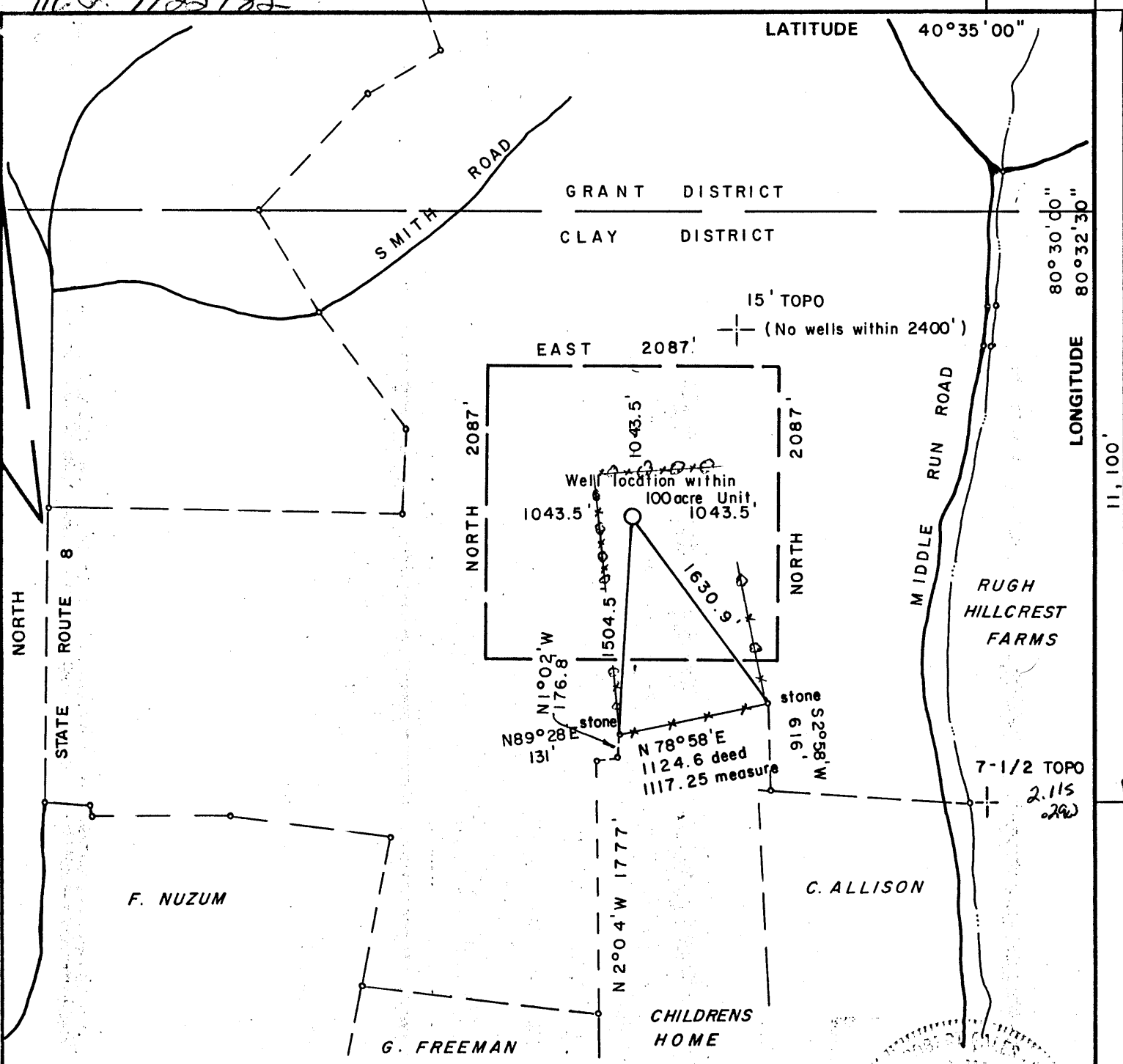


M.S. 9/22/82

1550'



FILE NO. 82-1026
 DRAWING NO. _____
 SCALE 1" = 1000'
 MINIMUM DEGREE OF ACCURACY 1/200
 PROVEN SOURCE OF ELEVATION EI. 1037 - Intersect'n of State Route 8 & Gas Valley Road

I THE UNDERSIGNED, HEREBY, CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF MINES.
 (SIGNED) John Robert Sales
 R.P.E. 5566 L.L.S. _____

