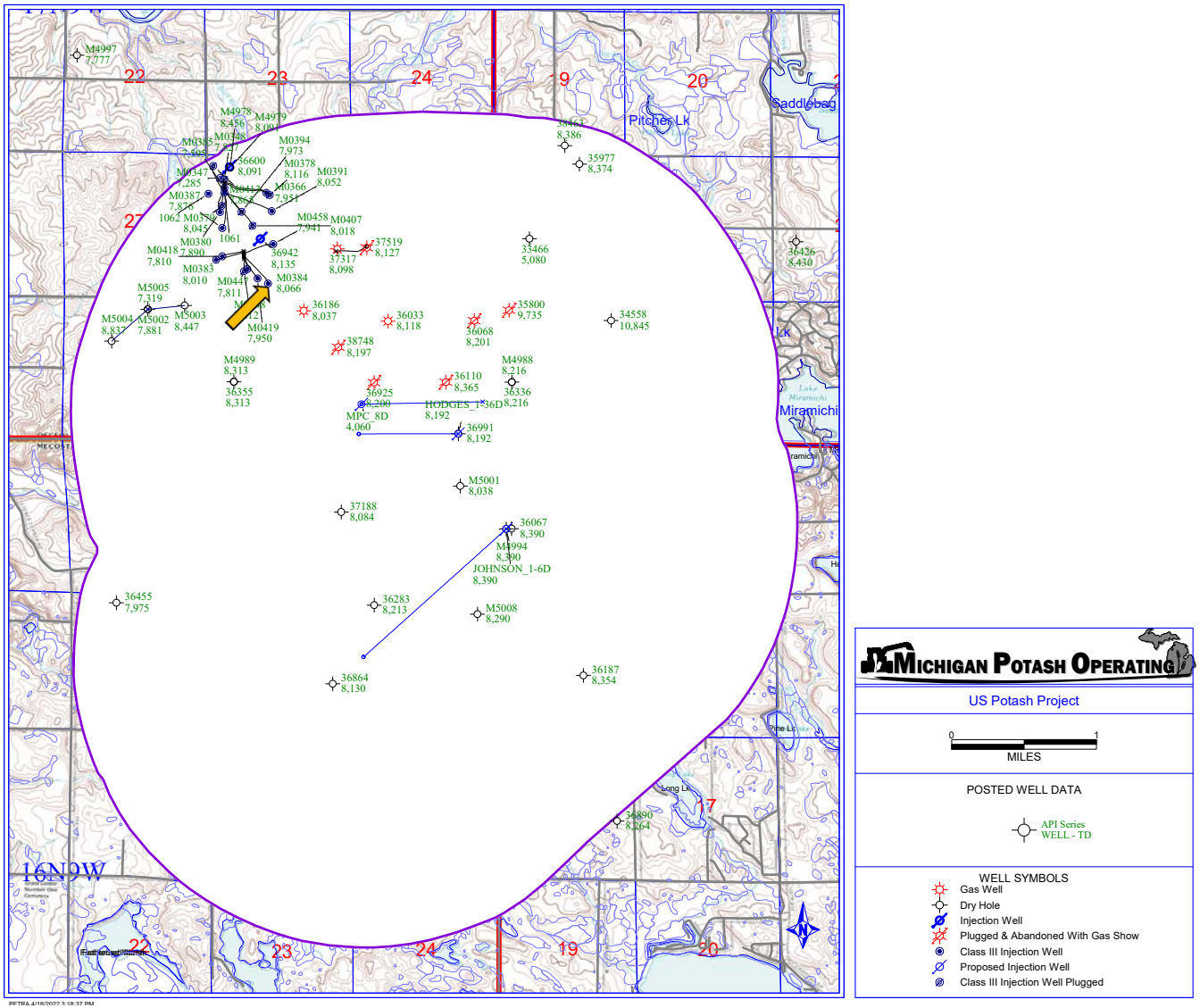


MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

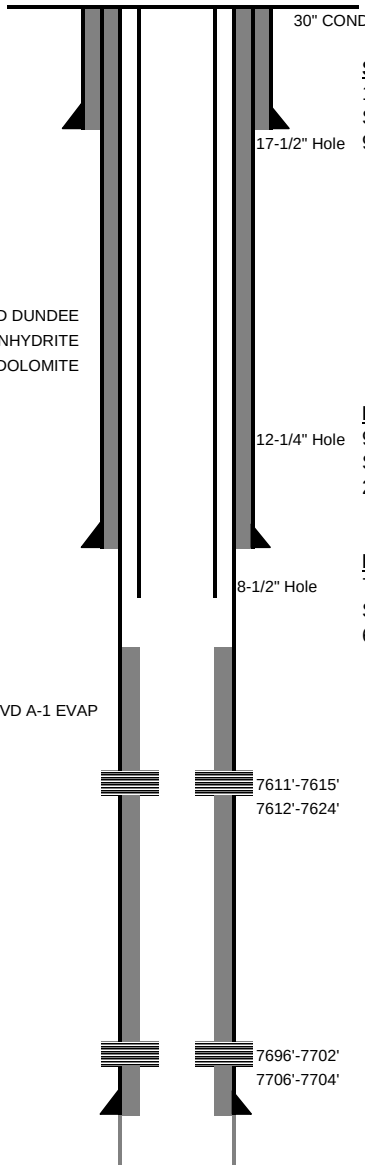
KALIUM 2082

SE NW SW Sec 26 T17N R9W
OSCEOLA COUNTY, MI

CURRENT WELLBORE DIAGRAM

PERMIT No. 00438
API No. 21-133-00438-70-00
GL @ 1135.6'
KB @ 1149.5'
WELL COMPLETION DATE: 10/26/1997
PLUGGING COMPLETION DATE:

UPDATED APRIL 2014 BY JLT



SURFACE CASING
13 3/8", 48#/ft
SET @ 893' KB
900 SX CLASS A

INTERMEDIATE CASING
9-5/8", 40#/ft
SET @ 5139' KB
2425 SX CLASS A

PROD. CASING
7", 23#/ft
SET @ 7715' KB
680 SX CLASS H

TD @ 7812' KB

KALIUM 2082 WELL HISTORY

DATE	DESCRIPTION
9/21/1997	SPUD.
10/22/1997	DRILLING COMPLETED.
	13 3/8" SET AT 925'; 715 SX CLASS A 9 5/8" SET AT 5205'; 2675 SX CLASS A 7" SET AT 7755'; 575 SX CLASS H
10/26/1997	WELL COMPLETED.
11/10/2007	WELL CASING REPAIR STARTED
12/5/2007	WELL CASING REPAIR COMPLETED. 4-1/2" CASING RUN TO 6000'.
8/31/2009?	LOST MECHANICAL INTEGRITY. PULL 4-1/2" CASING. RAN WIRLINE SET BRIDGE AND SAT DOWN AT 5703'. RAN 6" STRING MILL AND TRIED TO CLEAN OUT 7" CASING. COULD NOT GET BY 5703'. RAN 6" FLAT BOTTOM MILL AND TRIED MILLING THROUGH. COULD NOT GET BY 5703'. RAN 1-11/16" CCL. LOGGED FROM 5650'-5800'. APPEARS TO BE DAMAGED FROM 5703'-5714'. RAN 3-1/8" CCL AND COULD NOT GET BY 5703'. RAN 5-1/2" IMPRESSION BLOCK AND SAT DOWN AT 5703'. ONLY MARKS ON THE OUTSIDE OF THE BLOCK. REQUEST SETTING A BRIDGE PLUG @ 5675' AND P & A WELL.

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY

DEQ

APPLICATION TO:

☐ **CHANGE WELL STATUS OR**

☒ **PLUG AND ABANDON WELL**

Required by authority of Part 615 Supervisor of Wells or Part 625 Mineral Wells, of Act 451 PA 1994, as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment

☐ Part 615 Oil or Gas Well ☒ Part 625 Mineral Well

Permit number: 438	Type of well: Solution Mining
API number: MI-133-3G-A002	
Name and address of permittee: Mosaic Potash Hersey, 1395 135th Ave, Hersey, MI	
Change of well status requested to: ☒ Plug back ☐ Perforate ☐ Temporarily abandon ☐ Convert to ____ ☐ Other ____	Well name and number: Kalium 2082 (Mosaic Potash)
Last production/injection rate and type of fluid: 8/31/2009 300/GPM Brine Water	Well location: SE 1/4 of NW 1/4 of NW 1/4 Section 26 T 17N R 9W
Brief description of project: Set bridge plug @ 5675' Set 100 Sack Class a plug on top of bridge plug Continue plugging to 4741' Cut and pull 7" casing and then plug to surface.	Township: Hersey; County: Osceola
	Date drilling completed: 1998; Date last produced/utilized: 8/31/2009
Work to be done by: Mosaic Potash Hersey	Starting date: 11/1/2010

CASING AND CEMENTING RECORD

Hole dia	Casing dia & wt/ft	Depths set	Cement quantity, type, additives	Cement top	Perforations
30"	30"	90'	Driven		
17 1/2"	13/3/8"	893'	900 Sacks Lite/A	Surface	
12 1/4"	9 5/8"	5139'	2425 Sacks Lite/A	Surface	
8 1/2"	7"	7715'	680 Sacks Poz/H	4950'	7612'-7624'

Formation record (formation and depth of top, oil, gas and water shows, etc.):

formation depth

Detail proposed procedures:

Set CIBP @ 5675' Set 100 Sack Class A plug on top of the bridge plug. Set 75 Sack Class A plug @ 5147'. Cut and pull 7" casing from 4741' to surface Set 180 Sack 50/50 Poz plugs every 500' from 4741' to 300' Set 108 Sack Class A plug from 300' to surface. Make certain of cement to surface and cut and cap 9 5/8" stub

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OFFICE OF GEOLOGICAL SURVEY

Name/signature (authorized representative): William C Hicks — Date: 10/18/2010

FOR OFFICE OF GEOLOGICAL SURVEY USE ONLY

DEQ additional requirements:

NOTIFY MARK SMITH (231 876 4434) AND RAY VUGRINOVICH (517 241 1532) AT LEAST 48 HOURS BEFORE PLUGGING BEGINS.

☐ Yes ☐ No ☒ Not applicable Production tests to commence within 10 days of completion and to be filed

☒ Yes ☐ No Service company records are to be filed

Approved by DEQ:	Office:	Approval date:	Termination Date:
Raymond Vugrinovich	LANSING	11/9/2010	11/9/2011

Submit original and three (3) copies of this application to the District Office within 60 days ofchange of well status
Note: Three copies of Record of Well Plugging or Change of Well status (EQP 7200-8) and any requested service company records are to be filed within 60 days of completion at the District Office

OMB No. 2040-0042 Approval Expires 1/31/05

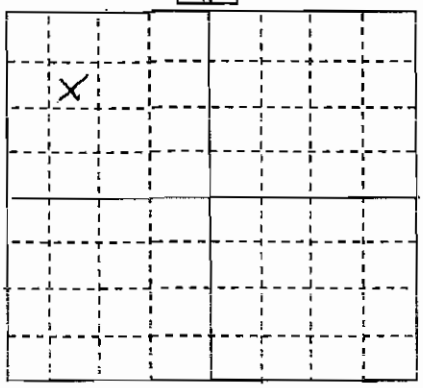
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D C. 20460

PLUGGING AND ABANDONMENT PLAN

Name and Address of Facility
Mosaic Potash Hersey
1395 135th Ave
Hersey, MI 49639

Name and Address of Owner/Operator
Mosaic Potash Hersey
1395 135th Ave
Hersey, MI 49639

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
MI	Osceola	MI-133-3G-A002

Surface Location Description
SE 1/4 of NW 1/4 of NW 1/4 of ___ 1/4 of Section 26 Township 17N Range 09W

Locate well in two directions from nearest lines of quarter section and drilling unit
Surface Location 1158 ft From (N/S) N Line of Quarter Section
And 1319 ft From (E/W) W Line of Quarter Section

TYPE OF AUTHORIZATION
- ☐ Individual Permit
- ☑ Area Permit
- ☐ Rule

Number of Wells 18

Lease Name Kalium (Mosaic Potash) Well Number 2082

WELL ACTIVITY
- ☐ Class I
  - ☐ Hazardous
  - ☐ Nonhazardous
- ☐ Class II
  - ☐ Brine Disposal
  - ☐ Enhanced Recovery
  - ☐ Hydrocarbon Storage
- ☑ Class III

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT (LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
30 "			90'	30"
13 3/8"	54#		893'	17 1/2"
9 5/8"	40#		5139'	12 1/4"
7"	23 & 29 #		4700' to 7715'	8 1/2"

METHOD OF EMPLACEMENT OF CEMENT PLUGS
- ☑ Balance Method
- ☐ Dump Bailer Method
- ☐ Two Plug Method
- ☐ Other

CEMENT TO PLUG AND ABANDON DATA:	Plug #1	Plug #2	Plug #3	Plug # 4	Plug #5	Plug #6	Plug #7
Size of Hole or Pipe in Which Plug Will Be Placed (inches)	CIBP	7"	7"	9 5/8"	9 5/8"	9 5/8"	9 5/8"
Depth to Bottom of Tubing or Drill Pipe (ft)	5675'	5675'	5141'	4741'	4241'	3741'	3241'
Sacks of Cement To Be Used (each plug)		100 Sks	75 Sks	180 Sks	180 Sks	180 Sks	180 Sks
Slurry Volume To Be Pumped (cu. Ft.)		118.9	89.1	186.9	186.9	186.9	186.9
Calculated Top of Plug (ft.)		5141'	4741'	4241'	3741'	3241'	2741'
Measured Top of Plug (if tagged, ft.)							
Slurry Weight (Lb./Gal.)		15.6	15.6	15	15	15	15
Type of Cement or Other Material (Class III)		Class A	Class A	50/50 Poz	50/50 Poz	50/50 Poz	50/50 Poz

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (if any)

From	To	From	To

Estimated Cost to Plug Wells $125,000.00

RECEIVED
OCT 26 2010
DNRE / ERMD
OFFICE OF GEOLOGICAL SURVEY

CERTIFICATION

I certify under the penalty of law that I have 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. (Ref 40 CFR 144.32)

Name and Official Title (Please type or print)	Signature	Date Signed
William C Hicks Midfield Supervisor	William C Hicks	10/15/10

EPA Form 7520-14 (Rev. 8-01)

OMB No. 2040-0042 Approval Expires 1/31/05

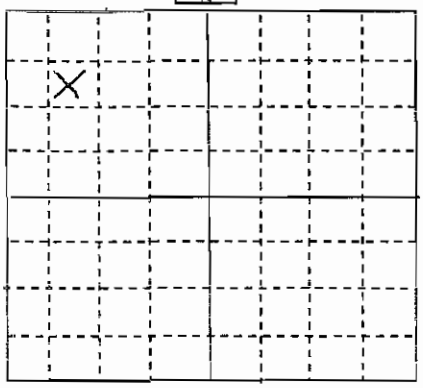
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D C 20460

PLUGGING AND ABANDONMENT PLAN

Name and Address of Facility
Mosaic Potash Hersey
1395 135th Ave
Hersey, MI 49639

Name and Address of Owner/Operator
Mosaic Potash Hersey
1395 135th Ave
Hersey, MI 49639

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
MI	Osceola	MI-133-3G-A002

Surface Location Description
SE 1/4 of NW 1/4 of NW 1/4 of 1/4 of Section 26 Township 17N Range 09W

Locate well in two directions from nearest lines of quarter section and drilling unit
Surface Location 1158 ft From (N/S) N Line of Quarter Section
And 1319 ft From (E/W) W Line of Quarter Section

TYPE OF AUTHORIZATION
- ☐ Individual Permit
- ☑ Area Permit
- ☐ Rule

Number of Wells 18

Lease Name Kalium (Mosaic Potash) Well Number 2082

WELL ACTIVITY
- ☐ Class I
  - ☐ Hazardous
  - ☐ Nonhazardous
- ☐ Class II
  - ☐ Brine Disposal
  - ☐ Enhanced Recovery
  - ☐ Hydrocarbon Storage
- ☑ Class III

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT (LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
30 "			90'	30"
13 3/8"	54#		893'	17 1/2"
9 5/8"	40#		5139'	12 1/4"
7"	23 & 29 #		4700' to 7715'	8 1/2"

METHOD OF EMPLACEMENT OF CEMENT PLUGS
- ☑ Balance Method
- ☐ Dump Bailer Method
- ☐ Two Plug Method
- ☐ Other

CEMENT TO PLUG AND ABANDON DATA:	Plug # 8	Plug #9	Plug #10	Plug #11	Plug #12	Plug #13
Size of Hole or Pipe in Which Plug Will Be Placed (inches)	9 5/8"	9 5/8"	9 5/8"	9 5/8"	9 5/8"	9 5/8"
Depth to Bottom of Tubing or Drill Pipe (ft)	2741'	2241'	1741'	1241'	741'	300'
Sacks of Cement To Be Used (each plug)	180 Sks	180 Sks	180 Sks	180 Sks	159 Sks	108 Sks
Slurry Volume To Be Pumped (cu. Ft.)	186.9	186.9	186.9	186.9	165.9	127.4
Calculated Top of Plug (ft.)	2241'	1741'	1241'	741'	300'	Surface
Measured Top of Plug (if tagged, ft.)						Surface
Slurry Weight (Lb./Gal.)	15	15	15	15	15	15.2
Type of Cement or Other Material (Class III)	50/50 poz	50/50 poz	50/50 poz	50/50 poz	50/50 poz	Class A

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (if any)

From	To	From	To

Estimated Cost to Plug Wells $125,000.00

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OCT 26 2010
DNRE / ERMD
OFFICE OF GEOLOGICAL SURVEY

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Name and Official Title (Please type or print)	Signature	Date Signed
William C Hicks Minefield Supervisor	William C Hicks	10/15/10

EPA Form 7520-14 (Rev. 8-01)

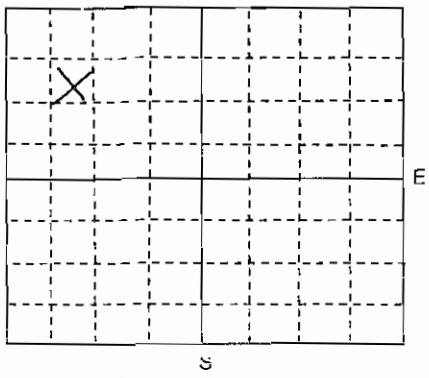
Form Approved OMB No. 2040-0042 Expires 1/31/05

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D C 20460

WELL REWORK RECORD

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR
Mosaic Potash Hersey 1395 135th Ave Hersey MI 49639	Mosaic Potash Hersey 1395 135th Ave Hersey, MI 49639

Locate Well and Outline Unit on Section Plat - 640 Acres



STATE	COUNTY	PERMIT NUMBER
MI	Osceola	MI-133-3G-A002

SURFACE LOCATION DESCRIPTION
SE 1/4 of NW 1/4 of NW 1/4 of Section 26 TWP 17N Range 9W

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT
Surface Location 1158 ft. From (N/S) N Line of Quarter Section
And 1319 ft From (E/W) W Line of Quarter Section

WELL ACTIVITY
- [x] Solution Mining
- [ ] Enhanced Recovery
- [ ] Hydrocarbon Storage

Lease Name
Kalium (Mosaic Potash)

Total Depth Before Rework: 7715'
Total Depth After Rework: 5703
Date Rework Commenced: 9/7/2009
Date Rework Completed: Awaiting plugging permission

TYPE OF PERMIT
- [ ] Individual
- [x] Area

Number of Wells 18
Well Number 2082

WELL CASING RECORD - BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	
30'	90'					
13 3/8"	893'					
9 5/8"	5139'					
7"	7715'					

WELL CASING RECORD - AFTER REWORK *(Indicate Additions and Changes Only)*

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	

DESCRIBE REWORK OPERATIONS IN DETAIL
USE ADDITIONAL SHEETS IF NECESSARY

Lost mechanical integrity-Pull 4 1/2" casing-Ran bridge plug and sat down at 5703'-Ran 6" string mill and tried to clean out 7" casing unsuccessfully.Ran 6" flat bottom mill and could not get by 5703'. Ran 1 1/16 CCL and loggeed from 5650' to 5800'. Casing damage is evident from 5703'-5714'. Ran 3 1/16 CCL and could not get by 5703'. Ran 5 1/2" impression block and sat down at 5703' . Retrieve impression block showing marks on the outside of the block. We would request setting a bridge plug @5675' and P&A the well .

WIRE LINE LOGS, LIST EACH TYPE

Log Types	Logged intervals
CCL	5650'-5800'

CERTIFICATION

I certify under the 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. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE	SIGNATURE	DATE SIGNED
William C Hicks Minefield Supervisor	William C Hicks	10/15/10

EPA Form 7520-12 (Rev. 8-01)

RECEIVED
OCT 26 2010
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OFFICE OF GEOLOGICAL SURVEY

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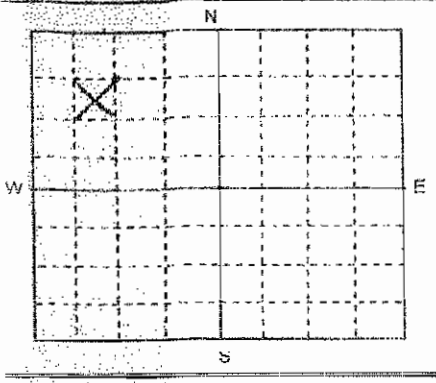
Form Approved OMB No. 2040-0042 Expires 1/31/05

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D C 20460

WELL REWORK RECORD

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR
Mosaic Potash Hersey 1395 135th Ave Hersey, Mi 49639	Mosaic Potash Hersey 1395 135th Ave Hersey, Mi 49639

Locate Well and Outline Unit on Section Plat - 640 Acres



STATE	COUNTY	PERMIT NUMBER
MI	Osceola	MI-133-3G-A002

SURFACE LOCATION DESCRIPTION
SE 1/4 of NW 1/4 of NW 1/4 of Section 26 Twp 17N R 9W

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT
Surface Location 1158 ft From (N/S) N Line of Quarter Section
And 1319 ft From (E/W) W Line of Quarter Section

WELL ACTIVITY
- [x] Solution Mining
- [ ] Enhanced Recovery
- [ ] Hydrocarbon Storage

Lease Name
Kalium (Mosaic Potash)

Total Depth Before Rework: 7715
Total Depth After Rework: 5703
Date Rework Commenced: 9/7/2009
Date Rework Completed: N/C

TYPE OF PERMIT
- [ ] Individual
- [x] Area

# of Wells 19

2082

WELL CASING RECORD - BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	
13 3/8"	893'	900	A/Lite			
9 5/8"	5139'	2350	A/Lite			
7"	7715'	680	H			

WELL CASING RECORD - AFTER REWORK *(Indicate Additions and Changes Only)*

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	
13 3/8"	893'	900	A/Lite			
9 5/8"	5139'	2350	A/Lite			
7"	5703'	680	H			

DESCRIBE REWORK OPERATIONS IN DETAIL
USE ADDITIONAL SHEETS IF NECESSARY

Lost mechanical intergrity. Pull 4 1/2" casing. Ran wireline set bridge and sat down at 5703'
Ran 6" string mill and tried to clean out 7" casing, could not get by 5703'. Ran 6" flat bottom mill and tried milling through, could not get by 5703'. Ran 1 11/16" CCL. Logged from 5650-5800'. Appears to be damage from 5703'-5714'.Ran 3 1/8 CCL and could not get by 5703'.
Ran 5 1/2" impression block and sat down at 5703'. Only marks on the outside of the block.
We would request setting a bridge plug @ 5675' and P&A the well. P&A form included.

WIRE LINE LOGS, LIST EACH TYPE

Log Types	Logged Intervals
CCl	5650'-5800'

CERTIFICATION

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NAME AND OFFICIAL TITLE	SIGNATURE	DATE SIGNED

EPA Form 7520-12 (Rev. 8-01)

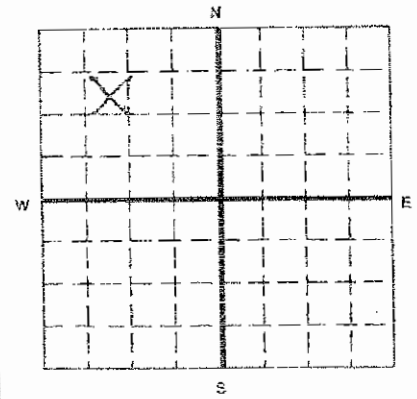
OMB No. 2040-0042 Approval Expires 12/31/2011

United States Environmental Protection Agency
Washington DC 20460

EPA PLUGGING AND ABANDONMENT PLAN

Name and Address of Facility	Name and Address of Owner/Operator
Mosaic Potash Hersey 1395 135th Ave Hersey MI 49639	Mosaic Potash Hersey 1395 135th Ave Hersey MI 49639

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
MI	Osceola	MI-133-3G-A002

Surface Location Description

__ 1/4 of se 1/4 of nw 1/4 of nw 1/4 of Section 26 Township 17n Range 9w

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 1150 ft. frm (N/S) N Line of quarter section
and 1319 ft. from (E/W) W Line of quarter section.

TYPE OF AUTHORIZATION

- [ ] Individual Permit
- [x] Area Permit
- [ ] Rule

Number of Wells 18

WELL ACTIVITY

- [ ] CLASS I
- [ ] CLASS II
  - [ ] Brine Disposal
  - [ ] Enhanced Recovery
  - [ ] Hydrocarbon Storage
- [x] CLASS III

Lease Name Kalium (Mosaic Potash) Well Number 2082

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT (LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
13 3/8	54#		893'	17 1/2
9 5/8	40#		5139'	12 1/4
7	23&29#		4700 7715'	8 1/2

METHOD OF EMPLACEMENT OF CEMENT PLUGS

- [x] The Balance Method
- [ ] The Dump Bailer Method
- [ ] The Two-Plug Method
- [ ] Other

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inche	CIBP	7"	7"	9 5/8"	9 5/8"	9 5/8"	9 5/8"
Depth to Bottom of Tubing or Drill Pipe (ft	5675	5675'	5141'	4741'	4241'	3741'	3241'
Sacks of Cement To Be Used (each plug)		100Sks	75 Sks	180 Sks	180 Sks	180 Sks	180 Sks
Slurry Volume To Be Pumped (cu. ft.)		118.5	89.1	186.9	186.9	186.9	186.9
Calculated Top of Plug (ft.)		5141'	4741'	4241'	3741'	3241'	2741'
Measured Top of Plug (if tagged ft.)							
Slurry Wt. (Lb./Gal.)		15.6	15.6	15.0	15.0	15.0	15.0
Type Cement or Other Material (Class III)		Class A	Class A	50/50po	50/50 po	50/50 po	50/50 po

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (If any)

From	To	From	To

Estimated Cost to Plug Wells
75 000 00

Certification

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Name and Official Title *(Please type or print)*	Signature	Date Signed

EPA Form 7520-14 (Rev 12-08)

OMB No. 2040-0042 Approval Expires 12/31/2011

EPA

United States Environmental Protection Agency
Washington DC 20460

PLUGGING AND ABANDONMENT PLAN

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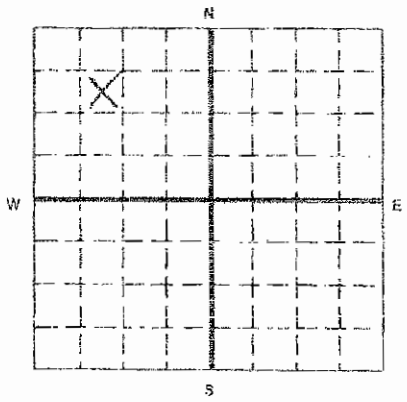


State	County	Permit Number
MI	Osceola	MI-133-3G-A002

Surface Location Description

1/4 of SE 1/4 of NW 1/4 of NW 1/4 of Section 26 Township 17n Range 9w

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 1158 ft. frm (N/S) N Line of quarter section

and 1329 ft. from (E/W) W Line of quarter section.

TYPE OF AUTHORIZATION
- ☐ Individual Permit
- ☑ Area Permit
- ☐ Rule

Number of Wells 18

WELL ACTIVITY
- ☐ CLASS I
- ☐ CLASS II
  - ☐ Brine Disposal
  - ☐ Enhanced Recovery
  - ☐ Hydrocarbon Storage
- ☑ CLASS III

Lease Name Kalium (Mosaic Potash) Well Number 2082

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT (LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
13 3/8	54#		893'	17 1/2
9 5/8	40#		5139'	12 1/4
7	23&29#		4700-7715'	8 1/2

METHOD OF EMPLACEMENT OF CEMENT PLUGS
- ☑ The Balance Method
- ☐ The Dump Bailer Method
- ☐ The Two-Plug Method
- ☐ Other

CEMENTING TO PLUG AND ABANDON DATA:	PLUG # 1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #
Size of Hole or Pipe in which Plug Will Be Placed (inches	9 5/8"	9 5/8"	9 5/8"	9 5/8"	9 5/8"	9 5/8"	
Depth to Bottom of Tubing or Drill Pipe (ft	2741'	2241'	1741'	1241'	741'	300'	
Sacks of Cement To Be Used (each plug)	180Sks	180Sks	180 Sks	180 Sks	159 Sks	108 Sks	
Slurry Volume To Be Pumped (cu. ft.)	186.9	186.9	186.9	186.9	165.9	127.4	
Calculated Top of Plug (ft.)	2241'	1741'	1241'	741'	300'	Surface	
Measured Top of Plug (if tagged ft.)						Surface	
Slurry Wt. (Lb./Gal.)	15.0	15.0	15.0	15.0	15.0	15.2	
Type Cement or Other Material (Class III)	50/50 po	50/50 po	50/50 Po	50/50 Po	50/50 Po	Class A	

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (if any)

From	To	From	To

Estimated Cost to Plug Wells

75,000.00

Certification

I certify under the 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. (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed

EPA Form 7520-14 (Rev. 12-08)

DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - OFFICE OF GEOLOGICAL SURVEY

RECORD OF WELL PLUGGING OR CHANGE OF WELL STATUS

Required by authority of Part 615 Supervisor of Wells or Part 625 Mineral Wells of Act 451 PA 1994 as amended
Non-submission and/or falsification of this information may result in fines and/or imprisonment

☐ Part 615 Oil/Gas Well ☐ Plugging
☒ Part 625 Mineral Well ☒ Change of Well Status

Permit number	Well name and number
438	Kalium 2082

API number: MI-133-3G-A002

Name and address of permittee:
Mosaic Potash Hersey
1395 135th Ave
Hersey, Mi 49639

Name and address of contractor/service company:
Mosaic Potash Hersey
1395 135th Ave
Hersey, Mi 49639

Type of well	Field name
Solution Mining	Kalium

Surface location: SE 1/4 NW 1/4 SW1 /4 Sec 26 T 17N R 9W

Township	County
Hersey	Osceola

Date plugging/change started	Date plugging/change completed
11/10/2007	12/5/2007

DEQ employee issuing plugging permit or approving Change of Well Status: Ray Vugrinovich

Date issued:

Any change of well status which results in a change of production or a change in injectivity must include production or injection test records. All records must include a narrative or daily chronology and signed certification noted on reverse.

WELL PLUGGING
(Hole conditions after plugging)

CASING

Casing size	Where set	Amount casing pulled	Depth casing cut/perfed; or windows milled

PLUGS

Depth of plug Bottom	Depth of plug Top	Make and type of bridge or plug	Cement plugs: type amount of cement & mix water	Additives,type and percent	Volume and types of spacers/flushes	Wait time	Tagged Top? Y/N

☐ Check if NORM or other materials were left or reinserted into wellbore. If so, describe materials fully in the Daily Chronology section on reverse.

☐ Check if cores were taken and attach core descriptions

Mail completed original and three copies to the appropriate DEQ district office within 60 days after completion of plugging/change of a Part 615 oil/gas well or within 30 days of a Part 625 mineral well.

OFFICE OF GEOLOGICAL SURVEY
MICHIGAN DEPT OF ENVIRONMENTAL QUALITY
PO BOX 30256
LANSING, MI 48909-7756

COMPLETE BOTH SIDES

API number	Permit number
MI-133-3G-A002	438

CHANGE OF WELL STATUS

Change was to:

- ☐ Convert current zone to:
  - ☐ Production
  - ☐ Disposal
  - ☐ Secondary recovery
  - ☐ Storage
  - ☐ Other _____
- ☐ Remediate well:
  - ☐ Perf and test existing zone
  - ☒ Repair casing/cement
  - ☐ Other _____
- ☐ Plugback (recomplete as)
  - ☐ New production zone
  - ☐ Disposal
  - ☐ Secondary recovery
  - ☐ Storage
  - ☐ Other _____
- ☐ Redrill:
  - ☐ Horizontal drain hole
  - ☐ Collapsed casing
  - ☐ Underream open hole
  - ☐ Other _____

Well casing record - BEFORE change

Casing		Cement		Perforations			
Size	Depth	Sacks	Type	From	To	If plugged, HOW?	Acid or fracture treatment record
13 3/8	893'	900	A				
9 5/8	5139'	2425	A				
7	7715'	680	H				

Well casing record - AFTER change (Indicate additions and changes only, complete test record)

Casing		Cement		Perforations			
Size	Depth	Sacks	Type	From	To	If plugged, HOW?	Acid or fracture treatment record
7	7715'	680	H				Casing patch installed at 2851'

BEFORE CHANGE

Total depth	Completed Fm	Well completed for	
BOPD	MCFGPD	Inj Rate	Pressure

AFTER CHANGE

Total depth	Completed Fm	Well completed for	
BOPD	MCFGPD	Inj Rate	Pressure

DAILY PRODUCTION TEST RECORD

Date	Oil (bbls)	Water (bbls)	Gas (Mcf)	Pressure	
				Tubing	Casing

DAILY INJECTION TEST RECORD ☐ Injection well ☐ Brine disposal

Date	Bbls water or Mcf gas	Pressure		Specific gravity of water
		Beginning	Ending	

DAILY CHRONOLOGY

Describe in detail the daily chronology of change/plugging, include days shut down Describe exceptions to issued plugging instructions. Describe tools, tubing etc left in hole and any logs run Include dates pits filled surface restored etc Use additional pages as needed

Date	Narrative
11/13/07	Set Cast iron bridge plug @ 5815' , dump 20 bags of sand on top of the plug.
11/16/07	Run packer testing for hole at various depths- intitial packer was leaking by, rented tension packer from Pioneer.
11/20/07	Found hole at 6' below wellhead Cut off 7 inch at 7 feet below wellhead. Pulled slips and 7 inch stub. Due to
11/27/07	past experience we cut and pulled 1520' of 7 inch casing, dressed of the 7 inch stub and patched the 7 inch at 1520'. Pressure up the 7"and still had a leak, pulled more on the patch and parted the pipe @ 2851'
11/29/07	Pulled 7 inch casing- Ran packer and tested below the parted pipe all ok.
11/30/07	Dressed off the top of the 7 inch Run 7 inch casing and casing patch.Set patch at 2851' Weld on wellhead
12/4/07	Tested casing -Mark Smith witnessed the test. Retrieve the bridge plug and run 4 1/2" casing to 6000'

NOTICE: Under Part 615 Supervisor of Wells or Part 625 Mineral Wells Act 451 PA 1994 as amended a well owner has continuing liability for the integrity of a plugged well.

CERTIFICATION 'I state that I am authorized by said owner This report was prepared under my supervision and direction The facts stated herein are true, accurate and complete to the best of my knowledge.'

Name and title (printed or typed)	Authorized signature	Date
ROBERT SCHWEITZER PRODUCTION SUPT	Robert Schweitzer	12/5/07

NOTE: Bonds cannot be terminated until plugging is completed, cellar, rat and mouse holes, and pits filled, site leveled and cleaned and records filed.

DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - GEOLOGICAL SURVEY DIVISION

REQUEST FOR TRANSFER OF PERMIT

Required by authority of Part 615 Supervisor of Wells or Part 625 Mineral Wells, Act 451 PA 1994 as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment

☐ Part 615 Oil/Gas Well ☒ Part 625 Mineral Well

Permit number	Well type	Current true vertical depth
M-438	Brine Prod.	7565

Well name and number: Kalium Hersey 2082

Surface location: SE 1/4 NW 1/4 SW 1/4 Section 26 T 17N R 9W

Township	County
Hersey	Osceola

NOTE: Eligibility for permits is conditioned upon compliance with the statutes, rules and orders of the Department of Environmental Quality. Permits shall not be transferred to persons not in compliance. A permit for a well shall not be transferred if the permittee is under notice because of unsatisfactory conditions at the well site until compliance is achieved The acquiring permittee shall attach a current Organization Report (EQP 7200-13)

This permit does not convey property rights in either real estate or material nor does it authorize any injury to private property or invasion of private or public rights nor does it waive the necessity of seeking federal and local permits or complying with other state statutes.

TRANSFER OF A PERMIT FROM:

Name(s) of Selling Permittee(s): IMC Kalium, Limited — Fed. I.D # or S.S.#: 38-3545577

Address: Number and Street, City or Town, State, ZIP Code — Telephone

1395, 135th Avenue
Hersey, MI, 49639 — 231-832-3755

All permits rights and responsibilities are discharged by:

	Authorized representative name	Signature	Date
IMC Kalium Limited (Permittee)	Colin Howard		16/04/2001
Permittee	Authorized representative name	Signature	Date
Permittee	Authorized representative name	Signature	Date

TRANSFER OF A PERMIT TO:

Name(s) of Acquiring Permittee(s): IMC Potash Hersey Inc. — Fed I.D.# or S.S.#: ME0132184

Address: Number and Street, City or Town, State ZIP Code — Telephone

1395 135th Avenue
Hersey, MI. 49639 — 231-832-3755

(We are) (I am) an owner or authorized representative of the owner of the well under this permit and assume full responsibility for the drilling, operation, and abandonment in conformity with the law, regulations and orders

BOND: ☐ Single Well ☐ Attached Surety or Bank: Royal Bank of Canada
☒ Blanket ☒ On File Bond Number: P43087C00008 Amount: $25,000
☐ Statement of Financial Responsibility

All permittee rights and responsibilities are assumed by:

	Authorized representative name	Signature	Date
IMC Potash Hersey Inc. (Permittee)	Colin Howard		16/04/2001
Permittee	Authorized representative name	Signature	Date
Permittee	Authorized representative name	Signature	Date

FOR DEPARTMENT OF ENVIRONMENTAL QUALITY USE ONLY

Approved _____ (Signature) MAY 0 8 2001 (Date)

Distribution by DEQ: ☑ Lansing ☐ Selling Owner ☐ Field ☐ Acquiring Owner

EQP 7200-7 (Rev 3/99) Mail Original and 3 copies to: GEOLOGICAL SURVEY DIVISION
MICHIGAN DEPT OF ENVIRONMENTAL QUALITY
PO BOX 30256
LANSING MI 48909-7756

Form Approved OMB No 2040-0042 Expires 6-30-98

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA **WELL REWORK RECORD**

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR
IMC Kalium Ltd 1395 135th Avenue Hersey, MI 49639	IMC Kalium Ltd 1395 135th Avenue Hersey, MI 49639

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT -- 640 ACRES	STATE	COUNTY	PERMIT NUMBER
N / W / E / S (X)	MI	Osceola	MI-133-3G-A002 M438

SURFACE LOCATION DESCRIPTION
_SE1/4 of _NW1/4 of _SW1/4 of___ 1/4 of Section26_ Township17N Range9W_

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location1158ft from (N/S)_N__Line of quarter section
and 1319_ft. from (E/W)_W_line of quarter section

WELL ACTIVITY	Total Depth Before Rework	TYPE OF PERMIT
___Brine Disposal	7715	___Individual
___Enhanced Recovery	Total Depth After Rework	_X_Area
___Hydrocarbon Storage	7715	Number of Wells_17_
_X_ Soln Mining	Date Rework Commenced	
Lease Name	9/12/2000	Well Number
Kalium Hersey	Date Rework Completed	2082
	11/3/2000	

WELL CASING RECORD - BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture
Size	Depth	Sacks	Type	From	To	Treatment Record
30	90	Driven				
13 3/8	893	900	A			
9 5/8	5139	2425	A			
7	7715	680	H	7611	7615	

WELL CASING RECORD - AFTER REWORK (Indicate Additions and Changes Only)

Casing		Cement		Perforations		Acid or Fracture
Size	Depth	Sacks	Type	From	To	Treatment Record

Describe rework operations in detail Use additional sheets if necessary	Wire line logs, list each type	
	Log Types	Logged intervals
Land at 7617		

CERTIFICATION

I certify under the 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. (Ref. CFR 144.32).

NAME AND OFFICIAL TITLE (Please type or print)	SIGNATURE	DATE SIGNED
Kyle Barbot Minefield Supervisor		12-1-00

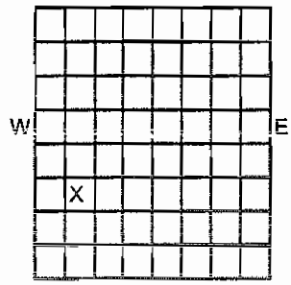
Form Approved OMB No. 2040-0042. Expires 6-30-98

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA **WELL REWORK RECORD**

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR
IMC Kalium, Ltd 1395 135th Avenue Hersey, MI 49639	IMC Kalium, Ltd. 1395 135th Avenue Hersey, MI 49639

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT – 640 ACRES	STATE	COUNTY	PERMIT NUMBER
	MI	Osceola	MI-133-3G-A002 M438



SURFACE LOCATION DESCRIPTION
_SE1/4 of _NW1/4 of _SW1/4 of ___ 1/4 of Section26_ Township17N Range9W_

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location1158ft. from (N/S) _N__ Line of quarter section
and 1319 ft. from (E/W) _W_ line of quarter section

WELL ACTIVITY	Total Depth Before Rework	TYPE OF PERMIT
___Brine Disposal	7715	___Individual
___Enhanced Recovery	Total Depth After Rework	_X_Area
___Hydrocarbon Storage	7715	Number of Wells_17_
_X_ Sol'n Mining	Date Rework Commenced	
Lease Name	01/28/2000	Well Number
Kalium Hersey	Date Rework Completed	2082
	02/08/2000	

WELL CASING RECORD - BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	
30	90	Driven				
13 3/8	893	900	A			
9 5/8	5139	2425	A			
7	7715	680	H	7696	7702	

WELL CASING RECORD - AFTER REWORK (Indicate Additions and Changes Only)

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	
7	7715	680	H	7611	7615	

Describe rework operations in detail Use additional sheets if necessary	Wire line logs, list each type	
	Log Types	Logged intervals
Lay down pipe. Run 4 1/2" Casing. Land donut at 7678'.		

CERTIFICATION

I certify under the 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. (Ref. CFR 144.32).

NAME AND OFFICIAL TITLE (Please type or print)	SIGNATURE	DATE SIGNED
Kyle Barbot Minefield Supervisor		2-25-00

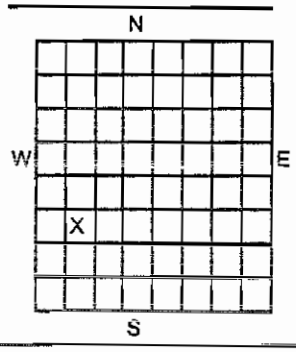
Form Approved. OMB No. 2040-0042. Expires 6-30-98

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA **WELL REWORK RECORD**

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR
IMC Kalium, Ltd	IMC Kalium, Ltd.
1395 135th Avenue	1395 135th Avenue
Hersey, MI 49639	Hersey, MI 49639

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT – 640 ACRES	STATE	COUNTY	PERMIT NUMBER
	MI	Osceola	MI-133-3G-A002 M438



SURFACE LOCATION DESCRIPTION
_SE1/4 of _NW1/4 of _SW1/4 of___ 1/4 of Section26_ Township17N Range9W_

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location1158ft from (N/S) N_ Line of quarter section
and 1319_ft. from (E/W) W_ line of quarter section

WELL ACTIVITY	Total Depth Before Rework	TYPE OF PERMIT
___Brine Disposal	7715	___Individual
___Enhanced Recovery	Total Depth After Rework	_X_Area
___Hydrocarbon Storage	7715	Number of Wells_17_
_X_ Sol'n Mining	Date Rework Commenced	
Lease Name	11/29/1999	Well Number
Kalium Hersey	Date Rework Completed	2082
	12/21/1999	

WELL CASING RECORD - BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	
30	90	Driven				
13 3/8	893	900	A			
9 5/8	5139	2425	A			
7	7715	680	H	7696	7702	

WELL CASING RECORD - AFTER REWORK (Indicate Additions and Changes Only)

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	
7	7715	680	H	7611	7615	

Describe rework operations in detail Use additional sheets if necessary	Wire line logs, list each type	
	Log Types	Logged intervals
Perforate 7612' - 7624'. Land at 7643'.		

CERTIFICATION

I certify under the 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. (Ref. CFR 144.32).

NAME AND OFFICIAL TITLE (Please type or print)	SIGNATURE	DATE SIGNED
Kyle Barbot Minefield Supervisor		2-25-00

Form Approved. OMB No. 2040-0042. Expires 6-30-98

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA **WELL REWORK RECORD**

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR
IMC Kalium Ltd 1395 135th Avenue Hersey, MI 49639	IMC Kalium Ltd. 1395 135th Avenue Hersey, MI 49639

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT -- 640 ACRES	STATE	COUNTY	PERMIT NUMBER
	MI	Osceola	MI-133-3G-A002 M438

N / W / E / S — X

SURFACE LOCATION DESCRIPTION
_SE1/4 of _NW1/4 of _SW1/4 of___ 1/4 of Section26_ Township17N Range9W_

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location1158ft. from (N/S)_N__Line of quarter section
and 1319 ft. from (E/W)_W_line of quarter section

WELL ACTIVITY	Total Depth Before Rework	TYPE OF PERMIT
___Brine Disposal	7715	___individual
___Enhanced Recovery	Total Depth After Rework	_X_Area
___Hydrocarbon Storage	7715	Number of Wells_17_
_X_ Sol'n Mining	Date Rework Commenced	
Lease Name	10/25/1999	Well Number
Kalium Hersey	Date Rework Completed	2082
	10/27/1999	

WELL CASING RECORD - BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	
30	90	Driven				
13 3/8	893	900	A			
9 5/8	5139	2425	A			
7	7715	680	H	7696	7702	

WELL CASING RECORD - AFTER REWORK (Indicate Additions and Changes Only)

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	
7	7715	680	H	7611	7615	

Describe rework operations in detail Use additional sheets if necessary	Wire line logs, list each type	
	Log Types	Logged intervals
Perforate 7611' - 7615'.		

CERTIFICATION

I certify under the 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. (Ref. CFR 144.32).

NAME AND OFFICIAL TITLE (Please type or print)	SIGNATURE	DATE SIGNED
Kyle Barbot Minefield Supervisor		11/23/99

Form Approved. OMB No. 2040-0042 Expires 6-30-98

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA **WELL REWORK RECORD**

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR
IMC Kalium Ltd	IMC Kalium Ltd
1395 135th Avenue	1395 135th Avenue
Hersey, MI 49639	Hersey, MI 49639

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT -- 640 ACRES	STATE	COUNTY	PERMIT NUMBER
	MI	Osceola	MI-133-3G-A002 M438

N / W / E / S (X)

SURFACE LOCATION DESCRIPTION
SE1/4 of NW1/4 of SW1/4 of ___ 1/4 of Section 26 Township 17N Range 9W

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 1118 ft. from (N/S) N Line of quarter section
and 1319 ft. from (E/W) W line of quarter section

WELL ACTIVITY	Total Depth Before Rework	TYPE OF PERMIT
___ Brine Disposal	7800	___ Individual
___ Enhanced Recovery	Total Depth After Rework	X Area
___ Hydrocarbon Storage	7800	Number of Wells 17
X Sol'n Mining	Date Rework Commenced	
Lease Name	2/1/99	Well Number
Kalium Hersey	Date Rework Completed	2081
	2/4/99	

WELL CASING RECORD - BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture
Size	Depth	Sacks	Type	From	To	Treatment Record
30	90	Driven				
13 3/8	908	825	A			
9 5/8	5134	1950	A			
7	7718	730	H			

WELL CASING RECORD - AFTER REWORK (Indicate Additions and Changes Only)

Casing		Cement		Perforations		Acid or Fracture
Size	Depth	Sacks	Type	From	To	Treatment Record
30	90	Driven				
13 3/8	908	825	A			
9 5/8	5134	1950	A			
7	7718	730	H	7706	7704	4sh/ft

Describe rework operations in detail Use additional sheets if necessary	Wire line logs, list each type Log Types	 Logged intervals
Trip standing. Perf 7" casing from 7695' - 7702'. Lowered liner 6'		

CERTIFICATION

I certify under the 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. (Ref. CFR 144.32).

NAME AND OFFICIAL TITLE (Please type or print)	SIGNATURE	DATE SIGNED
Paul McMillen Minefield Supervisor	Paul N McMillen	02/22/98

JAN 1 3 1999

Form Approved. OMB No 2040-0042. Expires 6-30-98

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON. DC 20460

EPA **WELL REWORK RECORD**

RECEIVED
JAN 1 4 1999
GEOLOGICAL SURVEY DIV.
ENVIRONMENTAL QUALITY
M438

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR
IMC Kalium Ltd 1395 135th Avenue Hersey, MI 49639	IMC Kalium, Ltd 1395 135th Avenue Hersey, MI 49639

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT -- 640 ACRES	STATE	COUNTY	PERMIT NUMBER
	MI	Osceola	MI-133-3G-A002

N / W / E / S — X

SURFACE LOCATION DESCRIPTION
SE1/4 of NW1/4 of SW1/4 of ___ 1/4 of Section 26 Township 17N Range 9W

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 1158 ft from (N/S) N Line of quarter section
and 1319 ft. from (E/W) W line of quarter section

WELL ACTIVITY	Total Depth Before Rework	TYPE OF PERMIT
___Brine Disposal	7715	___Individual
___Enhanced Recovery	Total Depth After Rework	X Area
___Hydrocarbon Storage	7715	Number of Wells 17
X Sol'n Mining	Date Rework Commenced	
Lease Name	12/15/98	Well Number
Kalium Hersey	Date Rework Completed	2082
	12/15/98	

WELL CASING RECORD - BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	
30	90	Driven				
13 3/8	893	900	A			
9 5/8	5139	2425	A			
7	7715	680	H			

WELL CASING RECORD - AFTER REWORK (Indicate Additions and Changes Only)

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	
30	90	Driven				
13 3/8	893	900	A			
9 5/8	5139	2425	A			
7	7715	680	H			

Describe rework operations in detail. Use additional sheets if necessary	Wire line logs, list each type	
	Log Types	Logged intervals
Perforate 7700' - 7702'		

CERTIFICATION

I certify under the 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. (Ref. CFR 144.32).

NAME AND OFFICIAL TITLE (Please type or print)	SIGNATURE	DATE SIGNED
Paul McMillen Minefield Supervisor	Paul McMillen	01/09/99

SEP 17 1998

Form Approved. OMB No. 2040-0042. Expires 6-30-98

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA **WELL REWORK RECORD**

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR
IMC Kalium, Ltd 1395 135th Avenue Hersey, MI 49639	IMC Kalium, Ltd. 1395 135th Avenue Hersey, MI 49639

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT -- 640 ACRES	STATE	COUNTY	PERMIT NUMBER
	MI	Osceola	MI-133-3G-A002

N / W / E / S — X

SURFACE LOCATION DESCRIPTION
SE1/4 of NW1/4 of SW1/4 of ___ 1/4 of Section 26 Township 17N Range 9W

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 1158 ft from (N/S) N Line of quarter section
and 1319 ft. from (E/W) W line of quarter section

WELL ACTIVITY	Total Depth Before Rework	TYPE OF PERMIT
___ Brine Disposal	7715	___ Individual
___ Enhanced Recovery	Total Depth After Rework	X Area
___ Hydrocarbon Storage	7715	Number of Wells 18
X Sol'n Mining	Date Rework Commenced	
Lease Name	9/8/98	Well Number
Kalium Hersey	Date Rework Completed	2082
	9/9/98	

WELL CASING RECORD - BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	
30	90	Driven				
13 3/8	893	900	A			
9 5/8	5139	2425	A			
7	7715	680	H			

WELL CASING RECORD - AFTER REWORK (Indicate Additions and Changes Only)

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	
30	90	Driven				
13 3/8	893	900	A			
9 5/8	5139	2425	A			
7	7715	680	H			

Describe rework operations in detail Use additional sheets if necessary	Wire line logs, list each type	
	Log Types	Logged intervals
Pull standing. Trip in hole. PFC. Land liner @ 7722'.		

CERTIFICATION

I certify under the 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. (Ref. CFR 144.32).

NAME AND OFFICIAL TITLE (Please type or print)	SIGNATURE	DATE SIGNED
Paul McMillen Minefield Supervisor	Paul McMillen	09/11/98

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SEP 17 1998

GEOLOGICAL SURVEY DIV.
ENVIRONMENTAL QUALITY

AUG 2 3 1998

Form Approved. OMB No 2040-0042. Expires 6-30-98

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA **WELL REWORK RECORD**

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR
IMC Kalium, Ltd 1395 135th Avenue Hersey, MI 49639	IMC Kalium, Ltd. 1395 135th Avenue Hersey, MI 49639

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT – 640 ACRES	STATE	COUNTY	PERMIT NUMBER
	MI	Osceola	MI-133-3G-A002 M438

N / W / E / S — X

SURFACE LOCATION DESCRIPTION
SE1/4 of NW1/4 of SW1/4 of ___ 1/4 of Section 26 Township 17N Range 9W

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location 1158 ft. from (N/S) N Line of quarter section
and 1319 ft. from (E/W) W line of quarter section

WELL ACTIVITY	Total Depth Before Rework	TYPE OF PERMIT
___ Brine Disposal	7715	___ Individual
___ Enhanced Recovery	Total Depth After Rework	X Area
___ Hydrocarbon Storage	7715	Number of Wells 18
X Sol'n Mining	Date Rework Commenced	
Lease Name	8/6/98	Well Number
Kalium Hersey	Date Rework Completed	2082
	8/14/98	

WELL CASING RECORD - BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture
Size	Depth	Sacks	Type	From	To	Treatment Record
30	90	Driven				
13 3/8	893	900	A			
9 5/8	5139	2425	A			
7	7715	680	H			

WELL CASING RECORD - AFTER REWORK (Indicate Additions and Changes Only)

Casing		Cement		Perforations		Acid or Fracture
Size	Depth	Sacks	Type	From	To	Treatment Record
30	90	Driven				
13 3/8	893	900	A			
9 5/8	5139	2425	A			
7	7715	680	H			

RECEIVED
AUG 2 8 1998
GEOLOGICAL SURVEY DIV.
ENVIRONMENTAL QUALITY

Describe rework operations in detail Use additional sheets if necessary	Wire line logs - list each type Log Types	Logged intervals
Pull standing. Run in hole withTHL set @ 7735'. Pull THL - plugged		
Clean out & land O.D.. PFC		

CERTIFICATION

I certify under the 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. (Ref. CFR 144.32).

NAME AND OFFICIAL TITLE (Please type or print)	SIGNATURE	DATE SIGNED
Paul McMillen Minefield Supervisor	Paul McMillen	08/21/98

Form Approved OMB No 2040-0042. Expires 6-30-98

JUN 2 1998

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON DC 20460

EPA **WELL REWORK RECORD**

NAME AND ADDRESS OF PERMITTEE	NAME AND ADDRESS OF CONTRACTOR
IMC Kalium Ltd 1395 135th Avenue Hersey, MI 49639	IMC Kalium, Ltd 1395 135th Avenue Hersey, MI 49639

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT -- 640 ACRES	STATE	COUNTY	PERMIT NUMBER
	MI	Osceola	MI-133-3G-A002

N / W / E / S — X

SURFACE LOCATION DESCRIPTION
SE1/4 of NW1/4 of SW1/4 of ___ 1/4 of Section26 Township17N Range9W

Locate well in two directions from nearest lines of quarter section and drilling unit

Surface Location1158ft from (N/S) N Line of quarter section
and 1319 ft. from (E/W) W line of quarter section

WELL ACTIVITY	Total Depth Before Rework	TYPE OF PERMIT
___Brine Disposal	7715	___Individual
___Enhanced Recovery	Total Depth After Rework	_X_Area
___Hydrocarbon Storage	7715	Number of Wells 18
_X_ Soln Mining	Date Rework Commenced	
Lease Name	4/3/98	Well Number
Kalium Hersey	Date Rework Completed	2082
	4/21/98	

WELL CASING RECORD - BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	
30	90	Driven				
13 3/8	893	900	A			
9 5/8	5139	2425	A			
7	7715	680	H			

WELL CASING RECORD - AFTER REWORK (Indicate Additions and Changes Only)

Casing		Cement		Perforations		Acid or Fracture Treatment Record
Size	Depth	Sacks	Type	From	To	
30	90	Driven				
13 3/8	893	900	A			
9 5/8	5139	2425	A			
7	7715	680	H			

Describe rework operations in detail Use additional sheets if necessary	Wire line logs, list each type Log Types	Logged intervals
Run 2 7/8" tubing in hole. 2 7/8" tubing parted. Fish tubing. Rerun	OCH 5" scale	7849-0
tubing to bottom. Circulate well. Trip stding. MIT. Rerun tubing.	OCH 25" scale	7849-6500
Trip stding Run OCHL Logs. Rerun tubing. PFC.	PFC	

CERTIFICATION

I certify under the 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. (Ref. CFR 144.32).

NAME AND OFFICIAL TITLE (Please type or print)	SIGNATURE	DATE SIGNED
Paul McMillen Minefield Supervisor	Paul McMillen	06/02/98

DEQ

MICHIGAN DEPART IT OF ENVIRONMENTAL QUALITY - GEOLOGIC/ URVEY DIVISION

CERTIFICATION OF CASING AND SEALING OF SURFACE HOLE

MAR 3 0 1998

Required by authority of Part 615 Supervisor of Wells or Part 625 Mineral Wells, of Act 451 PA 1994, as amended
Non-submission and/or falsification of this information may result in fines and/or imprisonment

Permit number: M438

Well name: KALIUM HERSEY 2082

Township: HERSEY County: OSCEOCA

Surface location: SE 1/4 of NW 1/4 of SW 1/4 Section 26 T 17N R 9W

Name and address of permittee:
IMC KALIUM CHEMICALS, LTD
1395 135TH AVE
HERSEY, MI, 49639

Name and address of drilling contractor:
MCLACHLIN DRILLING COMPANY
P.O BOX 548
EVART, MI, 49631

SURFACE HOLE

Hole diameter (Note reductions	Depth to bedrock	Base of specified aquifer (see permit)	Total depth of surface hole	Formation at surface casing seat	Date drilling completed
17 1/2"	769	769	891	MICH GROUP	9/20/97

Narrative of unusual drilling circumstances or problems encountered

N/A

Name and address of geologist/mud logger

ALLEN BRIGHT
P.O. BOX 320
LAKE ANN, MI. 49650

Signature: Allen J Bright

Date: 9-20-97

SURFACE CASING

Casing O.D. (in)	Casing depth	Cement type and additives	Amount of cement (sacks)	Volume (bbls) Pumped	Volume (bbls) Returned to surface	Plug down date & time
13 3/8	891	LITE	575	247	0	0200
		A	200	134	0	9/21/97

Narrative of problems encountered running or cementing casing Note any cement fallback grouting, or lost circulation zones

GROUTED WITH 125 SACKS (26 BBLS) CLASS "A" W/3%CaCl2
33BLS RETURNS

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

Signature of permittee or company officer:

Date: MARCH 15, 1998

Submit the original and one copy, typewritten or legible printed, within 30 days after drilling is completed to:

GEOLOGICAL SURVEY DIVISION
MICHIGAN DEPT OF ENVIRONMENTAL QUALITY
PO BOX 30256
LANSING MI 48909-7756

EQP 7200-12 (Rev 10/96)

MAR 1 0 1998

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION
P O BOX 30028 LANSING MICHIGAN 48909

RECORD OF WELL DRILLING OR DEEPENING

USE APPROPRIATE BLOCKS. FOR ITEMS NOT LISTED SUBMIT ATTACHMENTS

REQUIRED BY AUTHORITY OF:
☐ ACT 61 P.A. 1939, AS AMENDED (Submit 2 copies within 30 days of completion)
☒ ACT 315, P.A. 1969, AS AMENDED (Submit 2 copies within 60 days of completion.)

NON-SUBMISSION AND/OR FALSIFICATION OF THIS INFORMATION MAY RESULT IN FINES AND/OR IMPRISONMENT.

PERMIT NO./DEEPENING PERMIT NO	TYPE OF WELL (after completion)
M-438	Solution Mining

FIELD/FACILITY NAME: Hersey Potash

WELL NAME & NUMBER: Kalium Hersey 2082

SURFACE LOCATION: SE ¼ of NW ¼ of SW ¼ Section 26 T 17N R 9W

NAME AND ADDRESS OF OWNER:
IMC Kalium Chemicals, Ltd.
1395 135th Avenue
Hersey, MI 49639

TOWNSHIP	COUNTY
Hersey	Osceola

FOOTAGES: NORTH/SOUTH EAST/WEST
1158 Ft. from North Line and 1319 Ft. from West Line of ¼ Sec.

NAME AND ADDRESS OF DRILLING CONTRACTOR:
McLachlin Drilling Company
PO Box 548
Evart, MI 49631

SUBSURFACE LOCATION (if directionally drilled): NE ¼ of SW ¼ of SW ¼ Section 26 T 17N R 9W

TOWNSHIP	COUNTY
Hersey	Osceola

FOOTAGES: NORTH/SOUTH EAST/WEST
839 Ft from South Line and 1142 Ft from West Line of ¼ Sec

DATE DRILLING BEGAN	DATE DRILL COMPLETED	DATE WELL COMPLETED
9/21/97	10/22/97	10/26/97

TOTAL DEPTH OF WELL	FORMATION AT T D	PROD FORMATION(S)
Driller 7814 Log 7812	A-1 Evap	A-1 Evap

FEET DRILLED — CABLE TOOLS	FEET DRILLED — ROTARY TOOLS
From N/A To	From 0 To 7814

DATE OF FIRST INJECTION	INJECTED FORMATION	SOLUTION FORMATION
TBA	A-1 Evap	A-1 Evap

ELEVATIONS

K.B.	R.F.	R.T	Grd.
1149.5 ft.	1148.5 ft.	N/A ft.	1135.6 ft.

CASING, CASING LINERS AND CEMENTING, OPERATING STRINGS

SIZE	WHERE SET	CEMENT	FT. PULLED
13 3/8	893	900	--
9 5/8	5139	2425	--
7	7715	680	--

PERFORATIONS

DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN YES	OPEN NO

GROSS PAY INTERVALS

FORMATION	OIL OR GAS	FROM	TO
None			None

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X) Samples	Odor	Pits	Mud Line	Gas Log	Fill Up
None		None						

STIMULATION BY ACID OR FRACTURING

DATE	INTERVAL TREATED	MATERIALS AND AMOUNT USED
	None	None

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

FORMATION	F.U.	L.C.	DEPTH	AMOUNT
None				

MECHANICAL LOGS, LIST EACH TYPE RUN

	BRAND	(X)	LOG TYPES	LOGGED INTERVALS
	Schlumberger	x	Sonic - G/R	5100-7808
	~~Brown~~ Schl.	x	Neutron - G/R	5100-7808
OTHER	M.W.	x	Cement Bond	4630-7704
OTHER	DDL	x	Directional	0-7750

DEPTH CORRECTION

DEPTH	CORRECTION

DEVIATION SURVEY

RUN AT	DEGREES
2500	1.2
5000	.6
6000	18.9
7500	3.4

PLUGGED BACK

YES	NO	DEPTH

PRODUCTION TEST DATA

OIL — Bbls/day	GRAVITY — °API	COND Bbls/day	GAS — MCF/day	WATER — Bbls/day	H_2S — Grains/100 cu ft	B H P AND DEPTH
N/A	N/A	N/A	N/A	N/A	N/A	N/A

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

DATE	NAME AND TITLE (PRINT)	SIGNATURE
March 15, 1998	Colin Howard, Production Geologist	Howard

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD CORING RECORD AND DRILL STEM TEST INFORMATION PLEASE

FORMATION RECORD

KH2082

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

ELEVATION USED	GEOLOGIST NAME:	TOPS TAKEN FROM
1149.5	Colin Howard	☒ DRILLERS LOG ☐ SAMPLE LOG ☐ ELECTRIC LOG

NOTE: IF WELL DIRECTIONALLY DRILLED, *ADD* TRUE VERTICAL DEPTH FORMATION TOPS WHERE APPROPRIATE

FROM	TO	FORMATION (TYPE, COLOR, HARDNESS)
0	769	Drift
769	1374	Michigan Group
1374	1467	Triple Gyp
1467	1578	Brown Lime
1578	1684	Stray Sand
1684	1848	Marshall Sand
1848	2600	Coldwater Shale
2600	2697	Sunbury Shale
2697	3117	Ellsworth Shale
3117	3257	Antrim Shale
3257	3303	Traverse Formation
3303	3801	Traverse Lime
3801	3877	Bell Shale
3877	3944	Dundee
3944	3973	Reed City Anhydrite
3973	4124	Reed City Dolomite
4124	4191	Detroit River Anhydrite
4191	4590	Detroit River Salt
4590	4716	Detroit River Sour
4716	5006	Massive Anhydrite
5006	5128	Black Lime
5128	5219	Sylvania
5219	5380	Bois Blanc
5380	5701	Bass Island
5701	5709	Salina
5709	5733	F-Unit
5733	6038	F-Salt
6038	6421	E-Unit
6421	6467	D-Salt
6467	6687	C-Shale
6687	6920	B-Salt
6920	7060	A-2 Carbonate
7060	7416	A-2 Evaporite
7416	7480	A-1 Carbonate
7480	7750	A-1 Evaporiate (T.D.)

THESE ARE TVD - RAV 2/18/2003

FROM	TO	FORMATION (TYPE,COLOR, HARDNESS)

IF WELL WAS CORED, ATTACH CORE DESCRIPTION

DRILL STEM TEST DATA

LIST ATTACHMENTS:

DDL - Oncourse Directional

SCHL. - Sonic G/R

SCHL. - Neutron

M.W. - Cement Bond

GEOLOGICAL SURVEY USE ONLY

REVIEWED BY:

DATE OF REVIEW:

6729

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION
BOX 30028
LANSING MICHIGAN 48909

PERMIT TO

☒ DRILL ☐ DEEPEN ☐ REWORK ☐ OPERATE

GRANTED UNDER PROVISIONS OF

☐ Act 61 P A 1939, as amended (M.C L 319.1 to 319.27) ☒ Act 315, P.A. 1969 as amended (M C L. 319.211 to 319 236)

Violation of and/or non-compliance with the provisions of the acts and conditions of permit may result in penalties. This permit includes as requirements all the operations and methods proposed by the applicant, unless rejected or altered by the DNR, and along with the attached stipulations are incorporated in its entirety by reference.

PERMIT	ISSUED	TYPE OF WELL
M438	9/9/97	Brine Production
CANCEL AND TRANSFER	ISSUED	FORMATION
		A-1 Evaporite
DEEPENING PERMIT		DEPTH
		8,000' MD, 7,850' TVD
PERMIT EXPIRES		KIND OF TOOLS
3/9/98		Rotary

ISSUED TO
IMC Kalium, Ltd.
1395 135th Avenue
Hersey, MI 49639

WELL NAME	WELL NO
Kalium Hersey	2082

LOCATION AND FOOTAGES:

SHL: SE¼ NW¼ SW¼, Sec. 26, T17N, R9W, Hersey Twp., Osceola
1158 ft. from North and 1319 ft. from West line of quarter section.
BHL: NE¼ SW¼ SW¼, Sec. 26, T17N, R9W, Hersey Twp., Osceola Co.
889 ft. from South and 1142 ft. from West line of quarter section.

CASING AND SEALING REQUIREMENTS

CASING O.D. SIZE	WT./FT.	GRADE	CONDITION	DEPTH	CEMENT SACKS	W.O.C. (HRS.)
13 3/8"	48#	J-55	New/Used	900'	700	16
9 5/8"	40#	K-55	New/Used	5000'	1600	16
7 "	23#	L-80	New	7950'	500	24

1. No earthen reserve pit is to be dug. Steel tanks are to be used to contain drilling fluids and cuttings.
2. Solids and cuttings shall be hauled to the Northern Oaks landfill.
3. Wellhead shall be rated at 5000 psi.
4. 9 5/8" intermediate casing shall be set a minimum 100' into the Amherstburg formation.

OFFICE TO BE NOTIFIED BEFORE DRILLING/DEEPENING STARTS
CADILLAC (616) 775-3960

BY William Lee
PERMIT COORDINATOR
WILLIAM LEE (517) 334-6974

PAGE 1 of PAGE(S)

FOR THE SUPERVISOR OF WELLS/MINERAL WELLS

DIVISION COPY

SEE REVERSE SIDE FOR ADDITIONAL REQUIREMENTS

PR 7200
Rev 7/85

THIS PERMIT IS SUBJECT TO THESE GENERAL CONDITIONS

1. Drilling operations shall not start until the drill site preparation requirements are completed

2 Initiation of any work on the permitted project confirms the permittee's acceptance and agreement to comply with all the terms and conditions of this permit and the rules, orders and requirements of the Supervisor of Wells/Mineral Wells.

3 The permittee is required to give notice to public utilities in accordance with Act 53, PA 1974 (M C L 460 701 to 460.718).

4 Any changes from what is stated in the permit application and permit shall be approved by the Supervisor of Wells/Mineral Wells

5 This permit is valid only for the permittee of issue and any change of ownership shall be accompanied by a request to the Supervisor of Wells/Mineral Wells to transfer the permit from the current owner to the new owner

6 NOTICE AND REQUIREMENTS FOR SOURCES OF WATER AND WATER WELLS USED IN CONJUNCTION WITH OIL AND GAS OR MINERAL WELL DRILLING, AND OPERATIONS" December 1 1984 is made part of and a condition of this permit

7 During well completion and testing procedures all fluids shall be contained in tanks and transported to off site disposal facilities

8 The Michigan Air Pollution Control Commission rules require that a person shall not install nor alter sour gas or oil well production equipment and flare unless a permit to install has been approved by the Commission An operator is allowed to drill and test a sour well prior to obtaining the necessary permit to install from the Commission, but is not allowed full production of such wells before issuance of the necessary air use permits

9 This permit does not convey property rights in either real estate or material or does it authorize any injury to private property or invasion of private or public rights or does it waive the necessity of seeking federal and local permits or complying with other state statutes

10 If a Hydrogen Sulphide contingency plan is required a copy of PART II of the plan shall be posted in the primary briefing area

11 All trash and garbage shall be removed from the drill site at the completion of drilling.

12 Blowout preventers, accumulators and pumps shall be certified as operable under the product manufacturer s minimum operational specifications This certification shall include proper operation of the closing unit valving pressure gauges, and manufacturer s recommended accumulatory fluids Certification may be obtained through those companies presently used to test the blowout preventers stack and casing. Certification shall be required annually and shall be posted on the rig floor.

13 In addition to the primary closing system including an accumulator system, the blowout preventers shall have a secondary system. A combination of any two of the following secondary closing systems will be acceptable: Electric-operated pump; Air-operated pump, Hand-operated pump or nitrogen Extensions with hand wheels are not mandatory

14 Blowout preventer rams shall be of proper size for the drill pipe being used or production casing being run in the well. Variable type rams of the proper size range will be acceptable

15. The gas buster and flare system shall be in place and operable prior to drilling into a reservoir known or believed to contain Hydrogen Sulphide in excess of 500 ppm with the intention to complete in and/or test that reservoir.

16. A trip tank, or any accurate fluid monitoring system, as well as a gas buster and flare system where justified, shall be in place when penetrating the A2 Carbonate formation. Changes may be granted by the Department of Natural Resources District Geologist.

DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - GEOLOGICAL SURVEY DIVISION

TRANSMITTAL AND FIELD REVIEW FOR PROPOSED WELL SITE

☐ Part 615 Supervisor of Wells, Act 451 PA 1994, as amended
☒ Part 625 Mineral Wells, Act 451 PA 1994, as amended

CADILLAC DIST. GEOLOGIST COPY

1a Application number	1b Owner number	1c Revision	1d. Coordinator	1e Date sent
MW 970011		☐ Yes ☒ No	R. LEFEVRE	6-3-97

2 Applicant	1f. District
IMC KALIUM, LTD.	CADILLAC

3a Well name and number	3b Other permit numbers
KALIUM HERSEY #2082	

4a Surface location						Township	County
SE 1/4	NW 1/4	SW 1/4	Sec 26	T 17N	R 9W	HERSEY	OSCEOLA

4b Footages: 1158 ft from North line of 1/4 sec; 1319 ft from West line of 1/4 sec

RECEIVED
JUN 23 1997
GEOLOGICAL SURVEY CADILLAC

5a Surface Ownership	5b Mineral ownership
☒ Private ☐ State ☐ Federal	☒ Private ☐ State ☐ Federal

6 Information and requests: (Spacing, problem areas etc)	5c Well site area local zoning	
MINERAL EXTRACTION WELL	☒ Other: NOT ZONED	☐ Residential Initial date of residential zoning:

FIELD REVIEW AND RECOMMENDATIONS

7 Field review by: name and date	8a Land use:	8b Cover type/density:
MOSS	MINING	GRAVEL

9 Topography - (slope % grade)	10a. Area involved:	10b Area involved
FLAT	Drill pad: EXISTING PAD Acres	Access road EXISTING Acres

11 Soil type and drainage field tiles etc	SAND & GRAVEL FILL
12 Are soil erosion and sedimentation control measures adequate? ☑ Yes ☐ No	
13 Type direction & distance to surface waters waterways, wet lands flood plains and natural rivers within 1/4 mile	NONE
14 Nearby scenic historical or recreational areas. environmentally sensitive, critical dunes, and threatened and endangered species within 1/4 mile	N.A.
15 Buildings public roads, pipelines and power lines, water wells within 300 feet of proposed well site.	MINERAL WELL CLUSTER
16 Is casing and sealing adequate?	Expected depth to base of fresh water , formation
Conductor ☑ Yes ☐ No	
Surface ☑ Yes ☐ No	
Intermediate ☐ Yes ☑ No ←	SHOULD BE SET IN AMHERSTBURG FM OR LOWER
Production ☐ Yes ☐ No ←	SEE MEMO
17 Is Intermediate Casing Exception recommended? ☐ Yes ☑ No	
18 B.O.P. Program adequate? ☐ Yes ☑ No If certified tests required, give details.	WELLHEAD SHOULD BE 5000#
19 H_2S ☐ "Sweet" ☐ Sour' Class ☐ Plan required Plan complete and accurate? ☑ Yes ☐ No	GEOLOGICAL SURVEY AUG 26
20 S I 2-87 apply? ☐ Yes ☑ No; In-ground Pit Exception? ☐ Yes ☑ No; H_2S Prod Facilities Exception? ☐ Yes ☑ No; Require electric pump jack? ☐ Yes ☑ No	Permits & Bonding Unit

EQ 7239 (Rev 2/96) Complete both sides

21 Source of freshwater: ☐ Surface water ☐ Municipal source ☐ Potable well ☐ Other ☑ Exclusive use well	
22 Drilling pit requirements a Use mud tanks only? ☑ Yes ☐ No	
b Specific placement required? ☐ Yes ☐ No	
c. Remote pit required? ☐ Yes ☐ No	
d Salt cuttings to be: (give details) ☑ Dissolved & removed ☐ Removed for disposal ☐ None	
e District geologist to be notified prior to: Excavation ☐ Yes ☐ No Liner installation ☐ Yes ☐ Nc Encapsulation ☐ Yes ☐ No	NA
23 DEQ and/or DNR comments:	
24. Items continued and/or not covered above (attach additional sheets if needed):	
25. Permits needed (describe if applicable): ☐ Land use / well site ☐ Wetlands ☐ Stream crossing ☐ Other ☐ Soil erosion/sedimentation	
26 Revision included (describe if applicable)	

27. Representative of permittee contacted regarding additional requirements? ☐ Yes ☐ No

Name	Date	Phone

28. Area geologist: recommend a permit: ☐ Yes ☐ No (provide reasons) ☐ Needs corrections or additional information ☑ Memo attached

Michael J. Ward — Signature

Title

8/21/97 — Date

29 District Geologist: Recommend a permit: ☑ Yes ☐ No (provide reasons) ☐ Needs corrections or additional information ☐ Memo attached

Rick Hanson — Signature

Dist Geol — Title

8/21/97 — Date

DRILLING PERMIT APPLICATION FLOW SHEET

Application Number: MW970011	Date application received: 5/23/97	+ 5 days Date to send to field: 5/28/97
Applicant: ICM Kalium		~~+ 45~~ days 90 Date to review: 8/26/97
Well Name & No: Kalium Hersey #2082		+ 10 days Date to respond: 9/9/97
Vendor No: ☐ New vendor ☐ Org Chart received		+ 10 bus. days Date to issue permit: 9/23/97

INITIAL REVIEW

Reviewer: RT

☒ Fee
☒ Check #, Bank, City #0032293, Royal Bk. of Canada
☐ Deepening ☐ Revision ☐ C&T, original permit enclosed

☒ Complete Application
☒ EQP 7200-1 ☒ EQP 7200-2 ☒ Supplemental plat ☒ BOP Diagram
☒ EIA ☒ Notice to landowner ☒ Directional Plan ☒ Add info H2S plan
☒ Bond ☐ Single ☒ Blanket Bond # 25K

☐ Natural Features
☐ No match found Program _____ Feature _____
☐ Match found Personnel contacted _____ Phone: _____

☒ Distribution
Area geologist: ☒ Cad ☐ Gay ☐ B C ☐ H L. ☐ Shi ☐ Jac ☐ Liv ☐ Pl.
District Geologist: ☒ Cad ☐ B C ☐ Shi ☐ Pl
☐ Confidential, copy provided to PGP ☐ F T. Date 6-3-97
☐ Returned to applicant, date _____

REVIEW FOR COMPLETE AND ACCURATE INFORMATION

Reviewer: WRL

☒ Location
☒ 7200-1 Deficiencies or conflicts _____
☒ 7200-2 Deficiencies or conflicts _____
☒ Zoning NONE Residential zoning initial date: _____
☒ Posted on map ☐ Certification of elevations

☐ Drilling Unit MINERAL WELL
☒ Purpose of well in EIA? Well type: ☐ Oil/Gas ☐ BDW ☐ Gas Storage ☐ Secy Rec
☐ Spacing addressed in EIA? ☐ Field spacing order _____
☐ (A) 14-9-94 ☐ (A) 3-3-95 ☐ S O 1-73 ☐ S.O 1-86 ☐ General Rules
☐ Approved USP _____ USP Density _____ ☐ 1320' conflicts _____
Spacing conflicts _____
☐ Voluntary pooling ☐ Administrative approval ☐ Pooling documents

☒ Ownership
☒ Private surface ☐ Private minerals ☐ Complete drilling unit SURFACE OWNED BY COMPAN
☐ State surface ☐ State minerals ☐ Open acreage
☐ Federal surface ☐ Federal minerals State lease deficiencies _____

☒ H_2S
☐ Copy to H_2S Unit ☐ Sweet
☒ Sour, Class _____ ☒ Contingency plan enclosed

☒ Casing & Sealing
☒ Rotary ☐ Combination ☐ Cable
☒ Int csg S.O. 2-73 ☐ 30% exception ☐ Short int exception
☐ Through Gas Storage S O 1-87 ☐ Notice to Storage operator
☒ SI 1-94 ☒ BOP Adequate
☒ Deficiencies Added depth to int csg, upgrade wellhead rating

☒ EIA Review
☒ EIA Part I A-B Deficiencies _____
☒ Field review received Recommend issuance ☒ Yes ☐ No
☐ Field EIA deficiencies _____
☐ Corrections or additional info from above _____
☐ Notice to applicant Date _____

Ready to issue WRL

☒ Other
☐ Public hearing pending _____
☐ Permits hold _____
☒ Other problems, comments from RED - no/pps

DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY — GEOLOGICAL SURVEY DIVISION

APPLICATION FOR PERMIT TO: ☒ DRILL ☐ DEEPEN AND OPERATE A WELL

By authority of Part 615 or Part 625 of Act 451 PA 1994, as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment.

GEOLOGICAL SURVEY
MAY 2 1 1997
Permits & Bonding Unit

1a. Part 615 Supervisor of Wells	1b. Part 625 Mineral Wells	1c. Fee enclosed?
☐ Oil and Gas	☐ Disposal	☒ Yes
☐ Brine Disposal	☒ Brine Production	☐ No, revision of application
☐ Hydrocarbon Storage	☐ Test Well	
☐ Injection for Secondary Recovery	☐ Storage	

2. List all previous permit numbers

3 Fed Employer ID No. or Soc Security No: 38-3545577

4. Conformance bond: ☒ Blanket ☐ Single well
5. ☐ Attached ☒ On file
6. Bond number: Bank of Montreal
7. Bond amount: $25,000

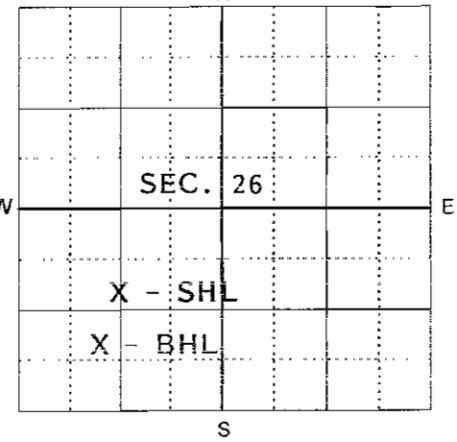
8. Applicant (name of permittee as bonded): IMC Kalium, Ltd.

9. Address: 1395 135th Avenue, Hersey, MI 49639
Phone: 616-832-3755

10. Lease or well name (be as brief as possible): Kalium Hersey
Well number: 2082

11. Surface owner: IMC Kalium, Ltd.

Locate well and outline drilling unit on section plat



12. Surface location: SE 1/4 of NW 1/4 of SW 1/4 of Sec 26 T 17N R 9W — Township: Hersey — County: Osceola

13. If directional, bottom hole location: NE 1/4 of SW 1/4 of SW 1/4 of Sec 26 T 17N R 9W — Township: Hersey — County: Osceola

14. The surface location for this well is
a. 1438 feet from nearest (N/S) south section line AND 1319 feet from nearest (E/W) west section line
b. 1158 feet from nearest (N/S) north quarter section line AND 1319 feet from nearest (E/W) west quarter section line

15. Is this a directional well? ☐ No ☒ Yes If yes complete lines 15 a & b the bottom hole location for this well is
a. 839 feet from nearest (N/S) south section line AND 1142 feet from nearest (E/W) west section line
b. 839 feet from nearest (N/S) south quarter section line AND 1142 feet from nearest (E/W) west quarter section line

16. The bottom hole location (whether straight or directional) of this well is
_____ feet from nearest (N/S) _____ drilling unit line AND _____ feet from nearest (E/W) _____ drilling unit line

17. Kind of tools: ☒ Rotary ☐ Cable ☐ Combination

18. Is sour oil or gas expected? ☐ No ☒ Yes ☒ H_2S Cont. plan enclosed

19 Base of lowest known fresh water aquifer: Formation Drift — Depth 800'

20. Intended total depth: MD 8,000' TVD 7,850'

21 Formation at total depth: A-1 Evaporite

22 Producing/injection formation(s): A-1 Evaporite

23 Objective pool field or project: Hersey Potash

24. PROPOSED DRILLING, CASING AND CEMENTING AND SEALING PROGRAM

HOLE			CASING			CEMENT			MUD	
Depth (MD)	Geol. Formation	Bit Dia.	O.D. Size	Wt/Ft Grade Condition	Depth (MD)	Sacks	T.O.C.	W.O.C	Wt.	Vis.
900'	Drift	17 1/2"	13 3/8"	48# J55, New/Used	900'	700	Surf.	16	8.4	27
4,900'	Mass. Anh.	12 1/4"	9 5/8"	40#, K-55, New/Used	4,900'	1,600	Surf.	16	10.2	27
8,000'	A-1 Evap.	8 1/2"	7"	23#, L-80, New	7,950'	500	5,000'	24	10.2	34

25. Send correspondence and permit to: IMC Kalium, Ltd.
Address: 1395 135th Avenue Hersey, MI 49639
Phone: 616-832-3755

CERTIFICATION "I state that I am authorized by said applicant. This application was prepared under my supervision and direction The facts stated herein are true accurate and complete to the best of my knowledge"

Enclose permit fee of $100 for a Part 615 oil, gas, or brine disposal well or $50 for a Part 625 disposal, brine production or storage well Make checks payable to State of Michigan

26. Application prepared by (print or type): Colin Howard
Phone: 616-832-3755

27. Signature: Colin Howard
Date: 5/20/97

DEQ Cashier use only.

Geological Survey Division Use Only.

Permit number	Date issued	Owner number

EQP 7200-1 (Rev 10/96) SEE INSTRUCTIONS FOR MAILING ON REVERSE

GEOLOGICAL SURVEY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY GEOLOGICAL SURVEY DIVISION

DEQ

mw 97804

APPLICATION FOR PERMIT TO: ☒ DRILL ☐ DEEPEN AND OPERATE A WELL

By authority of Part 615 or Part 625 of Act 451 PA 1994, as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment.

1a. Part 615 Supervisor of Wells: ☐ Oil and Gas ☐ Brine Disposal ☐ Hydrocarbon Storage ☐ Injection for Secondary Recovery

MAY 2 3 1997

Permits & Bonding Unit

1b. Part 625 Mineral Wells: ☐ Disposal ☒ Brine Production ☐ Test Well ☐ Storage

1c. Fee enclosed? ☒ Yes ☐ No, revision of application

2. List all previous permit numbers

3. Fed. Employer ID. No. or Soc. Security No: 38-3545577

4. Conformance bond: ☒ Blanket ☐ Single well

5. ☐ Attached ☒ On file

6. Bond number: P43087C Bank of Montreal 00008

7. Bond amount: $25,000

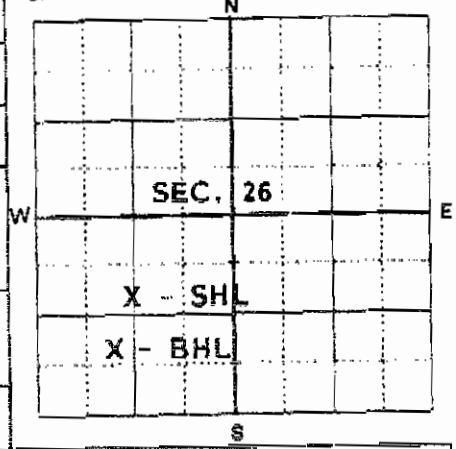
8. Applicant (name of permittee as bonded): IMC Kalium, Ltd.

9. Address: 1395 135th Avenue, Hersey, MI 49639 — Phone: 616-832-3755

10. Lease or well name (be as brief as possible): Kalium Hersey — Well number: 2082

11. Surface owner: IMC Kalium, Ltd.

Locate well and outline drilling unit on section plat



12. Surface location: SE 1/4 of NW 1/4 of SW 1/4 of Sec 26 T 17N R 9W — Township: Hersey — County: Osceola

13. If directional, bottom hole location: NE 1/4 of SW 1/4 of SW 1/4 of Sec 26 T 17N R 9W — Township: Hersey — County: Osceola

14. The surface location for this well is

a. 1438 feet from nearest (N/S) south section line AND 1319 feet from nearest (E/W) west section line

b. 1158 feet from nearest (N/S) north quarter section line AND 1319 feet from nearest (E/W) west quarter section line

15. Is this a directional well? ☐ No ☒ Yes If yes complete lines 15 a & b, the bottom hole location for this well is

a. 839 feet from nearest (N/S) south section line AND 1142 feet from nearest (E/W) west section line

b. 839 feet from nearest (N/S) south quarter section line AND 1142 feet from nearest (E/W) west quarter section line

16. The bottom hole location (whether straight or directional) of this well is ____ feet from nearest (N/S) ____ drilling unit line AND ____ feet from nearest (E/W) ____ drilling unit line

17. Kind of tools: ☒ Rotary ☐ Cable ☐ Combination

18. Is sour oil or gas expected? ☐ No ☒ Yes ☒ H_2S Cont. plan enclosed

19. Base of lowest known fresh water aquifer: Formation Drift — Depth 800'

20. Intended total depth: MD 8,000' TVD 7,850'

21. Formation at total depth: A-1 Evaporite

22. Producing/injection formation(s): A-1 Evaporite

23. Objective pool, field or project: Hersey Potash

24. PROPOSED DRILLING, CASING AND CEMENTING AND SEALING PROGRAM

HOLE			CASING			CEMENT			MUD	
Depth (MD)	Geol. Formation	Bit Dia.	O.D. Size	Wt/Ft Grade Condition	Depth (MD)	Sacks	T.O.C.	W.O.C.	Wt.	Vis.
900'	Drift	17 1/2"	13 3/8"	48# J55, New/Used	900'	700	Surf.	16	8.4	27
5000'	Amherstburg	12 1/4"	9 5/8"	40#, K-55, New/Used	5000'	1,600	Surf.	16	10.2	27
8,000'	A-1 Evap.	8 1/2"	7"	23#, L-80, New	7,950'	500	5,000'	24	10.2	34

25. Send correspondence and permit to: IMC Kalium, Ltd. — Address: 1395 135th Avenue Hersey, MI 49639 — Phone: 616-832-3755

CERTIFICATION "I state that I am authorized by said applicant. This application was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

Enclose permit fee of $100 for a Part 615 oil, gas, or brine disposal well, or $50 for a Part 625 disposal, brine production or storage well. Make checks payable to State of Michigan

26. Application prepared by (print or type): Colin Howard — Phone: 616-832-3755

27. Signature: [signature] — Date: 5/20/97

DEQ Cashier use only.

Geological Survey Division Use Only.

Permit number	Date issued	Owner number
M438	9/9/97	—

DEQ127352-6 06/03/97
[illegible] 99003 9096 $50.00

EQP 7200-1 (Rev 10/96) SEE INSTRUCTIONS FOR MAILING ON REVERSE

DEQ MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - GEOLOGICAL SURVEY DIVISION 97244

SURVEY RECORD OF WELL LOCATION

This infromation is required by authority of Part 615 Supervisor of Wells, or Part 625 Mineral Wells, of Act 451 PA 1994, as amended, in order to obtain a drilling permit

Applicant: IMC Kalium, Ltd.

Well name and number: Kalium Hersey #2082

1a. Surface location									Township	County
SE	1/4 of	NW	1/4 of	SW	1/4 of section	26	T 17N	R 9W	Hersey	Osceola

1b. If this is a directional well, bottom hole location will be									Township	County
NE	1/4 of	SW	1/4 of	SW	1/4 of section	26	T 17N	R 9W	Hersey	Osceola

Instructions: Outline drilling unit for oil/gas wells (Part 615) or property boundary for mineral wells (Part 625) and spot well location on plat shown. Locate the well in two directions from the **nearest** section, quarter section, and unit (or property, Part 625) lines

2. **The surface location is**

1438 ft from nearest (N/S) south section line

1319 ft from nearest (E/W) west section line

and

1158 ft from nearest (N/S) north quarter section line

1319 ft. from nearest (E/W) west quarter section line

3. **Bottom hole will be** (if directional)

839 ft from nearest (N/S) south section line

1142 ft from nearest (E/W) west section line

and

839 ft from nearest (N/S) south quarter section line

1142 ft. from nearest (E/W) west quarter section line

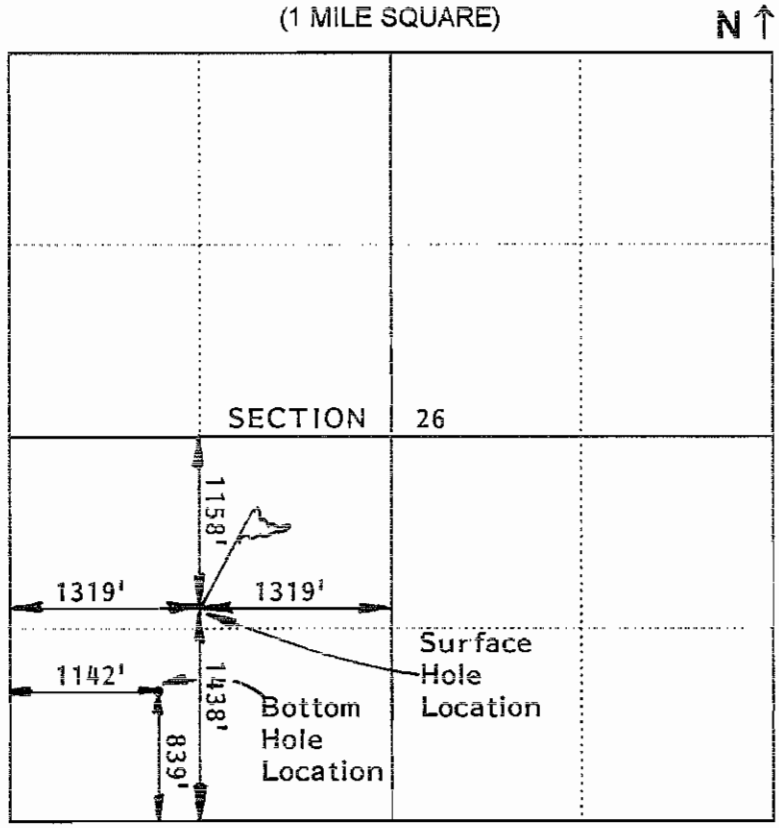
4. **Bottom hole will be** (directional or straight)

_____ ft. from nearest (N/S) _____ drilling unit line

_____ ft. from nearest (E/W) _____ drilling unit line

5. Show access to stake on plat and describe if it is not readily accessible. Site can be reached from the East, off of 135th Avenue, along an existing access road to the site

PLAT BELOW REPRESENTS ONE FULL SECTION
(1 MILE SQUARE)



6 Zoning ☐ Residential, effective date _____

initial date of residential zoning _____

☒ Other None in effect

ON SEPARATE PLAT OR PLOT PLAN, LOCATE, IDENTIFY AND SHOW DISTANCES TO:

A. All roads, power lines, buildings, residences, fresh water wells, and other man-made features, within 600 feet of the stake.

B. All lakes, streams, wetlands, drainage-ways, floodplains, environmentally sensitive areas, natural rivers, critical dune areas, and threatened or endangered species within 1320 feet of the stake.

C. All type I and IIa public water supply wells within 2000 feet and all type IIb and III public water supply wells within 800 feet of the well stake.

Name of individual who surveyed site	Company	Date of survey
J. Dean Geers, Prof. Surveyor	Wilcox Associates, Inc.	

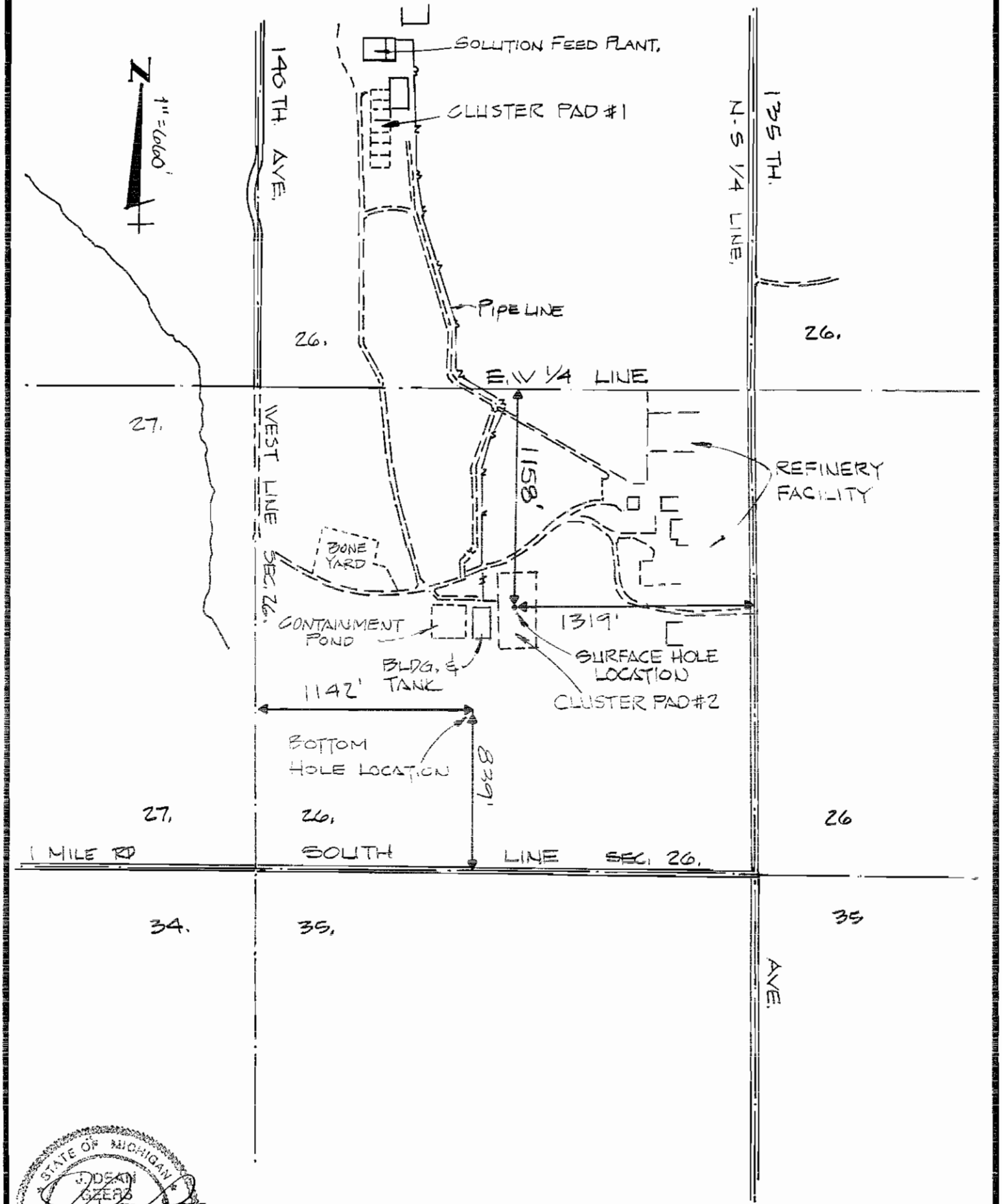
Address	Phone
7711 S. US-131 P.O. Box 580 Cadillac, MI 49601	616-775-7755

I CERTIFY THE ABOVE INFORMATION IS COMPLETE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

Signature of licensed surveyor (affix seal) — Date: 5-9-97

STATE OF MICHIGAN J. DEAN GEERS LAND SURVEYOR No. 33977 REGISTERED LAND SURVEYOR

EQP 7200-2 (Rev 11/96) ENCLOSE WITH APPLICATION TO DRILL OR DEEPEN



STATE OF MICHIGAN
J. DEAN GEERS
LAND SURVEYOR
No. 33977
LICENSED LAND SURVEYOR

SUPPLEMENTAL PLAT- KALIUM
HERSEY # 2082 - SEC. 26, T17N, R9W.
HERSEY TOWNSHIP.
OSCEOLA COUNTY, MICHIGAN.

CLIENT: I.M.C. KALIUM LTD.

DATE	5-7-97
DRN.	HAW
CHD.	JDG
SCALE	V: H: 1" = 660'
NOTES	F.B. PG. ~
SHEET	1 OF 1
JOB NO	97244

Wilcox Associates
Engineering Surveying and Environmental Sciences
7711 South US 131
P.O. Box 580
Cadillac, MI 49601
616 775-7755

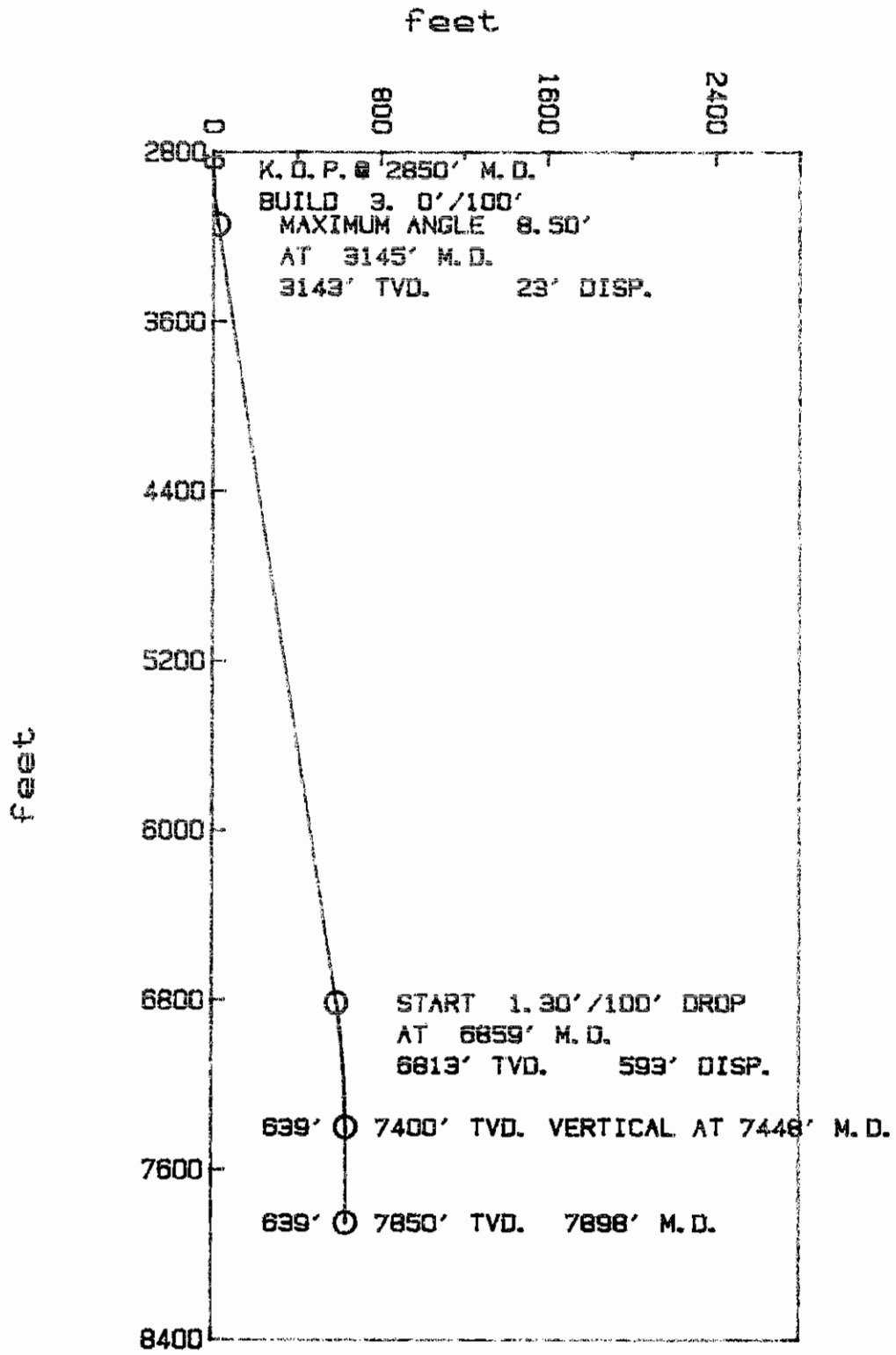
568649

IMC KALIUM

KALIUM HERSEY # 2082

HERSEY TOWNSHIP , OSCEOLA COUNTY

VERTICAL SECTION 1 IN. = 800 FT.



