



incident #205
New Hanover Co
MAY 13 1986
GROUND WATER SECTION
RALEIGH, N. C.

State of North Carolina
Department of Natural Resources and Community Development
Wilmington Regional Office

James G. Martin, Governor

S. Thomas Rhodes, Secretary

May 9, 1986

Mr. Jim Strickland
Koch Fuels, Inc.
Post Office Box 3958
Wilmington, NC 28401

Subject: Well Construction Permit No. 64-0315-WM-0212
Koch Fuels, Inc.
Wilmington
New Hanover

Dear Mr. Strickland:

In accordance with your application received April 29, 1986 we are forwarding herewith Well Construction Permit No. 64-0315-WM-0212 dated May 7, 1986, issued to Koch Fuels, Inc. for the construction of 13 monitor wells.

If any parts, requirements, or limitations contained in this Permit are unacceptable to you, you have the right to an adjudicatory hearing before a hearing officer upon written demand to the Director within 30 days following receipt of this Permit, identifying the specific issues to be contended. Unless such demand is made, this Permit shall be final and binding.

This Permit will be effective from the date of its issuance and shall be subject to the conditions and limitations as specified therein.

Sincerely,

DICK SHIVER

F012 Charles Wakild
Regional Supervisor

CW/RS/kd

Enclosure

cc:

Richard Catlin & Associates, Inc.
Perry Nelson
Bob Jamieson
Central Files
Wiro

NORTH CAROLINA
ENVIRONMENTAL MANAGEMENT COMMISSION
DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT
RALEIGH, NORTH CAROLINA

PERMIT FOR THE CONSTRUCTION OF A WELL OR WELL SYSTEM

In accordance with the provisions of Article 7, Chapter 87, North Carolina General Statutes, and other applicable Laws, Rules and Regulations.

PERMISSION IS HEREBY GRANTED TO

Koch Fuels, Inc.

FOR THE CONSTRUCTION OF 13 monitor wells located on River Road in New Hanover County, in accordance with the application dated April 29, 1986 and in conformity with specifications and supporting data, all of which are filed with the Department of Natural Resources and Community Development and are considered a part of this Permit.

This Permit is for well construction only, and does not waive any provisions or requirements of the Water Use Act of 1967, or any other applicable laws or regulations.

Construction of a well under this Permit shall be in compliance with the North Carolina Well Construction Regulations and Standards, and any other laws and regulations pertaining to well construction.

This Permit will be effective from the date of its issuance until November 8, 1986 and shall be subject to other specified conditions, limitations, or exceptions as follows:

1. The well(s) shall be located and constructed as shown on the attachments submitted as part of the permit application.

Permit issued this the 7th day of May, 1986.

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

DICK SHIVER
Charles Wakild, REGIONAL SUPERVISOR

FOU

DIVISION OF ENVIRONMENTAL MANAGEMENT

By Authority of the Environmental Management Commission

PERMIT NO. 64-0315-WM-0212

NORTH CAROLINA
ENVIRONMENTAL MANAGEMENT COMMISSION
DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT

APPLICATION FOR PERMIT TO CONSTRUCT MONITOR/RECOVERY WELL(S)

To: NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION April 29, 19 86

Gentlemen:

In accordance with the provisions of Article 7, Chapter 87, General Statutes of North Carolina, and regulations pursuant thereto, application is hereby made by Koch Fuels, Inc. for a permit to construct a
(name of well owner)

monitor/recovery well(s) as described below and in the accompanying data submitted as a part of this application.

(a) Name of property owner: Koch Fuels, Inc.

(b) Location of property: River Road, Wilmington, New Hanover
(Road, Industry, Community, etc.) Town County

(c) Type of facility or site being monitored: Tank Farm

(d) Types of contamination being monitored or recovered: Hydrocarbon/Fuel

(e) Existing monitor well numbers: See attached map (Proposed-12 to 13 monitoring wells)

(f) Existing monitor wells showing contamination (well no.): Free product in #5, #9, #11 as per report on file.

(g) Estimated water-table depth: 12 feet

(h) Estimated date of construction: Begin 5-1-86 Complete 5-31-86

(i) Drilling contractor: Carolina Drilling

(j) Location of well: Provide a detailed map showing the location of the proposed well(s), and of any wells in an existing monitoring system (if applicable), in relation to the pollution source(s) being monitored and to at least two (2) nearby permanent reference points such as roads, intersections, and streams. Identify roads with State Highway road identification numbers. (Show all existing water supply wells within a radius of 1,000 feet of the proposed well.) (See attached)

(k) Well construction diagram: Provide a diagram showing proposed construction specifications, including diameter, estimated depth, screens, sand pack, grout, type of materials, etc.

The Applicant hereby agrees the proposed well will be constructed in accordance with approved specifications and conditions of the Well Construction Permit. As regulated under the Well Construction Standards (Title 15 - North Carolina Administrative Code, Subchapter 2C).

Jim Strickland
Koch Fuels, Inc.
P.O. Box 3958, Wilmington, N.C. 28401
(Mailing Address of Well Owner-Required)
Richard Catlin & Associates, Inc.
PO Box 557, Wrightsville Bch., N.C. 28480
(Mailing Address of Agent-if other than above)

[Signature]
Signature of Well Owner or Agent

President,
Richard Catlin & Associates, Inc.
Title (if applicable)

FOR OFFICE USE ONLY

PERMIT NO. _____ Issued _____ 19 _____

RECEIVED

APR 29 1986

64-0315-WM-0212

GROUNDWATER SECTION
WILMINGTON REGIONAL OFFICE

1" = 3000'

C-DATE FEAR RIVER

BRUNSWICK CO.
NEW HANOVER CO.

WILMINGTON

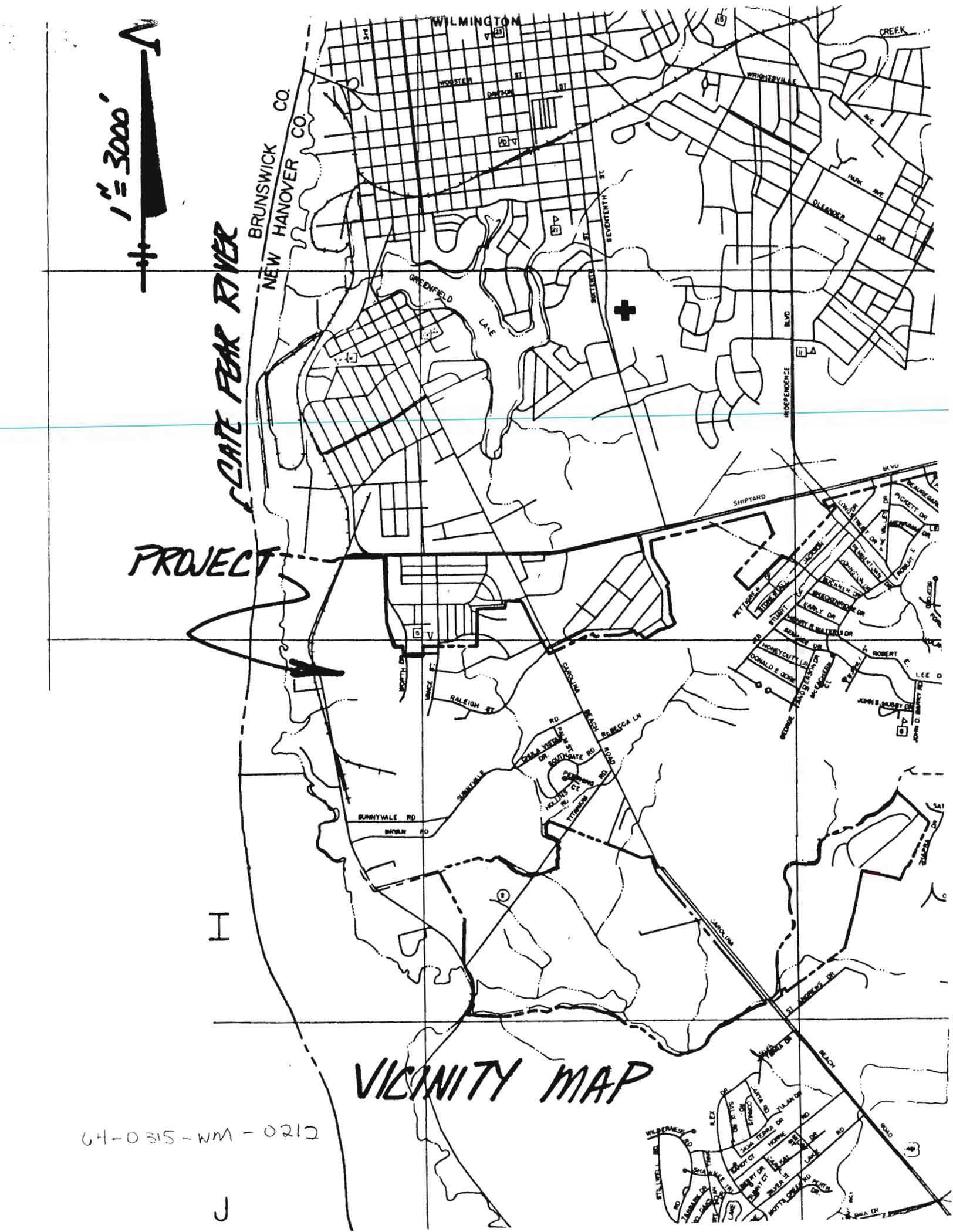
PROJECT

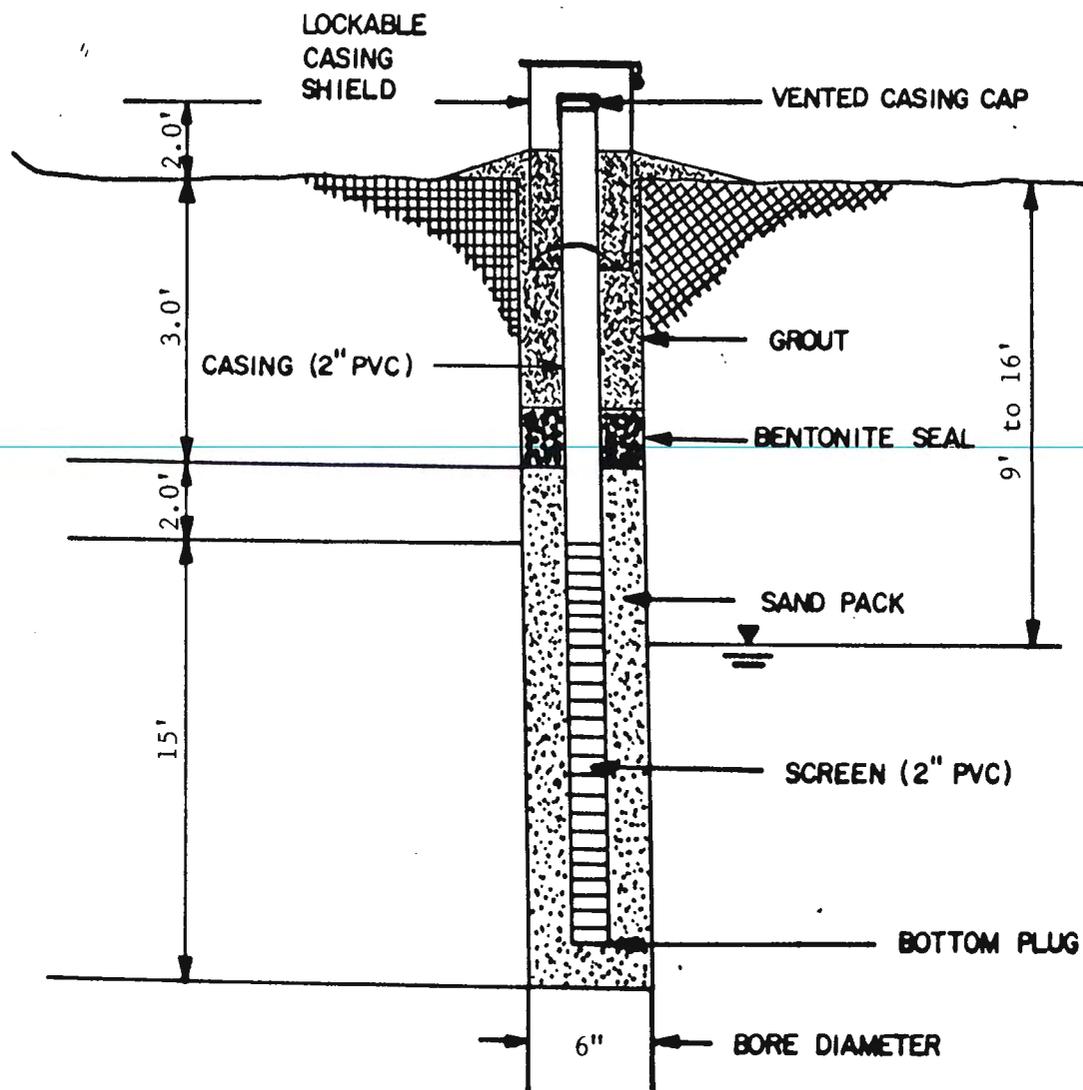
VICINITY MAP

64-035-WM-0212

H

J





SCHMATIC WELL CONSTRUCTION DETAIL

KOCH FUELS, INC.

N.T.S.