PLACE SEAL HERE

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
 FORM IV-6 (8-78)
 WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
 (IF "GAS,") PRODUCTION ___ STORAGE X DEEP ___ SHALLOW X
 LOCATION: ELEVATION 1270 WATERSHED OHIO RIVER
 DISTRICT CLAY COUNTY HANCOCK
 QUADRANGLE East Liverpool South
 SURFACE OWNER RUGH HILLCREST FARM ACREAGE 1730
 OIL & GAS ROYALTY OWNER RUGH HILLCREST FARM LEASE ACREAGE 1730
 LEASE NO. W - 843
 PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___ PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____
 PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___
 TARGET FORMATION DEVONIAN SHALE ESTIMATED DEPTH 5100
 WELL OPERATOR Quaker State Oil Refining Corporation DESIGNATED AGENT Carl J. Carlson
 ADDRESS Box 1327 Parkersburg, W. Va. 26101

STATE OF WEST VIRGINIA
 DEPARTMENT OF MINES
 OIL AND GAS DIVISION

DATE SEPT. 16, 1982
 OPERATOR'S WELL NO. 2
 API WELL NO. 47-029-0104-P
 STATE COUNTY PERMIT

JUN 2 1986

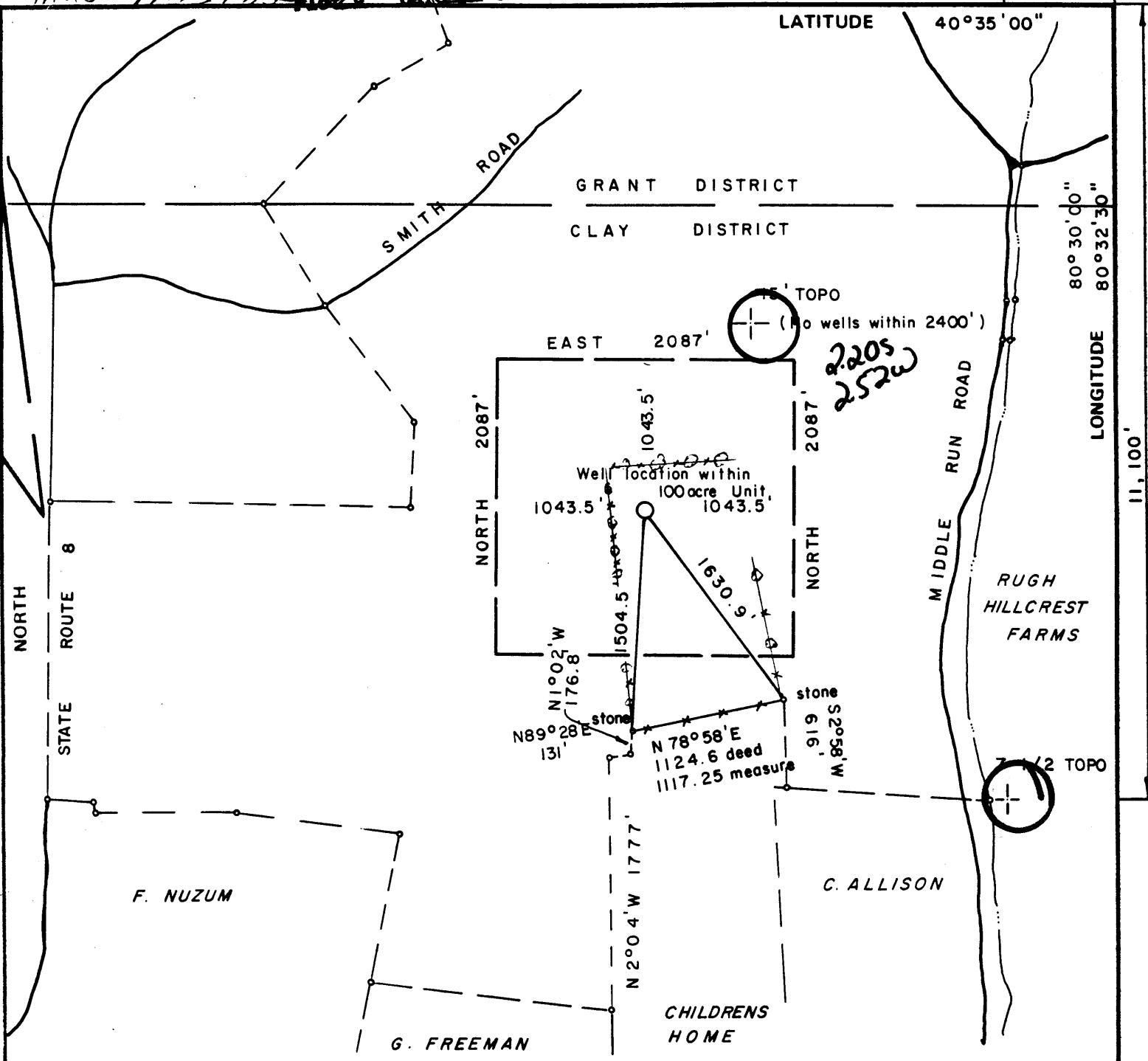
DESIGNATED AGENT Carl J. Carlson J for affidavit