IMC KALIUM

KALIUM HERSEY # 2082
HERSEY TOWNSHIP , OSCEOLA COUNTY

OBJECTIVE NO. 1:
639' S15.16'W OF
SURFACE LOCATION
7448' M.D. 7400' TVD.
616' SOUTH 168' WEST

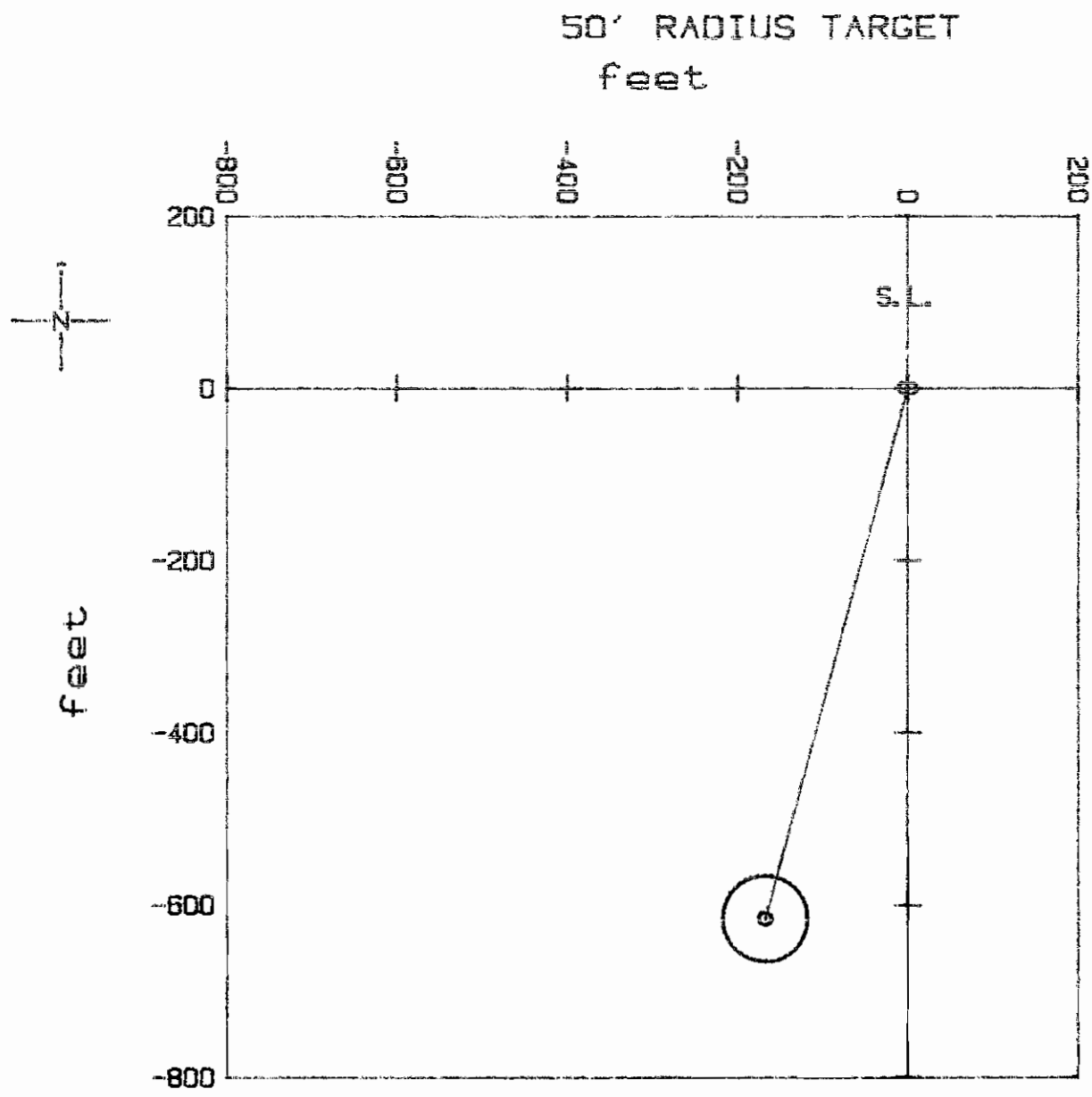
PLAN VIEW
1 IN. = 200 FT.

OBJECTIVE NO. 2:
639' S15.16'W OF
SURFACE LOCATION
7898' M.D. 7850' TVD.

SUBMITTED BY:

Directional Drilling Contractors, Inc.

50' RADIUS TARGET



IMC Kalium Chemicals Ltd.
1395 135th Ave.
Hersey, MI 49639

WHEN My Name IS ON IT, I HAVE SAFELY DONE MY BEST

To: Permits and Bonding Unit
Geological Survey Division
Department of Environmental Quality
P.O. Box 30256,
Lansing, MI 48909-7756

Date: May 14, 1997

Casing and Cementing Procedures
Kalium Hersey 2082

1 Conductor pipe of 30" diameter will be driven to refusal for this well.(usually 80-90 feet) Surface hole will be drilled with a 17 1/2" bit, 100 feet into the competent rocks of the Michigan Group at a depth of approximately 900 feet. The exact depth will be determined by a certified geologist. New or fully inspected used 13 3/8", 48#/ft., J55 seamless casing will be run to bottom with a Texas pattern shoe. The bottom three joints of casing will be strapped across the collars in three sections. The casing will be cemented with returns to surface. Wait on cement time will be 16 hours.

2. The 12 1/4" intermediate hole will be directionally drilled to 100 feet below the base of the Detroit River Salt at a true vertical depth of approximately 4900 feet, as local drilling shows no lost circulation zones deeper. Intermediate casing, new or fully inspected used 9 5/8" 40#/ft., J or K55, seamless casing will be set at this depth and two stage cemented to surface as per cementers recommendations in line with accepted cementing practices.Wait on cement time will be 16 hours.

3. The 8 1/2" production hole will be drilled into the A-1 Evaporite to a true vertical depth of approximately 7850 feet. The primary objective of this well is the evaluation and production of the potassium chloride and sodium chloride mineralization of the A-1 Evaporite. The evaluation program will consist of coring of appropriate sections of the A-1 Evaporite as well as appropriate geophysical logs. Production casing will be new 7", 23#/ft., L80 seamless casing set in the A-1 Evaporite and cemented back to 5000 feet with premium cement.Wait on cement time will be 24 hours.

4. After well operations cease, it will be plugged and abandoned according to Department of Environmental Quality requirements.

Colin D. Howard
Production Geologist

DEQ Michigan Department of Environmental Quality - Geological Survey Division

ENVIRONMENTAL IMPACT ASSESSMENT

Required for issuance of well permit pursuant to Part 615, 1994 PA 451, as amended. Falsification of this information may result in fines and/or imprisonment. Check all boxes and fill in all blanks which apply to this drilling application Attach additional pages as necessary

A. DESCRIPTION OF PROJECT

1. Applicant's name
IMC Kalium, Ltd.

Well name and number
Kalium Hersey #2082

2. Intended use of well
Development of potash from the A-1 Evaporite

3. Applicable spacing order and drilling unit size

- ☐ S.O. 14-9-94 N. Mich. Antrim, 80 acres
- ☐ S.O. 1-73 Niagaran, 80 acres
- ☐ R 324.301 General rule, 40 acres
- ☐ Field Spacing or Unitization Order (identify)
- ☐ S.O. 3-3-95 S. Mich. Antrim, 40 acres
- ☐ S.O. 2-81 Oakland Co. Niagaran, 40 acres
- ☐ S.O. 1-86 P.D.C , 640 acres

☐ Antrim USP (identify name, number of acres, and number of drilled and permitted wells)

☐ Administrative exception requested per Rule 324.303 ☐ Subsection 2 or ☐ Subsection 3
Enclose voluntary pooling agreement and plans for development
☐ Exception to spacing requested, petition for hearing filed
☒ Non-producing well, no drilling unit

4. Applicant's right to drill and produce
Are all mineral interests in the drilling unit under lease and controlled by the applicant/permittee?
☒ Yes ☐ No ☐ Not applicable, non-producing well
☐ If no, petition filed for compulsory pooling OR ☐ If no, attach certified efforts to obtain leases.

5. Special considerations
☐ Replacement well for permit no _____
☒ Existing well pad
☐ Other (describe)_____

B. IMPACTS AS A RESULT OF DRILLING

1. Dimensions of drill pad N/A x N/A of access roads N/A x N/A.

Describe access route to well during drilling From the intersection of 135th Avenue and One Mile Road, then north along 135th approximately 0.25 miles to the Kalium Facility access road, then westerly approx. 0.25 miles through facility to the existing Cluster #2 Pad and well site.

2. Describe the topography
Identify the direction of and percentage of slope(s):_____

a. At the well site Existing well pad. No earthwork will be needed.

b. Along the access to well site - there will be no new access trail needed.

3. Describe the land cover (type, density, species of trees) **and present land use:**

a At the well site - Existing well pad. No cover. Land use is commercial.

b. Along access to well site - no new access needed. Land use is commercial.

4. Identify the distance and direction to any of the following:

a. All buildings, fresh water wells, public roads, powerlines and other man-made features within 600' of the well site:
There are no residences or fresh water wells within 600' of the wellsite. The Kalium Processing Facility lies on land around Cluster #2 Pad.

b. All Type I and Type IIa public water supply wells within 2000'

None

c. All Type II b and Type III public water supply wells within 800' of the well site.

None

Type I is a community water supply with year-round service ≥ 15 living units or ≥ 25 residents Type II is a non-community water supply with ≥ 15 service connections or ≥ 25 individuals for not less than 60 days per year. Average daily water production: IIA ≥ 20,000 GPD IIB <20,000 GPD Type III is a public water supply which is neither type I or II.

(continued, see next page)

Part B-4 continued

d. Surface waters, floodplains, wetlands, natural rivers, critical dune areas, threatened or endangered species within 1320' of the well site: None

Are all items in part B-4 are shown on the supplemental plot? ☒ Yes ☐ No

If not, why? _____

5. Identify the source of fresh water used to drill this well

☐ "Permanent" water well, to be retained after final completion OR used for drinking water (shall be drilled and installed pursuant to Part 127 of 1979 PA 368, as amended).

☐ "Temporary" water well, will be plugged upon final completion and not used for drinking water (consult R 324.403 (2) for minimum construction requirements).

☒ Fresh water will be hauled from existing water well or municipal source (identify): Located at Kalium Facility

☐ No fresh water will be used in drilling this well.

6. Handling and disposal of drill cuttings and muds

☐ On site in-ground pit, anticipated dimensions: L _____ W _____ D _____

☐ Remote in-ground pit, anticipated dimensions: L _____ W _____ D _____
Attach approval of landowner and attach survey of remote pit location

☐ Temporary pit, cuttings and muds disposed at (identify)_____

☒ No in-ground pit, cuttings and muds disposed at (identify) Northern Oaks Landfill

☐ Depth to ground water expected 0'- 4' below the base of pit

☐ Pit will be solidified.

☐ Existing pits on location - identify location_____

C. IMPACTS AS A RESULT OF PRODUCTION

1. Kind of well ☐ exploratory ☒ development ☐ Antrim project

2. Location of surface facilities (Refer to R 324.103 (m))

☐ Greater than 300' from wellhead at _____¼, _____¼, _____¼, Sec _____, T _____, R _____ (complete C-3)

☒ Surface facility exists or was previously approved for construction and is known as IMC Kalium Potash Fac. (omit C-3)

☐ EIA for surface facility is found in another document (Identify where it is found) _____(omit C-3)

☐ Surface facility and all flowlines are within 300' of the wellhead (omit C-3)

☐ Surface facility location was not determined for this **exploratory** well (omit C-3). A separate request for surface facility location approval, which will include an Environmental Impact Assessment as well as a Soil Erosion and Sedimentation Control Plan, will be submitted to District Geologist prior to construction pursuant to R 324.504.

3. Surface facility Environmental Impact Assessment (describe or attach supplemental plot identifying the following)

a. Dimensions of surface facility: _____

b Access route to the surface facility _____

c. Route of flow lines from well(s) to surface facility_____

d. Topography, direction, and percentage of slopes at the surface facility _____

(continued, see next page)

Part C-3 continued

e Land cover and present land use at surface facility _____

f. Distance and direction to all buildings, fresh water wells, public roads, power lines and other man-made features within 600' of surface facility _____

g. Distance and direction to any surface waters, floodplains, wetlands, natural rivers, critical dune areas threatened or endangered species within 1320' of the surface facility site. _____

h. Distance and direction to all Type I and Type IIa public water supply wells within 2000' of the surface facility site and all Type IIb and Type III wells within 800' of the surface facility _____

Type I is a community water supply with year-round service ≥ 15 living units or ≥ 25 residents. Type II is a non-community water supply with ≥ 15 service connections or ≥ 25 individuals for not less than 60 days per year Average daily water production: IIA ≥ 20,000 GPD IIB <20,000 GPD Type III is a public water supply which is neither type I or II.

4. Method of brine disposal

☐ Dedicated flow line to _____ disposal well, permit number _____
☐ Tanked and hauled to disposal well.
☒ Other Used in production process (Salt refinery)

5. Method of transporting hydrocarbons past the point of sale

☐ Oil sold through transmission line
☐ Oil tanked and hauled
☐ Gas sold through transmission line
☐ Gas flared on site (production restrictions may apply)

D. MITIGATION OF IMPACTS FROM DRILLING AND/OR PRODUCTION

Describe measures to be taken to protect environmental and/or land use values

Site is an existing well pad with containment measures, which will be maintained and utilized for potash development for years in the future.

E. ATTACH SOIL EROSION AND SEDIMENTATION PLAN

(FORM 7200-18) (REFER TO REQUIREMENTS UNDER PART 91 1994 PA 451)

F. ALTERNATE WELL AND SURFACE FACILITY LOCATIONS

Were alternate surface locations considered for this well or surface facility?

☒ No, alternate sites did not seem necessary or more desirable
☐ Yes, the following locations were considered _____

Why were they rejected in favor of the proposed location? _____

CERTIFICATION "I state that I am authorized by said applicant to prepare this document. It was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

Colin Howard PRODUCTION GEOLOGIST		5/20/97
Name and title (printed or typed)	Authorized Signature	Date

ENCLOSE WITH APPLICATION FOR PERMIT TO DRILL

DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - GEOLOGICAL SURVEY DIVISION

SOIL EROSION & SEDIMENTATION CONTROL PLAN

By authority of Part 91, and Part 615 or Part 625 of Act 451 PA 1994, as amended Non-submission and/or falsification of this information may result in fines and/or imprisonment

☐ Part 615 Oil/Gas Well ☒ Part 625 Mineral Well

1 Name and address of applicant
IMC Kalium, Ltd.
1395 135th Avenue
Hersey, MI 49639
Phone: (616)832-3755 Fax: ( )

2 Well or project name:
Kalium Hersey #2082

3 Well or project location:
Section(s) 26 T17N R9W

4 Name and address of County or local Enforcement Agent (CEA)
Osceola County Soil Erosion Control
Courthouse
301 W. Upton Avenue
Reed City, MI 49677
Phone: (616) 832-3261 Fax: ( )

5 Township
Hersey

6 County
Osceola

7 Date earth changes expected to start
Not Applicable

8. Date of expected completion
Not Applicable

9 Name and address of person responsible for earth change:
Not Applicable
Phone: ( ) Fax: ( )

10. Name and address of person responsible for maintenance:
Not Applicable
Phone: ( ) Fax: ( )

11 Send copies of supplemental plat required by Part 615, R 324 201(2)(b) or R 324 504(4), and this form and all attachments to CEA

Date sent to CEA 5/20/97

EARTH CHANGE ACTIVITIES

12. Project description: (Project activities may be permitted sequentially.)

a Number of well sites N/A , N/A acres
b Number of surface facility sites N/A , N/A acres
c. New access roads N/A feet, N/A acres
d. Flow line(s) trenched in off well site* N/A feet, N/A acres
e Flow line(s) plowed in off well site* N/A feet, N/A acres
*Contact CEA for fee schedule

13 Describe sites for which permits are being sought under Part 301 (Inland Lakes & Streams) None
Describe sites for which permits are being sought under Part 303 (Wetlands) None
List file numbers if known

14 Areas requiring control structures
Will earth changes occur in areas with slopes of 10% or greater; areas where runoff water is likely, such as runs greater than 500' of moderate slope (5% to 10%), narrow valley bottoms etc ; areas within 500' of a lake or stream; or other areas where sedimentation to a wetland or drainage way may occur?

☐ Yes Attach detail map at scale of 1 =200 or larger, with contour lines at a minimum of 20' intervals OR percent slope descriptions.
Also indicate any of the following erosion control structures that will be utilized Identify location on map and attach detail plan
Indicate on plan whether erosion control structures are temporary or permanent
☐ Diversions ☐ Culverts ☐ Sediment basins ☐ Silt fences ☐ Rip-rap ☐ Berms ☐ Check dams ☐ Other
☒ No

15. Site restoration
☐ Topsoil will be segregated from subsoil and stockpiled OR ☐ No topsoil on site
☐ Recontour and revegetate as soon as weather permits Seed mix Not Applicable
☐ Describe other proposed methods of restoration

16 Application prepared by (name)
Colin Howard
Signature
Date 5/20/97

FOR USE OF COUNTY OR LOCAL ENFORCING AGENT

INSTRUCTIONS TO COUNTY OR LOCAL ENFORCMENT AGENT: Return this form to the applicable field or district office of the Geological Survey Division within 30 days of receipt Explain reasons for recommendation or disapproval and conditions required for approval Include copies of any revisions to the plan

17 Comments

☐ Conducted on site inspection Date
☐ Inspected site with representative of applicant Date

18 ☐ Approved ☐ Disapproved

CEA signature Date

DEQ MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - GEOLOGICAL SURVEY DIVISION 97244

WELLHEAD BLOWOUT CONTROL SYSTEM

Worksheet supplement for "Application for Permit to Drill or Deepen a Well"

This information is required by authority of Part 615 Supervisor of Wells or Part 625 Mineral Wells, Act 451 PA 1994, as amended, in order to obtain a permit.

Applicant

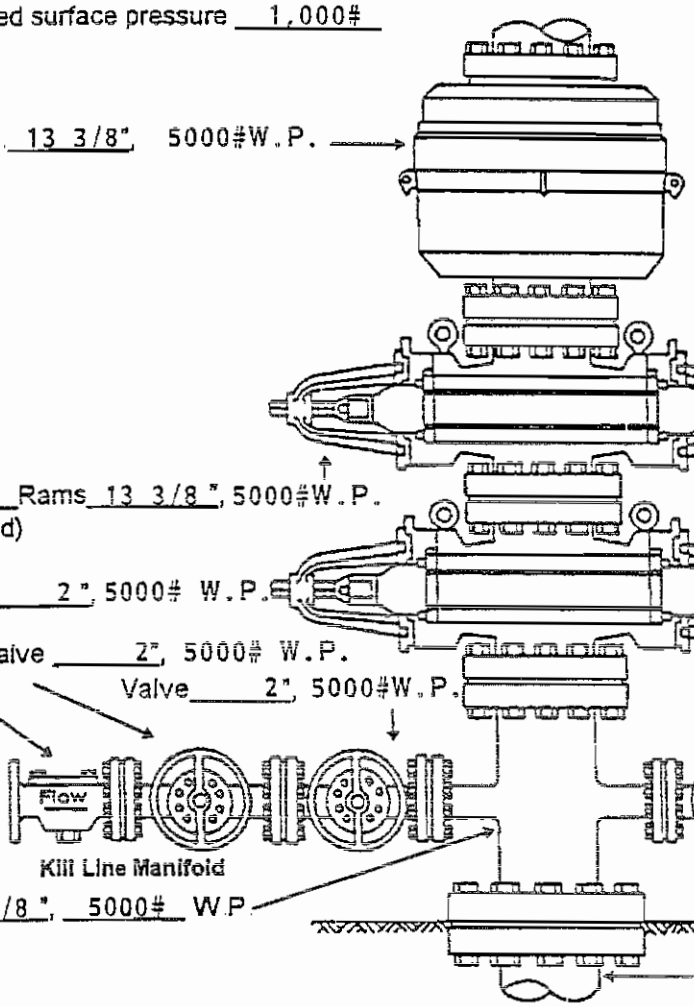
IMC Kalium, Ltd.

Well name and number

Kalium Hersey #2082

Max. anticipated surface pressure 1,000#

B.O.P.
☐Manual
☒Hydraulic
☒Sour Trim



Annular B.O.P. 13 3/8", 5000#W.P.

B.O.P. Pipe Rams 13 3/8", 5000#W.P. (Pipe/Blind)

B.O.P. Blind Rams 13 3/8", 5000#W.P. (Pipe/Blind)

Check Valve 2", 5000# W.P.

Valve 3", 5000# W.P.

Valve 2", 5000# W.P.

Valve 2", 5000#W.P.

Valve 3", 5000# W.P.

Flow

Kill Line Manifold

Manifold Line

Line 2", 5000# W.P.

Spool 13 3/8", 5000# W.P.

Wellhead 3000# W.P.

Fill above blanks with applicable information. If not applicable, enter "N.A." or cross-out item shown.
Describe test pressures and procedure for conducting pressure test. Identify any exceptions to R324.406 being requested.

Blowout prevention equipment will be tested to a pressure commensurate with the expected formation pressure, but not less than 1,000 psig at surface, for not less than 20 minutes before drilling the plug on the surface casing, intermediate casing and the production casing and before encountering all high-pressure formations and at other intervals as approved or requested by the Supervisor of Wells.

SOUR GAS CONTINGENCY PLAN - PART II
IMC KALIUM, LTD.
KALIUM HERSEY #2082
SECTION 26, T17N, R9W
HERSEY TOWNSHIP, OSCEOLA COUNTY, MICHIGAN

RESIDENTS WITHIN 1/4 MILE OF WELLSITE

1 IMC Kalium, Ltd
Refinery
Phone: 616-832-3755

EMERGENCY TELEPHONE NUMBERS

Name	Location	Number
Kalium Company Personnel		
Mr Rob Plosz	Hersey, MI (Office)	616-832-3755
Mr Paul McMillen	Hersey, MI (Office)	616-832-3755
MDEQ		
Cadillac District Geologist	Cadillac, MI	616-775-3960
Mr Ray Vugrinovich	Lansing (Office) Lansing (Home)	517-334-6945 517-339-9547
Sheriff	Osceola County	911
State Police	Cadillac, MI or Big Rapids, MI	911 616-832-2221
Ambulance / Emergency	Osceola County	911
Hospital	Reed City Hospital 7665 S. 220th Avenue Reed City, Michigan	911 or 616-832-3271
Director of Emergency Services		
Dallas Jenks	Osceola County (Office) or in an emergency	616-832-6172 911
Fire Department	Osceola County	911

Pollution Emergency Alerting System (PEAS) 800-292-4706

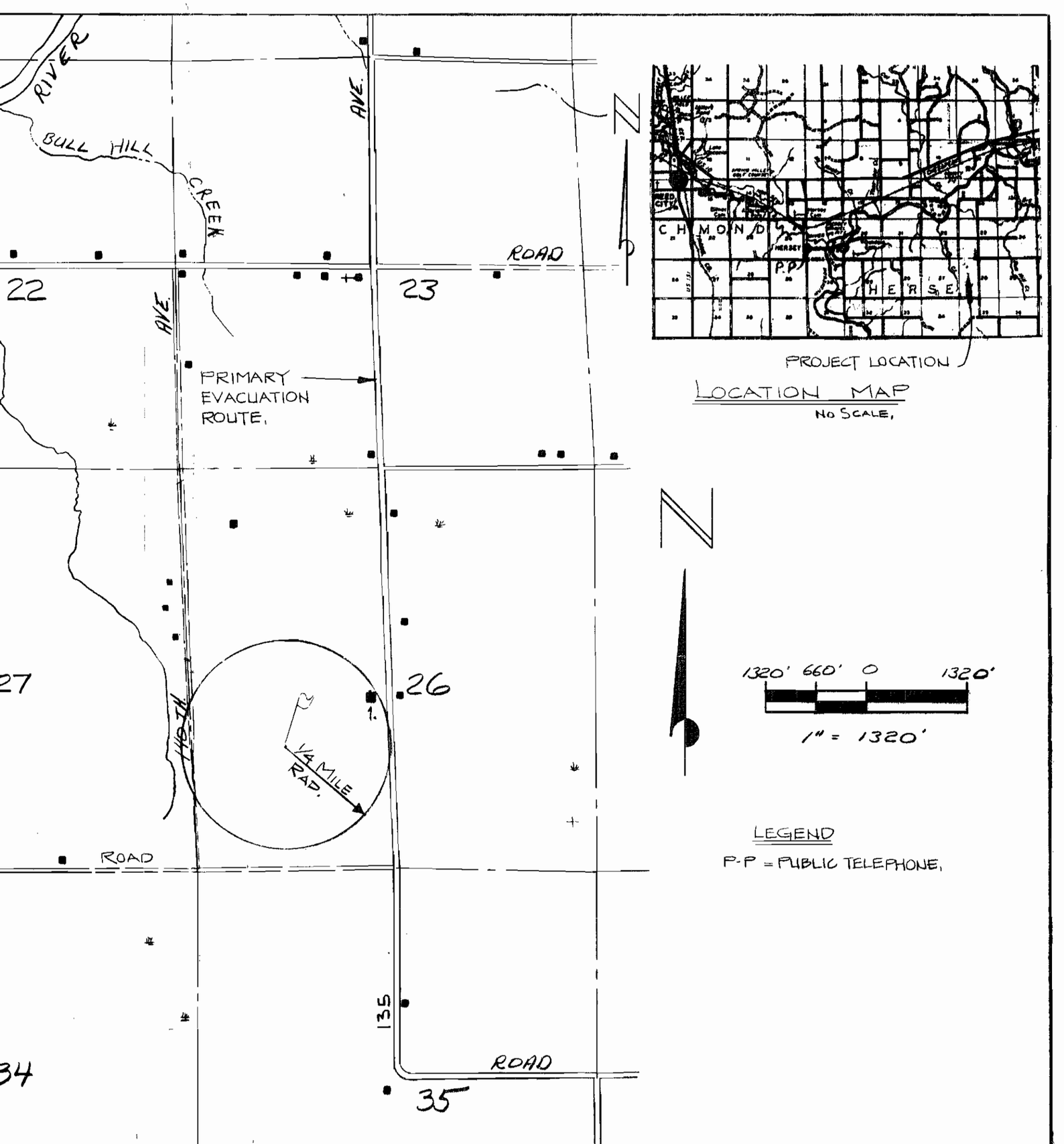
NEAREST PUBLIC TELEPHONE

The nearest public telephone is located in front of the General Store in the Village of Hersey. This is located approximately 1/4 mile east to 135th Avenue, then north on 135th Avenue approximately 3/4 mile, then west approximately 4-1/2 miles on Hersey Road to 180th Avenue.

MUD TREATMENT

A gas buster will be provided

Note: For locations of residences, public gathering places, and evacuation routes, see Vicinity Map.



LOCATION MAP

NO SCALE.

LEGEND

P-P = PUBLIC TELEPHONE.

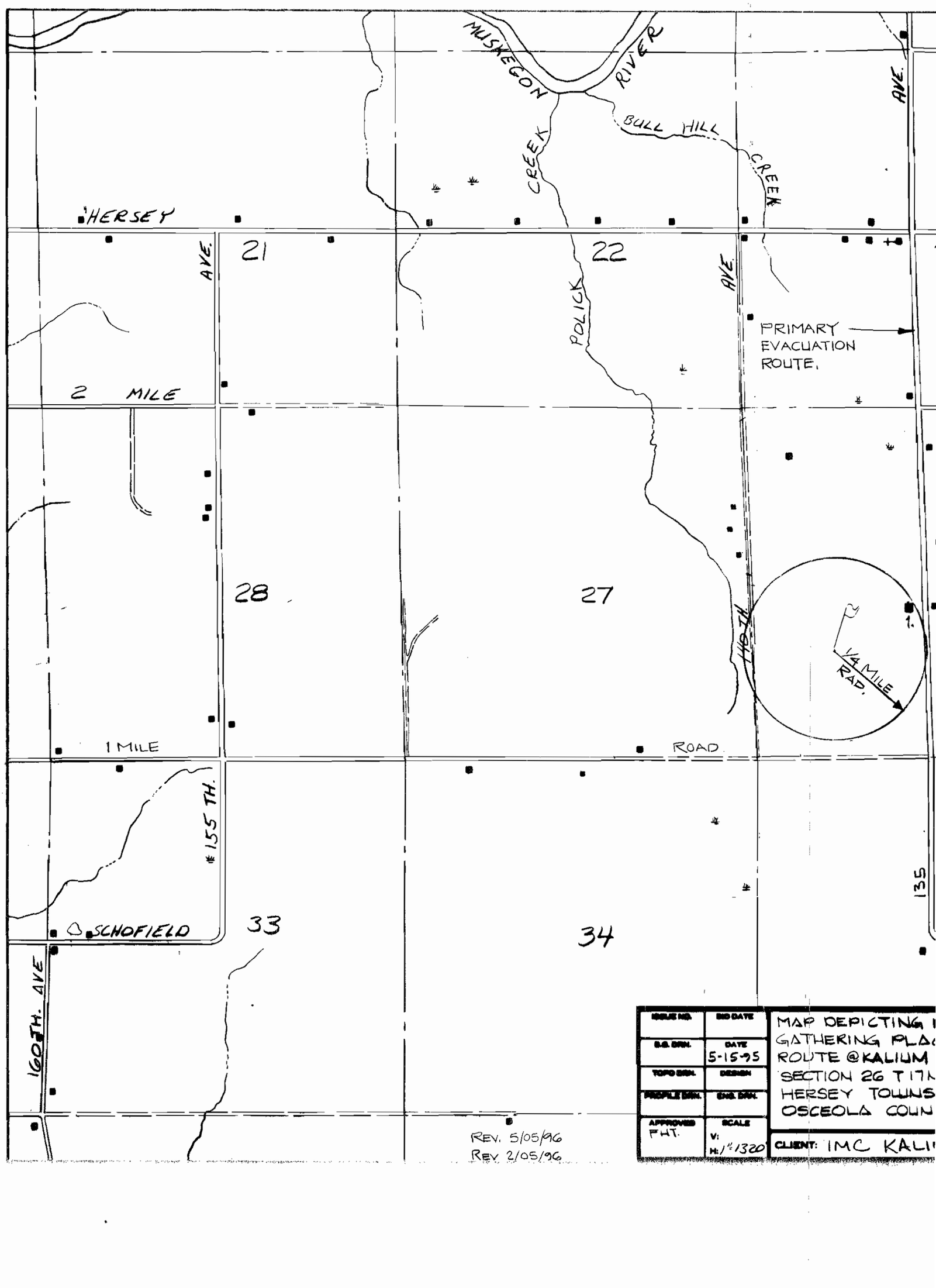
ISSUE NO.	BID DATE
D.O. DRN.	DATE 5-15-95
TOPO DRN.	DESIGN
PROFILE DRN.	ENG. DRN.
APPROVED FHT.	SCALE V: H: 1"=1320'

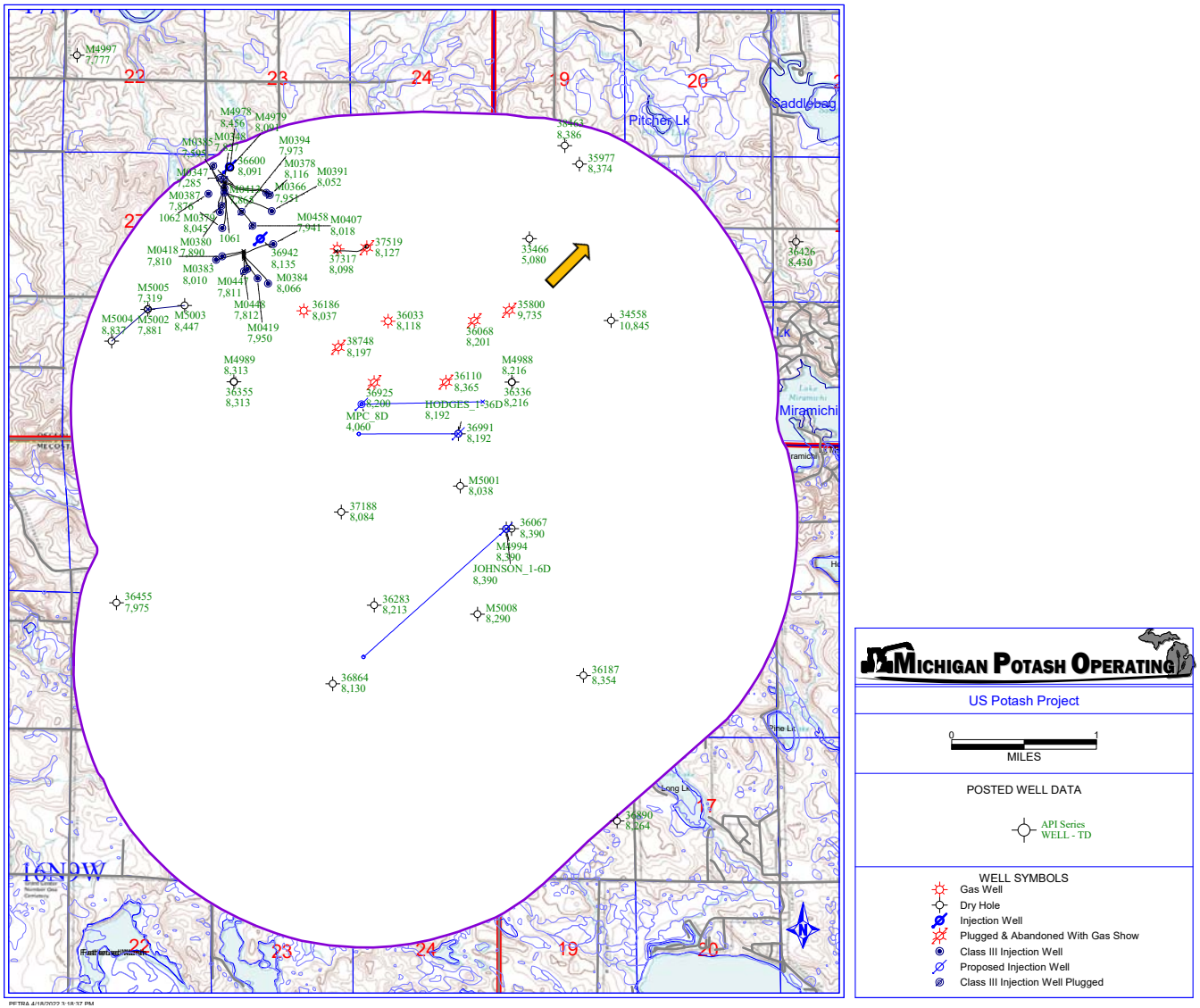
MAP DEPICTING RESIDENCES, PUBLIC GATHERING PLACES AND EVACUATION ROUTE @ KALIUM HERSEY #2082
SECTION 26 T17N, R9W.
HERSEY TOWNSHIP
OSCEOLA COUNTY, MICHIGAN

CLIENT: IMC KALIUM, LTD.

Wilcox Associates, Inc.
7711 South U.S. 131
P. O. Box 580
Cadillac, MI 49601
616 775-7755

P.B.	SHEET	JOB NO.
TOPO: LEVELS	1 OF 1	97244


MUSKEGON RIVER
BULL HILL CREEK
CREEK
HERSEY
AVE.
21
22
POLICK
AVE.
PRIMARY EVACUATION ROUTE.
2 MILE
28
27
1/4 MILE RAD.
1 MILE
ROAD
155TH.
SCHOFIELD
33
34
160TH. AVE
135
REV. 5/05/96
REV. 2/05/96
ISSUE NO.
END DATE
S.S. DRN.
DATE 5-15-95
TOPO DRN.
DESIGN
PROFILE DRN.
ENG. DRN.
APPROVED FHT.
SCALE V: H: 1"=1320'
MAP DEPICTING
GATHERING PLA
ROUTE @ KALIUM
SECTION 26 T17
HERSEY TOWNS
OSCEOLA COUN
CLIENT: IMC KALI



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

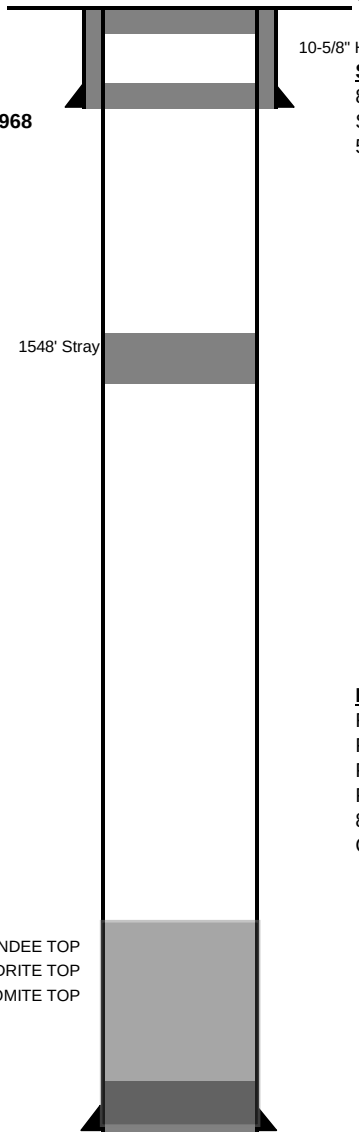
MADDERN 1

SE NW SE Sec 30 T17N R8W
OSCEOLA COUNTY, MI

CURRENT WELLBORE DIAGRAM

PERMIT No. 27159
API No. 21-133-27159-00-00
GL @ 1146'
KB @ 1161'
WELL COMPLETION DATE: 2/27/1968
PLUGGING COMPLETION DATE: 2/27/1968

UPDATED APRIL 2014 BY JLT



SURFACE CASING
8-5/8", 32#/ft.
SET @ 914' KB
500 SX CMT + 20 SX in top of cellar

PLUGGING
Run drill pipe to TD (4030') and spot 35 SX CMT on bottom.
Pull drill pipe to 1600', spot 35 SX CMT through Stray.
Pull drill pipe to base of the 8-5/8" surface pipe, spot 20 SX CMT
Pull remainder of drill pipe.
8-5/8" surface pipe abandoned with the well.
Cut pipe off 3' below ground level, spot 5 SX CMT.

TD @ 4030' KB

MADDERN 1 WELL HISTORY

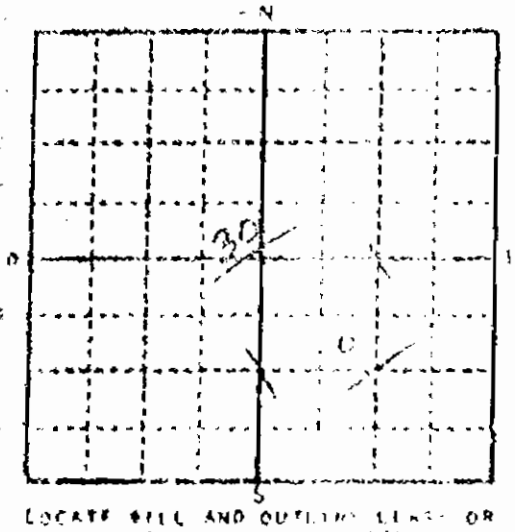
DATE	DESCRIPTION
1/31/1968	SPUD.
2/22/1968	DRILLING COMPLETED.
	8 5/8" SET AT 914'; 500 SX CMT + 20 SX in top of cellar
2/12/1968	Run drill pipe to TD (4030') and spot 35 SX CMT on bottom.
2/27/1968	Pull drill pipe to 1600', spot 35 SX CMT through Stray. Pull drill pipe to base of the 8-5/8" surface pipe, spot 20 SX CMT Pull remainder of drill pipe. 8-5/8" surface pipe abandoned with the well. Cut pipe off 3' below ground level, spot 5 SX CMT.
2/27/1968	PLUGGING COMPLETED

APPLICATION FOR PERMIT TO DRILL A WELL FOR OIL, GAS, GEOLOGICAL TEST, BRINE DISPOSAL, GAS OR L.P.G. STORAGE OR FOR SECONDARY RECOVERY

UNDER AUTHORITY OF ACT 61, P.A. OF 1939, AS AMENDED, AND/OR ACT 326, P.A. 1937 AS AMENDED

FILE TO:
SUPERVISOR OF WELLS
GEOLOGICAL SURVEY
MICHIGAN DEPARTMENT OF CONSERVATION
LANSING, MICHIGAN 48926

See Reverse Side Before Filling Out This Application



LOCATE WELL AND OUTLINE LEASE OR UNIT ON SECTION PLAT — 640 ACRES

1. APPLICATION TO DRILL A WELL FOR: Gas and Oil
2. DATE: 1-18-58
FEE ENCLOSED: $ 25.00
4. LESSEE (OWNER OF LEASE RIGHTS): Michigan Consolidated Gas Company
5. PERMANENT ADDRESS: One Woodward Avenue, Detroit, Michigan 48226
6. PHONE: 313 + 965-8000
7. LESSOR (IF FEE, NAME OF OWNER OF MINERAL RIGHTS): H. KAMPEN
8. WELL NO.: 1
9. SURFACE OWNER (IF OTHER THAN MINERAL OWNER): -
10. DRILLING CONTRACTOR: Company tools
11. ADDRESS: Reed City, Michigan
12. PHONE: 616 + 832-5651
13. SE ¼ of NW ¼ of SE ¼, SECTION 30 T 17N, R 8W
14. ACRES IN LEASE OR UNIT (SPECIFY): 40-Acre Unit
15. TOWNSHIP: Evart
16. COUNTY: Osceola
17. *Locate well in two directions from nearest lines of quarter section and property ownership or unit lines*

990 FT. FROM North (north-south) LINE OF QUARTER SECTION
990 FT. FROM North (north-south) (PROPERTY/UNIT) LINE
990 FT. FROM West (east-west) LINE OF QUARTER SECTION
330 FT. FROM East (east-west) (PROPERTY/UNIT) LINE

18. KIND OF TOOLS TO BE USED (Cable, rotary, combination): Rotary
19. WELL IS TO BE COMPLETED IN: Reed City Zone FORMATION
20. INTENDED DEPTH OF WELL: 3900 feet

21. PROGRAM OF CASING, SEALING, CEMENTING AND COMPLETING WELL

Approximately 700 feet of 8-5/8 inch casing will be set and cemented to surface. If productive, 5½ inch casing will be set through the productive zone and cemented. Proper wellhead control equipment will be used while drilling and completing well.

CASING IS NOT TO BE STRIPPED FROM THE HOLE AND NO CHANGE IS TO BE MADE IN THE PROGRAM OUTLINED ABOVE WITHOUT APPROVAL OF THE SUPERVISOR OF WELLS OR HIS AUTHORIZED REPRESENTATIVE

22. ARE THERE ANY LAKES, STREAMS, DRAINAGE WAYS, SWAMPS, OR MARSHES NEARER THAN 300 FEET FROM WELL LOCATION? Yes [ ] No [X]
23. ARE THERE ANY BUILDINGS OR OTHER STRUCTURES (WITHIN 75 FEET OF THE PROPOSED LOCATION)? Yes [ ] No [X]
24. IF ANSWER TO No. 22 ABOVE IS Yes, DESCRIBE AND GIVE DISTANCE FROM LOCATION.

APPLICANT AGREES TO COMPLY WITH THE PROVISIONS OF ACT 61, PUBLIC ACTS OF 1939, AS AMENDED, AND ACT 326, PUBLIC ACTS OF 1937, AS AMENDED, AND RULES AND REGULATIONS PERTAINING TO THE LOCATING, DRILLING, CASING, SEALING, COMPLETING, PRODUCING, AND PLUGGING OF WELLS. BEFORE COMMENCING DRILLING OPERATIONS, CONTACT THE NEAREST FIELD OFFICE. *(See reverse side)*

25. ADDRESS CORRESPONDENCE AND PERMIT TO: R. O. Ankarberg, Michigan Consolidated Gas Company, Route 2, Box 103-B, Reed City, Michigan
26. PHONE: 616 + 832-5651

LEAVE BLANK
DATE ISSUED
PERMIT NO.

27. OWNER OF LEASE RIGHTS: MICHIGAN CONSOLIDATED GAS COMPANY
28. AUTHORIZED REPRESENTATIVE: John A Vary-Gas

FOR CASHIER'S USE ONLY - DO NOT WRITE IN THIS SPACE

JAN-19-58 935203 $ 25.00

DISTRIBUTION
1. WHITE - LANSING
2. CANARY - CASHIER
3. BLUE - FIELD
4. GOLDENROD - FIELD
5. GREEN - APPLICANT

OIL AND GAS DIVISION - BOX 30028 - LANSING, MI 48909

Form Cons. 7200-A 1000 Sets 7-65

STATE OF MICHIGAN

DEPARTMENT OF CONSERVATION

No. 8935

SUPERVISOR OF WELLS

PERMIT TO DRILL A WELL FOR OIL OR GAS

(POST WHITE COPY OF PERMIT AT WELL LOCATION)

Permit No. 27159 Date Issued January 22, 1968

Permission is hereby granted to Michigan Consolidated Gas Company Madison, Inc.
Owner

One Woodward Avenue, Detroit, Michigan 48226
Address

Lease Name H. Maddern Well Number One

To drill a well for Gas and Oil

in the SE¼ NW¼ SE¼ of Section 30, T.17N., R.8W., Evart Twp., Osceola Co.

and located 940' from the north and 990' from the west line of quarter section

and located 940' from the north and 330' from the east property line

This permit is issued subject to the provisions and requirements of Act 61, P. A. 1939 and Act No. 326, P. A. 1937, as amended, and rules, regulations, requirements, or orders issued by the Supervisor of Wells and Department of Conservation.

GERALD E. EDDY, SUPERVISOR OF WELLS

By Robert M. Acker

SPECIAL REQUIREMENTS

NOTICE

DRILLING PERMIT ISSUED on the basis of the drilling, casing and sealing program as outlined on the application for permit and subject to special requirements as set forth above. No change or alteration is to be made without the permission and approval of the Supervisor of Wells or his authorized representative.

DRILLING OPERATIONS ARE NOT TO BE COMMENCED until all the well location requirements have been completed and the permit has been posted in a conspicuous place at the well site.

DEPARTMENT OFFICES

Lansing, Phone 517-373-1256
Mount Pleasant, Phone 517-773-8691
Cadillac, Phone 616-775-3181
Plainwell, Phone 616-685-8051
Imlay City, Phone 313-724-7015
Escanaba, Phone 906-786-0333

PERMITS MAY BE TRANSFERRED ONLY WITH THE PERMISSION OF THE SUPERVISOR OF WELLS

FORM 7209
REV. 8/63

MICHIGAN DEPARTMENT OF CONSERVATION
GEOLOGICAL SURVEY DIVISION

SURVEY RECORD OF WELL LOCATION

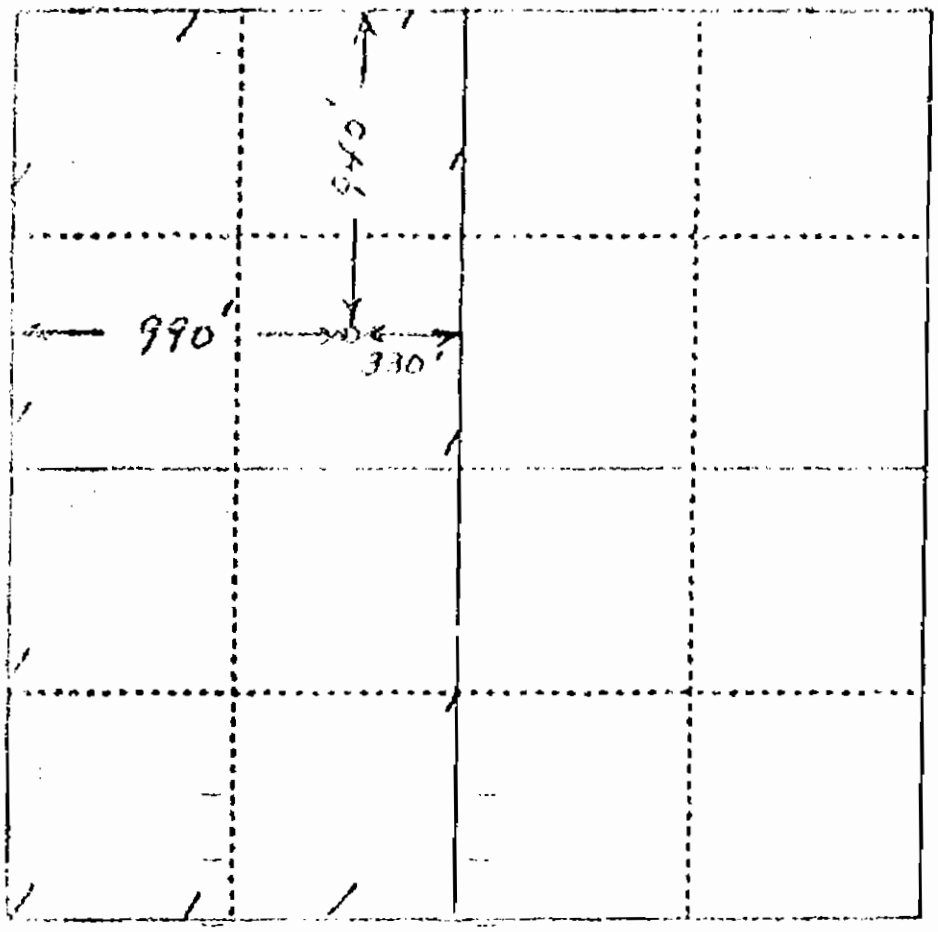
(Submit in triplicate with Application for Permit to Drill a Well for Oil, Gas, Geological Test, Brine Disposal, or Key Well for Secondary Recovery)

Operator Michigan Consolidated Gas Co.

Well Name H. M[illegible] Number 1

Location Description SE ¼ of NW ¼ of SE ¼ of Section 30, T 17 N S, R 8 E W

SE Quarter Section (160 acres more or less)



(Scale of plat = 1 inch equals 660 feet)

1. Locate well site and show acreage in lease.

2. Locate well in two directions from nearest quarter section lines and from nearest lease or ownership property lines.

940 ft. from North (north-south) line of quarter section.

990 ft. from West (east-west) line of quarter section.

940 ft. from North (north-south) lease or property line.

330 ft. from East (east-west) lease or property line.

3. Is location staked? yes
If location is not staked, describe how it is identified

4. Type of land and cover Open grass land
(open farm land, grass, brush, timber, etc.)

5. Are any lakes, streams, swamps, drainageways, etc., within 300 feet of well site? no If yes, locate on survey plat, show distance from site and give brief description. This location was staked 50' North of regular location because of sidehill conditions

6. Are any roads, power lines, regularly used buildings, etc., within 75 feet of well site? no If yes, locate on survey plat, show distance from site and give brief description.

Surveyed by Michigan Elevation Service (Name) (Title) January 10, 1968 (Date)

Address of Surveyor [illegible]

CERTIFICATION: I certify the above information is complete and accurate to the best of my knowledge and belief.

MICHIGAN CONSOLIDATED GAS COMPANY
Owner of Lease Rights

January 18, 1968
Date

Signature John A. Vary - JCE
Authorized Representative

[illegible] SURVEY DIVISION - BOX 30028 - LANSING, [illegible]

Cons. 7225

APR 8

WELL LOCATION REPORT

Permit No. 27159

Operator Michigan Consolidated Gas Co. Madlon Inc.

Farm Name H. Maddern #1

Notification M.C.G.C. called to inform commencing drilling.

Nature of Location Open grass land.

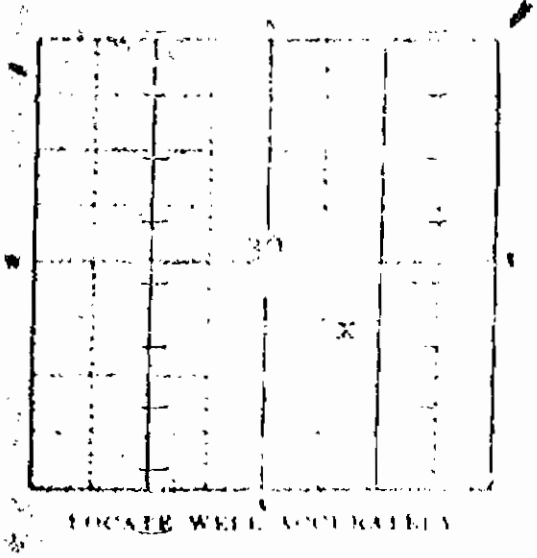
Condition of Pits OK.

Distance from Water No water.

Remarks Location on top of a steep grade. Moved stake 50' north to give better clearance. Approval given after completing well. Well completed Feb. 22, 1968 a dry hole.

Approved by Russell Wiles Date April 3, 1968

DIVISION - BOX 30028 - LANSING



LOCATE WELL ACCURATELY

STATE OF MICHIGAN
DEPARTMENT OF CONSERVATION

MAR 25 1968

LOG OF OIL, GAS OR TEST WELL

TO BE FILED WITH SUPERVISOR OF WELLS WITHIN 30 DAYS AFTER COMPLETION OF WELL (ACT 61 P. A. 1939 AND ACT 269 P. A. 1937)

Permit No. 27159 Deepening No.

Owner or Operator Michigan Consolidated Gas Company Maddern, No. 1

Address One Woodward Avenue - Detroit, Michigan 48226

Well No. 1 Farm H. Maddern

Township Evart County Osceola

Location SE NW SE Sec. 30 Twp. 17N Range 8W Elevation K.B. 1160 GRN 1145.5

Footage 940 ft. from North line and 990 ft. from West line of quarter section

Type of well: Dry Hole (OIL, GAS, BRINE DISPOSAL, DRY HOLE) Total depth 4030 (TD) 4025 (PB) Completed in Reed City Formation

Name of producing formation Top of formation

Date drilling began Jan. 31, 1968 Date drilling completed February 22, 1968 Date well completed February 27, 1968

Drilling contractor Michigan Consolidated Gas Co. Address One Woodward Avenue - Detroit, Michigan

WATER ZONES

NAME	FROM	TO	AMOUNT

OIL OR GAS ZONES

NAME	FROM	TO	AMOUNT

DEVIATION SURVEY

RUN AT	DEGREES

CASING AND CEMENTING

SIZE	WEIGHT SET	CEMENT	WT. PULLED
8-5/8"	934'	500	

STEEL LINES RUN

RUN AT	CORRECTED TO	RUN BY
3197	No Correction	Strapped Drill Pipe

PERFORATIONS

DATE	FROM	TO	NO. HOLES

ACID OR SHOOTING RECORD

DATE	FROM	TO	GALS. ACID OR QTS. NITRO

Rotary tools from 0 feet to 4030 feet. Cable tools from feet to feet.

Natural initial production first 24 hours 12 bbls. After acid or shot Bbls.

If gas well, cu ft. per 24 hours Rock pressure, lbs. per sq. in.

The above information is complete and correct.

Date 3/19/68

Signed R.O. Ankerberg

Title Drilling Supt.

Form 7210
Rev. 9/64

GIVE COMPLETE FORMATION RECORD ON REVERSE SIDE (Submit in Duplicate)

DIVISION - BOX 30028 - LANSING, MI 48909

MAR 2 2 19[illegible]

T.D. 4030 feet
in Reed City Zone

30-17N-8W
Evart Twp., (Osceola Co.)

#1 Maddern — Michigan Consolidated Gas Company — Permit #27159

Drilling Contractor: Michigan Consolidated Gas Company (Rig #1)

Location: SE NW SE Section 30-17N-8W
940' from North line and 930' from West line of Quarter Section

Elevation: 1160 K.B. 1157 R.F. 1145.5 Gnd.

Record By: Gordon Mabee from rig samples and driller's log

Driller's Log

		PLEISTOCENE:
0 -	75	Clay
75 -	252	Drift, clay, with sand streaks
252 -	565	Clay and Gravel
565 -	592	Shale, gray
		PERMIAN:
		Red Beds:
592 -	625	Red clay and gypsum
625 -	645	Limestone, shells and gypsum
		MISSISSIPPIAN:
		Saginaw Series:
645 -	790	Clay and sand

Sample Description:

790 -	800	Shale, reddish brown, sticky, sand and gravel contamination
800 -	810	Shale, reddish brown, plastic, soft
810 -	820	Shale as above; Clay, gray
820 -	830	Shale 60% reddish as above; Sandstone 40% gray, 0.1 to 0.2 MM grain size, subrounded, medium cemented with dolomite, well sorted
830 -	840	Free sand grains 80%, and some pieces of Sandstone, frosted, 0.2 to 0.4 MM grain size, subrounded, sample looks gray; Shale 20% dark gray
840 -	850	Shale 60% dark gray; Dolomite 10% dark brown, microcrystalline trace; Sandstone 30% gray, 0.1 MM grain size, subrounded well cemented with dolomite, white
850 -	860	Shale, dark gray; Sandstone, off white, 0.1 to 0.25 MM grain size, fair sorting, subrounded, poorly cemented; Sandstone seems to be interbedded with Shale, gray and Siltstone, gray
860 -	870	As above, slight increase Sandstone
870 -	900	Sandstone, off white, 0.1 to 0.2 MM grain size, subangular, well sorted, fair cemented with dolosite, Shale, trace, gray
900 -	915	Sandstone, off white and free sand grains, 0.1 to 0.3 MM grain size, subrounded, fair cemented with dolomite, medium sorted
915 -	920	Shale 50% gray, silty; Siltstone 50% gray
920 -	930	Sandstone, off white 70%, 0.1 to 0.15 MM grain size, subangular, well sorted, fair cemented with lime; Shale 30% gray

	Parma Sandstone:
930 - 950	Shale 50% black, hard; Sandstone 40% off white, 0.2 to 0.4 MM grain size, subrounded, poorly cemented with dolomite, poor sorting, porous; Dolomite 10% tan to brown, microcrystalline, sandy
950 - 960	Sandstone, off white, 0.1 MM grain size, well sorted, subangular, well cemented with white dolomite; Dolomite, trace, brown, very finely sucrosic
960 - 970	Shale, black
970 - 990	Shale, dark gray; Dolomite, trace, brown, microcrystalline
990 - 1000	Shale, light gray, hard, silty
1000 - 1010	Shale as above; Dolomite 10% buff to brown, microcrystalline
1010 - 1100	Shale, dark gray; Dolomite, trace, buff to brown, microcrystalline
1100 - 1190	Shale, dark gray
	MISSISSIPPIAN:
	Bayport Limestone:
1190 - 1200	Limestone, brown, microcrystalline, many included sand grains
1200 - 1210	Limestone, brown
1210 - 1220	Limestone 60% brown; Sandstone 40% off white, 0.2 to 0.8 MM grain size, subangular, medium cemented with lime, medium sorted
1220 - 1230	Limestone, brown; Shale, gray; Sandstone, trace as above
	Michigan Series:
1230 - 1240	Shale 70% gray; Anhydrite 30% white; Dolomite, trace, gray, microcrystalline
1240 - 1250	Shale, gray; Anhydrite 20% white
1250 - 1300	Shale 75% gray; Anhydrite 20-25% white
1300 - 1350	Shale, gray; Anhydrite 20-25% white and pink
1350 - 1370	As above, increase Anhydrite, pink
	Triple Gypsum: 1366 (SJ)
1370 - 1380	Anhydrite, white
1380 - 1390	Anhydrite 50% white; Shale 50% gray
1390 - 1395	Shale 70% gray; Anhydrite 30% white
1395 - 1400	Shale 80% gray; Anhydrite 20% white
1400 - 1410	Shale 60% gray; Anhydrite 40% white
1410 - 1415	Shale 75% gray; Anhydrite 25% white
1415 - 1420	Shale 85% gray; Anhydrite 15% white
1420 - 1425	Shale 90% gray; Anhydrite 10% white
1425 - 1430	Shale 75% gray; Anhydrite 25% white
1430 - 1435	Shale 65% gray; Anhydrite 15% white; Dolomite 20% brown, microcrystalline
1435 - 1440	Shale 80% gray; Dolomite, trace as above; Anhydrite 20% white
	Brown Limestone: 1440 (SJ)
1440 - 1445	Anhydrite 80% white; Shale, trace, gray; Limestone 20% brown, microcrystalline
1445 - 1450	Dolomite 85% brown, finely sucrosic; Anhydrite 15% white; Shale, trace, gray
1450 - 1455	Dolomite, brown as above; Anhydrite, trace, white; Shale, trace, gray
1455 - 1460	Dolomite 80% brown as above; Shale 20% gray
1460 - 1465	Dolomite 70% brown; Shale 30% gray
1465 - 1470	Shale 80% gray; Dolomite 20% brown, microcrystalline; Anhydrite, trace, white

1470 - 1475	Shale, gray; Anhydrite 20% white
1475 - 1480	Shale 80% gray; Siltstone 20% gray; Anhydrite, trace, white
1480 - 1485	Sandstone 40% off white, 0.15 to 0.4 MM grain size, angular, poorly sorted, fair cemented with lime; Shale 60% gray
1485 - 1490	Sandstone 50% as above; Shale 50% gray
1490 - 1500	No Samples
1500 - 1505	Shale 70% gray; Anhydrite 30% white
1505 - 1510	Shale 90% gray; Anhydrite 10% white
1510 - 1515	Anhydrite, white; Shale, trace, white
1515 - 1530	Shale 90% gray; Anhydrite 10% white
1530 - 1535	Anhydrite 50% white; Shale 50% gray
1535 - 1540	Shale 60% gray; Anhydrite 40% white; Dolomite, trace, brown, microcrystalline
1540 - 1545	Sandstone 30% green, 0.15 to 0.2 MM grain size, subangular, well cemented with dolomite, well sorted; Shale 50% gray; Anhydrite 20% white; Dolomite, trace, brown, microcrystalline
	Stray Sandstone: 1548 (SJ)
1545 - 1550	Sandstone 50% gray, 0.15 to 0.2 MM grain size, subangular, well sorted, medium cemented with lime; Shale 50% dark gray
1550 - 1555	Sandstone as above
	DST #1: 1524-1556
	Gas to surface 3 mins.
	Flow Time: 1st 30 mins 2nd 60 mins.
	CIP Time: 1st 60 mins 2nd 180 mins.
	IHP 739.1 FHP 759.1
	ICIP 578 FCIP 578
	IFP 66.3 - 94.7
	FFP 94.7 - 90
	Tool opened with good blow for 30 mins.
	Int. Flow rotated dual CIP Valve for a 60 min. Int. CIP.
	Reopened tool with good blow for 60 mins. Second Flow closed dual CIP valve for 180 mins FCIP.
	Recovered: 100' drilling fluid and 500 MCF gas
1555 - 1560	Sandstone, gray as above
1560 - 1565	Shale, gray
1565 - 1580	Sandstone 60% gray: Shale 40% gray
1580 - 1600	Sandstone, red, 0.15 to 0.25 MM grain size, subangular and subrounded, fair cemented with dolomite, well sorted
1600 - 1615	Sandstone, red as above, mostly free sand grains
1615 - 1620	Sandstone as above, becoming shaley
1620 - 1625	Sandstone 60% as above; Shale 40% red, soft, plastic
1625 - 1640	Shale, red, plastic; Some Sandstone, red
1640 - 1650	Shale, gray, plastic; some sand grains
1650 - 1660	As above
1660 - 1700	Sandstone, gray, 0.15 to 0.3 MM grain size, subangular and subrounded, fair sorting, fair cemented with dolomite
1700 - 1715	As above
1715 - 1725	Free sand grains, gray and red, frosted, 0.15 to 0.3 MM grain size. subangular
1725 - 1765	Free sand grains as above, mostly reddish grains, 0.2 to 0.5 MM size, subangular
1765 - 1785	Free sand grains, red, silty, 0.1 MM grain size, subangular

#1 Maddern
Page four

1785 - 1790	Free 40% sand grains as above; Free sand 20% grains, gray, coarse, subangular; Shale 40% gray
1790 - 1795	Free sand grains 60%, red, fine grained; Free sand grains 10%, coarse, subangular; Shale 30% gray
1795 - 1815	Free sand grains 80%, red, fine grained; Free sand grains 20%, coarse, subangular
1815 - 1835	Sandstone 70% reddish, silty, very fine grained; Shale 30% reddish, silty
1835 - 1845	Shale, gray, medium hard
1845 - 1870	Sandstone, reddish, silty, very fine grained, limey, micaceous
	Coldwater:
1870 - 2100	Shale 90% gray; Limestone 10% brown, microcrystalline
2100 - 2230	Shale 90% gray; Dolomite 10-20% gray and brown, microcrystalline
2230 - 2240	Shale 70% gray; Dolomite 30% brown, limey, microcrystalline
2240 - 2270	Shale 80% gray; Dolomite 20% as above
2270 - 2350	Shale 90% gray; Dolomite 10% as above
2350 - 2360	Shale 80% gray; Dolomite 20% brown, microcrystalline
2360 - 2650	Shale 90% gray; Dolomite 10% brown, microcrystalline
	Sunbury:
2650 - 2660	Shale 50% black, hard; Limestone 20% cream, microcrystalline; Shale 30% gray
2660 - 2670	Shale 60% black; Limestone 30% cream; Shale 10% gray
2670 - 2700	As above, fossil fragments
2700 - 2710	Shale 60% black, hard; Limestone 20% cream to gray, microcrystalline; Shale 20% gray
2710 - 2730	Shale 70% black; Limestone 30% as above
2730 - 2740	Shale, black, hard
	DEVONIAN:
	Ellsworth:
2740 - 2750	Shale 60% black; Shale 40% gray green, hard
2750 - 2800	Shale 70% gray green; Shale 30% light brown
2800 - 2870	Shale, gray green and some light brown
2870 - 2900	As above, slight increase Shale, light brown
2900 - 2940	Shale 50% gray green; Shale 50% light brown
2940 - 2950	Shale 60% light brown; Shale 40% gray green
2950 - 3000	Shale 80% light brown; Shale 20% gray-green
3000 - 3020	Shale 90% light brown; Shale 10% gray green
	Antrim:
3020 - 3165	Shale, dark brown, blackish, hard
3165 - 3170	Limestone 80% brown, microcrystalline; Shale 20% dark brown as above; Limestone, trace, cream, microcrystalline
3170 - 3175	Shale 70% dark brown; Limestone 30% brown as above
3175 - 3180	Limestone 60% brown as above; Shale, dark brown
3180 - 3185	Limestone 80% brown as above; Shale 20% dark brown
3185 - 3190	Shale 80% dark brown; Limestone 20% brown, as above
3190 - 3200	As above
3200 - 3210	Shale 90% dark brown; Limestone 10% as above
3210 - 3275	Shale, dark brown
	Traverse Formation: 3250 (SJ)
3275 - 3285	Shale, dark brown (more of a gray color); Shale, trace, gray, limey; Limestone, trace, white, microcrystalline

VISION - BOX 30028 - LANSING, MI 48909

3285 - 3295	Limestone, gray-brown, microcrystalline; Shale, gray brown, limey
3295 - 3305	Limestone, brown, microcrystalline, shaley
	Traverse Limestone: 3304 (SJ)
3305 - 3310	Limestone, brown, very finely sucrosic to microcrystalline
	30 min. Circulated Sample at 3310: Limestone, brown, finely sucrosic
3310 - 3315	Limestone, brown, sucrosic
3315 - 3320	Limestone, gray-brown, sucrosic
3320 - 3325	Limestone, brown, sucrosic
3325 - 3330	Limestone, brown, sucrosic; Shale, trace, grayish
	30 min. Circulated Sample at 3330: Limestone, brown, sucrosic; Shale 30% grayish
3330 - 3335	Limestone 40% black, microcrystalline; Shale 40% gray brown; Limestone 20% brown, sucrosic
3335 - 3340	Limestone, off white, microcrystalline, fragmental
3340 - 3345	Limestone, off white and buff, fragmental, sucrosic, cherty
3345 - 3360	Limestone, buff to cream, fragmental
3360 - 3375	Limestone, buff to brown, sucrosic
3375 - 3410	Limestone, buff to brown, sucrosic
3410 - 3425	Limestone, tan to brown, some buff to off white, sucrosic
3425 - 3440	Limestone, tan to brown, sucrosic
3440 - 3455	Limestone, off white, sucrosic
3455 - 3460	Limestone 80% off white, sucrosic; Limestone 20% cream to buff
3460 - 3490	Limestone, buff to tan, sucrosic
3490 - 3535	Limestone, brown, sucrosic
3535 - 3545	Limestone 70% brown, sucrosic; Limestone 30% buff to tan
3545 - 3650	Limestone, light brown, sucrosic; Limestone, trace, off white to buff
3650 - 3690	Limestone 50% dark brown to black, microcrystalline; Limestone 50% tan to brown, sucrosic
3690 - 3700	Limestone 60% off white, sucrosic; Limestone 40% black, microcrystalline
3700 - 3710	Limestone 70% buff to tan, sucrosic; Limestone 20% black, microcrystalline; Shale 10% gray
3710 - 3740	As above, darker color
3740 - 3750	As above plus Shale, gray
3750 - 3840	Limestone, brown, finely sucrosic; Limestone, trace, off white, sucrosic
	Bell Shale: 3834 (SJ)
3840 - 3850	Limestone 50% as above; Shale 50% gray
3850 - 3875	As above, quite shaley
3875 - 3895	Shale, gray
	Dundee: 3890 (SJ)
	Circulated Sample at 3896: Limestone, off white to tan to brown mottled, fragmental, finely sucrosic, fossiliferous; Shale, gray
3895 - 3900	Limestone as above; Shale, gray
3900 - 3910	Limestone as above

	60 min. Circulated Sample at 3910:
—	Limestone, buff to brown as above
3910 - 3960	Limestone as above, buff to brown mottled
—	Red City Anhydrite: 3953 (SJ)
3960 - 3970	Limestone 60% or above; Dolomite 40% buff to gray, finely sucrosic
—	Red City Dolomite: 3968 (SJ)
3970 - 3975	Dolomite, dark brown, sucrosic; Dolomite, gray, microcrystalline to finely sucrosic; Anhydrite, trace, white?
3975 - 3980	Dolomite, brown, finely sucrosic
3980 - 3985	As above; Anhydrite, trace, white?
3985 - 3990	Dolomite, brown, sucrosic; Chert, trace, white; Anhydrite, trace, white?
3990 - 3995	Dolomite, cream, dense, tight
3995 - 4000	Dolomite, tan, dense, tight
4000 - 4025	Dolomite, as above, trace Dolomite, brown to dark brown, microsucrosic, tight
4025 - 4030	Dolomite, brown to dark brown, fine to microcrystalline, tight
—	
4030 TOTAL DEPTH (DRILLER)	
4025 TOTAL DEPTH (SJ)	"

DIVISION - BOX 30028 - LANSING, KANSAS

7213
10/63

MICHIGAN DEPARTMENT OF CONSERVATION

WELL PLUGGING RECORD

TO BE FILED WITHIN THIRTY DAYS AFTER PLUGGING IS COMPLETED

MAR 21 1968

MAY 24 1968

Permit No. 27159 Date March 19, 1968

Name of Operator Michigan Consolidated Gas Co. Address One Woodward Avenue - Detroit, Michigan

Well Name Mc Madden No. 2 Location NE ¼ NW ¼ SE ¼ Section 32

Township Evart County Osceola T. 17N, R. 8W

Type of Well Dry Hole (OIL, GAS, BRINE DISPOSAL OR DRY HOLE) 4030 TD Total Depth 4025.81 Formation Reed City

Date Plugging Started February 27, 1968 Date Plugging Completed February 27, 1968

Was permission of Department of Conservation obtained before plugging began Yes

Name of Department representative who authorized or supervised plugging Russell Miles

CASING SIZE	WHERE SET	AMOUNT RECOVERED	SHOT OR RIPPED	BRIDGES OR PLUGS (SPUDS, STONE, CEMENT, ETC.)	DEPTH PLACED	NUMBER SACKS
8 5/8"	911'			Cemented	4030'	35
					1600'	35
					930'	20

Describe in detail how well was plugged Circulated the hole with mud. Spotted 35 bags of reg. cement through the drill pipe at 4030', 35 bags at 1600' and 20 bags at 660', Hole filled with mud. 8" casing to be cut off 3' below ground level and plated.

(USE REVERSE SIDE IF NEEDED)

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? No If so, give details

Did a Service Company pump mud, spot cement, or set bridge plugs Yes If so, give name and address Allied Services, Inc. - Mt. Pleasant, Michigan

Was the well plugged by a Company or Contractor other than Owner or Operator? No If so, give name and address

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging Chester Lowery

CERTIFICATE:

"I, R. O. Ankarberg of Michigan Consolidated Gas Company (Company), state that I am authorized by said Owner or Operator to make this report, and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge."

(SIGNATURE) Reed City, Michigan (ADDRESS) Drilling Supt. (TITLE)

FINAL INSPECTIONS: By Department Representative Russell Miles Date May 23, 1968

DATE Jan. 29 19 68 — FIELD ACTIVITY REPORT — FIELD NAME OR TYPE WELL Drlg.-Wildcat

PERMIT NO.	OPERATOR	LEASE OR WELL NAME & NO.		TOWNSHIP	COUNTY
27159	Mich. Cons. Gas Co.	Maddern #1		Evart	Osceola

Location made. Moving in rotary. Pits partly dug. I am not satisfied as to how this location is made but too late to correct problem. Pits are on low side of location and any excessive run off will cause a problem with pits overflowing. Location was moved 50' north to clear a steep hill. All drainage from location will run into Big Stone Lake, however, lakes are beyond 500' from location.

DATE Feb. 6 19 68 — FIELD ACTIVITY REPORT — FIELD NAME OR TYPE WELL Drlg.-Wildcat

PERMIT NO.	OPERATOR	LEASE OR WELL NAME & NO.	TOWNSHIP	COUNTY
27159	M. C. C. C.	Maddern #1	Evart	Osceola

Comm. 2-1-68. Drift 592'. Drlg. 880'. No surface pipe set yet, still looking for a place to set surface pipe so a pressure test can be made on cement job.

DATE Feb. 12 19 68 — FIELD ACTIVITY REPORT — FIELD NAME OR TYPE WELL Drlg.-Wildcat

PERMIT NO.	OPERATOR	LEASE OR WELL NAME & NO.	TOWNSHIP	COUNTY
27159	M.C.C.C.	Maddern #1	Evart.	Osceola

Blowout preventers set ant tested. Run in drill pipe and commenced drilling ahead. Found 500' of cement inside of 8". 3" set at 915 (500 cement + 20 sax in top of cellar).

DATE Feb. 14 19 68 — FIELD ACTIVITY REPORT — FIELD NAME OR TYPE WELL Drlg.-Wildcat

PERMIT NO.	OPERATOR	LEASE OR WELL NAME & NO.	TOWNSHIP	COUNTY
27159	M.C.C.C.	Maddern #1	Evart	Osceola

Trip out 3366; Br. ls. 1440; Stray 1548'. PTD 1556'. Running a D.S.T. 1524-1556'. Rec. gas to surface 3 mins., gauged 477,000 cu. ft. Have tool shut in now for F.C.I.P.

DATE Feb. 15 19 68 — FIELD ACTIVITY REPORT — FIELD NAME OR TYPE WELL Drlg.-Wildcat

PERMIT NO.	OPERATOR	LEASE OR WELL NAME & NO.	TOWNSHIP	COUNTY
27159	M.C.C.C.	Maddern #1	Evart	Osceola

Stray 1548'. DST 1524-1556'. Rec. gas to surface in 3 mins., gauged 350,000 on first flow, increased to 500,000 on second flow. Flow through 5/8" choke. Also recovered 100' of drilling fluid in drill pipe. IHMP 759#; ICIP 578#; IFP 66 to 94#; FFP 94 to 96#; FCIP 578#; FHMP 759#. Drilling ahead to Reed City. Drlg. now at 1800'.

CONS 7231

INSPECTOR Wiles

The above information is complete and correct.

Date 3/19/68 Title Drilling Supt. R.O. Armstrong

CONS. 1210
Rev. 9/64

GIVE COMPLETE FORMATION RECORD ON REVERSE SIDE (Submit in Duplicate)

STATE OF MICHIGAN

MAR 3 1968

FIELD ACTIVITY REPORT

DATE Feb. 19 19 68 FIELD NAME OR TYPE WELL Drlg.-Wildcat

PERMIT NO.	OPERATOR	LEASE OR WELL NAME & NO.	TOWNSHIP	COUNTY
27159	Mich. Cons. Gas Co.	Naddern #1	Evart	Osceola

Drlg. 3112'. Still in Antrim.

FEB 23 1968

FIELD ACTIVITY REPORT

DATE Feb. 21 19 68 FIELD NAME OR TYPE WELL Drlg.-Wildcat

PERMIT NO.	OPERATOR	LEASE OR WELL NAME & NO.	TOWNSHIP	COUNTY
27159	Mich. Cons. Gas Co.	Naddern #1	Evart	Osceola

Drlg. 373[illegible]'. 3470 DP = 3471 SJJ.

FEB 26 1968

FIELD ACTIVITY REPORT

DATE Feb. 22 19 68 FIELD NAME OR TYPE WELL Drlg.-Wildcat

PERMIT NO.	OPERATOR	LEASE OR WELL NAME & NO.	TOWNSHIP	COUNTY
27159	Mich. Cons. Gas Co.	Naddern #1	Evart	Osceola

Trv. Ls. 3233'; Bell 3850; Dd. 3891' Drlg. 2910; To drill ahead to Reed City & test. If no oil production is encountered will plug well to surface. Not to save gas encountered in strip.

FEB 27 1968

FIELD ACTIVITY REPORT

DATE Feb. 23 19 68 FIELD NAME OR TYPE WELL Drlg.-Wildcat

PERMIT NO.	OPERATOR	LEASE OR WELL NAME & NO.	TOWNSHIP	COUNTY
27159	Mich. Cons. Gas Co	Naddern #1	Evart	Osceola

Trip. Gyr. 1366; Br. Ls. 1436; Stray 1542; Ant. 3040; Trv. fm. 3256; Trv. Ls. 3304; Bell 3834; Dd. 3890; Anhyd. 3950(?); Reed City 3988(?). TD 4030'. 4030 DP = 4025 SJ). D & A. Completed 2-22-68. To plug 2-23-68 by running drill pipe to T.D. & spot 35 sax of cement on bottom. Pull drill pipe to 1600' and spot 35 sax of cement thru Stray. Pull drill pipe to base of 8-5/8" surface pipe and spot 20 sax of cement. 8-5/8" to be abandoned with the well. Cut off 3' below ground level & cap with 5 sax cement, however, while running in drill pipe hole caved in freezing drill pipe. Pipe stuck at 1865, cannot pull. Broke circulation OK & are now mixing good mud to attempt to free pipe & continue plugging well. Completed well using water for drilling fluid.

CONS 7231 INSPECTOR Wiles

Rotary tools from 0 feet to 4030 feet. Cable tools from ..... feet to ..... feet.

Natural initial production first 24 hours ..... Bbls. After acid or shot ..... Bbls.

If gas well, cu ft per 24 hours ..... Rock pressure, lbs. per sq. in. .....

The above information is complete and correct.

Signed R.O. Ankarberg

Date 3/19/68 Title Drilling Supt.

Cons. 7210
Rev. 3/64

GIVE COMPLETE FORMATION RECORD ON REVERSE SIDE (Submit in Duplicate)

DIVISION - BOX 30028 - LANSING

FEB 27 1968

FIELD ACTIVITY REPORT

DATE Feb. 27 19 68 FIELD NAME OR TYPE WELL Drlg.-Wildcat

PERMIT NO.	OPERATOR	LEASE OR WELL NAME & NO.	TOWNSHIP	COUNTY
27159	Mich. Cons. Gas Co	Maddern #1	Evart	Osceola

Trip. gyp. 1266; Br. ls. 1436; Stray 1588; Anh. 3040; Trv. fm. 3256; Trv. ls. 3304; Bell 3934; Dl. [illegible]; anhyd. 3950(?); Reed City 3968(?). TD 4030'. 4030 DP = 4025 Sj). D & A. Completed 2-22-68. To plug 2-23-68 by running drill pipe to T.D. & spot 35 sax of cement on bottom. Pull drill pipe to 1620' and spot 35 sax of cement thru Stray. Pull drill pipe to base of 8-5/8" surface pipe and spot 20 sax of cement. 8-5/8" to be abandoned with the well. Cut off 3' below ground level & cap with 5 sax cement, however, while running in drill pipe hole caved in freezing drill pipe. Pipe stuck at 1865, cannot pull. Broke circulation OK & are now mixing good mud to attempt to free pipe & continue plugging well. Completed well using water for drilling fluid.

INSPECTOR Wiles

CONS 7231 —

FIELD ACTIVITY REPORT

DATE Feb. 27 19 68 FIELD NAME OR TYPE WELL Drlg.-Wildcat

PERMIT NO.	OPERATOR	LEASE OR WELL NAME & NO.	TOWNSHIP	COUNTY
27159	M.C.G.C.	Maddern #1 - Cont'nued	Evart	Osceola

Mud vis. 39, wt. 8.6, wtr. loss 7.5 cc) Circulated mud in hole. 2-26-68 Packed off drill pipe & collars at 1575'. Ran in Halliburton packer & jars to 1560. Cut too much mud cake. Pulled packer & jars & reconditioned hole with 7-7/8" bit with jets out. Reran packer with jars & connected on to drill collars. Plug dropped down hole 4'. Top of pipe 1586'. Removed packer & reran again & recovered all drill collars. Laid down all drill collars and reran drill pipe to TD. Used a 7-1/8" bit with water courses out. Spotted 35 sacks of cement on bottom. Pulled drill pipe to 1600' & spotted 35 sax of cement thru stray, pulled drill pipe to base of 8 5/8" surface pipe (Cont'd)

INSPECTOR Wiles

CONS 7231 —

FIELD NAME OR TYPE WELL Drlg.-Wildcat

PERMIT NO.	OPERATOR	LEASE OR WELL NAME & NO.	TOWNSHIP	COUNTY
27159	M.C.G.C.	Maddern #1	Evart	Osceola

Well D & A on 3-22-68. TD 4030'. After running in drill pipe to plug pipe stuck at 1865', could not move. (Had 20 drill collars in hole). Completed well with salt water. Broke circulation OK so mixed mud using 32 sax of salt jel + 2 sax of mylojel. Mud did not free pipe. Spotted 110 gals. of B 19 chemical + 20 bbl. of oil. Pipe still froze. — Continued spotting oil around drill collars but pipe still froze. On 2-24-68 continued spotting oil around drill collars and working pipe, pipe began to work free but would not travel. 2/25/68 Pipe still stuck. Had McCullough Tool Co. check for free point, found drill pipe free to 931'. Cleaned mud pits again & mixed a new pit of mud using 40 sax mylogel + other chemicals. Cont'd.

INSPECTOR Wiles

CONS 7231 —

FIELD ACTIVITY REPORT

DATE Feb. 27 19 68 FIELD NAME OR TYPE WELL Drlg.-Wildcat

PERMIT NO.	OPERATOR	LEASE OR WELL NAME & NO.	TOWNSHIP	COUNTY
27159	M.C.G.C.	Maddern #1 - Continued	Evart	Osceola

and spotted 20 sax. 8" abandoned with the well. Cut off 3' below ground level and capped with 5 sax cement. To move rotary to Reed City for next well.

NOTE: Accompanied Frank Vining to Big Rapids checking on a complaint concerning a brine loss at a brine well operated by Mecosta County southeast of Big Rapids. Brine loss repaired and brine tanks in good order. No problem when checking.

MAY 24 1968

FIELD ACTIVITY REPORT

DATE May 22 19 68 FIELD NAME OR TYPE WELL Plugged-Wildcat

PERMIT NO.	OPERATOR	LEASE OR WELL NAME & NO.	TOWNSHIP	COUNTY
27159	Mich. Cons. Gas	Maddern #1	Evart	Osceola

Plugged to surface. Cellar & pits filled and leveled. Some debris on location, however will remove soon. OK to approve.

Form 1229
Rev. 5/67

STATE OF MICHIGAN
DEPARTMENT OF CONSERVATION
SUPERVISOR OF WELLS

FEB 27 196

PERMIT TO PLUG AND ABANDON

PERMIT NO.
27249

FIELD NAME
Wildcat

COMPANY OR OPERATOR
Michigan Consolidated Gas Company

WELL NAME
Maddern

WELL NO.
1

SEC.
30

T
17N

R
8W

TOWNSHIP
Evart

COUNTY
Osceola

TYPE OF WELL (Oil, Gas, Observation, etc.)
Dry Hole

DATE COMPLETED
Feb. 22 1968

PRODUCTION
19

LAST PRODUCTION (Average per day)
OIL,
WATER,
GAS

PLUGGING TO BE DONE BY
Cooper Tools & Allied Services

DATE PLUGGING WELL STARTED
Feb. 23 1968

PLUGGING FIRM'S REQUESTED ADDRESS (Where copy of Approved Permit is to be sent)
Jerry Upp

DATE
Feb. 22 1968

ADDRESS
Michigan Consolidated Gas Company,
Reed City, Michigan 49677

CASING AND PLUGGING RECORD

CASING SIZE	DEPTH SET	SACKS CEMENT	PERFORATIONS
8 5/8"	913	200 + 20	

FORMATION TOPS AND OTHER DATA
(Formation & depth, Oil, Gas & Water Shows, etc.)

Elev.	1157 DF	Antrim	3050	TD	4030
	1139 KB	Trv. fm.	3256		
	1145.5 Gr.	Trv. ls.	3304		
Draft	392	Bell	3334		
Trip exp	1306	Dundee	3390		
Br. ls.	1436	Anhyd.	3950		
Stony	1568	Rd. Cy.	3978		

PLUGGING REQUIREMENTS:

Run drill pipe to total depth and spot 35 sacks of cement on bottom. Pull drill pipe to 1600' and spot 35 sacks of cement through Stray. Pull drill pipe to base of the 8 5/8" surface pipe and spot 20 sacks of cement. Pull remainder of drill pipe.

8 5/8" surface pipe to be abandoned with the well. Cut pipe off 3' below ground level and cap with 5 sacks of cement.

Plugging requirements outlined above are to be executed in accordance with the provisions of Act 61, P.A. 1939, and/or Act 326, P.A. 1937, and the rules and regulations issued and adopted thereunder. NOTE: THE PLUGGING OF THIS WELL CANNOT BE APPROVED UNTIL THE PLUGGING IS COMPLETED, CELLAR, RAT HOLE AND PITS FILLED AND THE LOCATION HAS BEEN CLEANED AND LEVELED.

PERMIT ISSUED BY
Kenneth Fuller

FIELD OFFICE
Cadillac

DATE
Feb. 26 1968

NOTE: WELL PLUGGING RECORD, Form GSS 713, to be filed in DUPLICATE within 10 days after completion.

BOX 30028 - LANSING, MI 48909
DIVISION - BOX 30028 - LANSING, MI 48909

GS. 2
8/64

MAR 1 1 1971

MICHIGAN DEPARTMENT OF CONSERVATION
GEOLOGICAL SURVEY DIVISION

PLEASE FILE IN TRIPLICATE

REQUEST FOR TRANSFER OF PERMIT

Reed City, Michigan, Feb. 23, 1971

Supervisor of Wells
Lansing, Michigan

Please transfer Permit No. 27159 issued to Michigan Consolidated Gas Co.

for H. Maddern No. 1 located in the SE ¼ NW ¼ SE ¼ section 30, T. 17, R. 8W, Evart Township, Osceola County,

to Madlou, Inc. . All operating interests have been disposed of by us (me) and are being assumed by this proposed operator.

OPERATOR Michigan Consolidated Gas Co.

By J. A. Vary

NOTE: NO PERMIT SHALL BE TRANSFERRED WHEN AN OWNER OR HIS AUTHORIZED REPRESENTATIVE IS NOT COMPLYING OR HAS NOT COMPLIED WITH THE PROVISIONS OF ACT 61, PUBLIC ACTS OF MICHIGAN, 1939, AS AMENDED, OR ACT 326, PUBLIC ACTS OF MICHIGAN, 1937, AS AMENDED, OR THE REGULATIONS OR ORDERS ISSUED BY THE SUPERVISOR OF WELLS OR HIS AUTHORIZED REPRESENTATIVE.

Reed City, Michigan, Feb 23, 1971

Supervisor of Wells
Lansing, Michigan

Madlou, Inc. has acquired the well drilled under Permit No. 27159
ACQUIRING OPERATOR

and is assuming full responsibility for its operation and abandonment in conformity with the law, regulations and orders issued by the Supervisor of Wells. A surety bond is now on file covering these operations.

ACQUIRING OPERATOR Madlou, Inc. PHONE 832-5164

ADDRESS Box 176 Reed City, Mich.
STREET AND NO. TOWN STATE

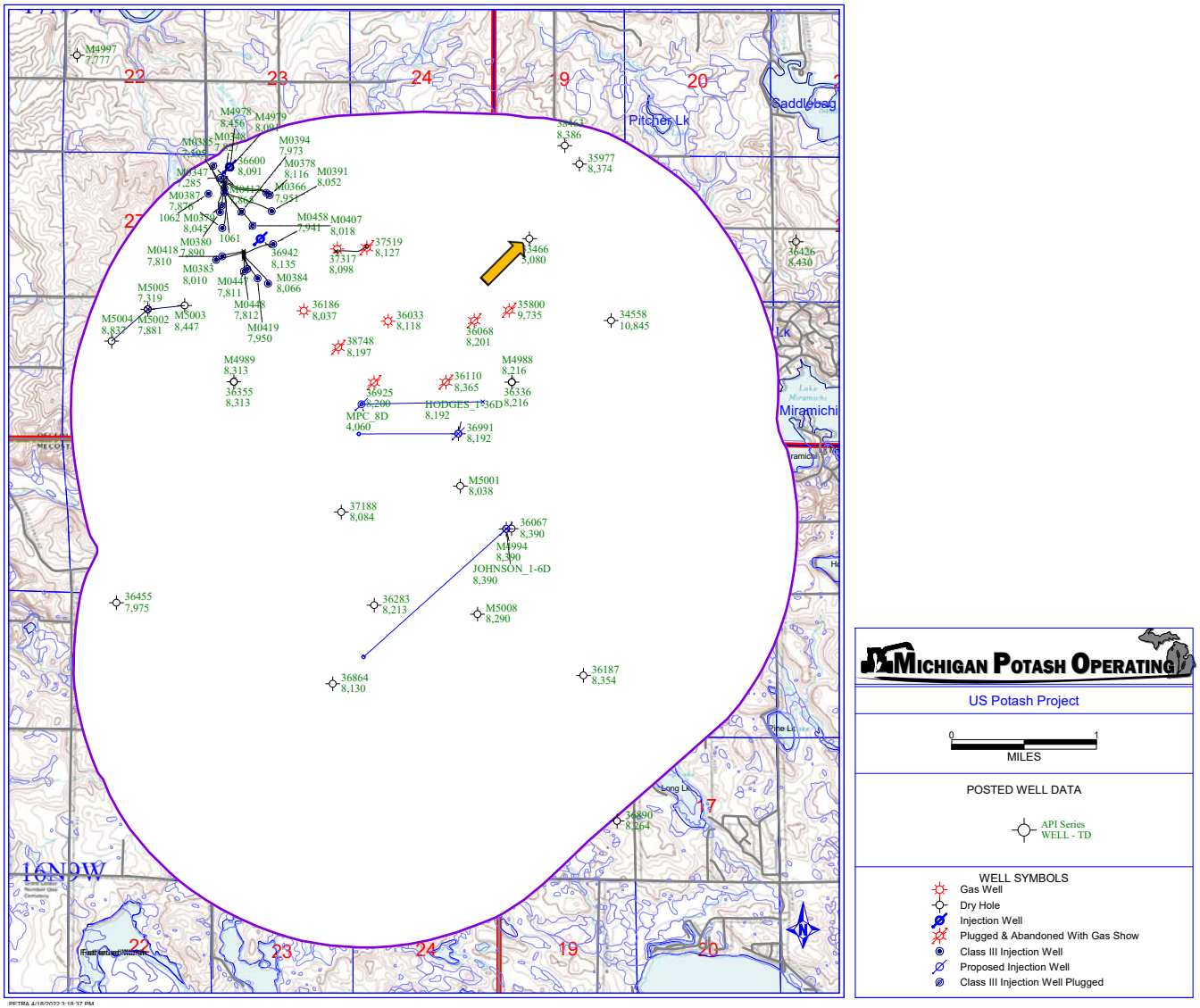
BY Charles H. Bishop pres.

TYPE OF WELL PLUGGED DRY HOLE

DATE TRANSFER APPROVED MAR 1 2 1971

TRANSFER APPROVED BY V. T. Sargent

GEOLOGICAL SURVEY DIVISION - BOX 30028 - LANSING, MI 48909



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

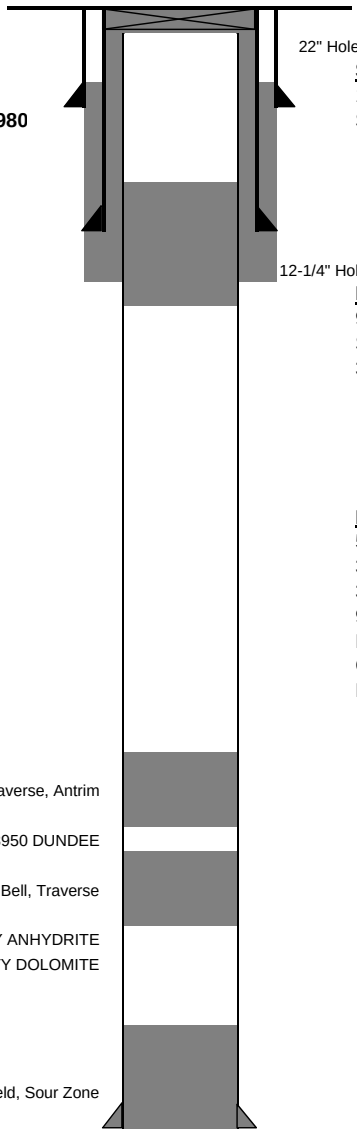
MANEY 1-30

NW NE SW Sec 30 T17N R8W
OSCEOLA COUNTY, MI

CURRENT WELLBORE DIAGRAM

PERMIT No. 33466
API No. 21-133-33466-00-00
GL @ 1130.2'
KB @ 1142.4'
WELL COMPLETION DATE: 2/11/1980
PLUGGING COMPLETION DATE: 2/11/1980

UPDATED APRIL 2014 BY JLT



SURFACE CASING
16", 65#/ft.
SET @ 70' KB

INTERMEDIATE CASING
9 5/8", 40#/ft
SET @ 868' KB
350 SX CMT

PLUGGING
5000' CMT w/100 SX (across Richfield and Sour Zone)
3900' CMT w/75 SX (across Dundee top, Bell and lower Traverse)
3200' CMT w/75 SX (across Traverse Top and Antrim)
930' CMT w/75 SX 50/50 (into surface casing)
Plug rathole with 10 SX.
Cut off casing below plow level and weld 1/2" steel cap onto casing.
Fill up cellar and level ground

TD @ 5080' KB

MANEY 1-30 WELL HISTORY

DATE	DESCRIPTION
1/26/1980	SPUD.
2/9/1980	DRILLING COMPLETED.
	16" SET AT 70'
	9 5/8" SET AT 868'; 350 SX CMT
2/11/1980	PLUGGING START DATE
	5000' CMT w/100 SX (across Richfield and Sour Zone)
	3900' CMT w/75 SX (across Dundee top, Bell and lower Traverse)
	3200' CMT w/75 SX (across Traverse Top and Antrim)
	930' CMT w/75 SX 50/50 (into surface casing)
	Plug rathole with 10 SX.
	Cut off casing below plow level and weld 1/2" steel cap onto casing.
	Fill up cellar and level ground
2/11/1980	PLUGGING COMPLETED

APPLICATION FOR PERMIT TO DRILL A WELL FOR OIL, GAS, BRINE DISPOSAL, HYDROCARBON STORAGE OR FOR SECONDARY RECOVERY

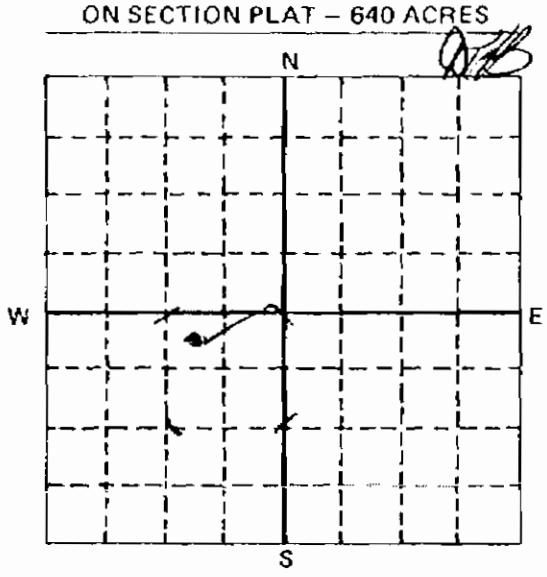
Under Authority of Act 61, P.A. of 1939, As Amended.

R 7207
Rev. 12/77

MAIL TO:
STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION
Box 30028, Lansing, Michigan 48909

See Reverse Side Before Filling Out This Application

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT – 640 ACRES



FOR DIRECTIONALLY DRILLED HOLE SEE INSTRUCTIONS ON REVERSE SIDE.

1. Application to drill a well for: Oil
2. Date: 12/5/79
3. Fee enclosed: $ 100.00
4. Applicant's name(s) as it is on the surety bond(s): Dart Oil & Gas Corporation
5. Permanent address: 600 Dart Road, Mason, Michigan 48854
6. Phone: 517-676-2900
7. Lease name (owner of mineral rights): Norman Maney
8. Well No.: 1-30
9. Surface owner: same
10. Address: Rt. #1, Evart, Michigan 49631
11. Phone:
12. Drilling contractor: Provins Drilling Co.
13. Address: 600 West Pickard, Mt. Pleasant, Michigan 48858
14. Phone:
15. Surface location: NW ¼ of NE ¼ of SW ¼ Section 30 T 17N R 8W
16. Township: Evart
17. County: Osceola

18. Locate well in two directions from nearest lines of quarter section and unit lines. (Surface location)

460 Ft. From north (north-south) Line of quarter section
860 Ft. From east (east-west) Line of quarter section
460 Ft. From north (north-south) Unit line
460 Ft. From west (east-west) Unit line

19. Kind of tools to be used (Cable, rotary, combination): Rotary
20. Formation in which well is to be completed: Amherstburg
21. Intended depth of well: 5250'

22. Program of casing, sealing, cementing and completing well (SEE REVERSE SIDE)

Drill 12 ¼" hole and set approximately 760' 8 5/8" 24# K55 surface casing, ②
Circulate cement to surface.
Drill 7 7/8" hole to TD.
Set 5 ½" 15.5# K55 production casing if productive. AND ADEQUATELY CEMENT.
~~B.O.P. series 900-3000# test Cameron type double ram.~~
~~series 900-3000# Regan tube type.~~
~~Completion unit will be used to complete well if productive.~~

CASING IS NOT TO BE STRIPPED FROM THE HOLE AND NO CHANGE IS TO BE MADE IN THE PROGRAM OUTLINED ABOVE WITHOUT APPROVAL OF THE SUPERVISOR OF WELLS OR HIS AUTHORIZED REPRESENTATIVE

APPLICANT AGREES TO COMPLY WITH THE PROVISIONS OF ACT 61, PUBLIC ACTS OF 1939, AS AMENDED, AND RULES PERTAINING TO THE LOCATING, DRILLING, CASING, SEALING, COMPLETING, PRODUCING, AND PLUGGING OF WELLS. *BEFORE COMMENCING DRILLING OPERATIONS, CONTACT THE NEAREST FIELD OFFICE.* (See reverse side)

23. Send correspondence and permit to: Dart Oil & Gas Corporation Attn: W.H. Veatch
24. Phone: 517-676-2900
25. Address: 600 Dart Road, Mason, Michigan 48854

LEAVE BLANK

Date Issued	Permit No.
1-9-80	33,466

26. Name of applicant's agent (Print): W.H. Veatch
27. Signature of agent: W.H. Veatch

FOR CASHIER'S USE ONLY. DO NOT WRITE IN THIS SPACE

5028-12 [illegible] 9071 100.00

For Geological Survey Use Only
1. White - Lansing
2. Canary - Cashier
3. Blue - Field
4. Goldenrod - Field
5. Green - Applicant

INSTRUCTIONS FOR PREPARING APPLICATION FOR PERMIT

1. Use form R-7207. (Five copies in set. Green will be returned when permit is issued.)
2. WELL LOCATION SURVEY. Use form R-7208. Submit five copies. (Surveyors plat may be substituted for form R-7208.) Submit supplemental information and maps if lakes, streams, swamps, buildings, roads, powerlines, etc., are within one quarter mile of location.
3. ENVIRONMENTAL IMPACT ASSESSMENT. Use form R-7616 or equivalent. Submit five copies. (See instructions and guidelines furnished with forms.)
4. WELL ELEVATION. Furnish with well location survey or submit certification that elevation will be run and submitted within fourteen days after drilling commences.
5. SURETY BOND. Proper bond coverage must be submitted with application or must have been filed previously. (See General Rules for details.)
6. PERMIT FEE. Must accompany application for permit. (See statute for applicable fee.) (Make check payable to STATE OF MICHIGAN.)
7. PROGRAM OF CASING, SEALING, CEMENTING AND COMPLETING WELL (SECTION 22). Include the different hole sizes and depths to be drilled; casing sizes, weights, grades and lengths; amount and type of cement and additives if used. Indicate the type, weight and viscosities of drilling fluids to be used. List blowout control equipment to be used; give size, type, pressure ratings and order of assembly. Indicate intended well logging and completion program, auxiliary equipment to be used (i.e. sour gas), if any, and general information and remarks not covered by the above.