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

POLLUTION INCIDENT REPORTING FORM

RECEIVED
JUL 28 1986

GROUND WATER SECTION
Division of Environmental Management
RALEIGH, N. C.
GROUNDWATER SECTION

1. Incident # ~~2213~~ [#] 205
2. Tabulate only _____

TYPE OF ACTION

A	1. Emergency response	③ Complaint investigation	5. Re-evaluation : # _____
	2. Compliance investigation	4. Routine inventory	6. Other : _____
POTENTIAL HAZARDS : ① Toxic chemicals 2. Radioactivity 3. Air emissions 4. Explosives 5. Fire			

INCIDENT

B	Incident Name Koch Fuels, Inc.		
	Address River Road		City/Town Wilmington
	County New Hanover	Region WiRO	DEM Regional Contact Rick Shiver

PERSON REPORTING INCIDENT

C	Name Robert E. Hoyle, Vice President	Date 03-29-86	Time —
	Company/Agency Koch Fuels, Inc.		Telephone (316) 832-5632
	Briefly Describe Incident On 04-03-86, Rick Shiver, Regional Hydrogeologist with DEM in Wilmington, received a written correspondence from Mr Hoyle, of Koch Fuels, Inc, notifying the State that gasoline had been found on the water table under the subject facility.		
	REPORTED BY: ① Responsible party 2. Government agency 3. Private party		

RECOMMENDED ACTION

D	1. Investigation complete ③ Initiate/complete cleanup 5. Technical support ⑦ Enforcement action ② Continue investigation ④ Long-term remedial action 6. Drill crew ⑧ Monitoring plan		
	Comments Koch Fuels, Inc intends to identify the source of the leakage, identify the extent of the plumes and contain and remove the contaminants.		
	LAB SAMPLES: 1. Yes ② No	Signature Rosemarie U. Sidorowicz	Date 07-21-86

POLLUTION INCIDENT REPORTING FORM

Incident # _____
 County: New Hanover

POLLUTANTS INVOLVED

	MATERIALS INVOLVED	AMOUNT STORED	AMOUNT LOST	AMOUNT RECOVERED
E	<u>Paraxylene</u>	<u>10,248,000 gal</u>	<u>unknown</u>	<u>as of 7-22-86 approx. 100 gal</u>

IMPACT ON SURFACE WATERS

F	WATERS EFFECTED 1. Yes 2. No No <input checked="" type="radio"/> Potentially	Distance to Stream (ft) <u>N 1450 ft</u>	Amount in Water (gal) <u>0</u>
	FISH KILL: 1. Yes <input checked="" type="radio"/> No	Name of Stream <u>CAPE FEAR RIVER</u>	Stream Class <u>5C</u>

RISK ASSESSMENT

Use these Codes: High = 3 Moderate = 2 Low = 1 None = 0				
G	Resource Threat	GROUNDWATER		
	Vertical Migration of Contaminant	<u>3</u>	Amount Infiltrating Land	
	Horizontal Migration of Contaminant	<u>3</u>		
	Areal Extent of Contamination	<u>2</u>	SURFACE WATER	AIR
	Probability of Violations	<u>3</u>	<u>2</u>	<u>1</u>
	Remedial Action Priority	<u>2</u>	<u>0</u>	<u>0</u>
	Potential Hazard of Substance	<u>3</u>	<u>3</u>	<u>1</u>
	Threat to Drinking Water	<u>1</u>	<u>1</u>	<u>0</u>
	Seriousness of Threat	<u>2</u>	<u>1</u>	<u>1</u>
	Overall Regional Concern	<u>2</u>	<u>1</u>	<u>0</u>
Please Circle the Appropriate Response(s):				
1. This incident poses additional threat to human health by: <input type="radio"/> inhalation <input checked="" type="radio"/> absorption <input type="radio"/> ingestion				
2. This incident poses additional threat to the environment by potential adverse effects on:				
<input type="radio"/> sensitive areas <input type="radio"/> wildlife <input checked="" type="radio"/> fish				

POTENTIAL SOURCE OF POLLUTION

H	SOURCE OF POTENTIAL POLLUTION	TYPE OF POLLUTANT	LOCATION	SETTING	
	1. Intentional dump	9. Sewer line	1. Pesticide/herbicide	<input checked="" type="radio"/> Facility	1. Residential
	2. Pit, pond, lagoon	10. Stockpile	2. Radioactive waste	2. Railroad	<input checked="" type="radio"/> Industrial
	3. Leak--underground	11. Landfill	3. Gasoline/diesel	3. Waterway	3. Urban
	4. Spray irrigation	12. Spill --surface	<input checked="" type="radio"/> Other petroleum prod.	4. Pipeline	4. Rural
	5. Land application	13. Well	5. Sewage/septage	5. Dumpsite	
	6. Animal feedlot	14. Dredge Spoil	6. Fertilizers	6. Highway	
	<input checked="" type="radio"/> Source unknown	15. Nonpoint source	7. Sludge	7. Residence	
	8. Septic tank		8. Solid waste leachate	8. Other	
	MULTIPLE SOURCES AT SITE: <input checked="" type="radio"/> Yes <input type="radio"/> No		9. Metals 10. Other inorganics 11. Other organics	POLLUTION CONFIRMED <input checked="" type="radio"/> Yes <input type="radio"/> No	

POLLUTION INCIDENT REPORTING FORM

Incident # _____
County: <u>New Hanover</u>

RESPONSIBLE PARTY

Responsible Party/Names <u>Jim Strickland, Terminal Manager</u>			Telephone <u>919/799-0180-0182</u>	
Company <u>Koch Fuels, Inc</u>		Street Address <u>POB 3958</u>		
City <u>Wilmington</u>		County <u>New Hanover</u>	State <u>NC</u>	Zip Code <u>28406</u>
REASON FOR INCIDENT	SOURCE IN USE 0. N/A 1. Yes 2. No	PERMIT TYPE	OWNERSHIP	OPERATION TYPE
1. Transportation Accident	SOURCE PERMITTED 1. Yes 2. No	0. N/A	0. N/A	0. N/A
2. Mechanical failure		1. Nondischarge	1. Municipal	1. Public Service
3. Facility design	PERMIT NUMBER	2. Oil terminal	2. Military	2. Agricultural
4. Inventory only		3. Landfill	3. Unknown	3. Other Source
5. Human error	SOURCE ON ERRIS LIST 1. Yes 2. No	4. Mining	<input checked="" type="radio"/> 4. Private	4. Educational
6. Vandalism		5. NPDES	5. Federal	<input checked="" type="radio"/> 5. Industrial
<input checked="" type="radio"/> 7. Unknown	ERRIS NUMBER	6. RCRA	6. County	6. Commercial
		7. Air	7. State	7. Mining

ACTIONS TAKEN

Containment, Cleanup, etc.
<u>As of 07-21-86, Richard Catlin and Associates, Inc</u>
<u>has had 24 monitoring wells installed at the Facility</u>
<u>and has utilized data from monitoring wells that remained</u>
<u>at site from a 1981 paraxylene spill recovery project.</u>
<u>Once an inventory loss is apparent, DEM instructed</u>
<u>Koch Fuels, Inc. to 1) Cease product input or output;</u>
<u>2) Regauge tanks; and 3) Check truck loadings.</u>
<u>As per NOV issued by DEM on 05-01-86, Koch Fuels,</u>
<u>Inc. was instructed to stop, define, contain, and</u>
<u>remove any leakage of oil from its bulk storage</u>
<u>systems.</u>
<u>A recovery well from the previous paraxylene spill</u>
<u>was reactivated.</u>
Nearest Populated Buildings--Type and Distance
<u>Buildings owned by Koch Fuels, Inc.; ~ 300 Feet.</u>
Precipitation/Weather Data

POLLUTION INCIDENT REPORTING FORM

Incident # _____
County <u>New Hanover</u>

LOCATION OF INCIDENT

Street Address, Road <u>River Road</u>		City/Town <u>Wilmington</u>	County <u>New Hanover</u>
Date Incident Occurred <u>unknown</u>	Time Incident Occurred <u>unknown</u>	7 1/2 Quad Name <u>Wilmington</u>	Lat. : Deg: Min: Sec: <u>34 11 20</u>
			Long. : Deg: Min: Sec: <u>77 56 56</u>

Draw Sketch of Area

see Attached Maps

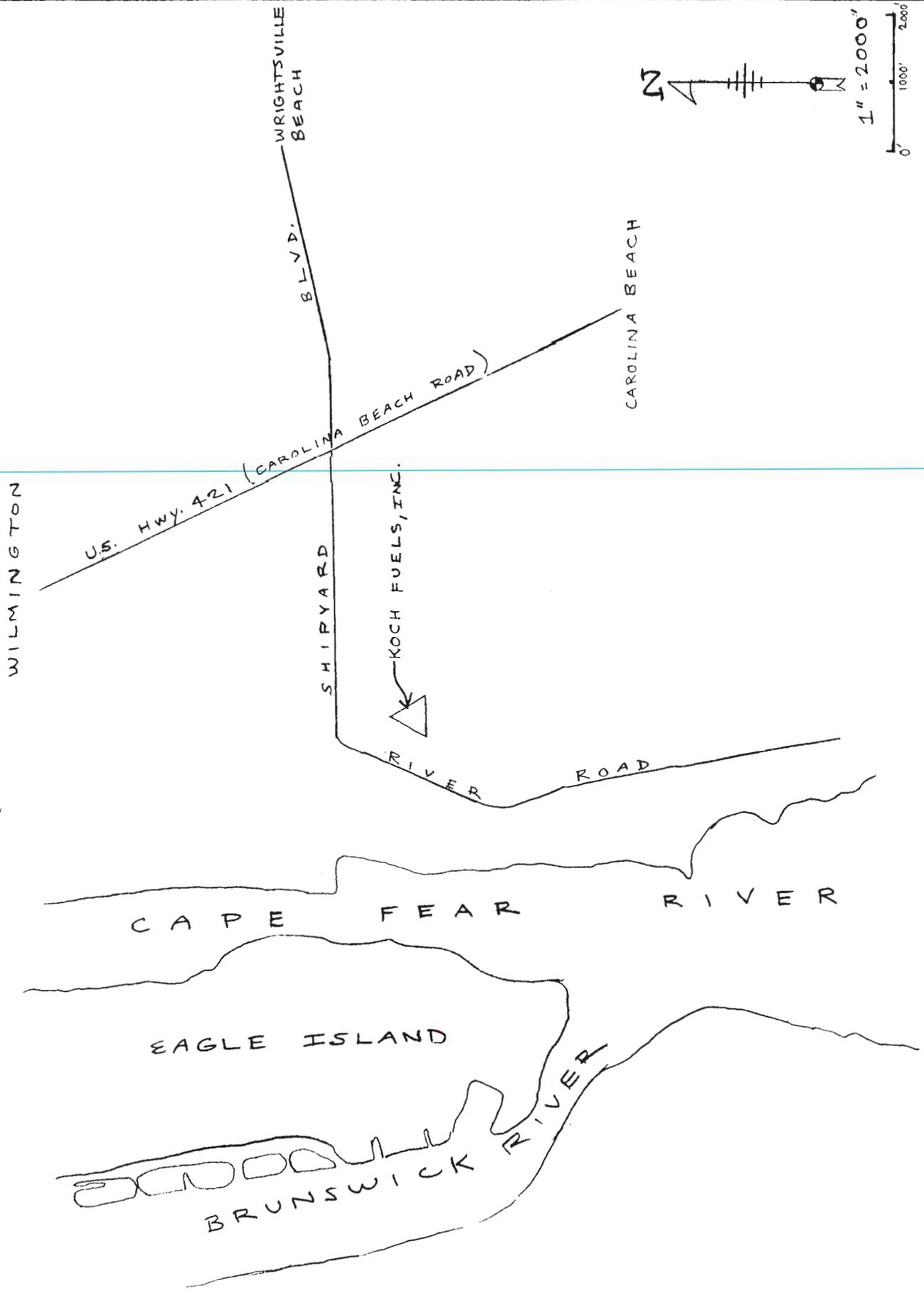
* Area is served by city water supplies.

ATTACH PHOTOCOPY OF MAP SHOWING: 1. Pollutant Source 2. Threatened Water Supplies
3. Direction of Overland Flow

Area Map - KOCH FUELS, INC.

Wilmington, North Carolina - NEW HANOVER COUNTY

4

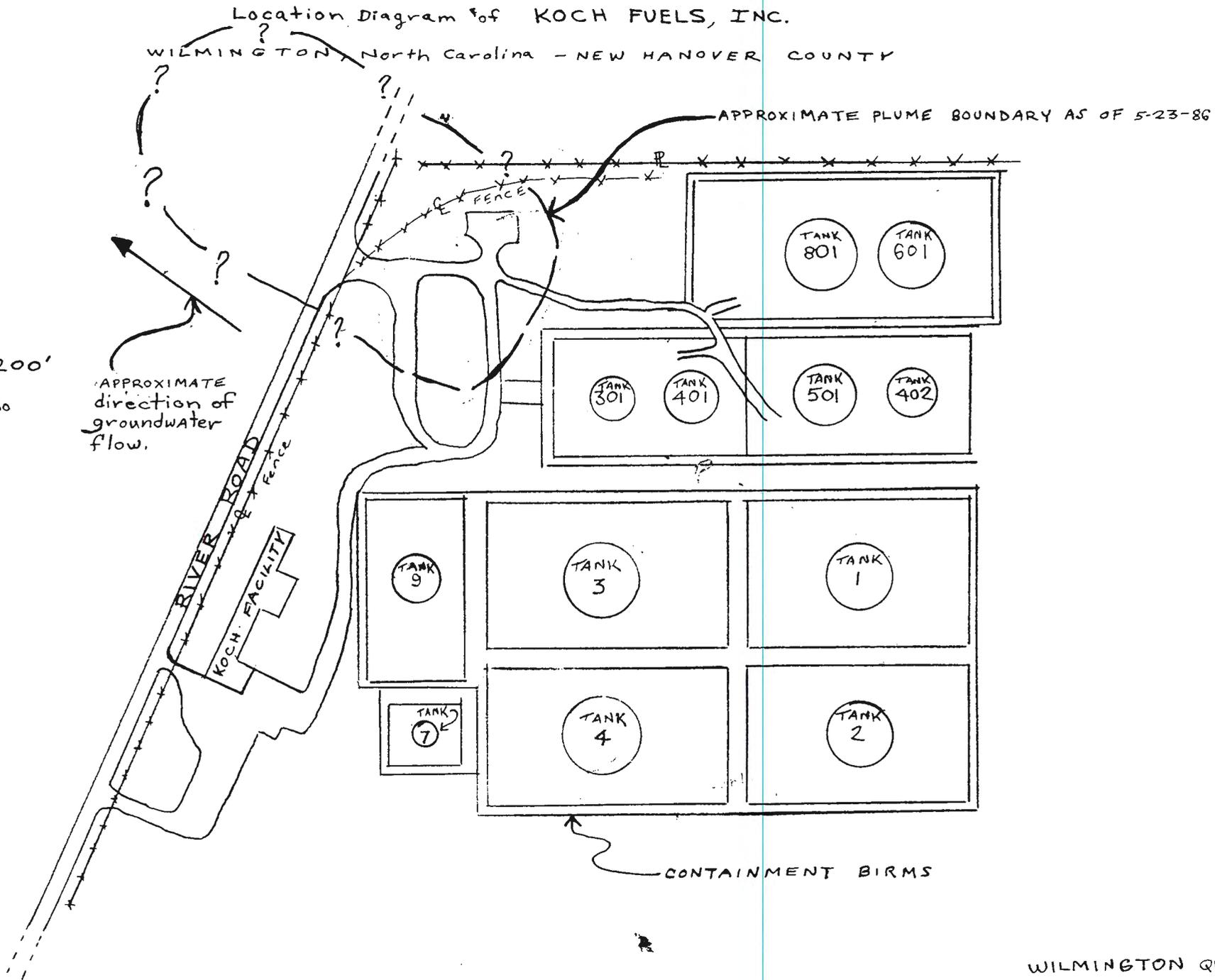


Location Diagram of KOCH FUELS, INC.

