ATTACHMENTS

ATTACHMENTS

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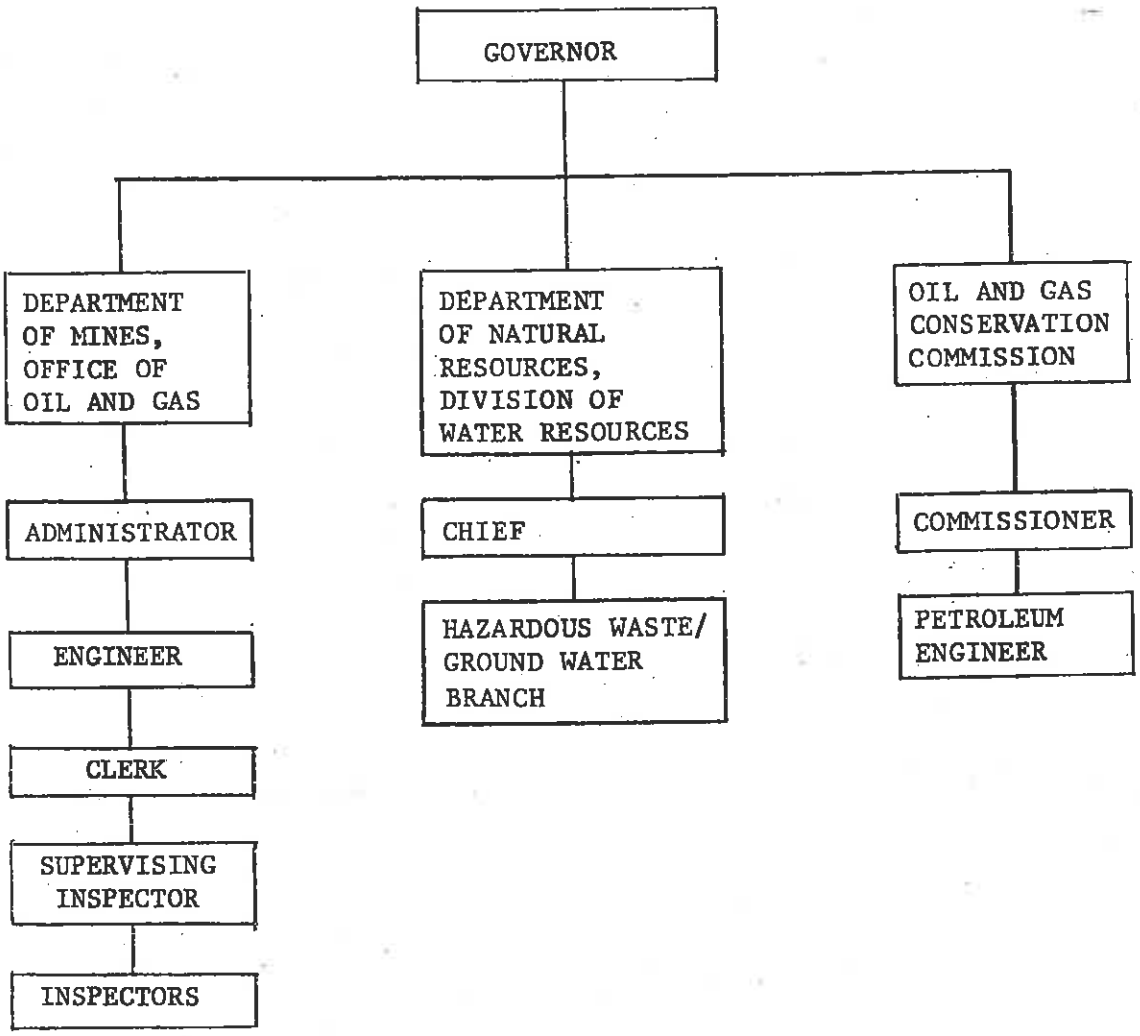
PARTICIPATING AGENCIES IN THE UIC PROGRAM



FORM IV-3
(Obverse)
[02-83]

DRILLING CONTRACTOR

1) Date: _____ 19___
2) Operator's Well No. _____
3) SIC Code
4) API Well No. 47 - _____ - _____
State County Permit
5) UIC Permit _____

STATE OF WEST VIRGINIA
LIQUID INJECTION OR WASTE DISPOSAL WELL PERMIT APPLICATION
For Both
DEPT. OF MINES, OFFICE OF OIL AND GAS, DNR, DIVISION OF WATER RESOURCES

6) WELL TYPE: Liquid Injection___/ Disposal___/ Gas Injection___/

7) LOCATION: Elevation _____ Watershed _____
District _____ County _____ Quadrangle _____

8) WELL OPERATOR _____
Address _____

9) ROYALTY OWNER _____
Address _____
Acreage _____

10) SURFACE OWNER _____
Address _____
Acreage _____

11) OIL AND GAS INSPECTOR TO BE NOTIFIED BEFORE DRILLING, AND 24 HOURS IN ADVANCE OF ANY MECHANICAL INTEGRITY TEST
Name _____
Address _____

12) DESIGNATED AGENT _____
Address _____

13) COAL OPERATOR _____
Address _____

14) COAL OWNER(S) WITH DECLARATION ON RECORD:
Name _____
Address _____
Name _____
Address _____

15) COAL LESSEE WITH DECLARATION ON RECORD:
Name _____
Address _____

16) The undersigned well operator is entitled to operate for liquid injection or waste disposal purposes at the above location under a deed___/ lease___/ other contract___/ dated _____,19___, to the undersigned well operator from _____.
(If said deed, lease, or other contract has been recorded:)
Recorded on _____,19___, in the office of the Clerk of the County Commission of _____ County, West Virginia, in _____ Book _____ at page _____. A permit is requested as follows:

17) PROPOSED WORK: Convert___/ Drill___/ Drill deeper___/ Fracture or stimulate___/ Plug off old formation___/ Other physical change in well (specify) _____

18) Date of first liquid injection or waste disposal: _____,19___.

PROPOSED WORK ORDER
THIS IS AN ESTIMATE ONLY:
ACTUAL INFORMATION MUST BE SUBMITTED ON FORM IV-37 UPON COMPLETION

19) Estimated depth of completed well _____ feet Rotary_____/ Cable tools___/

20) Approximate water strata depths: Fresh, _____ feet; salt, _____ feet.

21) Approximate coal seam depths: _____ Is coal being mined in the area? Yes___/ No___/

22) GEOLOGICAL TARGET FORMATION _____ Depth _____ feet(top) to _____ feet(bottom)
a) Virgin reservoir pressure in target formation _____ psig; Source _____
b) Estimated reservoir fracture pressure _____ psig (BHFP)
c) Perforation intervals _____ Open-hole intervals _____

23) MAXIMUM PROPOSED INJECTION OPERATIONS
Volume per hour: _____ Bottom hole pressure: _____ psig

24) DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED - PLUS ADDITIVES
_____

25) SPECIFICATION FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL _____
_____

26) FILTERS (IF ANY) _____

27) CASING AND TUBING PROGRAM

CASING OR TUBING TYPE	SPECIFICATIONS Size	Grade	Weight per ft.	New	Used	FOOTAGE INTERVALS For drilling	Left in well	CEMENT FILL-UP OR SACKS Cubic ft.	PACKERS
Conductor									Kinds
Fresh water									
Coal									Sizes
Intermediate									
Production									Depths se
Tubing									
Liners									Perforations
									Top Bottom

28) Copies of this Permit Application and the enclosed plat and reclamation plan have been mailed 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.

The person signing this document shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

_____
Well Operator

By_____

Its_____

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_____

OFFICE USE ONLY

PERMIT

Permit number_____

_____,19____
Date

This permit covering the well operator and well location shown below is evidence of permission granted to drill in accordance with the pertinent legal requirements subject to the conditions contained herein and on the reverse hereof. Notification must be given to the District Oil and Gas Inspector prior to the construction of roads, locations and pits for any permitted work. (Refer to No. 10)

In addition, the well operator or his contractor shall notify the proper District Oil and gas inspector 24 hours before actual permitted work has commenced.

Permit expires _____ unless work is commenced prior to that date and prosecuted with due diligence.

Bond:	Agent:	Plat:	Casing:	Fee:

_____
Administrator, Office of Oil and Gas

NOTE: Keep one copy of this permit posted at the drilling location.

IV-3 Line Item Explanation

1) Date of Application
2) Your well name and number
3) Designated Standard Industrial Code
4) To be filled out by the Office of Oil and Gas. For area permits, refer to instruction sheet IV-3-AP.
5) To be filled out by the Division of Water Resources unless this well is covered by an existing area permit (see instruction sheet IV-3-AP).
6) Well type for which permit is being applied for.
7) Where well is located.
8) Before a permit can be issued to a corporation, company partnership, or ficticious name, the name must be registered with the Secretary of State's Office.
9) Use separate sheet if necessary
10) Present surface owner at time application is filed.
11) Oil & Gas Inspector whose assigned county the well is located
12) See Reg. 7.01 relating to code §22-4-1k
13) As per §22-4-20; See Note 28
14 & 15) As per §22-4-20; See Note 28
16) Lease Information
17) Work that will be attemped - A separate Form IV-3 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-3 filed in connection therewith.
18) Anticipated date at which first injection or disposal will begin.