IF THIS APPLICATION IS FOR A HOLE TO BE DIRECTIONALLY DRILLED, SUBMIT THE FOLLOWING SUPPLEMENTAL INFORMATION:

(Five copies required.)

1. Give geographical description of intended bottom hole location.
2. Give correct footage measurements of intended bottom hole location from the NEAREST quarter section lines and from NEAREST unit lines.
3. Give RADIUS of intended bottom hole target area.
4. DIRECTIONAL DRILLING AND ENGINEERING PROGRAM. Include deviation kick-off points, degree of deviation intended, proposed depth and True Vertical Depth of the bottom hole. Specify the lateral distance and direction from the surface location to the proposed bottom hole location. Give name and address of the engineering company who will direct the deviation of the well bore and any general information and remarks not covered.

NOTICE: When drilling commences, the proper area field office MUST be notified!

FIELD OFFICES

Grayling	East Lansing	Mt. Pleasant	Imlay City
P.O. Box 507, 49738 Phone (A/C 517) 348-6371	8562 East Stoll Rd., 48823 Phone (A/C 517) 339-8638	204 Court St., 48858 Phone (A/C 517) 773-9965	P.O. Box 218, 48444 Phone (A/C 313) 724-2015

Plainwell	Cadillac	Gaylord
P.O. Box 355, 49080 Phone (A/C 616) 685-6851	P.O. Box 629, 49601 Phone (A/C 616) 775-9728	P.O. Box 576, 49735 Phone (A/C 517) ~~732-3622~~ 732-3541

THE SUPERVISOR OF WELLS IS PROHIBITED BY LAW FROM ISSUING A DRILLING PERMIT TO ANY OWNER OR OPERATOR WHO IS IN VIOLATION OF ANY OF THE PROVISIONS OF ACT 61, P.A. 1939, AS AMENDED, OR ANY OF THE RULES OR ORDERS PROMULGATED THEREUNDER.

STATE OF MICHIGAN

DEPARTMENT OF NATURAL RESOURCES

SUPERVISOR OF WELLS

PERMIT TO DRILL

Nº 5680

For Auditing Only

(POST WHITE COPY OF PERMIT AT WELL LOCATION)

Permit No. 33466 Issue Date January 9, 1980 Termination Date January 9, 1981

Permission is hereby granted to Dart Oil & Gas Corporation
Owner

600 Dart Road, Mason, MI. 48854
Address

Lease Name Norman Maney Well Number 1-30

Location NW¼ NE¼ SW¼ Section 30, T.17N., R.8W., Evart Twp., Osceola County

Footages 460' from north and 860' from east line of quarter section

460' from north and 460' from west unit line

Type of Well	Kind of Tools	Objective Formation	Intended Depth
Oil	Rotary	Amherstburg	5250'

This permit is issued subject to the provisions of Act 61, P.A. 1939, as amended, and rules, requirements, or orders issued by the Supervisor of Wells and Department of Natural Resources.

SUPERVISOR OF WELLS

By Daniel T. Batchan

CASING AND SEALING REQUIREMENTS

Drill 12 ¼" hole and set approximately 760' 8 5/8" 24# K55 surface casing, circulate cement to surface.

Drill 7 7/8" hole to total depth.

Set 5 1/2" 15.5# K55 production casing if productive and adequately cement.

NOTICE

IT IS FURTHER MADE A REQUIREMENT OF THIS PERMIT that the applicant give notice to the Public Utilities in accordance with Act 53, P.A. 1974 C.L. 460.701 to 460.718 and comply with each of the requirements of the act.

DRILLING PERMIT ISSUED on the basis of the drilling, casing and sealing program as outlined on the application for permit and subject to requirements as set forth above. No change or alteration is to be made without the permission and approval of the Supervisor of Wells or his authorized representative.

DRILLING OPERATIONS ARE NOT TO BE COMMENCED until all the well location requirements have been completed and the permit has been posted in a conspicuous place at the well site. The nearest field office of the Department of Natural Resources must be notified prior to the commencement of drilling, deepening, reworking, and plugging.

DEPARTMENT FIELD OFFICES

Region II, Roscommon ..... Phone 517-275-5151
Cadillac ..... Phone 616-775-9728
Gaylord ..... Phone 517-732-3541
Mt. Pleasant ..... Phone 517-773-9965

Region III, Lansing 517-322-1300
E. Lansing 517-339-8638
Imlay City 313-724-2015
Plainwell 616-685-6851
Grand Rapids 616-456-5071

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGY DIVISION

SURVEY RECORD OF WELL LOCATION

(Submit in quadruplicate with Application for Permit to Drill a Well for Oil or Gas, Brine Disposal, Secondary Recovery, or Gas or L.P.G. Storage)

79446

LESSEE (OWNER OF LEASE RIGHTS)
DART OIL AND GAS CORPORATION

LESSOR (OWNER OF MINERAL RIGHTS)
Norman Maney (Maney 1-30)

WELL NO.
1-30

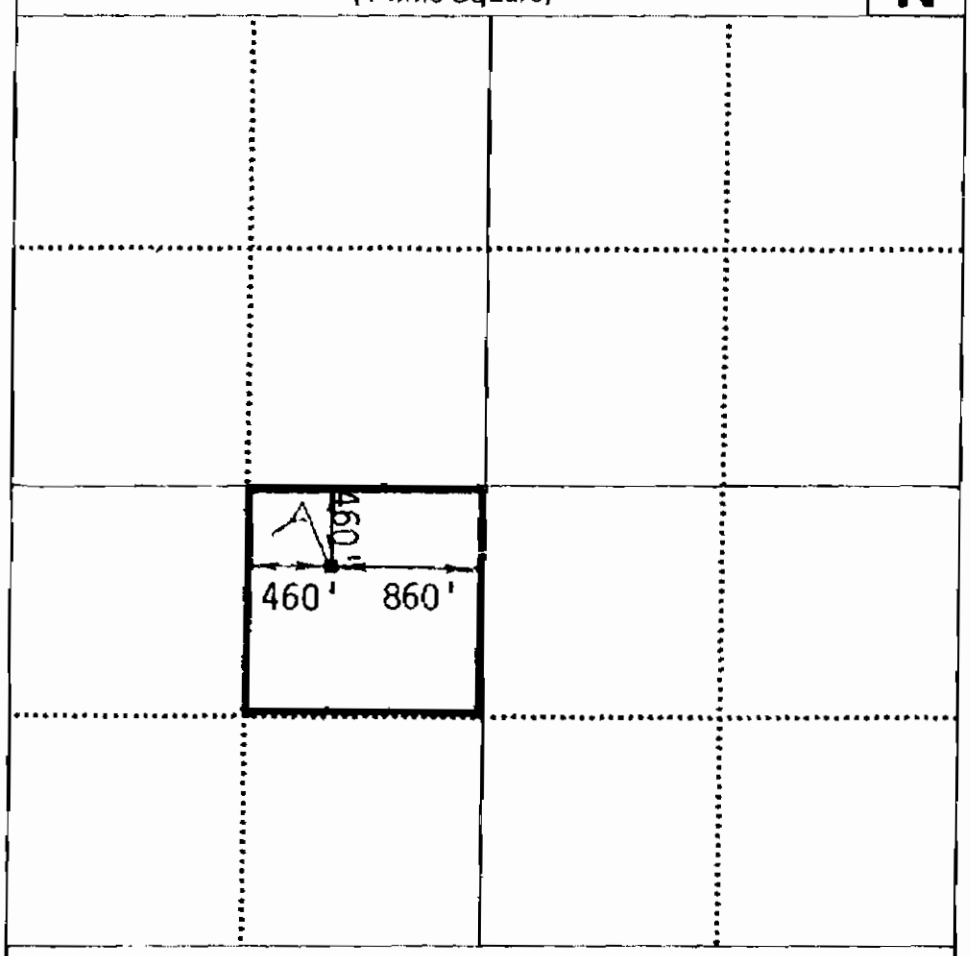
LOCATION
NW ¼ OF NE ¼ OF SW ¼ SECTION 30 T. 17N R. 8W

TOWNSHIP
Evart

COUNTY
Osceola

PLAT BELOW REPRESENTS ONE FULL SECTION
(1 Mile Square)

N



(Scale of Plat – 1 inch equals 1320 ft.)

1. Outline drilling unit and spot well location on plat at left. Where drilling unit crosses section lines, divide the plat into an east half and a west half **OR** a north half and a south half (which ever applies). Outline the unit and locate the well in two directions from **NEAREST** quarter section and unit lines.

2. Location of well in two directions from **NEAREST** quarter section and unit lines is:

   460 ft. from North (north-south) line of Quarter Section

   860 ft. from East (east-west) line of Quarter Section

   460 ft. from North (north-south) line of unit

   460 ft. from West (east-west) line of unit

3. Describe wellsite marker. Show or describe access route if it is not readily accessible.

   Wellsite is marked with a wood stake. Access is from the North off Big Stone Lake Road.

4. ON SEPARATE PLAT OR PLOT PLAN:

   A. Locate, identify, and show distances to all roads, power lines, residences, [illegible] buildings, and other structures within 300 feet of the stake;

   B. Locate, identify, and show distances to all lakes, streams, swamps, [illegible] other surface water features within 1320 feet of the stake.

5. In an ENVIRONMENTAL IMPACT ASSESSMENT describe all structures and [illegible] shown detailing plans for hazards prevention and erosion control (See instructions and guidelines for preparation of an environmental impact assessment).

[illegible] REGISTERED LAND SURVEYOR

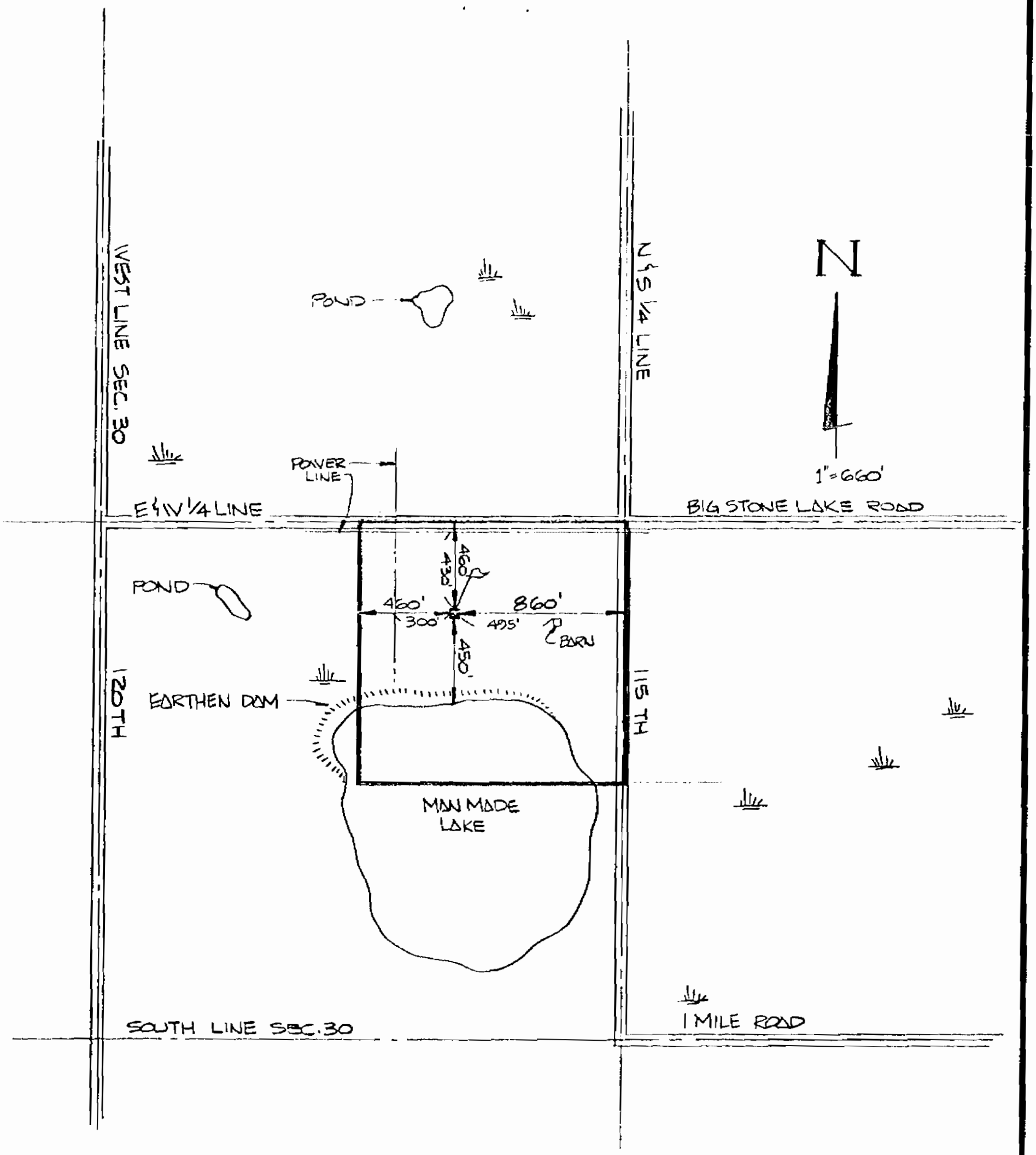
NAME OF INDIVIDUAL WHO SURVEYED WELL SITE	DATE	TITLE
Frederick H. Thomson, RLS #21996	12-14-79	Surveyor

ADDRESS
J. L. WILCOX & ASSOCIATES, INC. 7230 North US-131 Manton, Michigan 49663

I CERTIFY THE ABOVE INFORMATION IS COMPLETE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF

SIGNATURE (LESSEE OR AUTHORIZED REPRESENTATIVE)	ADDRESS (IF DIFFERENT THAN LESSEE)	DATE (MONTH, DAY, YEAR)
[signature]		

R 7208 REV. 7/76



SUPPLEMENTAL PLAT: MANEY 1-30
SECTION 30, T17N, R8W,
EVART TWP., OSCEOLA COUNTY
MICHIGAN

CLIENT: DART OIL & GAS

DATE 12-13-79
DRN. R.M.
CHD ACF
SCALE V: H: 1"=660'
NOTES F.B. PG
SHEET 1 OF 1
JOB NO. 79446

J.L. WILCOX & ASSOCIATES, INC.
Engineers and Surveyors
7230 N. U.S. — 131 • Manton, Michigan 49663

FEB 28 1980

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61)

Submit in **DUPLICATE** Within 30 Days after Well Completion

FINAL

PERMIT NUMBER	33466
DEEPENING PERMIT NUMBER	

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT	NAME & ADDRESS OF DRILLING CONTRACTOR(S)
Dart Oil & Gas Corporation 600 Dart Road Mason, Michigan 48854	Bigard Drilling Company 1315 N. Mission Road, P.O. Box 509 Mt. Pleasant, Michigan 48858

LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT: Maney #1-30

DIRECTIONALLY DRILLED: YES ☐ NO ☒

SURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME
NW NE SW	30	17N	8W	Evart

FOOTAGES (North/South) 460 Ft. from North Line and (East/West) 860 Ft. from East Line of quarter section

COUNTY NAME: Osceola

SUBSURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME

FOOTAGES (North/South) _____ Ft. from _____ Line and (East/West) _____ Ft. from _____ Line of quarter section

COUNTY NAME:

DATE	DRILLING BEGUN	TOTAL DEPTH OF WELL	TYPE WELL	ELEVATIONS	
	1/26/80	Driller 5080 Log 5080	Dry Hole		
	DRILLING COMPLETED	FORMATION AT T.D.	FT. DRLD. – ROTARY TOOLS	K.B.	R.F.
	2/9/80	Amherstburg	From 0 To 5080	1142.4	
	WELL COMPLETED	PRODUCING FORMATION(S)	FT. DRLD. – CABLE TOOLS	R.T.	Grd.
	2/11/80	None	From _____ To _____		1130.2

CASING, CASING LINERS AND CEMENTING

SIZE	WHERE SET	CEMENT	Ft. Pulled
9 5/8	868	350 sxs	

PERFORATIONS

DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN YES	OPEN NO

GROSS PAY INTERVALS

FORMATION	OIL OR GAS	FROM	TO

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X) Samples	Odor	Pits	Mud Line	Gas Log	Fill Up
Sour Zone	Gas	4646-53		X			X	

STIMULATION BY ACID OR FRACTURING

DATE	Interval Treated	Materials and amount used

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

FORMATION	F.U.	L.C.	DEPTH	AMOUNT

MECHANICAL LOGS, LIST EACH TYPE RUN

DEPTH CORRECTION

DEVIATION SURVEY

PLUGGED BACK

	Brand	(X)	LOG TYPES	LOGGED INTERVALS	DEPTH	CORRECT'N	RUN AT	DEGREES	YES	NO	DEPTH
	Schlumberger	X	GR-Cal/CNL-FDC	100-5078							
	Birdwell		DLL - Micro	3000-5076							
OTHER			BHC Sonic	3000-5076							

PRODUCTION TEST DATA

OIL – Bbls/day	GRAVITY – °API	COND. Bbls/day	GAS – MCF/day	WATER – Bbls/day	H_2S – Grains/100 cu. ft.	B.H.P. AND DEPTH

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

DATE	NAME AND TITLE (PRINT)	SIGNATURE
2/12/80	Richard Hinkley, Geologist	Richard Hinkley

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

R - 7210
Rev. 3/77

FORMATION RECORD

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

ELEVATION USED:	GEOLOGIST NAME:	TOPS TAKEN FROM:
1142.4	Richard Hinkley	☐ DRILLERS LOG ☐ SAMPLE LOG ☒ ELECTRIC LOG

NOTE: IF WELL DIRECTIONALLY DRILLED, *ADD* TRUE VERTICAL DEPTH FORMATION TOPS WHERE APPROPRIATE.

FROM	TO	FORMATION (TYPE, COLOR, HARDNESS)
0	737	Drift
737	874	Sand
874	1360	Sand & Shale
1360	1400	Triple Gyp.
1400	1548	Shale & Sand stringers
1548	1601	Michigan Stray Sand
1601	1736	Shale & Sand
1736	2592	Coldwater Shale
2592	2712	Sudbury Shale
2712	3094	Bedford Shale
3094	3247	Antrim Shale
3247	3299	Traverse Fm.
3299	3827	Traverse Lime (L.S. vf xln, Dense, tight, no fluorescence.)
3827	3883	Bell Shale
3883	3950	Dundee Lm.
3950	3961	Reed City Anhydrite
3961	4117	Reed City Dolomite (Dol, vf xln, sucrosic tex, some Intergranular porosity, Trace Dull Fluorescence.)
4117	4718	Detroit River (Salt, anhydrite, & dolomite. Gas shows in sour zone, no Fluorescence.)
4718	4780	Massive Anhydrite
4780	5039	Richfield (Interbedded anhy & dolomite, vuggy and intergranular porosity at base of formation, no hydrocarbon shows.)
5039	5080	Black Lime (L.S. F.xln, V. Arg, fair porosity, no hydrocarbon shows.)
	5080	T.D.

FROM	TO	FORMATION (TYPE, COLOR, HARDNESS)

IF WELL WAS CORED, ATTACH CORE DESCRIPTION

DRILL STEM TEST DATA

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

FEB 28 1980

AUG 26 1980 LANSING MAR 03 1980

MK

WELL PLUGGING RECORD

(Submit in TRIPLICATE Within 30 Days After Plugging is Completed)

PERMIT NUMBER: 33466

FIELD NAME: Hersey/Evart

COMPLETE NAME(S) AND ADDRESS OF WELL OWNER
Dart Oil & Gas Corp., 600 Dart Road, Mason, Michigan 48854

COMPLETE LEASE OR FARM NAME(S): Norman Maney

WELL NUMBER: 1-30

WELL LOCATION: NW ¼ NE ¼ SW ¼ SEC. 30 T. 17N R. 8W

TOWNSHIP: Evart

COUNTY: Osceola

TYPE OF WELL (Oil, Gas, Dry Hole, etc.): Dry Hole

TOTAL DEPTH: 5080

FORMATION: Amherstburg

DATE PLUGGING STARTED: 2/11/80

DATE PLUGGING COMPLETED: 2/11/80

DEPT. REPRESENTATIVE(S) WHO ISSUED PERMIT OR WITNESSED PLUGGING: Michael Moss

CASING RECORD

SIZE CASING	DEPTH SET	AMOUNT RECOVERED	SHOT OR RIPPED
16"	70'	none	
9 5/8"	868'	none	

BRIDGES OR PLUGS

TYPE (Brush, Stone, Cement, Mechanical, etc.)	DEPTH PLACED	SACKS OF CEMENT AND ADDITIVES
Cement	5000'	100 sx
Cement	3900'	75 sx
Cement	3200'	75 sx
Cement	930'	75 sx
Cement	surface	10 sx
	(rat hole)	

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? [X] YES [ ] NO — If yes, give details: All casing left in hole.

Did a Service Company pump mud, spot cement, or set bridge plugs? [X] YES [ ] NO — If yes, give name and address: Dowell, Box 159, Mt. Pleasant, Michigan 48858

Was the well plugged by a Company or Contractor other than Owner or Operator? [X] YES [ ] NO — If yes, give name and address: Bigard, 1315 N. Mission Road, P.O. Box 509, Mt. Pleasant, Mich. 48858

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Jud Howdyshell

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED: 100 sx spotted at 500' (across Richfield and Sour Zone), 75 sx spotted at 3900' (across Dundee top, Bell and lower Traverse), 75 sx spotted at 3200' (across Traverse Top and Antrim), 75 sx spotted at 930' (into surface casing). Plug rathole with 10 sx. Cut off casing below plow level and weld ½" steel cap onto casing. Fill up cellar and level ground.

(USE REVERSE SIDE IF NEEDED)

CERTIFICATION

"I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge."

NAME AND TITLE (Typed or Printed): Ward Kelner, Evaluation Engineer

SIGNATURE: Ward Kelner

DATE (Month, Day, Year): 2/13/80

COMPANY NAME AND ADDRESS: Dart Oil & Gas Corporation, 600 Dart Road, Mason, Michigan 48854

R 7213
Rev. 4/74

OPERATORS USE

Description of Detail (cont.) or Other Supplemental Data:

DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:

8/22/80 - SITE CLEAN, LEVEL, AND OK FOR APPROVAL

FINAL INSPECTIONS BY DEPARTMENT REPRESENTATIVES		
SIGNATURE	DIVISION	DATE
Michael J Noll	GEOLOGICAL SURVEY	8/22/80

FEB 19 1980

DNR DISTRIBUTION
Permittee — Orig & 1 copy
Division Office - 2 copies
Field Office — File copy
Others — On request

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

PERMIT TO PLUG AND ABANDON

PERMIT NUMBER: 33466
FIELD NAME:

NAME AND ADDRESS OF PERMITTEE
Dart Oil & Gas

LEASE NAME AND WELL NO
Maney 1-30

LOCATION (¼ ¼ ¼ or other)	SECTION	TOWNSHIP	COUNTY
NW NE SW,	30 T 17N R 8W	Evart	Osceola

TYPE OF WELL (Oil, Gas, Dry Hole, etc.)	DATE COMPLETED	DATE PLUGGING WILL START	PLUGGING PERMIT REQUESTED BY & DATE
Dry hole	2/10/80	2/11/80	T. Baker 2/9/80

LAST PRODUCTION				PLUGGING TO BE DONE BY
BOPD	BWPD	MCFGPD	DATE	Bigard #3

PERMIT MAILED TO
Dart Oil & Gas
600 Dart Rd.
Box 151A
Mason, MI 48954

COPIES MAILED TO

CASING AND CEMENTING RECORD

HOLE DIA	CASING DIA. & WT./FT.	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP.	PERFORATIONS
	16"	70			
	9 5/8"	868	350	surf.	

GEOLOGIC DATA; GAS AND OIL SHOWS; DRILLING AND COMPLETION DATA:

E LOG TOPS:

STRAY SAND 1548	DR 4117
COLDW SH 1822	1ST DRS 4181
ANT 3093	MASSIVE 4718
TF 3247	RICH 4780
TL 3299	BL LM 5039
BELL 3827	TD 5080
DD 3883	
RCA 3950	
RCD 3961	

PLUGGING REQUIREMENTS*

Plugging requirements outlined are to be executed in accordance with the provisions of Act 61, P.A. 1939, as amended, and rules and orders adopted thereunder.

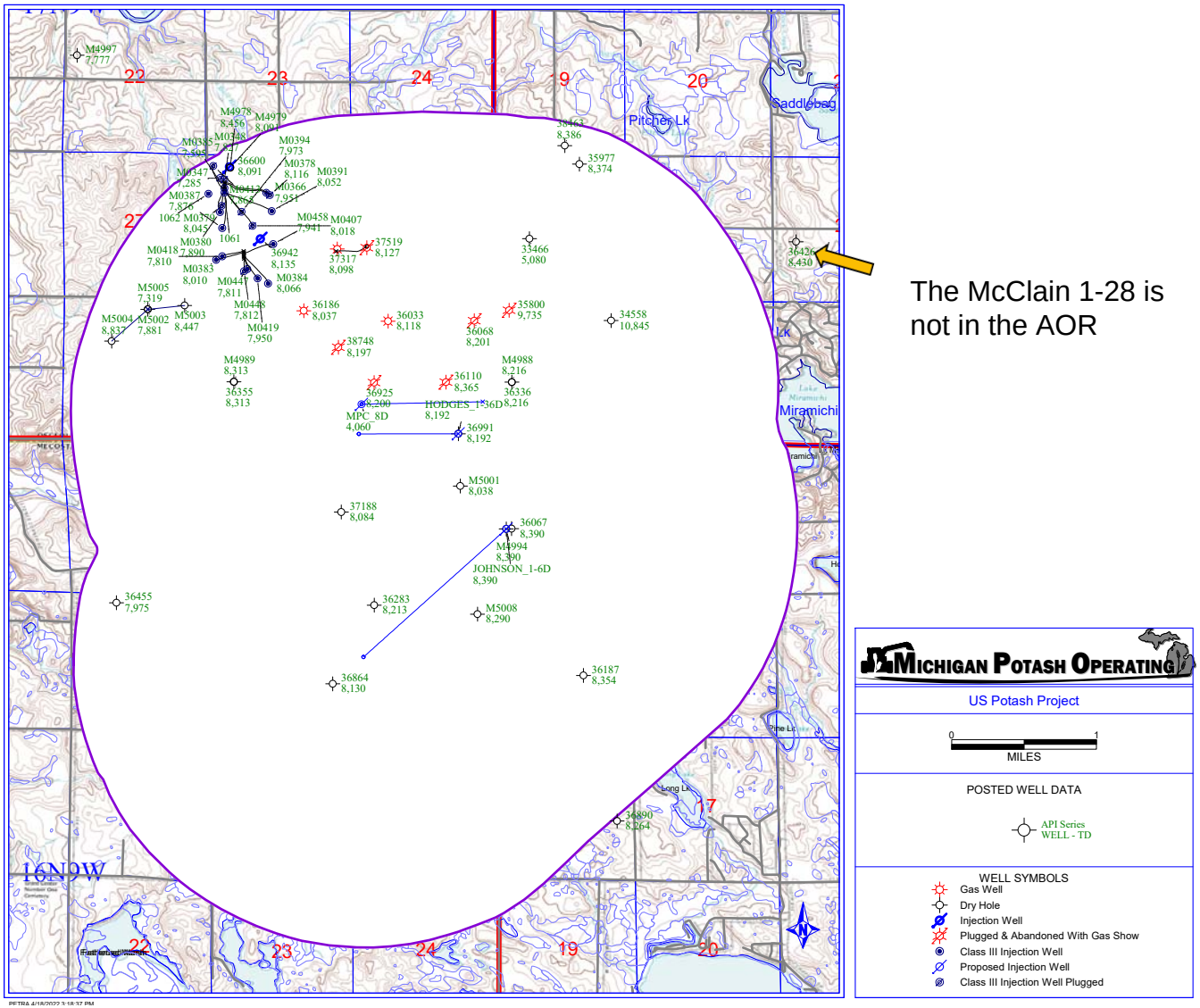
Spot 100 sx cmt. at 5000'.
Spot 75 sx cmt at 3900
Spot 75 sx cmt at 3200'
Spot 75 sx at 920'.
Cut csg off 3' below grd &
cap w/cmt & steel plate.

*NOTE: BONDS CANNOT BE RELEASED UNTIL A PLUGGING IS COMPLETED, CELLAR, RAT HOLE AND PITS FILLED, WELL SITE RESTORED AND RECORDS FILED. WATER WELLS MUST BE PLUGGED ACCORDING TO RULE 168 OF ACT 294 P.A. 1965, "GROUND WATER QUALITY CONTROL". It is further made a requirement of this permit that the applicant give notice to the public utilities in accordance with Act 53, P.A. 1974 C.L. 460.701 to 460.718 and comply with each of the requirements of the act.

AUTHORIZED BY (signature)	OFFICE	DATE
Michael J. Rath	Cadillac, D#6	2/12/80

NOTE: WELL PLUGGING RECORD Form R-7213 to be filed in TRIPLICATE within 30 days after completion

R-7229
Rev. 11/77



The McClain 1-28 is not in the AOR

MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

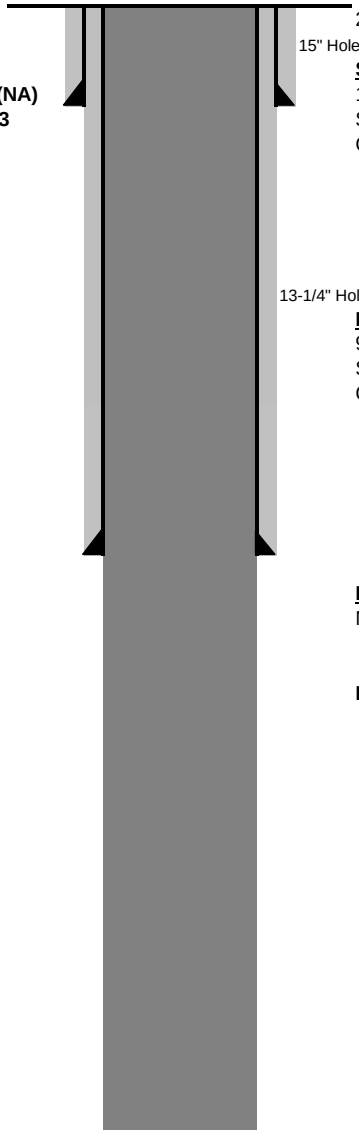
Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

MCCLAIN 1-28

NE NW SW Sec 28 T17N R8W
OSCEOLA COUNTY, MI

CURRENT WELLBORE DIAGRAM

API No. 21-133-36426-0000
GL @ 1107'
KB @ 1123'
WELL COMPLETION DATE: DRY HOLE (NA)
PLUGGING COMPLETION DATE: 2/19/83



UPDATED APRIL 2014 BY JLT
24" CONDUCTOR DRIVEN TO 60'

15" Hole expected

SURFACE CASING
13 3/8"
SET @ 873' KB
CMT w/ 900 SX TO SURFACE

13-1/4" Hole expected

INTERMEDIATE CASING
9 5/8"
SET @ 5472' KB
CMT w/ 1200 SX TO SURFACE

PROD. CASING
NA

PLUGGED FROM TD TO SURFACE w/CMT

TD @ 8440' KB

MCCLAIN 1-28 WELL HISTORY

DATE	DESCRIPTION
1/15/1983	SPUD.
2/17/1983	DRILLING COMPLETED. FORMATION AT TD CINCINNATIAN. 24" CONDUCTOR SET AT 60' 13 3/8" SET AT 873'; 900 SX 9 5/8" SET AT 5472'; 1200 SX
2/18/1983	PLUGGING START DATE RUN DRILL PIPE TO 8440' AND SET 145 SX PULLED DRILL PIPE TO 8021' AND SET 515 SX PULLED DRILL PIPE TO 5500' AND SET 280 SX PULLED DRILL PIPE TO 3700' AND SET 280 SX PULLED DRILL PIPE TO 1900' AND SET 280 SX PULLED DRILL PIPE TO 100' AND SET 35 SX
2/19/1983	PLUGGING COMPLETED.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MAR 8 1983

LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61)

Submit in **DUPLICATE** Within 30 Days after Well Completion

PERMIT NUMBER: 36426

DEEPENING PERMIT NUMBER:

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT
Willmet, Inc.
2250 Enterprise Drive
Mt. Pleasant, MI 48858

NAME & ADDRESS OF DRILLING CONTRACTOR(S)
T. D. Provins Drilling Company
2113 Enterprise Drive
Mt. Pleasant, MI 48858

LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT: McClain #1-28

DIRECTIONALLY DRILLED: YES ☐ NO ☒

SURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME
NE NW SW	28	17N	8W	Evart

FOOTAGES (North/South) 460 Ft. from North Line and (East/West) 859 Ft. from West Line of quarter section

COUNTY NAME: Osceola

SUBSURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME

FOOTAGES (North/South) _____ Ft. from _____ Line and (East/West) _____ Ft. from _____ Line of quarter section

COUNTY NAME:

DATE

DRILLING BEGUN	TOTAL DEPTH OF WELL	TYPE WELL	ELEVATIONS	
1-15-83	Driller 8440 Log 8430	Dry Hole		
DRILLING COMPLETED: 2-17-83	FORMATION AT T.D.: Cincinnatian	FT. DRLD. – ROTARY TOOLS From 0 To 8440	K.B. 1123	R.F. 1122
WELL COMPLETED:	PRODUCING FORMATION(S): None	FT. DRLD. – CABLE TOOLS From _____ To _____	R.T.	Grd. 1107

CASING, CASING LINERS AND CEMENTING

SIZE	WHERE SET	CEMENT	Ft. Pulled
24"	60'	-----	---
13 3/8"	873'	900 Sx	---
9 5/8"	5472'	1200 Sx	

PERFORATIONS

DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN YES	OPEN NO
		None		

GROSS PAY INTERVALS

FORMATION	OIL OR GAS	FROM	TO
None			

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X) Samples	Odor	Pits	Mud Line	Gas Log.	Fill Up
Traverse	Gas	3500						
Reed City Dol	Gas	4050						
Sour Zone	Gas	4580						
Bass Island	Gas	5600						
Strickler Zone		8230						

STIMULATION BY ACID OR FRACTURING

DATE	Interval Treated	Materials and amount used
	None	

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

FORMATION	F.U.	L.C.	DEPTH	AMOUNT

MECHANICAL LOGS, LIST EACH TYPE RUN

Brand	(X)	LOG TYPES	LOGGED INTERVALS	DEPTH CORRECTION: DEPTH	CORRECT'N	DEVIATION SURVEY: RUN AT	DEGREES	PLUGGED BACK: YES	NO	DEPTH
Schlumberger	X	LDT-CNL-GR	0 - 8430			2700	2°			
Birdwell		DLL-MLL	3300 - 8270			4300	1 3/4°			
Other		Sonic	200 - 8430			6500	1 1/2°			
		RFT	8220 - 8232			8000	2°			

PRODUCTION TEST DATA

OIL – Bbls/day	GRAVITY – °API	COND. Bbls/day	GAS – MCF/day	WATER – Bbls/day	H_2S – Grains/100 cu. ft.	B.H.P. AND DEPTH

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

DATE	NAME AND TITLE (PRINT)	SIGNATURE
2/25/83	William E. Booker, Geologist	William E Booker

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

R - 7210
Rev. 3/77

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

LANSING HAS COPY.

MAR 7 1983

WELL PLUGGING RECORD

(Submit in TRIPLICATE Within 30 Days After Plugging is Completed)

MAY 20 1983

SEP 17 1984

PERMIT NUMBER 36426

FIELD NAME

MAY 27 1983

COMPLETE NAME(S) AND ADDRESS OF WELL OWNER
Willmet, Inc., 2250 Enterprise Drive, Mt. Pleasant, MI 48858

COMPLETE LEASE OR FARM NAME(S)			WELL NUMBER
McClain			1-28
WELL LOCATION: NE ¼ NW ¼ SW ¼ SEC. 28 T. 17N R. 8W		TOWNSHIP: Evart	COUNTY: Osceola
TYPE OF WELL (Oil, Gas, Dry Hole, etc.): Dry Hole	TOTAL DEPTH: 8440	FORMATION: Cincinnatian	
DATE PLUGGING STARTED: 2-18-83	DATE PLUGGING COMPLETED: 2-19-83	DEPT. REPRESENTATIVE(S) WHO ISSUED PERMIT OR WITNESSED PLUGGING: Snider	

CASING RECORD

SIZE CASING	DEPTH SET	AMOUNT RECOVERED	SHOT OR RIPPED
24"	60'	---	
13 3/8"	873'	---	
9 5/8"	5472'	---	

BRIDGES OR PLUGS

TYPE (Brush, Stone, Cement, Mechanical, etc.)	DEPTH PLACED	SACKS OF CEMENT AND ADDITIVES
Cement	8440 - 8021	145 Sx
Cement	8021 - 5500	515 Sx
Cement	5500 - 3700	280 Sx
Cement	3700 - 1900	280 Sx
Cement	1900 - 100	280 Sx
Cement	0 - 100	35 Sx

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Dowell

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Marvin Woods

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Run drill pipe to 8440 and set 145 sx, pulled drill pipe to 8021 and set 515 sx, pulled drill pipe to 5500 and set 280 sx, pulled drill pipe to 3700 and set 280 sx, pulled drill pipe to 1900 and set 280 sx, pulled drill pipe to 100 and set 35 sx.

(USE REVERSE SIDE IF NEEDED)

CERTIFICATION

"I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge."

NAME AND TITLE (Typed or Printed): William E. Booker, Geologist

SIGNATURE: William E Booker

DATE (Month, Day, Year): 2/28/83

COMPANY NAME AND ADDRESS:
Strickler Geological Services, Inc.
1425 S. Mission
Mt. Pleasant, MI 48858

R 7213
Rev. 4/74

OPERATORS USE

Description of Detail (cont.) or Other Supplemental Data:

DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:

6/14/84 -

Site is clean and recontoured. There were no brine seeps and grass has grown in. Okay for final approval.

FINAL INSPECTIONS BY DEPARTMENT REPRESENTATIVES		
SIGNATURE	DIVISION	DATE
Michael J. Moss	GEOLOGICAL SURVEY	6/15/84

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Division Office — 2 copies
Field Office — File copy
Others — On request

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

PERMIT TO PLUG AND ABANDON

PERMIT NUMBER: 36426
FIELD NAME: Wildcat

NAME AND ADDRESS OF PERMITTEE
Willmet

LEASE NAME AND WELL NO.
McClain #1-28

LOCATION (¼ ¼ ¼ or other)	SECTION	TOWNSHIP	COUNTY
NE NW SWF	28 T 17N R 8W	Evart	Osceola

TYPE OF WELL (Oil, Gas, Dry Hole, etc)	DATE COMPLETED	DATE PLUGGING WILL START	PLUGGING PERMIT REQUESTED BY & DATE
Dry hole	2/17/83	2/18/83	2/18/83 M. Woods

LAST PRODUCTION				PLUGGING TO BE DONE BY
BOPD	BWPD	MCFGPD	DATE	Provins #7

PERMIT MAILED TO
Willmet

COPIES MAILED TO

CASING AND CEMENTING RECORD

HOLE DIA	CASING DIA & WT/FT	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP	PERFORATIONS
	24"	60'			
	133/8"	873'	900	surf	
	95/8"	5474'	1200	125'	

GEOLOGIC DATA; GAS AND OIL SHOWS; DRILLING AND COMPLETION DATA:

CONFIDENTIAL

PLUGGING REQUIREMENTS*

Plugging requirements outlined are to be executed in accordance with the provisions of Act 61, P.A. 1939, as amended, and rules and orders adopted thereunder.

P.I. as per Mineral Wells:

Circl. Class A cmt. to top Niag. Circl. 50-50 poz cmt. to within 100' of ground level.

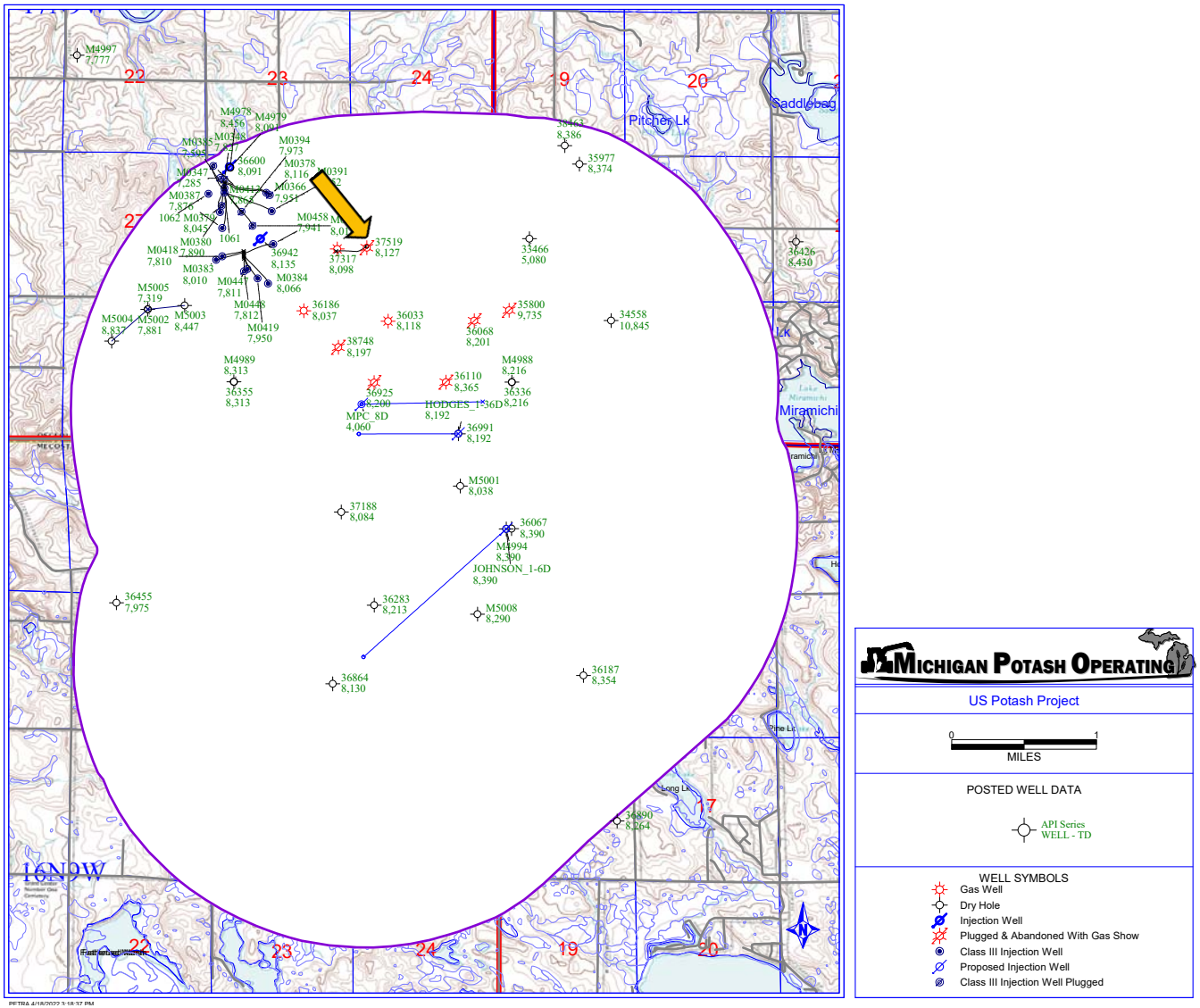
*NOTE: BONDS CANNOT BE RELEASED UNTIL A PLUGGING IS COMPLETED, CELLAR RAT HOLE AND PITS FILLED, WELL SITE RESTORED AND RECORDS FILED. WATER WELLS MUST BE PLUGGED ACCORDING TO RULE 166 OF ACT 294 P.A. 1965, "GROUND WATER QUALITY CONTROL". It is further made a requirement of this permit that the applicant give notice to the public utilities in accordance with Act 53, P.A. 1974 C.L. 460.701 to 460.718 and comply with each of the requirements of the act.

AUTHORIZED BY (signature)	OFFICE	DATE
Michael J. Wood	Cadillac D#6	2/22/83

NOTE: WELL PLUGGING RECORD Form R-7213 to be filed in TRIPLICATE within 30 days after completion.

R-7229
Rev 11/77

This document paid for with State funds



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

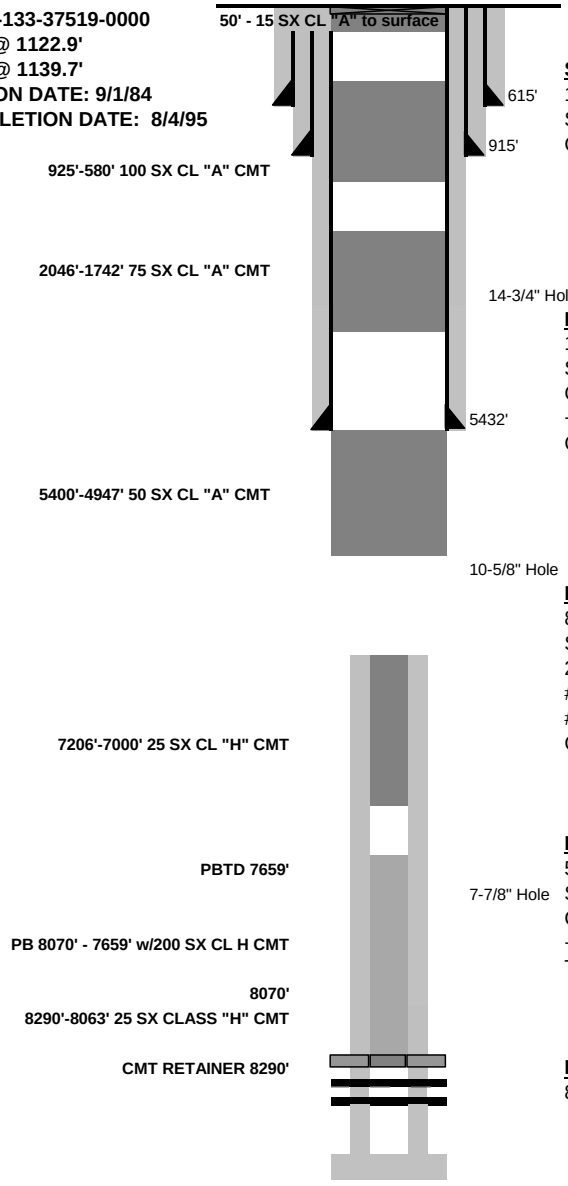
MILLER 1-25

SE NE SE Sec 26 T17N R9W
OSCEOLA COUNTY, MI

CURRENT WELLBORE DIAGRAM

UPDATED APRIL 2014 BY JLT

API No. 21-133-37519-0000
GL @ 1122.9'
KB @ 1139.7'
WELL COMPLETION DATE: 9/1/84
PLUGGING COMPLETION DATE: 8/4/95



SURFACE CASING
16"; 65#/ft.
SET @ 615' KB
CMT w/550 SX TO SURFACE

INTERMEDIATE CASING
11-3/4"; 60#/ft.
SET @ 915' KB
CMT w/ 200 SX HOWCOLITE w/3% cc
+ 200 SX "A" w/3% cc
CMT TO SURFACE

INTERMEDIATE CASING
8 5/8"; 32#/ft.
SET @ 5432' KB
2 STAGES:
#1: 450 SX POXMIX + 200 SX CLASS "A" ; DV TOOL @3763'
#2: 700 SX POZMIX + 100 SX CLASS "A"
CMT TO SURFACE

PROD. CASING
5-1/2"; 17#/ft.
SET @ 8426' KB
CMT w/800 SX POXMIX w/6% GEL AND 1/4# SK D-AIR
+ 160 SX CLASS "H" w/0.25% WG-17 & 0.25% C-331
TOC

BURNT BLUFF PERFS
8328'-8343' (30x)

TD @ 8425' KB
PBTD @ 7659'

MILLER 1-25 WELL HISTORY

DATE	DESCRIPTION
7/9/1984	SPUD.
9/13/1984	PERFORATED 30 HOLES, 2/FT: 8328'-8343'
9/1/1984	WELL COMPLETED. FORMATION AT TD CABOT HEAD. 16" SETAT 615'; 550 SX CMT 11-3/4" SET AT 915'; 200 SX HOWCO LITE w/3% cc + 200 SX "A" w/3% cc 8-5/8" SET AT 5432'; 2 STAGES: #1 450 SX POZMIX +200 SX CLASS "A" DV TOOL @ 3763', #2 700 SX POZMIX + 100 SX CLASS "A" 5-1/2" SET AT 8425'; 800 SX POXMIX w/6% GEL AND 1/4#/SK D-AIR + 160 SX CLASS "H" w/0.25% WG-17 & 0.25% C-331
7/31/1995	PLUGGING STARTED
8/1/1995	RU HALLIBURTON TO KILL WELL. 1,000 PSI ON TUBING. PUMPED 55 BBL 10.2 BRINE DOWN TUBING. FILLED CASING 42 BBL. ND TREE. NU BOP. START OUT WITH TUBING. GOT OUT WITH TUBING. RU HALLIBURTON WIRELINE. MAKING GAUGE RING AND JUNK BASKET RUN. RAN 5,000'. SHUT IN UNTIL AM.
8/2/1995	PREPARE TO CUT 5-1/2" CASING BELOW SLIPS. FINISH TIH w/TUBING, TAG CMT RETAINER @ 8290'. RU HALLIBURTON AND KAL-CON, STING OUT OF RETAINER AND LOAD HOLE w/115 BBLS BRINE. STING INTO RETAINER. PUMP 25 SX CLASS H CMT THRU RETAINER, STING OUT OF RETAINER AND SPOT 25 SX CLASS H CMT ON TOP OF RETAINER. PULL TUBING TO 7206'. REVERSE CIRCULATE TO FILL HOLE AND SPOT A 25 SX CLASS H CMT PLUG FROM 7000'-7206'. TOOH w/TUBING (STAND BACK 70 STAND-LAY DOWN REST). ND BOP'S AND TUBING HEAD. SPEAR 5-1/2" CASING AND ATTEMPT TO PULL BUT UNSUCCESSFUL. SDFN.
8/3/1995	RU ENTERRA OILFILED TOOLS CASING CUTTER, CUT 5-1/2" CASING 1' BELOW SLIPS AND REMOVE FROM HOLE. RU HALLIBURTON WIRELINE AND FREEPOINT CASING (NO MOVEMENT BELOW 2500'). 50% @ 2200'. 70% @ 2000'. RU CUTTER AND CUT CASING @ 2000'. RD HALLIBURTON, RU CASING TOOLS, PULL AND LAY DOWN 2000' OF 5-1/2" CASING (49 FULL JOINTS - 2 CUTOFFS). RD CASING TOOLS, TIH WITH TUBING TO 4400'. RADIATOR HOSE BROKE ON RIG, DOWN FOR REPAIRS. FINISH TIH WITH 2-7/8" TUBING TO 5400'. SD FOR EVENING.
8/4/1995	PLUGGING COMPLETE. RU HALLIBURTON AND KAL CON, BREAK CIRCULATION AND SPOT A 50 SX CLASS A CMT PLUG AT 5400'. TOOH LAYING DOWN TUBING TO 2046', WHERE A 75 SX CLASS A CMT PLUG WAS SPOTTED. TUBING WAS PULLED TO 925' WHERE A 100 SX CLASS A CMT PLUG WAS SPOTTED. TOOH TO 50', SPOT A 15 SX CLASS A CMT PLUG TO SURFACE, RIG DOWN AND RELEASE HALLIBURTON. CUT OFF HEAD AT GROUND LEVEL IN CELLAR AND WELD A 1/2" STEEL PLAT ONTOP. FOLLOWING ARE TOP AND BOTTOM FOOTAGE FOR INDIVIDUAL CMT PLUGS: PLUG SPOTTED AT 8290', 25 SX, TOP OF PLUG AT 8063' PLUG SPOTTED AT 7200', 25 SX, TOP OF PLUG AT 7000' PLUG SPOTTED AT 5400', 50 SX, TOP OF PLUG AT 4947' PLUG SPOTTED AT 2000', 75 SX, TOP OF PLUG AT 1742' PLUG SPOTTED AT 925', 100 SX, TOP OF PLUG AT 580' PLUG SPOTTED AT 50', 15 SX, TOP OF PLUG AT SURFACE

STATE OF MICHIGAN

REQUEST FOR TRANSFER OF A PERMIT

TYPE OR PRINT

SUBMIT 4 COPIES TO: Department of Natural Resources
Geological Survey Division
Box 30028
Lansing, Michigan 48909

Filing for change of ownership of well is required in accordance with ☒ Act 61, P.A. 1939 and ☐ Act 315 P.A. 1969, as amended, and Administrative Rules promulgated thereunder.

PERMIT NO	WELL TYPE
37519	Gas

FIELD NAME: Hersey-Clinton

WELL NAME AND NUMBER: Miller 1-25

WELL LOCATION: SE 1/4 NE 1/4 SE 1/4 SECTION 26 T 17N R 9W

TOWNSHIP	COUNTY
Hersey	Osceola

TRANSFER OF A PERMIT FROM:

NAME(S) OF SELLING OWNER(S): PPG Oil & Gas Co., Inc.

ADDRESS Number and Street — City or Town — State — Zip Code — Telephone: One Jackson Square, Suite 600, Jackson, MI 49201 (517) 782-8145

All operating rights are discharged by

Owner(s)	Representative(s)	Signature(s)	Date(s)
PPG Oil & Gas Co., Inc.,	Mr. Donald R. Hall	Donald R. Hall	12/14/87

ELIGIBILITY FOR PERMITS IS CONDITIONED UPON COMPLIANCE WITH THE STATUTES, RULES AND ORDERS OF THE DEPARTMENT OF NATURAL RESOURCES. PERMITS WILL NOT BE GRANTED TO PERSONS NOT IN COMPLIANCE.

NON-SUBMISSION AND/OR FALSIFICATION OF THIS INFORMATION MAY RESULT IN FINES AND/OR IMPRISONMENT.

TRANSFER OF A PERMIT TO:

NAME(S) OF ACQUIRING OWNER(S): Marathon Oil Company

ADDRESS Number and Street — City or Town — State — Zip Code — Telephone: One Jackson Square, Suite 600, Jackson, MI 49201 (517) 782-8145

(We) (I) have acquired the well under this permit and assume full responsibility for the drilling, operation, and abandonment in conformity with the law, regulations and orders.

SURETY BOND: ☐ SINGLE WELL ☐ ATTACHED ☒ BLANKET ☒ ON FILE

BONDING CO. SAFECO Insurance Company of America

BOND NUMBER 5194219

All operating rights and responsibilities are assumed by

Owner(s)	Representative(s)	Signature(s)	Date(s)
Marathon Oil Company,	Mr. David W. Hoopman	David W. Hoopman	12/16/87

FOR DEPARTMENT OF NATURAL RESOURCES USE ONLY

APPROVED S. J. Szypulski Signature 6/28/88 Date

DISTRIBUTION BY DNR
- ☒ Lansing
- ☐ Acquiring Owner
- ☐ Selling Owner
- ☐ Field

PR 7200 7
Rev. 4/87

OCT 10 1984

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

DIRECTIONAL HOLE

LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61)

Submit in **DUPLICATE** Within 30 Days after Well Completion

PERMIT NUMBER: 37519

DEEPENING PERMIT NUMBER:

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT	NAME & ADDRESS OF DRILLING CONTRACTOR(S)
PPG OIL & GAS, INC. 2258 Enterprise Drive Mt. Pleasant, MI 48858	INDRIL, INC. PO Box 668 Mt. Pleasant, MI 48858

LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT: MILLER #1-25

DIRECTIONALLY DRILLED: YES [X] NO [ ]

SURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME
SE NE SE	26	17N	9W	Hersey

FOOTAGES: 852 Ft. from North (North/South) Line and 560 Ft. from East (East/West) Line of quarter section — COUNTY NAME: Osceola

SUBSURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME
SW NW SW	25	17N	9W	Hersey

FOOTAGES: 634 Ft. from South (North/South) Line and 558 Ft. from West (East/West) Line of quarter section — COUNTY NAME: Osceola

DATE	DRILLING BEGUN	TOTAL DEPTH OF WELL	TYPE WELL	ELEVATIONS	
	7/9/84	Driller 8425 Log 8424	Gas well		
	DRILLING COMPLETED	FORMATION AT T.D.	FT. DRLD. – ROTARY TOOLS	K.B.	R.F.
	8/8/84	Cabot Head	From 0 To 8425	1139.7	1138.3
	WELL COMPLETED	PRODUCING FORMATION(S)	FT. DRLD. – CABLE TOOLS	R.T.	Grd.
	9/1/84		From ____ To ____		1122.9

CASING, CASING LINERS AND CEMENTING

SIZE	WHERE SET	CEMENT	Ft. Pulled
16"	615'	550 sx	--
11-3/4"	915'	400 sx	--
8-5/8"	5432'	650 sx 1st stage	
	DV tool @3763	310sx 2nd. stage	
5 1/2"	8426	960sx	

PERFORATIONS

DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN YES	OPEN NO
9/13/84	2/ft	8328-8343 (30x)	X	

GROSS PAY INTERVALS

FORMATION	OIL OR GAS	FROM	TO
Burnt Bluff	Gas	8327	8358MD
		8050	8075TVD

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X) Samples	Odor	Pits	Mud Line	Gas Log	Fill Up
Reed City	Gas	4075					X	
Antrim	Gas	3010					X	

STIMULATION BY ACID OR FRACTURING

DATE	Interval Treated	Materials and amount used
9/13/84	8328-43	500 gal. 15%

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

FORMATION	F.U.	L.C.	DEPTH	AMOUNT
None				

MECHANICAL LOGS, LIST EACH TYPE RUN

	Brand	(X)	LOG TYPES	LOGGED INTERVALS
	Schlumberger	X	LDT-CNL-GR	100-8420
	Birdwell		Sonic	6600-8420
OTHER			DLL-MLL	3150-5429
OTHER				7000-8422

DEPTH CORRECTION / DEVIATION SURVEY / PLUGGED BACK

DEPTH	CORRECT'N	RUN AT	DEGREES	DEVIATION SURVEY YES	DEVIATION SURVEY NO	PLUGGED BACK DEPTH
		See attached				

PRODUCTION TEST DATA

OIL – Bbls/day	GRAVITY – °API	COND. Bbls/day	GAS – MCF/day	WATER – Bbls/day	H_2S – Grains/100 cu. ft.	B.H.P. AND DEPTH
--	--	--	1,000	--	--	--

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

DATE	NAME AND TITLE (PRINT)	SIGNATURE
9/20/84	William E. Booker, Geologist	William E. Booker

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

R - 7210
Rev. 3/77

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

AUG 06 1984

LANSING HAS COPY

AUG 13 1984

WELL PLUGGING RECORD

(Submit in TRIPLICATE Within 30 Days After Plugging is Completed) AUG 1 1984

A B A N D O N E D H O L E

PERMIT NUMBER: 37519 (LOST HOLE)

FIELD NAME: Hersey

COMPLETE NAME(S) AND ADDRESS OF WELL OWNER
PPG Oil & Gas Co., Inc., 2258 Enterprise Drive, Mt. Pleasant, MI 48858

COMPLETE LEASE OR FARM NAME(S)
Miller (Abandoned Hole)

WELL NUMBER
#1-26 1-25

WELL LOCATION
SE ¼ NE ¼ SE ¼ SEC. 26 T. 17N R. 9W

TOWNSHIP: Hersey

COUNTY: Osceola

TYPE OF WELL (Oil, Gas, Dry Hole, etc.)
Abandoned Hole

TOTAL DEPTH: 8070

FORMATION: Niagaran

DATE PLUGGING STARTED: 8-1-84

DATE PLUGGING COMPLETED: 8-1-84

DEPT. REPRESENTATIVE(S) WHO ISSUED PERMIT OR WITNESSED PLUGGING: Mike Moss

CASING RECORD

SIZE CASING	DEPTH SET	AMOUNT RECOVERED	SHOT OR RIPPED
11 3/4"	915	0	---
8 5/8"	5432	0	---

BRIDGES OR PLUGS

TYPE (Brush, Stone, Cement, Mechanical, etc.)	DEPTH PLACED	SACKS OF CEMENT AND ADDITIVES
Cement	8070	200 sx H

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Halliburton

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Marvin Woods

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED
Cyro run and hole off track, plugged back from 8070 to 7659 with 200 sx Cl H cement.

(USE REVERSE SIDE IF NEEDED)

CERTIFICATION

"I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge."

NAME AND TITLE (Typed or Printed): William E. Booker, Geologist

SIGNATURE: William E Booker

DATE (Month, Day, Year): 8-2-84

COMPANY NAME AND ADDRESS
STRICKLER GEOLOGICAL SERVICES, INC.
1425 S. Mission
Mt. Pleasant, MI 48858

R 7213
Rev. 4/74

OPERATORS USE

Description of Detail (cont.) or Other Supplemental Data:

DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:

WELL WAS SIDETRACKED UNDER SAME PERMIT #

FINAL INSPECTIONS BY DEPARTMENT REPRESENTATIVES		
SIGNATURE	DIVISION	DATE
Michael J. Mudd	GEOLOGICAL SURVEY	8/15/84

DNR DISTRIBUTION
Permittee — Orig. & 1 copy
Division Office — 2 copies
Field Office — File copy
Others — On request

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

PERMIT TO PLUG AND ABANDON

PERMIT NUMBER: 37519 lost hole
FIELD NAME: Jersey

NAME AND ADDRESS OF PERMITTEE
PPG

LEASE NAME AND WELL NO.
Miller #1-25 Lost hole

LOCATION (¼ ¼ ¼ or other)	SECTION	TOWNSHIP	COUNTY
SE NE SE,	25 T 17N R 19W	Jersey	Osceola

TYPE OF WELL (Oil, Gas, Dry Hole, etc.)	DATE COMPLETED	DATE PLUGGING WILL START	PLUGGING PERMIT REQUESTED BY & DATE
Lost hole	8/1/84	8/1/84	W. Booker 8/1/84

LAST PRODUCTION
BOPD BWPD MCFGPD DATE

PLUGGING TO BE DONE BY: Indril #7

PERMIT MAILED TO

COPIES MAILED TO

CASING AND CEMENTING RECORD

HOLE DIA.	CASING DIA. & WT./FT.	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP	PERFORATIONS
	24"	46			
	16"	615	550	surf	
	113/4"	915	400	"	
	85/8"	5432	1450	"	

GEOLOGIC DATA; GAS AND OIL SHOWS; DRILLING AND COMPLETION DATA:

MEASURED DEPTHS: CONFIDENTIAL.

A1E 7665
BN1a 8047

T.D. 8077

PLUGGING REQUIREMENTS*

Plugging requirements outlined are to be executed in accordance with the provisions of Act 61, P.A. 1939, as amended, and rules and orders adopted thereunder.

NOTE: Well to be P.B. for deviation correction. Well to be plugged back w/cmt. to approx. 7650'.

*NOTE: BONDS CANNOT BE RELEASED UNTIL A PLUGGING IS COMPLETED, CELLAR RAT HOLE AND PITS FILLED, WELL SITE RESTORED AND RECORDS FILED. WATER WELLS MUST BE PLUGGED ACCORDING TO RULE 166 OF ACT 294 P.A. 1965, "GROUND WATER QUALITY CONTROL". It is further made a requirement of this permit that the applicant give notice to the public utilities in accordance with Act 53, P.A. 1974 C.L. 460.701 to 460.718 and comply with each of the requirements of the act.

AUTHORIZED BY (signature)	OFFICE	DATE
William J Moss	Cadillac DPC	8/1/84

NOTE: WELL PLUGGING RECORD Form R-7213 to be filed in TRIPLICATE within 30 days after completion.

R-7229
Rev. 11/77

This document paid for with State funds

FEB 18 1994

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION
BOX 30028
LANSING, MICHIGAN 48909

REQUIRED BY AUTHORITY OF:
☒ ACT 61, P.A. 1939, AS AMENDED ☐ ACT 315, P.A. 1969, AS AMENDED

APPLICATION TO (Submit 4 copies):

☐ **CHANGE WELL STATUS** ☒ **PLUG AND ABANDON**

NON-SUBMISSION AND/OR FALSIFICATION OF THIS INFORMATION MAY RESULT IN FINES AND/OR IMPRISONMENT.

PERMIT NO.	TYPE OF WELL
37519	Gas Producer

NAME AND ADDRESS OF WELL OWNER ☐ APPROVAL MAILED

Marathon Oil Company
1231 E. Mosherville Road
Jonesville, MI 49250

FIELD/FACILITY NAME: Hersey Unit

WELL NAME: Miller — WELL NO.: #1-25

CHANGE OF WELL STATUS REQUESTED FOR:
☐ PLUG BACK ☐ EXTEND PLUGGING (T.A.) ☐ PERFORATE
☐ CONVERT TO INJECTION OR DISPOSAL WELL ☐ OTHER

☐ ACIDIZE (315 ONLY) ☐ FRACTURE (315 ONLY)

WELL LOCATION: SW ¼ of NW ¼ of SW ¼ Section 25 T 17N R 9W

LAST PRODUCTION / INJECTION AND TYPE OF FLUID (Amount per day & injection pressure): 1 MCFD

TOWNSHIP: Hersey — COUNTY: Osceola

DATE DRILLING COMPLETED: 8-11-84 — DATE LAST PRODUCED/UTILIZED: Active

WORK TO BE DONE BY: ☐ APPROVAL MAILED: To Be Determined — STARTING DATE: A.S.A.P.

CASING AND CEMENTING RECORD

HOLE DIA.	CASING DIA. & WT./FT.	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP	PERFORATIONS
14 3/4"	16", 65#	615'	N/A		
10 5/8"	11 3/4", 60#	915'	200 SX Howcolite w/3% cc + 200 sx "A" w/3% cc	Surface	
7 7/8"	8 5/8", 32#	5432'	*	Surface	
	5 1/2", 17#	8425'	**		8328-43'

FORMATION RECORD (Formation and depth, oil, gas and water shows, etc.):

SEE ATTACHED "EXHIBIT A"

* 1ST STAGE: 450 SX POZMIX + 200 SX CLASS "A" DV TOOL @ 3763'.
2ND STAGE: 700 SX POZMIX + 100 SX CLASS "A".

** 800 SX POXMIX W/6% GEL AND 1/4#/SK D-AIR + 160 SX CLASS "H" W/0.25% WG-17 & 0.25% C-331.

DETAIL PROPOSED PROCEDURES:

See Attached

GEOLOGICAL SURVEY
1994
Permits & Bonding Unit

DNR ADDITIONAL REQUIREMENTS:

NAME/SIGNATURE (Authorized Representative): N. R. Daniels, Jr. Michigan Production Superintendent — DATE: 2/4/94

APPROVED BY DNR: Michael P. Rhodes — OFFICE: CADILLAC — APPROVAL DATE: MAR 0 8 1994 — TERMINATION DATE:

NOTE. THREE COPIES OF WELL PLUGGING OR REWORK (PR 7200-8) ARE TO BE FILED WITHIN 30 DAYS OF COMPLETION.

PR 7200-6
Rev. 3/86

Michigan Department of Natural Resources
Geological Survey Division

RECORD OF WELL PLUGGING OR REWORK

REQUIRED BY AUTHORITY OF: ACT 61, PA 1939, as amended or ACT 315, PA 1969, as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment.

Permit Number	Well Name & Number
37519	MILLER #1-25

SEP - 5 1995

Type of Well	Field Name
Gas	Hersey Unit

1/4 1/4 1/4, Section, Township, Range, County
SW, NW, SW, Section 25-T17N-R9W, Osceola County

Date Plugging / Rework Started	Date Plugging / Rework Completed
7/31/95	8/04/95

CADILLAC HAS COPY

Name and Address of Well OWNER
MARATHON OIL COMPANY
4445 E. MOSHERVILLE ROAD
JONESVILLE, MI 49250

CADILLAC HAS COPY

Name and Address of Contractor/Service Company
(attach additional sheets as needed)
McConnell & Scully, 26761 L Drive S, Homer, MI 49245
Halliburton, PO Box 374, Mt. Pleasant, MI 48804

Indicate Operation & Type of Well Permit
☐ PLUGGING ☐ REWORK ☐ Act 61 Oil & Gas ☐ Act 315 Mineral Wells

Name of DNR employee issuing Plugging Permit or Approving Change of Well Status: Michael J. Moss Date Issued: 3/8/94

☐ Tools, tubing, etc. left in hole - describe in Daily Chronology.

☐ Well logs run - list types and depths in Daily Chronology.

For WELL PLUGGING Only (HOLE CONDITIONS AFTER PLUGGING)

CASING

Casing Size	Where Set	Amount Casing Pulled	Depth Casing Cut/Perfed: Windows Milled
16"	615'	4'	4'
11-3/34"	915'	4'	4'
8-5/8"	5432'	4'	4'
5-1/2"	8425'	2000'	2000'

PLUGS

Depth Bottom	Depth Top	Type of Bridge or Plug	Cement Plugs: Cement type, # sx, and additives	Tagged Top? Y/N
8290'	8290'	Cement Retainer		Y
8290'	8063'	Cement	25 sx Class "H"	N
7206'	7000'	Cement	25 sx Class "H"	N
5400'	4947'	Cement	50 sx Class "A"	N
2046'	1742'	Cement	75 sx Class "A"	N
925'	580'	Cement	100 sx Class "A"	N
50'	Surf	Cement	15 sx Class "A"	N

Check ☐ if NORM material was reinserted into wellbore. If so, describe materials fully in the Daily Chronology section on back of this form.

For WELL REWORK Only

REWORK WAS TO: ☐ TEMPORARILY ABANDON
☐ CONVERT TO: ☐ Disposal Well ☐ Production ☐ Storage ☐ Enhanced Recovery ☐ Other
☐ REMEDIAL: ☐ Perf & Test ☐ Repair Casing/Cement ☐ Redrill ☐ Other
☐ PLUGBACK: ☐ New Production Zone ☐ Disposal ☐ Storage ☐ Enhanced Recovery ☐ Other

Well Casing Record - BEFORE Rework

Casing Size	Casing Depth	Cement Sacks	Cement Type	Perforations From	Perforations To	Perforations If plugged, HOW?	Acid or Fracture Treatment Record

GEOLOGICAL SURVEY

Well Casing Record - AFTER Rework (indicate additions and changes only; complete Test Record on next page)

Casing Size	Casing Depth	Cement Sacks	Cement Type	Perforations From	Perforations To	Perforations If plugged, HOW?	Acid or Fracture Treatment Record

SEP 07 1995
Permits & Bonding Unit

BEFORE REWORK			AFTER REWORK		
Total Depth	Formation/Zone	Well Completed For	Total Depth	Formation/Zone	Well Completed For

PR 7200 - 8 REV. 09/95:DLR

DAILY PRODUCTION TEST RECORD						DAILY INJECTION RECORD ☐ Injection Well ☐ Brine Disposal				
Date	Oil (Bbls)	Water (Bbls)	Gas (MCF)	Casing Size	Casing Depth	Date	Bbls Water or MCF Gas	Pressure Beginning	Pressure Ending	Specific Gravity of Water

DAILY CHRONOLOGY - Describe in detail the daily chronology of rework / plugging, include days shut down. Describe exceptions to issued plugging instructions.

Date	Narrative - also include dates pits filled, surface was restored, etc.. Use additional pages as needed.
	SEE ATTACHED

NOTICE: Under sections 18a and 18b of Act 61 PA 1939, as amended, and section 23 of Act 315 PA 1969, as amended, a well owner has continuing liability for the integrity of a plugged well.
CERTIFICATION "I state that I am authorized by said Owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

NAME and TITLE for Owner (printed or typed)	Authorized Signature	Date
C. A. Paulson - Production Engineer	Charles A. Paulson	9-1-95

NOTE: Bonds cannot be terminated until plugging is completed, cellar, rat and mouse holes, and pits filled, site leveled and cleaned and records filed

Mail completed original and three copies to the appropriate DNR District Office within 30 days after completion of plugging or rework.

DAILY REPORT
CENTRAL PRODUCTION REGION
COMPANY OPERATED
August 1, 1995

WORKOVER/RECOMPLETION

Hersey Unit
Miller 1-25
Osceola County, MI
AFE NO:
AFE AMOUNT:

OPERATOR: Marathon Oil
RIG: McConnell/Scully Rig54
MOC/WI:
MIRU: 07/31/95

COST TO DATE:
DAY: 1
PRESENT OPERATION: Rig up to plug and abandon.
REMARKS: 07/31/95: 7:00 - Drove to location to plug well. 10:00 - Arrived on location to spot equipment. 11:00 - Spotted BOP's and adaptors on location. 13:00 - Enterra delivered and spotted liners, tanks and tools. 14:00 - Rig 54 on location. Spot on liners. Rig up KalCon Construction. Fill tanks with 10.2 state approved brine. Unhook flow lines from well head, rigged up flow line from half tank. 18:00 - Release rig crew until AM.

DAY: 2
REMARKS: 08/01/95: 7:00 am - On location, rigged up Halliburton to kill well. 1,000 psi on tubing. Pumped 55 bbl 10.2 brine down tubing. Filled casing 42 bbl. Nippled down tree. Nippled up BOP. Start out with tubing. Got out with tubing. Rigged up Halliburton Wireline. Making gauge ring and junk basket run. Ran in cement retainer and set at 8290'. Start in with tubing. Ran 5,000'. Shut in until morning.

DAY: 3
REMARKS: 08/02/95: 7 am - prepare to cut 5-1/2" casing below slips. Finish TIH w/tubing, tag cement retainer @ 8290'. RU Halliburton and Kal-Con, sting out of retainer and load hole w/115 bbls brine. Sting into retainer. Pump 25 sx Class H cement thru retainer, sting out of retainer and spot 25 sx Class H cement on top of retainer. Pull tubing to 7206'. Reverse circulate to fill hole and spot a 25 sx Class H cement plug from 7000'-7206'. TOOH w/tubing (stand back 70 stands-lay down rest). ND BOP's and tubing head. Spear 5-1/2" casing and attempt to pull but unsuccessfully. SDFN.

DAILY REPORT
CENTRAL PRODUCTION REGION
COMPANY OPERATED
August 4, 1995

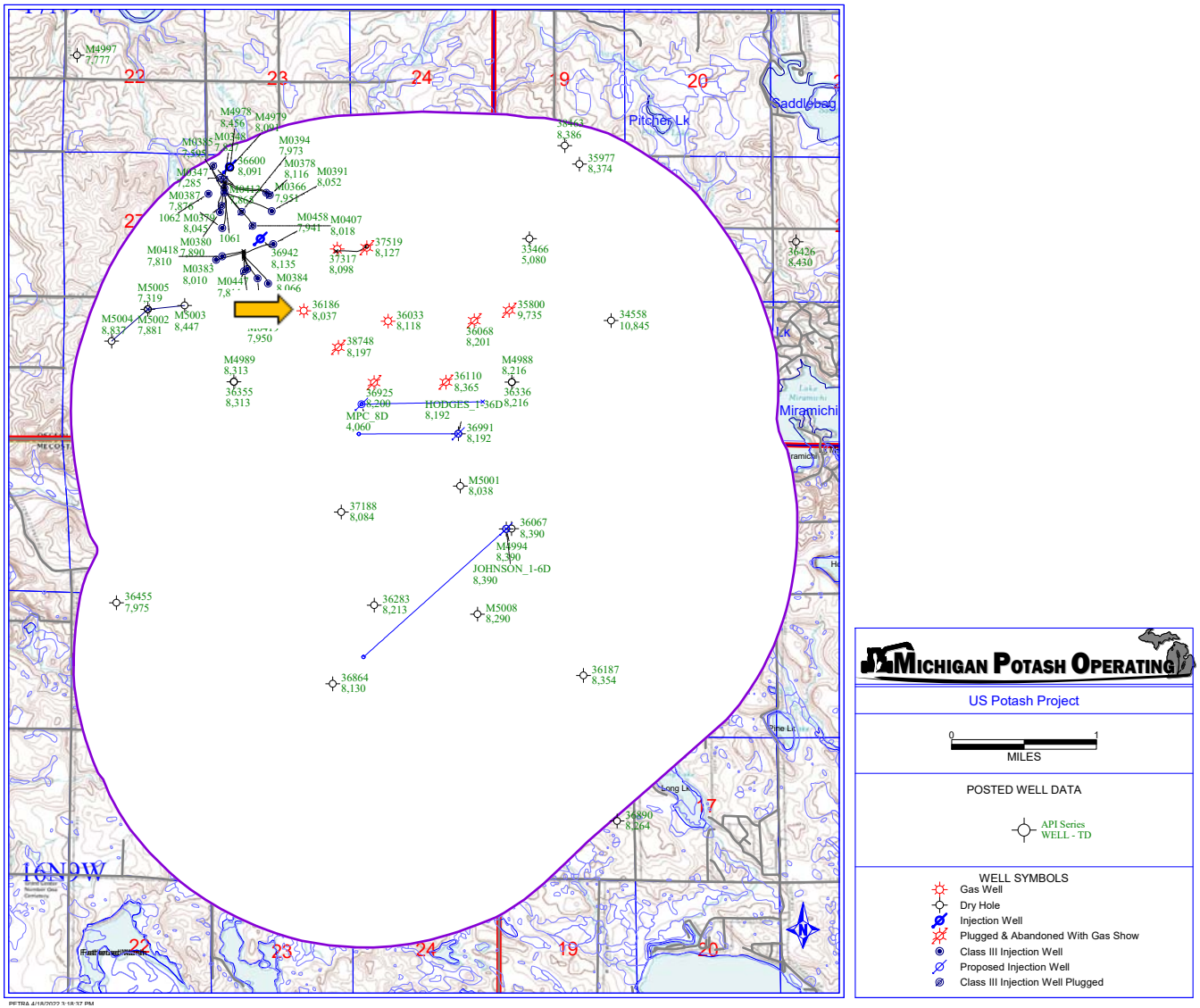
WORKOVER/RECOMPLETION

Hersey Unit
Miller 1-25
Osceola County, MI
AFE NO:
AFE AMOUNT:

OPERATOR: Marathon Oil
RIG: McConnell Rig 54
MOC/WI:
MIRU: 07/31/95

DAY: 4
REMARKS: 08/03/95: 7 am RU Enterra oilfield tools casing cutter, cut 5-1/2" casing 1' below slips and remove from hole. RU Halliburton Wireline and freepoint casing (no movement below 2500'). 50% @ 2200'. 70% @ 2000'. RU cutter and cut casing @ 2000'. RD Halliburton, RU casing tools, pull and lay down 2000' of 5-1/2" casing (49 full joints - 2 cutoffs). RD casing tools, TIH with tubing to 4400'. Radiator hose broke on rig, down for repairs. Finish TIH with 2-7/8" tubing to 5400'. SD for evening. Hal Fitch (DNR-Cadillac) was consulted concerning the cutting of the casing being shallower than planned and recommended changes to the rest of the plugging procedure which deviate from the original prognosis. 7 AM (8-4-95) Prepare to set final plugs and cap well.

DAY: 5
REMARKS: 08/04/95: Plugging complete. RU Halliburton and Kal Con, break circulation and spot a 50 sx Class A cement plug at 5400'. TOOH laying down tubing to 2046', where a 75 sx Class A cement plug was spotted. Tubing was pulled to 925' where a 100 sx Class A cement plug was spotted. TOOH to 50', spot a 15 sx Class A cement plug to surface, rig down and release Halliburton. Cut off head at ground level in cellar and weld a 1/2" steel plate on top, well number 1-25 and date 8-4-95 was etched in top of cap. RD completion unit and move to Grein 1-35, also move frac tank and 1/2 tank. SD for weekend. Following are top and bottom footage for individual cement plugs:
Plug spotted at 8290', 25 sx, top of plug at 8063'
Plug spotted at 7200', 25 sx, top of plug at 7000'
Plug spotted at 5400', 50 sx, top of plug at 4947'
Plug spotted at 2000', 75 sx, top of plug at 1742'
Plug spotted at 925', 100 sx, top of plug at 580'
Plug spotted at 50', 15 sx, top of plug at surface.



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

PAINE 1-26

SE NE SE Sec 26 T17N R9W
OSCEOLA COUNTY, MI

CURRENT WELLBORE DIAGRAM

UPDATED APRIL 2014 BY JLT

API No. 21-133-37317-0000
GL @ 1124'
KB @ 1140'
WELL COMPLETION DATE: 5/18/84
PLUGGING COMPLETION DATE:

LOST HOLE PB TO SURFACE w/
PLUG @ 670' 250 SX HOWCOLITE CaCl
PLUG @ 105' 175 SX CLASS A, 3% CaCl
RIG SKIDDED 30' N AND NEW WELL DRLD ON SAME PAD

LAST PRODUCING @ 296 MCFD OF GAS/DAY

625'
911'
14-3/4" Hole

SURFACE CASING
16"; 65#/ft.
SET @ 625' KB
CMT w/450 SX HOWCOLITE/100 SX CLASS A w/3% CaCl TO SURFACE

INTERMEDIATE CASING
11-3/4"; 60#/ft.
SET @ 911' KB
CMT w/ 170 SX HOWCOLITE/200 SX CLASS A w/3% CaCl TO SURFACE

5408'
10-5/8" Hole

PER TEMP SURVEY:
TOP OF POOR CMT @ 630', TOP OF GOOD CMT @2030', PLUG @ 3033'
TOP OF POOR CMT @ 40'

INTERMEDIATE CASING
8 5/8"; 32#/ft.
SET @ 5408' KB
CMT w/1100 SX HOWCOLITE/200 SX CLASS A w/2% CaCl TO SURFACE

PROD. CASING
5-1/2"; 17#/ft.
7-7/8" Hole SET @ 8090' KB
CMT w/300 SX HOWCOLITE w/18% SALT/425 SX POZMIX w/18% SALT/
160 SX SPECIAL H TO SURFACE

BURNT BLUFF PERFS
8026'-8045' (38x)

BURNT BLUFF REPERFS
8024'-8044' (4spf)

TD @ 8095' KB
PB TO SURFACE (LOST HOLE)

PAINE 1-26 WELL HISTORY

DATE	DESCRIPTION
1/5/1984	SPUD.
1/12/1984	LOST HOLE. PLUGGED BACK TO SURFACE. FIRST PLUG AT 670', 250 SX HOWCOLITE CaCl. SECOND PLUG AT 105', 175 SACKS, CLASS A, 3% CaCl. HAD CIRCULATION ON BOTH PLUGS, HOLE STAYED FULL. HAD 3 BARRELS CEMENT RETURN TO SURFACE ON SECOND PLUG. RIG SKIDDED ABOUT 30' N AND NEW WELL DRILLED ON SAME PAD.
2/15/1984	RUSC. MAKE GR RUN TO 8050'. ROH. RU 20' OF 2-1/8" THRU-TUBING PERFORATING GUNS LOADED TO SHOOT 4 SPF. RIH w/PERFORATING GUN. USING CCL, POSITION GUN TO PERFORATE 8024'-8044'. ONCE ON DEPTH, FIRE GUNS & ROH. RDSC. RETURN WELL TO PRODUCTION.
5/18/1984	PERFORATED 38 HOLES: 8026'-8045'
5/18/1984	WELL COMPLETED. FORMATION AT TD CABOT HEAD. PRODUCING FM BURNT BLUFF. 16" SET AT 625'; 450 SX HOWCOLITE/100 SX CLASS A w/3% CaCl 11-3/4" SET AT 911'; 170 SX HOWCO LITE/200 SX CLASS A w/3% CaCl 8-5/8" SET AT 5408'; 1100 SX HOWCOLITE/200 SX CLASS A w/2% CaCl 5-1/2" SET AT 8090'; 300 SX HOWCOLITE w/18% SALT/425 SX POZMIZ w/18% SALT/160 SX SPECIAL H LAST PRODUCTION/DAY: 296 MCFD OF GAS

STATE OF MICHIGAN

REQUEST FOR TRANSFER OF A PERMIT

SUBMIT 4 COPIES TO: Department of Natural Resources
Geological Survey Division
Box 30028
Lansing, Michigan 48909

Filing for change of ownership of well is required in accordance with ☒ Act 61, P.A. 1939 and ☐ Act 315 P.A. 1969, as amended, and Administrative Rules promulgated thereunder.

TYPE OR PRINT

PERMIT NO	WELL TYPE
37317	Gas

FIELD NAME: Hersey-Clinton

WELL NAME AND NUMBER: Paine 1-26

WELL LOCATION: SE 1/4 NE 1/4 SE 1/4 SECTION 26 T 17N R 9W

TOWNSHIP	COUNTY
Hersey	Osceola

TRANSFER OF A PERMIT FROM:

NAME(S) OF SELLING OWNER(S): PPG Oil & Gas Co., Inc.

ADDRESS Number and Street — City or Town — State — Zip Code — Telephone: One Jackson Square, Suite 600, Jackson, MI 49201 (517) 782-8145

All operating rights are discharged by

Owner(s)	Representative(s)	Signature(s)	Date(s)
PPG Oil & Gas Co., Inc.,	Mr. Donald R. Hall	Donald R Hall	12/14/87

ELIGIBILITY FOR PERMITS IS CONDITIONED UPON COMPLIANCE WITH THE STATUTES, RULES AND ORDERS OF THE DEPARTMENT OF NATURAL RESOURCES. PERMITS WILL NOT BE GRANTED TO PERSONS NOT IN COMPLIANCE.

NON-SUBMISSION AND/OR FALSIFICATION OF THIS INFORMATION MAY RESULT IN FINES AND/OR IMPRISONMENT.

TRANSFER OF A PERMIT TO:

NAME(S) OF ACQUIRING OWNER(S): Marathon Oil Company

ADDRESS Number and Street — City or Town — State — Zip Code — Telephone: One Jackson Square, Suite 600, Jackson, MI 49201 (517) 782-8145

(We) (I) have acquired the well under this permit and assume full responsibility for the drilling, operation, and abandonment in conformity with the law, regulations and orders.

SURETY BOND: ☐ SINGLE WELL ☐ ATTACHED ☒ BLANKET ☒ ON FILE

BONDING CO. SAFECO Insurance Company of America

BOND NUMBER 5194219

All operating rights and responsibilities are assumed by

Owner(s)	Representative(s)	Signature(s)	Date(s)
Marathon Oil Company,	Mr. David W. Hoopman	David W. Hoopman	12/16/87

FOR DEPARTMENT OF NATURAL RESOURCES USE ONLY

APPROVED L. J. Lyczkowski 6/28/88
Signature Date

DISTRIBUTION BY DNR
- ☒ Lansing
- ☐ Acquiring Owner
- ☐ Selling Owner
- ☐ Field

PR 7200 7
Rev. 4/87

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61)

Submit in DUPLICATE Within 30 Days after Well Completion

PERMIT NUMBER: 37317

DEEPENING PERMIT NUMBER:

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT	NAME & ADDRESS OF DRILLING CONTRACTOR(S)
P.P.G. Oil & Gas Co., Inc. 2258 Enterprise Drive Mt. Pleasant, MI 48858	T. D. Provins Drilling Company, Inc. 2113 Enterprise Drive Mt. Pleasant, MI 48858

JUN 28 1984

LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT: Paine #1-26

DIRECTIONALLY DRILLED: YES ☐ NO ☒

SURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME
SE/4, NE/4, SE/4	26	17N	9W	Hersey

FOOTAGES (North/South) 822 Ft. from N Line and 560 (East/West) Ft. from E Line of quarter section

COUNTY NAME: Osceola

SUBSURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME

FOOTAGES (North/South) _____ Ft. from _____ Line and (East/West) _____ Ft. from _____ Line of quarter section

COUNTY NAME:

DATE	DRILLING BEGUN	TOTAL DEPTH OF WELL	TYPE WELL	ELEVATIONS	
	1-5-84	Driller 8095 Log 8098	Gas		
	DRILLING COMPLETED	FORMATION AT T.D.	FT. DRLD. – ROTARY TOOLS	K.B.	R.F.
	2-16-84	Cabot Head	From 0 To 8093	1140'	1139'
	WELL COMPLETED	PRODUCING FORMATION(S)	FT. DRLD. – CABLE TOOLS	R.T.	Grd.
	5-18-84	Burnt Bluff	From _____ To _____		1124'

CASING, CASING LINERS AND CEMENTING

SIZE	WHERE SET	CEMENT	Ft. Pulled
16"	625'	550	-
11 3/4"	911'	370	-
8 5/8"	5403'	1400	
5 1/2"	8090'	885	

PERFORATIONS

DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN YES	OPEN NO
5-18-84	38	8026' to 8045'	X	

GROSS PAY INTERVALS

FORMATION	OIL OR GAS	FROM	TO
Burnt Bluff	Gas	8014'	8045'

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X) Sample	Odor	Pres	Mud Line	Gas Log	Full Up
None								

STIMULATION BY ACID OR FRACTURING

DATE	Interval Treated	Materials and amount used
5-18-84	8026-8045'	500 gal 20% Fe acid

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

FORMATION	F.U.	L.C.	DEPTH	AMOUNT
None				

MECHANICAL LOGS, LIST EACH TYPE RUN — DEPTH CORRECTION — DEVIATION SURVEY — PLUGGED BACK

Brand	(X)	LOG TYPES	LOGGED INTERVALS	DEPTH	CORRECTN	RUN AT-	DEGREES	YES	NO	DEPTH
Schlumberger	X	Sonic/GR	6400-8095'	1288'	1½°					
Birdwell		DLL-MLL/GR	3250-8095'	3332'	0°					
Gearhart		LDT/CNL	100-8095'	7832'	1°					

PRODUCTION TEST DATA

OIL – Bbls/day	GRAVITY – °API	COND. Bbls/day	GAS – MCF/day	WATER – Bbls/day	H_2S – Grains/100 cu. ft.	B.H.P. AND DEPTH
0	-	0	1155	0	0	Est. 4671 @ 8044'

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

DATE	NAME AND TITLE (PRINT)	SIGNATURE
6/21/84	Randall L. Schroeder - Senior Engineer	Randall L Schroeder

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

R - 7210
Rev. 3/77

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

Lost Hole

...ING HAS COPY

WELL PLUGGING RECORD

(Submit in TRIPLICATE Within 30 Days After Plugging is Completed)

JAN 1984

PERMIT NUMBER: 37317 LOST HOLE JAN 2 1984

FIELD NAME:

COMPLETE NAME(S) AND ADDRESS OF WELL OWNER: PPG Oil & Gas Co., Inc.

COMPLETE LEASE OR FARM NAME(S): Paine

WELL NUMBER: 1-26

WELL LOCATION: SE ¼ NE ¼ SE ¼ SEC. 26 T. 17N R. 9W

TOWNSHIP: Hersey

COUNTY: Osceola

TYPE OF WELL (Oil, Gas, Dry Hole, etc.): Dry Hole (LOST HOLE)

TOTAL DEPTH:

FORMATION:

DATE PLUGGING STARTED: 1-12-84

DATE PLUGGING COMPLETED: 1-12-84

DEPT. REPRESENTATIVE(S) WHO ISSUED PERMIT OR WITNESSED PLUGGING: Discussed with Jack Snider

CASING RECORD			
SIZE CASING	DEPTH SET	AMOUNT RECOVERED	SHOT OR RIPPED
20"	77'	None	

BRIDGES OR PLUGS		
TYPE (Brush, Stone, Cement, Mechanical, etc.)	DEPTH PLACED	SACKS OF CEMENT AND ADDITIVES
Cement	670-105	250 HOWCOlite
	105-0	175 Class A

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Halliburton

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Don Smith, Marvin Woods

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED: Plugged back to surface.
First plug at 670', 250 sacks HOWCOlite CaCl.
Second plug at 105', 175 sacks, Class A, 3% CaCl.
Had circulation on both plugs, hole stayed full. Had 3 barrels cement return to surface on second plug.
Rig skidded about 30' N and new well drilled on same pad.

(USE REVERSE SIDE IF NEEDED)

CERTIFICATION

"I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge."

NAME AND TITLE (Typed or Printed): Donald D. Metzger — Director, Exploration & Michigan Operations

SIGNATURE: Donald D Metzger

DATE (Month, Day, Year): 1-16-84

COMPANY NAME AND ADDRESS: PPG Oil & Gas Co., Inc.
2258 Enterprise Drive
Mt. Pleasant, MI 48858

R 7213
Rev. 4/74

OPERATORS USE

Description of Detail (cont.) or Other Supplemental Data:

DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:

1/30/84 rig skidded about 30'N and new well drld. on same pad.
(M. MOSS)

GEOLOGICAL SURVEY
MAR 1 4 1984
Regulatory Control Unit

FINAL INSPECTIONS BY DEPARTMENT REPRESENTATIVES		
SIGNATURE	DIVISION	DATE
Michael J. Moss	CADILLAC	1/30/84

DNR DISTRIBUTION
Permittee -- Orig & 1 copy
Division Office -- 2 copies
Field Office -- File copy
Others -- On request

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

PERMIT TO PLUG AND ABANDON

PERMIT NUMBER: 37317 Lost hole
FIELD NAME: Jersey

NAME AND ADDRESS OF PERMITTEE
PDC

LEASE NAME AND WELL NO.
Paine #1-26 LOST HOLE

LOCATION (¼ ¼ ¼ or other)	SECTION	TOWNSHIP	COUNTY
SE NE SE,	26 T17N R 9W	Jersey	Osceola

TYPE OF WELL (Oil, Gas, Dry Hole, etc.)	DATE COMPLETED	DATE PLUGGING WILL START	PLUGGING PERMIT REQUESTED BY & DATE
Lost hole	1/11/84	1/11/84	D. Smith 1/11/84

LAST PRODUCTION				PLUGGING TO BE DONE BY
BOPD	BWPD	MCFGPD	DATE	

PERMIT MAILED TO

COPIES MAILED TO

CASING AND CEMENTING RECORD

HOLE DIA.	CASING DIA. & WT./FT.	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP	PERFORATIONS
	24	72'			

GEOLOGIC DATA; GAS AND OIL SHOWS; DRILLING AND COMPLETION DATA:

T.D. 653'

PLUGGING REQUIREMENTS*

Plugging requirements outlined are to be executed in accordance with the provisions of Act 61, P.A. 1939, as amended, and rules and orders adopted thereunder.

Spot 425 sx cmt from T.D. to surface. Chk'd rig.

GEOLOGICAL SURVEY
JAN 23 1984
Regulatory Control Unit

*NOTE: BONDS CANNOT BE RELEASED UNTIL A PLUGGING IS COMPLETED, CELLAR RAT HOLE AND PITS FILLED, WELL SITE RESTORED AND RECORDS FILED. WATER WELLS MUST BE PLUGGED ACCORDING TO RULE 166 OF ACT 294 P.A. 1965, "GROUND WATER QUALITY CONTROL". It is further made a requirement of this permit that the applicant give notice to the public utilities in accordance with Act 53, P.A. 1974 C.L. 460.701 to 460.718 and comply with each of the requirements of the act.

AUTHORIZED BY (signature)	OFFICE	DATE
Michael J. Rutt	Cadillac DNR	1/12/84

NOTE: WELL PLUGGING RECORD Form R-7213 to be filed in TRIPLICATE within 30 days after completion.

R-7229
Rev. 11/77

This document paid for with State funds

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION
BOX 30028
LANSING, MICHIGAN 48909

REQUIRED BY AUTHORITY OF:
☒ ACT 61, P.A. 1939, AS AMENDED ☐ ACT 315, P.A. 1969, AS AMENDED

APPLICATION TO (Submit 4 copies):

☒ **CHANGE WELL STATUS** ☐ **PLUG AND ABANDON**

NON-SUBMISSION AND/OR FALSIFICATION OF THIS INFORMATION MAY RESULT IN FINES AND/OR IMPRISONMENT

PERMIT NO.	TYPE OF WELL
37317	Gas

NAME AND ADDRESS OF WELL OWNER ☐ APPROVAL MAILED
Marathon Oil Company
P.O. Box 68
Jonesville, MI 49250

FEB 10 1992

FIELD/FACILITY NAME: Hersey Unit

WELL NAME: Paine | WELL NO.: 1-26

CHANGE OF WELL STATUS REQUESTED FOR:
☐ PLUG BACK ☐ EXTEND PLUGGING (T.A.) ☒ PERFORATE
☐ CONVERT TO INJECTION OR DISPOSAL WELL ☐ OTHER

☐ ACIDIZE (315 ONLY) ☐ FRACTURE (315 ONLY)

WELL LOCATION: SE ¼ of NE ¼ of SE ¼ Section 26 T 17N R 4W

LAST PRODUCTION / INJECTION AND TYPE OF FLUID
(Amount per day & injection pressure)
296 MCFD of Gas

TOWNSHIP	COUNTY
Hersey	Osceola

DATE DRILLING COMPLETED	DATE LAST PRODUCED/UTILIZED
02-15-84	Currently Producing

WORK TO BE DONE BY: ☐ APPROVAL MAILED
To be Determined

STARTING DATE:

CASING AND CEMENTING RECORD

HOLE DIA.	CASING DIA. & WT./FT	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP	PERFORATIONS
20"	16", 65#	635'	450 sx Howco lite/100 sx Class A w/3%	CaCl	
14-3/4"	11-3/4", 60#	911'	170 sx Howco lite/200 sx Class A w/3%	CaCl	
10-5/8"	8-5/8", 32#	5408'	1100 sx Howco lite/200 sx Class A w/2%	CaCl	
7-7/8"	5-1/2", 20#	8090'	300 sx Howco lite w/18% salt/425 sx Pozmix w/18% salt/160 sx Special H		8026-45

FORMATION RECORD (Formation and depth, oil, gas and water shows, etc.):

See Attached

DETAIL PROPOSED PROCEDURES:
RUSC. Make GR run to 8050'. ROH. RU 20' of 2-1/8" thru-tubing perforating guns loaded to shoot 4 spf. RIH w/perforating gun. Using CCL, position gun to perforate 8024'-8044'. Once on depth, fire guns & ROH. RDSC. Return well to production.

GEOLOGICAL SURVEY
FEB 1 1 1992
Permits & Bonding Unit

DNR ADDITIONAL REQUIREMENTS:

NAME/SIGNATURE (Authorized Representative)		DATE
N. R. Daniels, Jr., Michigan Production Supt.		2/3/92
APPROVED BY DNR: Michael J. Moss	OFFICE	APPROVAL DATE: FEB 10 1992 / TERMINATION DATE

NOTE: THREE COPIES OF WELL PLUGGING OR REWORK (PR 7200-8) ARE TO BE FILED WITHIN 30 DAYS OF COMPLETION.

PR 7200-6
Rev. 3/86

DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - GEOLOGICAL SURVEY DIVISION

REQUEST FOR TRANSFER OF PERMIT

Required by authority of Part 615 Supervisor of Wells or Part 625 Mineral Wells, Act 451 PA 1994 as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment.

☒ Part 615 Oil/Gas Well ☐ Part 625 Mineral Well

Permit number	Well type	Current true vertical depth
37317	Gas	8090

Well name and number: Paine 1-26

Surface location: SE 1/4 NE 1/4 SE 1/4 Section 26 T 17N R 9W

Township	County
Hersey	Osceola

NOTE: Eligibility for permits is conditioned upon compliance with the statutes, rules and orders of the Department of Environmental Quality. Permits shall not be transferred to persons not in compliance. A permit for a well shall not be transferred if the permittee is under notice because of unsatisfactory conditions at the well site until compliance is achieved. The acquiring permittee shall attach a current Organization Report (EQP 7200-13)

This permit does not convey property rights in either real estate or material nor does it authorize any injury to private property or invasion of private or public rights nor does it waive the necessity of seeking federal and local permits or complying with other state statutes.

TRANSFER OF A PERMIT FROM:

Name(s) of Selling Permittee(s): Marathon Oil Company

Fed. I.D.# or S.S.#: 25-1410539

Address: Number and Street, City or Town, State, ZIP Code Telephone

7301 NW Expressway
Oklahoma City, OK. 73132

(405) 720-7373

All permits rights and responsibilities are discharged by:

Permittee	Authorized representative name	Signature	Date
Marathon Oil Company	Charles A. Paulson		5/9/00

TRANSFER OF A PERMIT TO:

Name(s) of Acquiring Permittee(s): RSEC, L.L.C.