WILMINGTON, North Carolina - NEW HANOVER COUNTY



SCALE: 1" = 200'



NOTE: ALL TANKS SHOWN ARE FOR OVERGROUND STORAGE.

WILMINGTON QUAD
DD-31, S-
LAT/LONG
34 11 20 / 77 56 56

POLLUTION INCIDENT REPORTING FORM

Incident # _____
 County: _____

SOIL TYPES

COASTAL PLAIN REGION

1. Middle Coastal Plain
2. Upper Coastal Plain/Piedmont
3. Sandhills
- ④ Lower Coastal/Wicomico, Talbot
5. Lower Coastal Plain/Pamlico
6. Organic Soil
7. Brackish and Freshwater Marsh
8. Outer Banks
9. Large River Valleys/Flood Plain

PIEDMONT SOIL REGION

10. Felsic Crystalline
11. Carolina Slate Belt
12. Triassic Basin
13. Mixed Felsic and Mafic

MOUNTAIN SOIL REGION

14. Low and Intermediate Mountain
15. Basins/Terraces/Flood Plain
16. High Mountain

LANDFORM

1. River/coastal terrace
- ② Coastal (flat) plain
3. Mountain range
4. Sandhills
5. Swamp
6. Linear (valley) slope
7. Head slope (concave)
8. Nose slope (convex)
9. Foot slope
10. Barrier island
11. Barrier system
12. Beach ridge
13. Tidal marsh
14. Floodplain
15. Upland: 0-5% slope (interstream divide)

OBSERVED AVERAGE GRADIENTS

To nearest water supply: _____ %
 Water table gradient: 1.4 %
 To nearest stream: <1 %
 Stream gradient: _____ %

ESTIMATED DEPTHS

To uppermost confining bed: 26 ft.
 To water table: 4-12 ft.
 To bedrock: ~40 ft.

ESTIMATE HYDRAULIC CONDUCTIVITIES

Soil	Unsaturated zone	Water Table	Upper confined aquifer
1. high	1. high	1. high	1. high
② medium	② medium	② medium	② medium
3. low	3. low	3. low	3. low
4. unknown	4. unknown	4. unknown	4. unknown

AQUIFER USE

- ① Little or no use
2. Moderate uses
3. Heavily used

DISTANCE TO NEAREST WATER SUPPLY: _____ ft.

DISTANCE TO NEAREST BUILDING: ~300 ft.

Describe general lithology of soil and unsaturated zone

Soil in the unsaturated zone is composed of
fine to medium-grained sands.

Provide map showing: 1. Pollutant source 2. Threatened water supplies 3. Direction of overland flow

Incident # _____
County: New Hanover

POLLUTION INCIDENT REPORTING FORM

EMERGENCY INCIDENT RESPONSIBILITIES

RESPONSIBILITY: _____ Local _____ State _____ Federal Responsible party

ON-SCENE COORDINATOR: _____ name _____ phone number _____

_____ agency/EOC location _____ EOC phone _____

EOC contacts _____

Assumed, date: _____ time: _____ Relinquished, date: _____ time: _____

On-site representatives: _____

TECHNICAL COORDINATOR: Rick Shiver name _____ (919) 256-4161 phone number _____

DNRCD - DEM - GWS agency/EOC location _____ Wilmington _____ EOC phone _____

EOC contacts _____

Assumed, date: _____ time: _____ Relinquished, date: _____ time: _____

On-site representatives: _____

RESOURCE TRUSTEE: _____ name _____ phone number _____

_____ agency/EOC location _____ EOC phone _____

EOC contacts _____

Assumed, date: _____ time: _____ Relinquished, date: _____ time: _____

On-site representatives: _____

PIO: _____ name _____ agency _____ phone number _____

Assumed, date: _____ time: _____ Relinquished, date: _____ time: _____

NOTIFICATIONS

* 24 Hour Telephone Number

Date	Agency	Telephone	Time	Contact
_____	Spill Response Center-DEM	(919) 733-5291	_____	_____
_____	Water Supply-DHR	(919) 733-2321	_____	_____
_____	Solid/Hazardous Waste-DHR	(919) 733-2178	_____	_____
<u>04-03-86</u>	Regional Office <u>WIRO</u>	<u>919/256-4161</u>	<u>-</u>	<u>Rick Shiver</u>
_____	Emergency Mngt.-CC&PS	(919) 733-3867	_____	_____
_____	Pesticides-DOA	(919) 733-3556	_____	_____
_____	Inland Fisheries-WRC	(919) 733-3633	_____	_____
_____	Wildlife Resources Commission	(800) 662-7137 *	_____	_____
_____	Marine Fisheries	(919) 726-7021	_____	_____
_____	Radiation Protection-DHR	(919) 733-4283	_____	_____
_____	EPA-Atlanta	(404) 881-4062 *	_____	_____
_____	Coast Guard-Wilmington	(919) 343-4567	_____	_____
_____	Coast Guard-Hampton Roads	(804) 441-3307	_____	_____
_____	National Response Center	(800) 424-8802 *	_____	_____
<u> </u>	(your supervisor) <u>SAME AS ABOVE</u>			
_____	(PIO) _____	_____	_____	_____
_____	(shipper) _____	_____	_____	_____
_____	(carrier) _____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	CHEMTREC (Chemical Spills Only)	(800) 424-9300 *	_____	_____
_____	N.C. Poison Center	(919) 684-8111 *	_____	_____
_____	Explosives problems-SBI	(919) 779-1400 *	_____	_____
_____	State Warning Point-SHP (emergencies only)	(919) 733-3861 * (800) 662-7956 *	_____	_____
_____	EPA-PCB problems	(919) 541-4573	_____	_____

Control Number 205	GROUNDWATER POLLUTION SOURCE INVENTORY	County Number 035	
Source Name Koch Fuels - spill		OWNERSHIP <input checked="" type="radio"/> 1 Private 2 Municipal 3 County 4 State 5 Federal 6 Military	
Source Address River Rd			
City Wilmington	County New Hanover		Region Wilme
Owner/Operator Koch Fuels			
7 1/2 Quad Name Wilmington DD-31	Multiple Sources at Site YES NO	County Source #'s	

POTENTIAL SOURCE OF GROUNDWATER POLLUTION

LOCATION	OPERATION TYPE	TYPE OF WASTE	DISPOSAL FACILITY	OTHER SOURCE
<input checked="" type="radio"/> 1 Facility	1 Municipal	1 Gasoline/diesel	1 Lagoon, etc.	1 Agricultural Activity
2 Highway	<input checked="" type="radio"/> 2 Industrial	2 Other oil	2 Landfill-contro.	2 Salt water intrusion
3 Railroad	3 Agricultural	<input checked="" type="radio"/> 3 Solvents	3 Landfill-uncont.	3 Chemical stock pile
4 Waterway	4 Oil and gas	4 Corrosives	4 Land application	4 River infiltration
5 Pipeline	5 Mining	5 Other chemical	5 Abandoned site	5 Mine drainage
6 Dumpsite	6 Other Source	6 Sewage/septage	6 Sewer system	6 Intentional dump
7 Other		7 Sludge	7 Septic tank	<input checked="" type="radio"/> 7 Spill
		8 Leachate	8 Injection well	8 Leak--above ground
		9 Other solids	9 Disposal well	<input checked="" type="radio"/> 9 Leak--underground
		10 Gas		
		11 Pest/herbicides		
		12 Fertilizers		
STATUS OF SOURCE:		WASTE:		
<input type="radio"/> 1 In use <input type="radio"/> 2 Inactive <input checked="" type="radio"/> 3 Other		Paraxylene Spill		

POLLUTION STATUS AND CROSS-REFERENCES

<p>GROUNDWATER POLLUTION</p> <input checked="" type="radio"/> 1 Confirmed <input checked="" type="radio"/> 1 Rank <input checked="" type="radio"/> 2 Potential 2 Tabulate	<p>FACILITY PERMITTED: Yes No</p> <table style="width:100%;"> <tr> <td>1 NPDES No: _____</td> <td>6 Mining No: _____</td> </tr> <tr> <td>2 DEM Nondischarge No: _____</td> <td>7 Hazardous Waste (RCRA) No: _____</td> </tr> <tr> <td>3 Well Construction No: _____</td> <td>8 Solid Waste (Landfill) No: _____</td> </tr> <tr> <td>4 Capacity Use No: _____</td> <td>9 Oil Terminal Registration No: _____</td> </tr> <tr> <td>5 UIC No: _____</td> <td>Ø Air Quality No: 03808</td> </tr> </table>	1 NPDES No: _____	6 Mining No: _____	2 DEM Nondischarge No: _____	7 Hazardous Waste (RCRA) No: _____	3 Well Construction No: _____	8 Solid Waste (Landfill) No: _____	4 Capacity Use No: _____	9 Oil Terminal Registration No: _____	5 UIC No: _____	Ø Air Quality No: 03808
1 NPDES No: _____	6 Mining No: _____										
2 DEM Nondischarge No: _____	7 Hazardous Waste (RCRA) No: _____										
3 Well Construction No: _____	8 Solid Waste (Landfill) No: _____										
4 Capacity Use No: _____	9 Oil Terminal Registration No: _____										
5 UIC No: _____	Ø Air Quality No: 03808										
<p>MONITORING WELLS</p> <input checked="" type="radio"/> 1 No monitoring <input checked="" type="radio"/> 2 State has data 3 Data at facility 4 Status unknown	<p>Comments Forwards "Sunmark"</p>										
<p>DATABASE CROSS-REFERENCE</p> 1 ERRIS (CERCLA) list ID: _____ 2 Surface Impoundment (SIA) ID: -NO 3 GW Pollution Source Inv. Date: _____ 4 Other DEM investigation Date: 6-21-82	<p>Compiler: js Date: 5-21-84</p>										

GROUNDWATER POLLUTION SOURCE EVALUATION
RANKING CRITERIA

<u>10</u> THREAT TO GROUNDWATER	<u>1</u> THREAT TO PEOPLE OR ECONOMY	<u>9</u> THREAT OF POLLUTANTS
<p>Probability of Groundwater Violations</p> <p>3 Violations documented or highly probable</p> <p>2 Default</p> <p>1 Violations unlikely</p> <hr/> <p>Extent of Groundwater Contamination</p> <p>3 Mappable, migrating plume</p> <p>2 Default</p> <p>1 Insignificant contamination expected</p> <hr/> <p>Seriousness of Groundwater Threat</p> <p>3 One of most serious in DEM region</p> <p>2 Default</p> <p>1 Not considered a serious problem</p>	<p>How Hazardous to Health/Economy</p> <p>3 People or business advised of contamination</p> <p>2 Default</p> <p>1 No expected impacts on people or business</p> <hr/> <p>Number of People at Risk</p> <p>3 4 or more family units, or \$10,000 loss</p> <p>2 Default</p> <p>1 No people or other interests at risk</p> <hr/> <p>Seriousness of People Threat</p> <p>3 Strong DEM concern over threat to people</p> <p>2 Default</p> <p>1 No threat to people or economy</p>	<p>How Toxic are Pollutants (use Sax)</p> <p>3 High value</p> <p>2 Mod value</p> <p>1 Low or None value</p> <hr/> <p>Quantity of Pollutants in Ground</p> <p>3 Reportable quantity of hazardous material (CERCLA def.) or quantity of real concern</p> <p>2 Default</p> <p>1 Not of concern to regional office</p> <hr/> <p>Seriousness of Pollutant Threat</p> <p>3 One of most serious in DEM region</p> <p>2 Default</p> <p>1 Not a serious threat</p>
<u>5</u> FEASIBILITY FOR TAKING ACTION	<u>5</u> FEASIBILITY OF RECLASSIFYING GROUNDWATER	RANK SCORE: _____
<p>Feasibility for Remedial Action</p> <p>3 Remedial action both feasible and desirable</p> <p>② Default</p> <p>1 No remedial action recommended</p> <hr/> <p>Desirability of Remedial Action</p> <p>3 One of top regional office priorities</p> <p>② Default</p> <p>1 Not a priority incident</p>	<p>Need to Reclassify Groundwater</p> <p>3 Groundwater should be reclassified RS or GC</p> <p>② Default</p> <p>1 No reclass. <u>nor</u> remedial action recommended</p> <hr/> <p>Desirability of Reclassification</p> <p>3 One of top reclassification priorities</p> <p>② Default</p> <p>1 Not a priority incident</p>	<p>Source Name: _____</p> <p>Control Number: 308 <u>205</u></p> <p>County: _____</p> <p>Ranker: _____</p> <p>Date: _____</p>

GROUNDWATER POLLUTION SITE EVALUATION

75

Source Name: KOCH FUELS

Control Number: ~~20~~ 205 County: _____

10 Threat to Groundwater

- A. Probability of Groundwater Violations: (H) M L
- B. Extent of Groundwater Contamination: (H) M L
- C. Seriousness of Threat: (H) M L

1 Threat to People

- A. How Hazardous to Human Health: H M (L)
- B. Number of People at Risk: H M (L)
- C. Seriousness of Threat: H M (L)

9 Threat of Pollutants

- A. How Toxic are Pollutants: (H) M L
- B. Quantity of Pollutants in Ground: (H) M L
- C. Seriousness of Threat: H (M) L

10 Feasibility of Cleanup

- A. Technical Feasibility of Cleanup: (H) M L
- B. Economic Feasibility of Cleanup: (H) M L
- C. Desirability of Cleanup: (H) M L

30

MONITORING

Figure 1.