    No injection or disposal well may begin operation until an IV-37 (Pre-Operation Certificate) is submitted to the Office of Oil & Gas for authorization by the Administrator and returned to the operator.

19) Self explanatory
20) Depth to deepest freshwater, and shallowest salt water, taken from nearby wells corrected for differences in elevation
21) All coal seam depths
22) Anticipated formation in which the well will be completed and the depths to the top and bottom of the formation.
    a) The reservoir pressure of the target formation in the virgin state and the means of obtaining this pressure.
    b) Self explanatory
    c) Self explanatory
23) The maximum values anticipated
24) Identification of materials shall include their specific gravity.
25) As needed
26) As needed
27) Proposed casing program and cementing refer to Code 22-4-5, 22-4-6, 22-4-7, 22-4-8, 22-4-8a, Re. 9.01, 15.01, 15.02, 15.03, 15.04, 25.01, 25.02, 25.03, 25.04
28) The 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.

ADDITIONAL REQUIREMENTS

NOTE 1: Regulation 7.02 of the Department of Mines provides that the original and four copies of Form IV-3 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 §22-4-2a, (iii) Form IV-9, "Reclamation Plan", applicable to the reclamation required by Code §22-4-12b and Regulation 23, and (iv) 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-3 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-3 in connection therewith.

NOTE 2: In addition to the permit required from the Department of Mines, the operator of a disposal well must obtain a separate permit from the Department of Natural Resources under the provisions of Code §20-5a-5(b)(7). This Form IV-3 is the application for both permits.

A copy of Form IV-3 must also be sent to the Chief of the Division of Water Resources, 1201 Greenbrier St., Charleston, 25311 (see instruction sheet IV-3-AP for area permits).

NOTE 3: Before injection can be permitted a Form IV-37 must be filed with the Office of Oil and Gas along with proof of mechanical integrity.

NOTE 4: Submit on separate sheet application for variance (if any) from Regulation 9.01(a) (specify purpose, necessity, and justifications).

NOTE 5: The person signing this application shall be:

(1) For a corporation: by a principal executive officer of at least the level of vice-president;
(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

or his duly authorized representative.

A person is a duly authorized representative if:

(1) The authorization is made in writing by a person described in this note above.
(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
(3) The written authorization is submitted to the Chief of the Division of Water Resources.

NOTE 6: Submit a topographic map showing one mile around the well, (for a single well) or one mile around the boundary of the area (for area permits). This map must show the location of the facility, each well where fluids are injected, and those wells, springs, surface water bodies and drinking water wells listed in the public record or otherwise known to the applicant in the map area. (20-5A, UIC Regulation 13.10(d)(6)).

FORM IV-3-AP
[3-83]

STATE OF WEST VIRGINIA
INSTRUCTION SHEET FOR ENHANCED RECOVERY INJECTION WELLS and
UNDERGROUND INJECTION CONTROL (UIC) PROGRAM AREA PERMIT APPLICATIONS

for both the

DEPARTMENT OF MINES, OFFICE OF OIL AND GAS

and the

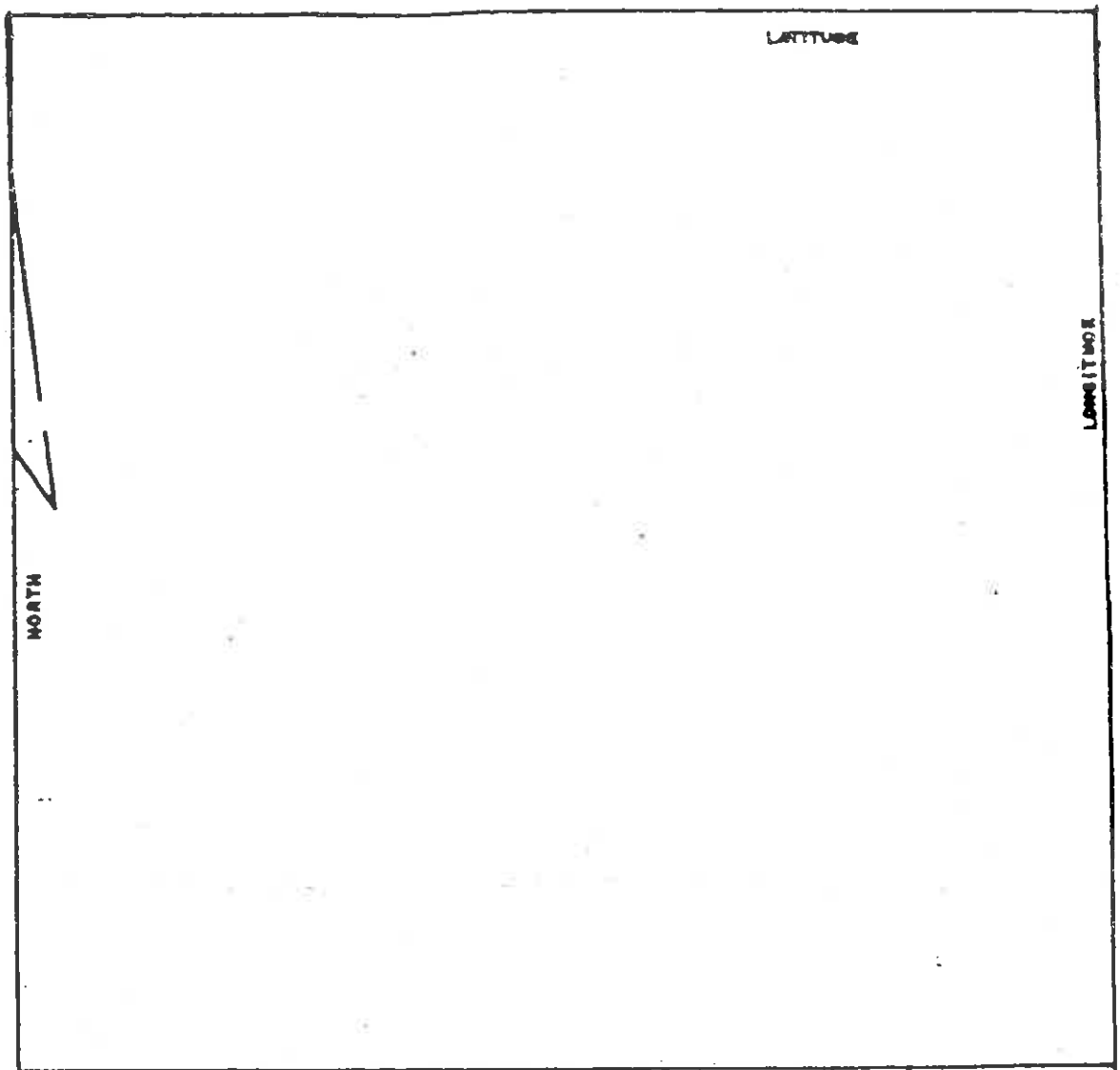
DEPARTMENT OF NATURAL RESOURCES, DIVISION OF WATER RESOURCES

1. - IF the new injection well(s) is(are) to be drilled in an existing enhanced recovery field or project, the Division of Water Resources will regulate by rule,
THEN the permit applicant must submit Form IV-3 to the Office of Oil and Gas only. It is not necessary (in this case) for the permit applicant to submit a copy of Form IV-3 to the Division of Water Resources as stated in NOTE 2 of Form IV-3.

2. - IF the new injection well(s) is(are) to be drilled into an area covered by an existing UIC area permit,
THEN
- IF the total number of injection wells (including the new well(s)) within the area covered by the UIC area permit does not exceed the maximum number allowed by the area permit,
THEN the permit applicant must submit Form IV-3 to the Office of Oil and Gas only. It is not necessary (in this case) for the permit applicant to submit a copy of Form IV-3 to the Division of Water Resources as stated in NOTE 2 of Form IV-3.

- IF the total number of injection wells (including the new well(s)) within the area covered by UIC area permit does exceed the maximum number allowed by the area permit,
THEN the applicant must apply to the Division of Water Resources to modify the UIC area permit. The permit applicant must also submit Form IV-3 to the Office of Oil and Gas as required.

3. - IF the injection well(s) is(are) to be covered by a UIC area permit and are EITHER existing wells being repermitted under the UIC Program, OR are wells in a new project or field,
THEN
1. The applicant must submit one Form IV-3 to the Division of Water Resources describing the general construction feature of all new wells. This Form IV-3 should have only items number 1, 6, 8, 17, 18, and 22-28 completed. If more than one type of general construction is proposed, submit a Form IV-3 for each type.
2. A list of API Well Numbers, and the corresponding Operator's Well Numbers for all existing injection wells inside the area permit and another list of Operator's Well Numbers for any new wells being proposed at the time of submittal should be submitted to the Division of Water Resources.
3. The applicant must also submit a Form IV-3 for each well to the Office of Oil and Gas as required under Chapter 22, Article 4 of the State Code of West Virginia.
4. A Form IV-37 (revised 1-83) must be submitted to the Office of Oil and Gas for each well included under the area permit. It must be approved by the Office of Oil and Gas before injection may begin.
5. A single topographic map showing the exact locations of all existing wells and fulfilling the requirements of NOTE 6 on Form IV-3 must be submitted to the Division of Water Resources.