Fed. I.D.# or S.S.#: 84-1533899

Address: Number and Street, City or Town, State, ZIP Code Telephone

1200 17th Street, Suite 2350
Denver, CO 80202

(303) 892-5616

(We are) (I am) an owner or authorized representative of the owner of the well under this permit and assume full responsibility for the drilling, operation, and abandonment in conformity with the law, regulations and orders.

BOND: ☐ Single Well ☐ Attached Surety or Bank
☐ Blanket ☐ On File Bond Number Pending Amount
☐ Statement of Financial Responsibility

All permittee rights and responsibilities are assumed by:

Permittee	Authorized representative name	Signature	Date
RSEC, L.L.C.	Steve Swanson, MANAGER		5/8/00

FOR DEPARTMENT OF ENVIRONMENTAL QUALITY USE ONLY

Approved _____ Signature MAY 3 1 2001 Date

Distribution by DEQ: ☑ Lansing ☐ Selling Owner ☐ Field ☐ Acquiring Owner

EQP 7200-7 (Rev 3/99) Mail Original and 3 copies to: GEOLOGICAL SURVEY DIVISION
MICHIGAN DEPT OF ENVIRONMENTAL QUALITY
PO BOX 30256
LANSING MI 48909-7756

DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - GEOLOGICAL SURVEY DIVISION

REQUEST FOR TRANSFER OF PERMIT

Required by authority of Part 615 Supervisor of Wells or Part 625 Mineral Wells, Act 451 PA 1994 as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment.

[X] Part 615 Oil/Gas Well [ ] Part 625 Mineral Well

Permit number	Well type	Current true vertical depth
37317	Gas	8090

Well name and number: Paine 1-26

Surface location: SE 1/4 NE 1/4 SE 1/4 Section 26 T17N R9W

Township	County
Hersey	Osceola

NOTE: Eligibility for permits is conditioned upon compliance with the statutes, rules and orders of the Department of Environmental Quality. Permits shall not be transferred to persons not in compliance. A permit for a well shall not be transferred if the permittee is under notice because of unsatisfactory conditions at the well site until compliance is achieved. The acquiring permittee shall attach a current Organization Report (EQP 7200-13)

This permit does not convey property rights in either real estate or material nor does it authorize any injury to private property or invasion of private or public rights nor does it waive the necessity of seeking federal and local permits or complying with other state statutes.

TRANSFER OF A PERMIT FROM:

Name(s) of Selling Permittee(s): RSEC, L.L.C.

Fed. I.D.# or S.S.#: 84-1533899

Address: Number and Street, City or Town, State, ZIP Code Telephone:
1200 17th Street, Suite 2350
Denver, CO 80202

(303) 892-5616

All permits rights and responsibilities are discharged by:

Permittee	Authorized representative name	Signature	Date
RSEC, L.L.C.	Steve Swanson	PRESIDENT	8/15/02

TRANSFER OF A PERMIT TO:

Name(s) of Acquiring Permittee(s): Whiting Petroleum Corporation

Fed. I.D.# or S.S.#: 84-0918829

Address: Number and Street, City or Town, State, ZIP Code
1700 Broadway, Suite 2300
Denver, CO 80290-2300

Telephone: (303) 837-1661

(We are) (I am) an owner or authorized representative of the owner of the well under this permit and assume full responsibility for the drilling, operation, and abandonment in conformity with the law, regulations and orders.

BOND: [ ] Single Well [ ] Attached [X] Blanket [X] On File [ ] Statement of Financial Responsibility

Surety or Bank: Travelers Casualty Surety Co.
Bond Number: 103847277 Amount: $250,000

All permittee rights and responsibilities are assumed by:

Permittee	Authorized representative name	Signature	Date
Whiting Petroleum Corporation	James T. Brown	James T. Brown	8-15-02

FOR DEPARTMENT OF ENVIRONMENTAL QUALITY USE ONLY

Approved: David R. Hamm — Signature — DEC 19 2002 — Date

Distribution by DEQ: [X] Lansing [ ] Selling Owner [ ] Field [ ] Acquiring Owner

PERMITS & BONDING

EQP 7200-7 (Rev 3/99)

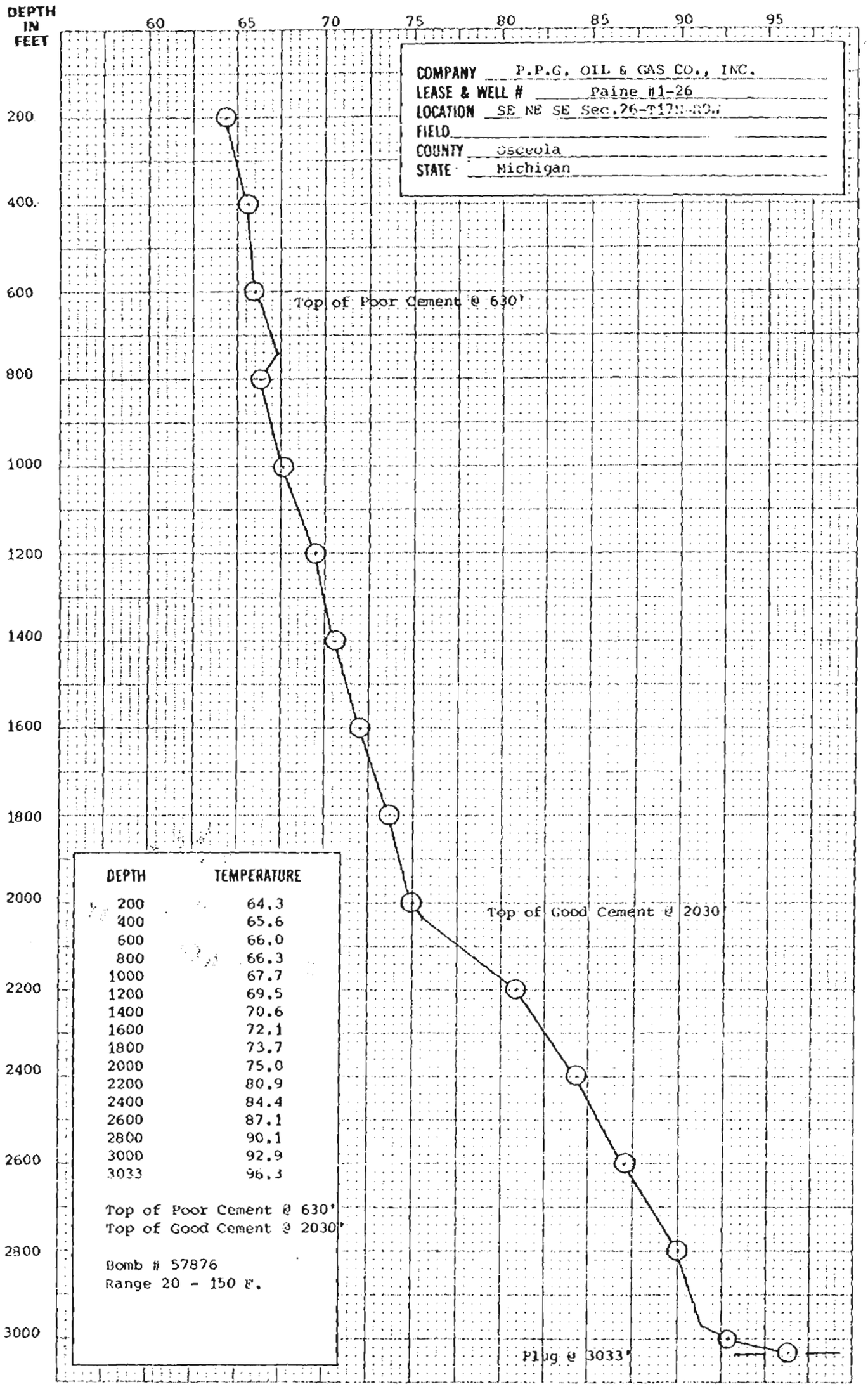
Mail Original and 3 copies to:
GEOLOGICAL SURVEY DIVISION
MICHIGAN DEPT OF ENVIRONMENTAL QUALITY
PO BOX 30256
LANSING MI 48909-7756

AUG 28 2002

GEOLOGICAL SURVEY

DAR-WAY, INC. • P. O. BOX 52 • KALKASKA, MICHIGAN

TEMPERATURE SURVEY



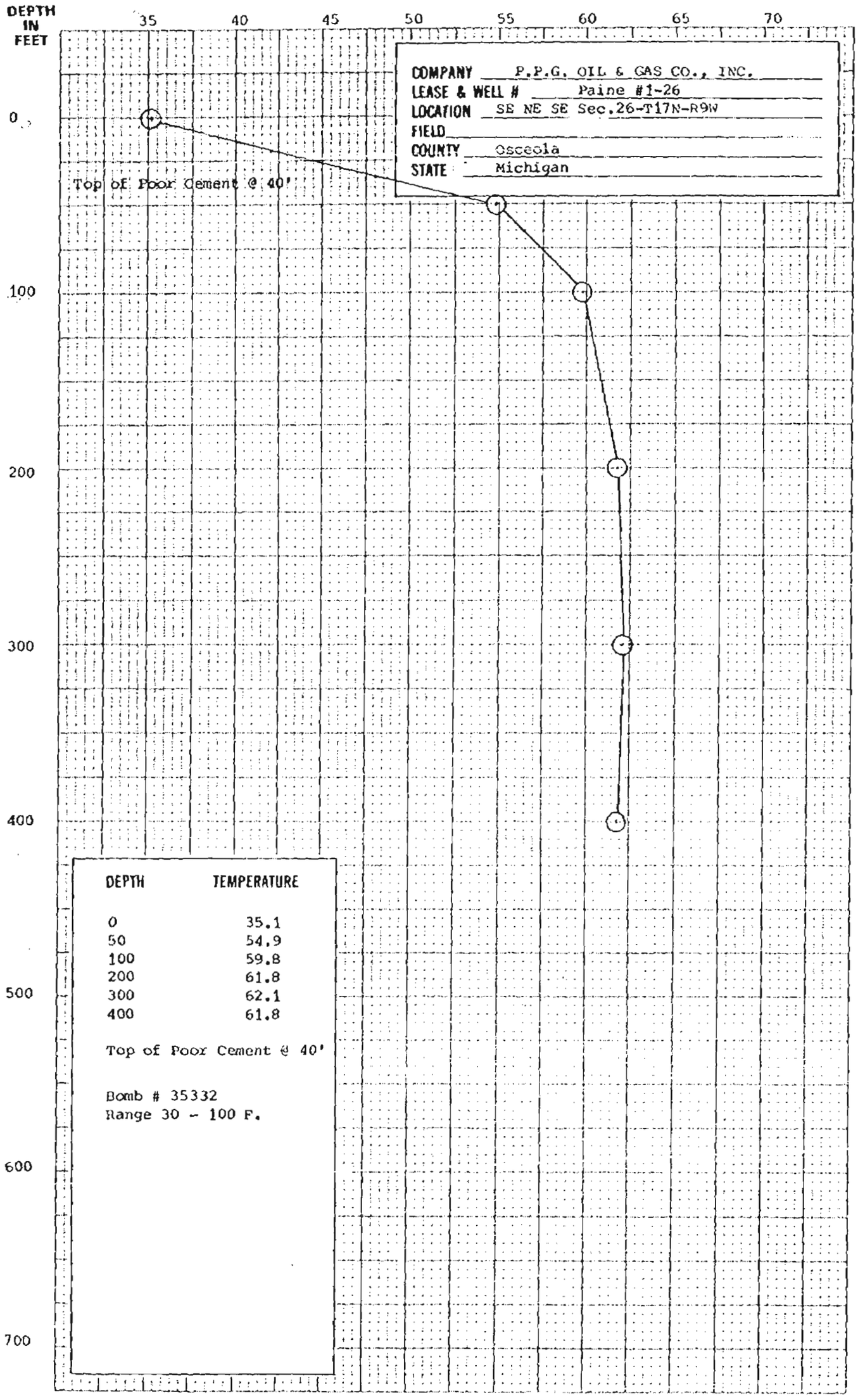
DEPTH	TEMPERATURE
200	64.3
400	65.6
600	66.0
800	66.3
1000	67.7
1200	69.5
1400	70.6
1600	72.1
1800	73.7
2000	75.0
2200	80.9
2400	84.4
2600	87.1
2800	90.1
3000	92.9
3033	96.3

Top of Poor Cement @ 630'
Top of Good Cement @ 2030'

Bomb # 57876
Range 20 - 150 F.

DAR-WAY, INC. • P. O. BOX 52 • KALKASKA, MICHIGAN

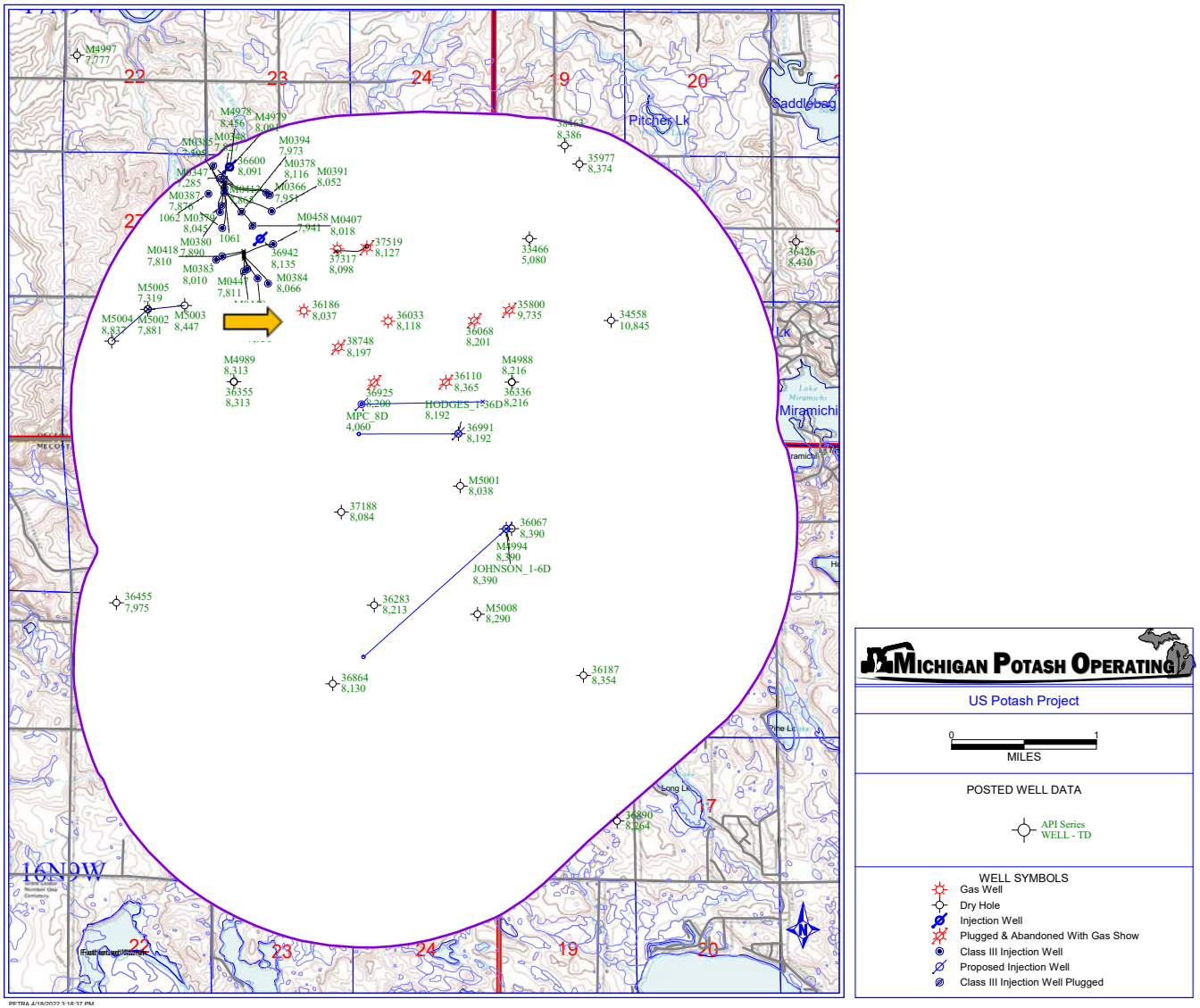
TEMPERATURE SURVEY



DEPTH	TEMPERATURE
0	35.1
50	54.9
100	59.8
200	61.8
300	62.1
400	61.8

Top of Poor Cement @ 40'

Bomb # 35332
Range 30 - 100 F.



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

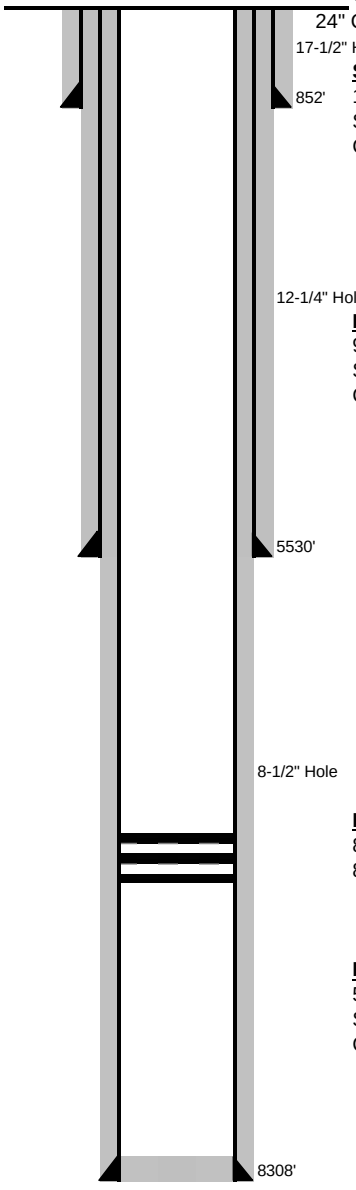
PAINE 1-35

NE NW NE Sec 35 T17N R9W
OSCEOLA COUNTY, MI

CURRENT WELLBORE DIAGRAM

UPDATED APRIL 2014 BY JLT

API No. 21-133-36186-0000
GL @ 1191'
KB @ 1215'
WELL COMPLETION DATE: 2/8/83
PLUGGING COMPLETION DATE:



SURFACE CASING
13-3/8"; 48#/ft.
SET @ 852' KB
CMT w/575 SX 50/50 POZ + 200 SX CLASS A w/3% CaCl TO SURFACE

INTERMEDIATE CASING
9-5/8"; 40#/ft.
SET @ 5530' KB
CMT w/1295 SX 50/50 POZ + 250 SX CLASS A w/18% SALT TO SURFACE

LAST PRODUCING @ 348 MCFD OF GAS/DAY

BURNT BLUFF PERFS
8077'-8080', 8086'-8089', 8099'-8105'
8115'-8117'

PROD. CASING
5-1/2"; 17#/ft.
SET @ 8308' KB
CMT w/800 SX 50/50 POZ 6% GEL, 18% SALT + 300 SX CLASS H

TD @ 8309' KB

PAINE 1-35 WELL HISTORY

DATE	DESCRIPTION
11/6/1982	SPUD.
12/24/1982	RUSC. MAKE GR RUN TO 8117'. ROH. RU 19' OF 2-1/8" THRU-TUBING PERFORATING GUNS LOADED TO SHOOT 4 SPF. RIH w/PERFORATING GUN. USING CCL, POSITION GUN TO PERFORATE 8086'-89', 8099'-8105'. ONCE AT DEPTH, FIRE GUNS & ROH. RDSC. RETURN WELL TO PRODUCTION.
2/8/1983	WELL COMPLETED. FORMATION AT TD CINCINNATIAN. PRODUCING FM BURNT BLUFF. 24" CONDUCTOR DRIVEN TO 56' 13-3/8" SET AT 858'; 575 SX 50/50 POZ + 200 SX CLASS A w/3% CaCl 9-5/8" SET AT 5525'; 1295 SX 50/50 POZ + 250 SX CLASS A w/18% SALT 5-1/2" SET AT 8308'; 800 SX 50/50 POZ 6% GEL, 18% SALT + 300 SX CLASS H PERFORATIONS: 8077'-8080', 8086'-8089', 8099'-8105', 8115'-8117' LAST PRODUCTION/DAY: 348 MCFD OF GAS

FEB 24 1983

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61)

Submit in **DUPLICATE** Within 30 Days after Well Completion

PERMIT NUMBER: 36186

DEEPENING PERMIT NUMBER:

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT
Willmet, Inc.
2250 Enterprise Drive
Mt. Pleasant, MI 48858

NAME & ADDRESS OF DRILLING CONTRACTOR(S)
T. D. Provins Drilling Company
2113 Enterprise Drive
Mt. Pleasant, MI 48858

LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT: Paine #1-35

DIRECTIONALLY DRILLED: YES ☐ NO ☒

SURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME
NE NW NE	35	17N	9W	Hersey

FOOTAGES: 460 Ft. from North (North/South) Line and 852 Ft. from West (East/West) Line of quarter section

COUNTY NAME: Osceola

SUBSURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME

FOOTAGES: _____ Ft. from _____ (North/South) Line and _____ Ft. from _____ (East/West) Line of quarter section

COUNTY NAME:

DATE

DRILLING BEGUN	TOTAL DEPTH OF WELL	TYPE WELL	ELEVATIONS	
11-6-82	Driller 8309 Log 8307	Gas Well		
DRILLING COMPLETED	**FORMATION AT T.D.**	**FT. DRLD. – ROTARY TOOLS**	**K.B.**	**R.F.**
12-21-82	Cincinnatian	From 0 To 8307	1215	1213
WELL COMPLETED	**PRODUCING FORMATION(S)**	**FT. DRLD. – CABLE TOOLS**	**R.T.**	**Grd.**
2-8-83	Burnt Bluff	From _____ To _____		1191

CASING, CASING LINERS AND CEMENTING

SIZE	WHERE SET	CEMENT	Ft. Pulled
24"	56'	D.P.	---
13 3/8"	852'	775 Sx	---
9 5/8"	5530'	2400 Sx	---
5 1/2"	8308'	1100 Sx	---

PERFORATIONS

DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN YES	OPEN NO
1-15-83	2x/ft	8115 - 8117	XX	
1-15-83	2x/ft	8077-80, 86-89,	XX	
		99-8105		

GROSS PAY INTERVALS

FORMATION	OIL OR GAS	FROM	TO
Burnt Bluff	Gas	8076	8118

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X): Samples	Odor	Pits	Mud Line	Gas Log.	Fill Up
Reed City Zn	Gas	4150					X	
Sour Zone	Gas	4710					X	
Manitoulin	Gas	8240					X	

STIMULATION BY ACID OR FRACTURING

DATE	Interval Treated	Materials and amount used
	500 gal. 28%	

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

FORMATION	F.U.	L.C.	DEPTH	AMOUNT
None				

MECHANICAL LOGS, LIST EACH TYPE RUN

	Brand	(X)	LOG TYPES	LOGGED INTERVALS
	Schlumberger	XX	Sonic	200 -- 8307
	Birdwell		LDT-CNL	200 - 8307
OTHER			DLL-MLL	3300- 8307
OTHER	McCull.	XX	Bond Log	

DEPTH CORRECTION

DEPTH	CORRECTN

DEVIATION SURVEY

RUN AT	DEGREES
3200	1/2°
3800	1/2°
5850	1 1/2°
7032	2 1/4°

PLUGGED BACK

YES	NO	DEPTH

PRODUCTION TEST DATA

OIL – Bbls/day	GRAVITY – °API	COND. Bbls/day	GAS – MCF/day	WATER – Bbls/day	H_2S – Grains/100 cu. ft.	B.H.P. AND DEPTH
-----	------	------	3000	2 Bbls	---------	4702-8097

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

DATE	NAME AND TITLE (PRINT)	SIGNATURE
2-21-83	William E. Booker, Geolgoist	William Booker

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

R - 7210
Rev. 3/77

JJ

STATE OF MICHIGAN

REQUEST FOR TRANSFER OF A PERMIT

TYPE OR PRINT

SUBMIT 4 COPIES TO: Department of Natural Resources
Geological Survey Division
Box 30028
Lansing, Michigan 48909

Filing for change of ownership of well is required in accordance with ☒ Act 61, P.A. 1939 and ☐ Act 315 P.A. 1969, as amended, and Administrative Rules promulgated thereunder.

PERMIT NO	WELL TYPE
36186	Gas

FIELD NAME: Hersey-Clinton

WELL NAME AND NUMBER: Paine 1-35

WELL LOCATION: NE 1/4 NW 1/4 NE 1/4 SECTION 35 T 17N R 9W

TOWNSHIP	COUNTY
Hersey	Osceola

TRANSFER OF A PERMIT FROM:

NAME(S) OF SELLING OWNER(S): PPG Oil & Gas Co., Inc.

ADDRESS Number and Street — City or Town — State — Zip Code — Telephone: One Jackson Square, Suite 600, Jackson, MI 49201 (517) 782-8145

All operating rights are discharged by

Owner(s)	Representative(s)	Signature(s)	Date(s)
PPG Oil & Gas Co., Inc.,	Mr. Donald R. Hall	Donald R Hall	12/14/87

ELIGIBILITY FOR PERMITS IS CONDITIONED UPON COMPLIANCE WITH THE STATUTES, RULES AND ORDERS OF THE DEPARTMENT OF NATURAL RESOURCES. PERMITS WILL NOT BE GRANTED TO PERSONS NOT IN COMPLIANCE.

NON-SUBMISSION AND/OR FALSIFICATION OF THIS INFORMATION MAY RESULT IN FINES AND/OR IMPRISONMENT.

TRANSFER OF A PERMIT TO:

NAME(S) OF ACQUIRING OWNER(S): Marathon Oil Company

ADDRESS Number and Street -- City or Town -- State -- Zip Code -- Telephone: One Jackson Square, Suite 600, Jackson, MI 49201 (517) 782-8145

(We) (I) have acquired the well under this permit and assume full responsibility for the drilling, operation, and abandonment in conformity with the law, regulations and orders.

SURETY BOND: ☐ SINGLE WELL ☐ ATTACHED ☒ BLANKET ☒ ON FILE

BONDING CO. SAFECO Insurance Company of America

BOND NUMBER 5194219

All operating rights and responsibilities are assumed by

Owner(s)	Representative(s)	Signature(s)	Date(s)
Marathon Oil Company,	Mr. David W. Hoopman	D. W. Hoopman	12/16/87

FOR DEPARTMENT OF NATURAL RESOURCES USE ONLY

APPROVED L. J. Szyszkowski Signature 6/28/88 Date

DISTRIBUTION BY DNR
- ☒ Lansing
- ☐ Acquiring Owner
- ☐ Selling Owner
- ☐ Field

PR 7200 7
Rev. 4/87

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION
BOX 30028
LANSING, MICHIGAN 48909

REQUIRED BY AUTHORITY OF:
☒ ACT 61, P.A. 1939, AS AMENDED ☐ ACT 315, P.A. 1969, AS AMENDED

APPLICATION TO (Submit 4 copies):

☒ **CHANGE WELL STATUS** ☐ **PLUG AND ABANDON**

NON-SUBMISSION AND/OR FALSIFICATION OF THIS INFORMATION MAY RESULT IN FINES AND/OR IMPRISONMENT.

PERMIT NO.	TYPE OF WELL
36186	Gas

NAME AND ADDRESS OF WELL OWNER ☐ APPROVAL MAILED

Marathon Oil Company
P.O. Box 68
Jonesville, MI 49250

FEB 10 1992

FIELD/FACILITY NAME: Hersey Unit

WELL NAME: Paine | WELL NO.: 1-35

CHANGE OF WELL STATUS REQUESTED FOR:
☐ PLUG BACK ☐ EXTEND PLUGGING (T.A.) ☒ PERFORATE
☐ CONVERT TO INJECTION OR DISPOSAL WELL ☐ OTHER

☐ ACIDIZE (315 ONLY) ☐ FRACTURE (315 ONLY)

WELL LOCATION: NE ¼ of NW ¼ of NE ¼ Section 35 T 17N R 9W

LAST PRODUCTION / INJECTION AND TYPE OF FLUID
(Amount per day & injection pressure)
348 MCFD of Gas

TOWNSHIP: Hersey | COUNTY: Osceola

DATE DRILLING COMPLETED: 12-24-82 | DATE LAST PRODUCED/UTILIZED: Currently Producing

WORK TO BE DONE BY: ☐ APPROVAL MAILED
To be Determined

STARTING DATE:

CASING AND CEMENTING RECORD

HOLE DIA.	CASING DIA. & WT./FT	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP	PERFORATIONS
17-1/2"	13-3/8", 48#	858'	575 sx 50/50 Poz/200 sx Class A w/3% CaCl		
12-1/4"	9-5/8", 40#	5525'	1295 sx 50/50 Poz/250 sx Class A w/18% salt		
8-1/2"	5-1/2", 17#	8308'	800 sx 50/50 Poz 6% gel, 18% salt/300 sx Class "H"		8077-80,86-89 8099-8105 8115-8117

FORMATION RECORD (Formation and depth, oil, gas and water shows, etc.):

See Attachment

DETAIL PROPOSED PROCEDURES:

RUSC. Make GR run to 8117'. ROH. RU 19' of 2-1/8" thru-tubing perforating guns loaded to shoot 4 spf. RIH w/perforating gun. Using CCL, position gun to perforate 8086'-89', 8099'-8105'. Once on depth, fire guns & ROH. RDSC. Return well to production.

GEOLOGICAL SURVEY
FEB 28 1992
Permits & Bonding Unit

DNR ADDITIONAL REQUIREMENTS:

NAME/SIGNATURE (Authorized Representative)
N. R. Daniels, Jr., Michigan Production Supt. N R Daniels Jr

DATE 2/3/92

APPROVED BY DNR: Michael J. Moss | OFFICE | APPROVAL DATE: FEB 10 1992 | TERMINATION DATE

NOTE: THREE COPIES OF WELL PLUGGING OR REWORK (PR 7200-8) ARE TO BE FILED WITHIN 30 DAYS OF COMPLETION.

PR 7200-5

DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - GEOLOGICAL SURVEY DIVISION

REQUEST FOR TRANSFER OF PERMIT

Required by authority of Part 615 Supervisor of Wells or Part 625 Mineral Wells, Act 451 PA 1994 as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment.

☒ Part 615 Oil/Gas Well ☐ Part 625 Mineral Well

Permit number	Well type	Current true vertical depth
36186	Gas	8308

Well name and number: Paine #1-35

Surface location: NE 1/4 NW 1/4 NE 1/4 Section 35 T 17N R 9W

Township	County
Hersey	Osceola

NOTE: Eligibility for permits is conditioned upon compliance with the statutes, rules and orders of the Department of Environmental Quality. Permits shall not be transferred to persons not in compliance. A permit for a well shall not be transferred if the permittee is under notice because of unsatisfactory conditions at the well site until compliance is achieved. The acquiring permittee shall attach a current Organization Report (EQP 7200-13)

This permit does not convey property rights in either real estate or material nor does it authorize any injury to private property or invasion of private or public rights nor does it waive the necessity of seeking federal and local permits or complying with other state statutes.

TRANSFER OF A PERMIT FROM:

Name(s) of Selling Permittee(s): Marathon Oil Company

Fed. I.D.# or S.S.#: 25-1410539

Address: Number and Street, City or Town, State, ZIP Code Telephone

7301 NW Expressway
Oklahoma City, OK. 73132

(405) 720-7373

All permits rights and responsibilities are discharged by:

Permittee	Authorized representative name	Signature	Date
Marathon Oil Company	Charles A. Paulson	Charles A. Paulson	5/4/01

TRANSFER OF A PERMIT TO:

Name(s) of Acquiring Permittee(s): RSEC, L.L.C.

Fed. I.D.# or S.S.#: 84-1533899

Address: Number and Street, City or Town, State, ZIP Code Telephone

1200 17th Street, Suite 2350
Denver, CO 80202

(303) 892-5616

(We are) (I am) an owner or authorized representative of the owner of the well under this permit and assume full responsibility for the drilling, operation, and abandonment in conformity with the law, regulations and orders.

BOND: ☐ Single Well ☐ Attached Surety or Bank
☐ Blanket ☐ On File Bond Number Pending Amount
☐ Statement of Financial Responsibility

All permittee rights and responsibilities are assumed by:

Permittee	Authorized representative name	Signature	Date
RSEC, L.L.C.	Steve Swanson, MANAGER		5/21/01

FOR DEPARTMENT OF ENVIRONMENTAL QUALITY USE ONLY

Approved _____ Signature

MAY 31 2001 Date

Distribution by DEQ
☑ Lansing ☐ Selling Owner
☐ Field ☐ Acquiring Owner

EQP 7200-7 (Rev 3/99) Mail Original and 3 copies to: GEOLOGICAL SURVEY DIVISION
MICHIGAN DEPT OF ENVIRONMENTAL QUALITY
PO BOX 30256
LANSING MI 48909-7756

DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - GEOLOGICAL SURVEY DIVISION

REQUEST FOR TRANSFER OF PERMIT

Required by authority of Part 615 Supervisor of Wells or Part 625 Mineral Wells, Act 451 PA 1994 as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment.

[X] Part 615 Oil/Gas Well [ ] Part 625 Mineral Well

Permit number	Well type	Current true vertical depth
36186	Gas	8308

Well name and number: Paine #1-35

Surface location: NE 1/4 NW 1/4 NE 1/4 Section 35 T 17N R 9W

Township	County
Hersey	Osceola

NOTE: Eligibility for permits is conditioned upon compliance with the statutes, rules and orders of the Department of Environmental Quality. Permits shall not be transferred to persons not in compliance. A permit for a well shall not be transferred if the permittee is under notice because of unsatisfactory conditions at the well site until compliance is achieved. The acquiring permittee shall attach a current Organization Report (EQP 7200-13)

This permit does not convey property rights in either real estate or material nor does it authorize any injury to private property or invasion of private or public rights nor does it waive the necessity of seeking federal and local permits or complying with other state statutes.

TRANSFER OF A PERMIT FROM:

Name(s) of Selling Permittee(s): RSEC, L.L.C.

Fed. I.D.# or S.S.#: 84-1533899

Address: Number and Street, City or Town, State, ZIP Code Telephone

1200 17th Street, Suite 2350
Denver, CO 80202

(303) 892-5616

All permits rights and responsibilities are discharged by:

Permittee	Authorized representative name	Signature	Date
RSEC, L.L.C.	Steve Swanson	PRESIDENT	8/15/02

TRANSFER OF A PERMIT TO:

Name(s) of Acquiring Permittee(s): Whiting Petroleum Corporation

Fed. I.D.# or S.S.#: 84-0918829

Address: Number and Street, City or Town, State, ZIP Code Telephone

1700 Broadway, Suite 2300
Denver, CO 80290-2300

(303) 837-1661

(We are) (I am) an owner or authorized representative of the owner of the well under this permit and assume full responsibility for the drilling, operation, and abandonment in conformity with the law, regulations and orders.

BOND: [ ] Single Well [ ] Attached Surety or Bank: Travelers Casualty Surety Co.
[X] Blanket [X] On File Bond Number: 103847277 Amount: $250,000
[ ] Statement of Financial Responsibility

All permittee rights and responsibilities are assumed by:

Permittee	Authorized representative name	Signature	Date
Whiting Petroleum Corporation	James T. Brown	James T. Brown	8-15-02

FOR DEPARTMENT OF ENVIRONMENTAL QUALITY USE ONLY

Approved: David R. Hamm — Signature — Date: DEC 19 2002

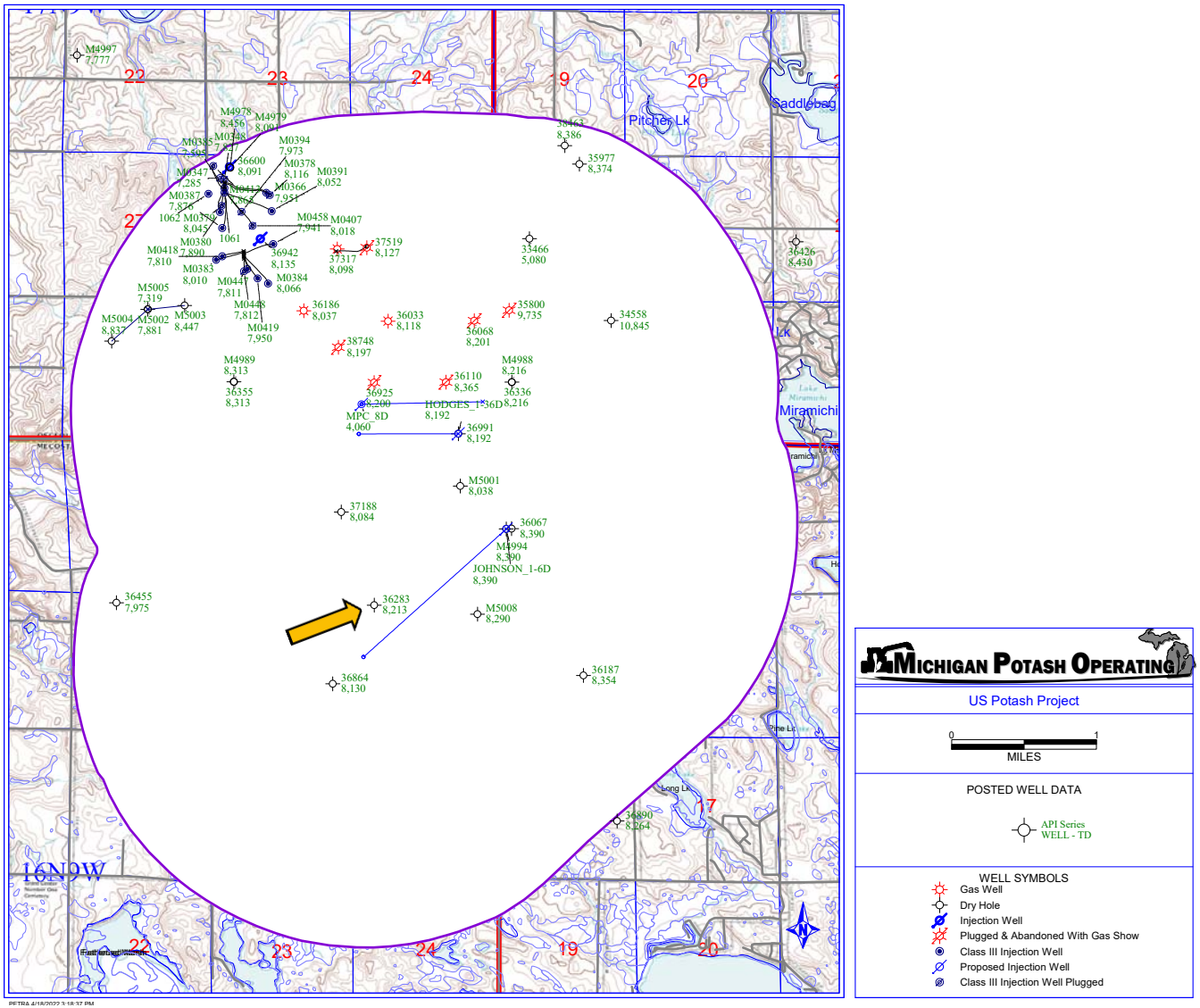
Distribution by DEQ: [X] Lansing [ ] Selling Owner [ ] Field [ ] Acquiring Owner

PERMITS & BONDING

EQP 7200-7 (Rev 3/99) Mail Original and 3 copies to: GEOLOGICAL SURVEY DIVISION
MICHIGAN DEPT OF ENVIRONMENTAL QUALITY
PO BOX 30256
LANSING MI 48909-7756

AUG 28 2002

GEOLOGICAL SURVEY



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

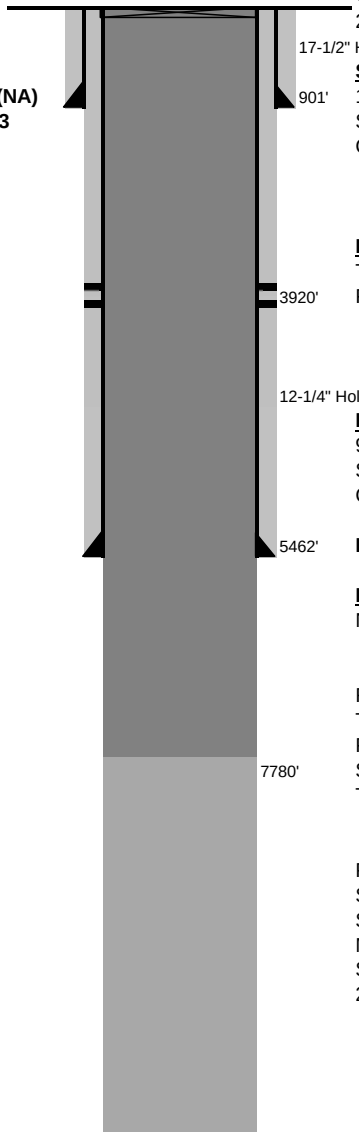
Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

PARK 1-12

NE NW NW Sec 12 T16N R9W
MECOSTA COUNTY, MI

CURRENT WELLBORE DIAGRAM

API No. 21-107-36283-0000
GL @ 1150.8'
KB @ 1167.1'
WELL COMPLETION DATE: DRY HOLE (NA)
PLUGGING COMPLETION DATE: 6/20/83



UPDATED APRIL 2014 BY JLT

24" CONDUCTOR DRIVEN TO 61'

SURFACE CASING
13 3/8", 48#/ft
SET @ 901' KB
CMT w/ 700 SX POZ + 200 SX CLASS A TO SURFACE

PER TEMP SURVEY
TOC @ 4040'
PLUG @ 5345'

INTERMEDIATE CASING
9 5/8", 40#/ft
SET @ 5462' KB
CMT w/ 1300 SX TO SURFACE

BP @ 5400'

PROD. CASING
NA

RAN DRILL PIPE TO 8200', SPOTTED 150 SX CL A.
TOC 7780'
PULLED DRILL PIPE AND RERAN WITH BP TO 5400'
SET BP.
TEMPORARILY ABANDONED

PERFORATED 9-5/8" @ 3920' AND CIRCULATED 9-5/8" AND SQUEEZED w/100 SX 50-50 POZ + 200 SX CL A
SHUT IN FOR CMT TO SET. TIH AND MILLED OUT MECHANICAL BP SET @ 5400'.
SET CMT PLUGS FROM 7700' TO SURFACE w/ 1200 SX 50-50 POZ + 25 SX CL A AT SURFACE, CUT AND CAPPED.

TD @ 8215' KB

PARK 1-12 WELL HISTORY

DATE	DESCRIPTION
12/10/1982	SPUD.
1/9/1983	DRILLING COMPLETED. FORMATION AT TD CINCINNATIAN. 24" CONDUCTOR SET AT 61' 13 3/8" SET AT 901'; 700 SX POZ + 200 SX CL A 9 5/8" SET AT 5462'; 1300 SX
1/10/1983	PLUGGING START DATE RAN DRILL PIPE TO 8200' AND SPOTTED 150 SX CL A. TOP OF CEMENT 7780'. PULLED DRILL PIPE AND RERAN WITH PERFORATED 9-5/8" AT 3920' AND CIRCULATED 9-5/8" AND SQUEEZED WITH 100 SX 50-50 POZ AND 200 SX CL A. SHUT IN FOR CEMENT TO SET. TRIPPED IN HOLE AND MILLED OUT MECHANICAL BP SET AT 5400'. SET CEMENT PLUGS FROM 7700' TO SURFACE - 1200 SX 50-50 POZ AND 25 SX CL A AT SURFACE, CUT AND CAPPED.
6/20/1983	PLUGGING COMPLETED. PER TEMPERATURE SURVEY: TOP OF CEMENT AT 4040' AND PLUG AT 5345'

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FEB 1 0 1983

LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61)

Submit in **DUPLICATE** Within 30 Days after Well Completion

PERMIT NUMBER: 36283

DEEPENING PERMIT NUMBER:

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT:
Willmet, Inc.
2250 Enterprise Drive
Mt. Pleasant, MI 48858

NAME & ADDRESS OF DRILLING CONTRACTOR(S):
T. D. Provins
2113 Enterprise Drive
Mt. Pleasant, MI 48858

LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT: Park #1-12

DIRECTIONALLY DRILLED: YES ☐ NO ☒

SURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME
NE NW NW	12	16N	9W	Grant

FOOTAGES (North/South) 460 Ft. from North Line and (East/West) 880 Ft. from West Line of quarter section

COUNTY NAME: Mecosta

SUBSURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME

FOOTAGES (North/South) _____ Ft. from _____ Line and (East/West) _____ Ft. from _____ Line of quarter section

COUNTY NAME:

DATE	DRILLING BEGUN	TOTAL DEPTH OF WELL	TYPE WELL	ELEVATIONS	
	12-10-82	Driller 8215 Log 8213	Dry Hole		
	DRILLING COMPLETED	FORMATION AT T.D.	FT. DRLD. – ROTARY TOOLS	K.B.	R.F.
	1-9-83	Cincinnatian	From 0 To 8215	1167.1	1165.9
	WELL COMPLETED	PRODUCING FORMATION(S)	FT. DRLD. – CABLE TOOLS	R.T.	Grd.
		NONE	From _____ To _____		1150.8

CASING, CASING LINERS AND CEMENTING

SIZE	WHERE SET	CEMENT	Ft. Pulled
24"	61'		
13 3/8"	901'	700 POZ/200 Cl A	
9 5/8"	5462'	1300 Sx	

PERFORATIONS

DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN YES	OPEN NO
		NONE		

GROSS PAY INTERVALS

FORMATION	OIL OR GAS	FROM	TO
NONE			

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X) Samples	Odor	Pits	Mud Line	Gas Log.	Fill Up
Antrim	Gas	3100				XX		
RC Dol	Gas	4100				XX		
Blk Lm	Gas	5150				XX		

STIMULATION BY ACID OR FRACTURING

DATE	Interval Treated	Materials and amount used
	NONE	

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

FORMATION	F.U.	L.C.	DEPTH	AMOUNT
NONE				

MECHANICAL LOGS, LIST EACH TYPE RUN

	Brand	(X)	LOG TYPES	LOGGED INTERVALS
	Schlumberger	XX	LDT-CNL-GR	100-8209
	Birdwell		Sonic	700-8200
OTHER			DLL-MLL	3300-8200

DEPTH CORRECTION

DEPTH	CORRECT'N

DEVIATION SURVEY

RUN AT	DEGREES
3185	½°
4995	2°
5826	3/4°
7954	2½°

PLUGGED BACK

YES	NO	DEPTH

PRODUCTION TEST DATA

OIL – Bbls/day	GRAVITY – °API	COND. Bbls/day	GAS – MCF/day	WATER – Bbls/day	H_2S – Grains/100 cu. ft.	B.H.P. AND DEPTH

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

DATE	NAME AND TITLE (PRINT)	SIGNATURE
1-20-83	William E. Booker, Geologist	William E Booker

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

R - 7210
Rev. 3/77

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

FEB 16 1983

NOV 28 1983 LANSING HAS COPY

WELL PLUGGING RECORD

(Submit in TRIPLICATE Within 30 Days After Plugging is Completed)

FEB 11 1983

FINAL APPROVAL

lfc

PERMIT NUMBER: 36283

FIELD NAME:

COMPLETE NAME(S) AND ADDRESS OF WELL OWNER: WILLMET, INC.

COMPLETE LEASE OR FARM NAME(S): Park

WELL NUMBER: #1-12

WELL LOCATION: NW ¼ NW ¼ NW ¼ SEC. 12 T. 16N R. 9W

TOWNSHIP: Grant

COUNTY: Mecosta

TYPE OF WELL (Oil, Gas, Dry Hole, etc.): Dry Hole

TOTAL DEPTH: 8215

FORMATION: Cincinnatian

DATE PLUGGING STARTED: 1-10-83

DATE PLUGGING COMPLETED: 1-10-83

DEPT. REPRESENTATIVE(S) WHO ISSUED PERMIT OR WITNESSED PLUGGING: Skipper

CASING RECORD

SIZE CASING	DEPTH SET	AMOUNT RECOVERED	SHOT OR RIPPED
24"	61'		
13 3/8"	901'		
9 5/8"	5462'		

BRIDGES OR PLUGS

TYPE (Brush, Stone, Cement, Mechanical, etc.)	DEPTH PLACED	SACKS OF CEMENT AND ADDITIVES
Cement	8200-7780	150 Sx Cl A
Mechanical		
Bridge Plug	5400	

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Dowell

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Marvin Woods

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED: Ran drill pipe to 8200 and spotted 150 sx Cl A. Top of cement 7780. Pulled drill pipe and reran with bridge plug to 5400, set bridge plug. TEMPORARILY ABANDONED.

(USE REVERSE SIDE IF NEEDED)

CERTIFICATION

"I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge."

NAME AND TITLE (Typed or Printed): William E. Booker, Geologist

SIGNATURE: William E Booker

DATE (Month, Day, Year): 1-20-83

COMPANY NAME AND ADDRESS: Strickler Geological Services, Inc.
1425 S. Mission
Mt. Pleasant, MI 48858

R 7213
Rev. 4/74

OPERATORS USE

Description of Detail (cont.) or Other Supplemental Data:

DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:

Site clean & recontoured

FINAL INSPECTIONS BY DEPARTMENT REPRESENTATIVES		
SIGNATURE	DIVISION	DATE
James H. Shippen	Geological Survey	11-21-83

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MAY 22 1984 MAY 24 1984 LANSING HAS COPY

WELL PLUGGING RECORD

(Submit in TRIPLICATE Within 30 Days After Plugging is Completed) OCT 02 1984

Willmet

FINAL ABBREV

PERMIT NUMBER: 36283

FIELD NAME:

COMPLETE NAME(S) AND ADDRESS OF WELL OWNER: PPG Oil & Gas Co., Inc., 2258 Enterprise Drive, Mt. Pleasant, MI 48858

COMPLETE LEASE OR FARM NAME(S): Park

WELL NUMBER: #1-12

WELL LOCATION: NE ¼ NW ¼ NW ¼ SEC. 12 T. 16N R. 9W

TOWNSHIP: Grant

COUNTY: Mecosta

TYPE OF WELL (Oil, Gas, Dry Hole, etc.): Dry Hole

TOTAL DEPTH: 8215

FORMATION: Cincinnatian

DATE PLUGGING STARTED: 1-10-83

DATE PLUGGING COMPLETED: 6-20-83

DEPT. REPRESENTATIVE(S) WHO ISSUED PERMIT OR WITNESSED PLUGGING: Skipper

CASING RECORD

SIZE CASING	DEPTH SET	AMOUNT RECOVERED	SHOT OR RIPPED
24"	61	------	
13 3/8"	901	------	
9 5/8"	5462	------	

BRIDGES OR PLUGS

TYPE (Brush, Stone, Cement, Mechanical, etc.)	DEPTH PLACED	SACKS OF CEMENT AND ADDITIVES
Cement	8200-7780	150 Sx Cl A
Cement	7700-0	1225 Sx

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Halliburton

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Marvin Woods

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Perforated 9 5/8" at 3920' and circulated 9 5/8" and squeezed with 100 sx 50-50 poz and 200 sx Cl A. Shut in for cement to set. Tripped in hole and milled out mechanical B.P. set at 5400'. Set cement plugs from 7700' to surface - 1200 sx 50-50 poz and 25 sx Cl A at surface, cut and capped.

(USE REVERSE SIDE IF NEEDED)

CERTIFICATION

"I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge."

NAME AND TITLE (Typed or Printed): William E. Booker, Geologist

SIGNATURE: William E Booker

DATE (Month, Day, Year): 5/17/84

COMPANY NAME AND ADDRESS: STRICKLER GEOLOGICAL SERVICES, INC.
1425 S. Mission
Mt. Pleasant, MI 48858

R 7213
Rev. 4/74

OPERATORS USE

Description of Detail (cont.) or Other Supplemental Data:

DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:

[redacted]

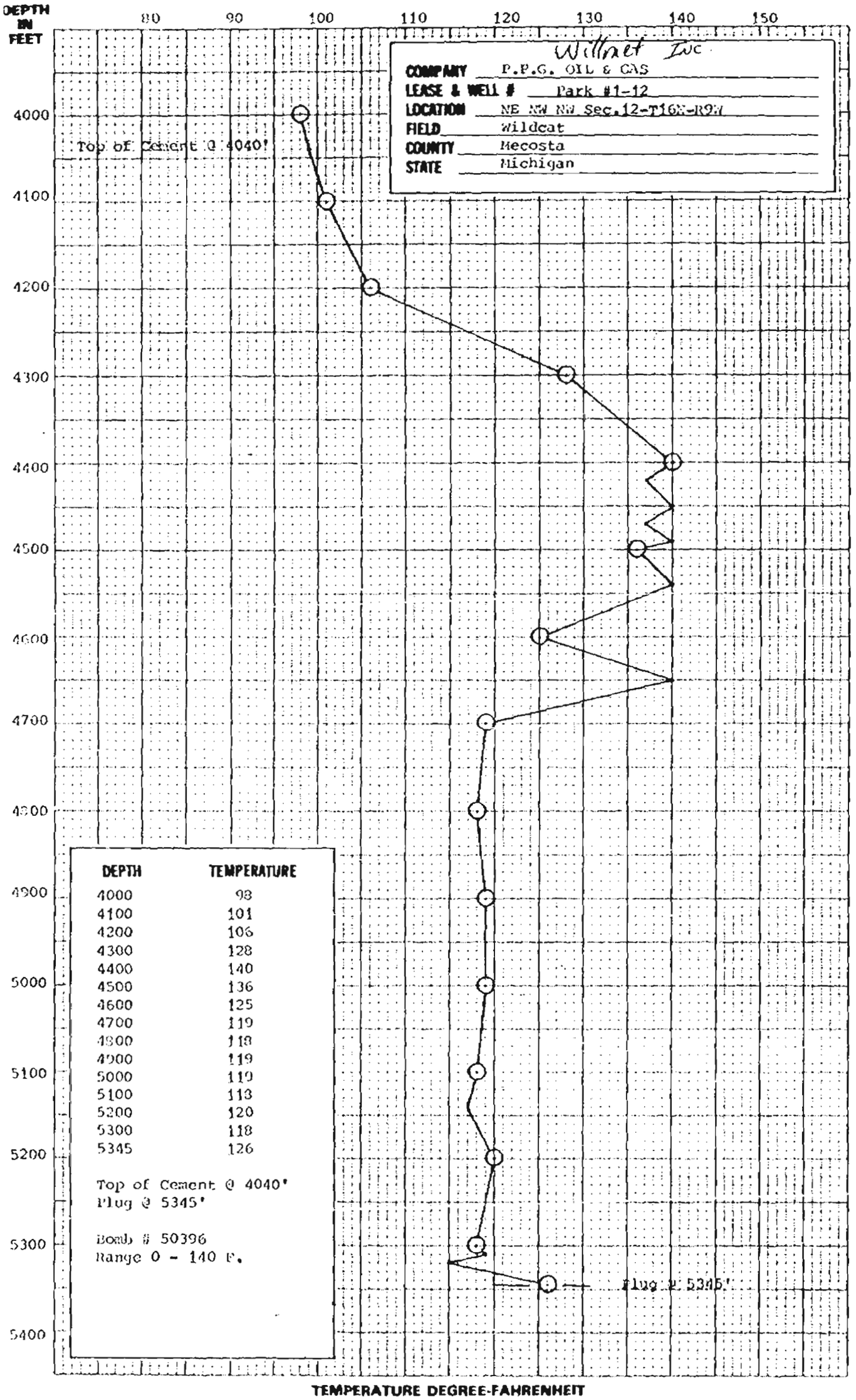
Location approved by Skipper 2/23/84 Clean & recontoured

FINAL INSPECTIONS BY DEPARTMENT REPRESENTATIVES

SIGNATURE	DIVISION	DATE
James L. Skipper	Geol. Survey	9/26/84

DAR-WAY, INC. • P. O. BOX 52 • KALKASKA, MICHIGAN

TEMPERATURE SURVEY



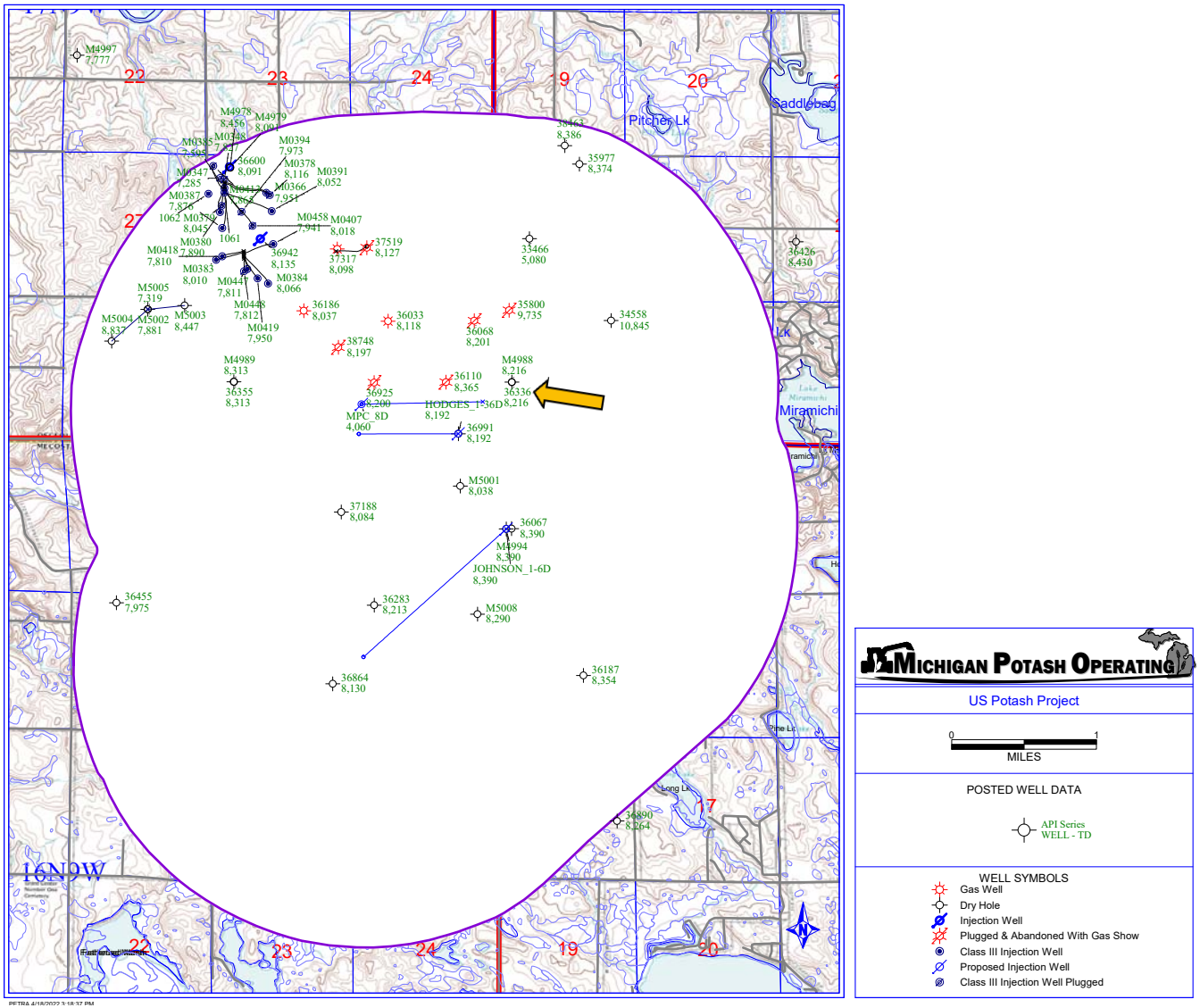
Willmet Inc

COMPANY P.P.G. OIL & GAS
LEASE & WELL # Park #1-12
LOCATION NE NW NW Sec.12-T16N-R9W
FIELD Wildcat
COUNTY Mecosta
STATE Michigan

DEPTH	TEMPERATURE
4000	98
4100	101
4200	106
4300	128
4400	140
4500	136
4600	125
4700	119
4800	118
4900	119
5000	119
5100	113
5200	120
5300	118
5345	126

Top of Cement @ 4040'
Plug @ 5345'

Bomb # 50396
Range 0 - 140 F.



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

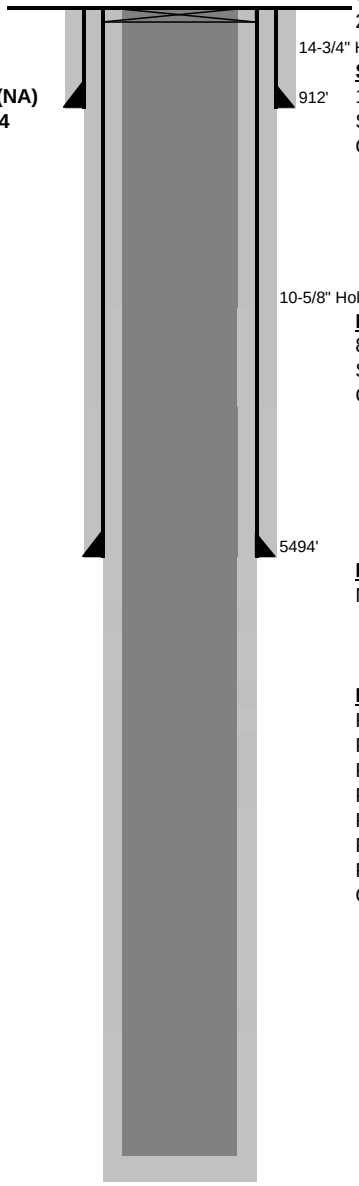
Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

PARK 1-31

NE NW SW Sec 31 T17N R8W
OSCEOLA COUNTY, MI

CURRENT WELLBORE DIAGRAM

API No. 21-133-36336-0000
GL @ 1168.9'
KB @ 1184.8'
WELL COMPLETION DATE: DRY HOLE (NA)
PLUGGING COMPLETION DATE: 2/12/84



UPDATED APRIL 2014 BY JLT

20" CONDUCTOR DRIVE TO 72'

14-3/4" Hole expected

SURFACE CASING
11-3/4"; 48#/ft.
SET @ 912' KB
CMT w/500 SX TO SURFACE

10-5/8" Hole expected

INTERMEDIATE CASING
8-5/8"; 60#/ft.
SET @ 5494' KB
CMT w/ 1250 SX TO SURFACE

PROD. CASING
NA

PLUGGING
RAN DRILL PIPE TO 8216', SPOTTED 90 SX CMT
PULLED DP TO 7900', SPOTTED 51 SX
PULLED DP TO 7600', SPOTTED 85 SX
PULLED DP TO 7300', SPOTTED 309 SX
PULLED DP TO 5500', SPOTTED 87 SX
PULLED DP TO 5200', SPOTTED 226 SX
PULLED DP TO 3900', SPOTTED 226 SX
CUT AND CAPPED.

TD @ 8216' KB

PARK 1-31 WELL HISTORY

DATE	DESCRIPTION
1/10/1984	SPUD.
2/10/1984	DRILLING COMPLETED. FORMATION AT TD BURNT BLUFF. 20" CONDUCTOR DRIVEN TO 72' 11-3/4" SET AT 912'; 580 SX 8-5/8" SET AT 5494'; 1250 SX
2/11/1984	PLUGGING STARTED RAN DRILL PIPE TO 8216' AND SPOTTED 90 SX, PULLED DRILL PIPE TO 7900' AND SPOTTED 51 SX PULLED DRILL PIPE TO 7600' AND SPOTTED 85 SX PULLED DRILL PIPE TO 7300' AND SPOTTED 309 SX PULLED DRILL PIPE TO 5500' AND SPOTTED 87 SX PULLED DRILL PIPE TO 5200' AND SPOTTED 226 SX PULLED DRILL PIPE TO 3900' AND SPOTTED 226 SX CUT AND CAPPED.
2/12/1984	PLUGGING COMPLETION DATE

DEPARTMENT OF NATURAL RESOURCES

LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61)

Submit in DUPLICATE Within 30 Days after Well Completion

SEP 0 6 1984

PERMIT NUMBER: 36336

DEEPENING PERMIT NUMBER:

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT	NAME & ADDRESS OF DRILLING CONTRACTOR(S)
PPG Oil & Gas Co., Inc. 2258 Enterprise Drive Mt. Pleasant, MI 48858	T. D. Provins Drilling Co. 2113 Enterprise Drive Mt. Pleasant, MI 48858

LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT: Park 1-31

DIRECTIONALLY DRILLED: YES [ ] NO [XX]

SURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME
NE NW SW	31	17N	8W	Evart

FOOTAGES: 460 Ft. from North (North/South) Line and 460 Ft. from West (East/West) Line of quarter section

COUNTY NAME: Osceola

SUBSURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME

FOOTAGES: _____ Ft. from _____ (North/South) Line and _____ Ft. from _____ (East/West) Line of quarter section

COUNTY NAME:

DATE	DRILLING BEGUN	TOTAL DEPTH OF WELL	TYPE WELL	ELEVATIONS	
	1-10-84	Driller 8216 Log 8216	Dry Hole		
	DRILLING COMPLETED	FORMATION AT T.D.	FT. DRLD. – ROTARY TOOLS	K.B.	R.F.
	2-10-84	Burnt Bluff	From 0 To 8216	1184.8	1183.3
	WELL COMPLETED	PRODUCING FORMATION(S)	FT. DRLD. – CABLE TOOLS	R.T.	Grd.
			From _____ To _____		1168.9

CASING, CASING LINERS AND CEMENTING

SIZE	WHERE SET	CEMENT	Ft. Pulled
20"	72'	Drill Pipe	---
11 3/4"	912'	580 Sx	---
9 5/8"	5494'	1250 Sx	---

PERFORATIONS

DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN YES	OPEN NO

GROSS PAY INTERVALS

FORMATION	OIL OR GAS	FROM	TO

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X) Samples	Odor	Gas	Mud Line	Gas Log	Fill Up
Sunbury	Gas	2650					XX	
Antrim	Gas	3150					XX	
Burnt Bluff	Gas	8159					XX	

STIMULATION BY ACID OR FRACTURING

DATE	Interval Treated	Materials and amount used

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

FORMATION	F.U.	L.C.	DEPTH	AMOUNT

MECHANICAL LOGS, LIST EACH TYPE RUN

DEPTH CORRECTION

DEVIATION SURVEY

PLUGGED BACK

Brand	(X)	LOG TYPES	LOGGED INTERVALS	DEPTH	CORRECTN	RUN AT	DEGREES	YES	NO	DEPTH
Schlumberger	XX	BHC Sonic	6610-8216			2545	1°			
Birdwell		DLL MLL	3300-5503			3500	½°			
OTHER			6610-8216			6666	3/4°			
OTHER		LDT CNL GR	200-8216			7537	½°			

PRODUCTION TEST DATA

OIL – Bbls/day	GRAVITY – °API	COND. Bbls/day	GAS – MCF/day	WATER – Bbls/day	H_2S – Grains/100 cu. ft.	B.H.P. AND DEPTH

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

DATE	NAME AND TITLE (PRINT)	SIGNATURE
3/19/84	William E. Booker, Geologist	William E Booker

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

R - 7210
Rev. 3/77

STATE OF MICHIGAN

REQUEST FOR TRANSFER OF A PERMIT APR 26 1988

SUBMIT 4 COPIES TO: Department of Natural Resources
Geological Survey Division
Box 30028
Lansing, Michigan 48909

Filing for change of ownership of well is required in accordance with ☒ Act 61, P.A. 1939 and ☐ Act 315 P.A. 1969, as amended, and Administrative Rules promulgated thereunder.

TYPE OR PRINT

PERMIT NO: 36336	WELL TYPE: Dry Hole
FIELD NAME: Hersey-Clinton	
WELL NAME AND NUMBER: Park 1-31	
WELL LOCATION: NE 1/4 NW 1/4 SW 1/4 SECTION 31 T 17N R 8W	
TOWNSHIP: Evart	COUNTY: Osceola

TRANSFER OF A PERMIT FROM:

NAME(S) OF SELLING OWNER(S): PPG Oil & Gas Co., Inc.

ADDRESS: Number and Street — City or Town — State — Zip Code — Telephone: One Jackson Square, Suite 600, Jackson, MI 49201 (517) 782-8145

All operating rights are discharged by:

Owner(s)	Representative(s)	Signature(s)	Date(s)
PPG Oil & Gas Co., Inc.,	Richard M. Rompala	RMRompala	3/31/88

ELIGIBILITY FOR PERMITS IS CONDITIONED UPON COMPLIANCE WITH THE STATUTES, RULES AND ORDERS OF THE DEPARTMENT OF NATURAL RESOURCES. PERMITS WILL NOT BE GRANTED TO PERSONS NOT IN COMPLIANCE.

NON-SUBMISSION AND/OR FALSIFICATION OF THIS INFORMATION MAY RESULT IN FINES AND/OR IMPRISONMENT.

TRANSFER OF A PERMIT TO:

NAME(S) OF ACQUIRING OWNER(S): Marathon Oil Company

ADDRESS: Number and Street — City or Town — State — Zip Code — Telephone: One Jackson Square, Suite 600, Jackson, MI 49201 (517) 782-8145

(We) (I) have acquired the well under this permit and assume full responsibility for the drilling, operation, and abandonment in conformity with the law, regulations and orders.

SURETY BOND: ☐ SINGLE WELL ☐ ATTACHED ☒ BLANKET ☒ ON FILE

BONDING CO. SAFECO Insurance Company of America

BOND NUMBER 5194219

All operating rights and responsibilities are assumed by

Owner(s)	Representative(s)	Signature(s)	Date(s)
Marathon Oil Company,	Donald R. Hall	Donald R Hall	3/28/88

FOR DEPARTMENT OF NATURAL RESOURCES USE ONLY

APPROVED [signature] Signature 6/28/88 Date

DISTRIBUTION BY DNR
☒ Lansing
☐ Acquiring Owner
☐ Selling Owner
☐ Field

PR 7200 7
Rev. 4/87

Latest

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

PERMIT TO PLUG AND ABANDON

NR DISTRIBUTION
- mittee -- Orig & 1 copy
- vision Office -- 2 copies
- eld Office -- File copy
- hers -- On request

PERMIT NUMBER 36336

FIELD NAME Hersey

ME AND ADDRESS OF PERMITTEE
PPG

ASE NAME AND WELL NO.
Park #1-31

FEB 17 1984

CATION (¼ ¼ ¼ or other) | SECTION | TOWNSHIP | COUNTY
NE NW SW, | 31 T 17N R 8W | Evart | Osceola

PE OF WELL (Oil, Gas, Dry Hole, etc.)	DATE COMPLETED	DATE PLUGGING WILL START	PLUGGING PERMIT REQUESTED BY & DATE
Dry hole	2/9/84	2/10/84	W. Booker 2/10/84

ST PRODUCTION
PD BWPD MCFGPD DATE

PLUGGING TO BE DONE BY
Provins #12

RMIT MAILED TO

COPIES MAILED TO

CASING AND CEMENTING RECORD

HOLE DIA.	CASING DIA. & WT./FT.	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP	PERFORATIONS
	20"	72'			
	113/4"	912'	580 sx	surf	
	85/8"	5494'	1250 sx	"	

GEOLOGIC DATA; GAS AND OIL SHOWS; DRILLING AND COMPLETION DATA:

CONFIDENTIAL.

PLUGGING REQUIREMENTS*

Plugging requirements outlined are to be executed in accordance with the provisions of Act 61, P.A. 1939, as amended, and rules and orders adopted thereunder.

Spot Cl A cmt 8216-7900';
spot lite cmt. 7900-7600';
spot Cl A cmt 7600-7300';
spot lite cmt 7300-5500';
spot Cl A cmt 5500-5200';
spot lite cmt. 5200-surface.

NOTE: BONDS CANNOT BE RELEASED UNTIL A PLUGGING IS COMPLETED, CELLAR RAT HOLE AND PITS FILLED, WELL SITE RESTORED AND RECORDS FILED. WATER WELLS MUST BE PLUGGED ACCORDING TO RULE 186 OF ACT 294 P.A. 1965, "GROUND WATER QUALITY CONTROL". It is further made a requirement of this permit that the applicant give notice to the public utilities in accordance with Act 53, P.A. 1974 C.L. 460.701 to 460.718 and comply with each of the requirements of the act.

THORIZED BY (signature)	OFFICE	DATE
Michael J. Moss	Cadillac D#6	2/13/84

TE: WELL PLUGGING RECORD Form R-7213 to be filed in TRIPLICATE within 30 days after completion.

R-7229
Rev. 11/77

This document paid for with State funds

DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

WELL PLUGGING RECORD

(Submit in TRIPLICATE Within 30 Days After Plugging is Completed)

SEP 06 1984

CADILLAC HAS COPY

PERMIT NUMBER: 36336

FIELD NAME:

COMPLETE NAME(S) AND ADDRESS OF WELL OWNER
PPG Oil & Gas Co., Inc., 2258 Enterprise Drive, Mt. Pleasant, MI 48858

COMPLETE LEASE OR FARM NAME(S): Park

WELL NUMBER: 1-31

WELL LOCATION: NE ¼ NW ¼ SW ¼ SEC. 31 T. 17N R. 8W

TOWNSHIP: Evart

COUNTY: Osceola

TYPE OF WELL (Oil, Gas, Dry Hole, etc.): Dry Hole

TOTAL DEPTH: 8216

FORMATION: Burnt Bluff

DATE PLUGGING STARTED: 2-11-84

DATE PLUGGING COMPLETED: 2-12-84

DEPT. REPRESENTATIVE(S) WHO ISSUED PERMIT OR WITNESSED PLUGGING: Mike Moss

CASING RECORD

SIZE CASING	DEPTH SET	AMOUNT RECOVERED	SHOT OR RIPPED
20"	72'	----------	----------
11 3/4"	912'	----------	----------
8 5/8"	5494	----------	----------

BRIDGES OR PLUGS

TYPE (Brush, Stone, Cement, Mechanical, etc.)	DEPTH PLACED	SACKS OF CEMENT AND ADDITIVES
Cement	8216	90 Sx
Cement	7900	51 Sx
Cement	7600	85 Sx
Cement	7300	309 Sx
Cement	5500	87 Sx
Cement	5200	226 Sx
Cement	3900	226 Sx

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Halliburton

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Carl Cookingham

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Ran drill pipe to 8216 and spotted 90 sx, pulled drill pipe to 7900 and spotted 51 sx, pulled drill pipe to 7600 and spotted 85 sx, pulled drill pipe to 7300 and spotted 309 sx, pulled drill pipe to 5500 and spotted 87 sx, pulled drill pipe to 5200 and spotted 226 sx pulled drill pipe to 3900 and spotted 226 sx. Cut and capped.

(USE REVERSE SIDE IF NEEDED)

CERTIFICATION

"I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge."

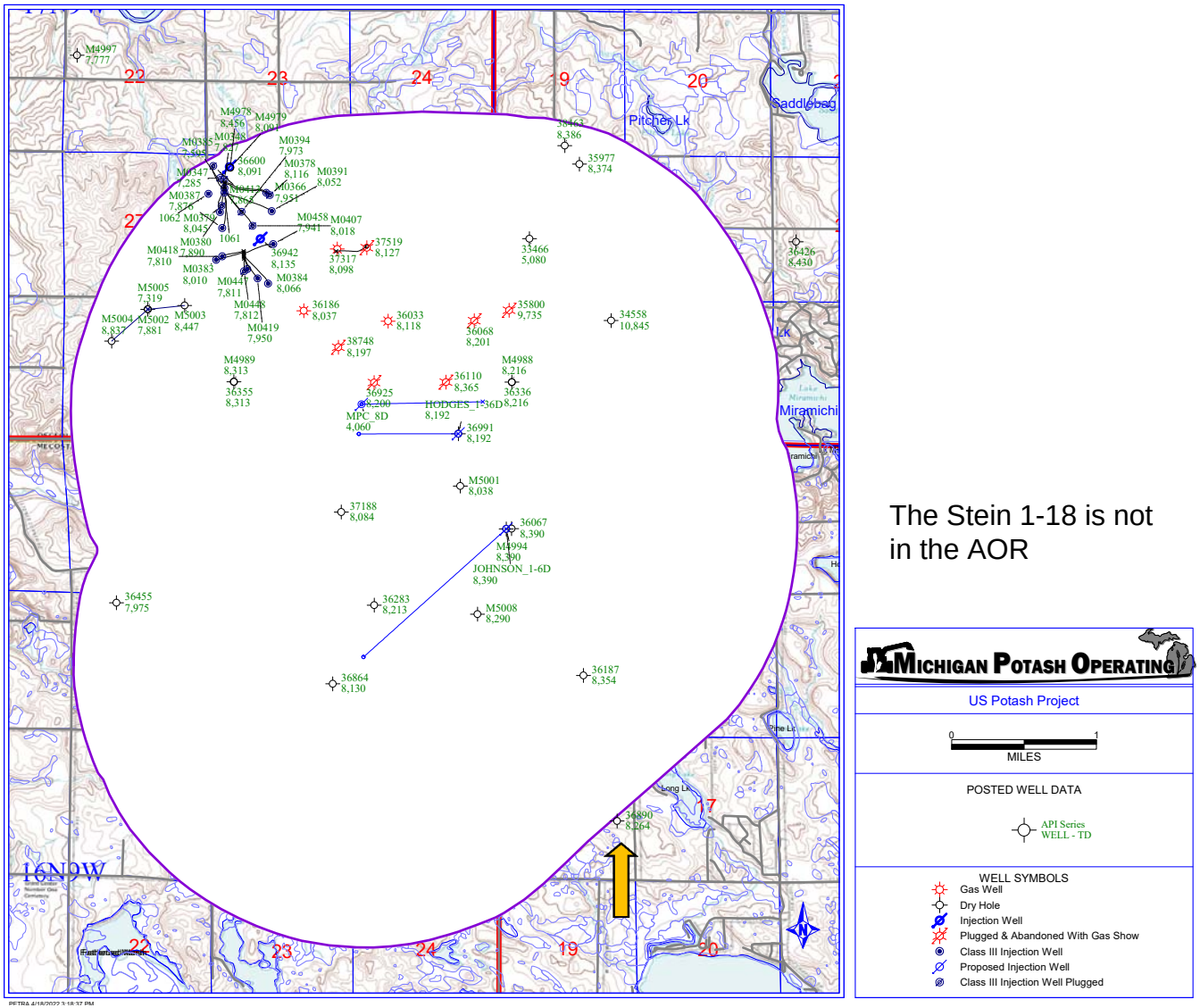
NAME AND TITLE (Typed or Printed): William E. Booker, Geologist

SIGNATURE: William E Booker

DATE (Month, Day, Year): 3-19-84

COMPANY NAME AND ADDRESS:
STRICKLER GEOLOGICAL SERVICES, INC.
1425 S. Mission
Mt. Pleasant, MI 48858

R 7213
Rev. 4/7



The Stein 1-18 is not in the AOR

MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

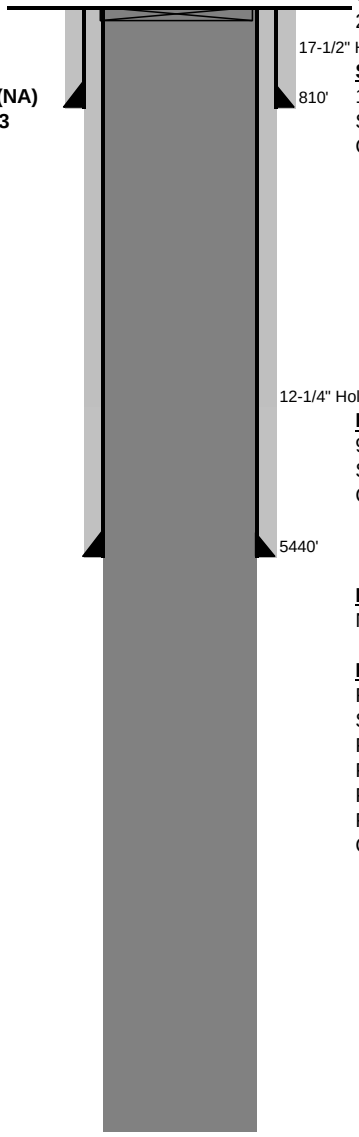
Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

STEIN 1-18

NE NE SE Sec 18 T16N R8W
MECOSTA COUNTY, MI

CURRENT WELLBORE DIAGRAM

API No. 21-107-36890-0000
GL @ 1148.6'
KB @ 1158.2'
WELL COMPLETION DATE: DRY HOLE (NA)
PLUGGING COMPLETION DATE: 8/27/83



UPDATED APRIL 2014 BY JLT

20" CONDUCTOR DRIVEN TO 62'

SURFACE CASING
13 3/8", 48#/ft
SET @ 810' KB
CMT w/700 SX TO SURFACE

INTERMEDIATE CASING
9 5/8", 40#/ft
SET @ 5440' KB
CMT w/1165 SX TO SURFACE

PROD. CASING
NA

PLUGGING
RAN IN OPEN ENDED DRILL PIPE AND
SPOTTED 140 SX CLASS A FROM 8264'-7850'.
PULLED UP TO 7850' AND SPOTTED 440 SX Hlc TO 5650'
PULLED UP TO 5650' AND SPOTTED 140 SX CLASS A TO 5250'
PULLED UP TO 5250' AND SPOTTED 1040 SX Hlc TO 500'
PULLED UP TO 500' AND SPOTTED 180 SX CLASS A TO SURFACE
CUT AND CAPPED 3' BELOW GROUND

TD @ 8264' KB

STEIN 1-18 WELL HISTORY

DATE	DESCRIPTION
8/3/1983	SPUD.
8/25/1983	DRILLING COMPLETED. FORMATION AT TD CINCINNATIAN. 20" CONDUCTOR SET AT 62' 13 3/8" SET AT 810'; 700 SX 9 5/8" SET AT 5440'; 1165 SX
8/26/1983	PLUGGING START DATE RAN IN OPEN ENDED DRILL PIPE AND SPOTTED 140 SX CL A FROM 8264'-7850'; PULLED UP TO 7850' AND SPOTTED 440 SX Hlc TO 5650'; PULLED UP TO 5650' AND SPOTTED 140 SX CL A TO 5250'; PULLED UP TO 5250' AND SPOTEED 1040 SX Hlc TO 500'; PULLED UP TO 500' AND SPOTTED 180 SX CL A TO SURFACE; CUT AND CAPPED 3' BELOW GROUND.
8/27/1983	PLUGGING COMPLETED.

AP

NOV 23 1983

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61)

Submit in **DUPLICATE** Within 30 Days after Well Completion

PERMIT NUMBER: 36,890

DEEPENING PERMIT NUMBER:

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT:
PPG Oil & Gas, Inc.
2250 Enterprise Drive
Mt. Pleasant, MI 48858

NAME & ADDRESS OF DRILLING CONTRACTOR(S):
James Bigard Drilling Company
1315 South Mission Road
Mt. Pleasant, MT 48858

LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT: STEIN #1-18

DIRECTIONALLY DRILLED: YES ☐ NO ☒

SURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME
NE¼ NE¼ SE¼	18	16N	8W	Chippewa

FOOTAGES (North/South) 465 Ft. from north Line and (East/West) 635 Ft. from east Line of quarter section

COUNTY NAME: Mecosta

SUBSURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME

FOOTAGES (North/South) _____ Ft. from _____ Line and (East/West) _____ Ft. from _____ Line of quarter section

COUNTY NAME:

DATE

DRILLING BEGUN	TOTAL DEPTH OF WELL	TYPE WELL	ELEVATIONS	
8/3/83	Driller 8264 Log 8223	Dry Hole		
DRILLING COMPLETED: 8/25/83	FORMATION AT T.D.: Cincinnatian	FT. DRLD. — ROTARY TOOLS From 0 To 8264	K.B. 1158.2	R.F. 1156.9
WELL COMPLETED:	PRODUCING FORMATION(S): None	FT. DRLD. — CABLE TOOLS From _____ To _____	R.T.	Grd. 1148.6

CASING, CASING LINERS AND CEMENTING

SIZE	WHERE SET	CEMENT	Ft. Pulled
20"	62'	D.P.	
13-3/8"	810'	700 sx	-0-
9-5/8"	5440'	1165 sx	-0-

PERFORATIONS

DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN YES	OPEN NO
		None		

GROSS PAY INTERVALS

FORMATION	OIL OR GAS	FROM	TO
None			

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X) Samples	Odor	Pits	Mud Line	Gas Log	Fill Up
Sunbury	Gas						X	
Antrim	Gas						X	
Burnt Bluff	Gas	8160					X	

STIMULATION BY ACID OR FRACTURING

DATE	Interval Treated	Materials and amount used
	None	

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

FORMATION	F.U.	L.C.	DEPTH	AMOUNT
None				

MECHANICAL LOGS, LIST EACH TYPE RUN — DEPTH CORRECTION — DEVIATION SURVEY — PLUGGED BACK

	Brand	(X)	LOG TYPES	LOGGED INTERVALS	DEPTH	CORRECT'N	RUN AT	DEGREES	YES	NO	DEPTH
	Schlumberger	X	LDT-CNL-GR	5440-8264			1515	3/4			
	Birdwell		DLL-MLL	5440-8264			3500	1/2			
OTHER			Sonic	5440-8264			4600	3/4			
OTHER	Gearhardt	X	CNL-Density	800-5440			8240	1½			
			Sonic	800-5440							

PRODUCTION TEST DATA

OIL — Bbls/day	GRAVITY — °API	COND. Bbls/day	GAS — MCF/day	WATER — Bbls/day	H_2S — Grains/100 cu. ft.	B.H.P. AND DEPTH

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

DATE	NAME AND TITLE (PRINT)	SIGNATURE
8/29/83	William E. Booker, Geologist STRICKLER GEOLOGICAL SERVICES, INC.	William E. Booker

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

R - 7210
Rev. 3/77

FORMATION RECORD

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

ELEVATION USED:	GEOLOGIST NAME:	TOPS TAKEN FROM: ☐ DRILLERS LOG ☐ SAMPLE LOG ☐ ELECTRIC LOG

NOTE: IF WELL DIRECTIONALLY DRILLED, *ADD* TRUE VERTICAL DEPTH FORMATION TOPS WHERE APPROPRIATE.

FROM	TO	FORMATION (TYPE, COLOR, HARDNESS)
1410		Triple Gyp
1484		Brown Limestone
1592		Stray
1706		Marshall
1860		Coldwater Shale
2630		Sunbury
2744		Ellsworth
3117		Antrim
3280		Traverse Formation
3332		Traverse Limestone
3842		Bell Shale
3900		Dundee
3964		Reed City Anhydrite
3990		Reed City Dolomite
4124		Detroit River Anhydrite
4190		Detroit River Salt
4558		Base Detroit River Salt
4588		Sour Zone
4758		Massive Anhydrite
4951		Base of Anhydrite
5052		Black Lime
5128		Sylvania
5250		Bois Blanc
5370		Bass Island
5691		Salina G Unit
5702		F Unit
5747		F Salt
6302		E Unit
6429		D Salt
6468		C Shale
6562		B Salt
6940		A-2 Carbonate
7079		A-2 Evaporite
7443		A-1 Carbonate
7496		A-1 Evaporite
7856		Niagaran
7974		Manistique (Clinton)
8036		Burnt Bluff
8094		Cabot Head
8174		Manitoulin
8212		Cincinnatian

IF WELL WAS CORED, ATTACH CORE DESCRIPTION

DRILL STEM TEST DATA

No DST or cores

Final Acceptance

NOV 23 1983

LANSING HAS COPY

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

NOV 29 1983

WELL PLUGGING RECORD

OCT 02 1984

(Submit in TRIPLICATE Within 30 Days After Plugging is Completed)

Final approved to be issued 9-28-84

PERMIT NUMBER: 36,890

FIELD NAME:

COMPLETE NAME(S) AND ADDRESS OF WELL OWNER
PPG Oil & Gas, Inc., 2250 Enterprise Drive, Mt. Pleasant, MI 48858

COMPLETE LEASE OR FARM NAME(S): STEIN

WELL NUMBER: 1-18

WELL LOCATION: NE ¼ NE ¼ SE ¼ SEC. 18 T. 16N R. 8W

TOWNSHIP: Chippewa

COUNTY: Mecosta

TYPE OF WELL (Oil, Gas, Dry Hole, etc.): Dry hole

TOTAL DEPTH: 8264

FORMATION: Cincinnatian

DATE PLUGGING STARTED: 8/26/83

DATE PLUGGING COMPLETED: 8/27/83

DEPT. REPRESENTATIVE(S) WHO ISSUED PERMIT OR WITNESSED PLUGGING: Wayne Todd

CASING RECORD

SIZE CASING	DEPTH SET	AMOUNT RECOVERED	SHOT OR RIPPED
20"	62'	-0-	
13-3/8"	810'	-0-	
9-5/8"	5440'		

BRIDGES OR PLUGS

TYPE (Brush, Stone, Cement, Mechanical, etc.)	DEPTH PLACED	SACKS OF CEMENT AND ADDITIVES
Cement	8264	140 sx Cl A
"	7850	440 sx Hlc
"	5650	140 sx Cl A
"	5250	1040 sx Hlc
"	500	180 sx Cl A

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Halliburton

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Willy Masterson

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED: Ran in open ended drill pipe and spotted 140 sx from 8264-7850'; pulled up to 7850' and spotted 440 sx to 5650'; pulled up to 5650' and spotted 140 sx to 5250'; pulled up to 5250' and spotted 1040 sx to 500'; pulled up to 500' and spotted 180 sx to surface; cut and capped 3' below ground.

(USE REVERSE SIDE IF NEEDED)

CERTIFICATION

"I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge."

NAME AND TITLE (Typed or Printed): William E. Booker, Geologist

SIGNATURE: William E. Booker

DATE (Month, Day, Year): 8/29/83

COMPANY NAME AND ADDRESS:
STRICKLER GEOLOGICAL SERVICES, INC.
1425 South Mission Road
Mt. Pleasant, MI 48858

R 7213
Rev. 4/74

OPERATORS USE

Description of Detail (cont.) or Other Supplemental Data:

DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:

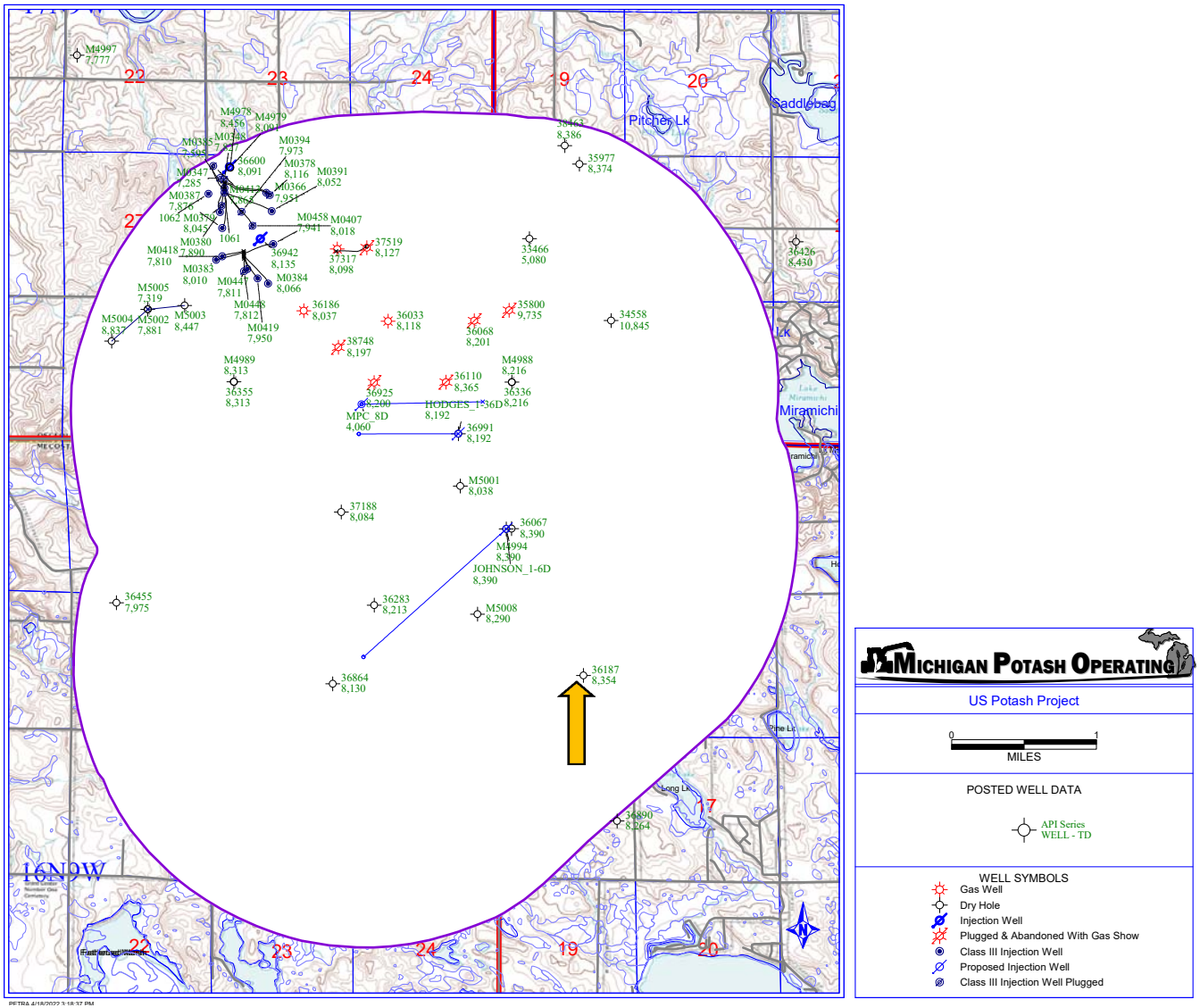
Location approved by Skipper 7/23/84 Clean & recontoured.

GEOLOGICAL SURVEY

NOV 23 1983

Regulatory Control Unit

FINAL INSPECTIONS BY DEPARTMENT REPRESENTATIVES		
SIGNATURE	DIVISION	DATE
James L. Skippers	Geol. Survey	9/26/84



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

STEIN 1-7

NE NW SE Sec 7 T16N R8W
MECOSTA COUNTY, MI

CURRENT WELLBORE DIAGRAM

API No. 21-107-36187-0000
GL @ 1197.5'
KB @ 1214'
WELL COMPLETION DATE: DRY HOLE (NA)
PLUGGING COMPLETION DATE: 12/2/82



UPDATED APRIL 2014 BY JLT

24" CONDUCTOR DRIVEN TO 59'

17-1/2" Hole expected

SURFACE CASING
13 3/8", 48#/ft
842'
SET @ 842' KB
CMT w/900 SX TO SURFACE

12-1/4" Hole expected

INTERMEDIATE CASING
9 5/8", 40#/ft
SET @ 5525' KB
CMT w/250 SX TO SURFACE

5525'

5400'

PROD. CASING
NA

RAN DRILL PIPE TO 8350', SPOTTED 460 SX POZ TO 5400',
CAME OUT, CUT AND PULLED 1500' OF 9-5/8".
RAN DRILL PIPE TO 5400' AND CEMENTED TO SURFACE
WITH 1635 SX CLASS A.

TD @ 8380' KB

STEIN 1-7 WELL HISTORY

DATE	DESCRIPTION
11/3/1982	SPUD.
11/30/1982	DRILLING COMPLETED. FORMATION AT TD CINCINNATIAN. 24" CONDUCTOR SET AT 59' 13 3/8" SET AT 842'; 900 SX 9 5/8" SET AT 5525'; 250 SX
12/1/1982	PLUGGING START DATE RAN DRILL PIPE TO 8350' AND SPOTTED 460 SX POZ TO 5400', CAME OUT AND PULLED 1500' OF 9-5/8". RAN DRILL PIPE TO 5400' AND CEMENTED TO SURFACE WITH 1635 SACKS CLASS A.
12/2/1982	PLUGGING COMPLETED.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

JAN 4 1983

LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61)

Submit in DUPLICATE within 30 Days after Well Completion

PERMIT NUMBER: 36187

DEEPENING PERMIT NUMBER:

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT
Willmet, Inc.
2250 Enterprise Drive
Mt. Pleasant, MI 48858

NAME & ADDRESS OF DRILLING CONTRACTOR(S)
T. D. Provins Drilling
2113 Enterprise Drive
Mt. Pleasant, MI 48858

LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT: Stein #1-7

DIRECTIONALLY DRILLED: YES ☐ NO ☒

SURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME
NE NW SE	7	16N	8W	Chippewa

FOOTAGES (North/South) 460 Ft. from North Line and (East/West) 854 Ft. from West Line of quarter section

COUNTY NAME: Mecosta

SUBSURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME

FOOTAGES (North/South) _____ Ft. from _____ Line and (East/West) _____ Ft. from _____ Line of quarter section

COUNTY NAME:

DATE

DRILLING BEGUN	TOTAL DEPTH OF WELL	TYPE WELL	ELEVATIONS	
11-3-82	Driller 8380 Log 8354	Dry Hole		
DRILLING COMPLETED: 11-30-82	FORMATION AT T.D.: Cincinnatian	FT. DRLD. – ROTARY TOOLS From 0 To 8380	K.B. 1214	R.F. 1212.6
WELL COMPLETED	PRODUCING FORMATION(S)	FT. DRLD. – CABLE TOOLS From _____ To _____	R.T.	Grd. 1197.5

CASING, CASING LINERS AND CEMENTING

SIZE	WHERE SET	CEMENT	Ft. Pulled
24"	59'		
13 3/8"	842'	900 Sx	
9 5/8"	5525'	250 Sx	1500

PERFORATIONS

DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN YES	OPEN NO
		None		

GROSS PAY INTERVALS

FORMATION	OIL OR GAS	FROM	TO
None			

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X) Samples	Odor	Pits	Mud Line	Gas Log.	Fill Up
Black Lime	Gas	5120					X	
E Unit	Gas	6668					X	
Strickler Zone	Gas	8170					X	

STIMULATION BY ACID OR FRACTURING

DATE	Interval Treated	Materials and amount used
	None	

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

FORMATION	F.U.	L.C.	DEPTH	AMOUNT
None				

MECHANICAL LOGS, LIST EACH TYPE RUN

DEPTH CORRECTION

DEVIATION SURVEY

PLUGGED BACK

Brand	(X)	LOG TYPES	LOGGED INTERVALS	DEPTH	CORRECT'N	RUN AT	DEGREES	YES	NO	DEPTH
Schlumberger	X	LDT-CNL-GR	100-8354	1926		1926	3/4°			
Birdwell		Sonic	100-8354							
OPEN HOLE		MLL-DLL	3400-8354							

PRODUCTION TEST DATA

OIL – Bbls/day	GRAVITY – °API	COND. Bbls/day	GAS – MCF/day	WATER – Bbls/day	H_2S – Grains/100 cu. ft.	B.H.P. AND DEPTH

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

DATE	NAME AND TITLE (PRINT)	SIGNATURE
12-29-82	William E. Booker, Geologist	William E Booker

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

R - 7210
Rev. 3/77

DEC 27 1982

DNR DISTRIBUTION
Permittee — Orig. & 1 copy
Division Office — 2 copies
Field Office — File copy
Others — On request

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

PERMIT TO PLUG AND ABANDON

PERMIT NUMBER [redacted]

FIELD NAME

NAME AND ADDRESS OF PERMITTEE
[redacted]

LEASE NAME AND WELL NO.
[redacted]

LOCATION (¼ ¼ ¼ or other)	SECTION	TOWNSHIP	COUNTY
[redacted]	[redacted]	[redacted]	[redacted]

TYPE OF WELL (Oil, Gas, Dry Hole, etc.)	DATE COMPLETED	DATE PLUGGING WILL START	PLUGGING PERMIT REQUESTED BY & DATE
[redacted]	[redacted]	[redacted]	[redacted]

LAST PRODUCTION				PLUGGING TO BE DONE BY
BOPD	BWPD	MCFGPD	DATE	[redacted]

PERMIT MAILED TO
[redacted]

COPIES MAILED TO [redacted]

CASING AND CEMENTING RECORD

HOLE DIA.	CASING DIA. & WT./FT.	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP.	PERFORATIONS
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

GEOLOGIC DATA; GAS AND OIL SHOWS; DRILLING AND COMPLETION DATA:

[redacted]

PLUGGING REQUIREMENTS*

Plugging requirements outlined are to be executed in accordance with the provisions of Act 61, P.A. 1939, as amended, and rules and orders adopted thereunder.

[redacted]

[redacted]

*NOTE: BONDS CANNOT BE RELEASED UNTIL A PLUGGING IS COMPLETED, CELLAR RAT HOLE AND PITS FILLED, WELL SITE RESTORED AND RECORDS FILED. WATER WELLS MUST BE PLUGGED ACCORDING TO RULE 186 OF ACT 294 P.A. 1965, "GROUND WATER QUALITY CONTROL". It is further made a requirement of this permit that the applicant give notice to the public utilities in accordance with Act 53, P.A. 1974 C.L. 460.701 to 460.718 and comply with each of the requirements of the act.

AUTHORIZED BY (signature)	OFFICE	DATE
James D. Skipper	[redacted]	[redacted]

NOTE: WELL PLUGGING RECORD Form R-7213 to be filed in TRIPLICATE within 30 days after completion.

R-7229
Rev. 11/77

To Lansing 8-8-84

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

JAN 4 1983

JAN 12 1983

LANSING HAS COPY

MT. PLEASANT HAS COPY

WELL PLUGGING RECORD

(Submit in TRIPLICATE Within 30 Days After Plugging is Completed)

AUG 0 9 1984

PERMIT NUMBER: 36187

FIELD NAME:

COMPLETE NAME(S) AND ADDRESS OF WELL OWNER: Willmet, Inc.