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS AND HYDROGEOLOGISTS

RC&A

March 30, 1988

Koch Fuels, Inc.
ATTN: Mr. Jim Strickland
P. O. Box 3958
Wilmington, NC 28406

RE: Fuel Oil Recovery Project,
Off-Site Paraxylene
Project, Koch Fuels, Inc.
Wilmington, N.C.
RC&A Projects 8729 & 8643

Dear Mr. Strickland:

Attached is our monthly monitoring report combining the field data from the fuel oil recovery project and the adjacent off-site paraxylene monitoring project at the Koch Fuels, Inc., terminal in Wilmington, N.C. An additional copy is enclosed for you to forward to Mr. Rick Shiver, P.G., of the N.C. Division of Environmental Management, 7225 Wrightsville Avenue, Wilmington, N.C. 28403-3696.

If you have any questions or requests, please do not hesitate to contact our office. We will continue to monitor the site and report to you again next month.

Sincerely,

J. Reed Whitesell
Vice President/
Quality Assurance Officer



APR 05 1988

GROUNDWATER SECTION
RALEIGH, NC

Enclosures

SAT/nd

RECEIVED

APR 14 1988

XC to Douglass Dixon 4-20-88

GROUNDWATER SECTION
WILMINGTON REGIONAL OFFICE

RICHARD CATLIN & ASSOCIATES, INC.

GROUND WATER MONITORING REPORT

DATE: 3/30/88

CLIENT: Koch Fuels, Inc.

PROJECT: Koch Fuel Oil Terminal, Fuel Oil and Paraxylene Recovery
Projects, Wilmington, NC

RC&A PROJECT #: 8729/8643

MONITORING INTERVAL: Weekly

REPORT INTERVAL: Monthly

DATE OF LAST REPORT: 3/7/88

DATE OF PLUME MANAGEMENT DATA RETRIEVAL THIS REPORT: 3/23/88

MONITORING/CLEAN-UP SYSTEM DESCRIPTION:

- 1) **Monitoring Wells:** Twenty eight (28) - 101, 102, 103, 103A, 104, 105, 106, 107, 108, 109, 110, 112, 113, 114, 115, 116, 117, 119, 120, 121, 122, 123, 124, 201, 202, 203, 204 and 206; one (1) piezometer (118X).
- 2) **Recovery Wells:** Three (3) 24" - RW-1, RW-2 and RW-3 - Utilize suction pumps for water table depression and one (1) scavenger pump for free product removal; scavenger pump is alternated from one well to another as free product accumulations dictate.
- 3) **Other Recovery Locations:** One (1) SD-1 - suction pump installed at the storm drain near the Koch Terminal North Gate.
- 4) **Discharge System:**
 - a) **Water:** Suction pump effluent from all three recovery wells and an additional suction pump (SD-1) is pumped to an on-site double gravity separator, as a safety factor, prior to discharge to an infiltration trench.
 - b) **Free Product:** Free product from the recovery wells is pumped to two product holding tanks (one for RW-1 and RW-2; one for RW-3).

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

MONITORING REQUIREMENTS: Weekly - Check system; pump free product from recovery wells and manually bail product from monitoring wells, if required. Free product in separators is pumped out by High Rise Service Co., as required. Monthly-Measure water table elevations and any accumulations of free product in all wells. On 10/28/87, the RW-1 and RW-2 suction pumps were turned off until future observations indicate recoverable amounts of free product.

I. FIELD DATA:

A) DATA REDUCTION OF MEASUREMENTS TAKEN ON 3/23/88:
(Refer to Figures 1 and 2.)

<u>Well #</u>	<u>Top of Casing</u>	<u>Water Table Depth</u>	<u>Product Thickness</u>	<u>Specific Gravity Adjustment</u>	<u>Water Table Elevation</u>
101	28.88	3.57'	-	-	25.31
102	29.88	3.85'	-	-	26.03
103	38.90	9.35'	-	-	29.55
103A	38.50	8.94'	0.12'	0.09	29.65
104	28.21	3.08'	-	-	25.13
105	29.61	3.89'	-	-	25.72
106	28.75	3.32'	-	-	25.43
107	29.32	4.85'	0.22'	0.17	24.64
108	30.89	5.47'	-	-	25.42
109	29.32	6.64'	trace	-	22.68
110	29.02	7.85'	-	-	21.17
112	30.55	7.41'	0.02'	0.01	23.15
113	33.28	8.17'	0.47'	0.36	25.47
114	34.80	8.68'	-	-	26.12
115	31.98	8.59'	0.81'	0.62	24.01
116	28.90	8.79'	1.71'	1.32	21.43
117	31.33	8.65'	-	-	22.68
*118X	27.09	-	-	-	-
119	27.40	4.41'	-	-	22.99
120	27.64	4.92'	-	-	22.72
121	29.30	4.19'	-	-	25.11
*122	36.52	-	-	-	-
*123	35.29	-	-	-	-
124	36.78	8.12'	0.04'	0.03	30.69
201	25.81	9.46'	-	-	16.35
202	26.91	11.04'	-	-	15.87
203	27.09	11.21'	-	-	15.88
204	26.95	11.07'	-	-	15.88
206	26.04	10.04'	-	-	16.00

Recovery Wells

RW-1	24.65	8.34'	-	-	16.31
RW-2	25.34	9.31'	-	-	16.03
RW-3	29.07	8.46'	0.81'	0.62	21.23

* No Data - well was inaccessible on this visit.

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

B) FREE PRODUCT HOLDING TANK DATA:

1) Off-site Paraxylene Project (RW-1 and RW-2):

a) Product Recovered This Period:

Date: **Amount:**

2/24/88 through 3/23/88 No Product Recovered This Period

b) Free Product Recovered to Date: 925 gallons

2) Fuel Oil Recovery Project (RW-3 and SD-1):

a) Product Recovered This Period:

Date: **Amount:**

2/24/88 through 3/23/88 801 gallons free product recovered

b) Product Recovered to Date: 6,441 gallons

C) MONITORING/RECOVERY SYSTEM STATUS:

1) Monitoring Wells:

Date: Measured Observations & Modifications:

3/23/88 X All wells measured except for 122, 123 and 118X which were inaccessible during our site visit.

2) Recovery Well Pumps (Suction & Scavenger Pumps):

Date: Operation Checked Observations & Modifications:

		<u>RW-1</u>	<u>RW-2</u>	<u>RW-3</u>
3/1/88	<u>X</u>	Shut off	Shut off	Shut off
3/8/88	<u>X</u>	Shut off	Shut off	Shut off
3/14/88	<u>X</u>	Shut off	Shut off	Shut off
3/23/88	<u>X</u>	Shut off	Shut off	Shut off

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

3) Suction Pump (SD-1):

Date:	Operation Checked	Observations & Modifications:
3/1/88	<u>X</u>	OK
3/8/88	<u>X</u>	OK
3/14/88	<u>X</u>	OK
3/23/88	<u>X</u>	OK

4) Discharge System:

a) Separator:

Date:	Operation Checked	Observations & Modifications
3/1/88	<u>X</u>	Operation OK
3/8/88	<u>X</u>	Operation OK
3/14/88	<u>X</u>	Operation OK
3/23/88	<u>X</u>	Operation OK

b) Product Holding Tanks:

Date:	Checked	Observations & Modifications:
3/1/88	<u>X</u>	OK
3/8/88	<u>X</u>	OK
3/14/88	<u>X</u>	OK
3/23/88	<u>X</u>	OK

c) Infiltration Trench:

Date:	Checked	Observations & Modifications:
3/1/88	<u>X</u>	Overflowing
3/8/88	<u>X</u>	Overflowing
3/14/88	<u>X</u>	Overflowing
3/23/88	<u>X</u>	Overflowing

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

II. DISCUSSION: (Refer to Figures 1 and 2.)

A) PLUME MANAGEMENT:

- 1) Summary of observed changes in potentiometric surface:
(see Figure 1)

As shown on Figure 1, the observed ground water at the site flows northwesterly to the Cape Fear River. During the past monitoring period, the overall water table surface level has decreased slightly (seasonal fluctuation).

- 2) Is free product plume inside areal extent of monitoring/recovery system?

YES X NO X

- 3) Comments on plume management:

Off-Site Paraxylene Project, Plume "A":

During this past monitoring period, no detectable thicknesses of free product were observed in any of the off-site wells. RW-1 and RW-2 suction pumps will remain disconnected until recoverable amounts of free product are detected around the recovery wells.

Fuel Oil Recovery Project, Plume "B" and Plume "C":

The active recovery of free product from plume "B" at RW-3 continues to be temporarily halted due to the increased free product recovery at SD-1. However, accumulated free product in RW-3 is still being removed by scavenger pump, and the areal extent of the free product plume around RW-3 has apparently not increased over the past month.

Free product observed in wells 103A and 124 still appear to be part of a separate plume (Plume "C").

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

B) FREE PRODUCT RECOVERY:

Off-Site Paraxylene Project:

During the past monitoring period, no free floating product has been recovered. To date, a total of 925 gallons of free product has been recovered at this site.

Fuel Oil Recovery Project:

During the past monitoring period, 38 gallons of free product were recovered from RW-3, although the suction pump has been turned off.

Also, 763 gallons of additional recovered free product were removed from the on-site separators this past month.

To date, a total of 6,441 gallons of free-floating product has been recovered at the recovery well RW-3 and storm drain pump (SD-1) at the site.

C) RECOMMENDED RECOVERY SYSTEM MODIFICATIONS:

1) Additions or modifications to system:

Once proposed site-wide recovery/treatment system recommendations have been approved, modifications to the existing system will be implemented.

2) Routine maintenance:

N/A

J. Reed Whitesell

J. Reed Whitesell, Project Mgr., Quality Assurance Officer

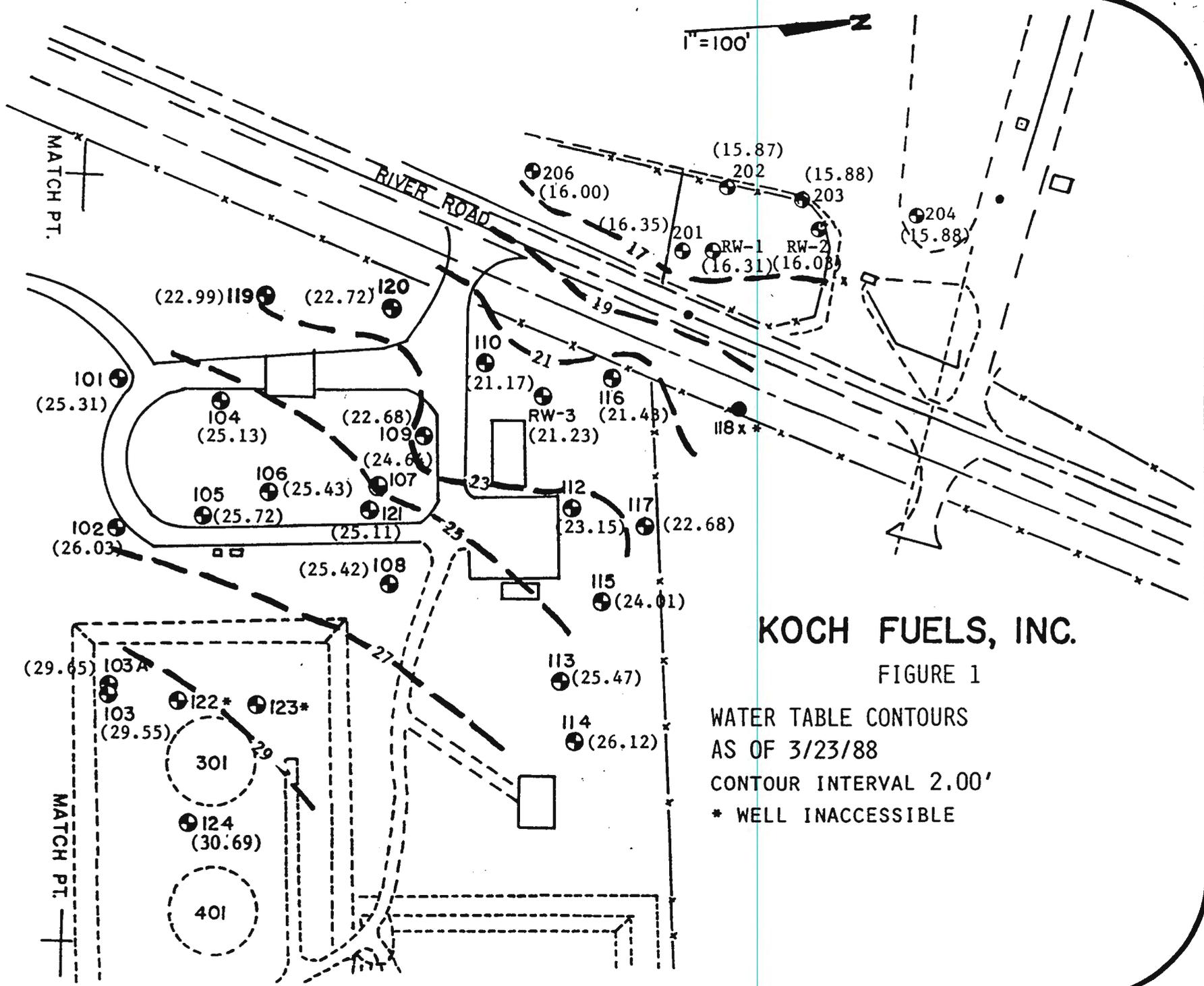
S. Tyler/ac

Stephan A. Tyler, Project Geologist

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A



KOCH FUELS, INC.