FILE NO. _____
DRAWING NO. _____
SCALE _____
MINIMUM DEGREE OF ACCURACY _____
PROVEN SOURCE OF ELEVATION _____

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) _____
R.P.E. _____ L.L.S. _____

PLACE SEAL HERE

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

FORM IV-6
(8-78)

DATE _____, 19 ____
OPERATOR'S WELL NO _____
API WELL NO.
47 - _____ - _____
STATE COUNTY PERMIT

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION

WELL TYPE: OIL ___ GAS ___ LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS", PRODUCTION ___ STORAGE ___ DEEP ___ SHALLOW ___

LOCATION: ELEVATION _____ WATER SHED _____
DISTRICT _____ COUNTY _____
QUADRANGLE _____
SURFACE OWNER _____ ACREAGE _____
OIL & GAS ROYALTY OWNER _____ LEASE ACREAGE _____
LEASE NO. _____

PROPOSED WORK: DRILL ___ 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 _____ ESTIMATED DEPTH _____
WELL OPERATOR _____ DESIGNATED AGENT _____
ADDRESS _____ ADDRESS _____

FORM IV-37
(Obverse)
[01-83]

Date: _____, 19___
Operator's
Well No. _____
API Well No. ____ - _____ - _____
State County Permit

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES, OIL AND GAS DIVISION

PRE-OPERATION CERTIFICATE
FOR LIQUID INJECTION OR WASTE DISPOSAL WELL

WELL OPERATOR _____ DESIGNATED AGENT _____

Address _____ Address _____

_____ _____

GEOLOGICAL TARGET FORMATION _____ Depth ____ feet(top) to _____ feet(Bottom)

Virgin reservoir pressure in target formation _____ psig

Source of information on virgin reservoir pressure

Perforation intervals _____ Open-hole intervals _____

MAXIMUM PROPOSED INJECTION OPERATIONS

Volume per hour: _____ Bottom hole pressure: _____ psig

DETAILED IDENTIFICATION OF MATERIALS TO BE INJECTED

Liquids to be injected for oil recovery under Code § 22-4-10a: _____

_____

Wastes to be disposed of: _____

_____

_____

Additives (slurry mediums, inhibitors, solvents, oxidizers, deoxidizers, etc.):

_____

_____

Specific Gravity: _____

SPECIFICATIONS FOR CATHODIC PROTECTION AND OTHER CORROSION CONTROL _____

_____

_____

FILTERS (IF ANY) _____

_____

ADDITIONAL DRILLING AS PART OF THE CONVERSION

(Complete and submit Form IV-35, "Well Operator's Report of Drilling, Fracturing and/or Stimulating or Physical Change".)

DETAILS ON NEW CASING AND TUBING PROGRAM AS PART OF THE CONVERSION:

(To be completed below unless the new casing and tubing program is described on a Form IV-35, "Well Operator's Report of Drilling, Fracturing and/or Stimulating or Physical Change", submitted in connection with the permit to which this Form IV-37 preoperation certificate relates.)

CASING OR TUBING TYPE	SPECIFICATIONS					FOOTAGE INTERVALS		CEMENT FILL-UP OR SACKS (Cubic feet)	PACKERS
	Size	Grade	Weight per ft.	New	Used	For drilling	Left in well		
Conductor									Kinds
Fresh water									
Coal									Sizes
Intermediate									
Production									Depths set
Tubing									
Liners									Perforations:

(continue on reverse side)

FORM IV-37
(Reverse)
[01-83]

MECHANICAL INTEGRITY TEST

Test method: _____

_____

_____

_____

The undersigned certifies that the test was performed on _____, 19__ and demonstrated the mechanical integrity of the well. The test was witnessed by _____ representing the Office of Oil and Gas.

_____ _____
Well Operator Date

THIS WELL IS AUTHORIZED FOR INJECTION.

Signed _____ Administrator, Office of Oil and Gas

Date _____

[NOTE: That the mechanical integrity of this well must be demonstrated again within ninety (90) days of five years from this date in order for injection to continue. Please notify the state inspector 24 hours in advance of the test].

FACILITIES OR SYSTEMS TO PROTECT THE INTEGRITY OF THE GEOLOGICAL TARGET FORMATION FRACTURING THE CONFINING STRATA _____

_____

_____

APPLICATION FOR VARIANCE (IF ANY) FROM REGULATION 9.01 (a)
[Specify purpose, necessity, and justification]

_____
Well Operator

By: _____

Its _____

IV-40

OIL AND GAS CONSERVATION COMMISSION
CHARLESTON, WEST VIRGINIA 25305
MONITORING REPORT FOR LIQUID INJECTION, WASTE DISPOSAL, OR ENHANCED RECOVERY

Company Name _____ Month _____ 19____

Field _____ County _____ District _____

Permit Nos. _____

	Injection								Production	
		Pressure - psig					Volume in Bbls. and/or Mcf.		Volume in Bbls. and/or Mcf.	
		Annulus		Flowing						
Day	Oper-ating Hrs.	Max.	Min.	Max.	Min.	Shut In	Daily	Accumumulated	Daily	Accumulated

ATTACHMENTS PAGE 6

FORM [illegible]

STATE OF WEST VIRGINIA

DEPARTMENT OF MINES

OIL AND GAS WELLS DIVISION

AFFIDAVIT OF PLUGGING AND FILLING WELL

AFFIDAVIT SHOULD BE MADE IN TRIPLICATE. ONE COPY MAILED TO THE DEPARTMENT, ONE COPY TO BE RETAINED BY THE WELL OPERATOR AND THE THIRD COPY (AND EXTRA COPIES IF REQUIRED) SHOULD BE MAILED TO EACH COAL OPERATOR AT THEIR RESPECTIVE ADDRESSES.

_______________ COAL OPERATOR OR OWNER

_______________ ADDRESS

_______________ COAL OPERATOR OR OWNER

_______________ ADDRESS

_______________ LEASE OR PROPERTY OWNER

_______________ ADDRESS

_______________ NAME OF WELL OPERATOR

_______________ COMPLETE ADDRESS

_______________ 19____

WELL AND LOCATION

_______________ District

_______________ County

Well. No_______________

_______________ Farm

STATE INSPECTOR SUPERVISING PLUGGING_______________

AFFIDAVIT

STATE OF WEST VIRGINIA, } ss:
County of_______________ }

_______________ and _______________ being first duly sworn according to law depose and say that they are experienced in the work of plugging and filling oil and gas wells and were employed by_______________ well operator, and participated in the work of plugging and filling the above well, that said work was commenced on the_____day of_______________, 19____, and that the well was plugged and filled in the following manner:

SAND OR ZONE RECORD	FILLING MATERIAL	PLUGS USED	CASING	
FORMATION		SIZE & KIND	CSG PULLED	CSG LEFT IN

COAL SEAMS		DESCRIPTION OF MONUMENT
(NAME)		
(NAME)		
(NAME)		
(NAME)		

and that the work of plugging and filling said well was completed on the_______________day of _______________, 19____

And further deponents saith not.