ADDRESS Box 1327 Parkersburg, W. Va. 26101

HAN. 0104

111.5 9/22/82 Plot A Card CSD

1550'



FILE NO. 82-1026
 DRAWING NO. _____
 SCALE 1" = 1000'
 MINIMUM DEGREE OF ACCURACY 1/200
 PROVEN SOURCE OF ELEVATION EI. 1037 - Intersect'n of State Route 8 & Gas Valley Road

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF MINES.
 (SIGNED) John Robert Giles
 RFE 5566 L.L.S. _____

PLACE SEAL HERE

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
 FORM IV-6 (8-78)



DATE SEPT. 16, 1982
 OPERATOR'S WELL NO. 2
 API WELL NO. 47-029-0104
 STATE WV COUNTY HANCOCK PERMIT

STATE OF WEST VIRGINIA
 DEPARTMENT OF MINES
 OIL AND GAS DIVISION

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
 (IF "GAS,") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
 LOCATION: ELEVATION 1270 WATER SHED OHIO RIVER
 DISTRICT CLAY COUNTY HANCOCK
 QUADRANGLE East Liverpool, South Wellsville, 15' SE
 SURFACE OWNER RUGH HILLCREST FARM ACREAGE 1730
 OIL & GAS ROYALTY OWNER RUGH HILLCREST FARM LEASE ACREAGE 1730
 LEASE NO. W-843
 PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___ PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____

PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___
 TARGET FORMATION DEVONIAN SHALE ESTIMATED DEPTH 5100
 WELL OPERATOR Quaker State Oil Refining Corporation DESIGNATED AGENT Carl J. Carlson
 ADDRESS Box 1327 Parkersburg, W. Va. 26101 ADDRESS Box 1327 Parkersburg, W. Va. 26101

SEP 28 1982

IV-35
(Rev 8-81)

RECEIVED
DEC 27 1982

JAN 03 1983



**OIL & GAS DIVISION
DEPT. OF MINES**

State of West Virginia

**Department of Mines
Oil and Gas Division**

Date December 20, 1982
Operator's
Well No. 2
Farm RUGH HILLCREST FARMS
API No. 47 - 029 - 0104

**WELL OPERATOR'S REPORT
OF**

DRILLING, FRACTURING AND/OR STIMULATING, OR PHYSICAL CHANGE

WELL TYPE: Oil ___ / Gas xx / Liquid Injection ___ / Waste Disposal ___ /
(If "Gas," Production ___ / Underground Storage ___ / Deep ___ / Shallow xx /)

LOCATION: Elevation: 1270 Watershed Ohio River
District: Clay County Hancock Quadrangle East Liverpool So. 7.5

COMPANY QUAKER STATE OIL REFG. CORP.
ADDRESS P.O.Box 1327, Parkersburg, WV 26102-1327
DESIGNATED AGENT Carl J. Carlson
ADDRESS same as above
SURFACE OWNER RUGH HILLCREST FARMS, INC.
ADDRESS % Garfield Refractories, Bolivar, PA 15293
MINERAL RIGHTS OWNER Same as above
ADDRESS _____
OIL AND GAS INSPECTOR FOR THIS WORK Robert Lowther
ADDRESS Middlebourn, WV 26149
PERMIT ISSUED 9/23/82
DRILLING COMMENCED 10/19/82
DRILLING COMPLETED 10/23/82

Casing & Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft.
Size 20-16 Cond.	38	38	---
13-10"			
9 5/8			
8 5/8	1296	1296	290 sx
7			
5 1/2			
4 1/2	4912	4912	375 sx
3			
2			
Liners used			

IF APPLICABLE: PLUGGING OF DRY HOLE ON CONTINUOUS PROGRESSION FROM DRILLING OR REWORKING. VERBAL PERMISSION OBTAINED ON _____

GEOLOGICAL TARGET FORMATION Devonian Shale Depth 3637 - 4896 feet
Depth of completed well 5000 feet Rotary xx / Cable Tools _____
Water strata depth: Fresh na feet; Salt na feet
Coal seam depths: na Is coal being mined in the area? no