FIGURE 1

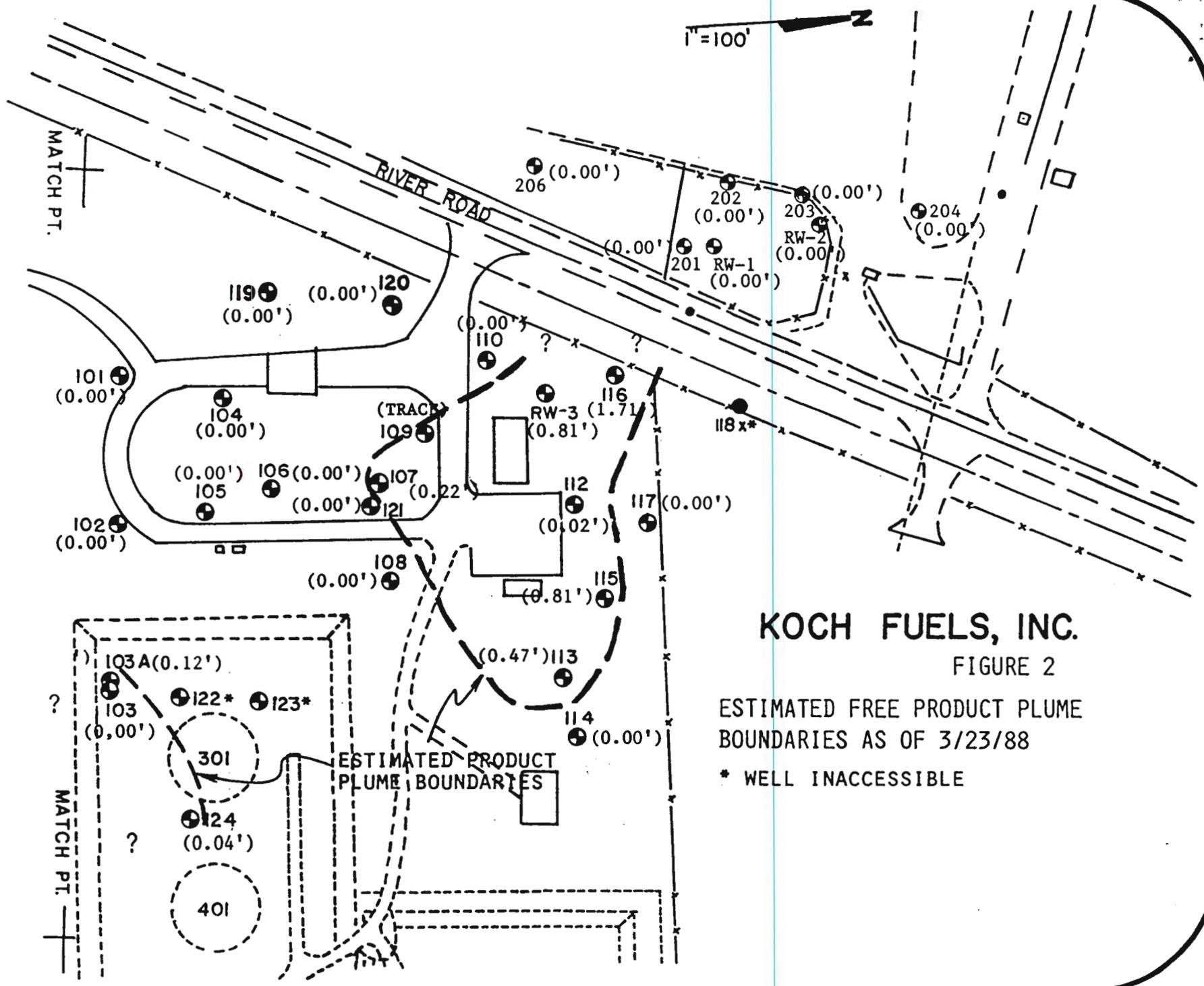
WATER TABLE CONTOURS
AS OF 3/23/88

CONTOUR INTERVAL 2.00'

* WELL INACCESSIBLE

Richard Catlin & Associates, Inc.
CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A



KOCH FUELS, INC.

FIGURE 2

ESTIMATED FREE PRODUCT PLUME BOUNDARIES AS OF 3/23/88

* WELL INACCESSIBLE

Richard Catlin & Associates, Inc.
CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS AND HYDROGEOLOGISTS

RC&A

RECEIVED

MAR 15 1988

March 8, 1988

GROUNDWATER SECTION
WILMINGTON REGIONAL OFFICE

Koch Fuels, Inc.
ATTN: Mr. Jim Strickland
P. O. Box 3958
Wilmington, NC 28406

RE: Fuel Oil Recovery Project,
Off-Site Paraxylene
Project, Koch Fuels, Inc.
Wilmington, N.C.
RC&A Projects 8729 & 8643

Dear Mr. Strickland:

Attached is our monthly monitoring report combining the field data from the fuel oil recovery project and the adjacent off-site paraxylene monitoring project at the Koch Fuels, Inc., terminal in Wilmington, N.C. An additional copy is enclosed for you to forward to Mr. Rick Shiver, P.G., of the N.C. Division of Environmental Management, 7225 Wrightsville Avenue, Wilmington, N.C. 28403-3696.

If you have any questions or requests, please do not hesitate to contact our office. We will continue to monitor the site and report to you again next month.

RECEIVED

APR 8 1988

GROUNDWATER SECTION
RALEIGH, NC

Sincerely,

J. Reed Whitesell

J. Reed Whitesell
Vice President/
Quality Assurance Officer

Enclosures

SAT/nd

XC to Douglass Dixon

4-20-80

RICHARD CATLIN & ASSOCIATES, INC.

GROUND WATER MONITORING REPORT

DATE: 3/7/88

CLIENT: Koch Fuels, Inc.

PROJECT: Koch Fuel Oil Terminal, Fuel Oil and Paraxylene Recovery
Projects, Wilmington, NC

RC&A PROJECT #: 8729/8643

MONITORING INTERVAL: Weekly

REPORT INTERVAL: Monthly

DATE OF LAST REPORT: 2/9/88

DATE OF PLUME MANAGEMENT DATA RETRIEVAL THIS REPORT: 2/23/88

MONITORING/CLEAN-UP SYSTEM DESCRIPTION:

- 1) **Monitoring Wells:** Twenty eight (28) - 101, 102, 103, 103A, 104, 105, 106, 107, 108, 109, 110, 112, 113, 114, 115, 116, 117, 119, 120, 121, 122, 123, 124, 201, 202, 203, 204 and 206; one (1) piezometer (118X).
- 2) **Recovery Wells:** Three (3) 24" - RW-1, RW-2 and RW-3 - Utilize suction pumps for water table depression and one (1) scavenger pump for free product removal; scavenger pump is alternated from one well to another as free product accumulations dictate.
- 3) **Other Recovery Locations:** One (1) SD-1 - suction pump installed at the storm drain near the Koch Terminal North Gate.
- 4) **Discharge System:**
 - a) **Water:** Suction pump effluent from all three recovery wells and an additional suction pump (SD-1) is pumped to an on-site double gravity separator, as a safety factor, prior to discharge to an infiltration trench.
 - b) **Free Product:** Free product from the recovery wells is pumped to two product holding tanks (one for RW-1 and RW-2; one for RW-3).

Richard Catlin & Associates, Inc.

**CONSULTING ENGINEERS
AND HYDROGEOLOGISTS**

RC&A

MONITORING REQUIREMENTS: Weekly - Check system; pump free product from recovery wells and manually bail product from monitoring wells, if required. Free product in separators is pumped out by High Rise Service Co., as required. Monthly-Measure water table elevations and any accumulations of free product in all wells. On 10/28/87, the RW-1 and RW-2 suction pumps were turned off until future observations indicate recoverable amounts of free product.

I. FIELD DATA:

A) DATA REDUCTION OF MEASUREMENTS TAKEN ON 2/23/88:
(Refer to Figures 1 and 2.)

<u>Well #</u>	<u>Top of Casing</u>	<u>Water Table Depth</u>	<u>Product Thickness</u>	<u>Specific Gravity Adjustment</u>	<u>Water Table Elevation</u>
101	28.88	3.44'	-	-	25.44
102	29.88	3.61'	-	-	26.27
103	38.90	9.08'	0.17'	0.13	29.95
103A	38.50	8.96'	-	-	29.54
104	28.21	2.88'	-	-	25.33
105	29.61	3.68'	-	-	25.93
106	28.75	3.09'	-	-	25.66
107	29.32	4.54'	0.22'	0.17	24.95
108	30.89	5.17'	-	-	25.72
109	29.32	6.37'	trace	-	22.95
110	29.02	7.61'	-	-	21.41
112	30.55	7.10'	trace	-	23.45
113	33.28	7.89'	0.09'	0.07	25.46
114	34.80	8.52'	-	-	26.28
115	31.98	8.19'	0.79'	0.61	24.40
116	28.90	8.75'	1.75'	1.35	21.50
117	31.33	8.42'	-	-	22.91
118X	27.09	8.89'	-	-	18.20
119	27.40	4.21'	-	-	23.19
120	27.64	4.60'	-	-	23.04
121	29.30	3.91'	-	-	25.39
*122	36.52	-	-	-	-
*123	35.29	-	-	-	-
*124	36.78	-	-	-	-
201	25.81	9.35'	-	-	16.46
202	26.91	10.93'	-	-	15.98
203	27.09	11.09'	-	-	16.00
204	26.95	10.96'	-	-	15.99
206	26.04	9.92'	-	-	16.12

Recovery Wells

RW-1	24.65	8.24'	-	-	16.41
RW-2	25.34	9.14'	-	-	16.20
RW-3	29.07	8.26'	0.82'	0.63	21.44

* No Data - well was inaccessible on this visit.

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

B) FREE PRODUCT HOLDING TANK DATA:

1) Off-site Paraxylene Project (RW-1 and RW-2):

a) Product Recovered This Period:

Date:

Amount:

1/27/88 through 2/23/88

No Product Recovered This Period

b) Free Product Recovered to Date: 925 gallons

2) Fuel Oil Recovery Project (RW-3 and SD-1):

a) Product Recovered This Period:

Date:

Amount:

1/27/88 through 2/23/88

74 gallons free product recovered

b) Product Recovered to Date: 5,640 gallons

C) MONITORING/RECOVERY SYSTEM STATUS:

1) Monitoring Wells:

Date:

Measured

Observations & Modifications:

2/23/88

X

All wells measured except for 122, 123 and 124 which were inaccessible during our site visit.

2) Recovery Well Pumps (Suction & Scavenger Pumps):

Date:

**Operation
Checked**

Observations & Modifications:

		<u>RW-1</u>	<u>RW-2</u>	<u>RW-3</u>
2/2/88	<u>X</u>	Shut off	Shut off	Shut off
2/9/88	<u>X</u>	Shut off	Shut off	Shut off
2/12/88	<u>X</u>	Shut off	Shut off	Shut off
2/15/88	<u>X</u>	Shut off	Shut off	Shut off
2/23/88	<u>X</u>	Shut off	Shut off	Shut off

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

3) Suction Pump (SD-1):

Date:	Operation Checked	Observations & Modifications:
2/2/88	<u>X</u>	OK
2/9/88	<u>X</u>	OK
2/12/88	<u>X</u>	OK
2/15/88	<u>X</u>	OK
2/23/88	<u>X</u>	OK

4) Discharge System:

a) Separator:

Date:	Operation Checked	Observations & Modifications
2/2/88	<u>X</u>	Operation OK
2/9/88	<u>X</u>	Operation OK
2/12/88	<u>X</u>	Operation OK
2/15/88	<u>X</u>	Operation OK
2/23/88	<u>X</u>	Operation OK

b) Product Holding Tanks:

Date:	Checked	Observations & Modifications:
2/2/88	<u>X</u>	OK
2/9/88	<u>X</u>	OK
2/12/88	<u>X</u>	OK
2/15/88	<u>X</u>	OK
2/23/88	<u>X</u>	OK

c) Infiltration Trench:

Date:	Checked	Observations & Modifications:
2/2/88	<u>X</u>	Overflowing
2/9/88	<u>X</u>	Overflowing
2/12/88	<u>X</u>	Overflowing
2/15/88	<u>X</u>	Overflowing
2/23/88	<u>X</u>	Overflowing

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

II. DISCUSSION: (Refer to Figures 1 and 2.)

A) PLUME MANAGEMENT:

- 1) Summary of observed changes in potentiometric surface:
(see Figure 1)

As shown on Figure 1, the observed ground water at the site flows northwesterly to the Cape Fear River. During the past monitoring period, the overall water table surface level has decreased by only about 0.14' (seasonal fluctuation).

- 2) Is free product plume inside areal extent of monitoring/recovery system?

YES X NO X

- 3) Comments on plume management:

Off-Site Paraxylene Project, Plume "A":

During this past monitoring period, no detectable thicknesses of free product were observed in any of the off-site wells. RW-1 and RW-2 suction pumps will remain disconnected until recoverable amounts of free product are detected around the recovery wells.

Fuel Oil Recovery Project, Plume "B" and Plume "C":

The active recovery of free product from plume "B" at RW-3 continues to be temporarily halted due to the increased free product recovery at SD-1. However, accumulated free product in RW-3 is still being removed by scavenger pump, and an apparent decrease in the areal extent of the free product plume around RW-3 was noted this month.

Free product observed in well 103 still appears to be part of a separate plume (Plume "C").

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

B) FREE PRODUCT RECOVERY:

Off-Site Paraxylene Project:

During the past monitoring period, no free floating product has been recovered. To date, a total of 925 gallons of free product has been recovered at this site.

Fuel Oil Recovery Project:

During the past monitoring period, 74 gallons of free product were recovered from RW-3, although the suction pump has been turned off.

No additional recovered free product has been removed from the on-site separators.

To date, a total of 5,640 gallons of free-floating product has been recovered at the recovery well RW-3 and storm drain pump (SD-1) at the site.

C) RECOMMENDED RECOVERY SYSTEM MODIFICATIONS:

1) Additions or modifications to system:

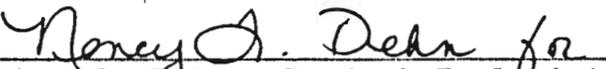
Once proposed site-wide recovery/treatment system recommendations have been approved, modifications to the existing system will be implemented.

