: DNR-	

SUBJECT: LUST in Keokuk

CONVERSATION

918-660-3035
Tulsa

Bob Hockwender & Henrod called were making some changes at station in Keokuk. Set down monitoring wells & discovered free product ranging from .7-4.5 ft deep.

Will be starting preliminary work to clean up next week. If anyone's in the area may want to stop by. I'll be sending out spill sheet with more information.

OK

IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

RECORD OF TELEPHONE CONVERSATION

DATE	TIME	☐ INITIATED ☐ RECEIVED	FILE NO.
6/4/87			

DEPARTMENT		OTHER PARTY	
EMPLOYEE NAME	PHONE NO.	OTHER PARTY NAME	PHONE NO.
J Patton		Bob Hockman 918	660-3035
BRANCH/DIVISION		FIRM/ADDRESS	
		Amoco	

SUBJECT

Tulsa OK

CONVERSATION

Discharge limitation on PAH's may be a problem. PAH's cannot be air stripped.

Lab should have results in ~ week

- Full priority, all tent scan on groundwater samples (water from beneath layer of fuel). Will include PAH's

Did not sample all wells

MW-1
MW-5
MW-6
MW-7

Go ahead & send response due 6/8 outlining general cleanup plan.

If lab results delay plan development significantly can extend deadline.

- Ecology & Environment – Kansas City

Ted Faile 913-432-9961



PAH - ~~phenols~~ cresols

PAH -

- 319-653-2135 -

Faile

IOWA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
FIELD OFFICE #6
117 N. 2nd AVENUE
WASHINGTON, IOWA 52353
319/653-2135

CERTIFIED MAIL
May 26, 1987

Mr. Robert Hockman
Amoco Corporation
Amoco Corps Facility
P.O. Box 3385
Tulsa, OK 74102

Re: Groundwater Contamination: HSI#03307-RK-1527

Dear Mr. Hockman:

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Therefore, under the authority granted in 455B, Division IV, Part 4 of the Iowa Code, the Department is requiring Amoco to take the following measures:

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Sincerely,

FIELD EVALUATION AND EMERGENCY RESPONSE BUREAU

James A. Patton

James A. Patton
Environmental Specialist III

JAP:jep:\wri\amococor.ltr

xc: Paul Tinder, State Fire Marshall's Office, Hwy 218 So., Mt. Pleasant, IA
Ron Kozel, Emergency Response, DNR - Des Moines
Pete Hamlim, Chief, Air Quality & Solid Waste Bureau, DNR - Des Moines
Pete Culver, Waste Management Division, EPA Region VII, 726 Minnesota Ave
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File
Suspense File - 6/8/87 & 7/15/87