OPEN FLOW DATA
Producing formation Devonian Shale Pay zone depth 3637 - 4878 feet
Gas: Initial open flow show Mcf/d Oil: Initial open flow show Bbl/d
Final open flow 35 Mcf/d Final open flow show Bbl/d
Time of open flow between initial and final tests 24 hours
Static rock pressure 1150 est. psig (surface measurement) after -- hours shut in
(If applicable due to multiple completion--)
Second producing formation _____ Pay zone depth _____ feet
Gas: Initial open flow _____ Mcf/d Oil: Initial open flow _____ Bbl/d
Final open flow _____ Mcf/d Oil: Final open flow _____ Bbl/d
Time of open flow between initial and final tests _____ hours
Static rock pressure _____ psig (surface measurement) after _____ hours shut in

(Continue on reverse side)

DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC.

Perforated from 4733 to 4878 with 14 shots. Foam frac'd with 300 MSCF of N₂; 14,200 gal. water and 30M# sand. Breakdown at 1790 psi, treated at 20 BPM and 3800 psi, I.S.I. 2360 psi.
 Perforated from 4378 to 4603 with 12 shots. Foam frac'd with 200 MSCF of N₂; 10,000 gal. water & 13M# sand. Breakdown at 1570 psi, treated at 15 BPM and 2900 psi, I.S.I. 1660 psi.
 Perforated from 3637 to 3647 with 6 shots. Foam frac'd with 155 MSCF of N₂; 5460 gal. water and 10M# sand. Breakdown at 1420 psi, treated at 3.2 BPM & 2400 psi. I.S.I. 1450 psi.

WELL LOG

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS Including indication of all fresh and salt water, coal, oil and gas
Shale			0	310	
Sandstone			310	363	
Shale			363	368	
Sandstone			368	446	
Shale			446	600	
Sandstone			600	610	
Shale			610	725	
Sandstone			725	740	
Shale			740	766	
Sandstone			766	796	
Shale			796	1140	
Berea Sandstone			1140	1160	
Shale			1160	1696	
Gordon Siltstone			1696	1746	
Gray Shale			1746	3620	
Black Shale			3620	3657	
Gray Shale			3657	4418	
Black Shale			4418	4896	
Limestone <i>Onondaga</i>			4896	4946 LTD 5000 DTD	

4896
1270
3626

5000
1160
3840 expl.
ftg

(Attach separate sheets as necessary)

QUAKER STATE OIL REFINING CORPORATION

Well Operator

By: *Michael C. Brannock*

Date: Michael C. Brannock - 12/20/82

Note: Regulation 2.02(i) provides as follows:
 "The term 'log' or 'well log' shall mean a systematic detailed geological record of all formations, including coal, encountered in the drilling of a well."



Date: September 20, 1982

Operator's Well No. RUGH HILLCREST FARMS #2

API Well No. 47 -029 0104

State County Permit

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES, OIL AND GAS DIVISION
OIL AND GAS WELL PERMIT APPLICATION

WELL TYPE: Oil / Gas xx /
(If "Gas", Production xx / Underground storage / Deep / Shallow xx /)
LOCATION: Elevation: 1270 Watershed: Ohio River
District: Clay County: Hancock Quadrangle: East Liverpool South / 7.5

WELL OPERATOR QUAKER STATE OIL REFG. CORP. DESIGNATED AGENT Carl J. Carlson
Address P.O.Box 1327 Address P.O. Box 1327
Parkersburg, WV 26102-1327 Parkersburg, WV 26102-1327

OIL & GAS ROYALTY OWNER Rugh Hillcrest Farms, Inc. COAL OPERATOR none
Address c/o Garfield Refractories Co. Address
Bolivar, PA 15923

ACREAGE 1730
SURFACE OWNER Same as above OWNER(S) WITH DECLARATION ON RECORD:
Name none
Address
ACREAGE 1730 Name
Address

RECEIVED
SEP 21 1982
OIL AND GAS DIVISION
WV DEPARTMENT OF MINES

FIELD SALE (IF MADE) TO:
Address Columbia Gas Transmission Corp.
P.O. Box 498, Washington, PA 15301

OIL & GAS INSPECTOR TO BE NOTIFIED Name Robert Lowther COAL LESSEE WITH DECLARATION ON RECORD:
Address General Delivery Name none
Middlebourne, WV 26149 Address
304-758-4764

The undersigned well operator is entitled to operate for oil or gas purposes at the above location under a deed / lease xx
other contract / dated May 1, 1975, to the undersigned well operator from Rugh Hillcrest Farms, Inc.