2) Routine maintenance:

N/A



J. Reed Whitesell, Project Mgr., Quality Assurance Officer

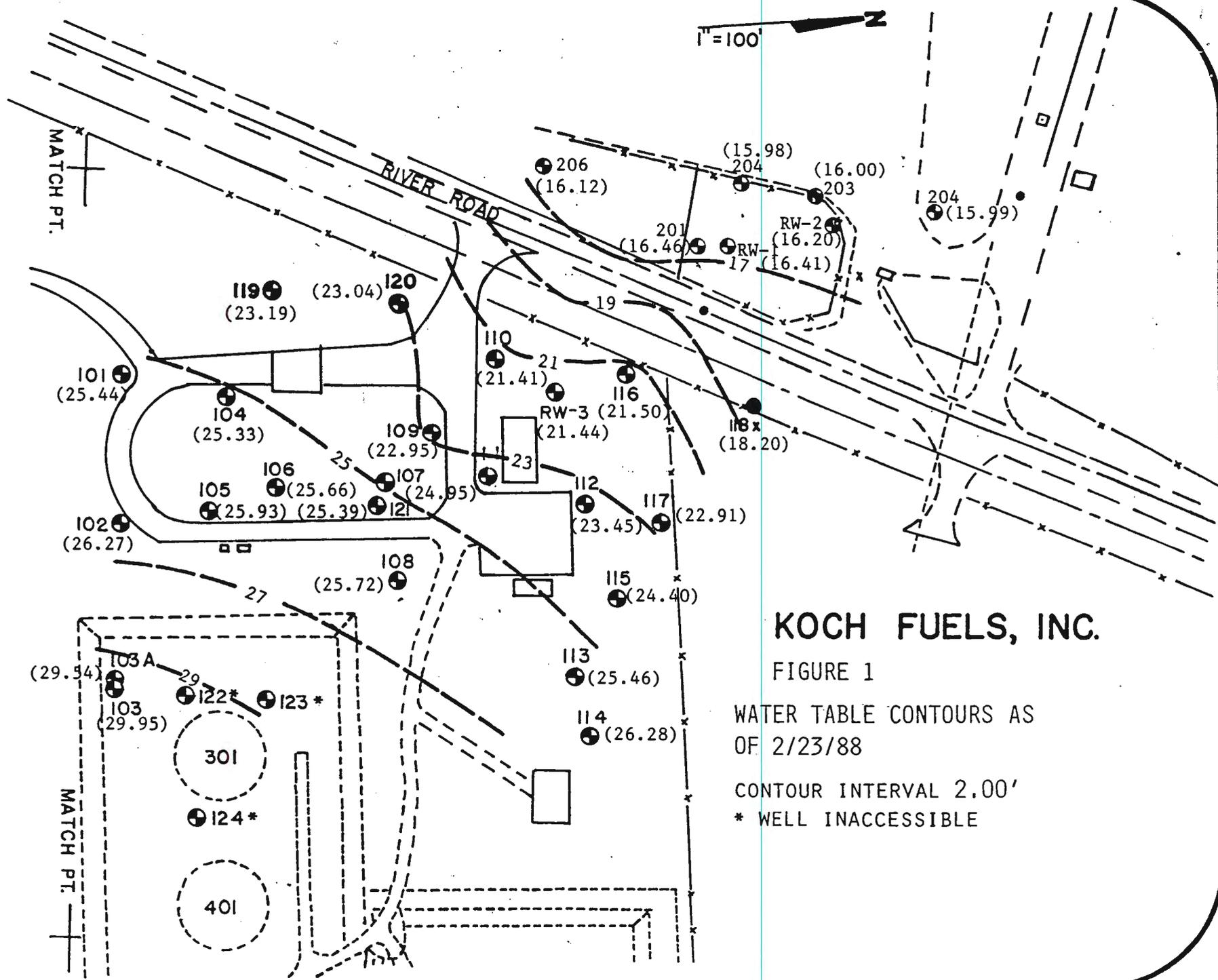


Stephan A. Tyler, Project Geologist

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A



KOCH FUELS, INC.

FIGURE 1

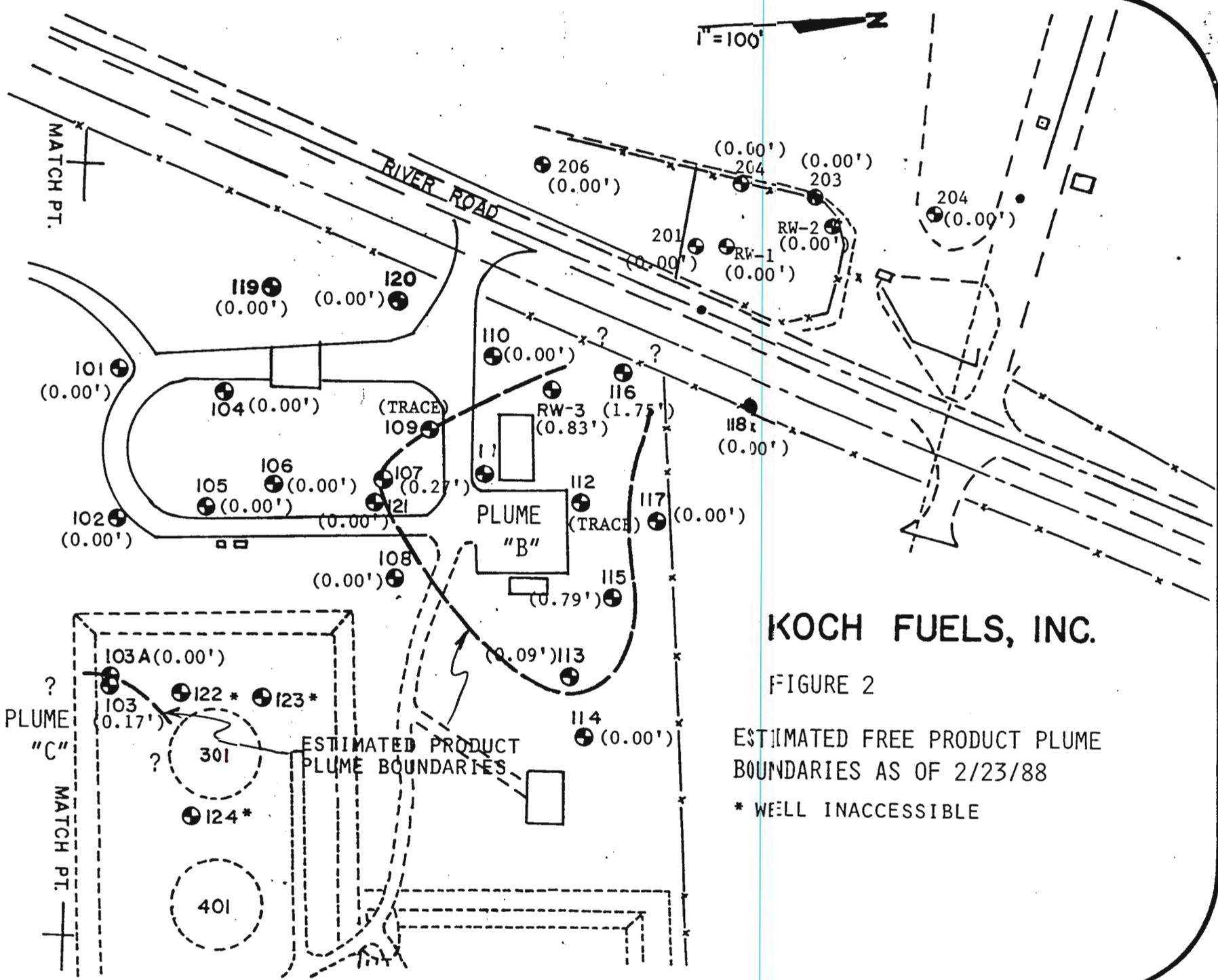
WATER TABLE CONTOURS AS OF 2/23/88

CONTOUR INTERVAL 2.00'

* WELL INACCESSIBLE

Richard Cain & Associates, Inc.
CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A



KOCH FUELS, INC.

FIGURE 2

ESTIMATED FREE PRODUCT PLUME BOUNDARIES AS OF 2/23/88

* WELL INACCESSIBLE

Richard Catlin & Associates, Inc.
CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS AND HYDROGEOLOGISTS

RC&A
RECEIVED
DEC 23 1987

December 9, 1987

Koch Fuels, Inc.
ATTN: Mr. Jim Strickland
P. O. Box 3958
Wilmington, NC 28406

GROUNDWATER SECTION
WILMINGTON REGIONAL OFFICE

RE: Fuel Oil Recovery Project,
Off-Site Paraxylene
Koch Fuels, Inc.
Wilmington, N.C.
RC&A Projects 8729 & 8643

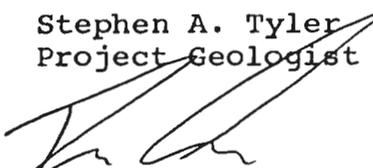
Dear Mr. Strickland:

Attached is our first monthly monitoring report combining the field data from the fuel oil recovery project and the adjacent off-site paraxylene monitoring project at the Koch Fuels, Inc., terminal in Wilmington, N.C. An additional copy is enclosed for you to forward to Mr. Rick Shiver, P.G., of the N.C. Division of Environmental Management, 7225 Wrightsville Avenue, Wilmington, N.C. 28403-3696.

If you have any questions or requests, please do not hesitate to contact our office. We will continue to monitor the site and report to you again next month.

Sincerely,

Stephen A. Tyler
Project Geologist


Richard G. Catlin, P.E., P.G.
President

Enclosures

SAT/nd

RICHARD CATLIN & ASSOCIATES, INC.

GROUND WATER MONITORING REPORT

DATE: 12/11/87

RECEIVED

DEC 23 1987

CLIENT: Koch Fuels, Inc.

GROUNDWATER SECTION
WILMINGTON REGIONAL OFFICE

PROJECT: Koch Fuel Oil Terminal, Fuel Oil Recovery Project,
Wilmington, NC

RC&A PROJECT #: 8729/8643

MONITORING INTERVAL: Weekly

REPORT INTERVAL: Monthly

DATE OF LAST REPORT: 11/6/87 - Two reports - (Fuel Oil and Paraxylene).
This is the first monitoring report combining
both projects.

DATE OF PLUME MANAGEMENT DATA RETRIEVAL THIS REPORT: 11/27/87

MONITORING/CLEAN-UP SYSTEM DESCRIPTION:

- 1) **Monitoring Wells:** Twenty eight (28) - 101, 102, 103, 103A, 104, 105, 106, 107, 108, 109, 110, 112, 113, 114, 115, 116, 117, 119, 120, 121, 122, 123, 124, 201, 202, 203, 204 and 206; one (1) piezometer (118X).
- 2) **Recovery Wells:** Three (3) 24" - RW-1, RW-2 and RW-3 - Utilize suction pumps for water table depression and one (1) scavenger pump for free product removal; scavenger pump is alternated from one well to another as free product accumulations dictate.
- 3) **Other Recovery Locations:** One (1) SD-1 - suction pump installed at the storm drain near the Koch Terminal North Gate.
- 4) **Discharge System:**
 - a) **Water:** Suction pump effluent from all three recovery wells and an additional suction pump installed in a drainage sump is pumped to an on-site double gravity separator, as a safety factor, prior to discharge to an infiltration trench.
 - b) **Free Product:** Free product from the recovery wells is pumped to a product holding tank (2,000 gallon capacity).

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

MONITORING REQUIREMENTS: Weekly - Check system; pump free product from recovery wells and manually bail product from monitoring wells, if required. Monthly-Measure water table elevations and any accumulations of free product in all wells. On 10/28/87, the RW-1 and RW-2 suction pumps were turned off until future observations indicate recoverable amounts of free product.

I. FIELD DATA:

A) DATA REDUCTION OF MEASUREMENTS TAKEN ON 11/27/87:
(Refer to Figures 1 and 2.)

<u>Well #</u>	<u>Top of Casing</u>	<u>Water Table Depth</u>	<u>Product Thickness</u>	<u>Specific Gravity Adjustment</u>	<u>Water Table Elevation</u>
101	28.88	3.59'	-	-	25.29
102	29.88	3.92'	-	-	25.96
103	38.90	9.21'	0.17	0.13	29.87
103A	38.50	9.56'	-	-	28.94
104	28.21	3.16'	-	-	25.05
105	29.61	3.96'	-	-	25.65
106	28.75	3.41'	-	-	25.34
107	29.32	4.94'	0.04	0.03	24.41
108	30.89	5.56'	-	-	25.33
109	30.04	6.94'	trace	-	23.10
110	29.02	8.59'	-	-	20.43
112	30.55	7.76'	trace	-	22.79
113	33.28	8.74'	0.81	0.62	25.16
114	34.80	8.95'	-	-	25.85
115	31.98	8.51'	0.11	0.09	23.56
116	28.90	7.42'	-	-	21.48
117	31.33	8.92'	-	-	22.41
118X	27.09	9.58'	-	-	17.51
119	27.40	4.62'	-	-	22.78
120	27.64	5.52'	-	-	22.12
121	29.30	4.33'	-	-	24.97
122	36.52	6.59'	-	-	29.93
*123	35.29	-	-	-	-
124	36.78	6.93'	trace	-	29.85
201	25.81	9.99'	-	-	15.82
202	26.91	11.53'	0.01'	0.01	15.39
203	27.09	11.66'	trace	-	15.43
204	26.95	11.53'	-	-	15.42
206	26.04	10.60'	-	-	15.44

Recovery Wells

RW-1	24.65	8.94'	-	-	15.71
RW-2	25.34	9.81'	-	-	15.53
RW-3	29.07	9.11'	0.77'	0.59	20.55

* No Data for Well #123 was accessible on this visit.

RECEIVED

DEC 23 1987

GROUNDWATER SECTION
WILMINGTON REGIONAL OFFICE

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

B) FREE PRODUCT HOLDING TANK DATA:

1) Off-site Paraxylene Project (RW-1 and RW-2):

a) Product Recovered This Period:

Date: **Amount:**

10/29/87 through 11/27/87 No Product Recovered This Period

b) Free Product Recovered to Date: 925 gallons

2) Fuel Oil Recovery Project (RW-3):

a) Product Recovered This Period:

Date: **Amount:**

10/30/87 through 11/27/87 51 Gallons free product recovered

b) Product Recovered to Date: 1,046 gallons

C) MONITORING/RECOVERY SYSTEM STATUS:

1) Monitoring Wells:

Date: Measured Observations & Modifications:

11/27/87 X All wells measured except for 123 which was inaccessible during our site visit.