COMPLETE LEASE OR FARM NAME(S): Stein

WELL NUMBER: 1-7

WELL LOCATION: NE ¼ NW ¼ SE ¼ SEC. 7 T. 16N R. 8W

TOWNSHIP: Chippewa

COUNTY: Mecosta

TYPE OF WELL (Oil, Gas, Dry Hole, etc.): Dry Hole

TOTAL DEPTH: 8380

FORMATION: Cincinnatian

DATE PLUGGING STARTED: 12-1-82

DATE PLUGGING COMPLETED: 12-2-82

DEPT. REPRESENTATIVE(S) WHO ISSUED PERMIT OR WITNESSED PLUGGING: Jim Skipper

CASING RECORD

SIZE CASING	DEPTH SET	AMOUNT RECOVERED	SHOT OR RIPPED
24"	59'		
13 3/8"	842'	900 Sx	
9 5/8"	5525'	250 Sx	1500

BRIDGES OR PLUGS

TYPE (Brush, Stone, Cement, Mechanical, etc.)	DEPTH PLACED	SACKS OF CEMENT AND ADDITIVES
Cement	5400-8350	460 Sx POZ
Cement	0 -5400	1635 Sx Cl A

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Dowell

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Marvin Woods

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Ran drill pipe to 8350, spotted 460 sacks to 5400, came out, cut and pulled 1500' of 9 5/8". Ran drill pipe to 5400' and cemented to surface with 1635 sacks.

(USE REVERSE SIDE IF NEEDED)

CERTIFICATION

"I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge."

NAME AND TITLE (Typed or Printed): William E. Booker, Geologist

SIGNATURE: William E Booker

DATE (Month, Day, Year): 12-29-82

COMPANY NAME AND ADDRESS: Strickler Geological Services, Inc
1425 S. Mission
Mt. Pleasant, MI 48858

R 7213
Rev. 4/74

OPERATORS USE

Description of Detail (cont.) or Other Supplemental Data:

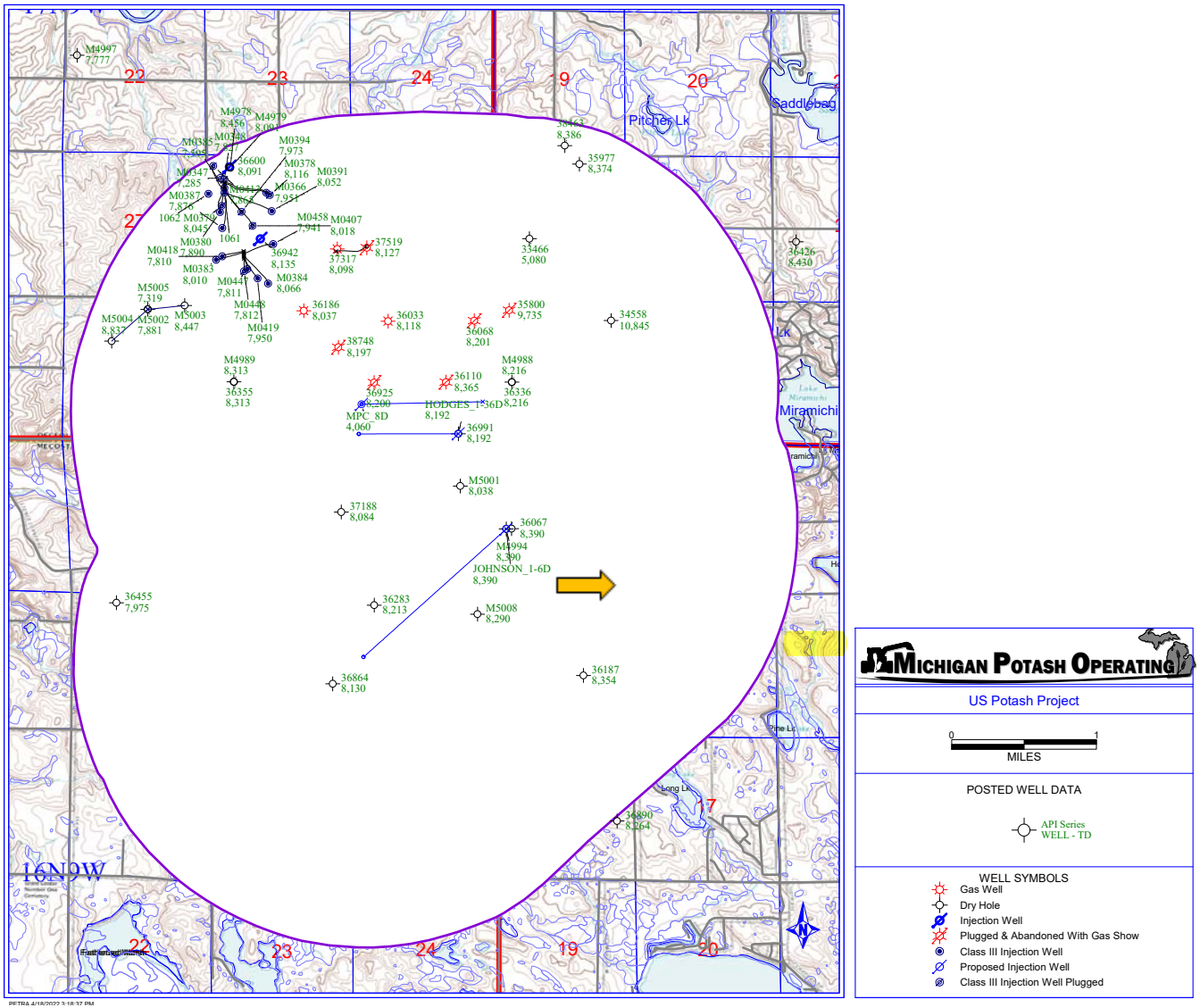
DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:

9/22/83 Clean, recontoured

FINAL INSPECTIONS BY DEPARTMENT REPRESENTATIVES

SIGNATURE	DIVISION	DATE
James G. Skippers	Geological Survey	8/1/84



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

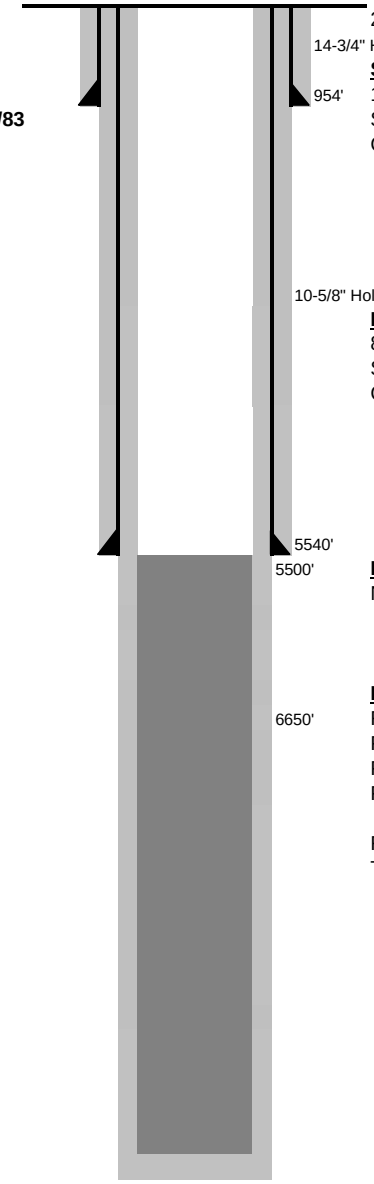
Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

STATE-HERSEY 2-35

NE NW SW Sec 35 T17N R9W
OSCEOLA COUNTY, MI

CURRENT WELLBORE DIAGRAM

API No. 21-133-36355-0000
GL @ 1213'
KB @ 1236'
WELL COMPLETION DATE: (NA)
PLUGGING COMPLETION DATE: 1/30/83



TD @ 8310' KB

UPDATED APRIL 2014 BY JLT

24" CONDUCTOR DRIVEN TO 72'

SURFACE CASING
11-3/4"; 48#/ft.
SET @ 954' KB
CMT w/500 SX TO SURFACE

INTERMEDIATE CASING
8-5/8"; 60#/ft.
SET @ 5540' KB
CMT w/ 1110 SX TO SURFACE

PROD. CASING
NA

PLUGGING
RAN DRILL PIPE TO 8310', SPOTTED 120 SX CMT
PULLED DP TO 7909', SPOTTED 120 SX
PULLED DP TO 6850', SPOTTED 60 SX
PULLED DP TO 6650', SPOTTED 145 SX

REMAINDER OF HOLE SAVED FOR POSSIBLE KICK OFF WELL
TOC ESTIMATED AT 5500'

STATE-HERSEY 2-35 WELL HISTORY

DATE	DESCRIPTION
1/2/1983	SPUD.
1/28/1983	DRILLING COMPLETED. FORMATION AT TD CINCINNATIAN. 24" CONDUCTOR DRIVEN TO 72' 11-3/4" SET AT 954'; 550 SX 8-5/8" SET AT 5540'; 1110 SX
1/29/1983	PLUGGING STARTED RAN DRILL PIPE TO 8310' AND SPOTTED 120 SX, PULLED DRILL PIPE TO 7909' AND SPOTTED 120 SX PULLED DRILL PIPE TO 6850' AND SPOTTED 60 SX PULLED DRILL PIPE TO 6650' AND SPOTTED 145 SX REMAINDER OF HOLE TO BE SAVED FOR POSSIBLE KICK OFF WELL
1/30/1983	PLUGGING COMPLETION DATE

FEB 2 5 1983

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61)

Submit in **DUPLICATE** Within 30 Days after Well Completion

PERMIT NUMBER: 36355

DEEPENING PERMIT NUMBER:

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT
Willmet, Inc., Rousek + Muskegon Dev.
2250 Enterprise Drive
Mt. Pleasant, MI 48858

NAME & ADDRESS OF DRILLING CONTRACTOR(S)
T. D. Provins Drilling Company
2113 Enterprise Drive
Mt. Pleasant, MI 48858

LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT: State-Hersey #2-35

DIRECTIONALLY DRILLED: YES ☐ NO ☒

SURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME
NE NW SW	35	17N	9W	Hersey

FOOTAGES (North/South) 460 Ft. from North Line and (East/West) 854 Ft. from West Line of quarter section

COUNTY NAME: Osceola

SUBSURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME

FOOTAGES (North/South) _____ Ft. from _____ Line and (East/West) _____ Ft. from _____ Line of quarter section

COUNTY NAME:

DATE

DRILLING BEGUN	TOTAL DEPTH OF WELL	TYPE WELL	ELEVATIONS	
1-2-83	Driller 8310 Log 8313	Temp. Aband.		
DRILLING COMPLETED: 1-28-83	FORMATION AT T.D.: Cincinnatian	FT. DRLD. – ROTARY TOOLS From 0 To 8310	K.B. 1236	R.F. 1235
WELL COMPLETED:	PRODUCING FORMATION(S): None	FT. DRLD. – CABLE TOOLS From _____ To _____	R.T.	Grd. 1213

CASING, CASING LINERS AND CEMENTING

SIZE	WHERE SET	CEMENT	Ft. Pulled
24"	72'	D.P.	
11 3/4"	954	550 Sx	
8 5/8"	5540	1110 Sx	

PERFORATIONS

DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN YES	OPEN NO
NONE				

GROSS PAY INTERVALS

FORMATION	OIL OR GAS	FROM	TO
NONE			

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X) Samples	Odor	Pits	Mud Line	Gas Log.	Fill Up
Trav. Lime	Gas	1700					X	
Reed City Do	Gas	4100					X	
Sour Zone	Gas	4700					X	

STIMULATION BY ACID OR FRACTURING

DATE	Interval Treated	Materials and amount used
NONE		

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

FORMATION	F.U.	L.C.	DEPTH	AMOUNT
NONE				

MECHANICAL LOGS, LIST EACH TYPE RUN

Brand	(X)	LOG TYPES	LOGGED INTERVALS
Schlumberger	XX	LDT-CNL-GR	200 - 8313
Birdwell		Sonic	200 - 8313
Dresser Atlas		DLL-MLL	3300 - 8313

DEPTH CORRECTION

DEPTH	CORRECT'N

DEVIATION SURVEY

RUN AT	DEGREES
2500	0°
5100	1°
6500°	0°
6900	3/4°

PLUGGED BACK

YES	NO	DEPTH

PRODUCTION TEST DATA

OIL – Bbls/day	GRAVITY – °API	COND. Bbls/day	GAS – MCF/day	WATER – Bbls/day	H_2S – Grains/100 cu. ft.	B.H.P. AND DEPTH

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

DATE	NAME AND TITLE (PRINT)	SIGNATURE
2-21-83	William E. Booker, Geologist	William Booker

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

R - 7210
Rev. 3/77

STATE OF MICHIGAN

REQUEST FOR TRANSFER OF A PERMIT

JUN 10 1988

SUBMIT 4 COPIES TO: Department of Natural Resources
Geological Survey Division
Box 30028
Lansing, Michigan 48909

Filing for change of ownership of well is required in accordance with ☒ Act 61, P.A. 1939 and ☐ Act 315 P.A. 1969, as amended, and Administrative Rules promulgated thereunder.

TYPE OR PRINT

PERMIT NO	WELL TYPE
36355	Dry Hole

FIELD NAME: Hersey-Clinton

WELL NAME AND NUMBER: St. Hersey 2-35

WELL LOCATION: NE 1/4 NW 1/4 SW 1/4 SECTION 35 T 17N R 9W

TOWNSHIP	COUNTY
Hersey	Osceola

TRANSFER OF A PERMIT FROM:

NAME(S) OF SELLING OWNER(S)
Adolph Rovsek, Muskegon Development Corp. & Willmet, Inc.

ADDRESS Number and Street — City or Town — State — Zip Code — Telephone
One Jackson Square, Suite 600, Jackson, MI 49201 (517) 782-8145

All operating rights are discharged by.

Owner(s)	Representative(s)	Signature(s)	Date(s)
Willmet, Inc., Richard M. Rompala		[signature]	3/31/88
Muskegon Development Corp.		[signature]	
Adolph Rovsek		[signature] Adolph Rovsek	

ELIGIBILITY FOR PERMITS IS CONDITIONED UPON COMPLIANCE WITH THE STATUTES, RULES AND ORDERS OF THE DEPARTMENT OF NATURAL RESOURCES. PERMITS WILL NOT BE GRANTED TO PERSONS NOT IN COMPLIANCE.

NON-SUBMISSION AND/OR FALSIFICATION OF THIS INFORMATION MAY RESULT IN FINES AND/OR IMPRISONMENT.

TRANSFER OF A PERMIT TO:

NAME(S) OF ACQUIRING OWNER(S)
Marathon Oil Company

ADDRESS Number and Street — City or Town — State — Zip Code — Telephone
One Jackson Square, Suite 600, Jackson, MI 49201 (517) 782-8145

(We) (I) have acquired the well under this permit and assume full responsibility for the drilling, operation, and abandonment in conformity with the law, regulations and orders.

SURETY BOND: ☐ SINGLE WELL ☐ ATTACHED ☒ BLANKET ☒ ON FILE

BONDING CO. SAFECO Insurance Company of America

BOND NUMBER 5194219

All operating rights and responsibilities are assumed by

Owner(s)	Representative(s)	Signature(s)	Date(s)
Marathon Oil Company, Donald R. Hall 2223		[signature]	March 28, 1988

FOR DEPARTMENT OF NATURAL RESOURCES USE ONLY

APPROVED [signature] 7/6/88
Signature Date

DISTRIBUTION BY DNR
- ☒ Lansing
- ☐ Acquiring Owner
- ☐ Selling Owner
- ☐ Field

PR 7200 7
Rev. 4/87

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

PERMIT TO PLUG AND ABANDON

MAR 16 1983

OUR DISTRIBUTION
Permittee — Orig & 1 copy
Division Office — 2 copies
Field Office — File copy
Others — On request

PERMIT NUMBER: 36355

FIELD NAME: Hersey

NAME AND ADDRESS OF PERMITTEE: Willmet

LEASE NAME AND WELL NO: State Hersey #2-35

LOCATION (¼ ¼ ¼ or other)	SECTION	TOWNSHIP	COUNTY
NE NW SW,	35 , 17N, 9W	Hersey	Osceola

TYPE OF WELL (Oil, Gas, Dry Hole, etc)	DATE COMPLETED	DATE PLUGGING IS TO START	PLUGGING PERMIT REQUESTED BY & DATE
Dry hole	1/28/83	1/29/83	M. Woods 1/28/83

LAST PRODUCTION — BOPD: — BWPD: — MCFGPD: — DATE:

PLUGGING TO BE DONE BY: Provins #9

PERMIT MAILED TO: Willmet

CASING AND CEMENTING RECORD

HOLE DIA	CASING DIA & WT/FT	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT TOP	PERFORATIONS
	16"	72			
	113/4"	954	550	surf	
	85/8"	5544	1100	70	

GEOLOGIC DATA; GAS AND OIL SHOWS; DRILLING AND COMPLETION DATA:

CONFIDENTIAL

PLUGGING REQUIREMENTS

Plugging requirements outlined are to be executed in accordance with the provisions of Act [illegible] and orders adopted thereunder.

PI AS PER MINERAL WELLS:

Spot 120 sx cmt. at 8310'; spot 120 sx cmt. at 7909'; spot 60 sx at 6850' (for possible KOP); spot 145 sx at 6650 (TOC 5500')
Remainder of hole to be saved for possible kick off well.

NOTE: BONDS CANNOT BE RELEASED UNTIL A PLUGGING IS COMPLETED, CELLAR, RAT HOLE AND PITS CLEEL, WELL SITE RESTORED AND RECORDS FILED. WATER WELLS MUST BE PLUGGED ACCORDING TO RULE 166 OF ACT 294 P.A. 1965. GROUND WATER QUALITY CONTROL: It is further made a requirement of this permit that the applicant give notice to the public utilities in accordance with Act 53, P.A. 1974, C.L. 460.701 to 460.718 and comply with each of the requirements of the act.

AUTHORIZED BY (signature)	OFFICE	DATE
Willard J. Kloh	Cadillac D#6	3/14/83

NOTE: WELL PLUGGING RECORD Form R-7213 to be filed in TRIPLICATE within 30 days after completion.

R-7229
Rev. 11/77

This document paid for with State funds

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

FEB 25 1983

LANSING HAS COPY
CADILLAC HAS COPY

WELL PLUGGING RECORD

(Submit in TRIPLICATE Within 30 Days After Plugging is Completed)

FEB 25 1983

PERMIT NUMBER 36355

FIELD NAME

MARATHON
~~A. Booker/Mark Dec. for Willmet Inc.~~

COMPLETE NAME(S) AND ADDRESS OF WELL OWNER
~~Willmet,~~ Inc., 2250 Enterprise Drive, Mt. Pleasant, MI 48858

COMPLETE LEASE OR FARM NAME(S): State-Hersey

WELL NUMBER: 2-35

WELL LOCATION: NE ¼ NW ¼ SW ¼ SEC. 35 T. 17N R. 9W

TOWNSHIP: Hersey

COUNTY: Osceola

TYPE OF WELL (Oil, Gas, Dry Hole, etc.): Dry Hole

TOTAL DEPTH: 8313

FORMATION: Cincinnatian

DATE PLUGGING STARTED: 1-29-83

DATE PLUGGING COMPLETED: 1-30-83

DEPT. REPRESENTATIVE(S) WHO ISSUED PERMIT OR WITNESSED PLUGGING: Snider

CASING RECORD

SIZE CASING	DEPTH SET	AMOUNT RECOVERED	SHOT OR RIPPED
24"	72'	---	
11 3/4"	954'	---	
8 5/8"	5540'	---	

BRIDGES OR PLUGS

TYPE (Brush, Stone, Cement, Mechanical, etc.)	DEPTH PLACED	SACKS OF CEMENT AND ADDITIVES
Cement	7909-8310	120 Sx
Cement	6850-7909	120 Sx
Cement	6650-6850	60 Sx
Cement	5500-6650	145 Sx

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Dowell

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Marvin Woods

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Ran drill pipe to 8310, spotted 120 sx, pulled drill pipe to 7909 and spotted 120 sx, pulled drill pipe to 6850 and spotted 60 sx, pulled drill pipe to 6650 and spotted 145 sx.

(USE REVERSE SIDE IF NEEDED)

CERTIFICATION

"I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge."

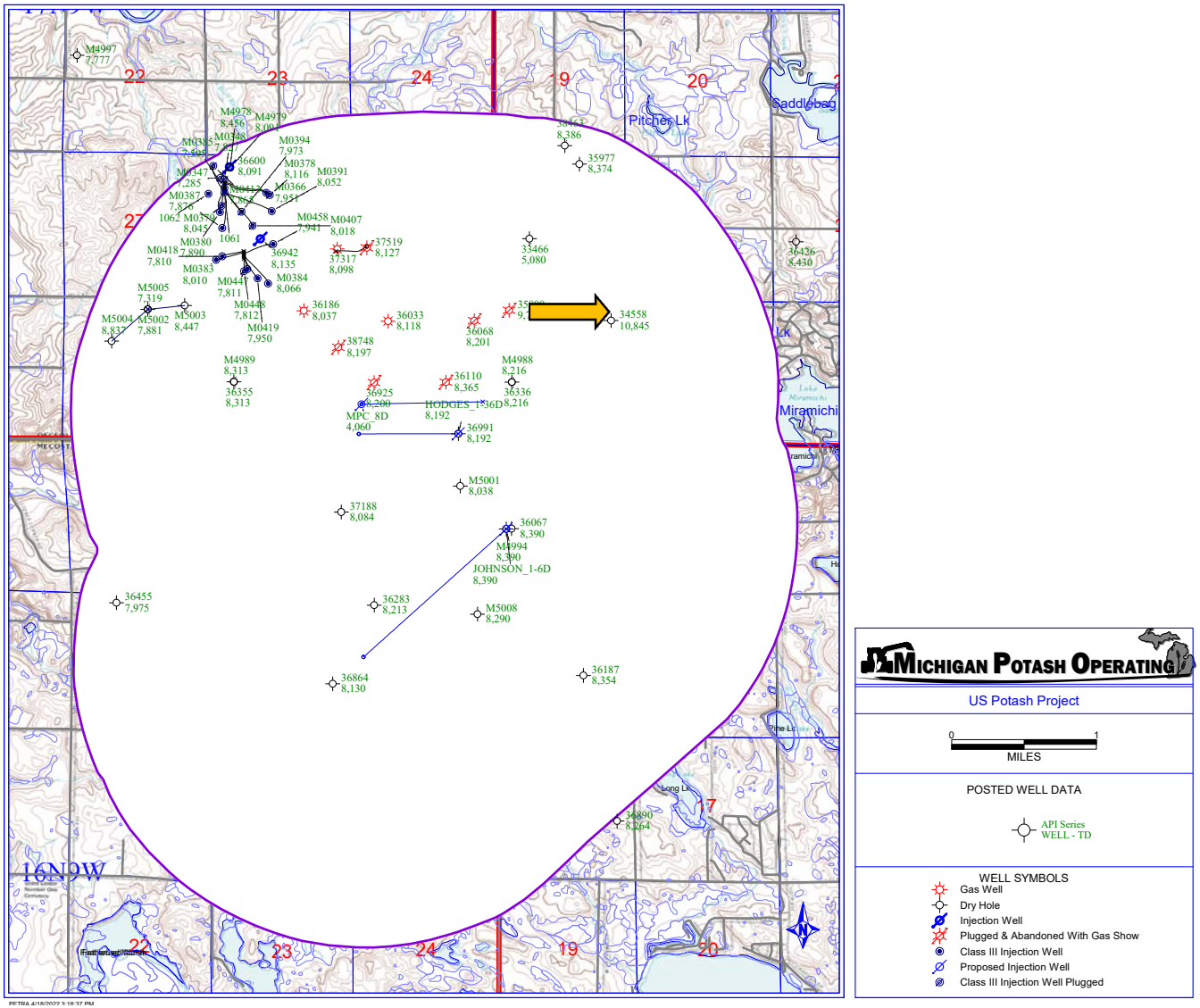
NAME AND TITLE (Typed or Printed): William E. Booker, Geologist

SIGNATURE: William Booker

DATE (Month, Day, Year): 2-21-83

COMPANY NAME AND ADDRESS: Strickler Geological Services, Inc.
1425 S. Mission
Mt. Pleasant, MI 48858

R 7213
Rev. 4/74



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

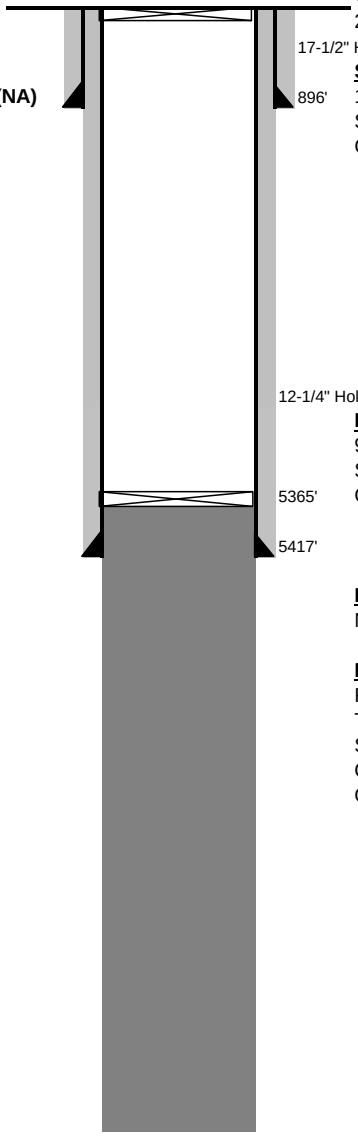
MICHIGAN POTASH OPERATING, LLC

THOMAS 1-26

NE NW NW Sec 26 T17N R9W
OSCEOLA COUNTY, MI

CURRENT WELLBORE DIAGRAM

API No. 21-133-336600-0000
GL @ 1121.6'
KB @ 1137.2'
WELL COMPLETION DATE: DRY HOLE (NA)
PLUGGING COMPLETION DATE: 1/8/84



UPDATED APRIL 2014 BY JLT

20" CONDUCTOR DRIVEN TO 68'

17-1/2" Hole expected

SURFACE CASING
13 3/8", 48#/ft
SET @ 896' KB
CMT w/700 SX TO SURFACE

12-1/4" Hole expected

INTERMEDIATE CASING
9 5/8", 40#/ft
SET @ 5417' KB
CMT w/1700 SX TO SURFACE

PROD. CASING
NA

PLUGGING
RAN IN OPEN ENDED TO 8085' AND SPOTTED 200 SX CLASS A, TRIPPED OUT AND RAN BACK IN WITH BAKER BP TO 5365' SET BRIDGE PLUG, TRIPPED OUT AND WELDED STEEL PLATE ON TOP. DIRECTIONALLY REDRILLED UNDER MW 020-841-367 ON 4/30/84

TD @ 8085' KB

THOMAS 1-26 WELL HISTORY

DATE	DESCRIPTION
3/12/1983	SPUD.
1/6/1984	DRILLING COMPLETED. FORMATION AT TD CABOT HEAD. 20" CONDUCTOR SET AT 68' 13 3/8" SET AT 896'; 700 SX 9 5/8" SET AT 5417'; 1700 SX
1/7/1984	PLUGGING START DATE RAN IN OPEN ENDED TO 8085' AND SPOTTED 200 SX CLASS A, TRIPPED OUT AND RAN BACK IN WITH BAKER BRIDGE PLUT TO 5365' - SET BRIDGE PLUG, TRIPPED OUT AND WELDED STEEL PLATE ON TOP. DIRECTIONALLY REDRILLED UNDER MW 020-841-367 ON 4-30-84.
1/8/1984	PLUGGING COMPLETED.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

FEB 17 1984

LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61)

Submit in **DUPLICATE** Within 30 Days after Well Completion

PERMIT NUMBER	DEEPENING PERMIT NUMBER
36600	

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT	NAME & ADDRESS OF DRILLING CONTRACTOR(S)
PPG Oil & Gas Co., Inc. 2258 Enterprise Drive Mt. Pleasant, MI 48858	T. D. Provins Drilling Company 2113 Enterprise Drive Mt. Pleasant, MI 48858

LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT: Thomas #1-26

DIRECTIONALLY DRILLED: YES ☐ NO XX

SURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME
NE NW NW	26	17N	9W	Hersey

FOOTAGES: 460 Ft. from North (North/South) Line and 864 Ft. from West (East/West) Line of quarter section

COUNTY NAME: Osceola

SUBSURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME

FOOTAGES: _____ Ft. from _____ (North/South) Line and _____ Ft. from _____ (East/West) Line of quarter section

COUNTY NAME:

DATE	DRILLING BEGUN	TOTAL DEPTH OF WELL	TYPE WELL	ELEVATIONS	
	3-12-83	Driller 8085 Log 8091	Temp. Abandoned		
	DRILLING COMPLETED	FORMATION AT T.D.	FT. DRLD. – ROTARY TOOLS	K.B.	R.F.
	1-06-84	Cabot Head	From 0 To 8091	1137.2	1135.8
	WELL COMPLETED	PRODUCING FORMATION(S)	FT. DRLD. – CABLE TOOLS	R.T.	Grd.
			From _____ To _____		1121.6

CASING, CASING LINERS AND CEMENTING

SIZE	WHERE SET	CEMENT	Ft. Pulled
20"	68	DP	
13 3/8	896	700 sx	
9 5/8	5417	1700 sx	

PERFORATIONS

DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN YES	OPEN NO

GROSS PAY INTERVALS

FORMATION	OIL OR GAS	FROM	TO
None			

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X) Samples	Odor	Pits	Mud Line	Gas Log	Fill Up
Antrim	Gas	3050					XX	
Trav. Lm	Gas	3596					XX	
Burnt Bluff	Gas	7982					XX	

STIMULATION BY ACID OR FRACTURING

DATE	Interval Treated	Materials and amount used
	None	

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

FORMATION	F.U.	L.C.	DEPTH	AMOUNT
None				

MECHANICAL LOGS, LIST EACH TYPE RUN

	Brand	(X)	LOG TYPES	LOGGED INTERVALS
	Schlumberger	XX	LDT-CNL-GR	100 - 8091
	Birdwell		Sonic	897 - 8091
OTHER			DLL-MLL	3200 - 5405
OTHER				5420 - 8076

DEPTH CORRECTION

DEPTH	CORRECTN

DEVIATION SURVEY

RUN AT	DEGREES
1500	3/4°
3700	3/4°
5093	1/4°
7816	2½°

PLUGGED BACK

YES	NO	DEPTH

PRODUCTION TEST DATA

OIL – Bbls/day	GRAVITY – °API	COND. Bbls/day	GAS – MCF/day	WATER – Bbls/day	H_2S – Grains/100 cu. ft.	B.H.P. AND DEPTH
------	------	------	------	------	------	------

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

DATE	NAME AND TITLE (PRINT)	SIGNATURE
2/15/84	William E. Booker, Geologist	William E Booker

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

R - 7210
Rev. 3/77

DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

Redrill

WELL PLUGGING RECORD

(Submit in TRIPLICATE Within 30 Days After Plugging is Completed)

AUG 05 1985

Regulatory Control Unit

PERMIT NUMBER: 36600

FIELD NAME:

COMPLETE NAME(S) AND ADDRESS OF WELL OWNER

PPG Oil & Gas Co., Inc., 2258 Enterprise Drive, Mt. Pleasant, MI 48858

COMPLETE LEASE OR FARM NAME(S): Thomas

WELL NUMBER: 1-36

WELL LOCATION: NE ¼ NW ¼ NW ¼ SEC. 26 T. 17N R. 9W

TOWNSHIP: Hersey

COUNTY: Osceola

TYPE OF WELL (Oil, Gas, Dry Hole, etc.): Temporarily Abandoned

TOTAL DEPTH: 8091

FORMATION: Cabot Head

DATE PLUGGING STARTED: 1-7-84

DATE PLUGGING COMPLETED: 1-8-84

DEPT. REPRESENTATIVE(S) WHO ISSUED PERMIT OR WITNESSED PLUGGING: Moss

CASING RECORD

SIZE CASING	DEPTH SET	AMOUNT RECOVERED	SHOT OR RIPPED
20"	68	----	----
13 3/8"	898	----	----
9 5/8"	5417	----	----

BRIDGES OR PLUGS

TYPE (Brush, Stone, Cement, Mechanical, etc.)	DEPTH PLACED	SACKS OF CEMENT AND ADDITIVES
Cement	8085	200 sx Cl A
Baker Bridge Plug	5365	----

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Halliburton

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Carl Cookingham

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Ran in open ended to 8085 and spotted 200 sx Class A, tripped out and ran back in with Baker bridge plug to 5365 - set bridge plug, tripped out and welded steel plate on top. Directionally redrilled under MW 020-841-367 on 4-30-84.

(USE REVERSE SIDE IF NEEDED)

CERTIFICATION

"I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and d ion, and that the facts stated herein are true, correct and complete to the best of my knowledge."

NAME AND TITLE (Typed or Printed): William E. Booker, Geologist

SIGNATURE: William E Booker

DATE (Month, Day, Year): 2/15/84

COMPANY NAME AND ADDRESS: Strickler Geological Services, In
1425 S. Mission
Mt. Pleasant, MI 48858

R 7

7/29/85: Location re-drilled under MW020-841-367.
OK for GS approval. (SNIDER)

John R. Snider Geology 7/29/85

GEOLOGICAL SURVEY

REVISED - LANSING

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

PERMIT TO PLUG AND ABANDON

AUG 05 1985

Regulatory Compliance Unit

DNR DISTRIBUTION
Permittee — Orig. & 1 copy
Division Office — 2 copies
Field Office — File copy
Others — On request

PERMIT NUMBER: 36600

FIELD NAME: Hersey

NAME AND ADDRESS OF PERMITTEE
PPG Oil & Gas Co., Inc.

LEASE NAME AND WELL NO.
Thomas #1-25

LOCATION (¼ ¼ ¼ or other)	SECTION	TOWNSHIP	COUNTY
NE NW NW,	26 T17N R 9W	Hersey	Osceola

TYPE OF WELL (Oil, Gas, Dry Hole, etc.)	DATE COMPLETED	DATE PLUGGING WILL START	PLUGGING PERMIT REQUESTED BY & DATE
Dry hole	1/7/84	1/7/84	Don Smith 1/7/84

LAST PRODUCTION				PLUGGING TO BE DONE BY
BOPD	BWPD	MCFGPD	DATE	Halliburton

PERMIT MAILED TO

COPIES MAILED TO

CASING AND CEMENTING RECORD

HOLE DIA.	CASING DIA. & WT./FT.	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP	PERFORATIONS
	20"	68'			
	13-3/8"	898'			
	9-5/8"	5417'			

GEOLOGIC DATA; GAS AND OIL SHOWS; DRILLING AND COMPLETION DATA:

C O N F I D E N T I A L

PLUGGING REQUIREMENTS*

Plugging requirements outlined are to be executed in accordance with the provisions of Act 61, P.A. 1939, as amended, and rules and orders adopted thereunder.

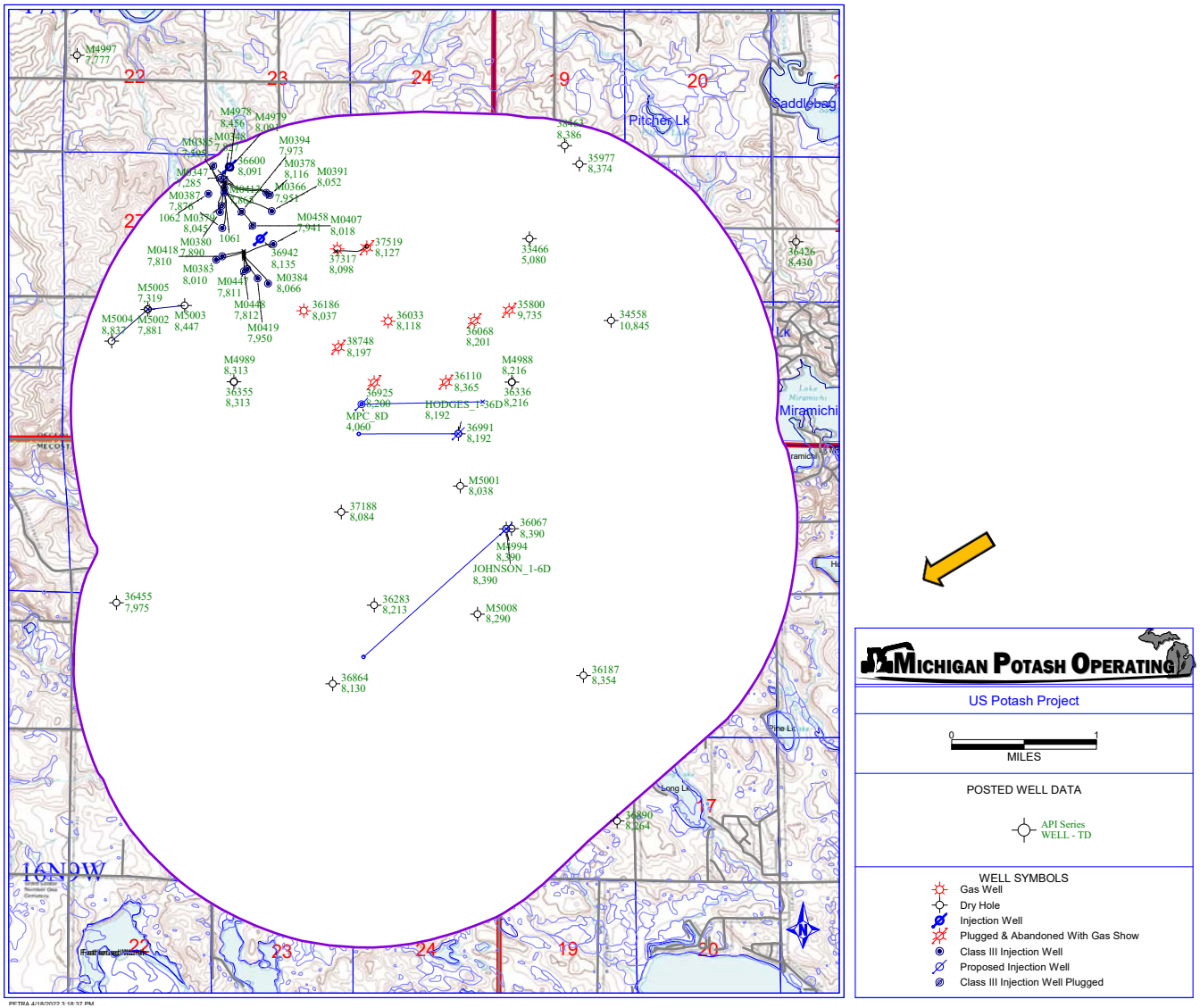
RIH. Spot 200 sx Cl A cmt. 8085'; set Baker BP at 5365';
remainder of hole used for directional redrill under MW020-841-367.

*NOTE: BONDS CANNOT BE RELEASED UNTIL A PLUGGING IS COMPLETED, CELLAR RAT HOLE AND PITS FILLED, WELL SITE RESTORED AND RECORDS FILED. WATER WELLS MUST BE PLUGGED ACCORDING TO RULE 166 OF ACT 294 P.A. 1965, "GROUND WATER QUALITY CONTROL". It is further made a requirement of this permit that the applicant give notice to the public utilities in accordance with Act 53, P.A. 1974 C.L. 460.701 to 460.718 and comply with each of the requirements of the act.

AUTHORIZED BY (signature)	OFFICE	DATE
John W. Snyder	Cadillac D#6	7/26/85

NOTE: WELL PLUGGING RECORD Form R-7213 to be filed in TRIPLICATE within 30 days after completion.

R-7220
Rev. 11/77



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

MICHIGAN POTASH OPERATING, LLC

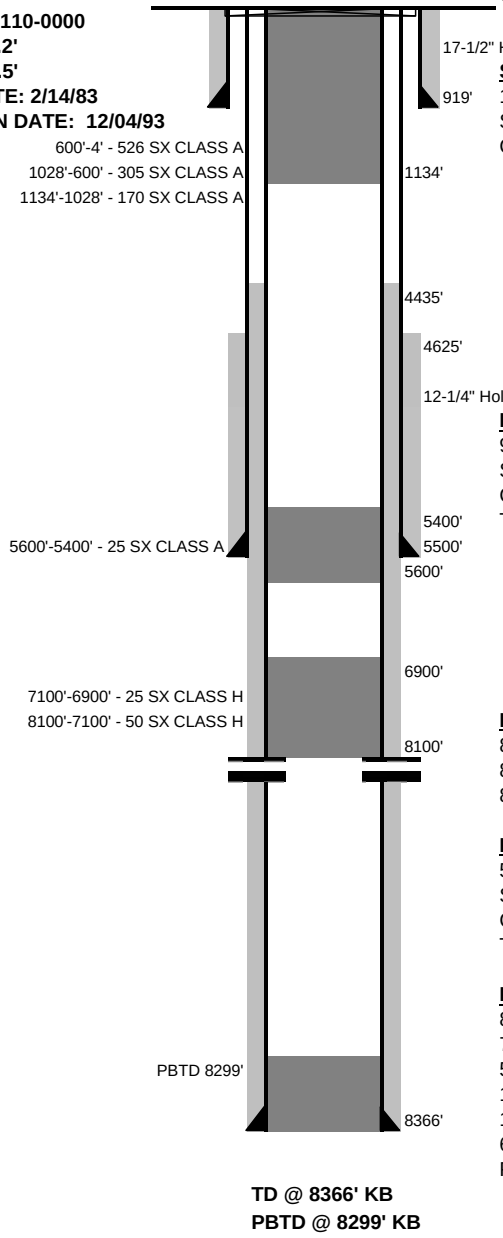
THOMPSON 3-36

NE NW SE Sec 36 T17N R9W
OSCEOLA COUNTY, MI

CURRENT WELLBORE DIAGRAM

UPDATED APRIL 2014 BY JLT

API No. 21-133-36110-0000
GL @ 1177.2'
KB @ 1200.5'
WELL COMPLETION DATE: 2/14/83
PLUGGING COMPLETION DATE: 12/04/93



TD @ 8366' KB
PBTD @ 8299' KB

SURFACE CASING
13 3/8", 48#/ft
SET @ 919' KB
CMT w/700 SX POZ MIX + 200 SX CLASS ATO SURFACE

INTERMEDIATE CASING
9 5/8", 43.5#/ft
SET @ 5500' KB
CMT w/300 SX SPECIAL
TOC @ 4625'

BURNT BLUFF PERFORATIONS
8141'-8144' - 13 HOLES
8142'-8152' 2X/ft - SQUEEZED w/25 SX CLASS A
8159'-8162' 2X/ft - SQUEEZED w/25 SX CLASS A

PROD. CASING
5-1/2", 17#/ft
SET @ 8366' KB
CMT w/1050 SX POZ MIX + 150 SX SPECIAL 11
TOC @ 4435'

PLUGGING
8100'-7100' - 50 SX CLASS H
7100'-6900' - 25 SX CLASS H
5600'-5400' - 25 SX CLASS A
1134'-1028' - 170 SX CLASS A
1028'-600' - 305 SX CLASS A
600'-4' - 526 SX CLASS A
PULLED 4' 13-3/8" csg, 3997.45' 9-5/8" csg, 4043' 5-1/2" csg

THOMPSON 3-36 WELL HISTORY

DATE	DESCRIPTION
9/25/1982	SPUD.
2/14/1983	DRILLING COMPLETED. FORMATION AT TD CINCINNATIAN. PRODUCING FORMATION CLINTON. 13 3/8" SET AT 919'; 900 SX 9 5/8" SET AT 5500'; 300 SX 5-1/2" SET AT 8366'; 1200 SX
4/22/1985	REWORK START DATE MIRU, KILL WELL, ND TREE, NU BOP's
4/23/1985	UNSEAT PACKER AND CIRC. HOLE CLEAN TO 8210'. TRIP OUT, LD PACKER, PU CEMENT RETAINER, TRIP IN TO 4000'
4/24/1985	SET RETAINER AT 8115', RUN INJECTION TEST, SQUEEZE PERS 8142-52' * 8159-62' WITH 25 SX CLASS A. TOOH, WOC.
4/25/1985	DRILL OUT SQUEEZE. CLEAN OUT HOLE TO 8299 (PBTD)
4/27/1985	SPOT ACID. PERF 8141-44' (13 HOLES). TIH TO 8095.
4/28/85 & 4/30/85	SWAB AND FLOW TEST; 3-400 MCF & 25 BBLS WATER;
5/1/1987	DATE LAST PRODUCED (21 MDF/D & 42 BWPD TEMPORARILY ABANDON WELL, SECURE WELLHEAD WITH CHAINS AND LOCK. DEPRESSURIZE SURFACE EQUIPMENT. EXTENSION GRANTED TO JUNE 13, 1989, FOR DECISION AS TO PLUG OR REQUEST TO HOLD AS TA FOR A BD WELL IN PERMISSION GIVEN TO TEMPORARILY ABANDON WELL TILL JUNE 13, 1991 FOR POSSIBLE RECOMPLETION AS A WATER DISPOSAL WELL.
11/8/1993	PLUGGING START DATE 8100'-7100' - 50 SX CLASS H 7100'-6900' - 25 SX CLASS H 5600'-5400' - 25 SX CLASS A 1134'-1028' - 170 SX CLASS A 1028'-600' - 305 SX CLASS A 600'-4' - 526 SX CLASS A; CUT 13-3/8" OFF 5' BELOW GROUND AND WELDED PLATE ON TOP PULLED 4' 13-3/8" csg, 3997.45' 9-5/8" csg, 4043' 5-1/2" csg
12/4/1993	PLUGGING COMPLETION DATE

FEB 2 2 1983

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61)

Submit in **DUPLICATE** Within 30 Days after Well Completion

PERMIT NUMBER: 36110

DEEPENING PERMIT NUMBER:

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT
Willmet, Inc.
2250 Enterprise Drive
Mt. Pleasant, MI 48858

NAME & ADDRESS OF DRILLING CONTRACTOR(S)
T. D. Provins Drilling Co.
2113 Enterprise Drive
Mt. Pleasant, MI 48858

LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT: Thompson #3-36

DIRECTIONALLY DRILLED: YES ☐ NO ☒

SURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME
NE NW SE	36	T17N	R9W	Hersey

FOOTAGES (North/South) 460 Ft. from North Line and (East/West) 850 Ft. from West Line of quarter section

COUNTY NAME: Osceola

SUBSURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME

FOOTAGES (North/South) _____ Ft. from _____ Line and (East/West) _____ Ft. from _____ Line of quarter section

COUNTY NAME:

DATE	DRILLING BEGUN	TOTAL DEPTH OF WELL	TYPE WELL	ELEVATIONS	
	9-25-82	Driller 8366 Log 8362	Gas		
	DRILLING COMPLETED: 10-31-82	FORMATION AT T.D.: Cincinnatian	FT. DRLD. – ROTARY TOOLS From 0 To 8362	K.B. 1200.5	R.F. 1199.2
	WELL COMPLETED: 2-14-83	PRODUCING FORMATION(S): Clinton	FT. DRLD. – CABLE TOOLS From _____ To _____	R.T.	Grd. 1177.2

CASING, CASING LINERS AND CEMENTING

SIZE	WHERE SET	CEMENT	Ft. Pulled
13 3/8	919'	900	
9 5/8	5500'	300	
5 1/2	8366'	1200	

PERFORATIONS

DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN YES	OPEN NO
1-5-83	2x/ft	8159 - 8162		XX
1-6-83	2x/ft	8142 - 8152	XX	

GROSS PAY INTERVALS

FORMATION	OIL OR GAS	FROM	TO
Clinton	Gas		

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X) Samples	Odor	Pits	Mud Line	Gas Log.	Fill Up
Traverse Lm	Gas	3420					X	
Reed City	Gas	4150					X	
Sour Zone	Gas	4700					X	

STIMULATION BY ACID OR FRACTURING

DATE	Interval Treated	Materials and amount used
1-6-83	8142-8152	Acid 500 Gals.

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

FORMATION	F.U.	L.C.	DEPTH	AMOUNT
None				

MECHANICAL LOGS, LIST EACH TYPE RUN

Brand	(X)	LOG TYPES	LOGGED INTERVALS
Schlumberger	X	LDT-CNL-GR	200-8362
Birdwell		DLL-MLL	3300-8362
OTHER		Sonic	200-8362

DEPTH CORRECTION

DEPTH	CORRECT'N

DEVIATION SURVEY

RUN AT	DEGREES
2700	1/2°
5100	3/4°
7461	1°
8340	1°

PLUGGED BACK

YES	NO	DEPTH
X		8247

PRODUCTION TEST DATA

Last Perf.

OIL – Bbls/day	GRAVITY – °API	COND. Bbls/day	GAS – MCF/day	WATER – Bbls/day	H_2S – Grains/100 cu. ft.	B.H.P. AND DEPTH	
----------	----------	Nil	3000	2	Nil	4659	8152

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

DATE	NAME AND TITLE (PRINT)	SIGNATURE
2-15-83	William E. Booker, Geologist	William Booker

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

R - 7210
Rev. 3/77

DEPARTMENT OF NATURAL RESOURCES
Geological Survey Division

REQUEST FOR CHANGE OF OWNERSHIP OF A PERMIT
(Submit all copies)

AUG 1 1983

Please Change:

Permit No. 36110 Type Well Oil & Gas Field Name Hersey-Clinton Pool

Owned by Willmet, Inc.

Address 2258 Enterprise Dr., Mt. Pleasant, MI 48858 (517) 773-3949
(street) (town) (state) (zip) (phone)

for Thompson No. 3-36 located in the NE ¼ NW ¼ SE ¼

section 36, T. 17N, R. 9W, Hersey Township, Osceola County,

to PPG Oil & Gas Co., Inc.
(acquiring owner-complete names please)

All operating rights are discharged by (us) (me).

(Owner)	*(Representative)*	*(Signature)*	*(Date)*
Willmet, Inc.		Donald R. Metzger	7-29-83

THE SUPERVISOR IS PROHIBITED BY STATUTE FROM ISSUING A PERMIT TO ANY PERSON WHO IS NOT IN COMPLIANCE WITH THE PROVISIONS OF THE ACT, THE RULES, OR THE ORDERS OF EITHER THE SUPERVISOR OR THE NATURAL RESOURCES COMMISSION. ELIGIBILITY FOR PERMITS IS CONDITIONED ON COMPLIANCE WITH SUCH RULES AND ORDERS IN A DILIGENT MANNER AND IN ACCORDANCE WITH ACCEPTED OIL FIELD PRACTICE.

(We) (I) have acquired the well under this permit and assume full responsibility for drilling, operation, and abandonment in conformity with the law, regulations and orders issued by the Supervisor of Wells. The bond(s) required is attached or already on file.

PPG Oil & Gas Co., Inc.
(acquiring owner-complete names please)

Address 2258 Enterprise Dr., Mt. Pleasant, MI 48858 (517) 773-3949
(street) (town) (state) (zip) (phone)

All operating rights and responsibilities are assumed by (us) (me).

(Owner)	*(Representative)*	*(Signature)*	*(Date)*
PPG Oil & Gas Co. Inc.		Donald R. Metzger	7-29-83

THE DEPARTMENT OF NATURAL RESOURCES

Approved. Stefan J. Lazarski AUG 9 1983
(Signature) *(Date)*

DNR USE ONLY
White, Lansing
Yellow, Acquiring Owner
Pink, Selling Owner
Blue, Field

R-7214 (Rev. 10-79)

LANSING HAS COPY

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
SUPERVISOR OF WELLS

WELL REWORK RECORD

GEOLOGICAL SURVEY
MAY 06 1985
Regulatory Control Unit

FILE IN DUPLICATE WITHIN 30 DAYS AFTER COMPLETION OF REWORK OR DEEPENING
(Replaces GS 38)

PERMIT NUMBER	DEEPENING PERMIT NUMBER	FIELD NAME
36110		Hersey

NAME AND ADDRESS OF WELL OWNER
PPG Oil & Gas Co., Inc., 2258 Enterprise Drive, Mt. Pleasant, Michigan 48858

LEASE OR FARM NAME	WELL NUMBER
Thompson	3-36

WELL LOCATION	SECTION		TOWNSHIP	COUNTY
NE NW SE	36	T. 17N R. 9W	Hersey	Osceola

WELL COMPLETED FOR (Oil, Gas, Gas Storage, Brine Disposal, Water Injection, etc.)	TOTAL DEPTH AFTER REWORK	MECHANICAL LOGS RUN
Gas	8366'	None
WELL COMPLETED IN (Name Rock Formation and Zone of Completion)	**DATE REWORK COMMENCED**	**DATE REWORK COMPLETED**
Clinton/Burnt Bluff	4-22-85	4-30-85

NAME AND ADDRESS OF CONTRACTOR
Lease Management, Mt. Pleasant and Halliburton, Mt. Pleasant

WELL CASING RECORD – BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture Treatment Record	Perforations If plugged, how?
Size	Depth	Sacks	Type	From	To		
13-3/8	919	900	Poz & A				
9-5/8	5500	300	Hall. Spec				
5-1/2	8366	1200	Poz & H				
2-7/8	7635	Packer		8142	8152	500 Gal. 1-7-83	
				8159	8162		

WELL CASING RECORD – AFTER REWORK (Indicate additions and changes only)

Casing		Cement		Perforations		Acid or Fracture Treatment Record	Perforations If plugged, how?
Size	Depth	Sacks	Type	From	To		
				8142	8152		Squeezed
				8159	8162		Squeezed
				8141	8144	500 Gal. 20% 4-27-85	

DESCRIBE REWORK OPERATIONS IN DETAIL

4/22/85 - MIRU, kill well, ND tree, NU BOP's.

4/23/85 - Unseat packer and circ. hole clean to 8210'. Trip out, LD packer, PU cement retainer, trip in to 4000'.

4/24/85 - Set retainer at 8115', run injection test, squeeze perfs 8142-52' & 8159-62' with 25 sxs Class A. TOOH, WOC.

4/25/85 - Drill out squeeze. Clean out hole to 8299' (PBTD).

4/27/85 - Spot acid. Perf 8141-44' (13 holes). TIH to 8095.

4-28-85 & 4/30/85 - Swab and flow test.

IMPORTANT! SEE REVERSE SIDE

R 7212
Rev. 10/72

GEOLOGICAL FORMATION RECORD OF DEEPENING

FROM	TO	FORMATION (type, color, hardness)	FROM	TO	FORMATION (type, color, hardness)
		SEE ORIGINAL 7210			

DAILY PRODUCTION TEST RECORD

Date	Barrels		Flowing Pressure	
	Gas	Water	Tubing	Casing
4-30-85	3-400	25		
	MCF		1440 psi	2440 psi

DAILY INJECTION TEST RECORD IF INJECTION WELL (OR BD

Date	Barrels of Water	Pressure		Specific Grav of Water
		Beginning	Ending	

SIGNATURE (Well Owner or Authorized Representative)	ADDRESS (If different than well owner)	DATE (Month, Day, Year)
/Donald R. Hall	Same	May 3, 1985

NOTE: IF GAS WELL, RECORD FLOW TEST UNDER "DAILY PRODUCTION TEST RECORD"

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

S. 9 E.

APR 05 1985

LEAVE BLANK
DEEPENING PERMIT NUMBER
DATE ISSUED

APPLICATION TO CHANGE WELL STATUS

(SUBMIT IN QUADRUPLICATE)

PERMIT NUMBER	FIELD NAME
36110	Hersey

NAME AND ADDRESS OF WELL OWNER
PPG Oil & Gas Co., Inc., 2258 Enterprise Drive, Mt. Pleasant, Michigan 48858

LEASE OR FARM NAME	WELL NUMBER
Thompson	3-36

WELL LOCATION	SECTION			TOWNSHIP	COUNTY
NE¼ NW¼ SE¼	36	T. 17N	R.9W	Hersey	Osceola

(Deepen, Plug Back, Convert to Injection or Disposal Well, Temporarily Abandon etc.)

APPROVAL REQUESTED TO Set retainer or squeeze to reduce water production

DATE DRILLING COMPLETED	DATE LAST PRODUCED	LAST PRODUCTION (Amt/day)
10-31-82	2-20-85	0 OIL, 25 WTR., 350 M.C.F. GAS

WORK TO BE DONE BY	WILL START (DATE)
Lease Management, Dowell	4-8-85

CASING AND CEMENTING RECORD

SIZE CASING	DEPTH SET	NO. SACKS CEMENT	PERFORATIONS
13-5/8	919	900	
9-5/8	5500	300	
5-1/2	8366	1200	8159-62, 8142-52
2-7/8	7635		

FORMATION RECORD
(Formation and depth, Oil, Gas & Wtr. shows, etc.)

See attached sheet

DESCRIBE PROPOSED WORK IN DETAIL:

1. Run production log to determine where water is entering wellbore.
2. If water is coming from 8159-62, set cement retainer at 8155. Swab perfs at 8142-52 to kick off - test and return to production.
3. If water is coming from 8142-52, set retainer at 8100. Squeeze with 75 sxs. WOC.
4. Drill out to 8175'.
5. Reperforate and stimulate with 500 gallons 28%. Perfs will be determined after logging.
6. Swab, test, return to production.

The proposed work as outlined above and approved by the Supervisor or his Authorized Representative will be executed in accordance with the provisions of Act 61, P.A. 1939 and the rules and regulations issued and adopted thereunder.

SIGNATURE (Well Owner or Authorized Representative)	DATE
/Donald R. Hall, Senior Petroleum Engineer	3-28-85

APPROVED BY:	FIELD OFFICE	DATE
Michael J. [illegible]	CADILLAC	4/1/85

NOTE: WELL REWORK RECORD, Form R-7212, is to be filled in DUPLICATE within 30 days after completion.

R 7237 3/73

STATE OF MICHIGAN

REQUEST FOR TRANSFER OF A PERMIT

SUBMIT 4 COPIES TO: Department of Natural Resources
Geological Survey Division
Box 30028
Lansing, Michigan 48909

Filing for change of ownership of well is required in accordance with ☒ Act 61, P.A. 1939 and ☐ Act 315 P.A. 1969, as amended, and Administrative Rules promulgated thereunder.

TYPE OR PRINT

PERMIT NO	WELL TYPE
36110	Gas

FIELD NAME: Hersey-Clinton

WELL NAME AND NUMBER: Thompson 3-36

WELL LOCATION: NE 1/4 NW 1/4 SE 1/4 SECTION 36 T 17N R 9W

TOWNSHIP	COUNTY
Hersey	Osceola

TRANSFER OF A PERMIT FROM:

NAME(S) OF SELLING OWNER(S): PPG Oil & Gas Co., Inc.

ADDRESS Number and Street — City or Town — State — Zip Code — Telephone: One Jackson Square, Suite 600, Jackson, MI 49201 (517) 782-8145

All operating rights are discharged by

Owner(s)	Representative(s)	Signature(s)	Date(s)
PPG Oil & Gas Co., Inc.,	Mr. Donald R. Hall	[signature]	12/14/87

ELIGIBILITY FOR PERMITS IS CONDITIONED UPON COMPLIANCE WITH THE STATUTES, RULES AND ORDERS OF THE DEPARTMENT OF NATURAL RESOURCES. PERMITS WILL NOT BE GRANTED TO PERSONS NOT IN COMPLIANCE.

NON-SUBMISSION AND/OR FALSIFICATION OF THIS INFORMATION MAY RESULT IN FINES AND/OR IMPRISONMENT.

TRANSFER OF A PERMIT TO:

NAME(S) OF ACQUIRING OWNER(S): Marathon Oil Company

ADDRESS Number and Street — City or Town — State — Zip Code — Telephone: One Jackson Square, Suite 600, Jackson, MI 49201 (517) 782-8145

(We) (I) have acquired the well under this permit and assume full responsibility for the drilling, operation, and abandonment in conformity with the law, regulations and orders.

SURETY BOND: ☐ SINGLE WELL ☐ ATTACHED ☒ BLANKET ☒ ON FILE

BONDING CO. SAFECO Insurance Company of America

BOND NUMBER 5194219

All operating rights and responsibilities are assumed by

Owner(s)	Representative(s)	Signature(s)	Date(s)
Marathon Oil Company,	Mr. David W. Hoopman	[signature]	12/16/87

FOR DEPARTMENT OF NATURAL RESOURCES USE ONLY

APPROVED [signature] Signature 6/28/88 Date

DISTRIBUTION BY DNR
- ☒ Lansing
- ☐ Acquiring Owner
- ☐ Selling Owner
- ☐ Field

PR 7200 7
Rev. 4/87

LANSING

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION
BOX 30028
LANSING, MICHIGAN 48909

GEOLOGICAL SURVEY
JUL 18 1988
Permits & Bonding Unit

REQUIRED BY AUTHORITY OF:
☒ ACT 61, P.A. 1939, AS AMENDED ☐ ACT 315, P.A. 1969, AS AMENDED

APPLICATION TO (Submit 4 copies):

☒ **CHANGE WELL STATUS** ☐ **PLUG AND ABANDON**

NON-SUBMISSION AND/OR FALSIFICATION OF THIS INFORMATION MAY RESULT IN FINES AND/OR IMPRISONMENT.

PERMIT NO.	TYPE OF WELL
36110	Gas

NAME AND ADDRESS OF WELL OWNER ☐ APPROVAL MAILED

Marathon Oil Company
One Jackson Square, Ste. 600
Jackson, MI 49201

JUL 11 1988

FIELD/FACILITY NAME: Hersey

CHANGE OF WELL STATUS REQUESTED FOR:
☐ PLUG BACK ☒ EXTEND PLUGGING (T.A.) ☐ PERFORATE
☐ CONVERT TO INJECTION OR DISPOSAL WELL ☐ OTHER

☐ ACIDIZE (315 ONLY) ☐ FRACTURE (315 ONLY)

WELL NAME	WELL NO.
Thompson	3-36

WELL LOCATION: NE ¼ of NW ¼ of SE ¼ Section 36 T 17N R 9W

LAST PRODUCTION / INJECTION AND TYPE OF FLUID (Amount per day & injection pressure): 21 MCF/D 42 BWPD

TOWNSHIP	COUNTY
Hersey	Osceola

DATE DRILLING COMPLETED	DATE LAST PRODUCED/UTILIZED
10/31/82	May 1987

WORK TO BE DONE BY: ☐ APPROVAL MAILED: NA

STARTING DATE:

CASING AND CEMENTING RECORD

HOLE. DIA.	CASING DIA. & WT./FT.	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP	PERFORATIONS
17-1/2	13-3/8 48#	919	700 Poz miz, 200 Class A	Circ	
12-1/4	9-5/8 43.5	5,500	300 Special	4,625	
8-1/2	5-1/2 17#	8,366	1,050 Poz mix, 150 Special II	4,435	8141-44

FORMATION RECORD (Formation and depth, oil, gas and water shows, etc.):
See Attached.

DETAIL PROPOSED PROCEDURES:

Temporarily abandon well, secure wellhead with chains and lock. Depressurize surface equipment.

DNR ADDITIONAL REQUIREMENTS:

Permission given to temporarily abandon well for reservoir study until 12/31/88.

NAME/SIGNATURE (Authorized Representative): Donald R. Hall, Production Superintendent D. R. Hall — DATE: 07/07/88

APPROVED BY DNR: John McSnider — OFFICE: Cadillac — DATE: 12/31/88

NOTE: THREE COPIES OF WELL PLUGGING OR REWORK (PR 7200-8) ARE TO BE FILED WITHIN 30 DAYS OF COMPLETION.

PR 7200-6
Rev. 8/85

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION
BOX 30028
LANSING, MICHIGAN 48909

RE[illegible]D BY AUTHORITY OF:
☒ [illegible] 61, P.A. 1939, AS AMENDED ☐ ACT 315, P.A. 1969, AS AMENDED

A[illegible]ICATION TO (Submit 4 copies):

☒ CHANGE WELL STATUS ☐ PLUG AND ABANDON

NON-SUBMISSION AND/OR FALSIFICATION OF THIS INFORMATION MAY RESULT IN FINES AND/OR IMPRISONMENT.

PERMIT NO.	TYPE OF WELL
36110	Gas

NAME AND ADDRESS OF WELL OWNER ☐ APPROVAL MAILED

Marathon Oil Company
One Jackson Square, Ste. 600
Jackson, MI 49201

JUL 11 1988

FIELD/FACILITY NAME: Hersey

WELL NAME: Thompson | WELL NO.: 3-36

CHANGE OF WELL STATUS REQUESTED FOR:
☐ PLUG BACK ☒ EXTEND PLUGGING (T.A.) ☐ PERFORATE
☐ CONVERT TO INJECTION OR DISPOSAL WELL ☐ OTHER

☐ ACIDIZE (315 ONLY) ☐ FRACTURE (315 ONLY)

WELL LOCATION: NE ¼ of NW ¼ of SE ¼ Section 36 T 17N R 9W

LAST PRODUCTION / INJECTION AND TYPE OF FLUID
(Amount per day & injection pressure)
21 MCF/D 42 BWPD

TOWNSHIP: Hersey | COUNTY: Osceola

DATE DRILLING COMPLETED: 10/31/82 | DATE LAST PRODUCED/UTILIZED: May 1987

WORK TO BE DONE BY: ☐ APPROVAL MAILED
NA

STARTING DATE:

CASING AND CEMENTING RECORD

HOLE DIA	CASING DIA. & WT./FT.	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP	PERFORATIONS
17-1/2	13-3/8 48#	919	700 Poz mix, 200 Class A	Circ	
12-1/4	9-5/8 43.5	5,500	300 Special	4,625	
8-1/2	5-1/2 17#	8,366	1,050 Poz mix, 150 Special II	4,435	8141-44

FORMATION RECORD (Formation and depth, oil, gas and water shows, etc.):
S[illegible]ttached.

DETAIL PROPOSED PROCEDURES:

Temporarily abandon well, secure wellhead with chains and lock. Depressurize surface equipment.

Extension granted to June 13, 1989, for decision as to plug or request to hold as T.A. for a BD well in what may become a unitized gas field that is increasing in formation water.

FOR ADDITIONAL REQUIREMENTS:

[illegible]mission given to temporarily abandon well for reservoir study until 12/31/88.

SIGNATURE (Authorized Representative)
Donald R. Hall, Production Superintendent D. R. Hall — DATE 07/07/88

APPROVED BY ONR John McLander — OFFICE Cadillac — DATE 12/31/88

[illegible] THREE COPIES OF WELL PLUGGING OR REWORK [illegible] SHALL BE FILED WITHIN 30 DAYS OF [illegible]

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION
BOX 30028
LANSING, MICHIGAN 48909

REQUIRED BY AUTHORITY OF:
[X] ACT 61, P.A. 1939, AS AMENDED [ ] ACT 315, P.A. 1969, AS AMENDED

APPLICATION TO (Submit 4 copies):

[X] **CHANGE WELL STATUS** [ ] **PLUG AND ABANDON**

NON-SUBMISSION AND/OR FALSIFICATION OF THIS INFORMATION MAY RESULT IN FINES AND/OR IMPRISONMENT.

CHANGE OF WELL STATUS REQUESTED FOR:
[ ] PLUG BACK [X] EXTEND PLUGGING (T.A.) [ ] PERFORATE
[ ] CONVERT TO INJECTION OR DISPOSAL WELL [ ] OTHER

[ ] ACIDIZE (315 ONLY) [ ] FRACTURE (315 ONLY)

LAST PRODUCTION / INJECTION AND TYPE OF FLUID
(Amount per day & injection pressure)
21 MCF/D 42 BWPD

WORK TO BE DONE BY: [ ] APPROVAL MAILED
NA

PERMIT NO.	TYPE OF WELL
36110	Gas

NAME AND ADDRESS OF WELL OWNER [ ] APPROVAL MAILED
Marathon Oil Company
One Jackson Square,
Suite 600
Jackson, MI 49201

FIELD/FACILITY NAME
Hersey

WELL NAME	WELL NO.
Thompson	3-36

WELL LOCATION
NE ¼ of NW ¼ of SE ¼ Section 36 T 17N R 9W

TOWNSHIP	COUNTY
Hersey	Osceola

DATE DRILLING COMPLETED	DATE LAST PRODUCED/UTILIZED
10/31/82	May 1987

STARTING DATE

CASING AND CEMENTING RECORD

HOLE DIA.	CASING DIA. & WT./FT.	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP	PERFORATIONS
17-1/2	13-3/8 48#	919	700 Poz mix, 200 Class A	Circ	
12-1/4	9-5/8 43.5	5,500	300 Special	4,625	
8-1/2	5-1/2 17#	8,366	1,050 Poz mix, 150 Special II	4,435	8141-44

FORMATION RECORD (Formation and depth, oil, gas and water shows, etc.):
See attached

DETAIL PROPOSED PROCEDURES:
Temporarily abandon well, secure wellhead with chains and lock. Depressurize surface equipment.

Extension granted to June 13, 1989 for decision as to plug or request to hold as T.A. for a BD well in what may become a unitized gas field that is increasing in formation water.

ONR ADDITIONAL REQUIREMENTS:
Permission is given to temporarily abandon well till June 13, 1991 for possible recompletion as a water disposal well.

NAME/SIGNATURE (Authorized Representative)			DATE
APPROVED BY ONR [signature]	OFFICE Lansing	APPROVAL DATE 9/26/89	TERMINATION DATE 6/13/91

NOTE: THREE COPIES OF WELL PLUGGING OR REWORK (PR 7200-8) ARE TO BE FILED WITHIN 30 DAYS OF COMPLETION.

PR 7200-6
Rev. 3/86

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION
BOX 30028
LANSING, MICHIGAN 48909

REQUIRED BY AUTHORITY OF:
[X] ACT 61, P.A. 1939, AS AMENDED [ ] ACT 315, P.A. 1969, AS AMENDED

APPLICATION TO (Submit 4 copies):

[X] **CHANGE WELL STATUS** [X] **PLUG AND ABANDON**

NON-SUBMISSION AND/OR FALSIFICATION OF THIS INFORMATION MAY RESULT IN FINES AND/OR IMPRISONMENT.

PERMIT NO.	TYPE OF WELL
36110	Gas

NAME AND ADDRESS OF WELL OWNER [ ] APPROVAL MAILED

Marathon Oil Company
1231 E. Mosherville Road
Jonesville, MI 49250

OCT 01 1993

FIELD/FACILITY NAME: Hersey

WELL NAME	WELL NO.
Thompson	3-36

CHANGE OF WELL STATUS REQUESTED FOR:
[ ] PLUG BACK [ ] EXTEND PLUGGING (T.A.) [ ] PERFORATE
[ ] CONVERT TO INJECTION OR DISPOSAL WELL [ ] OTHER

[ ] ACIDIZE (315 ONLY) [ ] FRACTURE (315 ONLY)

WELL LOCATION: NE ¼ of NW ¼ of SE ¼ Section 36 T 17N R 9W

LAST PRODUCTION / INJECTION AND TYPE OF FLUID (Amount per day & injection pressure)

TOWNSHIP	COUNTY
Hersey	Osceola

DATE DRILLING COMPLETED	DATE LAST PRODUCED/UTILIZED
10/31/82	5/87

WORK TO BE DONE BY: [ ] APPROVAL MAILED
N/A

STARTING DATE: ASAP

CASING AND CEMENTING RECORD

HOLE DIA.	CASING DIA. & WT./FT.	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT TOP	PERFORATIONS
17-1/2"	13 3/8", 48#	919'	700 SX Pozmix, 200 SX Class A	Circ.	
12-1/4"	9-5/8", 43.5#	5500'	300 SX Special	4625'	
8-1/2"	5 1/2", 17#	8366'	1050 SX Pozmix, 150 SX Special C1.H	4200'	8141-44'

FORMATION RECORD (Formation and depth, oil, gas and water shows, etc.):

SEE ATTACHMENT A

GEOLOGICAL SURVEY
NOV 08 1993
Permit & Bonding Unit

DETAIL PROPOSED PROCEDURES:

SEE ATTACHMENT B

DNR ADDITIONAL REQUIREMENTS:

Notify DNR 616-775-9727 24 hours prior to start up.

NAME/SIGNATURE (Authorized Representative)
N.R. Daniels, Jr. Michigan Production Superintendent N R Daniels Jr

DATE 9/27/93

APPROVED BY DNR Michael J. Muss

OFFICE CADILLAC

APPROVAL DATE NOV 05 1993

TERMINATION DATE

NOTE: THREE COPIES OF WELL PLUGGING OR REWORK (PR 7200-8) ARE TO BE FILED WITHIN 30 DAYS OF COMPLETION.

PR 7200-6
Rev 3/86

DEC 17 1993

Michigan Department of Natural Resources
Geological Survey Division

RECORD OF WELL PLUGGING OR REWORK

REQUIRED BY AUTHORITY OF: ACT 61, PA 1939, as amended or ACT 315, PA 1969, as amended. Non-submission and / or falsification of this information may result in fines and / or imprisonment.

Permit Number	Well Name & Number
36110	Thompson #3-36

Type of Well	Field Name
Oil Producer	Hersey

1/4 1/4 1/4, Section, Township, Range, County
NE NW SE Sec 36 T17N-R9W Osceola, County

Date Plugging / Rework Started	Date Plugging / Rework Completed
11-08-93	12-04-93

Name and Address of Well OWNER

Marathon Oil Company
1231 E. Mosherville Road
Jonesville, MI 49250

Name and Address of Contractor/Service Company
(attach additional sheets as needed)

Beckman Services, Inc. 4400 N. Clare Ave. Harrison,MI 48622
Michigan Wireline P O Box 349 Mt. Pleasant, MI 48804
Halliburton Ser. P O Box 374 Mt. Pleasant, MI 48804

Indicate Operation & Type of Well Permit
☒ PLUGGING ☐ REWORK ☒ Act 61 Oil & Gas ☐ Act 315 Mineral Wells

Name of DNR employee issuing Plugging Permit or Approving Change of Well Status. Michael J. Moss Date issued 11-05-93

☐ Tools, tubing, etc. left in hole - describe in Daily Chronology.

☐ Well logs run - list types and depths in Daily Chronology.

For WELL PLUGGING Only (HOLE CONDITIONS AFTER PLUGGING)

CASING

Casing Size	Where Set	Amount Casing Pulled	Depth Casing Cut/Perfed: Windows Milled
13 3/8"	919'	4'	4'
9 5/8"	5500'	3997.45'	4003'
5 1/2"	8366'	4043'	4150'

PLUGS

Depth Bottom	Depth Top	Type of Bridge or Plug	Cement Plugs: Cement type, # sx, and additives	Tagged Top? Y/N
8100'	7100'	Cement	50 sx Class "H"	N
7100'	6900'	Cement	25 sx Class "H"	N
5600'	5400'	Cement	25 sx Class "A"	N
1134'	1028'	Cement	170 sx Class "A"	Y
1028'	600'	Cement	305 sx Class "A"	N
600'	4'	Cement	526 sx Class "A"	N

Check ☐ if NORM material was reinserted into wellbore. If so, describe materials fully in the Daily Chronology section on back of this form.

For WELL REWORK Only

REWORK WAS TO:
☐ TEMPORARILY ABANDON
☐ CONVERT TO: ☐ Disposal Well ☐ Production ☐ Storage ☐ Enhanced Recovery ☐ Other
☐ REMEDIAL: ☐ Perf & Test ☐ Repair Casing / Cement ☐ Redrill ☐ Other
☐ PLUGBACK: ☐ New Production Zone ☐ Disposal ☐ Storage ☐ Enhanced Recovery ☐ Other

Well Casing Record - BEFORE Rework

Casing Size	Casing Depth	Cement Sacks	Cement Type	Perforations From	Perforations To	Perforations if plugged, HOW?	Acid or Fracture Treatment Record

Well Casing Record - AFTER Rework (Indicate additions and changes only: complete Test Record on next page)

Casing Size	Casing Depth	Cement Sacks	Cement Type	Perforations From	Perforations To	Perforations if plugged, HOW?	Acid or Fracture Treatment Record

BEFORE REWORK			AFTER REWORK		
Total Depth	Formation / Zone	Well Completed For	Total Depth	Formation / Zone	Well Completed For

DAILY PRODUCTION TEST RECORD						DAILY INJECTION TEST RECORD ☐ Injection Well ☐ Brine Disposal				
Date	Oil (Bbls)	Water (Bbls)	Gas (MCF)	Casing Size	Casing Depth	Date	Bbls Water or MCF Gas	Pressure Beginning	Pressure Ending	Specific Gravity of Water

DAILY CHRONOLOGY - Describe in detail the daily chronology of rework / plugging, include days shut down. Describe exceptions to issued plugging instructions

Date	Narrative - also include dates pits filled, surface was restored, etc.. Use additional pages as needed.
	See Attached

CERTIFICATION "I state that I am authorized by said Owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

NAME and TITLE for Owner (printed or typed)	Authorized Signature	Date
N. R. Daniels, Jr. Michigan Production Superintendent	N R Daniels	12/9/93

NOTE: Bonds cannot be terminated until plugging is completed, cellar, rat and mouse holes, and pits filled, site leveled and cleaned and records filed.
Mail completed original and three copies to the appropriate DNR District Office within 30 days after completion of plugging or rework.

DAILY REPORT
CENTRAL PRODUCTION REGION
COMPANY OPERATED
November 11, 1993

WORKOVER/RECOMPLETION

Hersey Field
Thompson #3-36
Osceola County, MI
AFE NO: 98832
AFE AMOUNT: $48,300

OPERATOR: Marathon Oil
RIG: Beckman #4
MOC/WI: 77%3
MIRU: 11-08-93

CSG: 13 3/8" 45# @ 919'
9 5/8" 435# @ 5500'
5 1/2" 17# @ 8366'

ELEV: GL KB
TD: PBTD:

COST TO DATE: $1,123
DAY: 1
PRESENT OPERATION: Plug and Abandon
REMARKS: 11/08/93: MI and spot 500 bbl Frac tank, mud pump, and open top tank. Hauled in 350 bbls 10.2 SAB. Rig had flat tire on the way to the location. Waiting on tire repair in a.m.

COST TO DATE: $5,697
DAY: 2
PRESENT OPERATION: Plug and Abandon
REMARKS: 11/09/93: MIRU Beckman Rig #4. Used J&B cat to spot rig. Csg 1100 psi and tbg 0 psi. RU JO well service. Ran 2.33" OD gauge ring range to 7968'. ROH. RIH w/DD Bridge plug and set @ 300'. ROH. ND tree (All bolts very rusty). NU BOP's. RU Double check. Tested BOP's to 500 psi and 5000 psi. Tested ok. RD Double check. RIH and retrieved DD Bridge plug. ROH. RD JO well service. Secured well for night.

COST TO DATE: $10,137
DAY: 3
PRESENT OPERATION: Plug and Abandon
REMARKS: 11/10/93: Tbg 0 psi and csg 0 psi. Circulated hole w/10.2 SAB. TOH w/260 jts 2 7/8" tbg (8067'). RU Michigan Wireline. RIH w/gauger ring and junk basket to 8150' GLM. ROH. RIH w/Baker K-1 5 1/2" retainer and set @ 8100'. ROH. RD Michigan Wireline. TIH w/Baker stinger tool and 10 stands 2 7/8" tbg. SWIFN.

DAILY REPORT
CENTRAL PRODUCTION REGION
COMPANY OPERATED
November 15, 1993

WORKOVER/RECOMPLETION

Hersey Field
Thompson #3-36
Osceola County, MI
AFE NO: 98832
AFE AMOUNT: $48,300
CSG: 13 3/8" 45# @ 919'
9 5/8" 435# @ 5500'
5 1/2" 17# @ 8366'

OPERATOR: Marathon Oil
RIG: Beckman #4
MOC/WI: 77%3
MIRU: 11-08-93

ELEV: GL KB
TD: PBTD:

COST TO DATE: $17,917
DAY: 4
PRESENT OPERATION: Plug and Abandon
REMARKS: 11/11/93: 0 psi on well. Finished TIH w/2 7/8" tbg. Stung into retainer @ 8100'. RU Halliburton services. Pumped 15 bbls SAB @ 3 bbl/min, 2000 psi. Pulled out of retainer and spotted cement to end of tbg. Stung back into retainer. Pumped 25 sks Class "H" cmt into formation @ 2 bbl/min, 1800 psi. Pulled out of retainer and spotted 25 sks Class "H" cmt. Flushed tbg with 45 bbls SAB. TOH with 2 7/8" tbg to 7100'. Spotted 25 sks of Class "H" cmt (7100-6900'). Flushed w/40 bbls SAB. TOH with 2 7/8" tbg to 5600'. Spotted 25 sks Class "A" cmt (5400-5600'). Flushed w/30 bbls SAB. TOH w/2 7/8" tbg to 4500'. Reverse circulated hole clean. RD Halliburton. TOH w/2 7/8" tbg and stinger. SWIFN.

COST TO DATE: $24,192
DAY: 5
PRESENT OPERATION: Plug and Abandon
REMARKS: 11/13/93: 0 psi on well. ND BOP's. Ran 5 1/2" spear, pulled 140,000 w/rig. Unable to move slips on 5 1/2". Cut 5 1/2" off 2' below slips with machine cutting. ND 5 1/2" csg spool. NU spacer spool. NU 10,000 psi BOP's. Ran spear in 5 1/2". Pulled stretch on 5 1/2" 70,000 to 95,000, had 11" stretch. Pulled 70,000 to 100,000,had 12" stretch. RU Michigan Wireline. RIH and cut 5 1/2" at 4150'. Worked csg pulling 110,000 lbs csg free. ROH and RD Michigan Wireline. TOH w/5 1/2" csg checking each jt for NORM. 50 jts (2083.99'). SWIFN.

COST TO DATE: $27,092
DAY: 6
PRESENT OPERATION: Plug and Abandon
REMARKS: 11/14/93: 0 psi on well. TOH w/20 jts 5 1/2" 17# csg. Bearing went out of rig gear box right angle drive. SD for repairs. Loaded hole w/10.2 SAB and secured well. Total 5 1/2" csg pulled 70 jts (2908.47). (About 1240' left to pull). Spotted csg jacks. Spotted 10,000 BOP's for 9 5/8". Secured location until rig repairs complete. Should be done on 11-16-93.

DAILY REPORT
CENTRAL PRODUCTION REGION
COMPANY OPERATED
November 24, 1993

WORKOVER/RECOMPLETION

Hersey Field
Thompson #3-36
Osceola County, MI
AFE NO: 98832
AFE AMOUNT: $48,300
CSG: 13 3/8" 45# @ 919'
9 5/8" 435# @ 5500'
5 1/2" 17# @ 8366'

OPERATOR: Marathon Oil
RIG: Beckman #4
MOC/WI: 77.3%
MIRU: 11-08-93

ELEV: GL KB
TD: PBTD:

COST TO DATE: $32,997
DAY: 7
PRESENT OPERATION: Plug and Abandon
REMARKS: 11/22/93: 0 psi on well. Finished pulling 5 1/2" 17# csg (27 jts). Total 5 1/2" csg pulled 4042.72. Checked for NORM. All okay. ND BOP's and NU csg jacks. RU Michigan Wireline. RIH w/8 1/4" OD cutter. Set down at 2688'. Could not get beyond 2688'. ROH. NU BOP's. Secured well for night. Ordered out 8 1/2" OD csg scrapper for a.m.

COST TO DATE: $38,432
DAY: 8
PRESENT OPERATION: Plug and Abandon
REMARKS: 11/23/93: 0 psi on well. TIH w/8 1/2" bit and 8 1/2" csg scraper to 4149'. Circulated hole. TOH w/2 7/8" tbg, scraper and bit. RU csg jacks and 9 5/8" spear. RU Michigan Wireline. RIH w/8 1/4" OD cutter. Pulled 220,000# w/jacks. Pipe free @ 4000'. Cut csg @ 4003'. Worked csg and it seems to be cut. ROH w/wireline. RD Michigan Wireline. 0 psi on well. NU jacks and pulled 30' 9 5/8" csg @ 115,000# w/jacks. Pulled slips and bowl out of wellhead. Set 9 5/8" csg back down. ND jacks and NU BOP's. Secured well for night.

DAILY REPORT
CENTRAL PRODUCTION REGION
COMPANY OPERATED
November 30, 1993

WORKOVER/RECOMPLETION

Hersey Field
Thompson #3-36
Osceola County, MI
AFE NO: 98832
AFE AMOUNT: $48,300
CSG: 13 3/8" 45# @ 919'
9 5/8" 435# @ 5500'
5 1/2" 17# @ 8366'

OPERATOR: Marathon Oil
RIG: Beckman #4
MOC/WI: 77.3%
MIRU: 11-08-93

ELEV: GL KB
TD: PBTD:

COST TO DATE: $39,692
DAY: 9
PRESENT OPERATION: Plug and Abandon
REMARKS: 11/24/93: 0 psi on well. Rig crew stringing up six lines on rig (7 hrs). Pulled on 9 5/8" csg, pulling 230,000# w/rig. Pipe moved up hole 20'. Worked 9 5/8" pipe pulling @ 220,000#. Trouble with rig air supply to clutch. Rig only able to pull 180,000# to 200,000#. Clutch slipping. Stacked 9 5/8" csg out on bottom. Secured well. Rig crew to work on rig on 11-26-93. No charge for rig today. Will start work again on 11-29-93.

DAILY REPORT
CENTRAL PRODUCTION REGION
COMPANY OPERATED
December 02, 1993

WORKOVER/RECOMPLETION

Hersey Field
Thompson #3-36
Osceola County, MI
AFE NO: 98832
AFE AMOUNT: $48,300
CSG: 13 3/8" 45# @ 919'
9 5/8" 435# @ 5500'
5 1/2" 17# @ 8366'

OPERATOR: Marathon Oil
RIG: Beckman #4
MOC/WI: 77.3%
MIRU: 11-08-93

ELEV: GL KB
TD: PBTD:

COST TO DATE: $43,702
DAY: 10
PRESENT OPERATION: Plug and Abandon
REMARKS: 11/29/93: 0 psi on well. RU casing jacks. Started jacking 9 5/8" @310,000#. Jacks 8 jts out of hole. Pulled 1 jt w/rig @ 200,000#. Unable to break connection on jt #10. Worked 1 1/2 hrs. Called out welder to head collar in am. Secured well for night. Loaded hole w/10.2 brine. Took 32 bbls. Total of 9 jts 9 5/8" csg pulled today.

COST TO DATE: $48,402
DAY: 11
PRESENT OPERATION: Plug and Abandon
REMARKS: 11/30/93: 0 psi on well. Loaded hole w/10.2 SAB. Took 25 bbls. Attempted to pull 9 5/8" csg w/rig. Pulled 230,000# with no luck. Jacked out 1 jt 9 5/8" csg pulling 300,000#. Pulled 5 jts with rig @ 180,000#. RD csg jacks. Finished pulling 9 5/8" csg. Loaded hole w/10.2 SAB after each jt. Checked all pipe for NORM. All okay. Total pipe pulled today 94 jts. Total pipe pulled 103 jts and 2 stubs (3997.45). Shut well in for night.

COST TO DATE: $51,962
DAY: 12
PRESENT OPERATION: Plug and Abandon
REMARKS: 12/01/93: 0 psi on well. Loaded hole w/10.2 SAB. Took 22 bbls. TIH with 2 7/8" tbg (open ended). Tbg stopped @1266'. Worked tbg, but could not get through @1266'. RU mud pump and circulated hole w/10.2 bbls brine. Still unable to get through @ 1266'. RU Halliburton. Circulated hole w/50 Vis Gel (wt 10.1). Dropped through @ 1266'. Ran 3 jts tbg and set down again @1357'. Soft tbg drifting down slow. TOH w/2 7/8" tbg. Bottom of tbg @900'. Secured well for night.

DAILY REPORT
CENTRAL PRODUCTION REGION
COMPANY OPERATED
December 06, 1993

WORKOVER/RECOMPLETION

Hersey Field
Thompson #3-36
Osceola County, MI
AFE NO: 98832
AFE AMOUNT: $48,300
CSG: 13 3/8" 45# @ 919'
9 5/8" 435# @ 5500'
5 1/2" 17# @ 8366'

OPERATOR: Marathon Oil
RIG: Beckman #4
MOC/WI: 77.3%
MIRU: 11-08-93

ELEV: GL KB
TD: PBTD:

COST TO DATE: $59,404
DAY: 13
PRESENT OPERATION: Plug and Abandon
Remarks: 12/02/93: Well 0 psi. TIH w/2 7/8" tbg and tagged at 1086'(180' higher than yesterday). RU Halliburton. Reverse circulated hole clean. Getting back chunks of shale. Circulated down 30', pulled up hole, and could not get back down. Tbg plugged. RD Halliburton. TOH w/2 7/8" tbg. RU Kal-Fish drill mobile. Started mixing salt water gel to 45 Vis. TIH w/7 5/8" bit and 2 7/8" tbg and tagged at 1080'. Drilled down to 1115' again (10 min) and circuleted hole 30 minutes. Short trip again. Lost 5' of hole. Reamed at 1110' - 1115' for one hour. Short trip again. (No hole loss). Picked up jt w/swivel and drilled from 1115' to 1128' for 10 minutes. Drilled hard from 1128' to 1134'. Drilled down to 1143'. Circulated hole 30 minutes. Added mud and took Vis to 50. Short trip at 1115' - 1143' (lost 10' of hole). Drilled down from 1133' - 1143' in 35 minutes. Circulated hole for 30 minutes. Present conditions: pump rate 4 bbls/min, mud wt 10.3, 48 Vis, and pump pressure 450 psi. Bit RPM 100. RU Halliburton services and kicked pump rate up to 7 bbls/ min.

COST TO DATE: $77,799
DAY: 14
PRESENT OPERATION: Plug and Abandon
Remarks: 12/03/93: Drilled at 1133' to 1143'. Kept losing last 10' of hole. Halliburton pumping at 7 bbls/min. Mud wt 10.2 and 48 Vis. 09:00 hrs called Mike Moss with the DNR. Okay to plug well from 1134' to surface. RD Kalfish and RD Halliburton. TOH w/2 7/8" tbg and 7 7/8" rock tooth bit. Layed down 60 jts tbg from derrick. TIH w/2 7/8" tbg open ended to 1100'. RU Halliburton. Tbg plugged. Pressure up to 1000 psi on tbg. Shook tbg, but could not unplug tbg. TOH w/2 7/8" tbg (last jt plugged). TIH w/2 7/8" tbg to 1091'. Circulated hole. Circulated down to 1122'. Mixed and pumped 170 sks Class "A" cmt. TOH w/2 7/8" tbg to 1028'. Mixed and pumped 305 sks Class "A" cmt 1028' to 600'. Pulled 2 7/8" tbg to 600'. Mixed and pumped 526 sks Class A"" cmt. Cemented to surface. RD Halliburton. ND BOP's and cut 13 3/8" off 5' below ground. Welded plate on top. SDFN.

DAILY REPORT
CENTRAL PRODUCTION REGION
COMPANY OPERATED
December 06, 1993

WORKOVER/RECOMPLETION
Hersey Field
Thompson #3-36
Osceola County, MI
AFE NO: 98832
AFE AMOUNT: $48,300
CSG: 13 3/8" 45# @ 919'
9 5/8" 435# @ 5500'
5 1/2" 17# @ 8366'

OPERATOR: Marathon Oil
RIG: Beckman #4
MOC/WI: 77.3%
MIRU: 11-08-93

ELEV: GL KB
TD: PBTD:

COST TO DATE: $81,399
DAY: 15
PRESENT OPERATION: Plug and Abandon
REMARKS: 12/04/93: RD Beckman Rig #4. Dug up seller and filled hole w/sand. Hauled all equipment off location except for 500 bbl Frac tank. Job complete.

NOV 05 1993

THOMPSON 3-36
Section 36-T17N-R9W
Osceola County, Michigan

P & A PROCEDURE

WELL DATA:

13-3/8" 48# csg @ 919'	Cement to surface
9-5/8" 43.5# csg @ 5500'	TOC = 4625'
5-1/2" 17# csg @ 8366'	TOC = 4200'
2-7/8" 6.5# tbg @ 8095'	
Existing perfs @ 8141-44'	

PROCEDURE:

1. Kill well with 10.2 ppg SAB (State Approved Brine). ND tree. NU BOP's.

2. TOH with 2-7/8" tubing.

3. RU wireline company. Run gauge ring and junk basket to 8100'.

   Set cement retainer @ 8100'. TIH with tubing and string into cement retainer. Establish injection and pump 50 sx of Class "H" cement. Displace 25 sx into formation, pull out of cement retainer and spot 25 sx above retainer. TOH to 7100' and reverse circulate to clean tubing.

4. With tubing at 7100', spot a 25 sx Class "H" cement plug at 7100-6900' (Across top of A2 Carbonate @ 7041'). TOH to 5600' and reverse circulate to clean tubing.

5. With tubing at 5600', spot a 25 sx Class "A" cement plug at 5600-5400' (Across 9-5/8" csg shoe @ 5500'). TOH to 4500' and reverse circulate to clean tubing. TOH with tubing.

6. RU wireline company. Cut 5-1/2" casing at 4150'. TOH with 5-1/2" casing. (Monitor for NORM and follow casing handling guidelines if NORM is encountered.)

7. Cut 9-5/8" casing at 4125'. TOH with 9-5/8" casing. (Again, monitor for NORM and follow NORM guidelines.)

8. TIH with 2-7/8" tubing to top of 5-1/2" casing stub. Spot a 175 sx Class "A" cement plug at 4150-3900' (Across top of Dundee at 3948'). TOH to 3400' and reverse circulate to clean tubing. TIH to top of cement. Add Bentonite to SAB until funnel viscosity is 28-29. Circulate hole with mud. TOH to 3400'.

9. With tubing at 3400', spot a 150 sx Class "A" cement plug at 3400-3200' (Across top to Traverse at 3303'). TOH to 1650' and reverse circulate to clean tubing.

10. With tubing at 1650', spot a 150 sx Class "A" cement plug at 1650-1450' (Across top os Stray at 1614'). TOH to 1020' and reverse circulate to clean tubing.

11. With tubing at 1020', spot a 150 sx Class "A" cement plug at 1020-820' (Across 13-3/8" csg shoe at 919'). TOH with 2-7/8" tubing.

12. Spot a 25 sx Class "A" cement plug at 30' - surface. Cut casing off 4' below ground level. Weld marker plate over top of casing.