____

____

Sworn to and subscribed before me this__________day of_______________, 19____

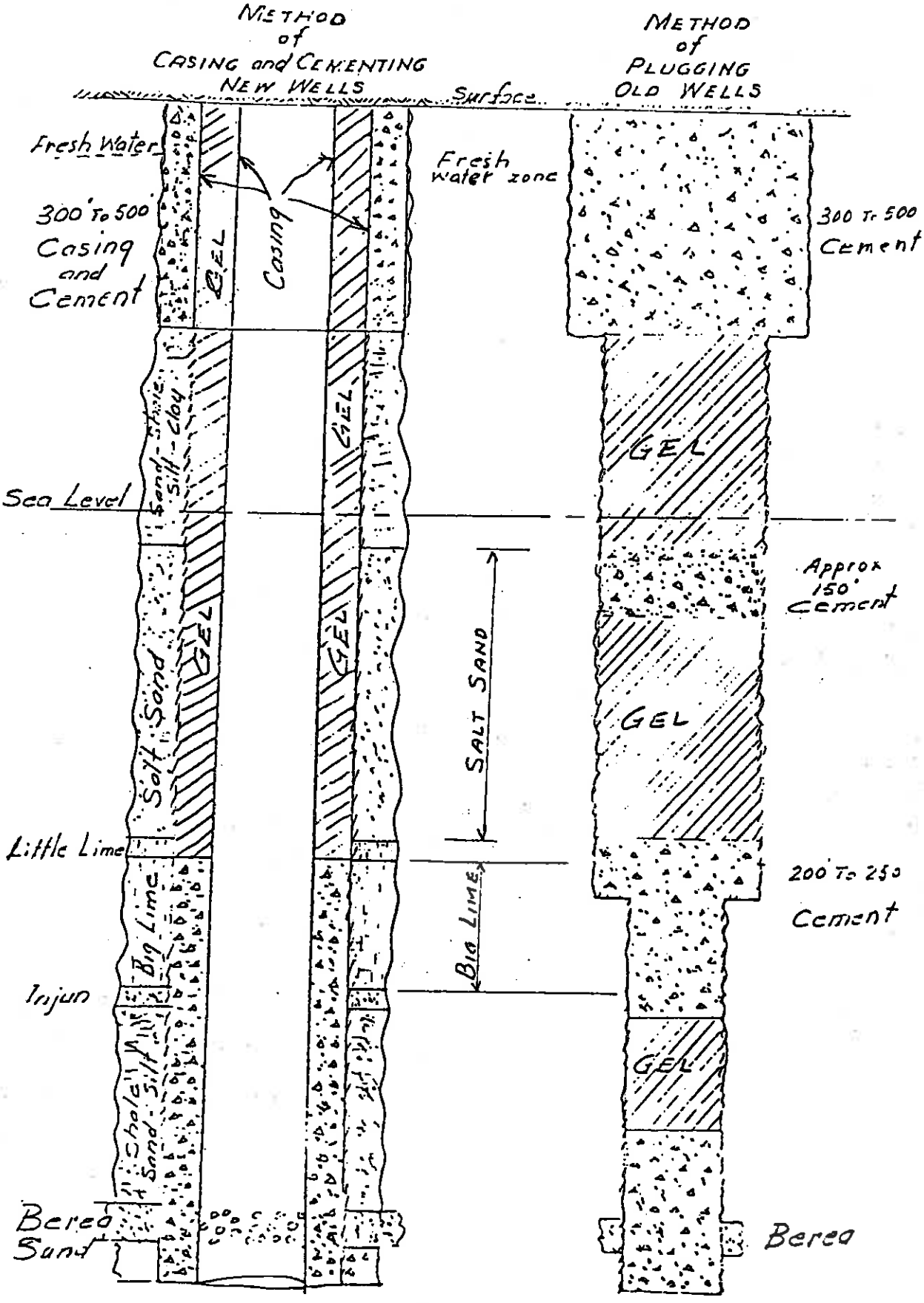
____
Notary Public.

My commission expires:

____

Permit No._______________

GUYAN OIL CO.
GRIFFITHVILLE OIL FIELD



PENNZOIL COMPANY
501 GRAND CENTRAL AVENUE • VIENNA W VA 26105 • PHONE (304) 422-6565
Mailing Address P O Drawer 1588 Parkersburg West Virginia 26101

February 24, 1981

Thomas E. Huzzey, Commissioner
Oil and Gas Conservation Commission
1613 Washington Street, East
Charleston, WV 25311

RE: Mechanical Integrity Test
Injection Well Casing
State of West Virginia

Dear Mr. Huzzey:

With respect to providing adequate protection of possible underground drinking water supplies in West Virginia from possible contamination from water injection wells, I offer the following comments. I have been intimately associated with injection wells and associated problems since I began working as a petroleum engineer 25 years ago. I have worked with water injection wells on a daily basis in West Virginia for the last 17 years and I feel completely qualified to recommend the following procedures in dealing with the mechanical integrity of water injection wells in the State.

INITIAL DRILLING AND COMPLETION

Surface casing: This casing string is set through any possible fresh water supply source and cemented back to the surface as required by State law. This procedure alone, is believed to be adequate protection for the protection of fresh water zones for the life of the well.

Injection casing: A string of 4½" casing is usually set through the pay and cemented with 50 to 100 sacks of cement. This casing should always be large enough to accommodate a tubing string and packer in case of a failure of the injection casing.

To insure the initial mechanical integrity of the injection casing, a pressure of 2,000 psig should be applied at the surface to the casing full of water. This pressure will generally be more than double the injection pressure used in a waterflood. The 2,000 psig pressure should hold for 15 minutes without significant bleed-off. If the injection well is completed openhole, suitable equipment may have to be placed in the hole to accommodate the 2,000 psig pressure test.

If this pressure test fails then the problem must be found and the leak remedied.

INJECTION WELL OPERATION

Permanent records for every injection well will be kept showing the following data:

1. Each well will be equipped with a meter in good repair and meter readings and pressures taken at least once a month.

2. Monthly and daily average water injection rates. (See attached Table 1)

3. Monthly average surface injection pressure.

4. Cumulative water injection on a monthly basis.

5. An injection rate-pressure curve on a monthly basis. (See attached Figure 1)

This data should be reviewed by a qualified individual on a monthly basis to determine if any irregularities suggest that a problem could exist in the mechanical integrity of a well.

The annulus of every injection well between the surface casing and the injection casing will be left open to the air where any flow will immediately be noticed by the well-tender or meter reader.

Any loss of mechanical integrity in the injection string will be obvious and will be accompanied by one or more of the following.

1. A drop on the pressure chart at the injection plant which will be picked up by the plant operator in less than 24 hours.

2. An unexplained increase in the daily water injection rate which will also be picked up by the plant operator. (If a by-pass regulator is being used, the pressure in (1) above could stay the same while the rate could appreciably increase.)

3. Both of the above occurences should lead to an immediate field search for a line break or well problem.

4. A drop in the wellhead pressure or an abnormal increase in an individual well rate would receive immediate attention to determine and correct the problem causing such behavior.

If the previous procedures are followed the chances of a casing leak developing unnoticed and then leaking into a possible fresh water supply through a completely cemented surface casing string are essentially nonexistent. These procedures will provide an integrity test on a continuing monthly basis and have been tested and proved for many years in field operations.

Contamination of ground waters by a waterflood operator with poor completions could only be accomplished in West Virginia through gross negligence and false reporting.

Very truly yours,

PENNZOIL COMPANY

John R. Blomberg

John Blomberg, District Manager
Registered Professional Engineer No. 8258

tlb

xc: Paul King
J. A. Crews

INJECTION DATA

Farm Name O. D. Stockly Well No. 171

Year 1979

Month	Avg. Press.	Avg. Rate	Water	Cum. Water
January	0	83	2573	2573
February	190	193	5417	7990
March	535	182	5657	13,647
April	800	168	5037	18684
May	1060	176	5458	24,142
June	960	137	4117	28,259
July	1065	117	3640	31,899
August	1010	108	3336	35,235
September	1050	98	2927	38,162
October	1095	89	2748	40,910
November	1080	81	2420	43,330
December	1065	80	2483	45813
Total				

Year 1980

Month	Avg. Press.	Avg. Rate	Water	Cum. Water
January	810	64	1970	47,783
February	1090	71	2057	49,840
March	1090	75	2316	52,156
April	1105	73	2175	54,331
May	1020	68	2100	56,431
June	835	53	1587	58018
July	855	56	1731	59749
August	945	56	1747	61,496
September	975	54	1679	63,175
October	945	51	1567	64,692
November	990	50	1507	66,199
December	895	48	1484	67683
Total				