2) Recovery Well Pumps (Suction & Scavenger Pumps):

Date: Operation Checked Observations & Modifications:

11/2/87	<u>X</u>	RW-1 and RW-2 shut off, RW-3 OK
11/9/87	<u>X</u>	RW-1 and RW-2 shut off, RW-3 OK
11/16/87	<u>X</u>	RW-1 and RW-2 shut off, RW-3 OK
11/23/87	<u>X</u>	RW-1 and RW-2 shut off, RW-3 OK, scavenger malfunctioning, fixed
11/27/87	<u>X</u>	RW-1 and RW-2 shut off, RW-3 OK

RECEIVED

DEC 23 1987

GROUNDWATER SECTION
WILMINGTON REGIONAL OFFICE

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

3) Suction Pump (SD-1):

Date:	Operation Checked	Observations & Modifications:
11/2/87	<u>X</u>	OK
11/9/87	<u>X</u>	Throttled back; infiltration trench overflowing
11/16/87	<u>X</u>	OK
11/23/87	<u>X</u>	OK
11/27/87	<u>X</u>	OK

4) Discharge System:

a) Separator:

Date:	Operation Checked	Observations & Modifications
11/2/87	<u>X</u>	Operation OK
11/9/87	<u>X</u>	Operation OK; bailed product to holding tank
11/16/87	<u>X</u>	Operation OK; bailed product to holding tank
11/23/87	<u>X</u>	Operation OK; bailed product to holding tank
11/27/87	<u>X</u>	Operation OK

b) Product Holding Tank:

Date:	Checked	Observations & Modifications:
11/2/87	<u>X</u>	OK
11/9/87	<u>X</u>	OK
11/16/87	<u>X</u>	OK
11/23/87	<u>X</u>	OK
11/27/87	<u>X</u>	OK

c) Infiltration Trench:

Date:	Checked	Observations & Modifications:
11/2/87	<u>X</u>	Overflowing
11/9/87	<u>X</u>	Overflowing
11/16/87	<u>X</u>	Overflowing
11/23/87	<u>X</u>	Overflowing
11/27/87	<u>X</u>	Overflowing

RECEIVED

DEC 23 1987

GROUNDWATER SECTION
WILMINGTON REGIONAL OFFICE

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

II. DISCUSSION: (Refer to Figures 1 and 2.)

A) PLUME MANAGEMENT (See Figure 1):

1) Summary of observed changes in potentiometric surface:

Since our last report the overall surficial ground water surface level at the site has dropped approximately 0.3', while the flow direction has remained relatively unchanged. The suction pump controls were being adjusted on 11/27/87, and only a slight influence of the water table by RW-3 is noticeable in Figure 1, due to the relatively high water level in RW-3 on 11/27/87.

2) Is free product plume inside areal extent of monitoring/recovery system?

YES X NO X

3) Comments on plume management (See Figure 2):

Off-Site Paraxylene Project, Plume "A":

Free product accumulation was measured in well 202 and a trace was detected in well 203. Additional monitoring wells will be needed northwest of wells 202 and 203 in order to more accurately define the extent of the free product plume. The suction pumps for RW-1 and RW-2 will remain disconnected until recoverable levels of product are detected around the recovery wells.

Fuel Oil Recovery Project, Plume "B" and Plume "C":

Recovery efforts still appear to be containing Plume "B". The estimated extent of free floating product apparently continued to decrease during this past monitoring period. The isolated accumulations of product observed in wells 103 and 124 (Plume "C") will continue to be closely monitored.

Significant increases in accumulation of free product have been noted in the storm drain near the north gate where the additional suction pump (SD-1) is installed. This storm drain is part of an extensive storm drain network draining much of the fuel oil site. The free product is presently being pumped from the storm drain and collected in the double gravity separator which also handles the effluent from RW-3.

RECEIVED

DEC 23 1987

GROUNDWATER SECTION
WILMINGTON REGIONAL OFFICE

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

B) FREE PRODUCT RECOVERY:

Off-Site Paraxylene Project:

In the past monitoring period no recoverable amounts of free floating product have been detected around RW-1 and RW-2. To date, a total of 925 gallons of free floating product have been recovered at the site.

Fuel Oil Recovery Project:

The pumping activity from RW-3 continues to accumulate free floating product from Plume "B". Since the last report, 51 gallons of recovered product have been pumped from RW-3 to the product holding tank. 941 gallons of recovered product was also removed from the double gravity separator by Richard Catlin & Assoc., Inc., and High Rise Service Co. during the past monitoring period. Most of the product collected in the separator was apparently pumped from SD-1, located in the storm drain.

C) RECOMMENDED RECOVERY SYSTEM MODIFICATIONS:

1) Additions or modifications to system:

On 11/10/87 and 11/16/87, samples were taken of the effluent from the paraxylene/fuel oil double gravity separators and the nearby RW-4 and RW-5 separators at the Koch terminal. The samples were tested for concentrations of benzene, toluene, xylene, methyl tertiary butyl ether, 1,2 dibromo ethane, naptha, and #2 fuel oil; the laboratory results are attached. The laboratory analyses indicate relatively high levels of dissolved hydrocarbon constituent exist at all three sampling locations.

Additionally, the addition of the storm drain pump to the system has overloaded the double gravity separator/infiltration trench system previously used only for RW-1, 2 and 3.

RECEIVED

DEC 23 1987

GROUNDWATER SECTION
WILMINGTON REGIONAL OFFICE

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

It is suggested that a centrally-located separator system, utilizing the four existing on-site tanks and the off-site 2,000 gallon product holding tank, be installed on-site to handle all effluent from the existing pumps. Separator effluent should, in turn, be pumped to a central holding tank or lagoon for aeration. The system could be designed to allow for treatment of other on-site generated contamination, such as effluent from tank bottoms, etc. Alternatives of system design are presently being discussed, and a design/cost proposal will be presented in the near future.

2) Routine maintenance:

N/A

Angela S. Freeman for

J. Reed Whitesell, Project Mgr., Quality Assurance Officer

Nancy A. Dehn for

Stephan A. Tyler, Project Geologist

RECEIVED

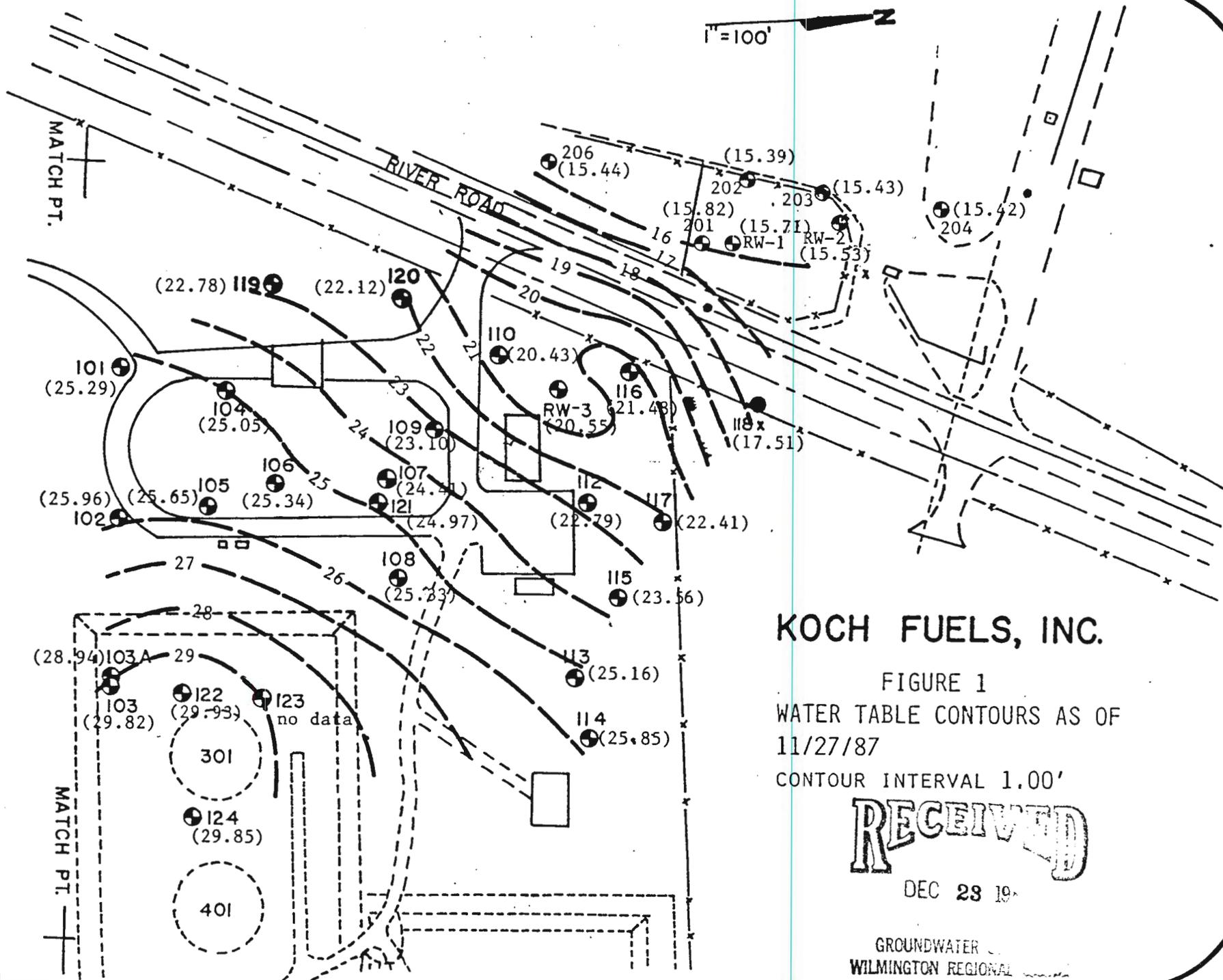
DEC 23 1987

GROUNDWATER SECTION
WILMINGTON REGIONAL OFFICE

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A



KOCH FUELS, INC.

FIGURE 1
 WATER TABLE CONTOURS AS OF
 11/27/87
 CONTOUR INTERVAL 1.00'

RECEIVED

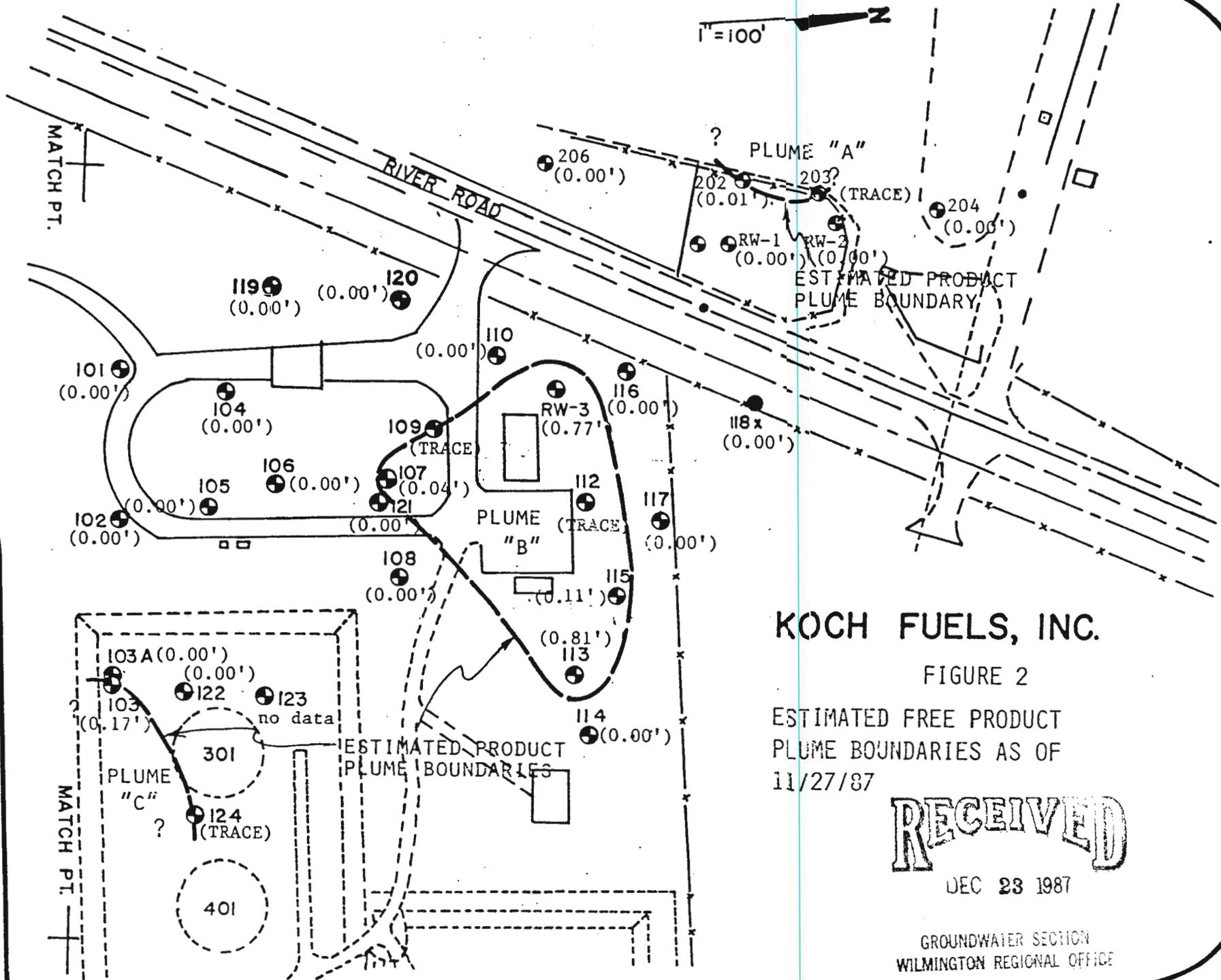
DEC 28 1987

GROUNDWATER
 WILMINGTON REGIONAL

Richard Catlin & Associates, Inc.
 CONSULTING ENGINEERS
 AND HYDROGEOLOGISTS

RC&A

Richard Catlin & Associates, Inc.
CONSULTING ENGINEERS
AND HYDROGEOLOGISTS
RC&A



KOCH FUELS, INC.