C. A. Paulson

P. E. Legg

NRD 9/27/93

N. R. Daniels, Jr.

Form 10118

MARATHON OIL COMPANY
ENGINEERING CHART

SHEET NO. OF

FILE

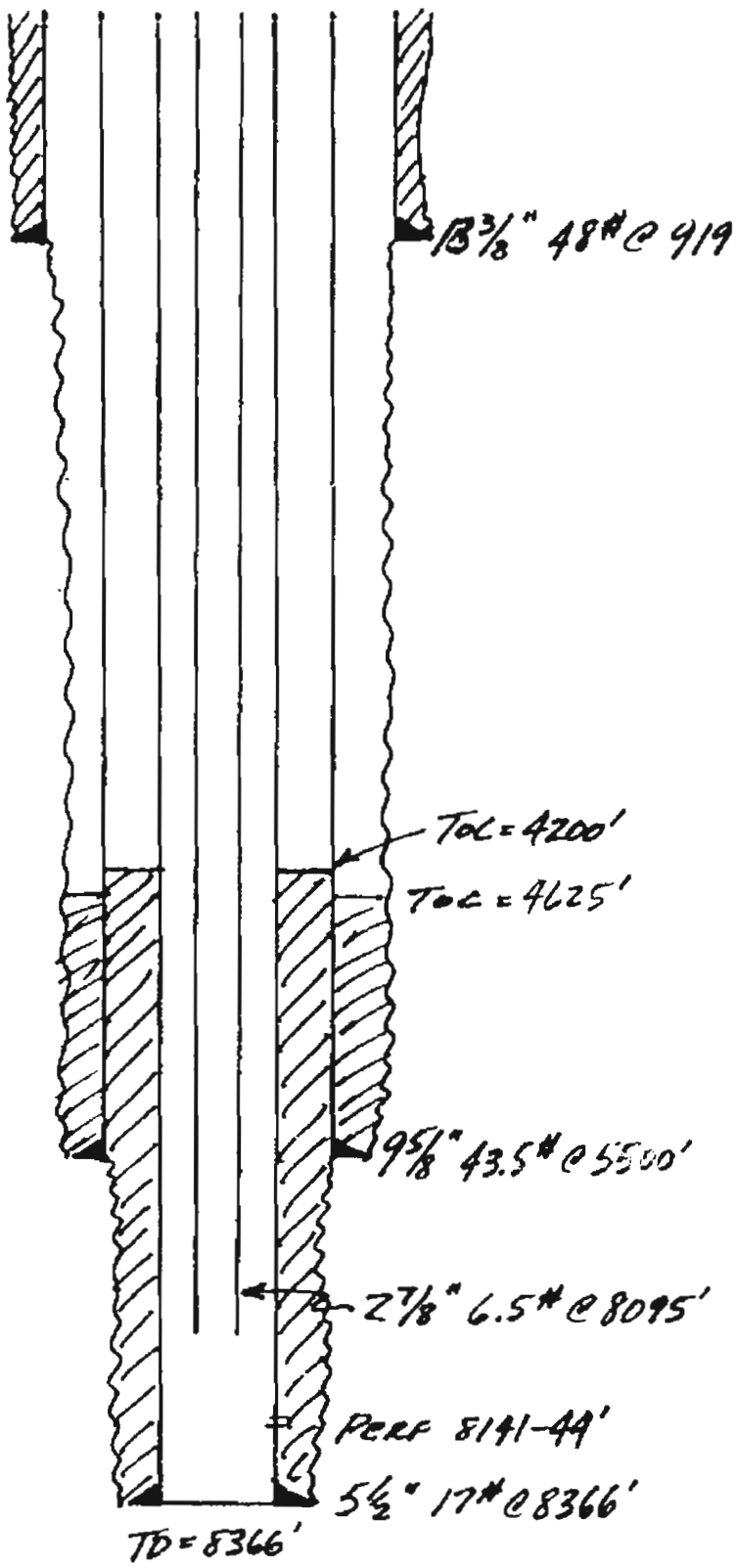
APPN

DATE 9-22-93

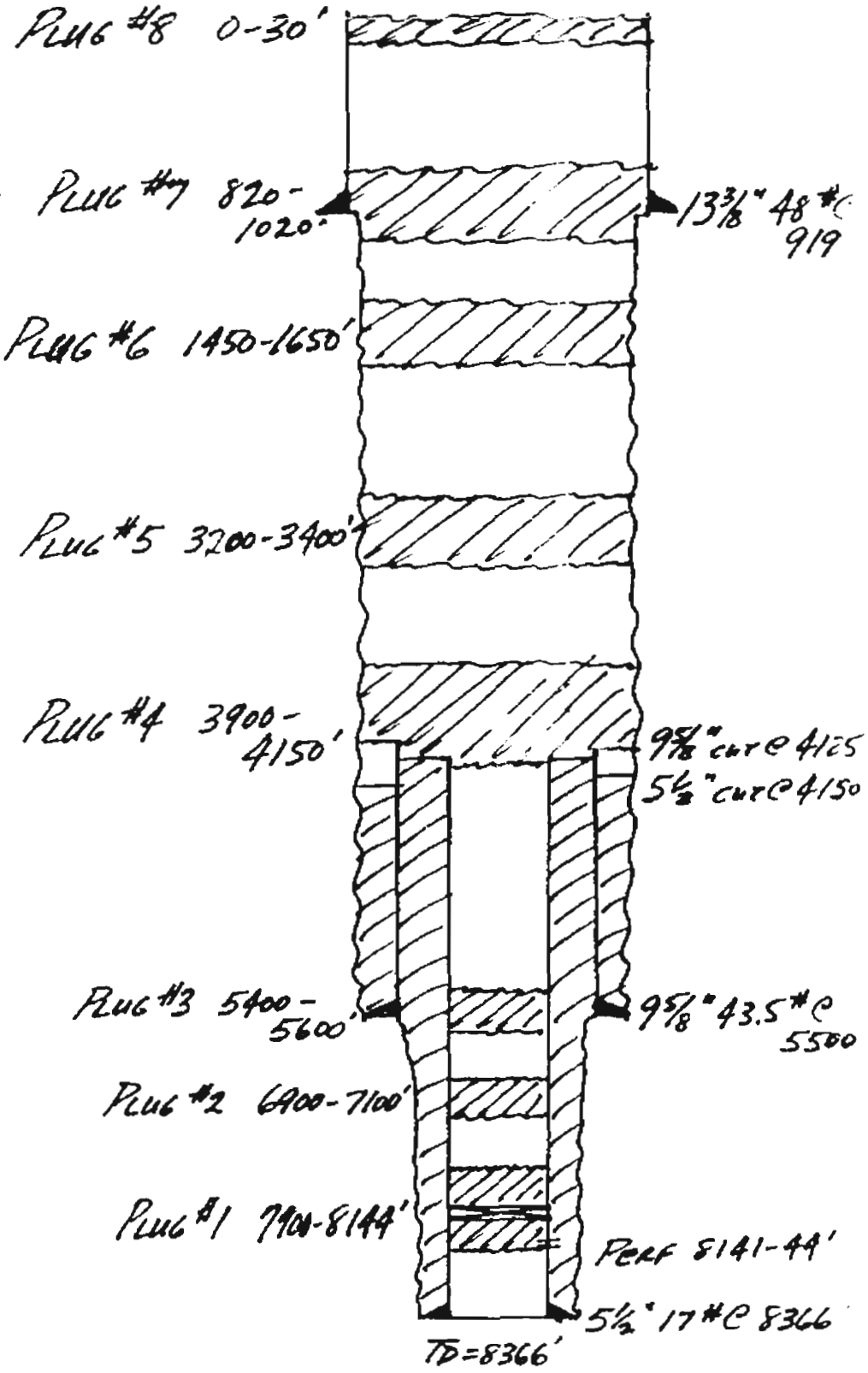
BY CA Rulson

SUBJECT THOMPSON 3-36 (P&A)

36-T17N-R9W OSCEOLA Co, MI

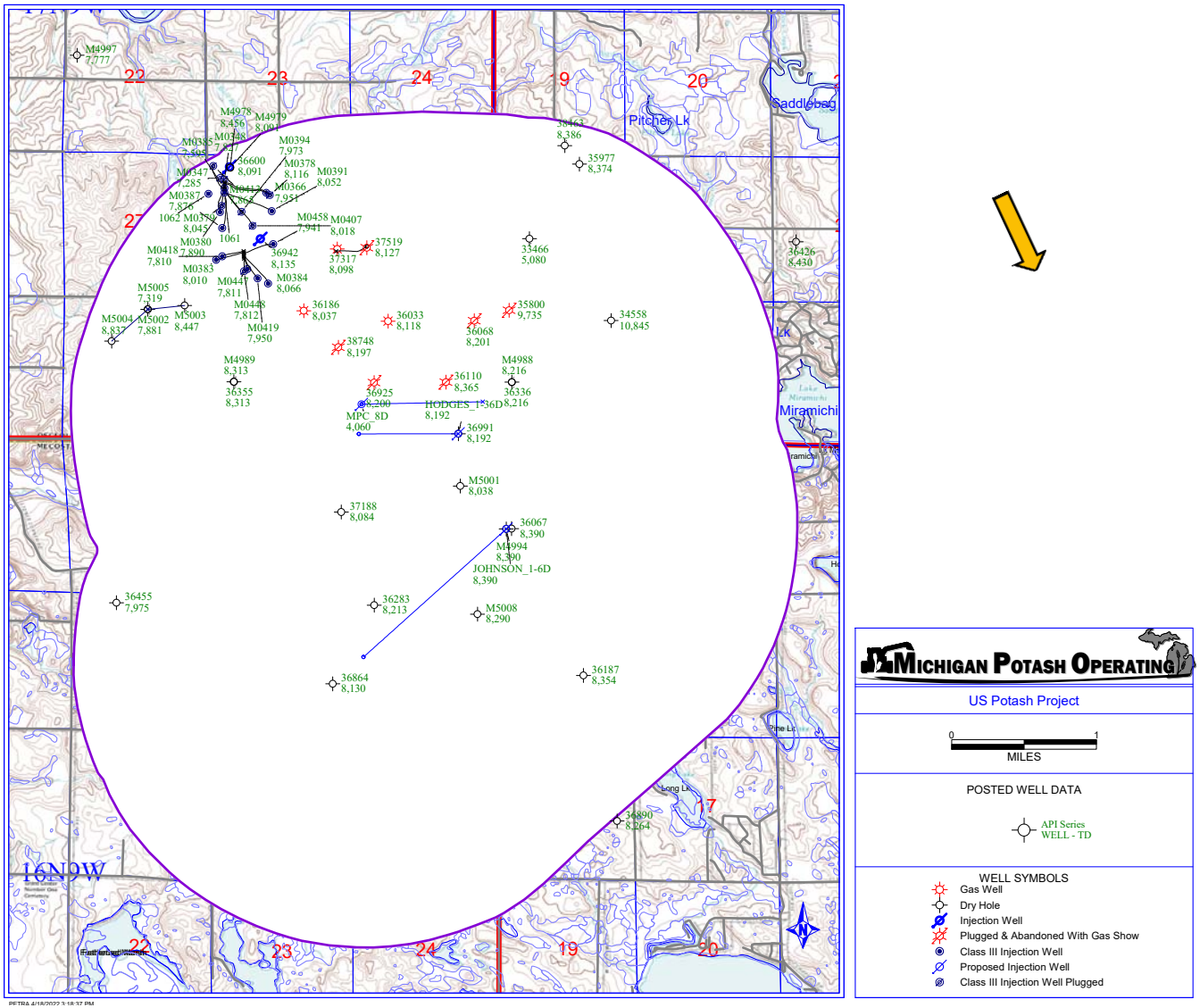


BEFORE



AFTER

CAPACITIES	FT³/FT
13⅜" 48# CSG	.8817
12¼" HOLE	.8125
9⅝" 43.5# CSG	.4180
5½" 17# CSG	.1305
2⅞" 6.5# TBG	.0325



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

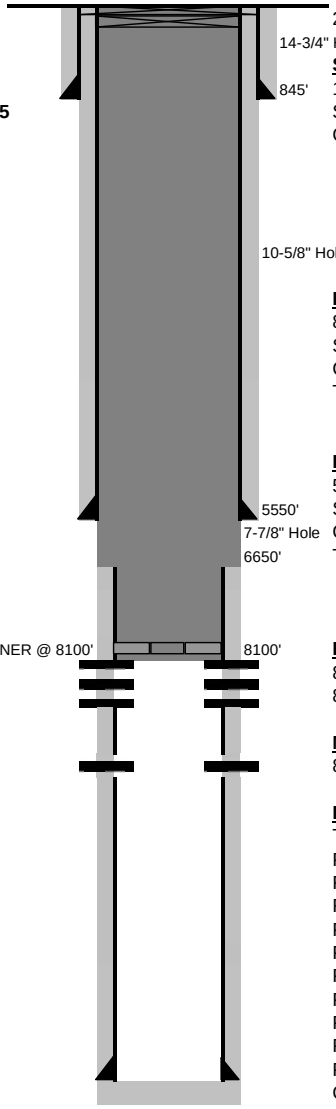
VUKIN UNIT A 1-19

SW SW SE Sec 19 T17N R8W

OSCEOLA COUNTY, MI

CURRENT WELLBORE DIAGRAM

API No. 21-133-38463-0000
GL @ 1104.4'
KB @ 1120.4'
WELL COMPLETION DATE: 2/1/85
PLUGGING COMPLETION DATE: 4/29/85



TD @ 8385' KB

UPDATED APRIL 2014 BY JLT

20" CONDUCTOR DRIVEN TO 81'

SURFACE CASING
11-3/4"; 42#/ft.
SET @ 845' KB
CMT w/ 575 SX TO SURFACE

INTERMEDIATE CASING
8 5/8"; 32#/ft.
SET @ 5550' KB
CMT w/660 SX + 825 SX \; DV 3620'
TOC @ 65'

PROD. CASING
5-1/2"; 15.5#/ft.
SET @ 8389' KB
CMT w/525 SX
TOC @ 6670'

BURNT BLUFF PERFS
8163'-8186' - 88 HOLES (4/10/85)
8215'-8221' - 24 HOLES (4/8/85)

MANITOULIN PERFS
8322'-8333' - 44 HOLES (3/5/85)

PLUGGING
TIH X TBG X CMT RETAINER TO 8100 FT. MIX 50 SX CMT X SQUEEZE PERFS.
PUMP 40 SX BELOW RET X LEAVE 10 SX ON TOP
R FREEPOINT X CUT 5-1/2" CSG AT 6650'. TOH X LD 83 JTS OF 5-1/2" CSG
R TBG TO TOP OF CMT AT 8000'. SPOT 45 SX HOWCO LITE
PU TO 7300' SPOT 45 SX. PU TO 6600' SPOT 254 SX
PU TO 6100' SPOT 254 SX. PU TO 5600' SPOT 100 SX CLASS A
PU TO 5250' SPOT 112 SX HOWCO LITE. PU TO 4606' SPOT 112 SX
PU TO 3960' SPOT 112 SX. PU TO 3350' SPOT 112 SX
PU TO 2700' SPOT 112 SX. PU TO 2060' SPOT 112 SX HOWCO LITE
PU TO 1450' SPOT 112 SX. PU TO 810' SPOT 105 SX
PU TO 160' SPOT 50 SX CLASS A
CUT OFF WELLHEAD. WELD CAP ON 8-5/8" X 11-3/4"
RECOVERED 6650' OF 5-1/2" CSG

VUKIN UNIT A 1-19 WELL HISTORY

DATE	DESCRIPTION
1/8/1985	SPUD.
3/5/1985	PERFORATED 44 HOLES: 8322'-8333'
4/8/1985	PERFORATED 24 HOLES: 8215'-8221'
4/10/1985	PERFORATED 88 HOLES: 8163'-8186'
2/1/1985	WELL COMPLETED. FORMATION AT TD CINCINNATIAN. 20" CONDUCTOR SET AT 81' 11-3/4" SET AT 845'; 575 SX 8-5/8" SET AT 5550'; 660/825 SX 5-1/2" SET AT 8389'; 525 SX
4/22/1985	PLUGGING STARTED TIH X TBG X CMT RETAINER TO 8100 FT MIX 50 SX CMT X SQUEEZE PERFS. PUMP 40 SX BELOW RET X LEAVE 10 SX ON TOP R FREEPOINT X CUT 5-1/2" CSG AT 6650'. TOH X LD 83 JTS OF 5-1/2" CSG R TBG TO TOP OF CMT AT 8000'. SPOT 45 SX HOWCO LITE PU TO 7300' SPOT 45 SX. PU TO 6600' SPOT 254 SX PU TO 6100' SPOT 254 SX. PU TO 5600' SPOT 100 SX CLASS A PU TO 5250' SPOT 112 SX HOWCO LITE. PU TO 4606' SPOT 112 SX PU TO 3960' SPOT 112 SX. PU TO 3350' SPOT 112 SX PU TO 2700' SPOT 112 SX. PU TO 2060' SPOT 112 SX HOWCO LITE PU TO 1450' SPOT 112 SX. PU TO 810' SPOT 105 SX PU TO 160' SPOT 50 SX CLASS A CUT OFF WELLHEAD. WELD CAP ON 8-5/8" X 11-3/4" RECOVERED 6650' OF 5-1/2" CSG
4/29/1985	PLUGGING COMPLETED

MAY 13 1985

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61)

Submit in **DUPLICATE** Within 30 Days after Well Completion

PERMIT NUMBER: 38463

DEEPENING PERMIT NUMBER:

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT
Amoco Production Company
P. O. Box 1350
Traverse City, MI 49685

NAME & ADDRESS OF DRILLING CONTRACTOR(S)
Indril
P. O. Box 668
Mt. Pleasant, MI 48858

LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT: Vukin Unit A 1-19

DIRECTIONALLY DRILLED: YES ☐ NO ☒

SURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME
SW/4 SW/4 SE/4	19	17N	8W	Evart

FOOTAGES (North/South) 330 Ft. from South Line and (East/West) 460 Ft. from West Line of quarter section — COUNTY NAME: Osceola

SUBSURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME

FOOTAGES (North/South) _____ Ft. from _____ Line and (East/West) _____ Ft. from _____ Line of quarter section — COUNTY NAME:

DATE

DRILLING BEGUN	TOTAL DEPTH OF WELL	TYPE WELL	ELEVATIONS	
1-8-85	Driller 8385 Log 8386	Dryhole		
DRILLING COMPLETED: 2-1-85	FORMATION AT T.D.: Cincinnatian	FT. DRLD. -- ROTARY TOOLS From 0 To TD	K.B. 1120.4	R.F. 1119.6
WELL COMPLETED: 2-1-85	PRODUCING FORMATION(S): Dryhole	FT. DRLD. -- CABLE TOOLS From _____ To _____	R.T.	Grd. 1104.4

CASING, CASING LINERS AND CEMENTING

SIZE	WHERE SET	CEMENT	Ft. Pulled
20"	81'	Driven	
11-3/4"	845'	575 sx	
8-5/8"	5550'	660/825 sx	
5-1/2"	8389'	525 sx	

PERFORATIONS

DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN YES	OPEN NO
3/5/85	44	8322-8333	X	
4/8/85	24	8215-8221	X	
4/10/85	88	8163-8186	X	

GROSS PAY INTERVALS

FORMATION	OIL OR GAS	FROM	TO

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X) Samples	Odor	Pits	Mud Line	Gas Log	Fill Up
SEE ATTACHED								

STIMULATION BY ACID OR FRACTURING

DATE	Interval Treated	Materials and amount used
3/8/85	8322-8333	2250 gal 28% NEHCL
4/10/85	8163-8186	500 gal 28% NEHCL
4/11/85	8163-8186	2000 gal 28% NEHCL

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

FORMATION	F.U.	L.C.	DEPTH	AMOUNT
Dundee		X	3863	Minimal Amt.
				Est<100 Bbl

MECHANICAL LOGS, LIST EACH TYPE RUN — DEPTH CORRECTION — DEVIATION SURVEY — PLUGGED BACK

Brand	(X)	LOG TYPES	LOGGED INTERVALS	DEPTH	CORRECT'N	RUN AT	DEGREES	YES	NO	DEPTH
Schlumberger	X	CNL/LDT	5550-100			SEE ATTACHED				
Birdwell		CNL/LDT	8383-5548							
OTHER		DLL/MLL	5550-5540							
OTHER		DLL/MLL	8358-5548							

BHC/Sonic 5546-817 Dipmeter 8345-7020
BHC/Sonic 8330-5548

PRODUCTION TEST DATA

OIL – Bbls/day	GRAVITY – °API	COND. Bbls/day	GAS – MCF/day	WATER – Bbls/day	H_2S – Grains/100 cu. ft.	B.H.P. AND DEPTH
DryHole						

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

DATE	NAME AND TITLE (PRINT)	SIGNATURE
5/8/85	J. L. Krupka, District Manager	J. L. Krupka

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

R - 7210
Rev. 3/77

MAY 1 4 1985

CONFIDENTIAL

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

PERMIT TO PLUG AND ABANDON

PERMIT NUMBER: 38463

FIELD NAME: Hersey Clinton

NAME AND ADDRESS OF PERMITTEE: Amoco Prod. Co.

LEASE NAME AND WELL NO.: Vukin Unit #1-19

LOCATION (N, S, W or other)	SECTION	TOWNSHIP	COUNTY
SW SW SE,	19	17N @ 8W Evart	Osceola

TYPE OF WELL (Oil, Gas, Dry Hole, etc.)	DATE COMPLETED	DATE PLUGGING WILL START	PLUGGING PERMIT REQUESTED BY & DATE
dry hole	drlg. 1/31/85	4/19/85	Mike Kutas 4/17/85

LAST PRODUCTION: perf 8163-86; only water; "puff" of gas

BOPD BWPD MCFGPD DATE

PLUGGING TO BE DONE BY: Pool / Halliburton

PERMIT MAILED TO

COPIES MAILED TO

CASING AND CEMENTING RECORD

HOLE DIA	CASING DIA & WT/FT	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT TOP	PERFORATIONS
	20"	80'	DP		
10-5/8"	11-3/4"	845'	650	circl	
7-7/8"	8-5/8"	5550'	660 1st stage; 825 2nd stage DV 3620	65	
	5-1/2"	8389'	525	6670	8163-86; 8215-21

WELL FIRST PERFD
3/5/85

KB 1120.4
BOD 545
BI 5445
BN 7995
GN 8009
CL 8095
BRT BLF 8165
MAN 8302
TD 8389

GEOLOGIC DATA; GAS AND OIL SHOWS; DRILLING AND COMPLETION DATA:

Perfs: 8322-33 squeezed w/4 bbls. cmt.
Rtnr. at 8289'.

PLUGGING REQUIREMENTS*

Plugging requirements outlined are to be executed in accordance with the provisions of Act 61, P.A. 1939, as amended, and rules and orders adopted thereunder.

Set 5-1/2" cmt. retainer at 8100'; squeeze 40 sx Cl H cmt. Spot 10 sx on top rtnr. Cut and pull 5-1/2" csg. at 6670'±. RIH w/tubg. to stub. Spot continuous cmt. plugs using lite poz., stub to just below surf. Spot 50 sx Cl A cmt. at surf. Cut csgs. 3' below grade. Weld on 1/2" steel plate. Fill cellar, rat & mouse holes solidly to surf.

*NOTE: BONDS CANNOT BE RELEASED UNTIL A PLUGGING IS COMPLETED, CELLAR RAT HOLE AND PITS FILLED, WELL SITE RESTORED AND RECORDS FILED. WATER WELLS MUST BE PLUGGED ACCORDING TO R[illegible] 188 OF ACT 294 P.A. 1965, "GROUND WATER QUALITY CONTROL". It is further made a requirement of this permit that the applicant give notice to the public utilities in accordance with [illegible] 53, P.A. 1974 C.L. 460 701 to 460 718 and comply with each of the requirements of the act.

AUTHORIZED BY (signature)	OFFICE	DATE
[signature]	Cadillac D#6	5/3/85

NOTE: WELL PLUGGING REC[illegible] Form R-7213 to be filed in TRIPLICATE within 30 days after completion.

R-7220
Rev. 11/77

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

CADILLAC HAS COPY

MAY 16 1985

WELL PLUGGING RECORD

(Submit in TRIPLICATE Within 30 Days After Plugging is Completed)

PPG 5156.as
ANP

PERMIT NUMBER: 38463

FIELD NAME:

COMPLETE NAME(S) AND ADDRESS OF WELL OWNER: P.P.G. Oil + Gas
Amoco Production Company, P. O. Box 1350, Traverse City, MI 49685

COMPLETE LEASE OR FARM NAME(S): Vukin Unit A

WELL NUMBER: 1-19

WELL LOCATION: SW ¼ SW ¼ SE ¼ SEC. 19 T. 17N R. 8W

TOWNSHIP: Evart

COUNTY: Osceola

TYPE OF WELL (Oil, Gas, Dry Hole, etc.): Dryhole

TOTAL DEPTH: 8386

FORMATION: Cincinnatian

DATE PLUGGING STARTED: 4/22/85

DATE PLUGGING COMPLETED: 4/29/85

DEPT. REPRESENTATIVE(S) WHO ISSUED PERMIT OR WITNESSED PLUGGING: Not Available

CASING RECORD			
SIZE CASING	DEPTH SET	AMOUNT RECOVERED	SHOT OR RIPPED
20"	81'		
11-3/4"	845'		
8-5/8"	5550'		
5-1/2"	8389'	6650'	

BRIDGES OR PLUGS		
TYPE (Brush, Stone, Cement, Mechanical, etc.)	DEPTH PLACED	SACKS OF CEMENT AND ADDITIVES
Numerous Cement Plugs		
See details described below		

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Halliburton - Kalkaska

Was the well plugged by a Company or Contractor other than Owner or Operator? ☒ YES ☐ NO — If yes, give name and address: Halliburton - Kalkaska

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: R. A. Abrahamson - Amoco

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

1. TIH X TBG X CMT RETAINER TO 8100 Ft.
2. MIX 50 SX CMT X SQUEEZE PERFS. PUMP 40 SX BELOW RET X LEAVE 10 SX ON TOP.
3. R FREEPOINT X CUT 5-1/2" CSG AT 6650'. TOH X LD 83 JTS OF 5-1/2" CSG.
4. R TBG TO TOP OF CMT AT 8000 FT. SPOT 45 SX HOWCO LITE.
5. PU TO 7300 FT. SPOT 45 SX. PU TO 6600 Ft. SPOT 254 SX.
6. PU TO 6100 FT. SPOT 254 SX. PU TO 5600 FT. SPOT 100 SX CLASS A.
7. PU TO 5250 FT. SPOT 112 SX HOWCO LITE. PU TO 4606 FT. SPOT 112 SX.
8. PU TO 3960 FT. SPOT 112 SX. PU TO 3350 FT. SPOT 112 SX.
9. PU TO 2700 FT. SPOT 112 SX. PU TO 2060 FT. SPOT 112 SX HOWCO LITE.
10. PU TO 1450 FT. SPOT 112 SX. PU TO 810'. SPOT 105 SX.
11. PU TO 160 FT. SPOT 50 SX CLASS A.
12. CUT OFF WELLHEAD. WELD CAP ON 8-5/8" X 11-3/4".

(USE REVERSE SIDE IF NEEDED)

CERTIFICATION

"I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge."

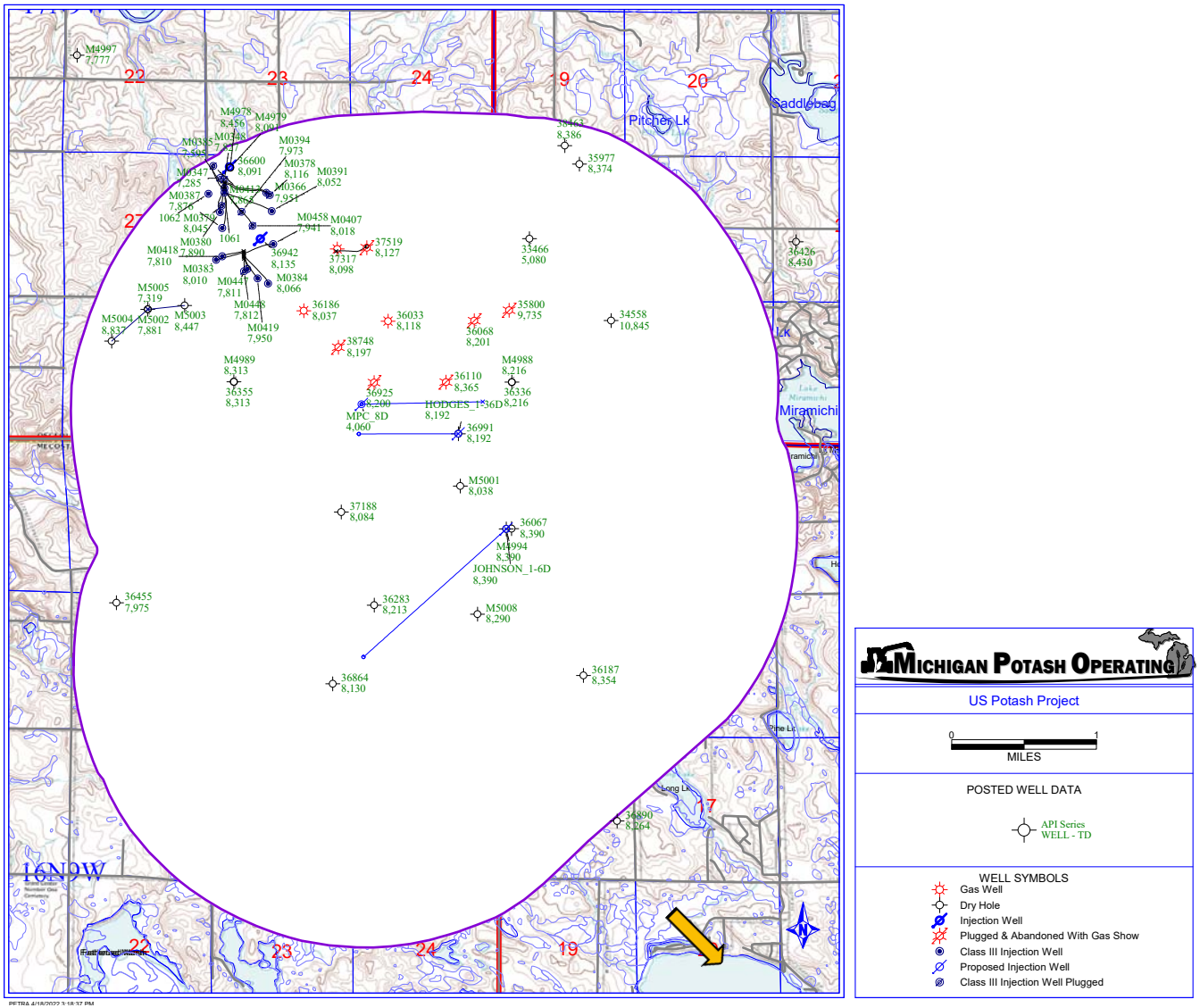
NAME AND TITLE (Typed or Printed): J. L. Krupka, District Manager

SIGNATURE: J. L. Krupka

DATE (Month, Day, Year): 5/8/85

COMPANY NAME AND ADDRESS:
Amoco Production Company
P. O. Box 1350
Traverse City, MI 49685

R 7213
Rev. 4/74



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

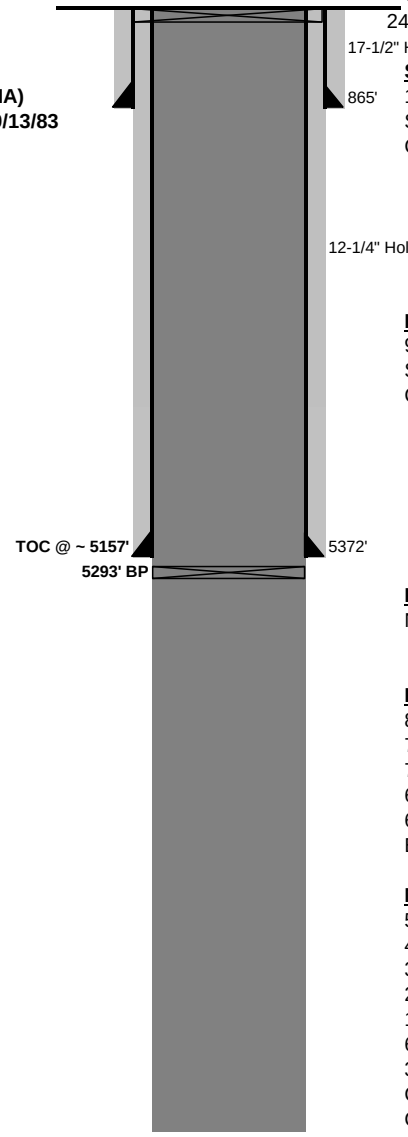
MICHIGAN POTASH OPERATING, LLC

WARD 1-11

C NE NE Sec 11 T16N R9W
MECOSTA COUNTY, MI

CURRENT WELLBORE DIAGRAM

API No. 21-107-36864-0000
GL @ 1140'
KB @ 1154.2'
COMPLETION DATE: DRY HOLE (NA)
PLUGGING COMPLETION DATE: 9/13/83



UPDATED APRIL 2014 BY JLT

24" CONDUCTOR DRIVEN TO 54'

17-1/2" Hole expected

SURFACE CASING
13 3/8"
SET @ 865' KB
CMT w/700 SX TO SURFACE

INTERMEDIATE CASING
9 5/8"
SET @ 5372' KB
CMT w/1875 SX TO SURFACE

PROD. CASING
NA

REWORK (PN36864)
8121'-7767' CMT w/100 SX COMMON
7767'-7015' CMT w/239 SX LITE
7015'-6885' CMT w/ 50 SX CLASS A
6885'-6509' CMT w/127 SX LITE
6509'-5300' CMT w/ 644 SX COMMON
BRIDGE PLUG AT 5293' w/50 SX CLASS A CMT ON TOP (TOC @ 5157')

MINERAL WELL PLUGGING (1200-821-354)
5015' CMT w/196 SX HOWCOLITE
4109' CMT w/188 SX HOWCOLITE
3239' CMT w/188 SX HOWCOLITE
2369' CMT w/188 SX HOWCOLITE
1499' CMT w/189 SX HOWCOLITE
624' CMT w/110 SX COMMON
312' CMT w/110 SX COMMON
CUT OFF 13-3/8" AND 9-5/8".
CAPPED WITH 3/8' STEEL PLATE

TD @ 8121' KB

WARD 1-11 WELL HISTORY

DATE	DESCRIPTION
7/28/1983	SPUD.
9/11/1983	DRILLING COMPLETED. FORMATION COMPLETED IN CINCINNATIAN. 24" CONDUCTOR SET AT 54' 13 3/8" SET AT 865'; 700 SX 9 5/8" SET AT 5372'; 1875 SX
9/12/1983	REWORK START DATE (PN36864) RAN IN AND SET 110 SX FROM 8121' TO 7767'. PULLED UP AND SPOTTED 239 SX FROM 7767'-7015'. SPOTTED 50 SX FROM 7015'-6885'. PULLED UP AND SPOTTED 127 SX FROM 6885'-6509' PULLED UP AND SPOTTED 644 SX FROM 6509'-5300'. SET BRIDGE PLUG AT 5293' AND SPOTTED 50 SX ON TOP (TOC @ ~5157')
9/13/1983	REWORK COMPLETED (PN36864).
9/12/1983	PLUGGING START DATE (1200-821-354) RAN IN WITH 2-7/8" TUBING, TAGGED CEMENT AT 5018'. CIRCULATED OUT MUD, HALLIBURTON SPOTTED HOWCOLITE PLUGS: 5015' CMT w/196 SX HOWCOLITE 4109' CMT w/188 SX HOWCOLITE 3239' CMT w/188 SX HOWCOLITE 2369' CMT w/188 SX HOWCOLITE 1499' CMT w/189 SX HOWCOLITE 624' CMT w/110 SX COMMON 312' CMT w/110 SX COMMON CUT OFF 13-3/8" AND 9-5/8". CAPPED WITH 3/8' STEEL PLATE
9/13/1983	PLUGGING COMPLETED (1200-821-354)

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

NOV 03 1983

LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61)

Submit in **DUPLICATE** Within 30 Days after Well Completion

PERMIT NUMBER: 36864

DEEPENING PERMIT NUMBER:

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT

PPG Oil & Gas Co., Inc.
2258 Enterprise Drive
Mt. Pleasant, MI 48858

NAME & ADDRESS OF DRILLING CONTRACTOR(S)

Bigard Drilling Company
1315 S. Mission
Mt. Pleasant, MI 48858

LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT: Ward #1-11

DIRECTIONALLY DRILLED: YES ☐ NO ☒

SURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME
C NE SE	11	16N	9W	Grant

FOOTAGES (North/South) 630 Ft. from North Line and (East/West) 617 Ft. from East Line of quarter section

COUNTY NAME: Mecosta

SUBSURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME

FOOTAGES (North/South) _____ Ft. from _____ Line and (East/West) _____ Ft. from _____ Line of quarter section

COUNTY NAME:

DATE	DRILLING BEGUN	TOTAL DEPTH OF WELL	TYPE WELL	ELEVATIONS	
	7-28-83	Driller 8121 Log 8130	Dry Hole		
	DRILLING COMPLETED	FORMATION AT T.D.	FT. DRLD. – ROTARY TOOLS	K.B.	R.F.
	9-11-83	Cincinnatian	From 0 To 8130	1154.2	1152.3
	WELL COMPLETED	PRODUCING FORMATION(S)	FT. DRLD. – CABLE TOOLS	R.T.	Grd.
		None	From _____ To _____		1140.2

CASING, CASING LINERS AND CEMENTING

SIZE	WHERE SET	CEMENT	Ft. Pulled
24"	54'		
13 3/8"	865'	700 Sx	
9 5/8"	1875 Sx		

PERFORATIONS

DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN YES	OPEN NO
		None		

GROSS PAY INTERVALS

FORMATION	OIL OR GAS	FROM	TO
None			

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X) Samples	Odor	Pits	Mud Line	Gas Log	Fill Up
Burnt Bluff	Gas	7960					X	
A2 Carbonate	Gas	6910	X	X			X	
Antrim	Gas	3150					X	

STIMULATION BY ACID OR FRACTURING

DATE	Interval Treated	Materials and amount used
	None	

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

FORMATION	F.U.	L.C.	DEPTH	AMOUNT
None				

MECHANICAL LOGS, LIST EACH TYPE RUN

	Brand	(X)	LOG TYPES	LOGGED INTERVALS	DEPTH	CORRECT'N	RUN AT	DEGREES	DEPTH YES	DEPTH NO	DEPTH
	Schlumberger	XX	LDT-CNL-GR	200-8130			1700	1/2°			
	Birdwell		DLL-MLL	2900-8130			4500	1 1/2°			
OTHER			NGT	200-8130			6060	1/2°			
OTHER			BHC-Sonic	200-8130			7320	1°			

PRODUCTION TEST DATA

OIL – Bbls/day	GRAVITY – °API	COND. Bbls/day	GAS – MCF/day	WATER – Bbls/day	H_2S – Grains/100 cu. ft.	B.H.P. AND DEPTH

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

DATE	NAME AND TITLE (PRINT)	SIGNATURE
10-17-83	William E Booker, Geolog.	William E. Booker

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

R 7210
Rev. 3/77

4450

DEPARTMENT OF NATURAL RESOURCES
Geological Survey Division

REQUEST FOR CHANGE OF OWNERSHIP OF A PERMIT
(Submit all copies)

Please Change:

Permit No. 36864 Type Well Oil & Gas Field Name ~~Hersey-Evart~~ Exploratory

Owned by PPG Oil & Gas Co., Inc.

Address 2258 Enterprise Drive, Mt. Pleasant, MI 48858 (517) 773-3949
(street) (town) (state) (zip) (phone)

for Ward No. 1-11 located in the C ¼ NE ¼ SE ¼

section 11, T. 16N, R. 9W, Grant Township, Mecosta County,

to PPG Industries, Inc.
(acquiring owner-complete names please)

All operating rights are discharged by (us) (me).

(Owner)	*(Representative)*	*(Signature)*	*(Date)*
PPG Oil & Gas Co., Inc.	Donald D. Metzger	Donald D. Metzger	4-17-84

THE SUPERVISOR IS PROHIBITED BY STATUTE FROM ISSUING A PERMIT TO ANY PERSON WHO IS NOT IN COMPLIANCE WITH THE PROVISIONS OF THE ACT, THE RULES, OR THE ORDERS OF EITHER THE SUPERVISOR OR THE NATURAL RESOURCES COMMISSION. ELIGIBILITY FOR PERMITS IS CONDITIONED ON COMPLIANCE WITH SUCH RULES AND ORDERS IN A DILIGENT MANNER AND IN ACCORDANCE WITH ACCEPTED OIL FIELD PRACTICE.

(We) (I) have acquired the well under this permit and assume full responsibility for drilling, operation, and abandonment in conformity with the law, regulations and orders issued by the Supervisor of Wells. The bond(s) required is attached or already on file.

PPG Industries, Inc.
(acquiring owner-complete names please)

Address 2258 Enterprise Drive, Mt. Pleasant, MI 48858 (517) 773-3949
(street) (town) (state) (zip) (phone)

All operating rights and responsibilities are assumed by (us) (me).

(Owner)	*(Representative)*	*(Signature)*	*(Date)*
PPG Industries, Inc.	Donald D. Metzger	Donald D. Metzger	4-17-84

THE DEPARTMENT OF NATURAL RESOURCES

Approved. [signature] 4/20/84
(Signature) *(Date)*

DNR USE ONLY
White, Lansing
Yellow, Acquiring Owner
Pink, Selling Owner
Blue, Field

R-7214 (Rev. 10-79)

HALLIBURTON SERVICES

JOB LOG

WELL NO. 1-11 LEASE Ward TICKET NO. 582870

CUSTOMER PPG Oil & Gas PAGE NO. 1 of 2

JOB TYPE P+A DATE 9/12/83

FORM 2013 R-2

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS T	PUMPS	PRESSURE (PSI) TUBING	PRESSURE (PSI) CASING	DESCRIPTION OF OPERATION AND MATERIALS
					DP			Shoo on loc.
								Safety meeting & set-up
								1st plug @ 8121' to 7748' 110sk
1			0		1			Start FW ahead
1			25		1			Finish FW ahead
1			0		1			Start mixing Cmt (CLA)
1			23.2		1			Finish Mixing Cmt (CLA)
1			7.0		1			FW Behind
1			0		1			Start Disp w/ Mud
1			103.0		1			Finish Disp w/ Mud
								2nd plug @ 7767' to 7015'
1			0		1			Start FW ahead
1			10		1			Finish FW ahead
1			0		1			Start mixing Cmt (Lite)
1			83.9		1			Finish mixing Cmt (lite)
1			2.8		1			FW Behind
1			0		1			Start Disp w/ Mud
1			96.9		1			Finish Disp w/ Mud
								3Rd plug @ 7054 to 6855'
1			0		1			Start FW ahead
1			10		1			Finish FW ahead
1			0		1			Start mixing Cmt (CLA)
1			10.5		1			Finish mixing Cmt (CLA)
1			2.8		1			FW Behind
1			0		1			Start Disp w/ Mud
1			95.1		1			Finish Disp w/ Mud
								4th plug @ 6885' to 6509'
1			0		1			FW ahead
1			10		1			Finish FW ahead
1			0		1			Mix Cmt - lite
1			41.6		1			Finish Cmt
1			2.8		1			FW Behind

Cont. on next page

CUSTOMER

HALLIBURTON SERVICES

JOB LOG

WELL NO. 1-11 LEASE Ward TICKET NO. 582870

CUSTOMER PPG Oil & Gas PAGE NO. 2 of 2

JOB TYPE P+A DATE 4/12/83

FORM 2013 R-2

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS T	PUMPS C	PRESSURE (PSI) TUBING	PRESSURE (PSI) CASING	DESCRIPTION OF OPERATION AND MATERIALS
					DP			Cont From 1st page 4th plug
								Start Disp w/ Mud
								Finish Disp w/ Mud
1					1			5th plug @ 6509' to 5300'
1			0		1			Start FW ahead
1			10		1			Finish FW ahead
1			0		1			Start Cmt (CLA)
1			135.3		1			Finish Cmt (CLA)
1			2.8		1			FW Behind
1			0		1			Start Disp w/ Mud
1			72.6		1			Finish Disp w/ Mud
2			25		1			Break Circulation
			0					START FW AHead
2			15		1			Finish FW Ahead
			0					Start Last Plug 5020' Cmt
2			10.5		1			Finish Plug
			0					FW Spacer START
2			35		1			FW Spacer Finish
			0					START Disp w/ Mud
2			69		1			Finish Disp w/ Mud
								Release Psi
								Hoses Released.

CUSTOMER

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

NOV 07 1983

WELL PLUGGING RECORD Rework

(Submit in TRIPLICATE Within 30 Days After Plugging is Completed)

LANSING HAS COPY

PERMIT NUMBER: 36864

FIELD NAME:

COMPLETE NAME(S) AND ADDRESS OF WELL OWNER
PPG Oil & Gas Co., Inc., 2258 Enterprise Drive, Mt. Pleasant, MI 48858

COMPLETE LEASE OR FARM NAME(S): Ward

WELL NUMBER: 1-11

WELL LOCATION: C ¼ NE ¼ SE ¼ SEC. 11 T. 16N R. 9W

TOWNSHIP: Grant

COUNTY: Mecosta

TYPE OF WELL (Oil, Gas, Dry Hole, etc.): Dry Hole

TOTAL DEPTH: 8130

FORMATION: Cincinnatian

DATE PLUGGING STARTED: 9-12-83

DATE PLUGGING COMPLETED: 9-13-83

DEPT. REPRESENTATIVE(S) WHO ISSUED PERMIT OR WITNESSED PLUGGING: Todd

CASING RECORD

SIZE CASING	DEPTH SET	AMOUNT RECOVERED	SHOT OR RIPPED
24"	54'		
13 3/8"	865'		
9 5/8"	5372'		

BRIDGES OR PLUGS

TYPE (Brush, Stone, Cement, Mechanical, etc.)	DEPTH PLACED	SACKS OF CEMENT AND ADDITIVES
Cement	8121-7767	100 Sx Common
Cement	7767-7015	239 Sx Lite
Cement	7015-6885	50 Sx Class A
Cement	6885-6509	127 Sx Lite
Cement	6509-5300	644 Sx Common
Bridge Plug	5293	50 Sx on Top

TOC ≈ 5157'

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO (XX) If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES (XX) ☐ NO If yes, give name and address: Halliburton

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO (XX) If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Chet Lowery

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Ran in and set 110 sx from 8121 to 7767, pulled up and spotted 239 sx from 7767 to 7015, pulled up and spotted 50 sx from 7015-6885, pulled up and spotted 127 sx from 6885 to 6509, pulled up and spotted 644 sx from 6509 to 5300. Set bridge plug at 5293 and spotted 50 sx on top.

GEOLOGICAL SURVEY

OCT 15 1993

Permit & Bonding Unit

GEOLOGICAL SURVEY
NOV 3 1983
Regulatory Control Unit

(USE REVERSE SIDE IF NEEDED)

CERTIFICATION

"I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge."

NAME AND TITLE (Typed or Printed): William E. Booker, Geologist

SIGNATURE: William E Booker

DATE (Month, Day, Year): 10-17-83

COMPANY NAME AND ADDRESS:
STRICKLER GEOLOGICAL SERVICES, INC.
1425 S. Mission
Mt. Pleasant, MI 48858

R 7213
Rev. 4/74

OPERATORS USE

Description of Detail (cont.) or Other Supplemental Data:

DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:

FINAL INSPECTIONS BY DEPARTMENT REPRESENTATIVES

SIGNATURE	DIVISION	DATE

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL PLUGGING RECORD

File in DUPLICATE Within 30 Days After Plugging is Completed

36864 Act 61

PERMIT NUMBER: 1200-821-354

DATE: 2-1-88

GEOLOGICAL SURVEY
Permits & Bonding Unit

OWNER OR OPERATOR: PPG Industries, Inc.

ADDRESS: One PPG Place, Pittsburgh, PA 15272

WELL NAME: Ward

WELL NUMBER: 1-11

WELL LOCATION: C ¼ NE ¼ SE ¼ SEC. 11 T. 16N R. 9W

TOWNSHIP: Grant

COUNTY: Mecosta

TYPE OF WELL (Brine Disposal, Storage, or Test): Dry Hole

TOTAL DEPTH: 8130

FORMATION: Cincinnatian

DATE PLUGGING STARTED: 9-12-83

DATE PLUGGING COMPLETED: 9-13-83

WAS PERMISSION OF DEPT. OF NATURAL RESOURCES OBTAINED BEFORE PLUGGING BEGAN? XX ☐ YES ☐ NO

NAME OF DEPARTMENT REPRESENTATIVE WHO AUTHORIZED OR SUPERVISED PLUGGING

CASING SIZE	WHERE SET	AMOUNT RECOVERED	SHOT OR RIPPED	TYPE OF BRIDGES OR PLUGS	DEPTH PLACED	NUMBER SACKS
24"	54'			Cement (Howcolite)	5015'	196 sx
13 3/8"	865'			Cement (")	4109'	188 sx
9 5/8"	5372'			Cement (")	3239'	188 sx
				Cement (")	2369'	188 sx
				Cement (")	1499'	189 sx
				Cement (common)	624'	110 sx
				Cement (")	312'	110 sx

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Ran in with 2 7/8" tubing, tagged cement at 5018', circulated out mud, Halliburton spotted Howcolite plugs: 196 sx at 5015', 188 sx at 4109', 188 sx at 3239', 188 sx. at 2369', and 189 sx. at 1499'. Halliburton spotted 110 sx common cement at 624' and 110 sx common cement at 312'. Cut off 13 3/8" and 9 5/8". Capped with 3/8' steel plate.

(USE REVERSE SIDE IF NEEDED)

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Halliburton, Mt. Pleasant, MI

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging

CERTIFICATE

I, Donald D. Metzger of Kalium Chemicals (company), state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction and that the facts stated herein are true, correct and complete to the best of my knowledge.

SIGNATURE	ADDRESS	TITLE
Donald D. Metzger	11126 140th Ave., Hersey, MI	Resident Manager

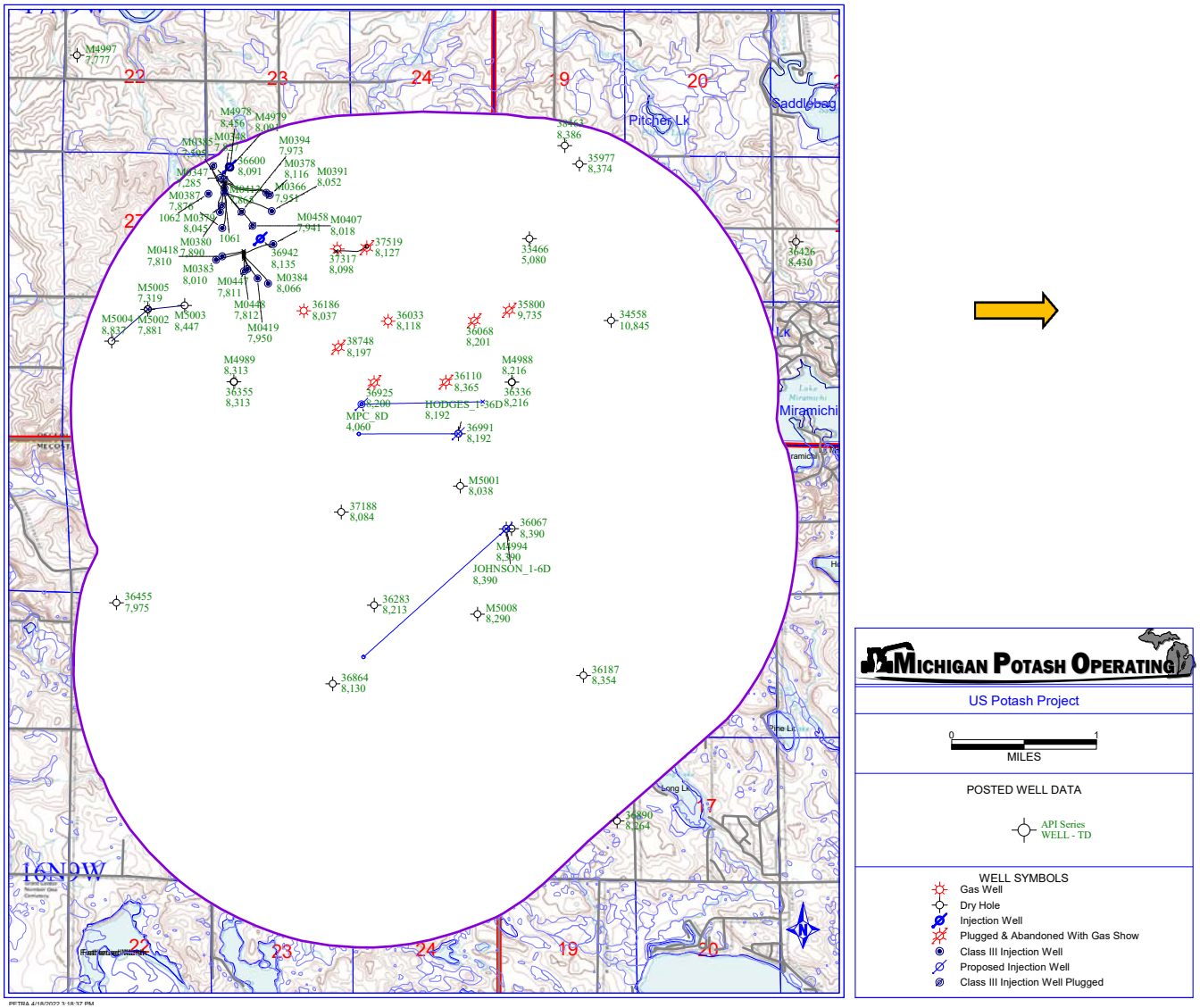
FINAL INSPECTIONS

DEPARTMENT REPRESENTATIVE	DATE
DEPARTMENT REPRESENTATIVE	DATE

OPERATORS USE

DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

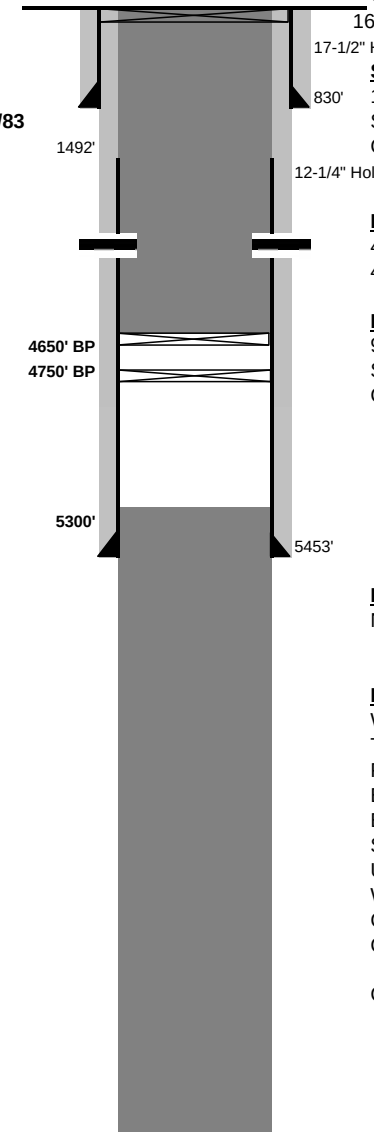
Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

WARK 1-30

NE NW NE Sec 30 T17N R8W
OSCEOLA COUNTY, MI

CURRENT WELLBORE DIAGRAM

API No. 21-133-35977-0000
GL @ 1100'
KB @ 1116.2'
COMPLETION DATE: DRY HOLE (NA)
PLUGGING COMPLETION DATE: 9/13/83



UPDATED APRIL 2014 BY JLT

16" CONDUCTOR DRIVEN TO 49'

17-1/2" Hole expected

SURFACE CASING
13 3/8"
830'
SET @ 830' KB
CMT w/860 SX TO SURFACE

12-1/4" Hole expected

DETROIT RIVER PERFORATIONS:
4455'-4457' 4X/ft
4560'-4562' 4X/ft

INTERMEDIATE CASING
9 5/8"
SET @ 5453' KB
CMT w/335 SX TO SURFACE

PROD. CASING
NA

PLUGGING
WELL WAS PLUGGED WITH CONTINUOUS CEMENT PLUG FROM
TD TO 5300' USING 370 SX POX MIN 16% GEL .78% HK-7 + 265 SX
POZ MIX SALT SATURATED CEMENT
BP SET ON TOP OF CEMENT @ 4750'
BP WAS SET AT 4650'
SOLID CEMENT PLUG SET FROM 4650' TO SURFACE
USING 1380 SX HOWCO LITE CEMENT
WITH 225 SX COMMON CEMENT ON TOP.
CASING CUT OFF 3' BELOW SURFACE AND
CAP WELDED OVER.

CASING LEFT FROM 1492'-5453'

TD @ 8371' KB

WARK 1-30 WELL HISTORY

DATE	DESCRIPTION
8/13/1982	SPUD.
9/13/1982	DRILLING COMPLETED. FORMATION COMPLETED IN CINCINNATIAN. 16" CONDUCTOR SET AT 49' 13 3/8" SET AT 830'; 860 SX 9 5/8" SET AT 5453'; 335 SX
9/16/1982	PERFORATIONS AT 4455'-4457' AND 4560'-4562' (4X/ft)
	PLUGGING STARTED WELL WAS PLUGGED WITH CONTINUOUS CEMENT PLUG FROM TD TO 5300' USING 370 SX POX MIN 16% GEL .78% HK-7 + 265 SX POZ MIX SALT SATURATED CEMENT BP SET ON TOP OF CEMENT @ 4750' BP WAS SET AT 4650' SOLID CEMENT PLUG SET FROM 4650' TO SURFACE USING 1380 SX HOWCO LITE CEMENT WITH 225 SX COMMON CEMENT ON TOP. CASING CUT OFF 3' BELOW SURFACE AND CAP WELDED OVER. CASING LEFT FROM 1492'-5453' PLUGGING COMPLETED.

OCT 2 1 1982

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61)

Submit in **DUPLICATE** Within 30 Days after Well Completion

PERMIT NUMBER: 35977

DEEPENING PERMIT NUMBER:

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT:
Willmet, Inc.
2250 Enterprise Drive
Mt. Pleasant, MI 48858

NAME & ADDRESS OF DRILLING CONTRACTOR(S):
T. D. Provins Drilling Company
2113 Enterprise Drive
Mt. Pleasant, MI 48858

LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT: Wark #1-30

DIRECTIONALLY DRILLED: YES ☐ NO ☒

SURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME
NE NW NE	30	17N	8W	Evart

FOOTAGES (North/South) 330 Ft. from North Line and (East/West) 983 Ft. from West Line of quarter section

COUNTY NAME: Osceola

SUBSURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME

FOOTAGES (North/South) _____ Ft. from _____ Line and (East/West) _____ Ft. from _____ Line of quarter section

COUNTY NAME:

DATE

DRILLING BEGUN	TOTAL DEPTH OF WELL	TYPE WELL	ELEVATIONS	
8-13-82	Driller 8371 Log 8374	Dry Hole		
DRILLING COMPLETED: 9-13-82	FORMATION AT T.D.: Cincinnatian	FT. DRLD. – ROTARY TOOLS From 0 To 8374	K.B. 1116.2	R.F. 1115
WELL COMPLETED	PRODUCING FORMATION(S): None	FT. DRLD. – CABLE TOOLS From _____ To _____	R.T.	Grd. 1100

CASING, CASING LINERS AND CEMENTING

SIZE	WHERE SET	CEMENT	Ft. Pulled
16"	49		--
13 3/8"	830	860 Sx	--
9 5/8"	5453	335 Sx	--

PERFORATIONS

DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN YES	OPEN NO
9-16-82	4x/ft.	4455 - 57 &	X	
		4560 - 62		

GROSS PAY INTERVALS

FORMATION	OIL OR GAS	FROM	TO
None			

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X) Samples	Odor	Pits	Mud Line	Gas Log	Fill Up
Reed City	Gas	3933						
Sour Zone	Gas	4523						
Manitoulin	Gas	8320					XX	

STIMULATION BY ACID OR FRACTURING

DATE	Interval Treated	Materials and amount used
9-16-82	4455 - 62	500 gal. 20% HCL

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

FORMATION	F.U.	L.C.	DEPTH	AMOUNT
None				

MECHANICAL LOGS, LIST EACH TYPE RUN

DEPTH CORRECTION

DEVIATION SURVEY

PLUGGED BACK

	Brand	(X)	LOG TYPES	LOGGED INTERVALS	DEPTH	CORRECT'N	RUN AT	DEGREES	YES	NO	DEPTH
	Schlumberger	X	LDT-CNL-GR	200-8374			2054	3/4°			
	Birdwell		Sonic	200-8374			4348	1°			
OTHER			DLL-MLL	200-8374			5882	1/2°			
							7591	1°			

PRODUCTION TEST DATA

OIL – Bbls/day	GRAVITY – °API	COND. Bbls/day	GAS – MCF/day	WATER – Bbls/day	H_2S – Grains/100 cu. ft.	B.H.P. AND DEPTH

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

DATE	NAME AND TITLE (PRINT)	SIGNATURE
10-11-82	William E. Booker, Geologist	William E Booker

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

R - 7210
Rev. 3/77

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

WELL PLUGGING RECORD

(Submit in TRIPLICATE Within 30 Days After Plugging is Completed)

OCT 04 1982

PERMIT NUMBER: 35977

FIELD NAME:

COMPLETE NAME(S) AND ADDRESS OF WELL OWNER
Willmet, Inc., 2250 Enterprise Dr., Mt. Pleasant, MI 48858

COMPLETE LEASE OR FARM NAME(S): Wark

WELL NUMBER: 1-30

WELL LOCATION: NE ¼ NW ¼ NE ¼ SEC. 30 T. 17N R. 8W

TOWNSHIP: Evart

COUNTY: Osceola

TYPE OF WELL (Oil, Gas, Dry Hole, etc.): Dry hole

TOTAL DEPTH: 8375

FORMATION: Cincinnatian

DATE PLUGGING STARTED: 8-12-82

DATE PLUGGING COMPLETED: 8-21-82

DEPT. REPRESENTATIVE(S) WHO ISSUED PERMIT OR WITNESSED PLUGGING: Jack Snider

CASING RECORD

SIZE CASING	DEPTH SET	AMOUNT RECOVERED	SHOT OR RIPPED
24"	49'	nil	---
13 3/8"	832'	nil	nil
9 5/8"	5,453'	1,492'	shot

BRIDGES OR PLUGS

TYPE (Brush, Stone, Cement, Mechanical, etc.)	DEPTH PLACED	SACKS OF CEMENT AND ADDITIVES
Cement	TD-5300	635 sacks
B.P.	4750	Permanent
B.P.	4650	Permanent
Cement	4650-Surface	1380 sacks

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? [X] YES [ ] NO

If yes, give details: Casing left from 1492'-5453'

Did a Service Company pump mud, spot cement, or set bridge plugs? [X] YES [ ] NO

If yes, give name and address: Halliburton Cementing
Baker Tools

Was the well plugged by a Company or Contractor other than Owner or Operator? [ ] YES [X] NO

If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Chet Lowery

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Well was plugged with continuous cement plug from T. D. to 5,300' using 370 sacks Poz. min. 16% gel .78% HK-7 plus 265 sacks Poz. mix salt saturated cement. A Baker permanent type B. P. was set on top of cement at 4750'. A Baker permanent type B. P. was set at 4650'. Solid cement plug set from 4650' to surface using 1380 sacks HOWCO lite cement with 225 sacks, common cement on top. Casing cut off 3' below surface and cap welded over.

(USE REVERSE SIDE IF NEEDED)

CERTIFICATION

"I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge."

NAME AND TITLE (Typed or Printed): Donald Smith, Exploration Engineer

SIGNATURE: D Smith

DATE (Month, Day, Year): Sept 30/82

COMPANY NAME AND ADDRESS:
Willmet, Inc.
2250 Enterprise Dr.
Mt. Pleasant, MI 48858

R 7213
Rev. 4/74

OPERATORS USE

Description of Detail (cont.) or Other Supplemental Data:

DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:

5/9/83 site is clean and recontoured, except for a pile of soil. Landowner came by and said that he asked that the pile of topsoil be left for his use and seemed satisfied with the restoration; can recommend approval. (M.Moss)

FINAL INSPECTIONS BY DEPARTMENT REPRESENTATIVES		
SIGNATURE	DIVISION	DATE
Michael J. Moss		5/9/83

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

OCT 2 1 1982

LANSING HAS COPY

WELL PLUGGING RECORD

(Submit in TRIPLICATE Within 30 Days After Plugging is Completed)

PERMIT NUMBER: 35977

FIELD NAME:

COMPLETE NAME(S) AND ADDRESS OF WELL OWNER
Willmet, Inc., 2250 Enterprise Drive, Mt. Pleasant, MI 48858

COMPLETE LEASE OR FARM NAME(S): Wark

WELL NUMBER: 1-30

WELL LOCATION: NE ¼ NW ¼ NE ¼ SEC. 30 T. 17N R. 8W

TOWNSHIP: Evart

COUNTY: Osceola

TYPE OF WELL (Oil, Gas, Dry Hole, etc.): Dry Hole

TOTAL DEPTH: 8327

FORMATION: Cincinnatian

DATE PLUGGING STARTED: 9-14-82

DATE PLUGGING COMPLETED: 9-17-82

DEPT. REPRESENTATIVE(S) WHO ISSUED PERMIT OR WITNESSED PLUGGING: Michael Moss

CASING RECORD

SIZE CASING	DEPTH SET	AMOUNT RECOVERED	SHOT OR RIPPED
16"	49		
13 13/8"	830	860 Sx	---
9 5/8"	5453	335 Sx	1492

BRIDGES OR PLUGS

TYPE (Brush, Stone, Cement, Mechanical, etc.)	DEPTH PLACED	SACKS OF CEMENT AND ADDITIVES
Cement	8374 to 4750	635 Sx
Baker Perm B.P.	4750	---
Baker Perm B.P.	4650	---
Cement	4650-Surface	1600 Sx

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Hailliburton

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Marvin Woods

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED: Circulated cement from total depth to 4750 and went in and set bridge plug in cement at 4750. Used 370 sx poz with 16% gel and 265 sx poz mix, salt saturated, attempted to complete Detroit River Sour - perf 4455 - 4462, negative results. Cut 9 5/8" at 1492.- set bridge plug at 4650 and circulated to surface using 1380 sx Howco Lite and 220 sx Class A casing cut 3' below surface and capped.

(USE REVERSE SIDE IF NEEDED)

CERTIFICATION

"I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge."

NAME AND TITLE (Typed or Printed): William E. Booker, Geologist

SIGNATURE: William E Booker

DATE (Month, Day, Year): 10-11-82

COMPANY NAME AND ADDRESS: Strickler Geological Services, Inc.
1425 S. Mission Street
Mt. Pleasant, MI 48858

R 7213
Rev. 4/74

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

PERMIT TO PLUG AND ABANDON

OCT 08 1982

DNR DISTRIBUTION
Permittee — Orig & 1 copy
Division Office — 2 copies
Field Office — File copy
Others — On request

PERMIT NUMBER: 35977

FIELD NAME:

NAME AND ADDRESS OF PERMITTEE: Willmet, Inc.

LEASE NAME AND WELL NO: Wark #1-30

LOCATION (¼ ¼ ¼ or other): NE NW NE
SECTION: 30 T 17N R 8W
TOWNSHIP: Osceola, Evart
COUNTY:

TYPE OF WELL (Oil, Gas, Dry Hole, etc.): Dry hole
DATE COMPLETED: 8/12/82
DATE PLUGGING WILL START: 8/12/82
PLUGGING PERMIT REQUESTED BY & DATE: Don Smith 8/12/82

LAST PRODUCTION
BOPD BWPD MCFGPD DATE

PLUGGING TO BE DONE BY: Halliburton

PERMIT MAILED TO: Willmet, Inc.
2250 Enterprise
Mt. Pleasant, MI 48858

COPIES MAILED TO:

CASING AND CEMENTING RECORD

HOLE DIA	CASING DIA. & WT./FT	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP	PERFORATIONS
	24"	49	DP		
	133/8"	832	860	circl	
	95/8"	5453	335	4220	

GEOLOGIC DATA; GAS AND OIL SHOWS; DRILLING AND COMPLETION DATA:

CONFIDENTIAL

PLUGGING REQUIREMENTS*

Plugging requirements outlined are to be executed in accordance with the provisions of Act 61, P.A. 1939, as amended, and rules and orders adopted thereunder.

Previously plugged back w/continuous cmt. plug from TD to 5300' and BP at 4750' and tested 4655-4662'. Set permanent BP at 4650'. Rip and pull 95/8". Run tubg. to 4650' and spot continuous cmt. plug to surface. Cut 113/4" and 24" 3' below surf. and weld 1/2" steel plate.

*NOTE: BONDS CANNOT BE RELEASED UNTIL A PLUGGING IS COMPLETED, CELLAR RAT HOLE AND PITS FILLED, WELL SITE RESTORED AND RECORDS FILED. WATER WELLS MUST BE PLUGGED ACCORDING TO RULE 166 OF ACT 294 P.A. 1965, "GROUND WATER QUALITY CONTROL." It is further made a requirement of this permit that the applicant give notice to the public utilities in accordance with Act 53, P.A. 1974 C.L. 460.701 to 460.718 and comply with each of the requirements of the act.

AUTHORIZED BY (signature): [signature]
OFFICE: Cadillac D#6
DATE: 10/6/82

NOTE: WELL PLUGGING RECORD Form R-7213 to be filed in TRIPLICATE within 30 days after completion.

R-7229
Rev. 11/77

This document paid for with State funds

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
SUPERVISOR OF WELLS

FEB 11 1983
LANSING HAS COPY

WELL REWORK RECORD

FILE IN DUPLICATE WITHIN 30 DAYS AFTER COMPLETION OF REWORK OR DEEPENING
(Replaces GS 38)

PERMIT NUMBER	DEEPENING PERMIT NUMBER	FIELD NAME
35977		Wildcat

NAME AND ADDRESS OF WELL OWNER
Willmet, Inc., 2250 Enterprise Drive, Mt. Pleasant, MI 48858

LEASE OR FARM NAME	WELL NUMBER
Wark	1-30

WELL LOCATION	SECTION			TOWNSHIP	COUNTY
NE NW NE	30	T. 17N	R. 8W	Evart	Osceola

WELL COMPLETED FOR (Oil, Gas, Gas Storage, Brine Disposal, Water Injection, etc.)	TOTAL DEPTH AFTER REWORK	MECHANICAL LOGS RUN
Dry Hole	4750	NO ADDITIONAL LOGS

WELL COMPLETED IN (Name Rock Formation and Zone of Completion)	DATE REWORK COMMENCED	DATE REWORK COMPLETED
Dry Hole in Sour Zone	9-17-82	9-19-82

NAME AND ADDRESS OF CONTRACTOR
T. D. Provins, 2113 Enterprise Drive, Mt. Pleasant, MI 48858

WELL CASING RECORD – BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture Treatment Record	Perforations If plugged, how?
Size	Depth	Sacks	Type	From	To		
16"	49'						
13 3/8"	830'	860	200 C1 A-660 POZ				
9 5/8"	5453'	335	C1 A				

WELL CASING RECORD – AFTER REWORK (Indicate additions and changes only)

Casing		Cement		Perforations		Acid or Fracture Treatment Record	Perforations If plugged, how?
Size	Depth	Sacks	Type	From	To		
9 5/8"	5453	335	4x/ft	4455	4457	500 gal. 20% HCL	
			"	4560	4562		

DESCRIBE REWORK OPERATIONS IN DETAIL

Run in and circulated cement from TD to 4750, Set bridge plug at approximately 4750. Perforated from 4455-57 and 4560-62, swabbed back 50 bbls load water and 30 bbls. formation water. Ran in and set bridge plug at 4650 and circulated cement to surface (1380 sx).

IMPORTANT! SEE REVERSE SIDE

R 7212
Rev. 10/72

GEOLOGICAL FORMATION RECORD OF DEEPENING

FROM	TO	FORMATION (type, color, hardness)	FROM	TO	FORMATION (type, color, hardness)

DAILY PRODUCTION TEST RECORD

Date	Barrels		Pressure	
	Oil	Water	Tubing	Casing
9-19-82	0	30 bbls.		

DAILY INJECTION TEST RECORD IF INJECTION WELL (OR BDW)

Date	Barrels of Water	Pressure		Specific Gravity of Water
		Beginning	Ending	

SIGNATURE (Well Owner or Authorized Representative)	ADDRESS (If different than well owner)	DATE (Month, Day, Year)
William Booker	1425 S. Mission Mt. Pleasant, MI 48858	1-20-83

NOTE: IF GAS WELL, RECORD FLOW TEST UNDER "DAILY PRODUCTION TEST RECORD"

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

Lansing
lfc
OCT 04 1982
OCT 07 1982

LEAVE BLANK
DEEPENING PERMIT NUMBER
DATE ISSUED

APPLICATION TO CHANGE WELL STATUS

(SUBMIT IN QUADRUPLICATE)

PERMIT NUMBER	FIELD NAME
35977	

NAME AND ADDRESS OF WELL OWNER
Willmet, Inc., 2250 Enterprise Dr., Mt. Pleasant, MI 48858

LEASE OR FARM NAME	WELL NUMBER
Wark	1-30

WELL LOCATION	SECTION			TOWNSHIP	COUNTY
NE/4 of NW/4 of NE/4	30	T. 17N	R.8W	Evart	Osceola

(Deepen, Plug Back, Convert to Injection or Disposal Well, Temporarily Abandon etc.)
APPROVAL REQUESTED TO Plug back

DATE DRILLING COMPLETED	DATE LAST PRODUCED	LAST PRODUCTION (Amt/day) OIL, WTR., M.C.F. GAS
8-12-82		

WORK TO BE DONE BY	WILL START (DATE)
	8-16-82

CASING AND CEMENTING RECORD

SIZE CASING	DEPTH SET	NO. SACKS CEMENT	PERFORATIONS
24"	49'	driven	
13 3/8"	832'	cement to surface	
9 5/8"	5,453'	cement top, 4220'.	

FORMATION RECORD
(Formation and depth, Oil, Gas & Wtr. shows, etc.)

DESCRIBE PROPOSED WORK IN DETAIL:

Continuous cement plug from T. D. 8375' to 5300'. Plug consists of 370 sacks Poz. min. 16% gel .78% HK-7 plus 265 sacks Poz. mix salt saturated cement. A Baker permanent type B. P. was set on top of cement at 4750'. A Baker permanent type B. P. was set at 4650'.* Solid cement plug set from 4650' to surface using 1380 sacks HOWCO lite cement with 225 sacks, common cement on top. Casing cut off 3' below surface and cap welded over.

*Perf. 4655-57 and 4660-62 at 4 spf and test these zones before completing plugging.

The proposed work as outlined above and approved by the Supervisor or his Authorized Representative will be executed in accordance with the provisions of Act 61, P.A. 1939 and the rules and regulations issued and adopted thereunder.

SIGNATURE (Well Owner or Authorized Representative) D. Smith DATE Sept 30/82

APPROVED BY	FIELD OFFICE	DATE
John M Snider	Cadillac	10/4/82

NOTE: WELL REWORK RECORD, Form R-7212, is to be filled in DUPLICATE within 30 days after completion.

R 7237 3/73

R 7207
Rev. 9/79

APPLICATION FOR PERMIT TO DRILL OR DEEPEN A WELL FOR OIL, GAS, BRINE DISPOSAL, HYDROCARBON STORAGE OR SECONDARY RECOVERY

Under Authority of Act 61, P.A. of 1939, As Amended

AUG 3 1982

MAIL TO:
STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
--GEOLOGICAL SURVEY DIVISION
30028, Lansing, Michigan 48909

1. **SEE INSTRUCTIONS ON REVERSE SIDE**

2. ☒ Fed. Employer Ident. No. ☐ Soc. Security No.
25-1391931

3. Application for permit to drill for:
☒ Oil and or Gas ☐ Brine Disposal ☐ Hydrocarbon Storage ☐ Secondary Recovery

4. Application to: (no fee required)
☐ Deepen ☐ Revise Application ☐ Cancel and Transfer

5. Fee enclosed:
☐ No ☒ Yes $100.00

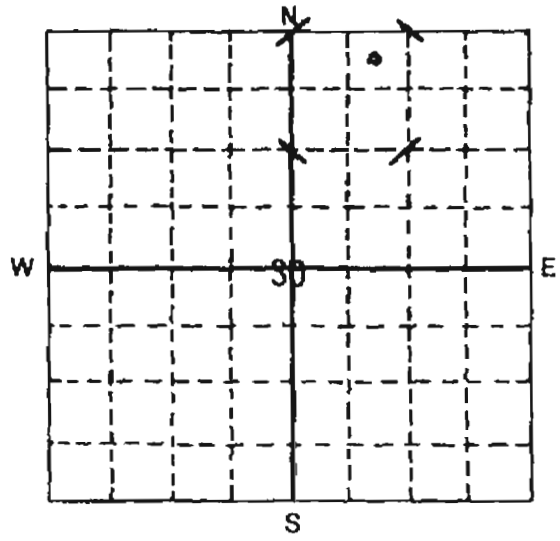
6. Do prior permits exist for this well?
☐ No ☒ Yes | ☐ Drilled ☐ Termin'd

7. List each permit number
Mineral Well Act #10029

8. Applicant: (name each "owner" as they are bonded)
WILLMET, INC.

9. Address: (operator only if more than one "owner") Phone:
2250 Enterprise Dr., Mt. Pleasant, MI 48858 (517) 773-3949

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



10. Lease or well name: (be brief as possible) Well number:
Wark 1-30

11. Surface owner:
John A. & Linda Wark

12. Address: Phone:
115th Avenue, Evart, MI 49631 (616) 734-5766

13. Surface location description
NE ¼ of NW ¼ of NE ¼ Section 30 T. 17N R. 8W

14. Township County
Evart Osceola

15. Bottom hole location description if directional drill
¼ of ¼ of ¼ Section T. R.

16. Township County

17. LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT.

a. Surface Location: 330 ft. from (N/S) N Line of quarter section. AND 983 ft. from (E/W) W Line of quarter section.

b. Bot. Hole Location: _____ ft. from (N/S) _____ Line of quarter section AND _____ ft. from (E/W) _____ Line of quarter section.

c. Drilling Unit: 330 ft. from (N/S) N Line of drilling unit AND 330 ft. from (E/W) E Line of drilling unit.

18. Drilling contractor: Address: Telephone:
T. D. Provins Drilling Co., Inc., 2111 Enterprise Dr., Mt. Pleasant, MI (517) 773-6946

19. Kind of tools (Rotary, cable, combination)	20. Intended depth	21. Intended formation	22. Is sour oil or gas expected? (See Instructions, Item 6)
Rotary	8,600	Cincinnati	☒ No ☐ Yes

23. Blowout control (Detail equipment type, size, trim, rating, testing, choke manifold, etc. See instructions, Item 7)

See Exhibits "A" and "B" attached hereto

24. **PROPOSED DRILLING, CASING, CEMENTING AND SEALING PROGRAM**

HOLE			CASING			CEMENT		MUD		
Depth	Geol. Form	Bit Dia.	O.D. Size	Wt./Ft. — Grade — Condition	Depth	Sacks	W.O.C.(hrs.)	Wt.	Vis.	W.L.
60-80		Drive	20	94.0# Conductor-New	60-80	--	--	--	--	--
80-900		17 1/2	13 3/8	48.0# H-40 -New	900	Cir.	18	9.5	55	25
900-5500		12 1/4	9 5/8	47.0# L-80 -New		200	18	10.5	33	10
				and Tuboscoped	5500					
5500-8600		8 1/2	5 1/2	17.0# N-80 -New	0-8600	As nec.	72	10.5	33	10

25. Send correspondence and permit to: Address
Willmet, Inc. 2250 Enterprise Dr., Mt. Pleasant, MI 48858

LEAVE BLANK

Date Issued	Permit	Number
	☐ TO DRILL	35977
	☐ TO DEEPEN	

FOR CASHIER'S USE ONLY. DO NOT WRITE IN THIS SPACE

8-6-82 # 2272 100.00

26. Name of applicant's agent: (Print) Phone:
James T. Junker (517) 773-3949

27. Signature of agent: Date:
James T. Junker 8-2-82

For Geological Survey Use Only

1. White — Lansing file
2. Canary — Cashier copy
3. Blue — District review
4. Pink — Region review
5. Goldenrod — District file (w/permit)
6. Green — Applicant file (w/permit)

LANSING JAN 24 1983

CADILLAC WAS COPY JAN 26 1983

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
SUPERVISOR OF WELLS

WELL REWORK RECORD

FILE IN DUPLICATE WITHIN 30 DAYS AFTER COMPLETION OF REWORK OR DEEPENING
(Replaces GS 38)

PERMIT NUMBER	DEEPENING PERMIT NUMBER	FIELD NAME
35977		Wildcat

NAME AND ADDRESS OF WELL OWNER
Willmet, Inc., 2250 Enterprise Drive, Mt. Pleasant, MI 48858

LEASE OR FARM NAME	WELL NUMBER
Wark	1-30

WELL LOCATION	SECTION		TOWNSHIP		COUNTY
NE NW NE	30	T. 17N	R. 8W	Evart	Osceola

WELL COMPLETED FOR (Oil, Gas, Gas Storage, Brine Disposal, Water Injection, etc.)	TOTAL DEPTH AFTER REWORK	MECHANICAL LOGS RUN
Dry Hole	4750	NO ADDITIONAL LOGS

WELL COMPLETED IN (Name Rock Formation and Zone of Completion)	DATE REWORK COMMENCED	DATE REWORK COMPLETED
Dry Hole in Sour Zone	9-17-82	9-19-82

NAME AND ADDRESS OF CONTRACTOR
T. D. Provins, 2113 Enterprise Drive, Mt. Pleasant, MI 48858

WELL CASING RECORD – BEFORE REWORK

Casing		Cement		Perforations		Acid or Fracture Treatment Record	Perforations If plugged, how?
Size	Depth	Sacks	Type	From	To		
16"	49'						
13 3/8"	830'	860	200 Cl A-660 POZ				
9 5/8"	5453'	335	Cl A				

WELL CASING RECORD – AFTER REWORK (Indicate additions and changes only)

Casing		Cement		Perforations		Acid or Fracture Treatment Record	Perforations If plugged, how?
Size	Depth	Sacks	Type	From	To		
9 5/8"	5453	335	4x/ft	4455	4457	500 gal. 20% HCL	
			"	4560	4562		

DESCRIBE REWORK OPERATIONS IN DETAIL

Run in and circulated cement from TD to 4750, Set bridge plug at approximately 4750. Perforated from 4455-57 and 4560-62, swabbed back 50 bbls load water and 30 bbls. formation water. Ran in and set bridge plug at 4650 and circulated cement to surface (1380 sx).

IMPORTANT! SEE REVERSE SIDE

R 7212
Rev. 10/72

GEOLOGICAL FORMATION RECORD OF DEEPENING

FROM	TO	FORMATION (type, color, hardness)	FROM	TO	FORMATION (type, color, hardness)

DAILY PRODUCTION TEST RECORD

Date	Barrels		Pressure	
	Oil	Water	Tubing	Casing
9-19-82	0	30 bbls.		

Woodward 1-26,
Converted to Active
Injctor

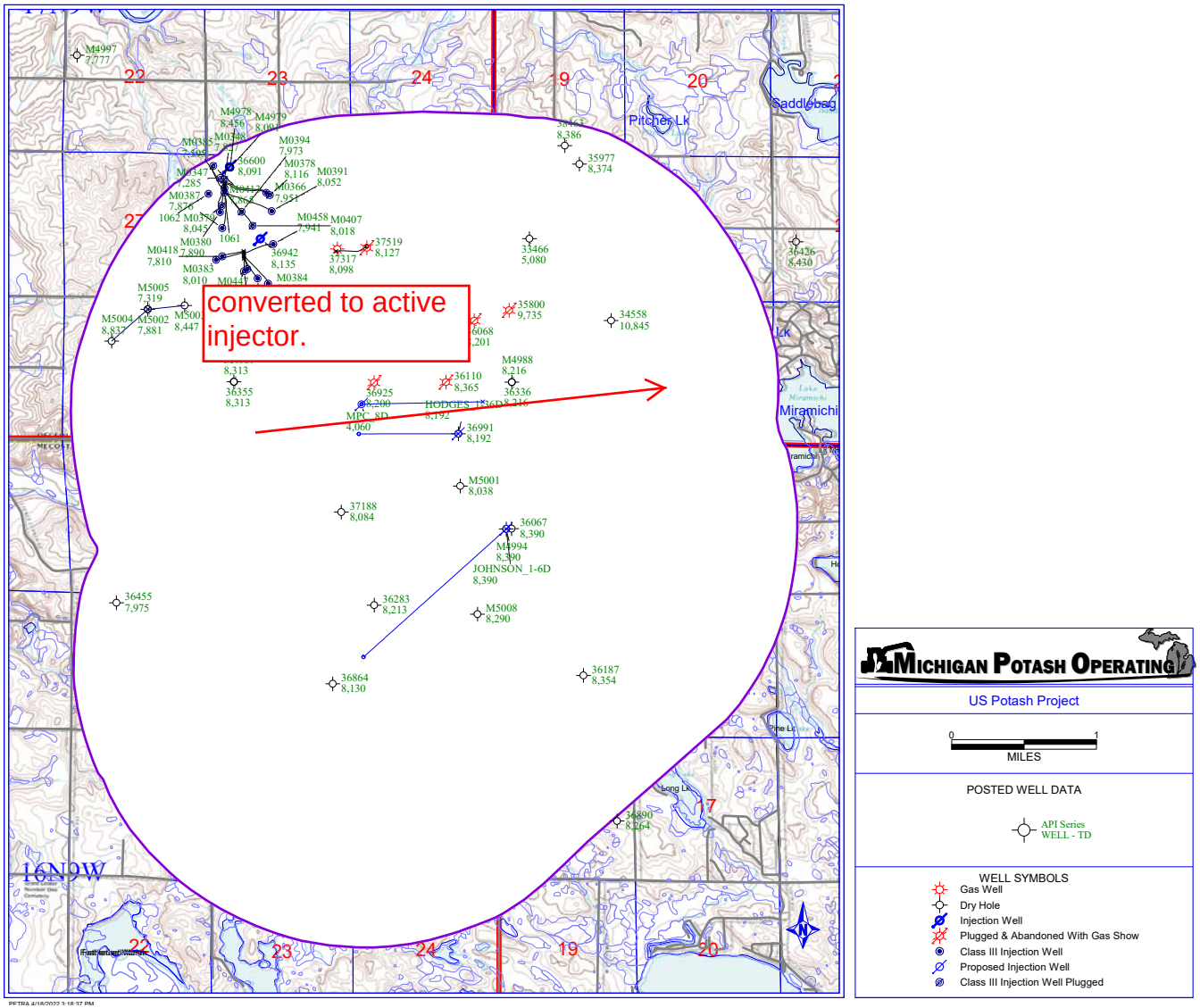


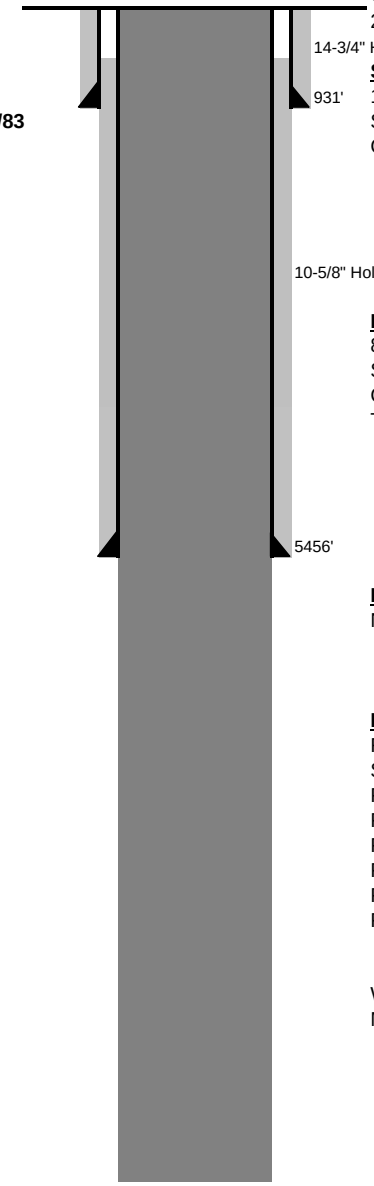
Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

WOODWARD 1-26

NW NE SW Sec 26 T17N R9W
OSCEOLA COUNTY, MI

CURRENT WELLBORE DIAGRAM

API No. 21-133-36942-0000
GL @ 1175.2'
KB @ 1191.7'
WELL COMPLETION DATE: NA
PLUGGING COMPLETION DATE: 11/1/83



UPDATED APRIL 2014 BY JLT

20" CONDUCTOR DRIVEN TO 77'

SURFACE CASING
11 3/4"; 42#/ft.
SET @ 931' KB
CMT w/ 575 SX TO SURFACE

INTERMEDIATE CASING
8 5/8"; 32#/ft.
SET @ 5456' KB
CMT w/1600 SX
TOC @ 700'

PROD. CASING
NA

PLUGGING
RAN OPEN EDED DRILL PIPE TO 8140' AND
SPOTTED 100 SX TO 7800'
PULLED DRILL PIPE TO 7800' AND SPOTTED 195 SX TO 7000'
PULLED DRILL PIPE TO 7000' AND SPOTTED 75 SX TO 6800'
PULLED DRILL PIPE TO 6800' AND SPOTTED 400 SX TO 5460'
PULLED DRILL PIPE TO 5460' AND SPOTTED 100 SX TO 5060'
PULLED DRILL PIPE TO 5060' AND SPOTTED 900 SX TO 500'
PULLED DRILL PIPE TO 500' AND SPOTTED 150 SX TO SURFACE

WELL RE-ENTERED AND CONVERTED TO ACT 315 DISPL WELL
MW PERMIT #349-855-867 (9/11/87)

TD @ 8135' KB

WOODWARD 1-26 WELL HISTORY

DATE	DESCRIPTION
10/11/1983	SPUD.
10/31/1983	DRILLING COMPLETED. FORMATION AT TD CABOT HEAD. 20" CONDUCTOR SET AT 77' 11 3/4" SET AT 931'; 575 SX 8 5/8" SET AT 5456'; 1600 SX
10/31/1983	PLUGGING START DATE RAN OPEN EDED DRILL PIPE TO 8140' AND SPOTTED 100 SX TO 7800' PULLED DRILL PIPE TO 7800' AND SPOTTED 195 SX TO 7000' PULLED DRILL PIPE TO 7000' AND SPOTTED 75 SX TO 6800' PULLED DRILL PIPE TO 6800' AND SPOTTED 400 SX TO 5460' PULLED DRILL PIPE TO 5460' AND SPOTTED 100 SX TO 5060' PULLED DRILL PIPE TO 5060' AND SPOTTED 900 SX TO 500' PULLED DRILL PIPE TO 500' AND SPOTTED 150 SX TO SURFACE
11/1/1983	PLUGGING COMPLETED
9/11/1987	WELL WAS RE-ENTERED AND CONVERTED TO AN ACT 315 DISPL. WELL MW PERMIT #349-855-867

R 7207
Rev. 2/81

APPLICATION FOR PERMIT TO DRILL OR DEEPEN A WELL FOR OIL, GAS, BRINE DISPOSAL, HYDROCARBON STORAGE OR SECONDARY RECOVERY

Under Authority of Act 61, P.A. of 1939, As Amended

#63 AUG 3 1983

MAIL TO:
STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION
Box 30028, Lansing, Michigan 48909

1. SEE INSTRUCTIONS ON REVERSE SIDE

2. [X] Fed. Employer Ident. No. [ ] Soc. Security No.
25-1391931

3. Application for permit to drill for: [X] Oil and or Gas [ ] Brine Disposal [ ] Hydrocarbon Storage [ ] Secondary Recovery

4. Application to: (no fee required) [ ] Deepen [X] Revise Application [ ] Cancel and Transfer

5. Fee enclosed: [ ] No [X] Yes $ 100.00

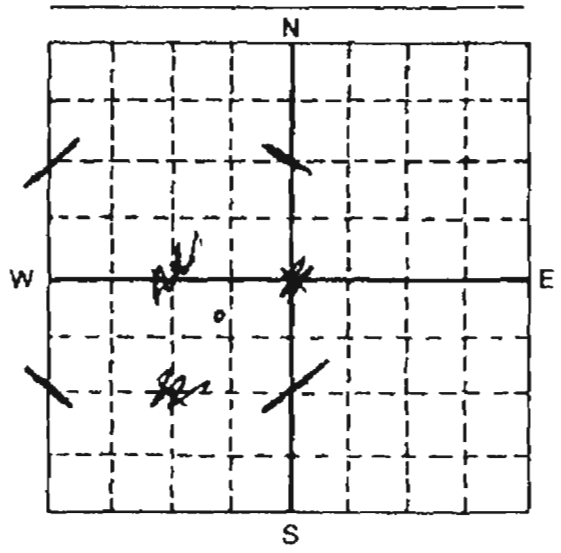
6. Do prior permits exist for this well? [X] No [ ] Yes [ ] Drilled [ ] Termin'd

7. List each permit number

8. Applicant: (name each "owner" as they are bonded)
PPG Oil & Gas Co., Inc. & Miller Bros.

9. Address: (operator only if more than one "owner") Phone:
2258 Enterprise Drive, Mt. Pleasant, MI 48858 (517) 773-3949

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



10. Lease or well name: (be brief as possible) Well number:
Woodward et al 1-26

11. Surface owner:
Jerry and Brigid Woodward

12. Address: Phone:
1661 W. Vance Rd. (616) 832-4970

13. Surface location description (See instructions, item 4)
NW ¼ of NE ¼ of SW ¼ Section 26 T. 17N R. 9W

14. Township County
Hersey Osceola

15. Bottom hole location description if directional drill (See instructions, item 5)
¼ of ¼ of ¼ Section T. R.

16. Township County

17. LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT. (See instructions, items 4 & 5)

a. Surface Location: 460 ft. from (N/S) N Line of quarter section. AND 667 ft. from (E/W) E Line of quarter section.

b. Bot. Hole Location: ft. from (N/S) Line of quarter section AND ft. from (E/W) Line of quarter section.

c. Drilling Unit: 842 ft. from (N/S) S Line of drilling unit AND 667 ft. from (E/W) E Line of drilling unit.

18. Drilling contractor: Address: Telephone:
T. D. Provins, P. O. Box 642, Mt. Pleasant, MI 48858 (517) 773-6946

19. Kind of tools (Rotary, cable, combination): Rotary

20. Intended depth: 8,600'

21. Intended formation: Cincinnatian

22. Is sour oil or gas expected? [X] No [ ] Yes (See Instructions, item 6)

23. Blowout control (Detail equipment type, size, trim, rating, testing, choke manifold, etc. See instructions, item 7)

See Exhibits "A" and "B" attached hereto.

24. PROPOSED DRILLING, CASING, CEMENTING AND SEALING PROGRAM

HOLE			CASING				CEMENT		MUD		
Depth	Geol. Form	Bit Dia.	O.D. Size	Wt./Ft. — Grade — Condition		Depth	Sacks	W.O.C.(hrs.)	Wt.	Vis.	W.L.
84'		20"	16"		New	84'					
857'	Drift	14 3/4"	11 3/4"	42#	New	857'	500	to surface			
5500'	Bass Islands	10 5/8"	8 5/8"	32# N-80	New, Insp.	5500'		to surface			
8600'	Cincinnatian	7 7/8"	5 1/2"	17# N-80	New, Insp.	8600'	350	to approx. 8 5/8" inter.	600'	inside	

25. Send correspondence and permit to: Address
PPG Oil & Gas Company, Inc., 2258 Enterprise Drive, Mt. Pleasant, MI 48858

LEAVE BLANK

Date Issued	Permit	Number
8-15-83	[X] TO DRILL	36942
	[ ] TO DEEPEN	

26. Name of applicant's agent: (Print) Phone:
Donald P. Smith
Exploration Engineer (517) 773-3949

27. Signature of agent: Date:
Donald P. Smith jc 7-29-83

FOR CASHIER'S USE ONLY. DO NOT WRITE IN THIS SPACE

For Geological Survey Use Only

1. White — Lansing file
2. Canary — Cashier copy
3. Blue — District review
4. Pink — Region review
5. Goldenrod — District file (w/permit)
6. Green — Applicant file (w/permit)

UG10-83 6706 100.00

DNR DISTRIBUTION
Permittee — Orig & 1 copy
Division Office — 2 copies
Field Office — File copy
Others — On request

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

PERMIT TO PLUG AND ABANDON

PERMIT NUMBER: 36942
FIELD NAME: Hersey

NAME AND ADDRESS OF PERMITTEE
PPG AND MILLER BROS.

LEASE NAME AND WELL NO.
Woodward 1-26

DEC 16 1983

LOCATION (¼ ¼ ¼ or other)	SECTION	TOWNSHIP	COUNTY
NW NE SW	26 T 17N 9W	Hersey	Osceola

TYPE OF WELL (Oil, Gas, Dry Hole, etc.)	DATE COMPLETED	DATE PLUGGING WILL START	PLUGGING PERMIT REQUESTED BY & DATE
Dry	10/30/83	10/31/83	W. Masterson 10/30/83

LAST PRODUCTION: BOPD ____ BWPD ____ MCFGPD ____ DATE ____

PLUGGING TO BE DONE BY: Bigard I4

PERMIT MAILED TO

COPIES MAILED TO

CASING AND CEMENTING RECORD

HOLE DIA.	CASING DIA. & WT./FT.	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP	PERFORATIONS
	20"	77			
	113/4"	931'	575 sx	surf	
	85/8"	5456'	1600 sx	700'	

GEOLOGIC DATA; GAS AND OIL SHOWS; DRILLING AND COMPLETION DATA:

CONFIDENTIAL

PLUGGING REQUIREMENTS*

Plugging requirements outlined are to be executed in accordance with the provisions of Act 61, P.A. 1939, as amended, and rules and orders adopted thereunder.

PI AS PER MINERAL WELLS; 100 sx cmt. at 8140; 195 sx cmt at 7800'; 75 sx at 7000'; 400 sx at 6800'; 100 sx cmt 5460'; 900 sx at 5060'; 150 sx at 500'.

*NOTE: BONDS CANNOT BE RELEASED UNTIL A PLUGGING IS COMPLETED, CELLAR RAT HOLE AND PITS FILLED, WELL SITE RESTORED AND RECORDS FILED. WATER WELLS MUST BE PLUGGED ACCORDING TO RULE 166 OF ACT 294 P.A. 1965, "GROUND WATER QUALITY CONTROL". It is further made a requirement of this permit that the applicant give notice to the public utilities in accordance with Act 53, P.A. 1974 C.L. 460.701 to 460.718 and comply with each of the requirements of the act.

AUTHORIZED BY (signature)	OFFICE	DATE
Donald J. Koop	Cadillac D#6	12/9/83

NOTE: WELL PLUGGING RECORD Form R-7213 to be filed in TRIPLICATE within 30 days after completion

R-7229
Rev. 11/77

This document paid for with State funds.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

NOV 29 1983

LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61)

Submit in **DUPLICATE** Within 30 Days after Well Completion

PERMIT NUMBER: 36942

DEEPENING PERMIT NUMBER:

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT
PPG Oil & Gas Co., Inc.
2258 Enterprise Drive
Mt. Pleasant, MI 48858

NAME & ADDRESS OF DRILLING CONTRACTOR(S)
Bigard Drilling Company
1315 S. Mission
Mt. Pleasant, MI 48858

LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT: Woodward #1-26

DIRECTIONALLY DRILLED: YES ☐ NO XX

SURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME
NW NE SW	26	17N	9W	Hersey

FOOTAGES (North/South) 460 Ft. from North Line and (East/West) 667 Ft. from East Line of quarter section

COUNTY NAME: Osceola

SUBSURFACE LOCATION	SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME

FOOTAGES (North/South) _____ Ft. from _____ Line and (East/West) _____ Ft. from _____ Line of quarter section

COUNTY NAME:

DATE

DRILLING BEGUN	TOTAL DEPTH OF WELL	TYPE WELL	ELEVATIONS	
10-11-83	Driller 8135 Log 8140	Dry Hole		
DRILLING COMPLETED: 10-31-83	FORMATION AT T.D.: Cabot Head	FT. DRLD. – ROTARY TOOLS From 0 To 8140	K.B. 1191.7	R.F. 1190.3
WELL COMPLETED	PRODUCING FORMATION(S): None	FT. DRLD. – CABLE TOOLS From _____ To _____	R.T.	Grd. 1175.2

CASING, CASING LINERS AND CEMENTING

SIZE	WHERE SET	CEMENT	Ft. Pulled
20"	77	D.P.	---
11 3/4	931	575 Sx	---
8 5/8	5456	1600 Sx	---

PERFORATIONS

DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN YES	OPEN NO
		None		

GROSS PAY INTERVALS

FORMATION	OIL OR GAS	FROM	TO
None			

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X) Samples	Odor	Pits	Mud Line	Gas Log	Fill Up
Reed City Dol	Gas	4100					X	
Sour	Gas	4650					X	
A2 Carbonate	Gas	6995			X		X	

STIMULATION BY ACID OR FRACTURING

DATE	Interval Treated	Materials and amount used
	None	

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

FORMATION	F.U.	L.C.	DEPTH	AMOUNT
None				

MECHANICAL LOGS, LIST EACH TYPE RUN

Brand	(X)	LOG TYPES	LOGGED INTERVALS
Schlumberger	X	LDT-CNL-GR	200-8135
Birdwell		Dual Micro	3100-8135
Birdwell		Sonic	200-8135

DEPTH CORRECTION

DEPTH	CORRECT'N

DEVIATION SURVEY

RUN AT	DEGREES
2450	1°
4400	3/4°
6493	3/4°
7100	1 3/4°

PLUGGED BACK

YES	NO	DEPTH

PRODUCTION TEST DATA

OIL – Bbls/day	GRAVITY – °API	COND. Bbls/day	GAS – MCF/day	WATER – Bbls/day	H_2S – Grains/100 cu. ft.	B.H.P. AND DEPTH

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

DATE	NAME AND TITLE (PRINT)	SIGNATURE
11-18-83	William E. Booker, Geologist	William E Booker

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

R - 7210
Rev. 3/77

GEOLOGICAL SURVEY

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

NOV 29 1983

LANSING HAS COPY

SEP 15 1983

WELL PLUGGING RECORD

(Submit in TRIPLICATE Within 30 Days After Plugging is Completed)

Permits & Bonding Unit

PERMIT NUMBER
36942 DEC 02 1983

FIELD NAME

COMPLETE NAME(S) AND ADDRESS OF WELL OWNER
PPG Oil & Gas Co., T Miller Bros. Inc., 2258 Enterprise Drive, Mt. Pleasant, MI 48858

COMPLETE LEASE OR FARM NAME(S)
Woodward

WELL NUMBER
1-26

WELL LOCATION
NW ¼ NE ¼ SW¼ SEC. 26 T. 17N R. 9W

TOWNSHIP
Hersey

COUNTY
Osceola

TYPE OF WELL (Oil, Gas, Dry Hole, etc.)
Dry Hole

TOTAL DEPTH
8135

FORMATION
Cabot Head

DATE PLUGGING STARTED
10-31-83

DATE PLUGGING COMPLETED
11-1-83

DEPT. REPRESENTATIVE(S) WHO ISSUED PERMIT OR WITNESSED PLUGGING
Jack Snider

CASING RECORD

SIZE CASING	DEPTH SET	AMOUNT RECOVERED	SHOT OR RIPPED
20"	77	---	
11 3/4"	931	---	
8 5/8"	5456	---	

BRIDGES OR PLUGS

TYPE (Brush, Stone, Cement, Mechanical, etc.)	DEPTH PLACED	SACKS OF CEMENT AND ADDITIVES
Cement	7800-8140	100 Sx
Cement	7000-7800	195 Sx
Cement	6800-7000	75 Sx
Cement	5460-6800	400 Sx
Cement	5060-5460	100 Sx
Cement	500-5060	900 Sx
Cement	0-500	150 Sx

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Halliburton

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Willie Masterson

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Ran open ended drill pip to 8140' and spotted 100 sx to 7800'. Pulled drill pipe to 7800' and spotted 195 sx to 7000', pulled drill pipe to 7000' and spotted 75 sx to 6800', pulled drill pipe to 6800' and spotted 400 sx to 5410', pulled drill pipe to 5460' and spotted 100 sx to 5060' pulled drill pipe to 5060' and spotted 900 sx to 500, pulled drill pipe to 500' and spotted 150 sx to surface.

(USE REVERSE SIDE IF NEEDED)

CERTIFICATION

"I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge."

NAME AND TITLE (Typed or Printed)
William E. Booker, Geologist

SIGNATURE
William E Booker

DATE (Month, Day, Year)
11-18-83

COMPANY NAME AND ADDRESS
STRICKLER GEOLOGICAL SERVICES, INC.
1425 S. Mission
Mt. Pleasant, MI 48858

R 7213
Rev. 4/74

OPERATORS USE

Description of Detail (cont.) or Other Supplemental Data:

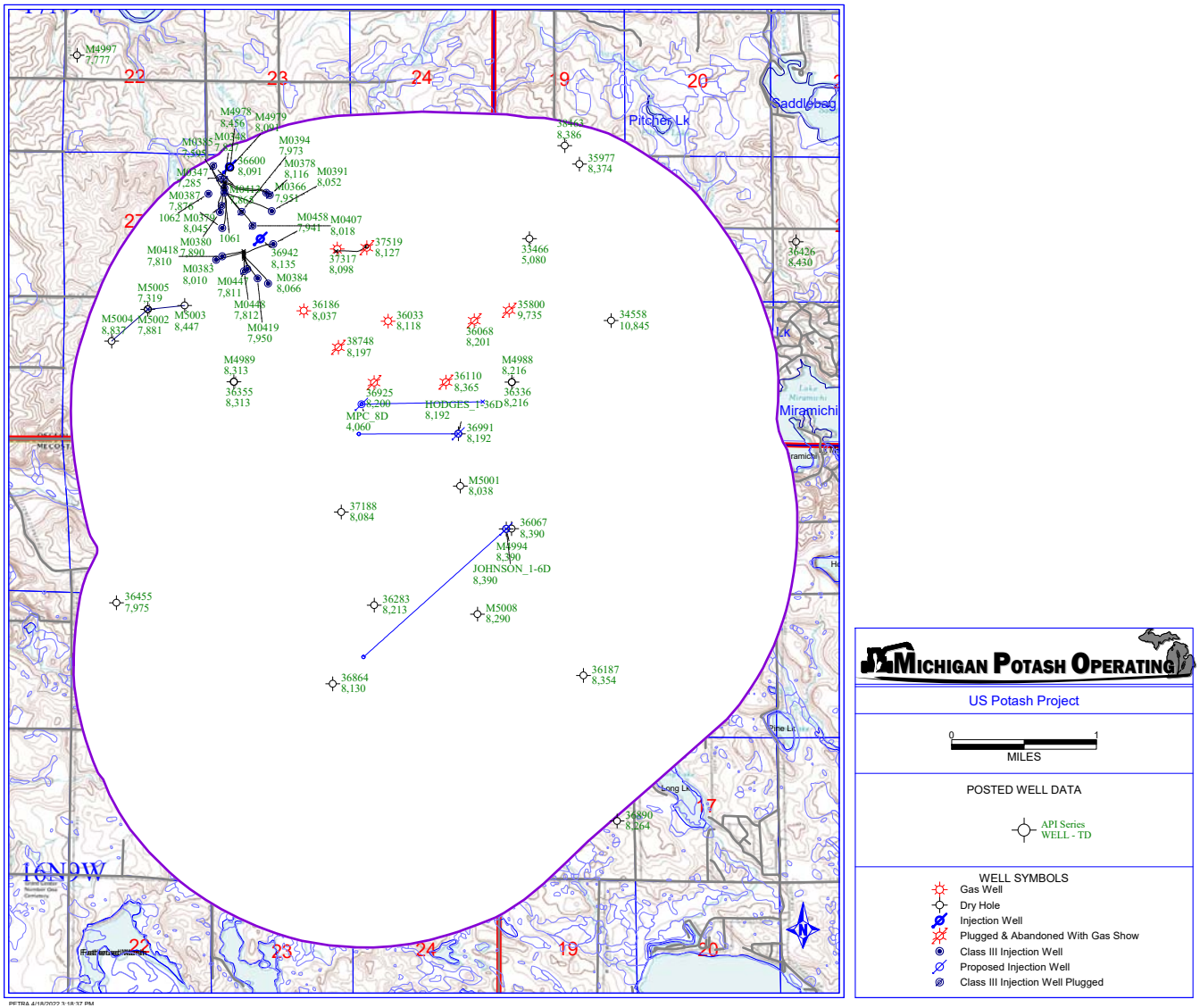
DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:

Well was re-entered and converted to an Act 315 displ. well, MW Permit #349-855-867. M Moss

FINAL INSPECTIONS BY DEPARTMENT REPRESENTATIVES		
SIGNATURE	DIVISION	DATE
Michael J. Moss	GEOLOGICAL SURVEY	9/11/87

a. Jensen 1-2, Permit # 37188



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

WELL PLUGGING RECORD

(Submit in TRIPLICATE Within 30 Days After Plugging is Completed)

T54

AMENDED 1-27-88

PERMIT NUMBER: 37188

FIELD NAME: Hersey

COMPLETE NAME(S) AND ADDRESS OF WELL OWNER: PPG Oil & Gas Co.,

COMPLETE LEASE OR FARM NAME(S): Jensen

WELL NUMBER: 1-2

WELL LOCATION: SE ¼ SE ¼ NE ¼ SEC. 2 T. 16N R. 9W

TOWNSHIP: Grant

COUNTY: Mecosta

TYPE OF WELL (Oil, Gas, Dry Hole, etc.): Dry Hole

TOTAL DEPTH: 8085

FORMATION: Cabot Head

DATE PLUGGING STARTED: 11-30-83

DATE PLUGGING COMPLETED: 11-30-83

DEPT. REPRESENTATIVE(S) WHO ISSUED PERMIT OR WITNESSED PLUGGING: Ben Gunning

CASING RECORD

SIZE CASING	DEPTH SET	AMOUNT RECOVERED	SHOT OR RIPPED
24"	132	None	
13 3/8"	848	None	
9 5/8"	5408	None	

BRIDGES OR PLUGS

TYPE (Brush, Stone, Cement, Mechanical, etc.)	DEPTH PLACED	SACKS OF CEMENT AND ADDITIVES
Cement	8085-5885	450 Sx
Cement	5885-5300	290 Sx

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Halliburton

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Marvin Woods

GEOLOGICAL SURVEY
FEB 5 1988
Permits & Bonding Unit

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Ran drill pipe in and set 3 150 sx plugs from TD to 5885, set 290 sx from 5885 to 5300 and bolted temperature plat on wellhead. Temporarily abandoned. On 8-23-84 tagged cement at 5195'/ On 8-24-84, Halliburton spotted 180 sack plugs of Howcolite cement at each depth of 5195', 4358'. 3521', 2684'. and 1847'. a 165 sack Howcolite plug at 1010' and a 75 sack plug of Class A cement at 210'.
13 3/8" and 9 5/8" casings capped with 1/2" plate 3' below grade.