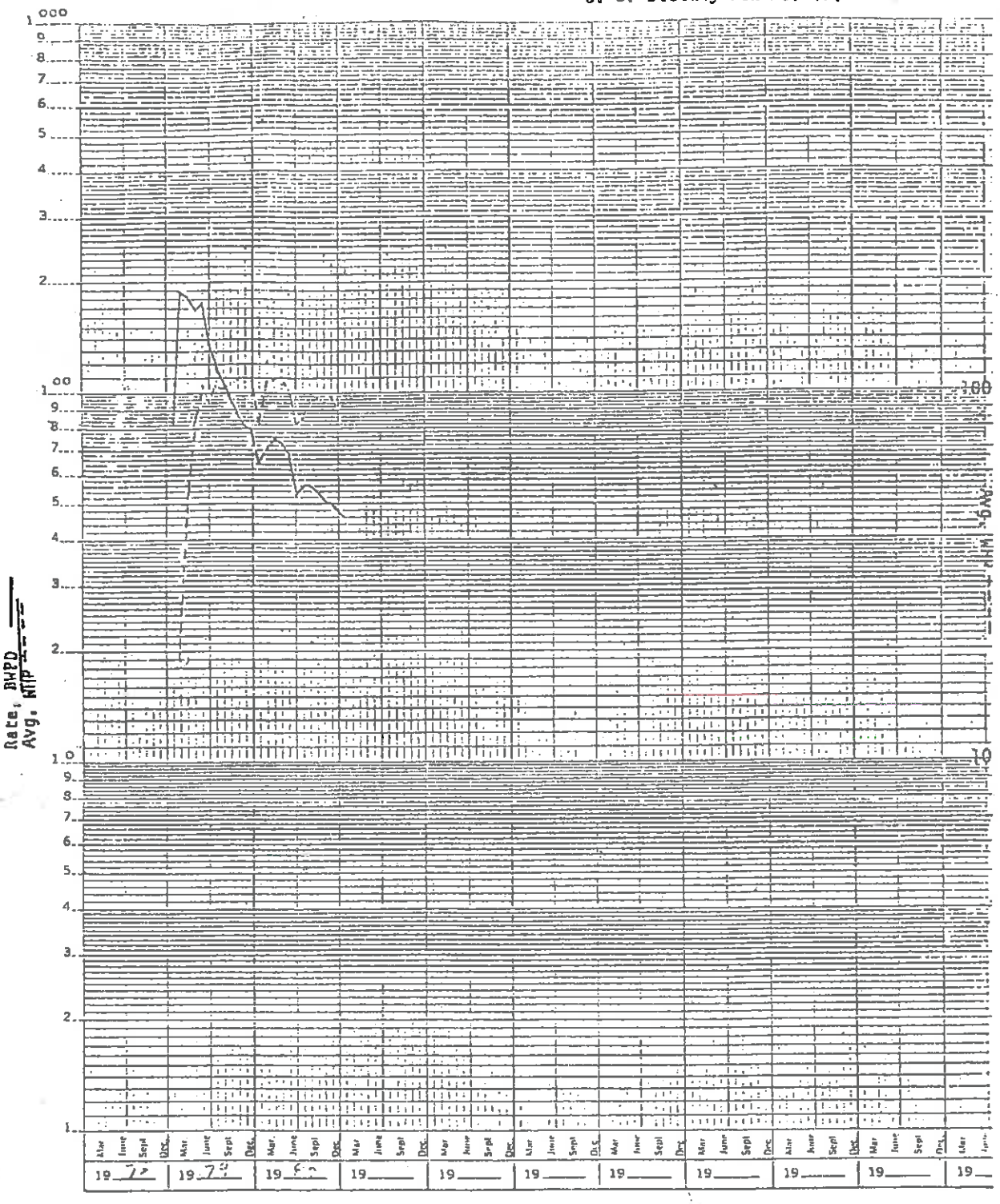
Year 1981

Month	Avg. Press.	Avg. Rate	Water	Cum. Water
January	940	46	1439	69,122
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				
Total				

Year 1982

Month	Avg. Press.	Avg. Rate	Water	Cum. Water
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				
Total				

FIGURE 1
O. D. Stockly WIW No. 171



STATE OF WEST VIRGINIA
OIL AND GAS CONSERVATION COMMISSION
CHARLESTON 25305

THOMAS E. HUZZEY
Commissioner

OGC-117.1

September 10, 1981

Mr. John Blomberg
Pennzoil Company
P. O. Box 1588
Parkersburg, WV 26101

Re: Well No. 47-087-3334

Dear Mr. Blomberg:

Based upon Barry Schmidt's report of the mechanical integrity test performed on this well on September 2, 1981, the well appears to have a pressure fall-off of approximately twenty (20) pounds per minute subsequent to shut-in at two thousand (2,000) pounds pressure.

With this amount of decline the well does not meet the standards we have established for mechanical integrity and it should not be used for fluid injection until a satisfactory test has been performed.

Per conversation between Havranek and Barry, this fall-off seems to be common in this area. If this be the case, a better completion method will be necessary.

Very truly yours,

Thomas E. Huzzey

Thomas E. Huzzey
Commissioner

STATE OF WEST VIRGINIA
OIL AND GAS CONSERVATION COMMISSION
CHARLESTON 25305

THOMAS E. HUZZEY
Commissioner

OGC-1170

September 8, 1981

Mr. Kenneth R. Gosnell
Sterling Drilling & Production Co., Inc.
710 Virginia Street, East
Charleston, WV 25301

Re: Secondary Recovery - Well No. 47-087-0805

Dear Mr. Gosnell:

Looking at the bonding log you have submitted for Well No. 47-087-0805, it appears very doubtful that there is adequate cementing of the casing to permit the well as an injection well.

To verify that it is capable of withstanding pressures of injection without leak, we will assist you by observing a mechanical integrity test that would place two thousand pounds pressure on the casing. This two thousand pounds pressure should hold without significant bleed-off for fifteen (15) minutes. If there is a bleed-off, obviously the well would fail the test.

When you have arranged for such a test, please call our office and we will have someone observe.

Very truly yours,

Thomas E. Huzzey

Thomas E. Huzzey
Commissioner

TEH/rf

THEIS EQUATION

$$r = \left(\frac{2.25 \times K \times H \times t}{S \, 10^{X}} \right)^{1/2}$$

where:

$$X = \frac{4 \pi K H \left(h_w - h_{b_o} \times SpG_b \right)}{2.3 \, Q}$$

r = Radius of endangering influence from injection well (length)

K = Hydraulic conductivity of the injection zone (length/time)

H = Thickness of the injection zone (length)

t = Time of injection (time)

S = Storage coefficient (dimensionless)

Q = Injection rate (volume/time)

h_{b_o} = Observed original hydrostatic head of injection zone (length) measured from the base of the lowest underground source of drinking water

h_w = Hydrostatic head of underground source of drinking water (length) measured from the base of the lowest underground source of drinking water

SpG_b = Specific gravity of fluid in the injection zone (dimensionless)

π = 3.142 (dimensionless).

The information on ATTACHMENTS
PAGES 17, 18 and 19 of the draft application
has been deleted.

STATE OF WEST VIRGINIA
OIL AND GAS CONSERVATION COMMISSION
CHARLESTON 25305

BEFORE THE OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF WEST VIRGINIA

IN THE MATTER OF THE APPLICATION OF GUYAN OIL COMPANY, INC., FOR AN ORDER FROM THE COMMISSION FOR THE OPERATION OF AN ENHANCED OIL RECOVERY PROJECT IN THE BEREA FORMATION, GRIFFITHSVILLE FIELD, UNION AND DUVAL DISTRICTS, LINCOLN COUNTY, WEST VIRGINIA.	) CAUSE NO. 10	
	) ORDER NO. 2	

REPORT OF THE COMMISSION

This cause came before the Commission on September 5, 1979, at 10:00 a.m. EST, in the Capitol Conference Center Lounge, Capitol Complex, Charleston, West Virginia, on order from the Commission to Guyan Oil Company, Inc., to show cause why the enhanced oil recovery project at the injection pressures shown in its reports for the Griffithsville Field, Union and Duval Districts, Lincoln County, West Virginia, should continue.

FINDINGS OF FACT

1. Applicant is an operator within the meaning of paragraph (5), section (a) of §22-4A-2.

2. That the application was submitted under the provisions of section §22-4A-8, of the amended chapter twenty-two of the Code of West Virginia, one thousand nine hundred thirty-one, governing secondary recovery of oil.

3. That from the evidence and testimony introduced in the hearing, it appears and the Commission hereby finds:

(a) The initial pilot failed because the oil production well selected was found saturated with water from a "dump flood".
(b) The pilot plan of Order No. 1 in Cause 10 of April 18, 1977, has not been followed but rather has been modified without notice to the Commission.
(c) No CO_2 has been injected since the issuance of Order No. 1, Cause No. 10.
(d) Applicant stated by testimony and by Exhibit 5 that CO_2 injection will begin November 1, 1979.
(e) Testimony asks permission to change the pilot to expand from eight thousand (8,000) to thirty thousand (30,000) tons of CO_2 to be injected.

(f) Exhibit 8 shows injection of CO_2 into twelve (12) rather than the original four (4) wells of Exhibit 7.

(g) The present water flood has produced twenty-three thousand, seven hundred and thirty-seven (23,737) barrels of oil from an injection of three hundred eighty-nine thousand, four hundred and seventy-two (389,472) barrels of salt and produced water.

(h) Testimony was that an injection profile was taken and a copy filed in the hearings of January 13, 1977. The records contain no injection profile log.

CONCLUSION OF LAW

1. That due notice of the time, place and purpose of the hearing has been given in all respects as required by law.

2. That pursuant to Chapter 22, Article 4A, Code of West Virginia 1931, as amended, the Commission has jurisdiction over the subject matter embraced in said notice, and the persons interested therein, and jurisdiction to promulgate the hereinafter prescribed order.

ORDER

It is ordered by the Oil and Gas Conservation Commission that Guyan Oil Company, Inc., continue as designated unit operator of its Griffithsville Unit.

Further, the expansion of the pilot to thirty thousand (30,000) tons of CO_2 injected into twelve (12) wells is approved.

Further, it is ordered that the CO_2 injection begin on or before November 1, 1979.

Further, that the operator continue to submit to the Commission on the "Enhanced Recovery Report" or other acceptable form a report of its progress in the operation of the pilot authorized for each calendar month by the twentieth (20th) of the succeeding month.

Further, that annually, on or about November first (1st), a "bottom hole bomb" pressure be recorded on each injection, production and observation well, and a copy filed with the Commission.

Further, that an injection profile log be taken on a "typical" injection well, and a copy of the record filed with the Commission.