(IF said deed, lease, or other contract has been recorded:)
Recorded on Oct. 12, 1976, in the office of the Clerk of the County Commission of Hancock County, West
Va., in Lease Book 16 at page 714. A permit is requested as follows:

PROPOSED WORK: Drill xx / Drill deeper / Redrill / Fracture or stimulate /
Plug off old formation / Perforate new formation /
Other physical change in well (specify)

—planned as shown on the work order on the reverse side hereof.

The above named coal operator, coal owner(s), and coal lessee are hereby notified that any objection they wish to make or are required to make by Code §22-4-3 must be filed with the Department of Mines within fifteen (15) days after the receipt of this Application by the Department.

Copies of this Permit Application and the enclosed plat and reclamation plan have been mailed by registered mail or delivered by hand to the above named coal operator, coal owner(s), and coal lessee on or before the day of the mailing or delivery of this Permit Application to the Department of Mines at Charleston, West Virginia.

PLEASE SUBMIT COPIES OF ALL GEOPHYSICAL LOGS DIRECTLY TO:
WEST VIRGINIA OIL AND GAS CONSERVATION COMMISSION
1615 WASHINGTON STREET EAST CHARLESTON, WV 25311
TELEPHONE: (304) 348-3092

QUAKER STATE OIL REFINING CORPORATION
Well Operator
By Carl J. Carlson
Its Carl J. Carlson - Dist. Manager

PROPOSED WORK ORDER

THIS IS AN ESTIMATE ONLY:
ACTUAL INFORMATION MUST BE SUBMITTED ON FORM IV-35 UPON COMPLETION

DRILLING CONTRACTOR (IF KNOWN) Sherman Drilling Co., Inc.
Address Box 112
Mineral City, Ohio 44656

GEOLOGICAL TARGET FORMATION, Devonian Shale

Estimated depth of completed well, 5100 feet Rotary XX / Cable tools /

Approximate water strata depths: Fresh, 240 feet; salt, na feet.

Approximate coal seam depths: na Is coal being mined in the area? Yes / No XX /

CASING AND TUBING PROGRAM

CASING OR TUBING TYPE	SPECIFICATIONS			New		Used		FOOTAGE INTERVALS		CEMENT FILL-UP OR SACKS (Cubic feet)	PACKERS
	Size	Grade	Weight per ft			For drilling	Left in well				
Conductor											Kinds
Fresh Water	8 5/8	na	20	xx		1350	1350			cts	
Coal											Sizes
Intermedlate											
Production	4 1/2	J-55	9.5	xx		5100	5100			1500'	Depths set
Tubing											
Liners											Perforations:
											Top Bottom

NOTE: Regulation 7.02 of the Department of Mines provides that the original and four copies of Form IV-2 must be filed with the Department, accompanied by (i) a plat in the form prescribed by Regulation 11, (ii) a bond in one of the forms prescribed by Regulation 12, or in lieu thereof the other security allowed by Code § 22-4-2, (iii) Form IV-9, "Reclamation Plan", applicable to the reclamation required by Code § 22-4-12b and Regulation 23, (iv) unless previously paid on the same well, the fee required by Code § 22-4-12a, and (v) if applicable, the consent required by Code § 22-4-8a from the owner of any water well or dwelling within 200 feet of the proposed well.

A separate Form Iv-2 shall not be required for fracturing or stimulating a well where fracturing or stimulating is to be part of the work for which a permit is sought and is noted as such on the Form IV-2 filed in connection therewith.

THIS PERMIT MUST BE POSTED AT THE WELL SITE.
ALL PROVISIONS BEING IN ACCORDANCE WITH CHAPTER 22,
ARTICLE 4 OF THE W. VA. CODE, THE LOCATION IS HEREBY
APPROVED FOR drilling. THIS PERMIT SHALL EXPIRE
IF OPERATIONS HAVE NOT COMMENCED BY 5-23-83;
BY [Signature]

The following waiver must be completed by the coal operator and by any coal owner or coal lessee who has recorded a declaration under Code 22-4-20, if the permit is to be issued within fifteen (15) days of receipt thereof.

WAIVER

The undersigned coal operator / owner / lessee / of the coal under this well location has examined this proposed well location. If a mine map exists which covers the area of the well location, the well location has been added to the mine map. The undersigned has no objection to the work proposed to be done at this location, provided, the well operator has complied with all applicable requirements of the West Virginia Code and the governing regulations.

Date: , 19

By
Its