(USE REVERSE SIDE IF NEEDED)

CERTIFICATION

"I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge."

NAME AND TITLE (Typed or Printed): Donald D. Metzger, Resident Manager

SIGNATURE: Donald D. Metzger

DATE (Month, Day, Year): 1-28-88

COMPANY NAME AND ADDRESS: Kalium Chemicals
11126 140th Ave.
Hersey, MI 49639

R 7213
Rev. 4/74

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL PLUGGING RECORD

File in DUPLICATE Within 30 Days After Plugging is Completed

AMENDED 1-27-88

PERMIT NUMBER: 1245-831-354

DATE: 1-22-88

OWNER OR OPERATOR: PPG Oil & Gas Co., Inc.

ADDRESS: One PPG Place, Pittsburgh, PA 15272

WELL NAME: Jensen

WELL NUMBER: 1-2

WELL LOCATION: SE ¼ SE ¼ NE ¼ SEC. 2 T. 16N R. 9W

TOWNSHIP: Grant

COUNTY: Mecosta

TYPE OF WELL (Brine Disposal Storage or Test): Test

TOTAL DEPTH: 8085

FORMATION: Cabot Head

DATE PLUGGING STARTED: 8-24-84

DATE PLUGGING COMPLETED: 8-24-84

WAS PERMISSION OF DEPT. OF NATURAL RESOURCES OBTAINED BEFORE PLUGGING BEGAN? ☐ YES ☐ NO

NAME OF DEPARTMENT REPRESENTATIVE WHO AUTHORIZED OR SUPERVISED PLUGGING

CASING SIZE	WHERE SET	AMOUNT RECOVERED	SHOT OR RIPPED	TYPE OF BRIDGES OR PLUGS	DEPTH PLACED	NUMBER SACKS
24"	132	None		Cement	8085-5885	450
13 3/8"	848	None		Cement	5885-5300	290
9 5/8"	5408	None		Cement (howcolite) 5195', 4358'		180 at
				3521'. 2684', 1847'		each depth
				Cement (Howcolite)		165
				Cement (Class A)	210'	75

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED: Hole was plugged to above 5300' on 11-30-83 and temporarily abandoned. On 8-23-84 tagged cement at 5195'. On 8-24-84, Halliburton spotted 180 sack plugs of Howcolite cement at each depth of 5195', 4358', 3521', 2684', and 1847', a 165 sack Howcolite plug at 1010' and a 75 sack plug of Class A cement at 210'.

13 3/8" and 9 5/8" casings capped with 1/2" plate 3' below grade.

(USE REVERSE SIDE IF NEEDED)

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

GEOLOGICAL SURVEY

Did a Service Company pump mud, spot cement or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Halliburton, Mt. Pleasant

FEB 6 1984

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address: Permits & Bonding Unit

Representatives of Owner Operator Company or Contractor who witnessed plugging: C. Cookingham

CERTIFICATE

I, Donald D. Metzger of Kalium Chemicals (company), state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction and that the facts stated herein are true, correct and complete to the best of my knowledge.

SIGNATURE	ADDRESS	TITLE
Donald D. Metzger	11126 140th Ave., Hersey, MI	Resident Manager

FINAL INSPECTIONS

DEPARTMENT REPRESENTATIVE	DATE
DEPARTMENT REPRESENTATIVE	DATE

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL COMPLETION REPORT

TO BE FILED WITH THE SUPERVISOR WITHIN 60 DAYS AFTER COMPLETION OF WELL (ACT 315 P A 1969)

SUBMIT IN TRIPLICATE

AMENDED 12-9-87

NAME OF OWNER OR OPERATOR: PPG Oil & Gas., Inc.	ADDRESS OF OWNER OR OPERATOR: 2258 Enterprise Drive, Mt. Pleasant, MI 48858
NAME OF DRILLING CONTRACTOR: James Bigard Drilling Company	ADDRESS OF DRILLING CONTRACTOR: 1315 S. Mission, Mt. Pleasant, MI 48858
WELL NAME: Jensen	WELL NUMBER: 1-2 / PERMIT NUMBER: 1245-831-354
LOCATION: SE SE NE	SECTION: 2 / TWP: 16N / RANGE: 9W
TOWNSHIP: Grant	COUNTY: Mecosta
FOOTAGE: 330 Ft. from South (N or S) Line and 330 Ft. from East (E or W) Line of quarter section	
DATE DRILLING COMMENCED: 11-3-83 / DATE DRILLING COMPLETED: 11-28-83	DATE WELL COMPLETED: -------- / TYPE OF WELL: Dry Hole
FORMATION COMPLETED IN: Cabot Head / TOTAL DEPTH: 8085	ELEVATION: KB 1114, RB, RT, DF 1113, GN 1098
ROTARY TOOLS: From 0 Feet to 8085 Feet	CABLE TOOLS: From ____ Feet to ____ Feet

RECEIVED FEB 5 1988 Permits & Bonding Unit GEOLOGICAL SURVEY

WELL CASING RECORD

TUBING AND CASING DATA				CEMENTING DATA			PERFORATIONS OR OPEN HOLE		
SIZE	LB./FT.	GRADE	DEPTH	SACKS	TYPE	STAGING DEPTH(S)	NO. HOLES	FROM	TO
24"			132	DP					
13 3/8"			848	900					
9 5/8"			5408	1600					

WATER ZONES

FORMATION	FROM	TO	AMOUNT
(Fresh)			

WIRE LINE LOGS RUN

SERVICE COMPANY	TYPE LOG	INTERVAL LOGGED	COPY TO SURVEY
Schlumberger	LDT-CNL-GR	200 - 8084	Yes
	DLL-MLL	3250 - 8084	Yes
	Sonic	200 - 8084	Yes

FRACTURE OR ACID TREATMENT

DATE	FROM	TO	QUANTITY

SOLUTION MINING

NAME AND NUMBER OF INJECTION AND TARGET WELL – DISTANCE APART

The information in and attached to this report is complete and correct

SIGNATURE	TITLE	DATE
Donald D. Metzger	Kalium Chemicals Resident Manager	12-9-87

GIVE COMPLETE FORMATION RECORD ON REVERSE SIDE

R 7504 2/73

FORMATION RECORD

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

ELEVATION USED: ☐ KB ☐ RT ☐ RF ☐ GR	GEOLOGIST NAME:	TOPS TAKEN FROM: ☐ SAMPLE LOG ☐ ELECTRIC LOG

FROM	TO	FORMATION (TYPE, COLOR, ETC.)	FROM	TO	FORMATION (TYPE, COLOR, ETC.)

IF WELL WAS CORED, ATTACH CORE DESCRIPTION AND ANALYSIS

LIST ATTACHMENTS:

GEOLOGICAL SURVEY USE ONLY

REVIEWED BY

DATE OF COMPLETION

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

FEB 3 1984

MINERAL WELL PLUGGING RECORD

File in DUPLICATE Within 30 Days After Plugging is Completed

PERMIT NUMBER: 37188

DATE: 1/12/84

OWNER OR OPERATOR: PPG Oil & Gas Company, Inc.

ADDRESS: 2258 Enterprise Drive, Mt. Pleasant, MI 48858

WELL NAME: Jensen

WELL NUMBER: 1-2

WELL LOCATION: SE ¼ SE ¼ NE ¼ SEC. 2 T. 16N R. 9W

TOWNSHIP: Grant

COUNTY: Mecosta

TYPE OF WELL (Brine Disposal Storage or Test): Dry Hole

TOTAL DEPTH: 8085

FORMATION: Cabot Head

DATE PLUGGING STARTED: 11-30-83

DATE PLUGGING COMPLETED: 11-30-83

WAS PERMISSION OF DEPT OF NATURAL RESOURCES OBTAINED BEFORE PLUGGING BEGAN? XX YES ☐ NO

NAME OF DEPARTMENT REPRESENTATIVE WHO AUTHORIZED OR SUPERVISED PLUGGING: Ben Gunning

CASING SIZE	WHERE SET	AMOUNT RECOVERED	SHOT OR RIPPED	TYPE OF BRIDGES OR PLUGS	DEPTH PLACED	NUMBER SACKS
24"	132	None		Cement	8085-5885	450
13 3/8"	848	None		Cement	5885-5300	290
9 5/8"	5408	None				

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Ran drill pipe and set 3 150 sx plugs from total depth to 5885. Set 290 sx from 5885 to 5300 and bolted temperature plate on well head. Temporarily abandoned.

RECEIVED
GEOLOGICAL SURVEY
FEB - 6 1984

(USE REVERSE SIDE IF NEEDED)

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES XX NO If yes, give details:

Did a Service Company pump mud spot cement, or set bridge plugs? XX YES ☐ NO If yes, give name and address: Halliburton

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES XX NO If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Marvin Woods

CERTIFICATE

I, William E. Booker, of Strickler Geological Services, Inc. (company), state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge.

SIGNATURE	ADDRESS	TITLE
William E Booker	1425 S. Mission, Mt. Pleasant, MI	Geologist

FINAL INSPECTIONS

DEPARTMENT REPRESENTATIVE	DATE
DEPARTMENT REPRESENTATIVE	DATE

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL COMPLETION REPORT

TO BE FILED WITH THE SUPERVISOR WITHIN 60 DAYS AFTER COMPLETION OF WELL (ACT 315, P.A. 1969)

FEB 3 1984

SUBMIT IN TRIPLICATE

NAME OF OWNER OR OPERATOR	ADDRESS OF OWNER OR OPERATOR
PPG Oil & Gas Co., Inc.	2258 Enterprise Drive Mt. Pleasant, MI 48858
NAME OF DRILLING CONTRACTOR	**ADDRESS OF DRILLING CONTRACTOR**
James Bigard Drilling Company	1315 S. Mission Mt. Pleasant, MI 48858

WELL NAME	WELL NUMBER	PERMIT NUMBER	
Jensen	1-2	37188	
LOCATION	**SECTION**	**TWP.**	**RANGE**
SE SE NE	2	16N	9W
TOWNSHIP	**COUNTY**		
Grant	Mecosta		

FOOTAGE 330 Ft. from South (N or S) Line and 330 Ft. from East (E or W) Line of quarter section

DATE DRILLING COMMENCED	DATE DRILLING COMPLETED	DATE WELL COMPLETED	TYPE OF WELL
11-3-83	11-28-83	------	Dry Hole

FORMATION COMPLETED IN	TOTAL DEPTH	ELEVATION	KB	RB	RT	RF	GN
Cabot Head	8085		1114			1113	1098

ROTARY TOOLS From 0 Feet to 8085 Feet

CABLE TOOLS From ____ Feet to ____ Feet

WELL CASING RECORD

TUBING AND CASING DATA				CEMENTING DATA			PERFORATIONS OR OPEN HOLE		
SIZE	LB./FT.	GRADE	DEPTH	SACKS	TYPE	STAGING DEPTH(S)	NO. HOLES	FROM	TO
24"			132	DP					
13 3/8"			848	900					
9 5/8"			5408	1600					

WATER ZONES

FORMATION	FROM	TO	AMOUNT
(Fresh)			

WIRE LINE LOGS RUN

SERVICE COMPANY	TYPE LOG	INTERVAL LOGGED	COPY TO SURVEY
Schlumberger	LDT-CNL-GR	200 - 8084	Yes
	DLL-MLL	3250 - 8084	Yes
	Sonic	200 - 8084	Yes

FRACTURE OR ACID TREATMENT

DATE	FROM	TO	QUANTITY

GEOLOGICAL SURVEY

SOLUTION MINING

NAME AND NUMBER OF INJECTION AND TARGET WELL - DISTANCE APART

FEB - 6 1984

[illegible] SECTION

The information in and attached to this report is complete and correct.

SIGNATURE	TITLE	DATE
William E Book	Geologist	1/12/84

GIVE COMPLETE FORMATION RECORD ON REVERSE SIDE

NATURAL RESOURCES COMMISSION
THOMAS J. ANDERSON
R. CAROLLO
OB A. HOEFER
EPHEN F. MONSMA
HILARY F. SNELL
PAUL H. WENDLER
HARRY H. WHITELEY

STATE OF MICHIGAN

JAMES J. BLANCHARD, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING
BOX 30028
LANSING, MI 48909

RONALD O. SKOOG, Director

Chron

ajc

October 26, 1983

Mr. Donald P. Smith
PPG Oil & Gas Co., Inc.
2258 Enterprise Drive
Mt. Pleasant, MI 48858

Dear Mr. Smith:

Enclosed is Mineral Well Permit #1245-831-354 to drill and abandon a mineral exploration well in the SE¼, SE¼, NE¼, Sec. 2, T16N-R9W, Grant Twp., Mecosta County. This permit was issued under the provisions of the "Mineral Well Act", Act 315 PA 1969, as amended.

It is my understanding that this well is also being permitted under Act 61, Oil and Gas Act. This was not indicated in your covering letter. In the future please alert us to the fact that simultaneous permitting is being requested.

Records of the well drilled under this permit are due within 60 days of completion. For information on contents of these records, please refer to Rule 72(a). These records and supporting information will be held confidential as per Section 17(5) and Rule 73 of the Act.

Whenever possible, please indicate county, township and range on each record sent into our office.

Thank you for your cooperation with us on these matters.

Sincerely,

A.J. Rarick, Acting Chief
Mineral Well Unit
Geological Survey Division

AJR:bb
Enclosures

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL PERMIT

For a Test Well(s)

No. 11358

Permit No.	
1245-831-354	
Date Issued	Date Expires
10-26-83	04-26-83

Permission is hereby granted to PPG Oil & Gas Co., Inc. (name)

2258 Enterprise Drive, Mt. Pleasant, MI 48858 (address)

to drill and abandon (type of operation) mineral exploration [type of test well(s)]

to be located in SE¼, SE¼, NE¼, Sec. 2, T16N-R9W, Grant Twp., Mecosta County

RB____ RF____
RT____ GN____

Jensen (well name)	1-2 (well number)	Niagaran (formation)	8000 (intended depth)	(elevation)

SPECIAL INSTRUCTIONS:

HOLE TO BE PLUGGED FROM TOP TO BOTTOM WITH NEAT CEMENT.

Permit is subject to the provisions and requirements of Act 315 PA 1969, As Amended, and rules, requirements, or orders issued by the Supervisor of Mineral Wells and the Department of Natural Resources.

SUPERVISOR OF MINERAL WELLS

By: A.J. Rarick
Title: A.J. Rarick, Acting Chief
Address: Mineral Well Unit
Geological Survey Division
Dept. of Natural Resources
Box 30028, Lansing, MI 48909

Please address all notifications, correspondence, and records to:

Telephone: 517/373-9289

— NOTICE —

1. This permit is issued on the basis of the approved program outlined in the application. No changes or alterations are to be made without the permission and approval of the Supervisor of Mineral Wells or his authorized representative.
2. This permit, or a copy thereof, shall be posted at a conspicuous place at the well location or be in the possession of the driller.
3. It is further made a requirement of this permit that the applicant (or contractor) give notice to the public utilities in accordance with Act 53, Public Acts of 1974, Compiled Laws 460.701 to 460.718 and comply with each of the requirements of the act.
4. An unusual, unexpected, or difficultly controllable large volume of oil, gas, brine or flowing fresh water or a condition hazardous to public health, safety, or waters of the state shall be reported immediately to the Supervisor.

Distribution: Linen-applicant—2-Lansing—3-field—4-applicant.

20. continued

c. How are salt cuttings to be handled? Cuttings will be dissolved, and brine circulated to the reserve pit.

d. Are all fluids in the lined pit to be removed and disposed of in approved method? [X] Yes [ ] No If no, explain: _____

e. Are drilling muds and cuttings to be removed or totally encapsulated within the folded over liner and/or an additional impermeable cover as needed, for burial at four feet below grade or deeper? [X] Yes [ ] No If no, explain: _____

f. Is approval of the encapsulation to be received from the District Geologist? [X] Yes [ ] No If no, explain: _____

g. During well completion and test procedures, all fluids must be contained in steel tanks and transported to approved facilities for disposal. Comments:

Other Department personnel contacted? [X] Yes [ ] No Comments:
See item #16

21. Site Restoration will be addressed upon well completion or site abandonment. At that time the District Geologist will develop specifications in keeping with the State Land Manager's or Surface Owner's objectives. _____

ON THE BASIS OF THE REVIEW FINDINGS:

I [X] DO [ ] DO NOT RECOMMEND ISSUANCE OF A PERMIT TO DRILL THIS SITE.

DISTRICT GEOLOGIST'S COMMENTS: _____

GEOLOGICAL SURVEY DIVISION: BY: _____ 10-21-83
(signature) (date)

LAND MANAGER'S COMMENTS: _____

LAND MANAGER (If State Surface): _____
(signature) (date)

REGIONAL DIRECTOR'S COMMENTS: _____

REGIONAL DIRECTOR: BY: _____
(signature) (date)

This document paid for with State funds

PPG Oil & Gas Co., Inc.
A Subsidiary of PPG Industries, Inc.
2258 Enterprise Drive Mt. Pleasant, Michigan 48858 (517) 773-3949

October 19, 1983

Mr. Wayne T. Todd
Regional Mineral Wells Geologist
Michigan Department of Natural Resources
Clare Avenue
Clare, MI 48617

Mr. Ty Black
Assistant to the Regional Geologist
Michigan Department of Natural Resources
P.O. Box 128
Roscommon, MI 48653

Gentlemen:

Attached is a copy of an application for a permit to drill a Mineral Test Well in Grant Township, Mecosta County. This application was submitted in Lansing on October 19, 1983. I would appreciate your early handling of the field review in order to expedite the issuance of the permit.

Please note that the Mineral Well Act provides confidential treatment of information related to the permit and all data obtained from the well.

Please call me at (517) 773-3949 if we can be of assistance.

Sincerely,

Donald D. Metzger

Donald D. Metzger
Director, Exploration
& Michigan Operations

DDM/blb
Attachments

PRINT OR TYPE INFORMATION SEE INSTRUCTION SHEET R 7500-1 BEFORE FILLING OUT APPLICATION

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

APPLICATION FOR A MINERAL WELL PERMIT

To Drill, Operate, Convert, or Rework a Brine, Storage, Disposal, or Test Well.

By Authority of Act 315, P. A. 1969

1 DATE OF APPLICATION: 10-18-83	2 FEE ENCLOSED: $1.00
3 APPLICATION TO: Drill	
4 TYPE MINERAL WELL: D-5 (Test Well)	5 WELL DESIGNATION: Jensen 1-2
6 LOCATION: SE/4 of the SE/4 of the NE ¼ SEC 2 T 16N R 9W	
7 TOWNSHIP: Grant	8 COUNTY: Mecosta

9 APPLICANT: PPG Oil & Gas Co., Inc.			10 TELEPHONE: (517) 773-3949
11 ADDRESS (Street City State): 2258 Enterprise Drive, Mt. Pleasant, MI			12 ZIP CODE: 48858
13 SURETY OR SECURITY COMPANY: Hartford Accident & Indemnity Co.	14 TYPE: ☐ SINGLE ☒ BLANKET	15 AMOUNT: $25,000.00	16 BOND NO: 4506230
17 OWNER OR SURFACE RIGHTS: Philip C. Jensen	18 OWNER OR MINERAL RIGHTS: Philip C. Jensen		
19 DRILLING CONTRACTOR: T. D. Provins	20 ADDRESS: P.O. Box 642, Mt. Pleasant, MI 48858		21 TELEPHONE: (517) 773-6946
22 TYPE DRILLING TOOLS: ☐ CABLE ☒ ROTARY ☐ COMBINATION	23 FORMATION: Niagaran		24 INTENDED DEPTH: 8,000'
25 PROJECT ENGINEER OR GEOLOGIST: D. D. Metzger	26 ADDRESS: 2258 Enterprise Drive, Mt. Pleasant, MI 48858		27 TELEPHONE: (517) 773-3949

28 PROGRAM OF DRILLING, CONVERTING, REWORKING, CASING, CEMENTING, COMPLETING, OPERATING, AND MONITORING.
(See appropriate instruction sheet Attach 3 copies of proposed program — including but not necessarily limited to information requested in the instruction sheet.)

CASING PROGRAM:

Size	Depth	Cement

Exhibits 1, 2, 3 enclosed

GEOLOGICAL SURVEY
OCT 20 1983
MINERAL WELL SECTION

INSTRUCTION SHEET NO.		
Type of Well	Drill-New	Rework*
Brine	D-1	R-1
Storage	D-2	R-1
Disposal	D-3	R-1
Solution Mining	D-4	R-2
Test Well	D-5 X	R-1

*Rework, Deepen, or Convert to New Use

THERE WILL BE NO CHANGES IN THE PROGRAM OUTLINED IN THIS APPLICATION WITHOUT APPROVAL OF THE SUPERVISOR OF MINERAL WELLS OR HIS AUTHORIZED REPRESENTATIVE.

29 ADDRESS CORRESPONDENCE AND PERMIT TO: PPG Oil & Gas Co., Inc., 2258 Enterprise Drive, Mt. Pleasant, MI 48858	30 TELEPHONE: (517) 773-3949

MINERAL WELL SECTION USE ONLY

STATUS OF BOND:

APPLICATION APPROVED BY: A. Karuff

PERMIT NUMBER: 1245-831-354

DATE ISSUED: 10-26-83

ISSUED BY: ER bb

DISTRIBUTION:
White — Lansing
Canary — Field
Pink — Applicant

7019 10

The Applicant agrees to comply with provisions and requirements of Act 315, P.A. 1969, and asserts that the information on this application and attached report is true and correct.

SIGNATURE (APPLICANT/AUTHORIZED REP.): D Smith	DATE: 10-18-83
NAME (TYPED): Donald P. Smith	
TITLE: Exploration Engineer	
FOR CASHIER'S USE ONLY	R 7500 2/73

PPG Oil & Gas Co., Inc.
A Subsidiary of PPG Industries, Inc
2258 Enterprise Drive Mt. Pleasant, Michigan 48858 (517) 773-3949

October 19, 1983

Mr. Al Rarick
Department of Natural Resources
Geological Survey Division
P. O. Box 30028
Lansing, MI 48909

Dear Mr. Rarick:

Re: PPG Oil & Gas Co., Inc. Standard Casing and Cementing Procedures

Listed below are PPG Oil & Gas Co., Inc. standard casing and cementing procedures:

1. Drive 24 pipe as deep as possible. This allows us to set 20" conductor inside and lower if trouble occurs with washout under conductor pipe while drilling surface hole.

2. Drill 17 1/2" hole to base of drift or to a firm footing as determined by geologist from samples.

3. Run 13 3/8" S.T.C. 48# Seamless H-40 casing equipped with Texas pattern weld on shoe. A float collar is set 30', or one joint, off bottom. The lower 5 joints of casing are strapped across collar in either two or three sectors. Top and bottom cement plugs with no centralizer as recommended by cementing company (see attached).

4. We also run a cement basket approximately 50' below surface, making sure cement is circulated back to surface.

5. We then drill 12 1/4" hole into Bass Islands formation or the Amherstburg if local drilling shows no lost circulation zones in the Bois Blanc and set 9 5/8" L.T.C. 40# N-80 grade pipe with a guide shoe on bottom with float collar first joint up and all bottom 6 joints secured with Weld-A or Baker Lok or some similar material.

6. Centralizers are run per cementer's recommendation attached.

7. For both the surface and intermediate casings, the lower joints of casing are roughened unless they appear rusty as this provides a much better bond for cement.

Sincerely,

Donald P. Smith
Exploration Engineer

DPS/blb
Attachment

Exhibit #1

Surface Casing (13 3/8" in 17 1/2" hole @ 750')

A. Use insert float and Texas Pattern Shoe and lock to shoe joint with thread lock.

B. No centralizers

C. Circulate hole a minimum of one complete circulation

D. Do not reciprocate casing

E. Run bottom (red) wiper plug. Do not use if carrying LCM in cement.

F. Pump 70 bbls. fresh water ahead of cement

G. Cement with:

1. 475 sx 50/50 Poz., 6% total gel, 3% $CaCl_2$
   1.54ft^3/sk, 13.3#/gal, 7.66 gals/sk
2. 200 sx Class "A", 3% $CaCl_2$
   1.18 ft^3/sk, 15.6#/gal, 7.66 gals/sk

Intermediate Casing (9 5/8" in 12 1/4" hole @ 5100')

Recommended Procedure:

A. Use float collar and guide shoe and lock to shoe joint with Halliburton Weld-A

B. Run one centralizer 10' above guide shoe and four more at every other collar spacing.

C. Circulate hole a minimum of one complete circulation and until the drag stabilizes.

D. Reciprocate casing while circulating and cementing. Stop reciprocation just prior to bumping top plug.

E. Run bottom (red) wiper plug. Do not use if carrying LCM in cement.

F. Pump 30 bbls. fresh water ahead of cement.

G. Cement with enough cement from caliper log to bring cement to surface on all intermediate casing strings.

H. Run top (black) wiper plug.

I. Displace with fresh water.

Casing Equipment: (9 5/8")

Regular guide shoe, float collar with auto fill, Halliburton weld-A (2), Centralizers (5)

PPG Oil & Gas Co., Inc.
A Subsidiary of PPG Industries, Inc
2258 Enterprise Drive Mt. Pleasant, Michigan 48858 (517) 773-3949

October 19, 1983

Mr. Al Rarick
Department of Natural Resources
Geological Survey Division
4th Floor, Mason Building
P. O. Box 30028
Lansing, MI 48909

Dear Mr. Rarick:

Subject: PPG Oil & Gas Co., Inc. Testing Program

The test well covered by this application is being drilled into the top of the Niagaran formation to approximately 8,000'. The primary objective is evaluation of the potash mineralization of the A-1 Evaporite, which occurred in the interval -7,579' to -7,931' in the Freudenburg 1-31 well located in the SE/4 NE/4 NE/4 of Section 31, T17N, R8W, Osceola County, Michigan.

The testing program will consist of cutting 4" cores through the anticipated potash mineralized section. Then gamma ray, neutron and other geophysical logs will be run at total depth.

Geophysical logs will also be run from the base of the surface casing to total depth. Sample cuttings will be retained and sample descriptions will be submitted with the plugging record. Potential disposal horizons will be drill stem tested.

Sincerely,

Donald D. Metzger jc

Donald D. Metzger
Director, Exploration
& Michigan Operations

DDM/blb

Exhibit #2

PPG Oil & Gas Co., Inc.
A Subsidiary of PPG Industries, Inc
2258 Enterprise Drive Mt. Pleasant, Michigan 48858 (517) 773-3949

October 19, 1983

Mr. Al Rarick
Department of Natural Resources
Geological Survey Division
4th Floor, Mason Building
P.O. Box 30028
Lansing, MI 48909

Re: Casing Removal and Plugging

Dear Mr. Rarick:

Upon completion of the coring and logging of the test well covered by attached permit application the well may be abandoned and plugged. If not abandoned, change of status will be requested at a later date.

Plugging will consist of running open end drill pipe to T.D. and setting continuous cement plugs to surface. The casing will be cut off at least 3 feet below surface and a 1/2" steel plate welded over the top of surface casing stub.

The cellar will be removed and backfilled according to D.N.R. specifications.

Sincerely,

Donald P. Smith
Exploration Engineer

DPS/blb

Exhibit #3

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

SURVEY RECORD OF WELL LOCATION

(Submit five copies with Application for Permit to Drill a Well for Oil or Gas, Brine Disposal, Hydrocarbon Storage or Secondary Recovery)

83368

LESSEE (OWNER OF LEASE RIGHTS)
P.P.G. Oil & Gas Company, Inc.

LESSOR (OWNER OF MINERAL RIGHTS)
Phillip Jensen (Jensen # 1-2)

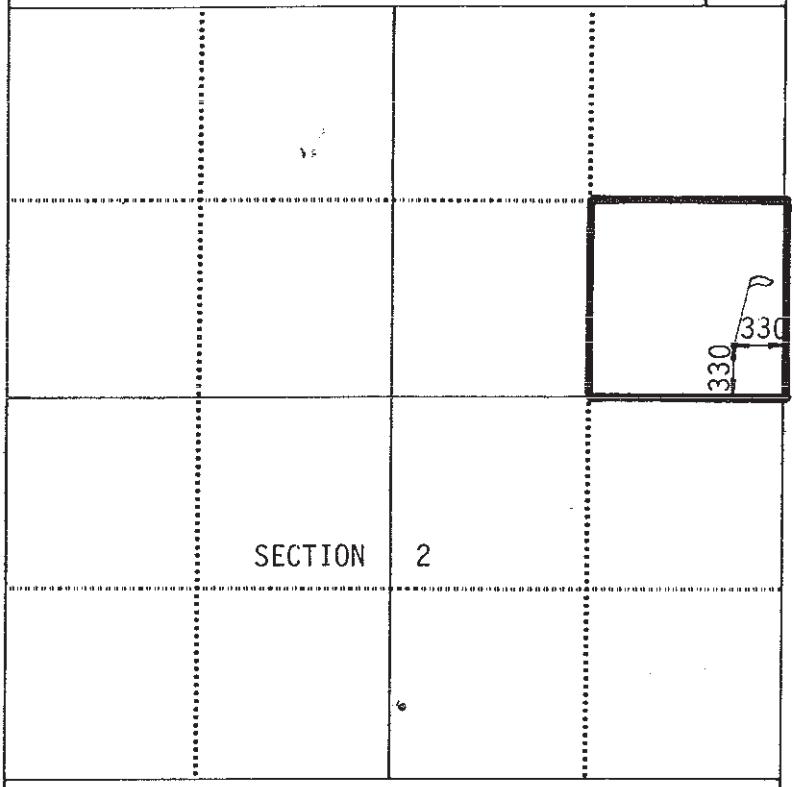
WELL NO.
1-2

LOCATION
SE ¼ OF SE ¼ OF NE ¼ SECTION 2 T. 16 N R. 9 W

TOWNSHIP
Grant

COUNTY
Mecosta

PLAT BELOW REPRESENTS ONE FULL SECTION
(1 Mile Square)



(Scale of Plat — 1 inch equals 1320 ft.)

1. Outline drilling unit and spot well location on plat at left. Where drilling unit crosses section lines, divide the plat into an east half and a west half **OR** a north half and a south half (which ever applies). Outline the unit and locate the well in two directions from **NEAREST** quarter section and unit lines.

2. Location of well in two directions from **NEAREST** quarter section and unit lines is:

330 ft. from South (north-south) line of Quarter Section

330 ft. from East (east-west) line of Quarter Section

330 ft. from South (north-south) line of unit

330 ft. from East (east-west) line of unit

3. Describe wellsite marker. Show or describe access route if it is not readily accessible.

Wellsite is marked with a painted wood stake. Site can be reached from East off of 130th Ave. See supplemental plat.

4. ON SEPARATE PLAT OR PLOT PLAN:

A. Locate, identify, and show distances to all roads, power lines, residences, farm buildings, and other structures within 300 feet of the stake;

B. Locate, identify, and show distances to all lakes, streams, swamps, drainage-ways or any other surface water features within 1320 feet of the stake.

STATE OF MICHIGAN FREDERICK H. THOMSON LAND SURVEYOR No. 21996 REGISTERED LAND SURVEYOR

5 In an ENVIRONMENTAL IMPACT ASSESSMENT describe all structures and surface features shown detailing plans for hazards prevention and erosion control (See instructions and guidelines for preparation of an environmental impact assessment).

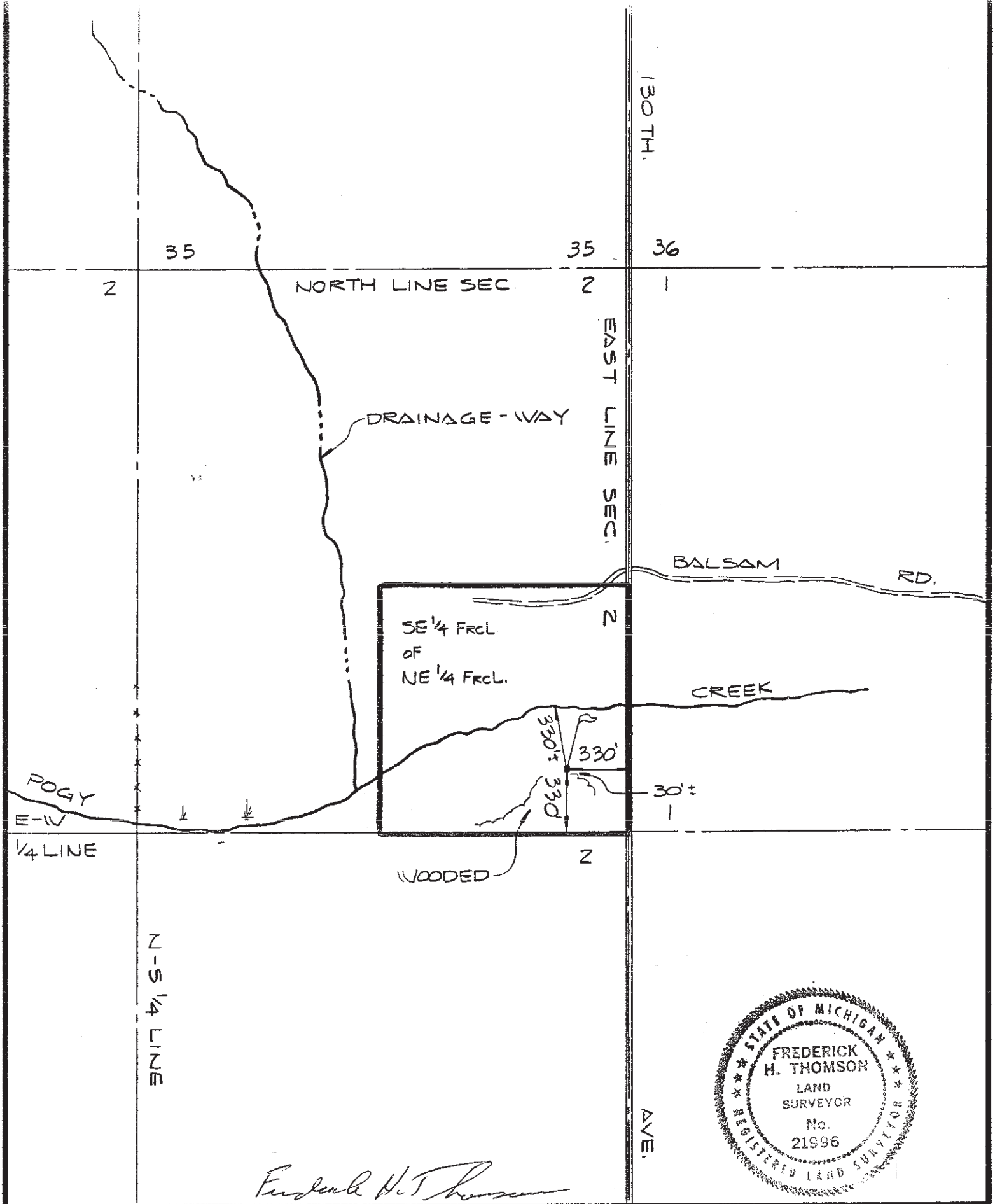
NAME OF INDIVIDUAL WHO SURVEYED WELL SITE	DATE	TITLE
Frederick H. Thomson, LS# 21996	10-18-83	Surveyor

ADDRESS
J. L. WILCOX & ASSOCIATES, INC. 7230 North US 131 Manton, MI 49663

I CERTIFY THE ABOVE INFORMATION IS COMPLETE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF

SIGNATURE (LESSEE OR AUTHORIZED REPRESENTATIVE)	ADDRESS (IF DIFFERENT THAN LESSEE)	DATE (MONTH, DAY, YEAR)

R 7208 REV 3/80



Frederick H. Thomson

SUPPLEMENTAL PLAT: JENSEN 1-2, SECTION 2, T1GN-R9W, GRANT TOWNSHIP, MECOSTA COUNTY MICHIGAN

CLIENT: P.P.G. OIL & GAS CO. INC.

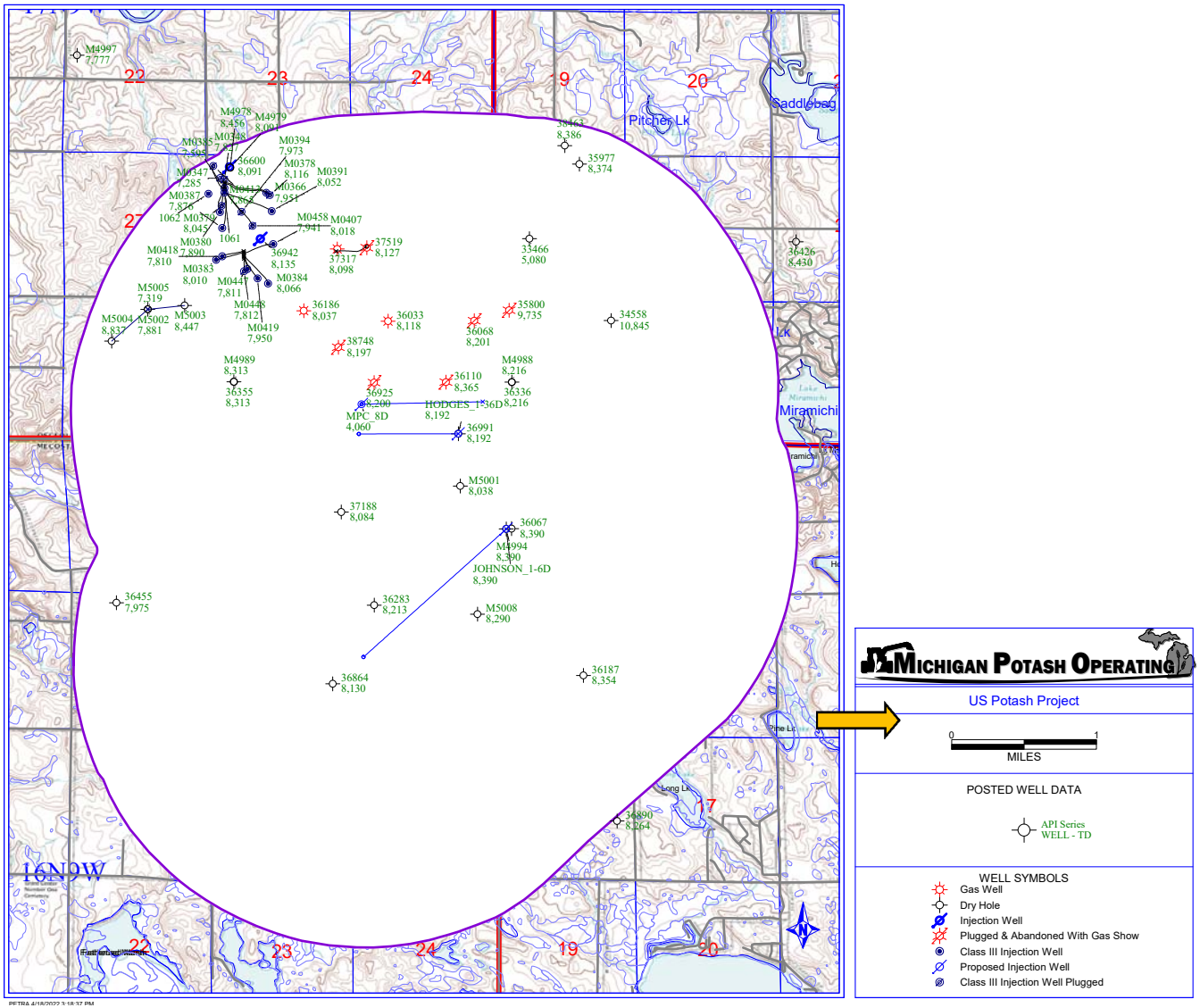
DATE 10-13-83
DRN R.M.
CHD. ACF
SCALE V: H: 1"=660'

J.L. WILCOX & ASSOCIATES, INC.
Engineers and Surveyors
7230 N. U.S. — 131 • Manton, Michigan 49663

NOTES F.B. 180 PG. 13
SHEET 1 OF 1
JOB NO. 83368

BRUNING 44-122 484/5

b. Pilarski 1-12, Permit #00340



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

DEPARTMENT OF NATURAL RESOURCES
Geological Survey Division

REQUEST FOR CHANGE OF OWNERSHIP OF A PERMIT
(Submit all copies)

Please Change:

Permit No. 1242-831-354 Type Well Mineral Test Field Name Hersey-Evart

Owned by PPG Oil & Gas Co., Inc.

Address 2258 Enterprise Drive, Mt. Pleasant, MI 48858 (517) 773-3949
(street) (town) (state) (zip) (phone)

for Pilarski PN 1242-831-354 No. 1-12 located in the C ¼ NE ¼ NE ¼

section 12, T. 16N, R. 9W, Grant Township, Mecosta County,

to PPG Industries, Inc.
(acquiring owner-complete names please)

All operating rights are discharged by (us) (me).

(Owner)	(Representative)	(Signature)	(Date)
PPG Oil & Gas Co., Inc.	Donald D. Metzger	Donald D. Metzger	4-17-84

THE SUPERVISOR IS PROHIBITED BY STATUTE FROM ISSUING A PERMIT TO ANY PERSON WHO IS NOT IN COMPLIANCE WITH THE PROVISIONS OF THE ACT, THE RULES, OR THE ORDERS OF EITHER THE SUPERVISOR OR THE NATURAL RESOURCES COMMISSION. ELIGIBILITY FOR PERMITS IS CONDITIONED ON COMPLIANCE WITH SUCH RULES AND ORDERS IN A DILIGENT MANNER AND IN ACCORDANCE WITH ACCEPTED OIL FIELD PRACTICE.

(We) (I) have acquired the well under this permit and assume full responsibility for drilling, operation, and abandonment in conformity with the law, regulations and orders issued by the Supervisor of Wells. The bond(s) required is attached or already on file.

PPG Industries, Inc.
(acquiring owner-complete names please)

Address 2258 Enterprise Drive, Mt. Pleasant, MI 48858 (517) 773-3949
(street) (town) (state) (zip) (phone)

All operating rights and responsibilities are assumed by (us) (me).

(Owner)	(Representative)	(Signature)	(Date)
PPG Industries, Inc.	Donald D. Metzger	Donald D. Metzger	4-17-84

THE DEPARTMENT OF NATURAL RESOURCES

Approved. J. Rauch 5/3/84
(Signature) (Date)

DNR USE ONLY
White, Lansing
Yellow, Acquiring Owner
Pink, Selling Owner
Blue, Field

R-7214 (Rev. 10-79)

R 299.1105. Transfer of permits

Rule 105.

(b) Change of ownership of a well

Should the person who has obtained a permit to drill dispose of his interest in the well to a new owner before drilling is commenced, while the well is being drilled, or after the well has been completed, a notice of the change of ownership and a request for the transfer of the permit to the new owner shall be submitted to the supervisor on forms prescribed by him. The transfer of the permit may be approved on receipt of a properly-prepared request, including the signatures of the operator of record and the acquiring operator, and the required surety bond of the acquiring operator.

Should the owner of record or the acquiring operator fail, neglect, or refuse to file a notice of change of ownership and request the transfer of a permit for a producible well, the supervisor may require suspension of production from the well until the request for transfer has been filed and approved.

Should the owner of record be under notice because of unsatisfactory conditions on the lease involved with the transfer of a permit, the supervisor may require suspension of production from the well on said lease until:

(1) The owner of record has corrected said unsatisfactory conditions and the permit has been transferred to the new owner; or until

(2) The acquiring operator by written agreement with the supervisor has corrected said unsatisfactory conditions and the permit has been transferred as provided herein.

A permit for a well which has not been drilled, or for a well which is being drilled, may not be transferred to a person who is not in compliance with the statutes, rules, regulations and orders as provided in rule 104.

R 299.1105a. Suspension of production on default

Rule 105a. Should the owner of record sell or dispose of a well without filing a notice of change of ownership and a request for transfer of the permit, the supervisor may require suspension of production from the well, including removal or sale of oil from the lease, until correction has been made of all unsatisfactory lease conditions and transfer of the permit has been completed as provided in rule 105 (b).

R 299.1106. Surety bond; required

Rule 106. A person who drills a well as provided in rule 101, or who acquires a well or wells as provided in rule 105, shall file a surety bond with the supervisor, on a form provided by the supervisor, which has been executed by a responsible surety company authorized to do business in the state of Michigan.

NOTE: Cash may be deposited in lieu of a surety bond.

GEOLOGICAL SURVEY
APR 6 1984
Regulatory Control Unit

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL PLUGGING RECORD

File in DUPLICATE Within 30 Days After Plugging is Completed

PERMIT NUMBER: 1242-831-354

DATE: 2/2/84

OWNER OR OPERATOR: PPG Oil & Gas Co., Inc.

ADDRESS: 2258 Enterprise Drive, Mt. Pleasant, MI 48858

WELL NAME: Pilarski

WELL NUMBER: 1-12

WELL LOCATION: C ¼ NE ¼ NE ¼ SEC. 12 T. 16N R. 9W

TOWNSHIP: Grant

COUNTY: Mecosta

TYPE OF WELL (Brine Disposal Storage or Test): Test Well

TOTAL DEPTH: 7937

FORMATION: Niagaran

DATE PLUGGING STARTED: 11-18-83

DATE PLUGGING COMPLETED: 11-18-83

WAS PERMISSION OF DEPT. OF NATURAL RESOURCES OBTAINED BEFORE PLUGGING BEGAN? XX YES ☐ NO

NAME OF DEPARTMENT REPRESENTATIVE WHO AUTHORIZED OR SUPERVISED PLUGGING: Ben Gunning

CASING SIZE	WHERE SET	AMOUNT RECOVERED	SHOT OR RIPPED	TYPE OF BRIDGES OR PLUGS	DEPTH PLACED	NUMBER SACKS
24"	45	----		Cement	7937-6015	530
13 3/8"	946	----		Cement	6015-5590	290
9 5/8"	5480	----				

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Ran drill pipe open ended to 7937 and spotted 530 sx, pulled drill pipe to 6015 and spotted 290 sx, pulled drill pipe and waited on cement.

(USE REVERSE SIDE IF NEEDED)

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES XX NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? XX YES ☐ NO — If yes, give name and address: Halliburton

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES XX NO — If yes, give name and address:

GEOLOGICAL SURVEY

Representatives of Owner, Operator, Company or Contractor who witnessed plugging: Marvin Woods

FEB 28 1984

CERTIFICATE

I, William E. Booker of Strickler Geological Services, Inc. (company) state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge.

MINERAL WELLS SECTION

SIGNATURE	ADDRESS	TITLE
William E. Booker	1425 S. Mission Mt. Pleasant, MI 48858	Geologist

FINAL INSPECTIONS

DEPARTMENT REPRESENTATIVE	DATE
DEPARTMENT REPRESENTATIVE	DATE

OPERATORS USE

DEPARTMENT USE ONLY

pplemental Plugging Data and Site Conditions:

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL COMPLETION REPORT

TO BE FILED WITH THE SUPERVISOR WITHIN 60 DAYS AFTER COMPLETION OF WELL (ACT 315, P.A. 1969)

FEB 24 1984

SUBMIT IN TRIPLICATE

NAME OF OWNER OR OPERATOR	ADDRESS OF OWNER OR OPERATOR
PPG Oil & Gas Co., Inc.	2258 Enterprise Drive Mt. Pleasant, MI 48858
NAME OF DRILLING CONTRACTOR	**ADDRESS OF DRILLING CONTRACTOR**
T. D. Provins Drilling Co.	2113 Enterprise Drive Mt. Pleasant, MI 48858

WELL NAME	WELL NUMBER	PERMIT NUMBER
Pilarski	1-12	1242-831-354

LOCATION	SECTION	TWP.	RANGE
C NE NE	12	16N	9W

TOWNSHIP	COUNTY
Grant	Mecosta

FOOTAGE: 844 Ft. from North (N or S) Line and 666 Ft. from East (E or W) Line of quarter section

DATE DRILLING COMMENCED	DATE DRILLING COMPLETED	DATE WELL COMPLETED	TYPE OF WELL
10-22-83	1-1-84	1-3-84	Test Hole

FORMATION COMPLETED IN	TOTAL DEPTH	ELEVATION	KB	RB	RT	RF	GN
----------	8290, 8109, 8318, 7937		1215.4			1213.9	1199.0

ROTARY TOOLS	CABLE TOOLS
From 0 Feet to 8318 Feet	From Feet to Feet

WELL CASING RECORD

TUBING AND CASING DATA				CEMENTING DATA			PERFORATIONS OR OPEN HOLE		
SIZE	LB./FT.	GRADE	DEPTH	SACKS	TYPE	STAGING DEPTH(S)	NO. HOLES	FROM	TO
24"	64#		45'	DP					
13 3/8"	54.5#		946'	900 sx	700 Lt-200 Cl A				
9 5/8"	40#		5480'	1585 sx	1265 Lt-350 Cl A	0-3650			
						3650-5980			

WATER ZONES

FORMATION	FROM	TO	AMOUNT
(Fresh)			

WIRE LINE LOGS RUN

SERVICE COMPANY	TYPE LOG	INTERVAL LOGGED	COPY TO SURVEY
Schlumberger	LDT-CNL-GR	100-7937	Yes
	DLL-MLL	3450-5498	Yes
	Sonic	940-5490	

FRACTURE OR ACID TREATMENT

DATE	FROM	TO	QUANTITY

SOLUTION MINING

NAME AND NUMBER OF INJECTION AND TARGET WELL -- DISTANCE APART

GEOLOGICAL SURVEY

FEB 28 1984

MINERAL WELL SECTION

The information in and attached to this report is complete and correct.

SIGNATURE	TITLE	DATE
William E Booker	William E. Booker, Geologist	2/2/84

GIVE COMPLETE FORMATION RECORD ON REVERSE SIDE

GEOLOGICAL SURVEY FIELD REPORT
Mt. Pleasant

File

11-29-83 - Skipper/Todd

Mineral Well - CONFIDENTIAL

Mecosta, Grant, Hersey
1242-831-354 PPG Oil & Gas Pularski 1-12 DRILLING

Provins Rig 7 RIH @ 8048. A-1 Ev. 7915 MD. Dev. Surveys

MD	Dev.	TVD	Obs. Dir.	Rect. Co-Ord.	
6112	15¼	6108	N33W	49S	74W
6237	25½	6224	N33W		
6330	30½	6307	N30W		
6390	34-3/4	6357	N31W		
6497	37¼	6444	N30W		
6672	36½	6584	N30W		
6884	34-3/4	6760	N31W		
6983	35	6837	N29W	352N	315W
7107	35-3/4	6938	N31W		
7263	36	7065	N29W		
7419	34-3/4	7192	N29W		
7576	34-3/4	7320	N29W		
7733	36-3/4	7447	N29W		
7889	37	7571	N29W	814N	565W
7960	37¼	7628	N29W	852N	595W

Coring A-1 Ev., wouldn't disclose interval.

+ + + + +

GEOLOGICAL SURVEY

GEOLOGICAL SURVEY FIELD REPORT
Mt. Pleasant

File

CONFIDENTIAL

Mineral Well
11-23-83 - Skipper

Mecosta, Grant, Hersey (Clinton)
PPG Oil & Gas — Pilarski 1-12 — DRILLING

Provins Rig 7 drlg. 7-7/8" @ 6190. KOP for directional redrill at 5852 in F Salt. Dir. Surveys:

MD	Dev.	TVD	Dir.	Rect. Co-ordinates	
5800	7/8	5799		76S	52W
5988	7½	5986		70S	63W
6112	15¼	6108	N33W	49S	74W

+ + + + +

GEOLOGICAL SURVEY
DEC - 2 1983
[illegible] SECTION

J. L. WILCOX & ASSOCIATES, INC.
7230 North U.S. 131
MANTON MICHIGAN 49663

(616) 824-6415

PPG Oil & Gas

LETTER OF TRANSMITTAL

DATE Oct. 25, 1983	JOB NO. 83366
ATTENTION Supervisor of Wells - Mineral Well	
RE: WELL ELEVATIONS - PPG ~~2886~~ 4348	
Pilarski #1-12	
Permit #1242-831-354	
Section 12, T16N, R9W	
Grant Twp., Mecosta Co., Michigan	

TO Geological Survey Division
Dept. of Natural Resources
P. O. Box 30028
Lansing, MI 48909

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☒ Well Elevations

COPIES	DATE	NO.	DESCRIPTION
			GEOLOGICAL SURVEY
			NOV - 4 1983
			OIL AND GAS WELL SECTION

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19_____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS Elevations for subject well are as follows:

Ground = 1199.0

Platform = 1213.9

T KDB = 1215.4

NOTE: above elevations are U.S.G.S. datum.

COPY TO PPG Oil & Gas Co., Inc.

SIGNED: Fred Thomas

PRODUCT 240-3 NEBS Inc. Groton, Mass. 01471

If enclosures are not as noted, kindly notify us at once.

NATURAL RESOURCES COMMISSION
THOMAS J. ANDERSON
R. CAROLLO
JOB A. HOEFER
STEPHEN F. MONSMA
HILARY F. SNELL
PAUL H. WENDLER
HARRY H. WHITELEY

STATE OF MICHIGAN

JAMES J. BLANCHARD, Governor

DEPARTMENT OF NATURAL RESOURCES

STEVENS T. MASON BUILDING
BOX 30028
LANSING, MI 48909

RONALD O. SKOOG, Director

October 10, 1983

Mr. Donald P. Smith
PPG Oil & Gas Co., Inc.
2258 Enterprise Drive
Mt. Pleasant, MI 48858

Dear Mr. Smith:

Enclosed is Mineral Well Permit #1242-831-354 to drill and abandon mineral exploration well in C, NE¼, NE¼, Sec. 12, T16N-R9W, Grant Twp., Mecosta County, Michigan. This permit was issued under the provisions of the "Mineral Well Act", Act 315 PA 1969, as amended.

Records of wells drilled under this permit are due within 60 days of completion. For information on contents of these records, please refer to Rule 72(a). These records and supporting information will be held confidential as per Section 17(5) and Rule 73 of the Act.

Whenever possible, please indicate County, Township & Range on each record sent into our office.

Thank you for your cooperation with us on these matters.

Sincerely,

A.J. Rarick, Acting Chief
Mineral Well Unit
Geological Survey Division

AJR:bb
Enclosures

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL PERMIT

For a Test Well(s)

No. 11355

Permit No. 1242-831-354	
Date Issued 10-10-83	Date Expires 04-10-83

Permission is hereby granted to PPG Oil & Gas Co., Inc. (name)
2258 Enterprise Drive, Mt. Pleasant, MI 48858 (address)

to drill and abandon (type of operation) mineral exploration [type of test well(s)]
to be located in C, NE¼, NE¼, Sec. 12, T16N-R9W, Grant Twp., Mecosta County, Michigan

RB____ RF____
RT____ GN____

Pilarski	1-12	Niagaran	8,000'	
(well name)	(well number)	(formation)	(intended depth)	(elevation)

SPECIAL INSTRUCTIONS:

HOLES TO BE PLUGGED WITH NEAT CEMENT FROM BOTTOM TO TOP.

Permit is subject to the provisions and requirements of Act 315 PA 1969, As Amended, and rules, requirements, or orders issued by the Supervisor of Mineral Wells and the Department of Natural Resources.

SUPERVISOR OF MINERAL WELLS

By: A.J. Karick
Title: A.J. Karick, Acting Chief
Address: Mineral Well Unit
Geological Survey Division
Dept. of Natural Resources
Box 30028, Lansing, MI 48909

Please address all notifications, correspondence, and records to:

Telephone: 517/373-9289

— NOTICE —

1. This permit is issued on the basis of the approved program outlined in the application. No changes or alterations are to be made without the permission and approval of the Supervisor of Mineral Wells or his authorized representative.
2. This permit, or a copy thereof, shall be posted at a conspicuous place at the well location or be in the possession of the driller.
3. It is further made a requirement of this permit that the applicant (or contractor) give notice to the public utilities in accordance with Act 53, Public Acts of 1974, Compiled Laws 460.701 to 460.718 and comply with each of the requirements of the act.
4. An unusual, unexpected, or difficultly controllable large volume of oil, gas, brine or flowing fresh water or a condition hazardous to public health, safety, or waters of the state shall be reported immediately to the Supervisor.

Distribution: Linen-applicant—2-Lansing—3-field—4-applicant.

GEOLOGICAL SURVEY

MINERAL WELL

State of Michigan
Department of Natural Resources
FIELD REVIEW OF PROPOSED WELL SITE

OCT - 5

1. Date of Inspection: 10-3-83
2. Name of Applicant: PPG Oil& Gas Co. Inc.
3. Well Name & Number: Pilarski 1-12
4. Legal Description: SE NE NE, Sec.12, T16N-9W, Grant Twp., Mecosta Co.
5. [ ] PR or [ ] DJ - Surface Owner: Daniel A. & Saundra A. Pilarski
6. Ownership Pattern: N/A
7. Land Use of the Area: Recreational
8. Cover Type/Density: Open Grass Field
9. Topography: Gently rolling
10. Soil Type & Drainage: Sand- Sandy-loam , Drainage- Good
11. Type, Direction & Distance to Surface Waters: None within $\frac{1}{4}$mi.
12. Well Site Dimensions: (3.7 Acres)
13. Access Road Length, Width, Location, Special Requirements: 600' of new trail will be constructed.
(Acres)
14. Were soil erosion and sedimentation control measures adequately considered? XXX Yes [ ] No If not, specify additional requirements:
15. Wildlife concerns: Minimal
16. Fisheries concerns: Minimal
17. Timber Damage Appraisal (State Surface): N/A
18. Nearby Scenic, Historical or Recreational Areas: None
19. Is it reasonable to expect to encounter H_2S during drilling? Yes
Are proposed drilling practices adequate for H_2S safety? [X] Yes [ ] No If not, recommend additional requirements:
20. Is the Environmental Impact Assessment accurate and acceptable? [X] Yes [ ] No If not, specify additional site construction requirements and/or restrictions. Comments if any:

a. Is an unlined earthen pit to receive fresh water muds prior to setting surface casing? [X] Yes [ ] No If yes, explain: Pit utilized for fluids from the surface to setting point of the surface caseing.

b. Is a 20 mil PVC liner to be used for pits receiving drilling fluids from below the surface pipe? [X] Yes [ ] No If no, explain:

This document paid for with State funds

R 7239-REV 6/82

20. continued

c. How are salt cuttings to be handled? Cuttings will be dissolved, and brine circulated to the reserve pit.

d. Are all fluids in the lined pit to be removed and disposed of in approved method? [X] Yes [ ] No If no, explain:

e. Are drilling muds and cuttings to be removed or totally encapsulated within the folded over liner and/or an additional impermeable cover as needed, for burial at four feet below grade or deeper? [X] Yes [ ] No If no, explain:

f. Is approval of the encapsulation to be received from the District Geologist? [X] Yes [ ] No If no, explain:

g. During well completion and test procedures, all fluids must be contained in steel tanks and transported to approved facilities for disposal. Comments:

Other Department personnel contacted? [X] Yes [ ] No Comments:
Ben Gunning

21. Site Restoration will be addressed upon well completion or site abandonment. At that time the District Geologist will develop specifications in keeping with the State Land Manager's or Surface Owner's objectives.

ON THE BASIS OF THE REVIEW FINDINGS:

I [X] DO [ ] DO NOT RECOMMEND ISSUANCE OF A PERMIT TO DRILL THIS SITE.

DISTRICT GEOLOGIST'S COMMENTS: See Addendum to Field Review.

GEOLOGICAL SURVEY DIVISION: BY: (signature) 10-3-83 (date)

LAND MANAGER'S COMMENTS:

LAND MANAGER (If State Surface): (signature) (date)

REGIONAL DIRECTOR'S COMMENTS:

REGIONAL DIRECTOR: BY: (signature) (date)

This document paid for with State funds.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

SURVEY RECORD OF WELL LOCATION

(Submit five copies with Application for Permit to Drill a Well for Oil or Gas, Brine Disposal, Hydrocarbon Storage or Secondary Recovery)

83366

LESSEE (OWNER OF LEASE RIGHTS): PPG OIL & GAS COMPANY, INC.

LESSOR (OWNER OF MINERAL RIGHTS): (Pilarski 1-12)

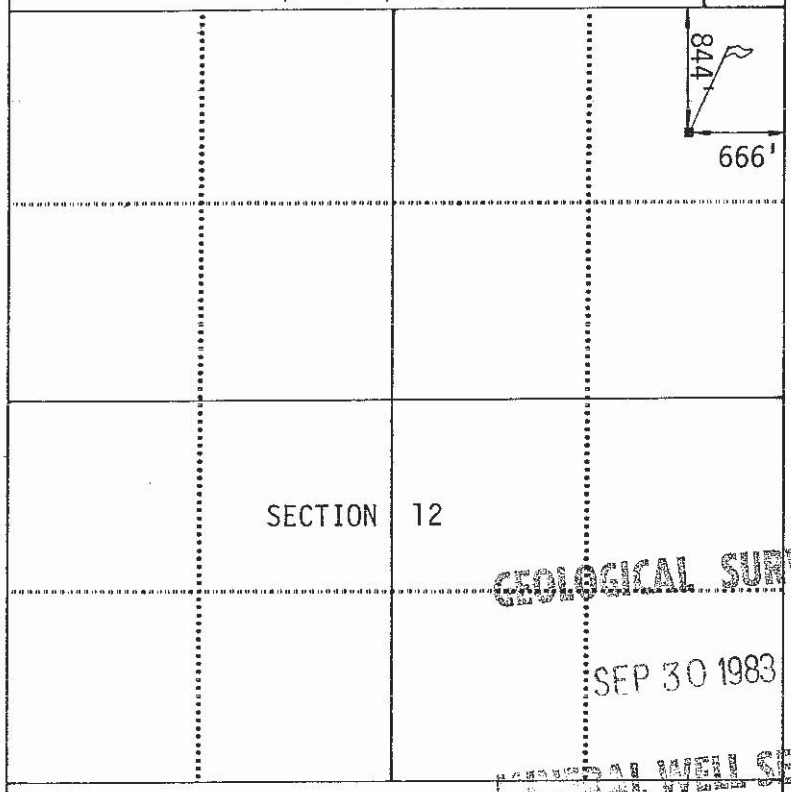
WELL NO: 1-12

LOCATION: SE ¼ OF NE ¼ OF NE ¼ SECTION 12 T. 16 N R. 9 W

TOWNSHIP: Grant

COUNTY: Mecosta

PLAT BELOW REPRESENTS ONE FULL SECTION (1 Mile Square)



(Scale of Plat — 1 inch equals 1320 ft.)

1. Outline drilling unit and spot well location on plat at left. Where drilling unit crosses section lines, divide the plat into an east half and a west half **OR** a north half and a south half (which ever applies). Outline the unit and locate the well in two directions from **NEAREST** quarter section and unit lines.

2. Location of well in two directions from **NEAREST** quarter section and unit lines is:

   844 ft. from North (north-south) line of Quarter Section

   666 ft. from East (east-west) line of Quarter Section

   _____ ft. from _____ (north-south) line of unit

   _____ ft. from _____ (east-west) line of unit

3. Describe wellsite marker. Show or describe access route if it is not readily accessible.

   Wellsite is marked with a painted wood stake. Site can be reached from North off of 23 Mile Road. See supplemental plat.

   Ground Elevation = 1198.2 feet, U.S.G.S. datum.

GEOLOGICAL SURVEY
SEP 30 1983
MINERAL WELL SECTION

4. ON SEPARATE PLAT OR PLOT PLAN:

   A. Locate, identify, and show distances to all roads, power lines, residences, farm buildings, and other structures within 300 feet of the stake;

   B. Locate, identify, and show distances to all lakes, streams, swamps, drainage-ways or any other surface water features within 1320 feet of the stake.

5. In an ENVIRONMENTAL IMPACT ASSESSMENT describe all structures and surface features shown detailing plans for hazards prevention and erosion control (See instructions and guidelines for preparation of an environmental impact assessment).

STATE OF MICHIGAN
FREDERICK H. THOMSON
LAND SURVEYOR
No. 21996
REGISTERED LAND SURVEYOR

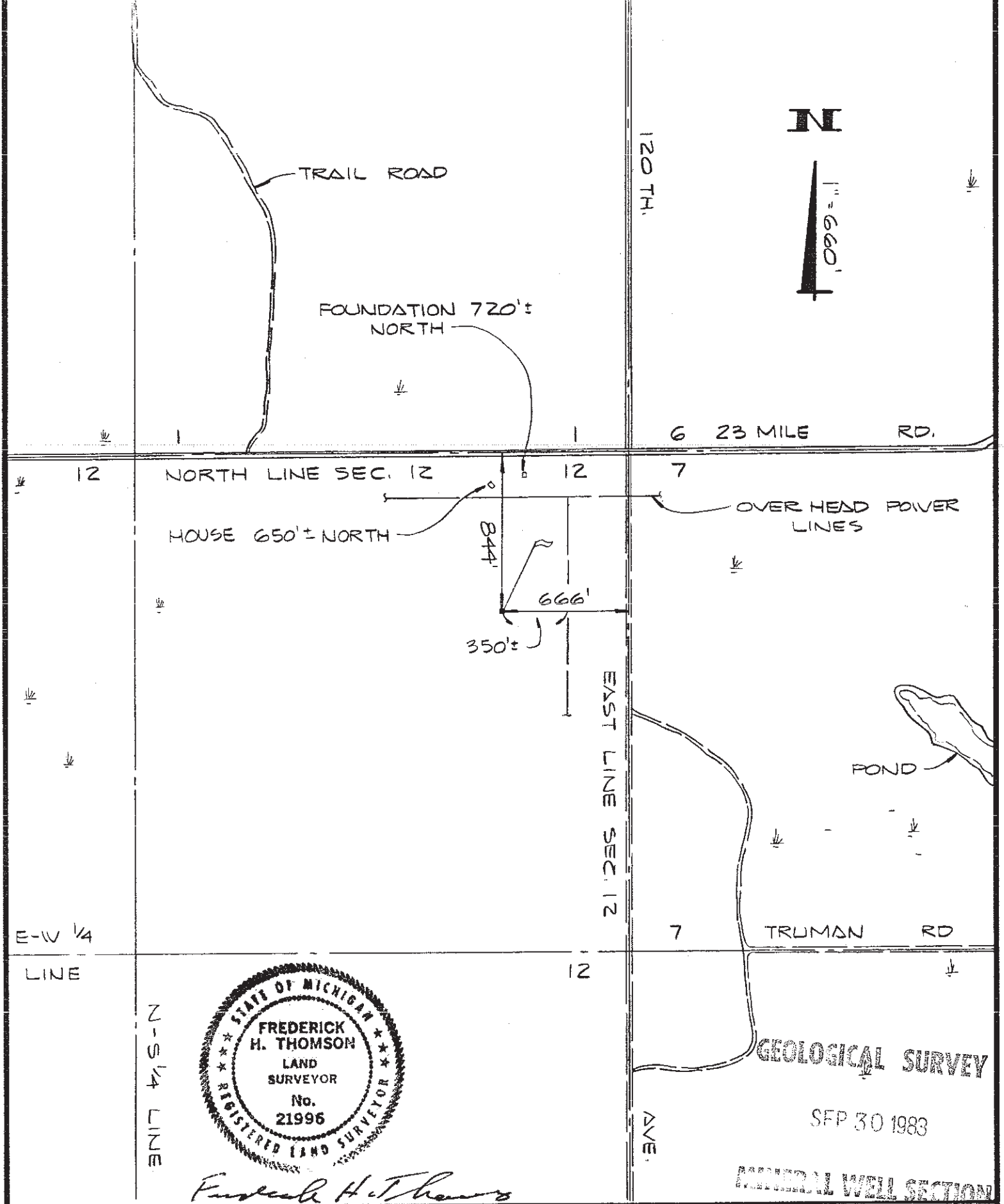
NAME OF INDIVIDUAL WHO SURVEYED WELL SITE: Frederick H. Thomson
DATE: Frederick H. Thomson, LS#21996 9-30-83
TITLE: Surveyor

ADDRESS: J. L. WILCOX & ASSOCIATES, INC. 7230 North U.S.-131 Manton, Michigan 49663

I CERTIFY THE ABOVE INFORMATION IS COMPLETE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF

SIGNATURE (LESSEE OR AUTHORIZED REPRESENTATIVE)	ADDRESS (IF DIFFERENT THAN LESSEE)	DATE (MONTH, DAY, YEAR)
[signature]		

R 7208 REV 3/80



Frederick H. Thomson

SUPPLEMENTAL PLAT: PILARSKI #1-12, SECTION 12 T16N-R9W, GRANT TOWNSHIP, MECOSTA COUNTY, MICHIGAN

CLIENT: PPG OIL & GAS COMPANY, INC.

DATE	DRN	CHD	SCALE
2-29-83	R.M.	FHT	V: H: 1"=660'

J.L. WILCOX & ASSOCIATES, INC.
Engineers and Surveyors
7230 N. U.S. — 131 • Manton, Michigan 49663

NOTES	SHEET	JOB NO.
F.B. 81 PG. 73,74	1 OF 1	83366

BRUNING 44-122 48478

PPG Oil & Gas Co., Inc.
A Subsidiary of PPG Industries Inc
2258 Enterprise Drive Mt. Pleasant, Michigan 48858 (517) 773-3949

September 30, 1983

Mr. Al Rarick
Department of Natural Resources
Geological Survey Division
P. O. Box 30028
Lansing, MI 48909

Dear Mr. Rarick:

Re: PPG Oil & Gas Co., Inc. Standard Casing and Cementing Procedures

Listed below are PPG Oil & Gas Co., Inc. standard casing and cementing procedures:

1. Drive 24 pipe as deep as possible. This allows us to set 20" conductor inside and lower if trouble occurs with washout under conductor pipe while drilling surface hole.

2. Drill 17 1/2" hole to base of drift or to a firm footing as determined by geologist from samples.

3. Run 13 3/8" S.T.C. 48# Seamless H-40 casing equipped with Texas pattern weld on shoe. A float collar is set 30', or one joint, off bottom. The lower 5 joints of casing are strapped across collar in either two or three sectors. Top and bottom cement plugs with no centralizer as recommended by cementing company (see attached).

4. We also run a cement basket approximately 50' below surface, making sure cement is circulated back to surface.

5. We then drill 12 1/4" hole into Bass Islands formation or the Amherstburg if local drilling shows no lost circulation zones in the Bois Blanc and set 9 5/8" L.T.C. 40# N-80 grade pipe with a guide shoe on bottom with float collar first joint up and all bottom 6 joints secured with Weld-A or Baker Lok or some similar material.

6. Centralizers are run per cementer's recommendation attached.

7. For both the surface and intermediate casings, the lower joints of casing are roughened unless they appear rusty as this provides a much better bond for cement.

Sincerely,

Donald P. Smith
Exploration Engineer

DPS/blb
Attachment

Exhibit #1

GEOLOGICAL SURVEY
SEP 30 1983
MINERAL WELL SECTION

Surface Casing (13 3/8" in 17 1/2" hole @ 750')

A. Use insert float and Texas Pattern Shoe and lock to shoe joint with thread lock.

B. No centralizers

C. Circulate hole a minimum of one complete circulation

D. Do not reciprocate casing

E. Run bottom (red) wiper plug. Do not use if carrying LCM in cement.

F. Pump 70 bbls. fresh water ahead of cement

G. Cement with:

1. 475 sx 50/50 Poz., 6% total gel, 3% $CaCl_2$
   1.54ft^3/sk, 13.3#/gal, 7.66 gals/sk
2. 200 sx Class "A", 3% $CaCl_2$
   1.18 ft^3/sk, 15.6#/gal, 7.66 gals/sk

Intermediate Casing (9 5/8" in 12 1/4" hole @ 5100')

Recommended Procedure:

A. Use float collar and guide shoe and lock to shoe joint with Halliburton Weld-A

B. Run one centralizer 10' above guide shoe and four more at every other collar spacing.

C. Circulate hole a minimum of one complete circulation and until the drag stabilizes.

D. Reciprocate casing while circulating and cementing. Stop reciprocation just prior to bumping top plug.

E. Run bottom (red) wiper plug. Do not use if carrying LCM in cement.

F. Pump 30 bbls. fresh water ahead of cement.

G. Cement with enough cement from caliper log to bring cement to surface on all intermediate casing strings.

H. Run top (black) wiper plug.

I. Displace with fresh water.

Casing Equipment: (9 5/8")

Regular guide shoe, float collar with auto fill, Halliburton weld-A (2), Centralizers (5)

PPG Oil & Gas Co., Inc.
A Subsidiary of PPG Industries, Inc
2258 Enterprise Drive Mt. Pleasant, Michigan 48858 (517) 773-3949

September 30, 1983

Mr. Al Rarick
Department of Natural Resources
Geological Survey Division
4th Floor, Mason Building
P. O. Box 30028
Lansing, MI 48909

Dear Mr. Rarick:

Subject: PPG Oil & Gas Co., Inc. Testing Program

The test well covered by this application is being drilled into the top of the Niagaran formation to approximately 8,000'. The primary objective is evaluation of the potash mineralization of the A-1 Evaporite, which occurred in the interval -7,579' to -7,931' in the Freudenburg 1-31 well located in the SE/4 NE/4 NE/4 of Section 31, T17N, R8W, Osceola County, Michigan.

The testing program will consist of cutting 4" cores through the anticipated potash mineralized section. Then gamma ray, neutron and other geophysical logs will be run at total depth.

Geophysical logs will also be run from the base of the surface casing to total depth. Sample cuttings will be retained and sample descriptions will be submitted with the plugging record. Potential disposal horizons will be drill stem tested.

Sincerely,

Donald D. Metzger

Donald D. Metzger
Director, Exploration
& Michigan Operations

DDM/blb

GEOLOGICAL SURVEY
SEP 30 1983
OIL AND GAS SECTION

Exhibit #2

PPG Industries, Inc. 2250 Enterprise Drive Mt. Pleasant, Michigan 48858 (517) 773-3949

September 30, 1983

Mr. Al Rarick
Department of Natural Resources
Geological Survey Division
4th Floor, Mason Building
P.O. Box 30028
Lansing, MI 48909

Re: Casing Removal and Plugging

Dear Mr. Rarick:

Upon completion of the coring and logging of the test well covered by attached permit application the well may be abandoned and plugged. If not abandoned, change of status will be requested at a later date.

Plugging will consist of running open end drill pipe to T.D. and setting continuous cement plugs to surface. The casing will be cut off at least 3 feet below surface and a 1/2" steel plate welded over the top of surface casing stub.

The cellar will be removed and backfilled according to D.N.R. specifications.

Sincerely,

Donald P. Smith
Exploration Engineer

DPS/blb

Exhibit #3

GEOLOGICAL SURVEY
SEP 30 1983
MINERAL WELL SECTION

PPG Industries, Inc. 2250 Enterprise Drive Mt. Pleasant, Michigan 48858 (517) 773-3949

September 30, 1983

Mr. Al Rarick
Department of Natural Resources
Geological Survey Division
4th Floor, Mason Building
P.O. Box 30028
Lansing, MI 48909

Re: Casing Removal and Plugging

Dear Mr. Rarick:

Upon completion of the coring and logging of the test well covered by attached permit application the well may be abandoned and plugged. If not abandoned, change of status will be requested at a later date.

Plugging will consist of running open end drill pipe to T.D. and setting continuous cement plugs to surface. The casing will be cut off at least 3 feet below surface and a 1/2" steel plate welded over the top of surface casing stub.

The cellar will be removed and backfilled according to D.N.R. specifications.

Sincerely,

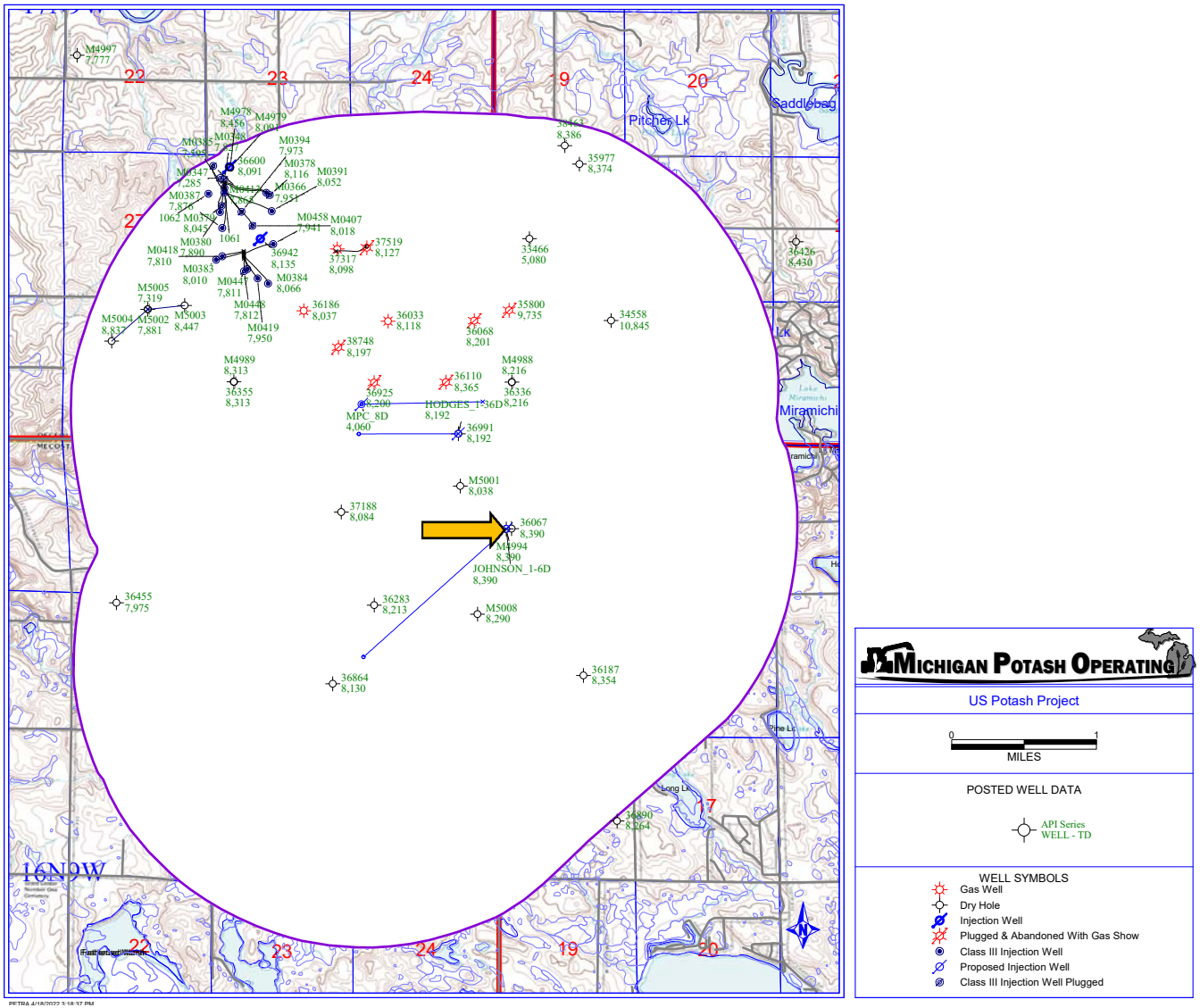
Donald P. Smith
Exploration Engineer

DPS/blb

Exhibit #3

GEOLOGICAL SURVEY
SEP 30 1983
MINERAL WELL SECTION

c. Johnson 1-6, Permit #36067



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

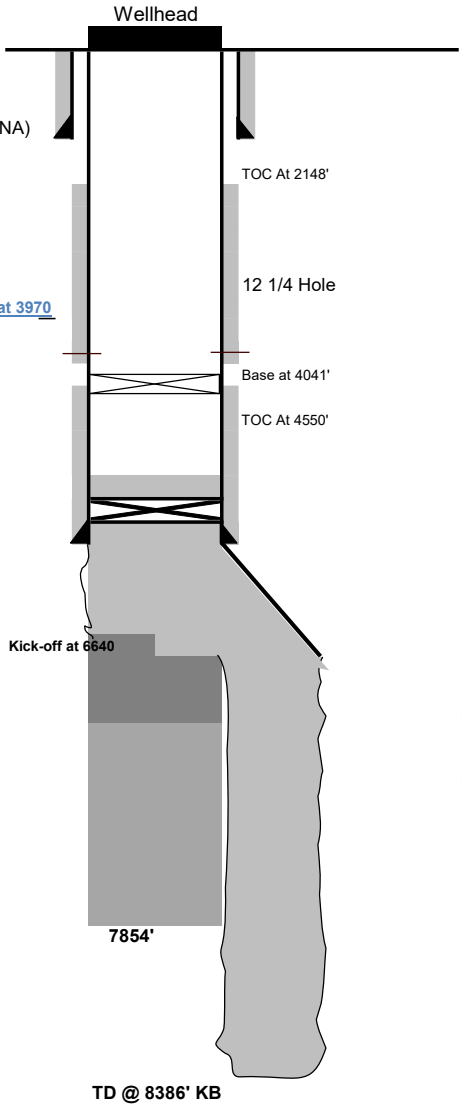
JOHNSON ET AL 1-6

NE NW SW Sec 6 T16N R8W
MECOSTA COUNTY, MI

PROPOSED WELLBORE DIAGRAM

UPDATED December 2021

API No. 21-107-36067-0000
GL @ 1175'
KB @ 1191.5'
WELL COMPLETION DATE: DRY HOLE (NA)
PLUGGING COMPLETION DATE:
11/1/1982
REMEDIATION DATE:
8/12/2021



Fish 4184 - 4221
AS1-X 95/8" packer 7.9'
X-O 0.30'
X-O 0.70'
1 jt 3.5" drillpipe 31.98'

SURFACE CASING
13 3/8" 48# H-40
SET @ 904' KB
CMT w/950 SX TO SURFACE

Squeeze cement at base of Dundee 4041
6 holes over 2'
Squuezed with 450 sks 65/35 3% CaCl2
133 sks Class A 3aCl2
TOC after squeeze is 2148'

Squeeze Hole and cement at 4041.
CIBP at 4180'.
TOC @ 4550'; CIBP @ 5464'
30' Cement over CIBP

INTERMEDIATE CASING
9 5/8" 47# L 80
SET @ 5550' KB
CMT w/250 SX
ID 8.681 Drift 8.525

PLUGGING
380 SX in 1st Open Hole from 7854-6640. Kickoff at 6640.
457 SX POZ in 2nd Open Hole from 8386 to 6640.
Cement Retainer at 5500'.
Reporting 1175 Sx Class A from Retainer up
422 Below Retainer based on Original P&A Report.
(Corrected P&A Report Submitted 12-21-82. Original 12-9-82).

JOHNSON 1-6 WELL HISTORY

DATE	DESCRIPTION
9/23/1982	SPUD.
10/17/1982	24" CONDUCTOR SET AT 60'
	13 3/8" SET AT 950'; 904 SX
	9 5/8" SET AT 5550'; 250 SX
	DRILL TO 7852.
	SPOT 380 SX CEMENT FROM 7852 TO 6640. Kick-off from 6640 to TD at 8386
10/29/1982	REACH TD AT 8390.
	SPOT 457 SX POZ LITE FROM 8390 UP.
	SET RETAINER AT 5500.
	COME OFF RETAINER. SPOT 1175 SX CEMENT FROM RETAINER UP.
8/12/2021	MIRUSU FOR CEMENT REMEDIATION TO COVER DUNDEE
	DRILL THROUGH CEMENT TO 5437.
	SQUEEZE HOLES AT 4041, PUMP 450 SX 65/35, 133 SX Class A
	ESTABLISH CIRCULATION AND PUMP 588 SX 65/35 REMEDIAL CEMENT TO COVER DUNDEE
	TOC BY BOND LOG AT 2148.
	CIBP SET AT 4180.

PPG INDUSTRIES, INC. 1385-821-354, JOHNSON 1-6
NENWSW S6, T16N, R8W, CHIPPEWA T, MECOSTA CO.
M4994

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL PLUGGING RECORD

File in DUPLICATE Within 30 Days After Plugging is Completed

AMENDED 2-1-88

PERMIT NUMBER: 1385-821-354

DATE: 12-21-82

OWNER OR OPERATOR: PPG Industries, Inc.

ADDRESS: One PPG Place, Pittsburgh, PA 15272

WELL NAME: Johnson

WELL NUMBER: 1-6

WELL LOCATION: NE¼ NW ¼ SW ¼ SEC. 6 T. 16N R. 8W

TOWNSHIP: Chippewa

COUNTY: Mecosta

TYPE OF WELL (Brine, Disposal, Storage, or Test): Dry Hole

TOTAL DEPTH: 8390

FORMATION: Cincinnatian

DATE PLUGGING STARTED: 10-29-82

DATE PLUGGING COMPLETED: 11-1-82

WAS PERMISSION OF DEPT. OF NATURAL RESOURCES OBTAINED BEFORE PLUGGING BEGAN? XX YES ☐ NO

NAME OF DEPARTMENT REPRESENTATIVE WHO AUTHORIZED OR SUPERVISED PLUGGING: Michael Moss

CASING SIZE	WHERE SET	AMOUNT RECOVERED	SHOT OR RIPPED	TYPE OF BRIDGES OR PLUGS	DEPTH PLACED	NUMBER SACKS
24"	60	----	----	Cement	TD	457 POZ
13 3/8"	904	----	----	Cement Retainer	5550	
9 5/8"	5550	----	----	Cement	5550	Cl A

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

On 10-17-82, well was plugged back from 7852' to 6640' with 270 sacks Regular POZ 4% gel cement and 110 sacks Class A cement, and redrilled. On 10-29-82 ran in spotted 457 sx POZ, pulled up to 5500' and set cement retainer, came off and spotted 1175 sx of Class A.

(USE REVERSE SIDE IF NEEDED)

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES XX NO — If yes, give details:

GEOLOGICAL SURVEY

Did a Service Company pump mud, spot cement, or set bridge plugs? XX YES ☐ NO — If yes, give name and address: Dowell

FEB 5 19[illegible]

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES XX NO — If yes, give name and address:

Permits & Bonding Unit

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging

CERTIFICATE

I, Donald D. Metzger of Kalium Chemicals (company), state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction and that the facts stated herein are true, correct and complete to the best of my knowledge.

SIGNATURE	ADDRESS	TITLE
Donald D. Metzger	11126 140th Ave., Hersey, MI	Resident Manager

FINAL INSPECTIONS

DEPARTMENT REPRESENTATIVE	DATE
DEPARTMENT REPRESENTATIVE	DATE

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL COMPLETION REPORT

TO BE FILED WITH THE SUPERVISOR WITHIN 60 DAYS AFTER COMPLETION OF WELL (ACT 315, P.A. 1969)

SUBMIT IN TRIPLICATE

AMENDED 12-9-87

NAME OF OWNER OR OPERATOR	ADDRESS OF OWNER OR OPERATOR
PPG Industries, Inc.	2258 Enterprise Drive Mt. Pleasant, MI 48858
NAME OF DRILLING CONTRACTOR	**ADDRESS OF DRILLING CONTRACTOR**
T. D. Provins Drilling Company	2113 Enterprise Drive Mt. Pleasant, MI 48858

RECEIVED
GEOLOGICAL SURVEY
Permits & Bonding Unit

WELL NAME	WELL NUMBER	PERMIT NUMBER		
Johnson	1-6	1385-82 [illegible]354		
LOCATION	**SECTION**	**TWP.**		**RANGE**
NE NW SW	6	16N		8W
TOWNSHIP	**COUNTY**			
Chippewa	Mecosta			

FOOTAGE 460 Ft. from North (N or S) Line and 585 Ft. from West (E or W) Line of quarter section

DATE DRILLING COMMENCED	DATE DRILLING COMPLETED	DATE WELL COMPLETED	TYPE OF WELL
9-23-82	10-29-82	----	Dry Hole

FORMATION COMPLETED IN	TOTAL DEPTH	ELEVATION	KB	RB	RT	RF	GN
Cincinnatian	8390		1191.5				1175

ROTARY TOOLS	CABLE TOOLS
From 0 Feet to 8390 Feet	From Feet to Fe

WELL CASING RECORD

TUBING AND CASING DATA				CEMENTING DATA			PERFORATIONS OR OPEN HOLE		
SIZE	LB./FT.	GRADE	DEPTH	SACKS	TYPE	STAGING DEPTH(S)	NO. HOLES	FROM	TO
24"			60	0		60	NONE		
13 3/8"			904	950		904			
9 5/8"			5550	250		5550			

WATER ZONES

FORMATION	FROM	TO	AMOUNT
(Fresh)			
NONE			

WIRE LINE LOGS RUN

SERVICE COMPANY	TYPE LOG	INTERVAL LOGGED	COPY TO SURVEY
Schlumberger	LDT-CNL-GR	200-8390	
	Sonic	200-8390	
	DLL-MLL	3300-8390	

FRACTURE OR ACID TREATMENT

DATE	FROM	TO	QUANTITY
NONE			

SOLUTION MINING

NAME AND NUMBER OF INJECTION AND TARGET WELL – DISTANCE APART
NONE

The information in and attached to this report is complete and correct.

SIGNATURE	TITLE	DATE
Donald D. Metzger	Kalium Chemicals Resident Manager	12-9-87

GIVE COMPLETE FORMATION RECORD ON REVERSE SIDE

R 7504 2/73

Strickler Geological Services, Inc.

1425 SOUTH MISSION ROAD • MT. PLEASANT, MICHIGAN 48858 • (517) 772-2107

December 21, 1982

Department of Natural Resources
Geological Survey Division
P. O. Box 30028
Lansing, MI 48909

Dear Sirs:

Please find enclosed two (2) copies of the Mineral Well Plugging Record and two (2) copies of the Well Plugging Record which have been corrected, on the Johnson #1-6 located in the NE¼ NW¼ SW¼ of Section 6, Chippewa Township, Mecosta County.

If you have any questions, please feel free to contact me.

Sincerely,

William E Booker

William E. Booker

/ljb
Enclosures

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL PLUGGING RECORD

File in DUPLICATE Within 30 Days After Plugging is Completed

PERMIT NUMBER: ~~36867~~ (1385-821-354)

DATE: 12-21-82

OWNER OR OPERATOR: Willmet, Inc.

ADDRESS: 2250 Enterprise Drive, Mt. Pleasant, MI 48858

WELL NAME	WELL NUMBER
Johnson	1-6

WELL LOCATION	TOWNSHIP	COUNTY
NE ¼ NW ¼ SW ¼ SEC. 6 T. 16N R. 8W	Chippewa	Mecosta

TYPE OF WELL (Brine, Disposal, Storage, or Test)	TOTAL DEPTH	FORMATION
Dry Hole	8390	Cincinnatian

DATE PLUGGING STARTED	DATE PLUGGING COMPLETED	WAS PERMISSION OF DEPT. OF NATURAL RESOURCES OBTAINED BEFORE PLUGGING BEGAN?
10-29-82	11-1-82	XX YES ☐ NO

NAME OF DEPARTMENT REPRESENTATIVE WHO AUTHORIZED OR SUPERVISED PLUGGING: Michael Moss

CASING SIZE	WHERE SET	AMOUNT RECOVERED	SHOT OR RIPPED	TYPE OF BRIDGES OR PLUGS	DEPTH PLACED	NUMBER SACKS
24"	60	---	---	Cement	TD	457 POZ
13 3/8"	904	---	---	Cement Retainer	5550	
9 5/8"	5550	---	---	Cement	5550	1175
						Cl A

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Ran in spotted 457 sx POZ, pulled up to 5500' and set cement retainer, came off and spotted 1175 sx of Class A.

(USE REVERSE SIDE IF NEEDED)

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Dowell

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Marvin Woods

CERTIFICATE

I, William E. Booker of Stricker Geological Services, Inc. (company), state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge.

SIGNATURE	ADDRESS	TITLE
William E Booker	1425 S. Mission, Mt. Pleasant, MI	Geologist

FINAL INSPECTIONS

DEPARTMENT REPRESENTATIVE	DATE
DEPARTMENT REPRESENTATIVE	DATE

OPERATORS USE

DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:

Strickler Geological Services, Inc.

1425 SOUTH MISSION ROAD • MT. PLEASANT, MICHIGAN 48858 • (517) 772-2107

December 9, 1982

Mr. Bob Ives
Mineral Wells
Department of Natural Resources
Geological Survey Division
P. O. Box 30028
Lansing, MI 48909

RE: WILLMET, INC.
Johnson #1-6
NE NW SW, Section 6, T16N R8W
Chippewa Township, Mecosta County

Dear Mr. Ives:

Enclosed please find the following on the above referenced dry hole.

1. Mineral Well Plugging Record - 2 copies.
2. Mineral Well Completion Report - 2 copies.
3. Sample Description - 2 copies.

If you have any questions, please feel free to contact me.

Sincerely,

William E. Booker

William E. Booker

/ljb
Enclosures

GEOLOGICAL SURVEY

DEC 1982

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL PLUGGING RECORD

File in DUPLICATE Within 30 Days After Plugging is Completed

PERMIT NUMBER: ~~36065~~ (1385-821-354)

DATE: 12-9-82

OWNER OR OPERATOR: Willmet, Inc.

ADDRESS: 2250 Enterprise Drive, Mt. Pleasant, MI 48858

WELL NAME	WELL NUMBER
Johnson	1-6

WELL LOCATION	TOWNSHIP	COUNTY
NE ¼ NW ¼ SW ¼ SEC. 6 T. 16N R. 8W	Chippewa	Mecosta

TYPE OF WELL (Brine, Disposal, Storage, or Test)	TOTAL DEPTH	FORMATION
Dry Hole	8390	Cincinnatian

DATE PLUGGING STARTED	DATE PLUGGING COMPLETED	WAS PERMISSION OF DEPT. OF NATURAL RESOURCES OBTAINED BEFORE PLUGGING BEGAN?
10-29-82	11-1-82	☑ YES ☐ NO

NAME OF DEPARTMENT REPRESENTATIVE WHO AUTHORIZED OR SUPERVISED PLUGGING: Michael Moss

CASING SIZE	WHERE SET	AMOUNT RECOVERED	SHOT OR RIPPED	TYPE OF BRIDGES OR PLUGS	DEPTH PLACED	NUMBER SACKS
24"	60'	---	---	Cement	TD	457 POZ
13 3/8"	904	---	---	Cement Retainer	5550	
9 5/8"	5550	1500	Shot	Cement	5550	1597 Cl A

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Cut and pulled casing - 1500', ran in spotted 457 sx POZ, pulled up to 5500' and set cement retainer, came off and spotted 1597 sx of Class A.

RECEIVED
NOV 3 1982
GEOLOGICAL SURVEY

(USE REVERSE SIDE IF NEEDED)

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Dowell

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Marvin Woods

CERTIFICATE

I, William E. Booker of Strickler Geological Services, Inc. (company), state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge.

SIGNATURE	ADDRESS	TITLE
William Booker	1425 S. Mission, Mt. Pleasant MI	Geologist

FINAL INSPECTIONS

DEPARTMENT REPRESENTATIVE	DATE
DEPARTMENT REPRESENTATIVE	DATE

OPERATORS USE

DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL COMPLETION REPORT

TO BE FILED WITH THE SUPERVISOR WITHIN 60 DAYS AFTER COMPLETION OF WELL (ACT 315, P.A. 1969)

SUBMIT IN TRIPLICATE

PN 1385-821-35

NAME OF OWNER OR OPERATOR	ADDRESS OF OWNER OR OPERATOR
Willmet, Inc.	2250 Enterprise Drive Mt. Pleasant, MI 48858
NAME OF DRILLING CONTRACTOR	**ADDRESS OF DRILLING CONTRACTOR**
T. D. Provins Drilling Company	2113 Enterprise Drive Mt. Pleasant, MI 48858

WELL NAME	WELL NUMBER	PERMIT NUMBER		
Johnson	1-6	36067		
LOCATION	**SECTION**	**TWP.**	**RANGE**	
NE NW SW	6	16N	8W	
TOWNSHIP	**COUNTY**			
Chippewa	Mecosta			

FOOTAGE 460 Ft. from North (N or S) Line and 585 Ft. from West (E or W) Line of quarter section

DATE DRILLING COMMENCED	DATE DRILLING COMPLETED	DATE WELL COMPLETED	TYPE OF WELL		
9-23-82	10-29-82	---	Dry Hole		
FORMATION COMPLETED IN	**TOTAL DEPTH**	**ELEVATION**	**KB**	**RB**	**RT**	**RF**	**GN**
Cincinnatian	8390		1191.5				1175

ROTARY TOOLS From 0 Feet to 8390 Feet

CABLE TOOLS From ____ Feet to ____ Feet

WELL CASING RECORD

TUBING AND CASING DATA				CEMENTING DATA			PERFORATIONS OR OPEN HOLE		
SIZE	LB./FT.	GRADE	DEPTH	SACKS	TYPE	STAGING DEPTH(S)	NO. HOLES	FROM	TO
24"			60	0		60	NONE		
13 3/8"			904	950		904			
9 5/8"			5550	250	class 'A'	5550			

WATER ZONES

FORMATION	FROM	TO	AMOUNT
(Fresh)			
NONE			

WIRE LINE LOGS RUN

SERVICE COMPANY	TYPE LOG	INTERVAL LOGGED	COPY TO SURVEY
Schlumberger	LDT-CNL-GR	200-8390	
	Sonic	200-8390	
	DLL-MLL	3300-8390	

FRACTURE OR ACID TREATMENT

DATE	FROM	TO	QUANTITY
NONE			

SOLUTION MINING

NAME AND NUMBER OF INJECTION AND TARGET WELL – DISTANCE APART

NONE

The information in and attached to this report is complete and correct.

SIGNATURE	TITLE	DATE
William Booker	William E. Booker, Geologist	12/6/82

GIVE COMPLETE FORMATION RECORD ON REVERSE SIDE

FORMATION RECORD

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

ELEVATION USED: ☐ KB ☐ RT ☐ RF ☐ GR	GEOLOGIST NAME:	TOPS TAKEN FROM: ☐ SAMPLE LOG ☐ ELECTRIC LOG

FROM	TO	FORMATION (TYPE, COLOR, ETC.)

FROM	TO	FORMATION (TYPE, COLOR, ETC.)

IF WELL WAS CORED, ATTACH CORE DESCRIPTION AND ANALYSIS

LIST ATTACHMENTS:

GEOLOGICAL SURVEY USE ONLY

REVIEWED BY

WILLMET, INC.

2250 ENTERPRISE DRIVE • MOUNT PLEASANT, MICHIGAN 48858
517 • 773 • 3949

October 29, 1982

Mr. Robert E. Ives, Supervisor
Mineral Wells
State of Michigan
Department of Natural Resources
Geological Survey Division
P. O. Box 30028
Lansing, MI 48909

Re: Sidetrack of the Johnson 1-6

Dear Mr. Ives:

As discussed with your personnel prior to taking the action, Willmet plugged back and sidetracked the Johnson 1-6 located in the NW/4 of SW/4, Section 6, T16N, R8W, Mecosta County, Michigan. This operation was made necessary due to a mechanical problem which occurred during a coring operation which resulted in loss of the core. A cement plug was set with the top of the cement being at 6,640 feet, and the well was sidetracked to the east approximately 40'.

We were informed prior to conducting this sidetracking operation that no permit was required. This letter is for your information and for file purposes.

Sincerely,

Donald D. Metzger

Donald D. Metzger
Director, Exploration
& Michigan Operations

DDM/jlc

cc: Al Rarick

GEOLOGICAL SURVEY
NOV 1 - 1982
MINERAL WELL SECTION

TO: Innaiah Rothecamury | FROM: Wayne T. Todd

SUBJECT: T.O.C. | OUR JOB NO. | DATE OF MEMO 1-6-83

MESSAGE

Innaiah here are the T.O.C. you requested on the following wells
Johnson 1-6 — 4550', Park 1-12-4040', Stien 1-7-4638',
Thompson 3-36-4000', Wark 1-30-4700', Paine 1-35 →
Cement 5525' to 4400' then 3349' to Surface, DV tool at 3349'

SIGNED Wayne T. Todd

SENDER — DO NOT WRITE BELOW THIS LINE

REPLY

P FILE IN
WILDMAT
JOHNSON 1-6

SIGNED DATE

ORIGINAL

SENDER — Retain part 2 for your follow-up, send parts 1 and 3 to addressee
RECIPIENT — Retain part 1 and return part 3

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL PERMIT
For a Test Well(s)

No. 10049

Permit No. 1385-821-354	
Date Issued 9/2/82	Date Expires 3/2/83

Permission is hereby granted to VILLMET, INC. (name)
2250 Enterprise Dr., Mt. Pleasant, Michigan 48858 (address)

to drill & abandon (type of operation) mineral exploration (type of test well(s))

to be located in NE/4 NW/4 SW/4 Section 6, T16N-R8W, Chippewa Twp., Mecosta County

Johnson 1-6		Niagaran	8,000'	RB RF GN
(well name)	(well number)	(formation)	(intended depth)	(elevation)

SPECIAL INSTRUCTIONS:
24 HOUR NOTIFICATION PRIOR TO STARTING DATE, CASING, CEMENTING AND PRESSURE TESTS AND LOGGING ACTIVITIES IS REQUIRED.