FIGURE 2

ESTIMATED FREE PRODUCT
PLUME BOUNDARIES AS OF
11/27/87

RECEIVED

DEC 23 1987

GROUNDWATER SECTION
WILMINGTON REGIONAL OFFICE

LAW & COMPANY
Consulting and Analytical Chemists

ESTABLISHED 1903

Main Office
1711 Castle Street
P.O. Box 629
Wilmington, N.C. 28402

RICHARD SPIVEY, President
919-762-7082 919-762-8956
TWX 510-937-0280

REPORT DATE: 11-12-87

RICHARD CATLIN & ASSOCIATES
POST OFFICE BOX 557
WRIGHTSVILLE BEACH, NORTH CAROLINA
28480

DATE RECEIVED: 11-10-87
DATE COLLECTED: 11-10-87
COLLECTED BY: STEVE TYLER
LAB I.D. # EW 8924

SAMPLE DESCRIPTION: KOCH SAMPLES

TESTS/SAMPLES	UNITS	RW-5	RW-3
BENZENE	PPB	124	62
TOLUENE	PPB	1910	185
XYLENE	PPB	2480	12500
METHYL TER-BUTYL ETHER	PPB	27	13
1,2 DIBROMO ETHANE (EDB)	PPB	13	<1.0

CHEMIST: Jolly Bedwan

RECEIVED

DEC 23 1987

GRU...
WILMINGTON REGIONAL OFFICE

LAW & COMPANY
Consulting and Analytical Chemists

ESTABLISHED 1903

Main Office
1711 Castle Street
P.O. Box 629
Wilmington, N.C. 28402

RICHARD SPIVEY, President
919-762-7082 919-762-8956
TWX 510-937-0280

REPORT DATE: 11-23-87

RICHARD CATLIN & ASSOCIATES
POST OFFICE BOX 557
WRIGHTSVILLE BEACH, NORTH CAROLINA
28480

DATE RECEIVED: 11-16-87
DATE COLLECTED: 11-16-87
COLLECTED BY: STEVE TYLER
LAB I.D. # EW 9024

SAMPLE DESCRIPTION: KOCH FUELS

TESTS/SAMPLES	UNITS	RW-4	RW-3	RW-5
BENZENE	PPB	79	---	---
TOLUENE	PPB	910	---	---
XYLENE	PPB	1740	---	---
METHYL TER-BUTYL ETHER	PPB	23	---	---
1,2 DIBROMO ETHANE (EDB)	PPB	12	---	---
NAPHTHA	PPB	<1	<1	<1
#2 FUEL OIL	PPB	1120	6580	<1

RECEIVED

DEC 23 1987

GROUNDSURVEILLANCE DIVISION
WILMINGTON REGIONAL OFFICE

CHEMIST: Dolly Bidwan

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS AND HYDROGEOLOGISTS

RC&

December 1, 1986

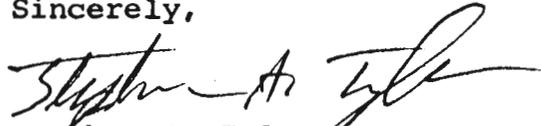
Koch Fuels, Inc.
ATTN: Mr. Jim Strickland
P. O. Box 3958
Wilmington, N.C. 28406

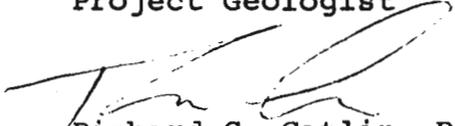
Dear Mr. Strickland:

Attached is our monthly monitoring report concerning the ground water clean-up project near the State Ports Authority south gate in the north project area. An additional copy is enclosed for you to forward to Mr. Rick Shiver, P.G., of the N. C. Division of Environmental Management, 7225 Wrightsville Avenue, Wilmington, N. C. 28403-3696.

If you have any questions or requests, please contact our office. We will continue to monitor the site and report to you again next month.

Sincerely,


Stephan A. Tyler
Project Geologist


Richard G. Catlin, P.E., P.G.
President

Enclosures

SAT/nd

RECEIVED

DEC 16 1986

GROUNDWATER SECTION
WILMINGTON REGIONAL OFFICE

JOB: Koch Fuels

COMPUTED BY: SAT

DATE: 12/2/86

DESCRIPTION: Monitoring

CHECKED BY: RGC

DATE: 12/2/86

MONTHLY ASSESSMENT
MONITORING REPORT

1) WATER TABLE SURFACE:

- A) CHANGES SINCE LAST REPORT: During this past month the water table has dropped an average of 0.14'.
- B) DISCUSSION: The ground water geometry and flow direction have remained relatively the same since our last report.

2) CONTAMINATION PLUME:

- A) CHANGES SINCE LAST REPORT: Both recovery wells RW-8 and RW-9 continue to accumulate significant volumes of product. In monitoring wells #201 and #206, product levels have increased since our last report. Product volumes in monitoring wells #202 and #203 have decreased during this past month.
- B) DISCUSSION: This data seems to indicate that the contamination plume configuration has remained unchanged in the past month.

3) RECOVERY PROGRESS:

- A) CHANGES SINCE LAST REPORT: Mechanical difficulties have hampered recovery efforts for the past 10 days. Nonetheless, to date approximately 447 gallons of product have been recovered.
- B) DISCUSSION: Repair of the recovery system should be completed in the near future. We still advise that our previous recommendations concerning additional wells be carried out. We will continue bi-weekly product removal from the contaminated wells and, using the scavenger in both the north and south recovery wells.

RECEIVED

DEC 16 1986

Sheet 1 of 1

GROUNDWATER SECTION
WILMINGTON REGIONAL OFFICE

Richard Catlin & Associates, Inc.

CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A

N.C. STATE PORTS HARDSTAND

FIGURE 1 12/1/86
WATER TABLE CONTOURS AS OF 11/25/86

RECEIVED

DEC 16 1986

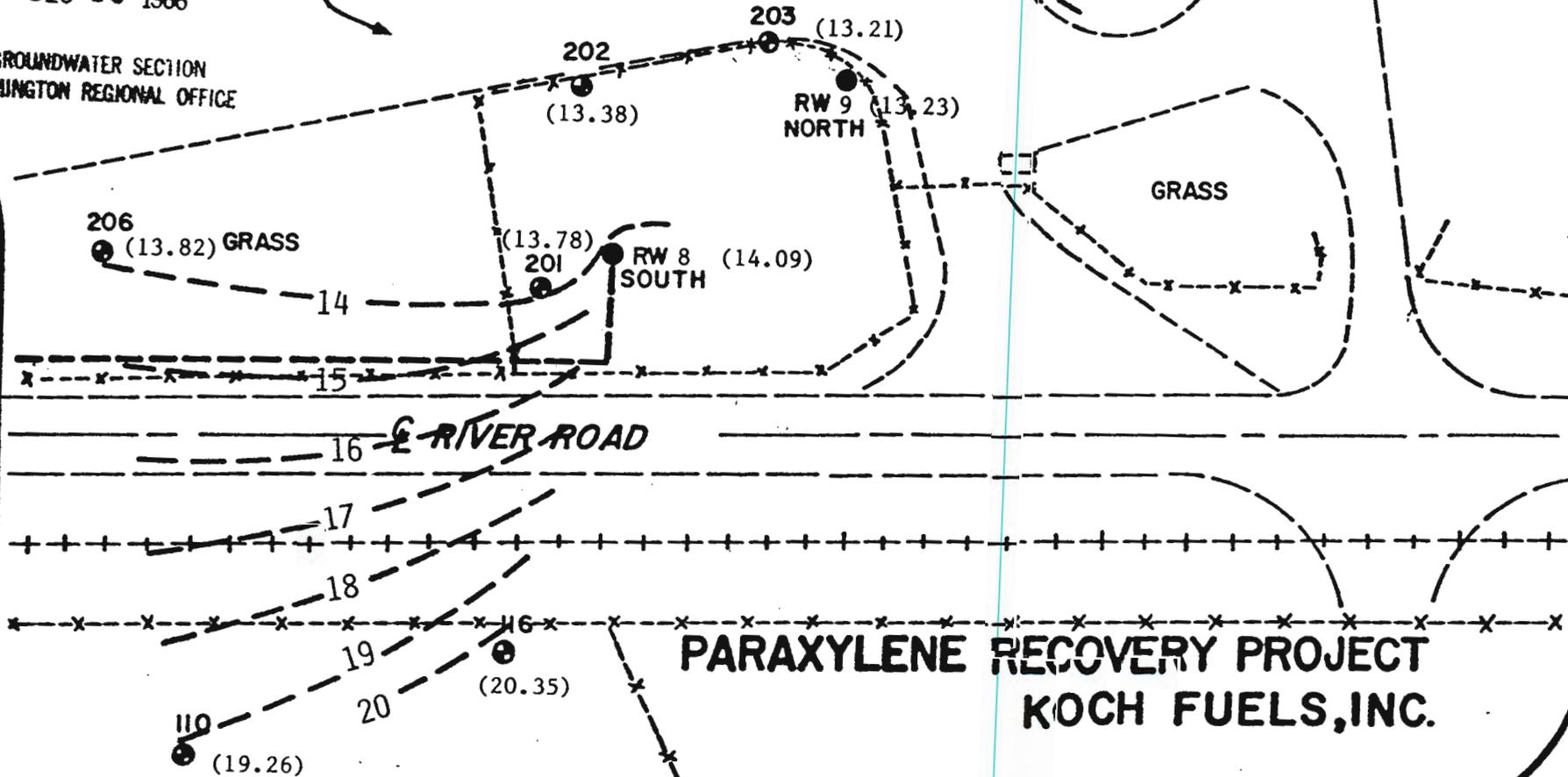
ASPHALT



GROUNDWATER SECTION
WILMINGTON REGIONAL OFFICE

Richard Catlin & Associates, Inc.
CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A



**PARAXYLENE RECOVERY PROJECT
KOCH FUELS, INC.**

RECEIVED

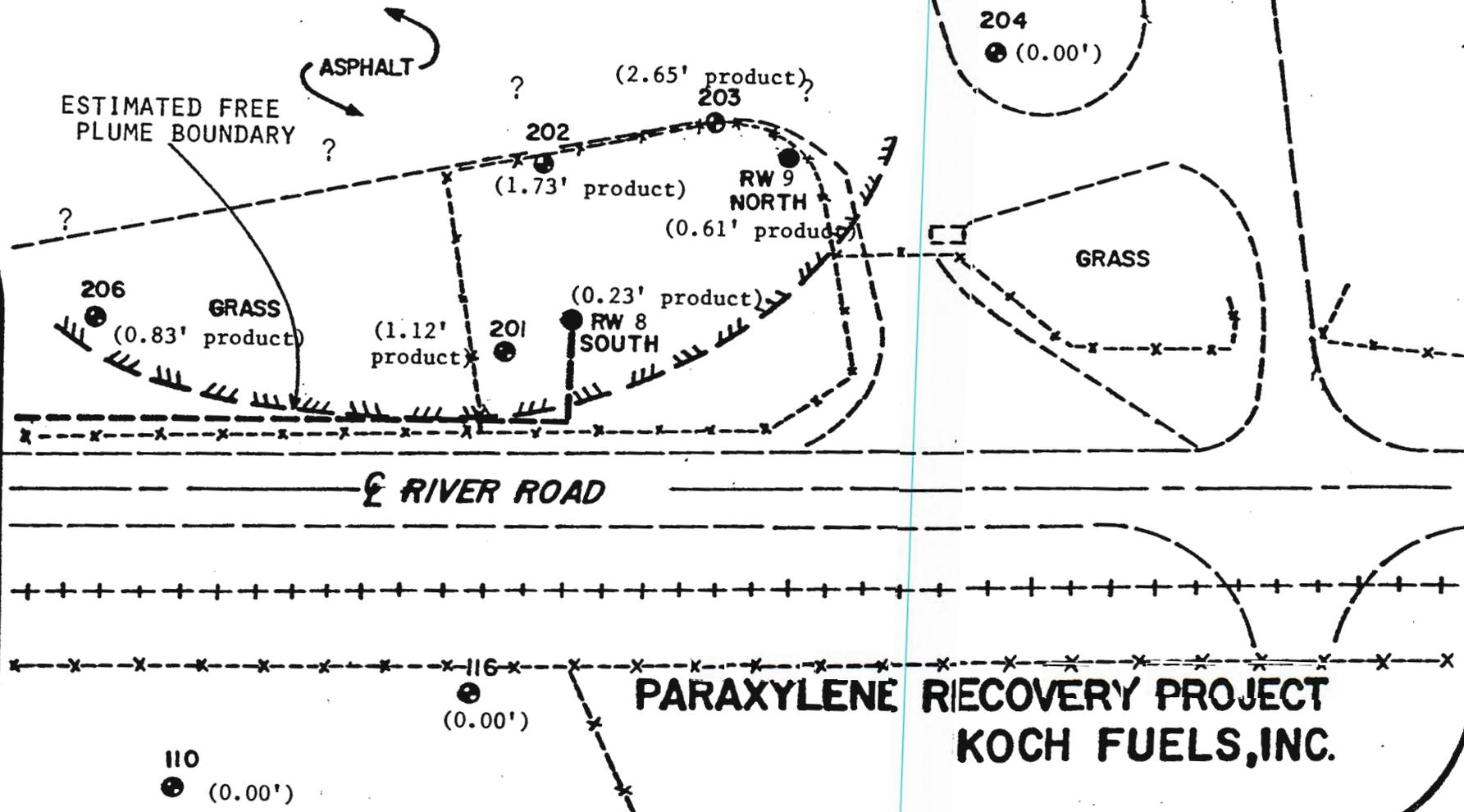
DEC 16 1986

N.C. STATE PORTS HARDSTAND

GROUNDWATER SECTION
WILMINGTON REGIONAL OFFICE



FIGURE 2. 12/1/86
ESTIMATED FREE PRODUCT PLUME AS OF 11/25/86



Richard Catlin & Associates, Inc.
CONSULTING ENGINEERS
AND HYDROGEOLOGISTS

RC&A