Further, that the Commission be appraised of any shut-down that continues in excess of eight (8) hours.

Further, that the Commission be advised of wells added to the program, or those wells abandoned.

Further, any alteration of the plan described in 3 (f) of the Findings of Fact and Exhibit 9 be approved by the Commission.

Further that the Commissioner, or his designated agent or agents, have the right at any and all times hereafter to investigate the project and the unit operator shall secure the approval of the Commissioner for any change in the injection wells.

The Commission further incorporates the Report of the Commission and the Findings of Fact and Conclusion of Law dated September 5, 1979, as if the same were fully set forth and includes hereto the Report of the Commission and Findings of Fact and Conclusion of Law as a part of this Order.

Entered this 20th day of September, 1979.

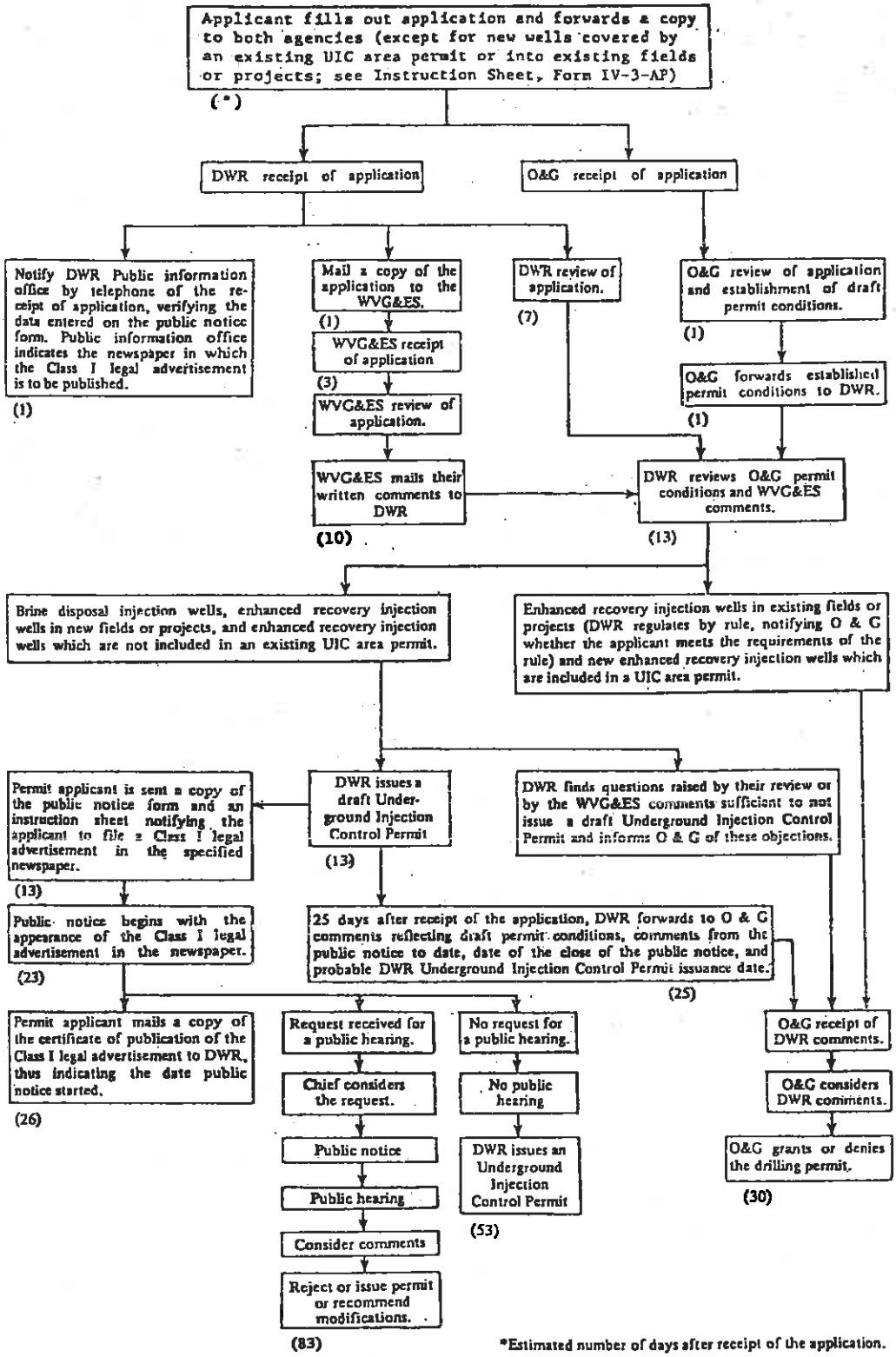
IN THE NAME OF THE STATE OF WEST VIRGINIA:

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF WEST VIRGINIA

By: Thomas E. Huzzey
Thomas E. Huzzey, Commissioner

FLOW CHART FOR PROCESSING CLASS II PERMIT APPLICATIONS

Division of Water Resources (DWR); Office of Oil & Gas, Department of Mines (O&G); West Virginia Geological and Economic Survey (WVG&ES); Underground Injection Control (UIC)



*Estimated number of days after receipt of the application.

COST ITEMIZATION FOR IMPLEMENTATION AND MAINTENANCE
OF THE CLASS II PORTION OF THE
U. I. C. PROGRAM IN 1983 BY THE
OFFICE OF OIL AND GAS OF THE DEPARTMENT OF MINES

	CATEGORIES				
	PERSONAL SERVICES*	TRAVEL	SUPPLIES	CONTRACTUAL	TOTAL
ADMINISTRATION	12,500	1,000			13,500
CLERICAL	9,500	-	2,100	3,300 (ISSD)***	14,900
TRAINING	4,250	1,500	-	-	5,750
MAPPING	4,250	-	1,500	-	5,750
INSPECTION	20,000	14,509	1,500	-	36,009
PUBLIC PARTICIPATION	nil	-	-	-	-
ENFORCEMENT	-	-	-	1,100	1,100
TOTAL DIRECT	50,500	17,009	5,100	4,400	77,009
INDIRECT**	24,341	-	-	-	24,341
TOTAL	74,841	17,009	5,100	4,400	101,350

*Rough estimate of man-hours needed to implement U. I. C. Program for next year (5,456 hours)

**Indirect costs calculated as 48.2% of Personnel costs.

***Information Systems Services Division.

NOTE: These funds are to be obtained from carryover funding from FY '82.

IV-35
(Rev 8-81)

Date_____
Operator's
Well No._____
Farm_____
API No.____-_____-_____

State of West Virginia
Department of Mines
Oil and Gas Division

WELL OPERATOR'S REPORT
OF
DRILLING, FRACTURING AND/OR STIMULATING, OR PHYSICAL CHANGE

WELL TYPE: Oil___/ Gas___/ Liquid Injection___/ Waste Disposal___/
(If "Gas," Production___/ Underground Storage___/ Deep___/ Shallow___/)

LOCATION: Elevation:_____ Watershed_____
District:_____ County_____ Quadrangle_____

COMPANY_____
ADDRESS_____
DESIGNATED AGENT_____
ADDRESS_____
SURFACE OWNER_____
ADDRESS_____
MINERAL RIGHTS OWNER_____
ADDRESS_____
OIL AND GAS INSPECTOR FOR THIS WORK_____
_____ ADDRESS_____
PERMIT ISSUED_____
DRILLING COMMENCED_____
DRILLING COMPLETED_____
IF APPLICABLE: PLUGGING OF DRY HOLE ON CONTINUOUS PROGRESSION FROM DRILLING OR REWORKING. VERBAL PERMISSION OBTAINED ON_____

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

GEOLOGICAL TARGET FORMATION_____ Depth_____ feet
Depth of completed well_____ feet Rotary____/ Cable Tools_____
Water strata depth: Fresh_____ feet; Salt_____ feet
Coal seam depths:_____ Is coal being mined in the area?____

OPEN FLOW DATA
Producing formation_____ Pay zone depth_____ feet
Gas: Initial open flow_____ Mcf/d Oil: Initial open flow_____ Bbl/d
Final open flow_____ Mcf/d 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
(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)

FORM IV-35
(REVERSE)

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

WELL LOG

FORMATION COLOR HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS Including indication of all fresh and salt water, coal, oil and gas

(Attach separate sheets as necessary)

Well Operator

By: _____

Date: _____

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 [illegible], encountered in the drilling of a well."

ATTACHMENTS, PAGE 26

MEMORANDUM OF UNDERSTANDING BETWEEN

THE DIVISION OF WATER RESOURCES
WEST VIRGINIA DEPARTMENT OF NATURAL RESOURCES,

THE OFFICE OF OIL AND GAS
WEST VIRGINIA DEPARTMENT OF MINES,

AND

THE WEST VIRGINIA OIL AND GAS CONSERVATION COMMISSION

MEMORANDUM OF UNDERSTANDING BETWEEN

THE DIVISION OF WATER RESOURCES
WEST VIRGINIA DEPARTMENT OF NATURAL RESOURCES

THE OFFICE OF OIL AND GAS
WEST VIRGINIA DEPARTMENT OF MINES

AND

THE WEST VIRGINIA OIL AND GAS CONSERVATION COMMISSION

Relating to the joint development and implementation of the Underground Injection Control Program - Part C - of the Safe Drinking Water Act (Public Law 93-523, as amended) (hereafter "program") and the administration of the laws of the State of West Virginia to protect the environment and the public health from the adverse effects of the subsurface disposal or emplacement of fluids or wastes by well injection.

I. Preamble

The Division of Water Resources, Department of Natural Resources as the designated lead agency for the State (hereafter "Chief"), the Office of Oil and Gas, Department of Mines (hereafter "Administrator") and the Oil and Gas Conservation Commission (hereafter "Commissioner") enter into this Memorandum of Understanding (hereafter "MOU"). The agencies listed above shall be referred to collectively as the "participating agencies". This MOU is to serve as an instrument for the development and implementation of an effective and approvable program in the State. This MOU will assure efficient distribution of grant funds and will minimize duplication of effort among the participating agencies.

II. Authority and Responsibility

The Chief has the authority to enter into this MOU pursuant to Section 4 of Chapter 20, Article 5A of the Code of West Virginia for the purpose of receiving grant funds and coordinating with other agencies and interested parties to secure the benefits of federal legislation. The Administrator has the authority under Chapter 22, Article 4, Section 1, et seq. The Commissioner has the authority under Chapter 22, Article 4A, Section 1, et seq.

It is understood that the Chief retains ultimate responsibility for program development and implementation and shall retain oversight of all activities related to such implementation and development.

Such oversight, in general, shall include:

1. Approval of all workplans to be funded by the pass through of federal grant funds to participating agencies.

2. Review and approval of all reports and submissions required by this MOU and in relation to the expenditure of grant funds.

3. Approval of all contractual agreements entered into by the participating agencies when federal grant funds are utilized in part or in full for such agreements.

III. Substantive and Procedural Arrangement

A. Division of Water Resources
Department of Natural Resources

1. The Chief shall apply for and receive grant funds at a level based on an approved work plan negotiated with the U. S. Environmental Protection Agency.

2. The Chief shall provide pass through grant funds to the Administrator and the Commissioner for program development work eligible under such grant, upon submission of an approvable work plan and estimated budget to the Chief.

3. The Chief shall issue construction and operational permits or authorize by rule for Class I, Class II, Class III, Class IV, and Class V injection wells with limitations on the depth of the injection interval, the nature and quantity of the injected waste and injection pressures.

4. The Chief shall receive monitoring reports submitted by the operators of Class I, existing Class II brine disposal, Class III, Class IV, and Class V wells and shall review these monitoring reports to verify compliance with permit conditions.

5. The Chief shall forward to the Administrator copies of all monitoring forms and reports received from existing Class II brine disposal well installations. (New and repermitted Class II brine disposal wells will send monitoring forms and reports to the Administrator as required.) These copies shall be forwarded immediately upon receipt of the monitoring forms and/or reports.

6. The Chief will insure compliance with the provisions of all the well permits issued through inspections, fines, criminal proceedings, and any other enforcement remedies available.

7. The Chief shall review existing permits for Class I wells against the criteria established under operational requirements listed in Sections 7.00 and 8.00 of the West Virginia Administrative Regulations of the State Water Resources Board, Chapter 20-5A, 1982 (Series IX).

8. The Chief shall review existing permits for Class I wells against the criteria established under operational requirements listed in Section 10.00 of the West Virginia Administrative Regulations of the State Water Resources Board, Chapter 20-5A, 1982 (Series IX).

9. The Chief shall establish priorities for the repermitting of Class I and Class III wells based on the information supplied through his review and that provided by the Administrator and the Commissioner.

10. In coordination with the Administrator and the Commissioner, the Chief shall review existing permits for Class II wells against the criteria established under Section 9.00 of the West Virginia Administrative Regulations of the State Water Resources Board, Chapter 20-5A, 1982 (Series IX).

11. The Chief shall cooperate with the Administrator and the Commissioner in the establishment of priorities for the repermitting of Class II wells based on the information supplied through his review and that provided by the Administrator and the Commissioner.

12. The Chief shall review Class II well permit applications against the criteria established under Section 9.00 of the West Virginia Administrative Regulations of the State Water Resources Board, Chapter 20-5A, 1982 (Series IX), to insure adequate protection of underground sources of drinking water. The Chief shall issue Underground Injection Control – Permits to Class II wells which adequately protect underground sources of drinking water. It is unlawful to inject without either this permit or authorization by rule. Comments regarding applications for this permit shall be submitted in writing to the Administrator within thirty (30) days of the date upon which the Administrator receives the application.

13. The Chief will follow the procedure outlined in the Flow Chart for Processing Class II Injection Well Permit Applications found in Section IV of this MOU (page 7).

14. In order to avoid duplicative public hearings, the Chief will notify the Administrator and the Commissioner prior to scheduling any public hearing which involves injection wells which are within the jurisdiction of the Administrator and the Commissioner.

15. The Chief shall determine which aquifers in the State qualify for exempted aquifer status as defined in Section 3.00 of the West Virginia Administrative Regulations of the State Water Resources Board, Chapter 20-5A, 1982 (Series IX).

16. The Chief shall review monitoring reports and forms for Class II wells and take appropriate enforcement action after coordination with the Administrator and the Commissioner.

17. The Chief shall coordinate the inspection and enforcement of Class II well permits with the Administrator and the Commissioner.

18. The Chief shall cooperate with the Administrator and the Commissioner in responding to and investigating citizen complaints.

B. Office of Oil and Gas
Department of Mines

1. The Administrator will issue all well drilling permits within his jurisdiction and will insure the mechanical integrity of the well through a proper casing and cementing program to protect groundwater and a posted bond and plan for well abandonment.

2. The Administrator will insure compliance with the provisions of all well permits issued under his authority through inspections, fines, criminal proceedings, and other enforcement remedies available.

3. The Administrator shall review Class I, Class II and Class III wells for mechanical integrity and forward that information to the Chief.

4. In recognition of the authority vested in him by Chapter 22, Article 4 and 7 of the West Virginia Code, 1931, as amended, the Administrator

shall retain jurisdiction over wells utilized in the underground storage of natural gas.

5. The Administrator will follow the procedure outlined in the Flow Chart for processing Class II Injection Well Permit Applications found in Section IV of this MOU (page 7).

6. For each injection well permitted, the Administrator shall foward a copy of the Pre-Injection Certificate (Form IV-37) and a copy of the Well Record (Form IV-35) to the Chief. These copies shall be forwarded immediately upon receipt of the originals by the Administrator.

7. The Administrator shall cooperate with the Chief in the establishment of priorities for the re-permitting of existing Class II wells.

8. The Administrator shall forward to the Chief copies of all monitoring forms and reports received from Class II well installations. These copies shall be forwarded immediately upon receipt of the monitoring forms and/or reports.

9. When implementing the Underground Injection Control Program, the Administrator defines "Underground Source of Drinking Water" as in the West Virginia Administrative Regulations of the State Water Resources Board, Chapter 20-5A, 1982, Series IX (see Attachment A).

10. In order to avoid duplicative public hearings, the Administrator shall notify the Chief prior to scheduling any hearing which involves injection wells.

11. The Administrator shall submit to the Chief the necessary information regarding activities for which grant funding has or will be used (including inventory updates, progress reports, narrative workplans, budget estimates, annual program reports, and mid-course evaluation reports) as required by the U.S. Environmental Protection Agency (EPA) to meet Underground Injection Control Program requirements. This information shall be submitted to the Chief by the appropriate dates (Attachment B) so that the Chief may report to the U.S. Environmental Protection Agency and thereby insure the quarterly release of grant funds.

12. The Administrator shall provide the necessary State matching funds for all Federal pass through grant funds provided by the Chief.

13. The Administrator shall maintain adequate financial records for all Underground Injection Control Program expenditures until the program audit is completed.

14. The Administrator shall review all monitoring forms and reports submitted by the operators of Class II wells and shall take such actions as are necessary and appropriate to enforce all the terms and conditions of this permit.

15. The Administrator shall prepare and send to the Chief quarterly noncompliance reports based on the monitoring reports received from the operators of Class II wells for those wells designated "major" by the Chief. The Administrator shall also prepare and send to the Chief an annual report of noncompliance for all "minor" facilities.

16. The Administrator shall continue to inspect Class II wells and to enforce permit terms and conditions, except for those existing brine disposal wells which are currently operating under a permit from the Chief.

17. The Administrator shall promptly inform the Chief of any violations detected of the Chief's permit which are not also violations of the Administrator's permit.

18. The Administrator shall inform the Chief of enforcement actions taken by sending him a copy of each abatement form, criminal warrant, or court action filed on any Class II well facility.

19. The Administrator shall cooperate with the Chief in responding to and investigating citizen complaints.

C. Oil and Gas Conservation Commission

1. The Commissioner will regulate by issuing orders for operations of Class II enhanced recovery wells. Monitoring of operations will continue through the check of monthly monitoring reports submitted by the operators.

2. The Commissioner shall check the quality, quantity, and pressure of the injected fluid and the casing and cementing procedures for Class II enhanced recovery wells to insure that there will be no migration of fluids into fresh water zones.

3. The Commissioner shall initiate, include in the order and schedule a testing program to insure that all Class II wells are tested every five (5) years for casing and cementing integrity.

4. The Commissioner will follow the procedure outlined in the Flow Chart for Processing Class II Injection Well Permit Applications found in Section IV of this MOU (page 7).

5. The Commissioner shall cooperate with the Chief in the establishment of priorities for the re-permitting of existing Class II brine disposal wells.

6. The Commissioner shall forward to the Chief copies of all monitoring forms and reports received from Class II well installations. These copies shall be forwarded immediately upon receipt of the monitoring forms and/or reports.

7. When implementing the Underground Injection Control Program, the Commissioner defines "Underground Source of Drinking Water" as in the West Virginia Administrative Regulations of the State Water Resources Board, Chapter 20-5A, 1982, Series IX (see Attachment A).

8. In order to avoid duplicative public hearings, the Commissioner shall notify the Chief prior to scheduling any hearing which involves injection wells.

9. The Commissioner shall submit to the Chief the necessary information regarding activities for which grant funding has or will be used (including inventory updates, progress reports, narrative workplans, budget estimates, annual program reports, and mid-course evaluation reports) as required by the U.S. Environmental Protection Agency (EPA) to meet Underground Injection Control Program requirements. This information shall be submitted to the Chief by the appropriate dates (Attachment B) so that the Chief may report to the U.S. Environmental Protection Agency and thereby insure the quarterly release of grant funds.

10. The Commissioner shall provide the necessary State matching funds for all Federal pass through grant funds provided by the Chief.

11. The Commissioner shall maintain adequate financial records for all Underground Injection Control Program expenditures until the program audit is completed.

12. The Commissioner shall review all monitoring forms and reports submitted by the operators of Class II wells and shall take such actions as are necessary and appropriate to enforce all the terms and conditions of his permit.

13. The Commissioner shall prepare and send to the Chief quarterly non-compliance reports based on the monitoring reports received from the operators of Class II wells for those wells designated "major" by the Chief. The Administrator shall also prepare and send to the Chief an annual report of noncompliance for all "minor" facilities.

14. The Commissioner shall continue to inspect Class II wells and to enforce permit terms and conditions, except for those existing brine disposal wells which are currently operating under a permit from the Chief.

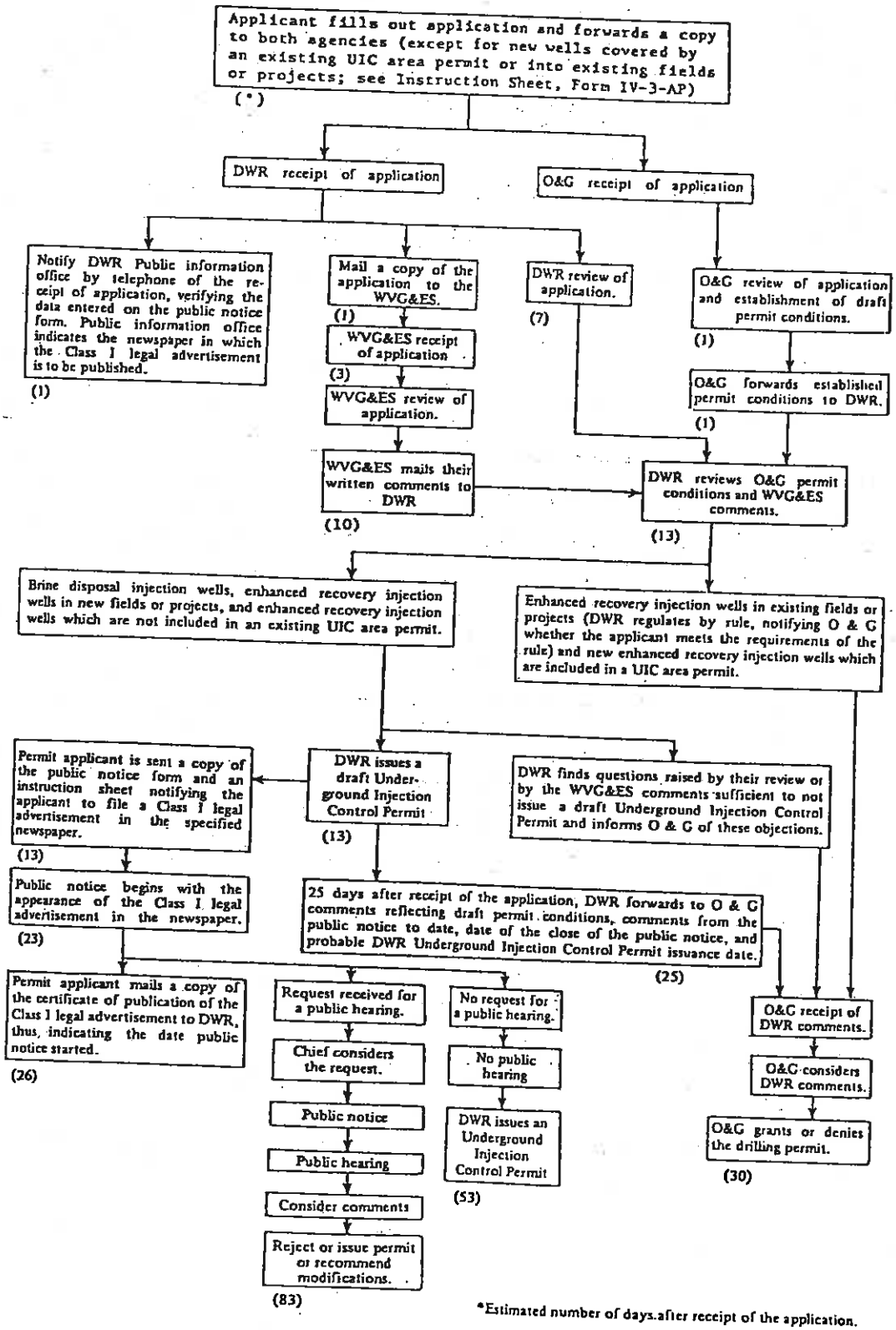
15. The Commissioner shall promptly inform the Chief of any violations detected of the Chief's permit which are not also violations of the Administrator's permit.

16. The Commissioner shall inform the Chief of enforcement actions taken by sending him a copy of each abatement form, criminal warrant, or court action filed on any Class II well facility.

17. The Commissioner shall cooperate with the Chief in responding to and investigating citizen complaints.

IV. FLOW CHART FOR PROCESSING CLASS II PERMIT APPLICATIONS

Division of Water Resources (DWR); Office of Oil & Gas, Department of Mines (O&G); West Virginia Geological and Economic Survey (WVG&ES); Underground Injection Control (UIC)



*Estimated number of days after receipt of the application.

V. Effective Date

This MOU and any subsequent modifications will take effect after signing by the participating agencies identified herein and upon authorization of the State program by the U. S. Environmental Protection Agency.

VI. Modifications

This MOU may be modified or amended by mutual written agreement signed by the participating agencies identified herein.

D. W. Robinson

Chief
Division of Water Resources

Administrator
Office of Oil and Gas
Department of Mines

Commissioner
Oil and Gas Conservation Commission

ATTACHMENT A

From the

West Virginia Administrative Regulations

of the

State Water Resources Board

Chapter 20-5A, 1982

(Series IX)

"Underground source of drinking water" (USDW) means an "aquifer" or its portion:

(a)(1) which supplies any public water system; or

(2) which contains a sufficient quantity of ground water to supply a public water system; and

(i) currently supplies drinking water for human consumption; or

(ii) contains fewer than 10,000 mg/l total dissolved solids; and

(b) Which is not an exempted aquifer.

ATTACHMENT B: REPORTING REQUIREMENTS

FREQUENCY	DATES	REPORT	FEDERAL CITATION
ANNUAL	Draft May 15 Final July 1	Annual UIC Program Plan	35.670-2 35.670-3
	January 15	Annual Program Report (A) Program Implementation (B) Suggested Program Changes (C) Updated Inventory	122.18(c)(4) (i)(A) (i)(B) (i)(C)
	January 15	Annual Non-Compliance Report for Non-Major Facilities	122.18(c)(1)
SEMI-ANNUAL	April 7 July 7 October 7	Semi-Annual Grant Progress Report	
QUARTERLY	April 15 July 15 October 15 January 15	Quarterly Non-Compliance Report for Major Facilities	122.18(a)
SPECIAL & UNUSUAL	February 10 & August 10 of first two years of Primacy	Midcourse Evaluation Report	122.18(c)(4) (ii) and 146.15 146.25 146.35