Permit is subject to the provisions and requirements of Act 315 PA 1969, As Amended, and rules, requirements, or orders issued by the Supervisor of Mineral Wells and the Department of Natural Resources.

SUPERVISOR OF MINERAL WELLS

By: Innaiah Pothacamury
Title:
Address: Innaiah Pothacamury
Supervisor of Test Wells
Mineral Roll Unit
Geological Survey/Division
DNR
Box 30028
Lansing, MI 48909
Telephone: (517) 373-9289

Please address all notifications, correspondence, and records to:

— NOTICE —

1. This permit is issued on the basis of the approved program outlined in the application. No changes or alterations are to be made without the permission and approval of the Supervisor of Mineral Wells or his authorized representative.
2. This permit, or a copy thereof, shall be posted at a conspicuous place at the well location or be in the possession of the driller.
3. It is further made a requirement of this permit that the applicant (or contractor) give notice to the public utilities in accordance with Act 53, Public Acts of 1974, Compiled Laws 460.701 to 460.718 and comply with each of the requirements of the act.
4. An unusual, unexpected, or difficultly controllable large volume of oil, gas, brine or flowing fresh water or a condition hazardous to public health, safety, or waters of the state shall be reported immediately to the Supervisor.

Distribution: Linen-applicant—2-Lansing—3-field—4-applicant.

WILLMET, INC.

2250 ENTERPRISE DRIVE • MOUNT PLEASANT, MICHIGAN 48858
517 • 773 • 3949

August 30, 1982

State of Michigan
Department of Natural Resources
P. O. Box 30028
Lansing, Michigan 48909

Attention: Mr. Bob Ives

Re: Request for Test Well Permit
under Mineral Well Act,
NE/4 NW/4 SW/4 of Sec. 6,
T16N, R8W, Mecosta County,
Michigan

Dear Mr. Ives:

An application for a Mineral Test Well for the Johnson 1-6, at the referenced location, was submitted on August 13, 1982. This application provided for directional drilling so that the bottom-hole location would be 95' east of the surface location. In view of the current interpretation that directional drilling is prohibited under the Mineral Well Act, please consider this letter as a revision to that application, with a revised bottom-hole location corresponding to the surface location.

Your cooperation is appreciated.

Sincerely,

Donald P. Smith
Exploration Engineer

DPS/jlc

cc: Ty Black
Wayne Todd
Sam Alguire

GEOLOGICAL SURVEY

SEP 1 1982

MINERAL WELL SECTION

State of Michigan
Department of Natural Resources
Geological Survey Division

FIELD REVIEW OF PROPOSED WELL SITE

(RETURN to Geological Survey)

Date of Inspection: 8-17-82

1. Name of Applicant: Willmet, Inc.
2. Well Name & Number: Johnson 1-6
3. Legal Description: NE NW SW Sec 6 T16N-R8W Chippewa Township Mecosta County
4. Surface Owner: Donald W. and E. Caroline Johnson
   (If other than mineral owner)
5. Topography: Gently Sloping
6. Cover Type/Density: Mostly open with scattered Pine, Cherry, Maple and Elm.
7. Land Utilization: Agricultural and Recreational uses
8. Is there any type of surface water nearer than one-quarter (1/4) mile? No
   (Specify direction and distance)
9. Is the Environmental Impact Assessment accurate and acceptable? Yes
10. Have necessary soil erosion and sedimentation control measures been adequately considered? Yes
11. Are there any special drill site construction requirements and restrictions? No
    (Specify)

Inspected by: Wayne T. Todd (signature) 8-19-82 (date)
8-31-82

By the signature below of the agent of applicant, the applicant agrees to implement specifications stated in Item #11 above.

(signature) (date)

(title) (date)

GEOLOGICAL SURVEY

SEP 1 1982

R 7518 - 1
4/75

GENERAL WELL SECTION

WILLMET INCORPORATED

2250 ENTERPRISE DRIVE • MOUNT PLEASANT, MICHIGAN 48858
517 • 773 • 3949

August 13, 1982

State of Michigan
Department of Natural Resources
P. O. Box 30028
Lansing, Michigan 48909

Attn.: Mr. Robert Ives

Re: Request for Test Well Permit under
Mineral Well Act, NE/4 NW/4 of SW/4,
Section 6, T16N-R8W, Mecosta County, MI

Dear Mr. Ives:

Enclosed herewith please find our check in the amount of $1.00 for the fee for a Mineral Test Well Application for the above noted location. This Mineral Test Well Application is submitted as a replacement for the Test Well Permit, No. 10036, for the Johnson 1-6 located in the SE/4 SE/4 NW/4, Section 6, T16N-R8W, Mecosta County, Michigan. Please cancel this latter permit, as it is now inappropriate to drill at that location in view of this newly proposed location.

We will arrange to have J. L. Wilcox & Associates do an elevation survey within ten (10) days after spud date of the above well.

Please note that an application for an Oil & Gas Drilling Permit for this location is being submitted simultaneously with this application. It is our understanding that this drilling activity will be conducted jointly under Acts 315 and 61 as per the letter from R. Thomas Segall, Assistant Supervisor of Wells, to Mr. Donald D. Metzger, dated August 4, 1982.

While sour oil and gas zones are not expected, good drilling practices and proper fluid density will be employed and should readily control such occurrences. Procedures regarding the use of hydrogen sulfide signs, flags and wind indicators will be employed. Fresh air breathing apparatus will be available at the well site. Part 2 of the Oil & Gas Sour Gas Contingency Plan, although not required for this well, is attached for reference purposes.

It is requested that all information be kept confidential as the regulations allow.

Sincerely,

Donald D. Metzger

Donald D. Metzger
Director, Exploration and
Michigan Operations

DDM:pka

GEOLOGICAL SURVEY

AUG 16 1982

MINERAL WELL SECTION

PRINT OR TYPE INFORMATION. SEE INSTRUCTION SHEET R 7500-1 BEFORE FILLING OUT APPLICATION.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

APPLICATION FOR A MINERAL WELL PERMIT

To Drill, Operate, Convert, or Rework a Brine, Storage, Disposal, or Test Well.

By Authority of Act 315, P. A. 1969

1. DATE OF APPLICATION: August 13, 1982	2. FEE ENCLOSED: $1.00
3. APPLICATION TO: Drill	
4. TYPE MINERAL WELL: D-5 (Test Well)	5. WELL DESIGNATION: Johnson 1-6
6. LOCATION: NE/4 of the NW/4 of the SW ¼ SEC. 6 T 16N R 8W	
7. TOWNSHIP: Chippewa	8. COUNTY: Mecosta

9. APPLICANT: Willmet, Inc.			10. TELEPHONE: (517)773-3949
11. ADDRESS (Street, City, State): 2250 Enterprise Drive, Mt. Pleasant, MI 48858			12. ZIP CODE: 48858
13. SURETY OR SECURITY COMPANY: Hartford Accident & Indemnity Co.	14. TYPE: ☐ SINGLE ☒ BLANKET	15. AMOUNT: $5,000	16. BOND NO.: 4486243
17. OWNER OR SURFACE RIGHTS: Donald W. & E. Caroline Johnson	18. OWNER OR MINERAL RIGHTS: Donald W. Johnson, et ux.; Carrie M. Pangborn		
19. DRILLING CONTRACTOR: T. D. Provins Drilling	20. ADDRESS: P. O. Box 642, Mt. Pleasant, MI 48858		21. TELEPHONE: (517)773-6946
22. TYPE DRILLING TOOLS: ☐ CABLE ☒ ROTARY ☐ COMBINATION	23. FORMATION: Niagaran		24. INTENDED DEPTH: 8,000'
25. PROJECT ENGINEER OR GEOLOGIST: W. J. Strickler (to A-1 Carbonate) D. Metzger, C. Jones (from A-1 to TD)	26. ADDRESS: 2250 Enterprise Dr., Mt. Pleasant, MI 48858		27. TELEPHONE: (517)773-3949

28. PROGRAM OF DRILLING, CONVERTING, REWORKING, CASING, CEMENTING, COMPLETING, OPERATING, AND MONITORING. (See appropriate instruction sheet. Attach 3 copies of proposed program — including but not necessarily limited to information requested in the instruction sheet.)

CASING PROGRAM:

Size	Depth	Cement

Exhibit 1, 2, 3 enclosed

INSTRUCTION SHEET NO.		
Type of Well	Drill-New	Rework*
Brine	D-1	R-1
Storage	D-2	R-1
Disposal	D-3	R-1
Solution Mining	D-4	R-2
Test Well	D-5	R-1

*Rework, Deepen, or Convert to New Use.

GEOLOGICAL SURVEY

AUG 23 1982

MINERAL WELL SECTION

THERE WILL BE NO CHANGES IN THE PROGRAM OUTLINED IN THIS APPLICATION WITHOUT APPROVAL OF THE SUPERVISOR OF MINERAL WELLS OR HIS AUTHORIZED REPRESENTATIVE.

29. ADDRESS CORRESPONDENCE AND PERMIT TO: Willmet, Inc., 2250 Enterprise Dr., Mt. Pleasant, MI 48858	30. TELEPHONE: (517)773-3949

MINERAL WELL SECTION USE ONLY

STATUS OF BOND: EAS	
APPLICATION APPROVED BY: CP	
PERMIT NUMBER: 1385-821-354	SIGNATURE (APPLICANT/AUTHORIZED REP.): D Smith — DATE: Aug 13/82
DATE ISSUED: 9/2/82 mja	NAME (TYPED): Donald P. Smith
ISSUED BY: CP	TITLE: Exploration Engineer

The Applicant agrees to comply with provisions and requirements of Act 315, P.A. 1969, and asserts that the information on this application and attached report is true and correct.

DISTRIBUTION:
White — Lansing
Canary — Field
Pink — Applicant

FOR CASHIER'S USE ONLY

R 7500 2/73

-82 H 5399 1.00

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

SURVEY RECORD OF WELL LOCATION

(Submit five copies with Application for Permit to Drill a Well for Oil or Gas, Brine Disposal, Hydrocarbon Storage or Secondary Recovery)

82266

LESSEE (OWNER OF LEASE RIGHTS)
WILLMET, INC.

LESSOR (OWNER OF MINERAL RIGHTS)
Donald Johnson (Johnson 1-6)

WELL NO.
1-6

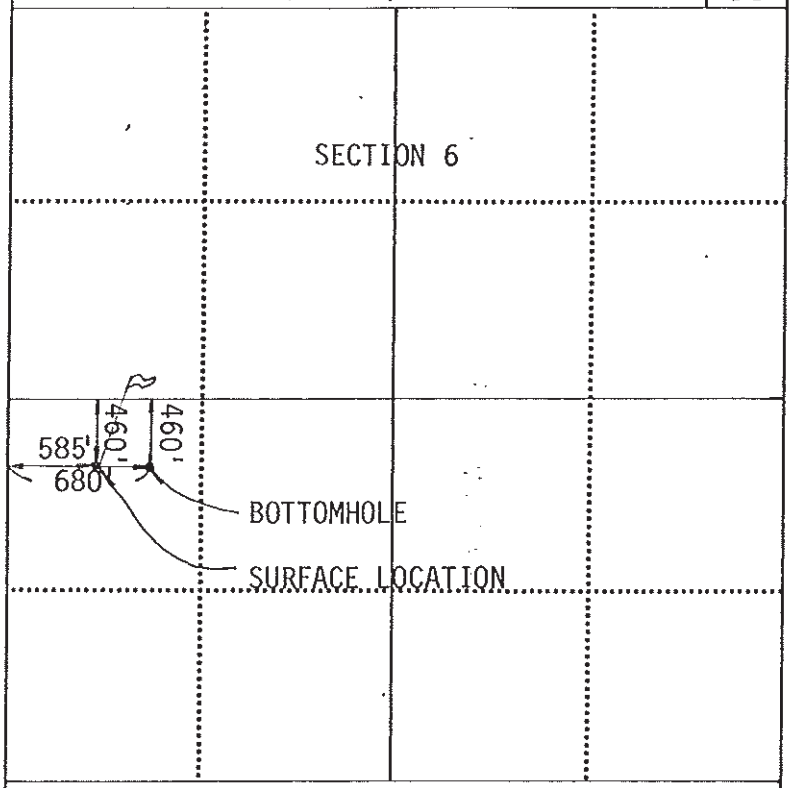
LOCATION
NE ¼ OF NW ¼ OF FR'L SW ¼ SECTION 6 T. 16N R. 8W

TOWNSHIP
Chippewa

COUNTY
Mecosta

PLAT BELOW REPRESENTS ONE FULL SECTION
(1 Mile Square)

N



(Scale of Plat – 1 inch equals 1320 ft.)

1. Outline drilling unit and spot well location on plat at left. Where drilling unit crosses section lines, divide the plat into an east half and a west half **OR** a north half and a south half (which ever applies). Outline the unit and locate the well in two directions from **NEAREST** quarter section and unit lines.

2. Location of well in two directions from **NEAREST** quarter section and unit lines is:

SURFACE LOCATION

460 ft. from North (north-south) line of Quarter Section

585 ft. from West (east-west) line of Quarter Section

_____ ft. from _____ (north-south) line of unit

_____ ft. from _____ (east-west) line of unit

3. Describe wellsite marker. Show or describe access route if it is not readily accessible.

Wellsite is marked with a painted wood stake. Site can be reached from the North off of county trail road, Evergreen Road. See supplemental plat.

4. ON SEPARATE PLAT OR PLOT PLAN:

A. Locate, identify, and show distances to all roads, power lines, residences, farm buildings, and other structures within 300 feet of the stake;

B. Locate, identify, and show distances to all lakes, streams, swamps, drainageways or any other surface water features within 1320 feet of the stake.

STATE OF MICHIGAN
FREDERICK H. THOMSON
SURVEYOR
No. 21996
REGISTERED LAND SURVEYOR

5. In an ENVIRONMENTAL IMPACT ASSESSMENT describe all structures and surface features shown detailing plans for hazards prevention and erosion control (See instructions and guidelines for preparation of an environmental impact assessment).

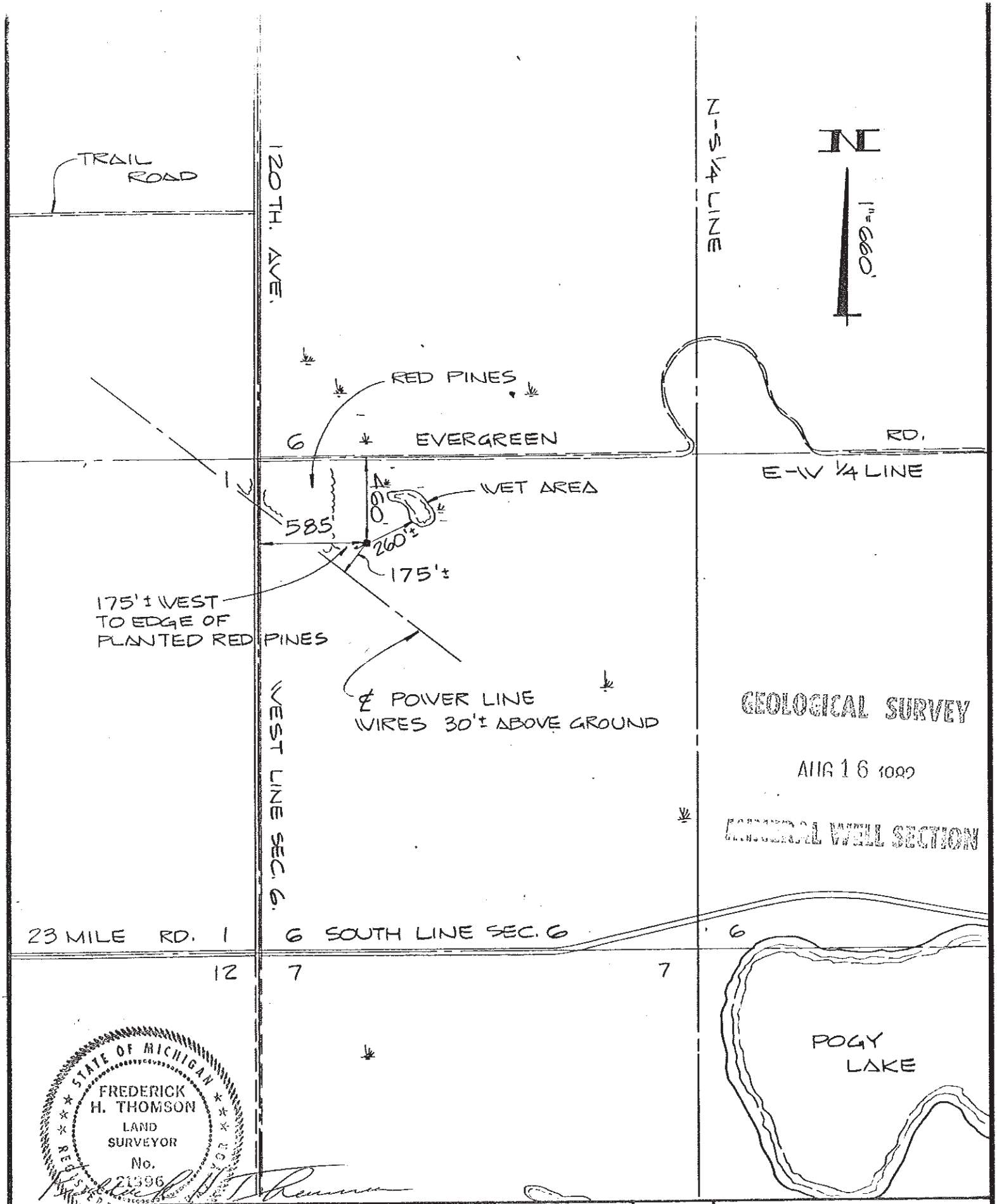
NAME OF INDIVIDUAL WHO SURVEYED WELL SITE	DATE	TITLE
Frederick H. Thomson, LS#21996	8-12-82	Surveyor

ADDRESS
J. L. WILCOX & ASSOCIATES, INC. 7230 North U.S.-131 Manton, Michigan 49663

I CERTIFY THE ABOVE INFORMATION IS COMPLETE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF

SIGNATURE (LESSEE OR AUTHORIZED REPRESENTATIVE)	ADDRESS (IF DIFFERENT THAN LESSEE)	DATE (MONTH, DAY, YEAR)
D. Smith		Aug 13/82

R 7208 REV. 3/80



SUPPLEMENTAL PLAT: JOHNSON #1-6, SECTION 6, T16N-R8W, CHIPPEWA COUNTY, MECOSTA COUNTY, MICHIGAN

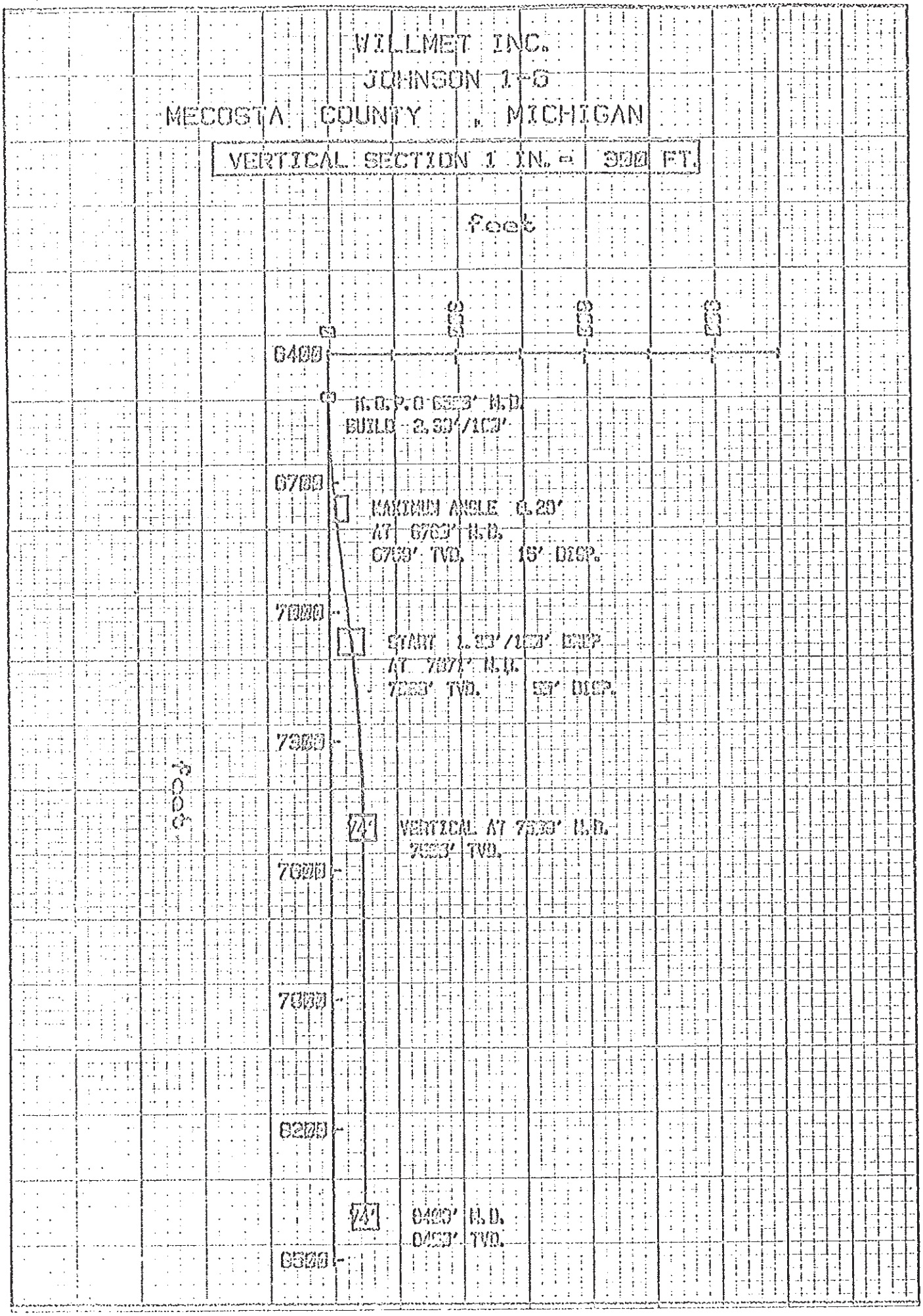
CLIENT: WILLMET INC.

DATE	8-12-82
DRN.	R.M.
CHD.	FHT
SCALE	V: 1"=660' H:
NOTES	F.B. 173 PG. 43-44
SHEET	1 OF 1
JOB NO.	82266

J.L. WILCOX & ASSOCIATES, INC.
Engineers and Surveyors
7230 N. U.S. — 131 • Manton, Michigan 49663

WILLMET INC.
JOHNSON 1-6
MECOSTA COUNTY, MICHIGAN

VERTICAL SECTION 1 IN. = 300 FT.



K+E 10 X 10 TO THE INCH • 7 X 10 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.

K&E 10 X 10 TO THE INCH • 7 X 10 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.

WILLMET INC.
JOHNSON 1-6
RECOSTA COUNTY, MICHIGAN

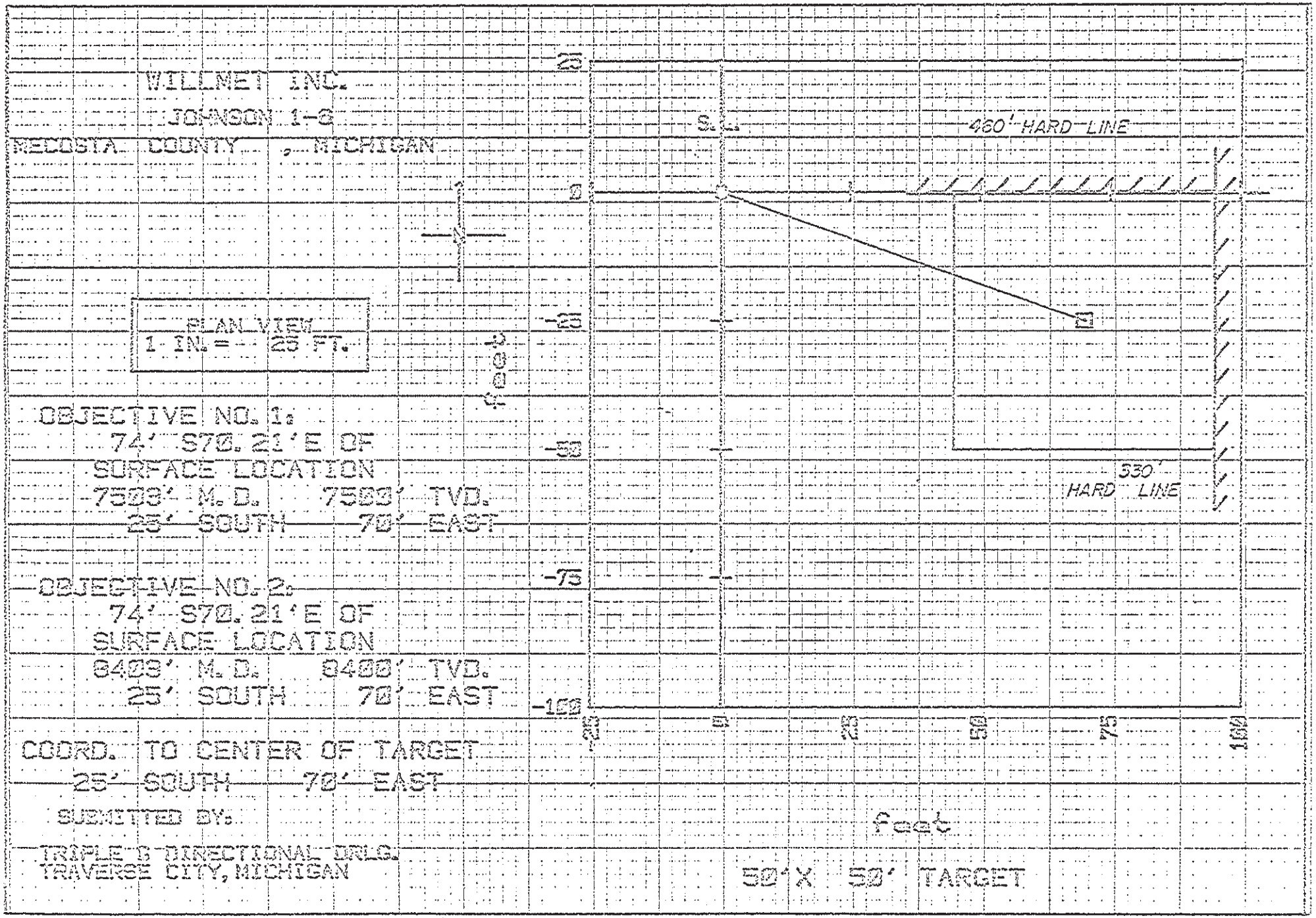
PLAN VIEW
1 IN. = 25 FT.

OBJECTIVE NO. 1:
74' S70.21'E OF
SURFACE LOCATION
7503' M.D. 7500' TVD.
25' SOUTH 70' EAST

OBJECTIVE NO. 2:
74' S70.21'E OF
SURFACE LOCATION
8403' M.D. 8400' TVD.
25' SOUTH 70' EAST

COORD. TO CENTER OF TARGET
25' SOUTH 70' EAST

SUBMITTED BY:
TRIPLE B DIRECTIONAL DRLG.
TRAVERSE CITY, MICHIGAN



WILLMET, INC.

2250 ENTERPRISE DRIVE • MOUNT PLEASANT, MICHIGAN 48858
517 • 773 • 3949

August 13, 1982

Mr. Robert E. Ives
Department of Natural Resources
Geological Survey Division
4th Floor, Mason Building
P. O. Box 30028 Lansing, MI 48909

Dear Mr. Ives:

Subject: Willmet Standard Casing and Cementing Procedures

Listed below are Willmet's standard casing and cementing procedures:

1. Drive 24" conductor pipe as deep as possible. This allows us to set 20" conductor inside and lower if trouble occurs with washout under conductor pipe while drilling surface hole.

2. Drill 17 1/2" hole to base of drift or to a firm footing as determined by geologist from samples.

3. Run 13 3/8" S.T.C. 48# Seamless H-40 casing equipped with Texas pattern weld on shoe. A float collar is set 30', or one joint, off bottom. The lower 5 joints of casing are strapped across collar in either two or three sectors. Top and bottom cement plugs with no centralizer as recommended by cementing company (see attached).

4. We also run a cement basket approximately 50' below surface, making sure cement is circulated back to surface.

5. We then drill 12 1/4" hole 50' into Bass Islands formation or the Amherstburg if local drilling shows no lost circulation zones in the Bois Blanc and set 9 5/8" L.T.C. 40# N-80 grade pipe with a guide shoe on bottom with float collar first joint up and all bottom 6 joints secured with Weld-A or Baker Lok or some similar material.

6. Centralizers are run per cementer's recommendation attached.

7. For both the surface and intermediate casings, the lower joints of casing are roughened unless they appear rusty as this provides a much better bond for cement.

Sincerely,

Donald P. Smith
Exploration Engineer

DPS/jlc

Attachment

Exhibit #1

GEOLOGICAL SURVEY

AUG 16 1982

MINERAL WELL SECTION

Surface Casing (13 3/8" in 17½" hole @ 750 ft.

A. Use insert float and Texas Pattern Shoe and lock to shoe joint with thread lock.
B. No centralizers
C. Circulate hole a minimum of one complete circulation
D. Do not reciprocate casing
E. Run bottom (red) wiper plug.
Do not use if carry LCM in cement
F. Pump 70 bbls fresh water ahead of cement
G. Cement with:
1. 475 sx 50/50 Poz, 6% total Gel, 3% $CaCl_2$
1.54ft^3/sk, 13.3#/gal, 7.66 gals/sk

2. 200 sx Class "A", 3% $CaCl_2$
1.18 ft^3/sk, 15.6#/gal, 7.66 gals/sk

Intermediate Casing: (9 5/8 in 12¼" hole @ 5100 ft)

Recommended Procedure:

A. Use float collar and guide shoe and lock to shoe joint with Halliburton Weld-A
B. Run one centralizer 10' above guide shoe and four more at every other collar spacing.
C. Circulate hole a minimum of one complete circulation and until the drag stabilizes.
D. Reciprocate casing while circulating and cementing. Stop reciprocation just prior to bumping top plug.
E. Run bottom (red) wiper plug.
Do not use if carrying LCM in cement
F. Pump 30 bbls fresh water ahead of cement.
G. Cement with:
1. 150 sx Special Cement

NOTE: State requires 500' of annulus fillup and a minimum of 150 sx for intermediate casing.

H. Run top (black) wiper plug.
I. Displace with fresh water.

Casing Equipment: (9 5/8)

Regular Guide Shoe
Float Collar with Auto Fill
Halliburton Weld-A (2)
Centralizers (5)

GEOLOGICAL SURVEY
AUG 16 1999
CONSERVATION

WILLMET, INC.
2250 ENTERPRISE DRIVE • MOUNT PLEASANT, MICHIGAN 48858
517 • 773 • 3949

August 13, 1982

Mr. Robert E. Ives
Department of Natural Resources
Geological Survey Division
4th Floor, Mason Building
P. O. Box 30028
Lansing, MI 48909

Dear Mr. Ives:

Subject: Willmet Testing Program

The test well covered by this application is being drilled into the top of the Niagaran formation to approximately 8,000'. The primary objective is evaluation of the potash mineralization of the A-1 Evaporite, which occurred in the interval -7,579' to -7,931' in the Freudenburg 1-31 well located in the SE/4 NE/4 NE/4 of Section 31, T17N, R8W, Osceola County, Michigan.

The testing program will consist of cutting 4" cores through the anticipated potash mineralized section. Then gamma ray, neutron and other geophysical logs will be run at total depth.

Geophysical logs will also be run from the base of the surface casing to total depth. Sample cuttings will be retained and sample descriptions will be submitted with the plugging record. Hydrocarbon shows will be drill stem tested.

Sincerely,

Donald D. Metzger/jc

Donald D. Metzger
Director, Exploration
& Michigan Operations

DDM/jlc

Exhibit #2

WILLMET, INC.

2250 ENTERPRISE DRIVE • MOUNT PLEASANT, MICHIGAN 48858
517 • 773 • 3949

August 13, 1982

Mr. Robert E. Ives
Department of Natural Resources
Geological Survey Division
4th Floor, Mason Building
P. O. Box 30028
Lansing, Michigan 48909

Dear Mr. Ives:

Subject: Casing Removal and Plugging

Upon completion of the coring and logging of the test well covered by attached permit application the well will be abandoned and plugged as follows:

1. Removal of well head used for drilling.

2. Weld on to existing intermediate casing string.

3. Run "free point" to determine amount of casing which can easily be recovered above the top of cement.

4. Run explosive type casing cutter and cut casing.

5. Lay down recovered casing and proceed to plug hole.

Plugging will consist of running open end drill pipe to T.D. and setting continuous cement plugs to surface. The casing will be cut off at least 3 feet below surface and a 1/2" steel plate welded over the top of surface casing stub.

The wooden cellar will be removed and backfilled according to D.N.R. specifications.

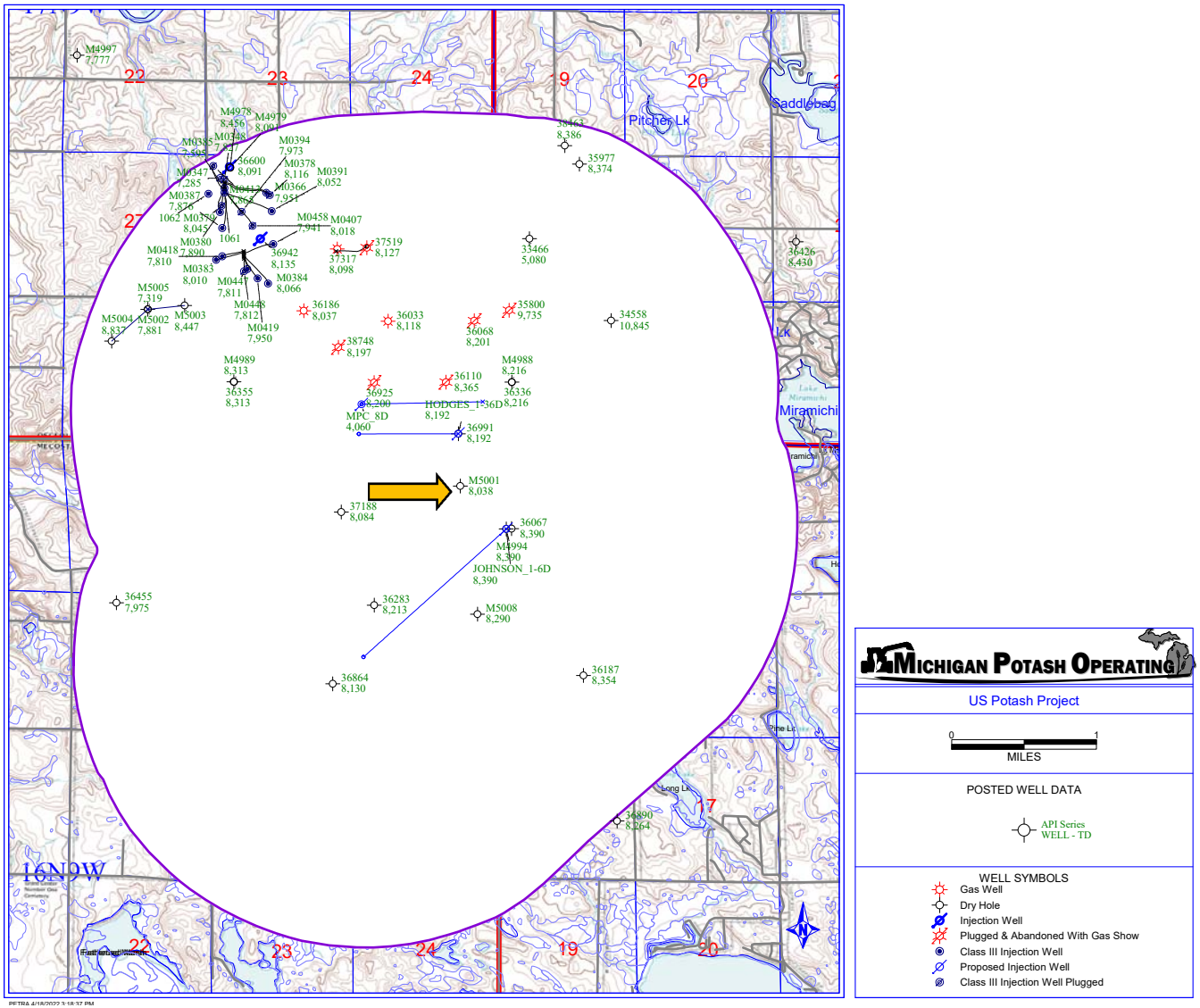
Sincerely,

Donald P. Smith
Exploration Engineer

DPS/jlc

Exhibit #3

d. Johnson 2-1, Permit #00377



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

Strickler Geological Services, Inc.
1425 SOUTH MISSION ROAD • MT. PLEASANT, MICHIGAN 48858 • (517) 772-2107

December 21, 1982

Department of Natural Resources
Geological Survey Division
P. O. Box 30028
Lansing, MI 48909

Dear Sirs:

Please find enclosed two (2) copies of the Mineral Well Plugging Record and two (2) copies of the Well Plugging Record which have been corrected, on the Johnson #1-6 located in the NE¼ NW¼ SW¼ of Section 6, Chippewa Township, Mecosta County.

If you have any questions, please feel free to contact me.

Sincerely,

William E Booker

William E. Booker

/ljb
Enclosures

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL PLUGGING RECORD

File in DUPLICATE Within 30 Days After Plugging is Completed

PERMIT NUMBER: ~~36867~~ (1385-821-354)

DATE: 12-21-82

OWNER OR OPERATOR: Willmet, Inc.

ADDRESS: 2250 Enterprise Drive, Mt. Pleasant, MI 48858

WELL NAME: Johnson

WELL NUMBER: 1-6

WELL LOCATION: NE ¼ NW ¼ SW ¼ SEC. 6 T. 16N R. 8W

TOWNSHIP: Chippewa

COUNTY: Mecosta

TYPE OF WELL (Brine, Disposal, Storage, or Test): Dry Hole

TOTAL DEPTH: 8390

FORMATION: Cincinnatian

DATE PLUGGING STARTED: 10-29-82

DATE PLUGGING COMPLETED: 11-1-82

WAS PERMISSION OF DEPT. OF NATURAL RESOURCES OBTAINED BEFORE PLUGGING BEGAN? XX YES ☐ NO

NAME OF DEPARTMENT REPRESENTATIVE WHO AUTHORIZED OR SUPERVISED PLUGGING: Michael Moss

CASING SIZE	WHERE SET	AMOUNT RECOVERED	SHOT OR RIPPED	TYPE OF BRIDGES OR PLUGS	DEPTH PLACED	NUMBER SACKS
24"	60	---	---	Cement	TD	457 POZ
13 3/8"	904	---	---	Cement Retainer	5550	
9 5/8"	5550	---	---	Cement	5550	1175
						Cl A

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Ran in spotted 457 sx POZ, pulled up to 5500' and set cement retainer, came off and spotted 1175 sx of Class A.

(USE REVERSE SIDE IF NEEDED)

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES XX NO If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? XX YES ☐ NO If yes, give name and address: Dowell

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES XX NO If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Marvin Woods

CERTIFICATE

I, William E. Booker of Stricker Geological Services, Inc. (company), state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge.

SIGNATURE: William E Booker | ADDRESS: 1425 S. Mission, Mt. Pleasant, MI | TITLE: Geologist

FINAL INSPECTIONS

DEPARTMENT REPRESENTATIVE | DATE

DEPARTMENT REPRESENTATIVE | DATE

OPERATORS USE

DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:

Strickler Geological Services, Inc.

1425 SOUTH MISSION ROAD • MT. PLEASANT, MICHIGAN 48858 • (517) 772-2107

December 9, 1982

Mr. Bob Ives
Mineral Wells
Department of Natural Resources
Geological Survey Division
P. O. Box 30028
Lansing, MI 48909

RE: WILLMET, INC.
Johnson #1-6
NE NW SW, Section 6, T16N R8W
Chippewa Township, Mecosta County

Dear Mr. Ives:

Enclosed please find the following on the above referenced dry hole.

1. Mineral Well Plugging Record - 2 copies.
2. Mineral Well Completion Report - 2 copies.
3. Sample Description - 2 copies.

If you have any questions, please feel free to contact me.

Sincerely,

William E. Booker

William E. Booker

/ljb
Enclosures

GEOLOGICAL SURVEY

DEC 1982

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL PLUGGING RECORD

File in DUPLICATE Within 30 Days After Plugging is Completed

PERMIT NUMBER: ~~36065~~ (1385-821-354)

DATE: 12-9-82

OWNER OR OPERATOR: Willmet, Inc.

ADDRESS: 2250 Enterprise Drive, Mt. Pleasant, MI 48858

WELL NAME: Johnson

WELL NUMBER: 1-6

WELL LOCATION: NE ¼ NW ¼ SW ¼ SEC. 6 T. 16N R. 8W

TOWNSHIP: Chippewa

COUNTY: Mecosta

TYPE OF WELL (Brine, Disposal, Storage, or Test): Dry Hole

TOTAL DEPTH: 8390

FORMATION: Cincinnatian

DATE PLUGGING STARTED: 10-29-82

DATE PLUGGING COMPLETED: 11-1-82

WAS PERMISSION OF DEPT. OF NATURAL RESOURCES OBTAINED BEFORE PLUGGING BEGAN? ☑ YES ☐ NO

NAME OF DEPARTMENT REPRESENTATIVE WHO AUTHORIZED OR SUPERVISED PLUGGING: Michael Moss

CASING SIZE	WHERE SET	AMOUNT RECOVERED	SHOT OR RIPPED	TYPE OF BRIDGES OR PLUGS	DEPTH PLACED	NUMBER SACKS
24"	60'	---	---	Cement	TD	457 POZ
13 3/8"	904	---	---	Cement Retainer	5550	
9 5/8"	5550	1500	Shot	Cement	5550	1597 Cl A

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Cut and pulled casing - 1500', ran in spotted 457 sx POZ, pulled up to 5500' and set cement retainer, came off and spotted 1597 sx of Class A.

GEOLOGICAL SURVEY

DEC 3 1982

(USE REVERSE SIDE IF NEEDED)

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Dowell

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Marvin Woods

CERTIFICATE

I, William E. Booker of Strickler Geological Services, Inc. (company), state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge.

SIGNATURE	ADDRESS	TITLE
William Booker	1425 S. Mission, Mt. Pleasant MI	Geologist

FINAL INSPECTIONS

DEPARTMENT REPRESENTATIVE	DATE
DEPARTMENT REPRESENTATIVE	DATE

OPERATORS USE

DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL COMPLETION REPORT

TO BE FILED WITH THE SUPERVISOR WITHIN 60 DAYS AFTER COMPLETION OF WELL (ACT 315, P.A. 1969)

SUBMIT IN TRIPLICATE

PN 1385-821-351

NAME OF OWNER OR OPERATOR	ADDRESS OF OWNER OR OPERATOR
Willmet, Inc.	2250 Enterprise Drive Mt. Pleasant, MI 48858
NAME OF DRILLING CONTRACTOR	**ADDRESS OF DRILLING CONTRACTOR**
T. D. Provins Drilling Company	2113 Enterprise Drive Mt. Pleasant, MI 48858

WELL NAME	WELL NUMBER	PERMIT NUMBER		
Johnson	1-6	36067		
LOCATION	**SECTION**	**TWP.**	**RANGE**	
NE NW SW	6	16N	8W	
TOWNSHIP	**COUNTY**			
Chippewa	Mecosta			

FOOTAGE 460 Ft. from North (N or S) Line and 585 Ft. from West (E or W) Line of quarter section

DATE DRILLING COMMENCED	DATE DRILLING COMPLETED	DATE WELL COMPLETED	TYPE OF WELL			
9-23-82	10-29-82	---	Dry Hole			
FORMATION COMPLETED IN	**TOTAL DEPTH**	**ELEVATION**	**KB**	**RB**	**RT**	**RF**	**GN**
Cincinnatian	8390		1191.5				1175

ROTARY TOOLS From 0 Feet to 8390 Feet

CABLE TOOLS From ____ Feet to ____ Feet

WELL CASING RECORD

TUBING AND CASING DATA				CEMENTING DATA			PERFORATIONS OR OPEN HOLE		
SIZE	LB./FT.	GRADE	DEPTH	SACKS	TYPE	STAGING DEPTH(S)	NO. HOLES	FROM	TO
24"			60	0		60	NONE		
13 3/8"			904	950		904			
9 5/8"			5550	250	class 'A'	5550			

WATER ZONES

FORMATION	FROM	TO	AMOUNT
(Fresh)			
NONE			

WIRE LINE LOGS RUN

SERVICE COMPANY	TYPE LOG	INTERVAL LOGGED	COPY TO SURVEY
Schlumberger	LDT-CNL-GR	200-8390	
	Sonic	200-8390	
	DLL-MLL	3300-8390	

FRACTURE OR ACID TREATMENT

DATE	FROM	TO	QUANTITY
NONE			

SOLUTION MINING

NAME AND NUMBER OF INJECTION AND TARGET WELL – DISTANCE APART
NONE

The information in and attached to this report is complete and correct.

SIGNATURE	TITLE	DATE
William Booker	William E. Booker, Geologist	12/6/82

GIVE COMPLETE FORMATION RECORD ON REVERSE SIDE

FORMATION RECORD

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

ELEVATION USED: ☐ KB ☐ RT ☐ RF ☐ GR	GEOLOGIST NAME:	TOPS TAKEN FROM: ☐ SAMPLE LOG ☐ ELECTRIC LOG

FROM	TO	FORMATION (TYPE, COLOR, ETC.)

FROM	TO	FORMATION (TYPE, COLOR, ETC.)

IF WELL WAS CORED, ATTACH CORE DESCRIPTION AND ANALYSIS

LIST ATTACHMENTS:

GEOLOGICAL SURVEY USE ONLY

REVIEWED BY

Kalium
377-845-754

Johnson 2-1
Mecosta

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL PLUGGING RECORD

File in DUPLICATE Within 30 Days After Plugging is Completed

AMENDED 1-4-88

PERMIT NUMBER: 012-841-354

DATE: 5-29-84

OWNER OR OPERATOR: PPG Oil & Gas, Inc.

ADDRESS: 2258 Enterprise Drive, Mt. Pleasant, MI 48858

WELL NAME: Johnson

WELL NUMBER: 2-1

WELL LOCATION: NW¼ SE ¼ NE ¼ SEC. 1 T. 16N R. 9W

TOWNSHIP: Grant

COUNTY: Mecosta

TYPE OF WELL (Brine Disposal Storage or Test): Test

TOTAL DEPTH: 8085

FORMATION: Niagaran

DATE PLUGGING STARTED: 4-24-84

DATE PLUGGING COMPLETED: 4-24-84

WAS PERMISSION OF DEPT. OF NATURAL RESOURCES OBTAINED BEFORE PLUGGING BEGAN? XX YES ☐ NO

NAME OF DEPARTMENT REPRESENTATIVE WHO AUTHORIZED OR SUPERVISED PLUGGING: Gunning

CASING SIZE	WHERE SET	AMOUNT RECOVERED	SHOT OR RIPPED	TYPE OF BRIDGES OR PLUGS	DEPTH PLACED	NUMBER SACKS
13 3/8"	905	----		Set one cement plug	8085	50 sx
9 5/8"	5507	----				
7"	7829	----				

GEOLOGICAL SURVEY

FEB 5 1988

Permits & Bonding Unit

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Set 1 plug - 50 sx Howcolite at 8082, PBTD 7920

(USE REVERSE SIDE IF NEEDED)

Were tools, tubing casing, etc., lost or left in the hole before or during plugging? ☐ YES XX NO If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? X YES ☐ NO If yes, give name and address: Halliburton

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES XX NO If yes, give name and address:

Representatives of Owner Operator Company or Contractor who witnessed plugging: Marvin Woods

CERTIFICATE

Donald D. Metzger of Kalium Chemicals (company)

I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction and that the facts stated herein are true, correct and complete to the best of my knowledge.

SIGNATURE	ADDRESS	TITLE
Donald D Metzger	11126 140th Ave., Hersey, MI	Resident Manager

FINAL INSPECTIONS

DEPARTMENT REPRESENTATIVE	DATE
DEPARTMENT REPRESENTATIVE	DATE

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL PLUGGING RECORD

File in DUPLICATE Within 30 Days After Plugging is Completed

PERMIT NUMBER: 012-341-354

DATE: 5/29/84

OWNER OR OPERATOR: PPG Oil & Gas Co., Inc.

ADDRESS: 2258 Enterprise Drive, Mt. Pleasant, MI 48858

WELL NAME: Johnson

WELL NUMBER: 2-1

WELL LOCATION: NW ¼ SE ¼ NE ¼ SEC. 1 T. 16N R. 9W

TOWNSHIP: Grant

COUNTY: Mecosta

TYPE OF WELL (Brine Disposal Storage or Test): Test

TOTAL DEPTH: 8085

FORMATION: Niagaran

DATE PLUGGING STARTED: 4-24-84

DATE PLUGGING COMPLETED: 4-24-84

WAS PERMISSION OF DEPT. OF NATURAL RESOURCES OBTAINED BEFORE PLUGGING BEGAN? XX YES ☐ NO

NAME OF DEPARTMENT REPRESENTATIVE WHO AUTHORIZED OR SUPERVISED PLUGGING: Gunning

CASING SIZE	WHERE SET	AMOUNT RECOVERED	SHOT OR RIPPED	TYPE OF BRIDGES OR PLUGS	DEPTH PLACED	NUMBER SACKS
13 3/8"	905	----------		Set one cement plug	8085	50 sx
9 5/8"	5507	----------				
7"	7829	----------				

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Set 1 plug - 50 sx Howco Lt. at 8082, PBTD 7920

GEOLOGICAL SURVEY
JUN 2 8 1984
PETROLEUM GEOLOGY SECTION

(USE REVERSE SIDE IF NEEDED)

Were tools, tubing, casing, etc , lost or left in the hole before or during plugging? ☐ YES XX NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? XX YES ☐ NO — If yes, give name and address: Halliburton

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES XX NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Marvin Woods

CERTIFICATE

I, William E. Booker of Strickler Geological Services, Inc. (company), state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge.

SIGNATURE	ADDRESS	TITLE
William E Booker	1425 S. Mission, Mt. Pleasant, MI	Geologist

FINAL INSPECTIONS

DEPARTMENT REPRESENTATIVE	DATE
DEPARTMENT REPRESENTATIVE	DATE

R 7506-1 2/73

OPERATORS USE

DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL PLUGGING RECORD

File in DUPLICATE Within 30 Days After Plugging is Completed

AMENDED 1-4-88

PERMIT NUMBER: 012-841-354

DATE: 5-29-84

OWNER OR OPERATOR: PPG Oil & Gas., Inc.

ADDRESS: 2258 Enterprise Drive, Mt. Pleasant, MI 48858

WELL NAME: Johnson

WELL NUMBER: 2-1

WELL LOCATION: NW ¼ SE ¼ NE ¼ SEC. 1 T. 16N R. 9W

TOWNSHIP: Grant

COUNTY: Mecosta

TYPE OF WELL (Brine Disposal Storage or Test): Test

TOTAL DEPTH: 8085

FORMATION: Niagaran

DATE PLUGGING STARTED: 4-24-84

DATE PLUGGING COMPLETED: 4-24-84

WAS PERMISSION OF DEPT OF NATURAL RESOURCES OBTAINED BEFORE PLUGGING BEGAN? XX ☐ YES ☐ NO

NAME OF DEPARTMENT REPRESENTATIVE WHO AUTHORIZED OR SUPERVISED PLUGGING: Gunning

CASING SIZE	WHERE SET	AMOUNT RECOVERED	SHOT OR RIPPED	TYPE OF BRIDGES OR PLUGS	DEPTH PLACED	NUMBER SACKS
13 3/8"	905	----		Set one cement plug	8085	50 sx
9 5/8"	5507	----				
7"	7829	----				

GEOLOGICAL SURVEY
FEB 5 1985
Permits & Bonding Unit

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Set 1 plug - 50 sx Howco Lt. at 8082, PBTD 7920's
4-25-84 Halliburton Spotted HOWCO Lite cement plugs - 88 sx @ 7663', 91 sx @ 6847', 91 sx @ 6036', 91 sx @ 5222', 91 sx @ 4411', 91 sx @ 3599', 90 sx @ 2789', 90 sx @ 1981', 62 sx @ 1172', 58 sx @ 622', 42 sx @ 311'. Spotted common cement plugs. Cut 9 5/8" head of 3' below surface. Cap 7" & 9 5/8" casings.

(USE REVERSE SIDE IF NEEDED)

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Halliburton

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner Operator Company or Contractor who witnessed plugging: Marvin Woods

CERTIFICATE

I, Donald D. Metzger of Kalium Chemicals (company), state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction and that the facts stated herein are true, correct and complete to the best of my knowledge.

SIGNATURE: Donald D Metzger | ADDRESS: 11126 140th Ave., Hersey, MI | TITLE: Resident Manager

FINAL INSPECTIONS

DEPARTMENT REPRESENTATIVE | DATE

DEPARTMENT REPRESENTATIVE | DATE

OPERATORS USE

DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:

ORIGINAL SECRET

377-854-7X4
5

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

PERMIT TO PLUG AND ABANDON

DNR DISTRIBUTION
Permittee — Orig. & 1 copy
Division Office — 2 copies
Field Office — File copy
Others — On request

SEP 23 1985
Regulatory Control Unit

PERMIT NUMBER: MW012-341-354

FIELD NAME: Hersey

NAME AND ADDRESS OF PERMITTEE
PPG Oil & Gas

LEASE NAME AND WELL NO
Johnson #2-1

LOCATION (¼ ¼ ¼ or other)	SECTION	TOWNSHIP	COUNTY
NW SE NE,	1	T 16N R 9W	Grant Mecosta

TYPE OF WELL (Oil, Gas, Dry Hole, etc.)	DATE COMPLETED	DATE PLUGGING WILL START	PLUGGING PERMIT REQUESTED BY & DATE
Min. well	4/26/84	a.s.a.p.	D. Smith

LAST PRODUCTION				PLUGGING TO BE DONE BY
BOPD	BWPD	MCFGPD	DATE	Lease Mgmt.

PERMIT MAILED TO

COPIES MAILED TO

CASING AND CEMENTING RECORD

HOLE DIA.	CASING DIA. & WT./FT.	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP	PERFORATIONS
	13-3/8"	905	700	surf	
	9-5/8"	5507	2100	surf	
	7"	7829	1200	surf	

GEOLOGIC DATA; GAS AND OIL SHOWS; DRILLING AND COMPLETION DATA:

PLUGGING REQUIREMENTS*

Plugging requirements outlined are to be executed in accordance with the provisions of Act 61, P.A. 1939, as amended, and rules and orders adopted thereunder

(Previously PB to 7783')
run tubg. to 7783';
spot 700 sx lite cmt. and 93
sx Cl A cmt.
Cut csg off 3' below grd & cap w/
cmt. & steel plate.

NOTIFY CADILLAC OFFICE 48 HOURS PRIOR TO PLUGGING.

*NOTE: BONDS CANNOT BE RELEASED UNTIL A PLUGGING IS COMPLETED, CELLAR RAT HOLE AND PITS FILLED, WELL SITE RESTORED AND RECORDS FILED. WATER WELLS MUST BE PLUGGED ACCORDING TO RULE 166 OF ACT 294 P.A. 1965, "GROUND WATER QUALITY CONTROL". It is further made a requirement of this permit that the applicant give notice to the public utilities in accordance with Act 53, P.A. 1974 C.L. 460.701 to 460.718 and comply with each of the requirements of the act.

AUTHORIZED BY (signature)	OFFICE	DATE
Michael J. Moore	Cadillac D#6	9/19/85

NOTE: WELL PLUGGING RECORD Form R-7213 to be filed in TRIPLICATE within 30 days after completion

R-7229
Rev. 11/77

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL COMPLETION REPORT

TO BE FILED WITH THE SUPERVISOR WITHIN 60 DAYS AFTER COMPLETION OF WELL (ACT 315 P.A. 1969)

SUBMIT IN TRIPLICATE

NAME OF OWNER OR OPERATOR	ADDRESS OF OWNER OR OPERATOR
PPG Oil & Gas Co., Inc.	2258 Enterprise Drive Mt. Pleasant, MI 48858
NAME OF DRILLING CONTRACTOR	ADDRESS OF DRILLING CONTRACTOR
I. D. Provins Drilling Co.	2113 Enterprise Drive Mt. Pleasant, MI 48858

WELL NAME	WELL NUMBER	PERMIT NUMBER
Johnson	2-1	012-341-354

LOCATION	SECTION	TWP.	RANGE
Surface: NW SE NE Subsurface: SE NE	1	16N	9W

TOWNSHIP	COUNTY
Grant	Mecosta

FOOTAGE: 1077 Ft from South (N or S) Line and 1267 Ft from East (E or W) Line of quarter section

DATE DRILLING COMMENCED	DATE DRILLING COMPLETED	DATE WELL COMPLETED	TYPE OF WELL
3-24-84	4-23-84	4-26-84	Test

FORMATION COMPLETED IN	TOTAL DEPTH	ELEVATION	KB	RB	RT	RF	GN
A1 Evaporite	8085		-172			1171	1156

ROTARY TOOLS	CABLE TOOLS
From 0 Feet to 8085 Feet	From Feet to Feet

WELL CASING RECORD

TUBING AND CASING DATA				CEMENTING DATA			PERFORATIONS OR OPEN HOLE		
SIZE	LB./FT.	GRADE	DEPTH	SACKS	TYPE	STAGING DEPTH(S)	NO. HOLES	FROM	TO
13 3/8"	54.5#	K-55	905	500,200	Lite/ClA	Circ. 70 bbls			
9 5/8"	45.5#	N-80	5507	700,200	Lite/ClA	5507-3700			
				100,100	Lite/ClA	3700-Surface			
7"	23#	S-95	7829	475,450	Lite/Poz				
				280	Hw .2% HR7				

WATER ZONES

FORMATION	FROM	TO	AMOUNT
(Fresh)			

WIRE LINE LOGS RUN

SERVICE COMPANY	TYPE LOG	INTERVAL LOGGED	COPY TO SURVEY
Schlumberger	LDT-CNL-GR	0 - 8085	---
	Dual & Micro	3024 - 4200	

FRACTURE OR ACID TREATMENT

DATE	FROM	TO	QUA

GEOLOGICAL SURVEY
JUN 28 1984
GEOLOGICAL WELL SECTION

SOLUTION MINING

NAME AND NUMBER OF INJECTION AND TARGET WELL — DISTANCE APART

The information in and attached to this report is complete and correct

SIGNATURE	TITLE	DATE
William E Baker	Geologist	5/29/84

GIVE COMPLETE FORMATION RECORD ON REVERSE SIDE

R 7504 2/73

PPG Industries, Inc. One PPG Place Pittsburgh, Pennsylvania 15272

May 15, 1984

Michigan Department of Natural
Resources
Stevens T. Mason Building
P.O. Box 30028
Lansing, MI 48909

ATTENTION: A. J. Rarick

Dear Mr. Rarick:

Enclosed please find an original and two copies of our Application for a Mineral Well Permit relating to the conversion of the Johnson #2-1 well to a solution mining well. Also enclosed is a check for the fee in the amount of $50.00.

If you require any additional information, please contact me at (412) 434-3907.

Sincerely,

Joseph Gil, Jr.

JG:rm
Enclosures

cc: (w/enclosures)
D. D. Metzger
G. F. Pellett
R. J. Samelson
L. H. Wilcox
RES 969.0

PRINT OR TYPE INFORMATION SEE INSTRUCTION SHEET R 7500-1 BEFORE FILLING OUT APPLICATION

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

APPLICATION FOR A MINERAL WELL PERMIT

To Drill, Operate, Convert, or Rework
a Brine, Storage, Disposal, or Test Well.

By Authority of Act 315, P. A 1969

1. DATE OF APPLICATION	2 FEE ENCLOSED
May 16, 1984	$50.00

3. APPLICATION TO: Convert to Solution Mining

4 TYPE MINERAL WELL	5. WELL DESIGNATION
Solution Mining	Johnson 2-1

6 LOCATION: NW/4 of the SE/4 of the NE ¼ SEC 1 T 16N R 9W

7 TOWNSHIP	8 COUNTY
Grant	Mecosta

9 APPLICANT	10. TELEPHONE
PPG Industries, Inc.	(412)434-3907
11. ADDRESS (Street, City, State)	12 ZIP CODE
One PPG Place, Pittsburgh, PA	15272

13 SURETY OR SECURITY COMPANY	14. TYPE	15 AMOUNT	16 BOND NO
Hartford Accident & Indemnity Co.	☐ SINGLE ☒ BLANKET	$25,000.00	4506230

17 OWNER OR SURFACE RIGHTS	18 OWNER OR MINERAL RIGHTS
Donald and E. Caroline Johnson	Gerald Knapp, et al

19 DRILLING CONTRACTOR	20 ADDRESS	21 TELEPHONE
T. D. Provins	P.O. Box 642, Mt. Pleasant, MI 48858	(517)773-6946

22 TYPE DRILLING TOOLS	23 FORMATION	24 INTENDED DEPTH
☐ CABLE ☒ ROTARY ☐ COMBINATION	Niagaran	8000'

25. PROJECT ENGINEER OR GEOLOGIST	26 ADDRESS	27. TELEPHONE
Donald D. Metzger	2258 Enterprise Drive, Mt. Pleasant, MI 48858	(517)773-3949

28 PROGRAM OF DRILLING CONVERTING REWORKING, CASING, CEMENTING, COMPLETING OPERATING AND MONITORING.
(See appropriate instruction sheet Attach 3 copies of proposed program — including but not necessarily limited to information requested in the instruction sheet.)

CASING PROGRAM:

Size	Depth	Cement

See Attached

INSTRUCTION SHEET NO.		
Type of Well	Drill-New	Rework*
Brine	D-1	R-1
Storage	D-2	R-1
Disposal	D-3	R-1
Solution Mining	D-4	R-2 X
Test Well	D-5	R-1

*Rework, Deepen, or Convert to New Use

THERE WILL BE NO CHANGES IN THE PROGRAM OUTLINED IN THIS APPLICATION WITHOUT APPROVAL OF THE SUPERVISOR OF MINERAL WELLS OR HIS AUTHORIZED REPRESENTATIVE.

29 ADDRESS CORRESPONDENCE AND PERMIT TO:	30 TELEPHONE
PPG Industries, Inc., One PPG Place, Pittsburgh, PA 15272 ATTENTION: J. Gil, Jr.	(412)434-3907

MINERAL WELL SECTION USE ONLY

STATUS OF BOND: Effective

APPLICATION APPROVED BY: A. J. Kanich

PERMIT NUMBER: 377 ~~810~~-845-754

DATE ISSUED: 5/31/84

ISSUED BY: A. J. Kanich

DISTRIBUTION:
White — Lansing
Canary — Field
Pink — Applicant

6924 50.00

The Applicant agrees to comply with provisions and requirements of Act 315, P.A. 1969, and asserts that the information on this application and attached report is true and correct.

SIGNATURE (APPLICANT/AUTHORIZED REP.)	DATE
Joseph Gil	5/16/84

NAME (TYPED): Joseph Gil, Jr.

TITLE: Project Manager

FOR CASHIER'S USE ONLY

R 7500 2/73

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

SURVEY RECORD OF WELL LOCATION

(Submit five copies with Application for Permit to Drill a Well for Oil or Gas, Brine Disposal, Hydrocarbon Storage or Secondary Recovery)

84024

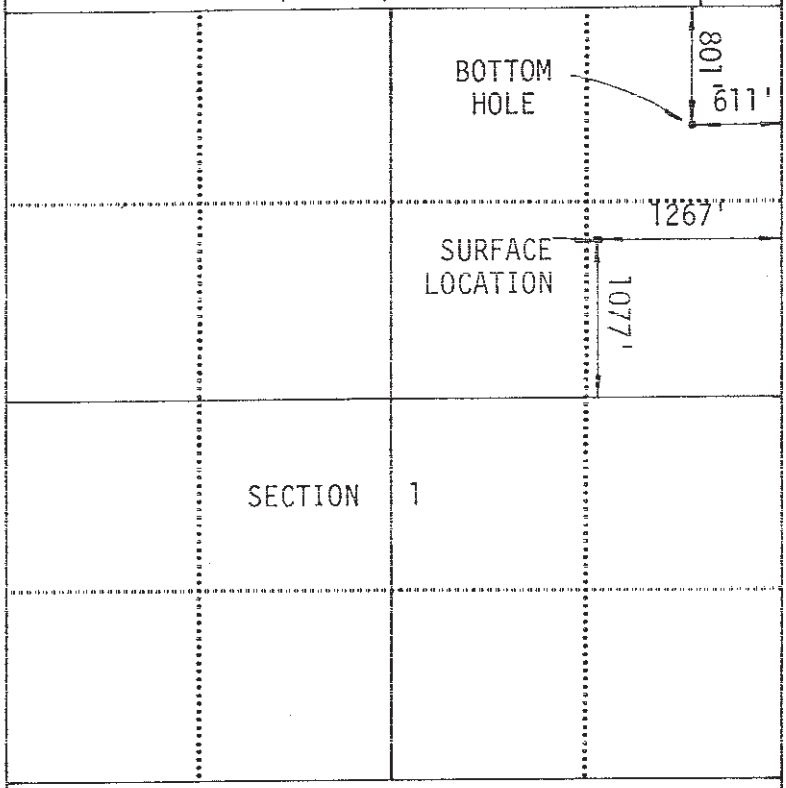
LESSEE (OWNER OF LEASE RIGHTS): PPG INDUSTRIES, INC.

LESSOR (OWNER OF MINERAL RIGHTS): (Johnson #2-1) | WELL NO. 2-1

LOCATION NW ¼ OF SE ¼ OF NE FRC'L ¼ SECTION 1 T. 16 N R. 9 W

TOWNSHIP: Grant | COUNTY: Mecosta

PLAT BELOW REPRESENTS ONE FULL SECTION (1 Mile Square)



(Scale of Plat — 1 inch equals 1320 ft.)

1. Outline drilling unit and spot well location on plat at left. Where drilling unit crosses section lines, divide the plat into an east half and a west half **OR** a north half and a south half (which ever applies). Outline the unit and locate the well in two directions from **NEAREST** quarter section and unit lines.

2. Location of well in two directions from **NEAREST** quarter section and unit lines is:

SURFACE LOCATION

1077 ft. from South (north-south) line of Quarter Section

1267 ft. from East (east-west) line of Quarter Section

____ ft. from ____ (north-south) line of unit

____ ft. from ____ (east-west) line of unit

3. Describe wellsite marker. Show or describe access route if it is not readily accessible.

Wellsite is marked with an existing casing. Site can be reached from the North off Balsam Road. See supplemental plat.

Ground elev. = 1156.4 feet, U.S.G.S. datum.

4. ON SEPARATE PLAT OR PLOT PLAN:

A. Locate, identify, and show distances to all roads, power lines, residences, farm buildings, and other structures within 300 feet of the stake;

B. Locate, identify, and show distances to all lakes, streams, swamps, drainage-ways or any other surface water features within 1320 feet of the stake.

STATE OF MICHIGAN JERRY L. WILCOX 14102 REGISTERED LAND SURVEYOR

5. In an ENVIRONMENTAL IMPACT ASSESSMENT describe all structures and surface features shown detailing plans for hazards prevention and erosion control (See instructions and guidelines for preparation of an environmental impact assessment).

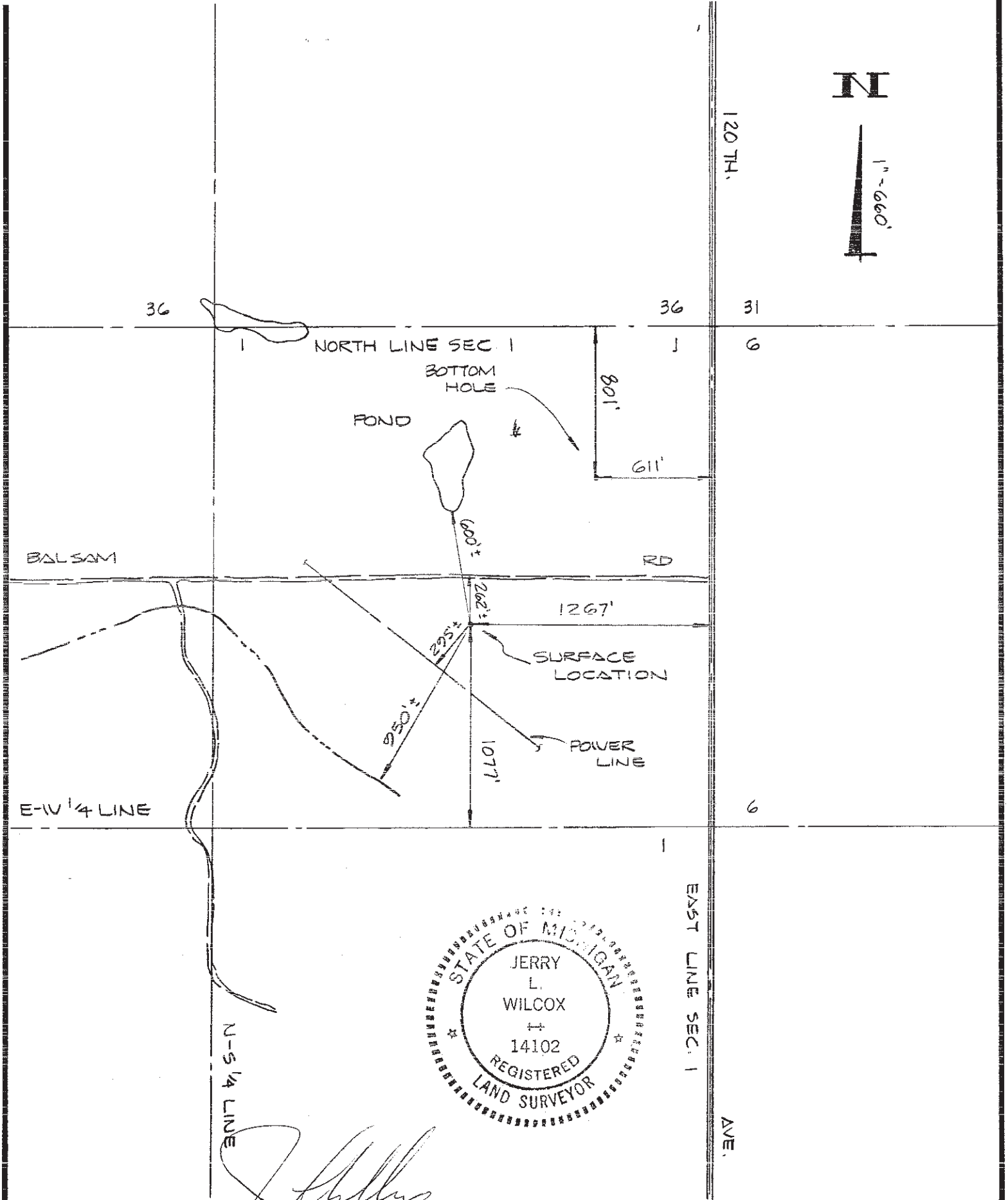
NAME OF INDIVIDUAL WHO SURVEYED WELL SITE	DATE	TITLE
Jerry L. Wilcox, LS#14102	5-4-84	President

ADDRESS: J. L. WILCOX & ASSOCIATES, INC. 7230 North U.S.-131 Manton, Michigan 49663

I CERTIFY THE ABOVE INFORMATION IS COMPLETE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF

SIGNATURE (LESSEE OR AUTHORIZED REPRESENTATIVE)	ADDRESS (IF DIFFERENT THAN LESSEE)	DATE (MONTH, DAY, YEAR)

R 7208 REV 3/80



SUPPLEMENTAL PLAT: JOHNSON 2-1
SECTION 1, T16N-R9W
GRANT TOWNSHIP, MECOSTA
COUNTY, MICHIGAN

CLIENT: PPG INDUSTRIES INC

DATE	5-4-89
DRN	R.M.
CHD	FHT
SCALE	V: H: 1"=660'
NOTES	F.B. 180 PG. 57
SHEET	1 OF 1
JOB NO.	84024

J.L. WILCOX & ASSOCIATES, INC.
Engineers and Surveyors
7230 N. U.S. — 131 • Manton, Michigan 49663

BRUNING 44-122 48478

Section 28 - Solution Mining Well Program

I. Drilling and Completion Programs

The Johnson 2-1 was drilled and cased according to the following:

A. Surface

1. The 24" conductor pipe was driven to a depth of 96.5'.
2. A 17-1/2" hole was drilled to a depth of 905'.
3. Then 13-3/8" 54.0# K-55 S.T.C. was run to total depth. A weld-on guide shoe was placed on bottom and the lower five joints were strapped across the collars.
4. Surface casing was cemented with 525 sacks HOWCO lite and 200 sacks Class A cement. Seventy barrels of cement were returned to surface on the outside of the casing.
5. Blowout preventor equipment was installed on 13-3/8" casing and the equipment was pressure tested to 1500 psi for 15 minutes.

B. Intermediate Hole

1. A vertical 12-1/4" hole was drilled from below the surface casing to 4240'.
2. The hole was then directionally drilled NE of the surface location to a depth of 5545' measured depth (MD) with an angle of 22-1/4° N37E at 5456' MD.
3. The 9-5/8" 40# N-80 L.T.C. casing was then run using a float shoe on the bottom and a float collar at the top of the first joint with 7 centralizers installed midway on every second joint. The centralizers were held in place with stop rings. A D.V. tool was installed in the casing string approximately 3710' from the surface.
4. The 9-5/8" casing was cemented to the surface. The first stage was cemented with 700 sacks HOWCO lite with 2% CaCl and 200 sacks Common Class A. The D.V. tool was then closed and the second stage was cemented using 1100 sacks HOWCO lite with 2% CaCl and 100 sacks Common Class A with 2% CaCl.
5. Twenty barrels of cement were returned on the first stage. Forty barrels of cement were returned on the second stage.

C. Production Casing

1. The blowout preventor equipment (BOPE) was installed on the 9-5/8" casing and was tested to 1500 psi for 15 minutes using the rig pump.
2. The D.V. tool was drilled out along with the float collar and the float shoe. The drilling of an 8-1/2" hole commenced from below intermediate casing.

3. The hole was drilled using the build and drop method, with the angle of the hole being back to vertical at approximately 7765'. The maximum angle achieved was 24-1/2°.

4. The hole was cored through the zone of potash mineralization.

5. Drilling continued to a total depth of 8082', ten feet into the Niagaran formation.

6. Geophysical logs and a gyro survey were run.

7. The hole was plugged back from total depth to approximately 7850' with 50 sacks of HOWCO lite.

8. Seven inch 23# S-95 L.T.C. casing was run with a float shoe and centralizer on the bottom. A float collar with manual fill was run one joint up with the centralizers midway between joints and held in place with a stop ring.

9. Two more joints were run and a short marker pup was installed in the production string.

10. Casing was run continuously to surface.

11. The casing was cemented with 475 sacks HOWCO lite A, salt saturated with 1/4# per sack D-Air-1, 450 sacks HOWCO poz 18% salt and 1/4# per sack D-Air-1, and 280 sacks HOWCO special H with .2% HR-7.

12. Forty barrels of cement were returned to surface around the outside of the pipe.

13. The casing was landed in slips at 7838' and capped with a temporary blank pending approval of the application for a permit to convert the well to a solution mining well.

D. Geophysical Logging

In addition to the logs run at intermediate casing point, gamma ray, neutron and other lithology indicating logs are run from the base of the intermediate casing to the top of the Niagaran formation. Later, when the cement plugs are drilled out to below the zone of mineralization, a series of cased hole-logs will be run. A cement bond log and collar locator will be run from total depth to surface. The depth of the casing is checked using a collar locator log to locate the marker joint.

E. Tests

The pressure testing of the 7" casing to 80% of burst pressure will take place prior to the initial mining. This pressure exceeds 133% of operating pressure. A packer will run to the bottom and the pressure checked in the final stages before mining commences.

F. Mining Interval

Mining will be commenced in the salt a short distance above the bottom of the 7" casing. The exact depth depends on the depth at which the potash bed is encountered in the Johnson 3-1. Mining will be continued up through the salt and potash sections to a height up to approximately 6458' to 6428', subsea.

G. Well Area

The well head will be surrounded by a concrete and steel sump. This sump will drain by gravity through a pipeline into a sump within the test mining facility processing building, where any leakage will be captured by a sump pump and reinjected into the circulating fluid system.

II. Operation

A. Solutioning System

1. Single Well Operation

a) The well will be initially operated as a single well with annulus injection and tubing withdrawal. Oil will be used as the inert padding system for roof control in the cavern. Oil will be added to the well on a batch basis as required. The well will be operated as a single well until the cavity size is large enough to connect with an adjacent cavity (Johnson 3-1). It will then be operated in multi-well operation.

2. Multi-Well Operation

a) After connection has been established the well will be operated as a two well gallery. Each well may be operated as an injection or withdrawal well in the multi-well mode. Oil padding will continue to be used for roof control throughout the multi-well phase. The well will be operated in the multi-well mode until sufficient data have been collected from the test. It is anticipated that this phase of the operation will take between 160 and 200 days to complete.

B. Operating Parameters

1. Average injection flow will range from 50 gpm to 390 gpm with short-term peak flow to 600 gpm.

2. Withdrawal flow will be approximately 97% of injection. No losses are anticipated to the formation.

3. Injection temperature will range from 50°F to 180°F.

4. Injection pressure will depend on the injection flowrate and the density difference of the injection and withdrawal fluids. It is anticipated that the injection pressure will range between 900 and 1300 psig.

5. Specific gravity of the withdrawal fluid will range between 1.0 (water) and 1.25.

6. Chemical composition of the withdrawal fluid will depend on the ore being dissolved and is anticipated to range from nearly pure water to an aqueous solution of sodium chloride (NaCl) and potassium chloride (KCl) cntaining up to 435 gpl combined dissolved NaCl and KCl.

7. The only pre-treatment of the injection fluid (water) will be heating of the water to 180°F during certain stages of the solution mining test. Chemical pre-treatment is not required.

III. Monitoring

A. Operating Parameters

The injection and withdrawal flowrate for the well(s) will be monitored by totalizing flowmeters. Flow information along with the chemical analysis of injection and withdrawal as determined from daily composite samples will be used to perform daily material balances on the solution mining process. The material balances will provide a daily accounting of the KCl and NaCl withdrawn from the well(s).

B. Well Integrity and Solutioning Process

1. The well head and surface equipment will be visually monitored by operators who will be on duty 24 hours per day, seven days per week, throughout the test.

2. The condition of the borehole, casing, and cement sheath will be determined by monitoring the pressure when the well is operating. If any loss of fluid (other than expansion of the cavity) is indicated from a comparison of the injection and withdrawal flowmeters, pressure and/or video testing of the casing will be performed to locate leaks.

C. Surface Changes

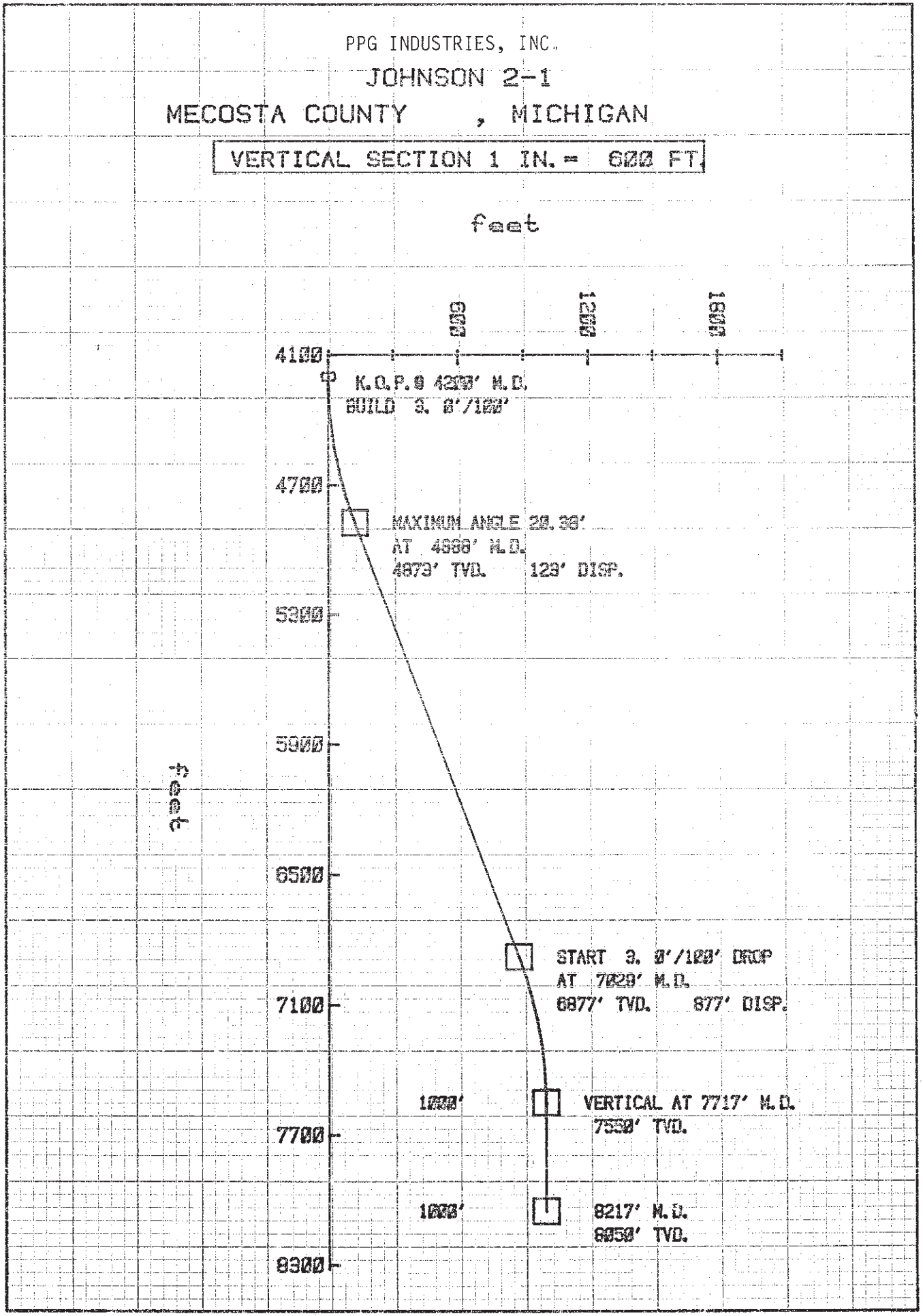
In order to monitor any ground surface movement at the well area, two bench marks will be established on the site. These bench marks will be located at least 200 feet away from the area in which the cavity will be formed. The bench marks will be a precast concrete monument approximately 4 inches in diameter and 3 to 4 feet long having a 1/2 inch diameter reinforcing rod embedded in the center. The monument will be buried in the ground vertically having one end exposed. A monument grid will be utilized. The grid will be made up of four additional bench marks which will be placed over the cavity. A survey of second order accuracy will be conducted to determine the elevation of the monuments in the grid relative to the bench marks. These will be measured annually and reported to DNR every two years.

PPG INDUSTRIES, INC.

JOHNSON 2-1

MECOSTA COUNTY , MICHIGAN

VERTICAL SECTION 1 IN. = 600 FT.



PPG INDUSTRIES, INC.

JOHNSON 2-1

MECOSTA COUNTY , MICHIGAN

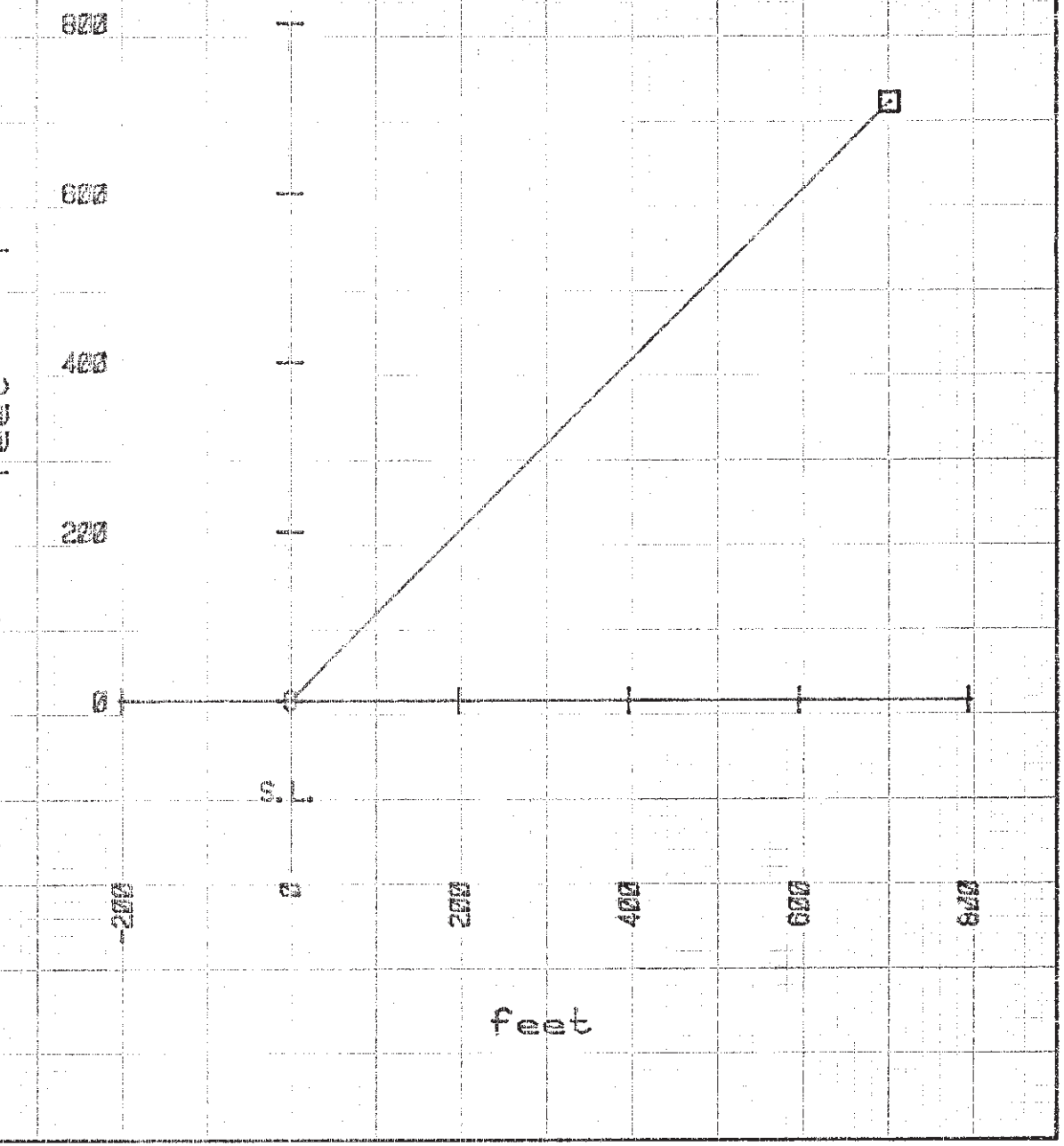
PLAN VIEW
1 IN. = 200 FT.

OBJECTIVE NO. 1:
1000' N45.00'E OF
SURFACE LOCATION
7717' M.D. 7550' TVD.
707' NORTH 707' EAST

OBJECTIVE NO. 2:
1000' N45.00'E OF
SURFACE LOCATION
8217' M.D. 8050' TVD.
707' NORTH 707' EAST

SUBMITTED BY:

TRIPLE G DIRECTIONAL DRLG.
TRAVERSE CITY, MICHIGAN



the applicant to allow all-weather operation. The environmental effect of this project is slight, and every effort will be made to insure protection and preservation of the environment during the course of operations.

Applicant's Representative

Joseph Fish

Comments by Department of Natural Resources Representative:

Authorized Representative

PPG Oil & Gas Co., Inc.
A Subsidiary of PPG Industries, Inc.
2258 Enterprise Drive Mt. Pleasant, Michigan 48858 (517) 773-3949

Rle

June 26, 1984

Supervisor of Mineral Wells
Geological Survey Division
Department of Natural Resources
P.O. Box 30028
Lansing, MI 48909

Re: Johnson 2-1 Reports and Logs

Gentlemen:

Enclosed are the following reports and logs for the Johnson 2-1:

Form R7506-1, Mineral Well Plugging Record - 2 copies

Form R7504, Mineral Well Completion Report - 3 copies

Sample Descriptions - 2 copies

Final Logs:

Dual Laterolog/Micro SFL/GL

Compensated Neutron-Litho Density, Run 1 & 2

Directional Survey

Upon receipt, please sign below and return one copy to our office.

Sincerely,

Janet Caltrider

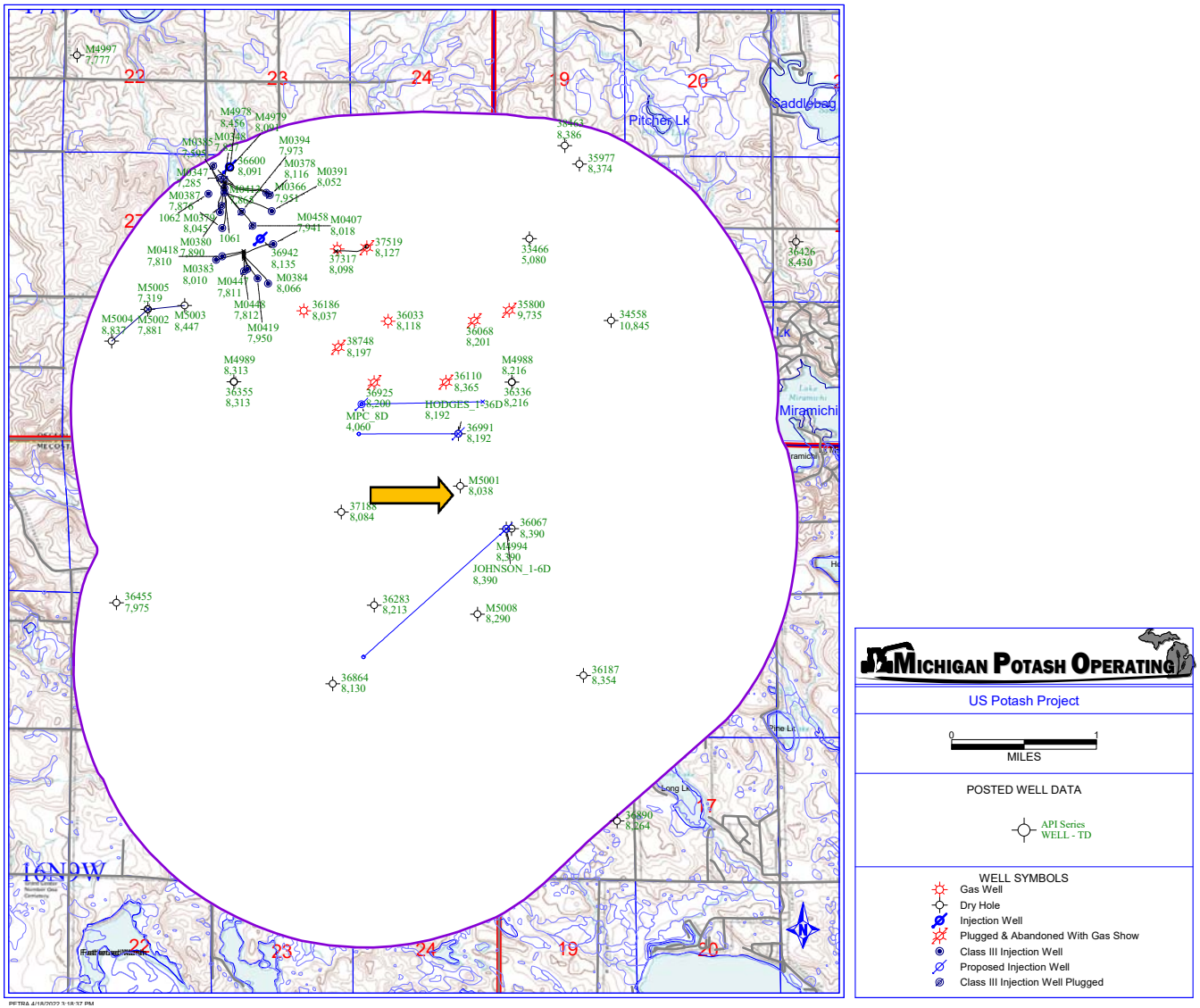
Janet Caltrider
Operations Staff Assistant

GEOLOGICAL SURVEY
JUN 28 1984
GEOLOGICAL WELL SECTION

JC/llh
Enclosures

Received on 6/29/84, 1984, by

e. Johnson 3-1, Permit #00337



MICHIGAN POTASH OPERATING

US Potash Project

0 1
MILES

POSTED WELL DATA

API Series
WELL - TD

WELL SYMBOLS
- Gas Well
- Dry Hole
- Injection Well
- Plugged & Abandoned With Gas Show
- Class III Injection Well
- Proposed Injection Well
- Class III Injection Well Plugged

Figure A8. Map showing the wells that penetrate the confining zone in the AOR.

TRIPLE-G

REPORT

of

SUB-SURFACE

DIRECTIONAL

SURVEY

GEOLOGICAL SURVEY
JUN 28 1984
GAYLORD, WELL SECTION

PPG Oil & Gas Company, Inc.
COMPANY

Johnson #2-1
WELL NAME

Mecosta County, Michigan
LOCATION

JOB NUMBER	TYPE OF SURVEY	DATE
TC-MJ-40052	Gyroscopic & Single Shot Survey	04/23/84

SURVEY BY
Burdick

OFFICE
Michigan

RECORD OF SURVEY

Triple 'G' Directional Drilling, Inc. Objective N45.00E

JOB NO. 40062 DATE 4/23/84 Checked by

MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	VERTICAL SECTION	DOG LEG	DRIFT DIR.	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST
100.00	.04	100.00	-.04	.07	S87.30W		.00		.04
200.00	.07	200.00	-.15	.05	N78.48W	.01			.22
300.00	.03	300.00	-.11	.14	N25.48E	.12			.27
400.00	.07	400.00	-.06	.16	S07.12W	.09			.18
500.00	.05	500.00	-.21	.05	S31.54W		.07		.23
600.00	.04	600.00	-.32	.10	N63.00W		.10		.35
700.00	.05	700.00	-.24	.15	S89.06E		.01		.33
800.00	.10	800.00	-.17	.13	S36.00E		.11		.14
900.00	.07	900.00	-.23	.05	S28.24E		.32		.01
1000.00	.08	1000.00	-.40	.23	N73.36W		.45		.12
1100.00	2.35	1099.96	.40	2.62	N28.54E	1.46			.90
1200.00	2.10	1199.88	4.41	.43	N31.42E	5.04		1.19	
1300.00	2.19	1299.80	8.24	.23	N36.06E	8.29		3.37	
1400.00	1.51	1399.73	11.65	.51	N41.30E	11.12		5.65	
1500.00	1.43	1499.69	14.96	.15	N59.36E	13.48		7.67	
1600.00	1.43	1599.64	17.95	.22	N46.54E	15.66		9.72	
1700.00	1.20	1699.60	20.61	.39	N44.42E	17.52		11.63	
1800.00	1.20	1799.58	22.94	.06	N42.00E	19.21		13.23	
1900.00	1.07	1899.55	25.07	.24	N46.54E	20.74		14.72	
2000.00	1.02	1999.54	26.95	.09	N44.42E	22.04		16.07	
2100.00	1.10	2099.52	28.87	.15	N41.42E	23.44		17.38	
2200.00	1.39	2199.49	31.31	.60	N56.06E	25.05		19.23	
2300.00	2.20	2299.43	34.53	.99	N77.06E	26.43		22.40	
2400.00	3.12	2399.31	38.06	1.32	S81.54E	26.63		27.20	
2500.00	3.46	2499.12	41.25	.84	S71.36E	25.24		33.10	
2600.00	4.21	2598.87	43.77	.99	S60.12E	22.35		39.55	
2700.00	4.55	2698.55	45.03	1.15	S47.48E	17.61		46.08	
2800.00	4.47	2798.19	45.32	.20	S46.06E	11.84		52.25	
2900.00	4.02	2897.89	45.64	.77	S48.36E	6.63		57.91	
3000.00	4.11	2997.63	45.82	.34	S44.18E	1.70		63.10	

RECORD OF SURVEY

Triple 'G' Directional Drilling, Inc. Objective N45.00E

JOB NO. 40062 DATE 4/23/84 Checked by

MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	VERTICAL SECTION	DOG LEG	DRIFT DIR.	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST
3100.00	3.39	3097.40	45.84	.55	S46.06E		3.11	67.94	
3200.00	3.09	3197.22	46.41	.72	S54.48E		6.89	72.51	
3300.00	2.44	3297.09	47.42	.45	S58.00E		9.73	76.79	
3400.00	2.29	3396.99	48.46	.25	S58.30E		12.12	80.66	
3500.00	1.44	3496.92	49.36	.75	S59.48E		14.01	83.81	
3600.00	1.15	3596.89	50.20	.52	S67.36E		15.16	86.15	
3700.00	1.23	3696.86	50.85	.31	S55.24E		16.25	88.16	
3800.00	.52	3796.84	51.33	.54	S62.54E		17.26	89.85	
3900.00	.36	3896.83	51.79	.28	S69.24E		17.78	91.02	
4000.00	.33	3996.83	52.17	.07	S65.06E		18.16	91.94	
4100.00	.57	4096.82	52.37	.49	S43.00E		18.93	92.98	
4200.00	.21	4196.81	52.35	.60	S44.18E		19.75	93.78	
4220.00	.29	4216.81	52.35	.67	S47.00E		19.85	93.88	
4300.00	4.48	4296.71	54.53	5.87	N58.00E		20.18	97.29	
4400.00	10.22	4395.79	67.48	5.59	N53.48E		12.79	108.22	
4500.00	13.50	4493.56	87.93	7.72	N20.06E	3.72		120.63	
4600.00	20.00	4589.18	114.91	6.40	N26.06E	30.46		132.04	
4700.00	16.48	4684.06	145.36	4.01	N33.48E	57.79		147.78	
4800.00	16.22	4779.90	173.42	.59	N35.12E	81.31		163.95	
4900.00	15.37	4876.03	200.60	.77	N35.54E	103.72		179.97	
5000.00	15.06	4972.46	226.79	.61	N37.06E	125.01		195.72	
5100.00	15.10	5068.99	252.66	.07	N37.12E	145.82		211.49	
5200.00	17.10	5165.03	280.25	2.00	N37.36E	167.94		228.40	
5300.00	19.30	5259.95	311.40	2.37	N36.18E	193.08		247.30	
5400.00	21.21	5353.66	345.86	1.87	N35.30E	221.34		267.77	
5500.00	23.13	5446.18	383.20	1.90	N34.36E	252.38		289.54	
5600.00	24.19	5537.70	422.84	1.10	N34.42E	285.54		312.45	
5700.00	23.49	5629.01	462.96	.50	N34.36E	319.08		335.64	
5800.00	22.40	5720.89	501.81	1.17	N35.12E	351.45		358.22	
5900.00	21.33	5813.54	538.92	1.13	N35.42E	382.11		380.04	

RECORD OF SURVEY

Triple 'G' Directional Drilling, Inc. Objective N45.00E

JOB NO. 40062 DATE 4/23/84 Checked by

MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	VERTICAL SECTION	DOG LEG	DRIFT DIR.	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST
6000.00	22.21	5906.29	575.85	.87	N36.36E	412.29		402.09	
6100.00	22.43	5998.65	613.75	.38	N36.16E	443.11		424.86	
6200.00	22.57	6090.82	652.16	.42	N37.12E	474.21		448.08	
6300.00	23.16	6182.79	691.01	.39	N36.36E	505.59		471.64	
6400.00	23.58	6274.42	730.63	.70	N36.24E	537.79		495.47	
6500.00	21.52	6366.52	769.09	2.12	N35.36E	569.30		518.36	
6600.00	18.36	6460.34	803.21	3.27	N35.48E	597.38		538.54	
6700.00	16.03	6555.79	832.58	2.55	N35.16E	621.60		555.85	
6800.00	12.58	6652.59	857.24	3.10	N34.06E	642.20		570.11	
6900.00	11.00	6750.41	877.66	1.98	N35.12E	659.28		581.92	
7000.00	10.15	6848.69	895.78	.82	N33.24E	674.51		592.31	
7100.00	9.42	6947.18	912.75	.55	N33.36E	688.95		601.87	
7166.00	10.00	7012.21	923.94	2.22	N42.00E	697.86		608.78	
7259.00	9.15	7103.90	939.47	.83	N43.00E	709.33		619.28	
7352.00	8.00	7195.84	953.41	1.35	N42.00E	719.61		628.71	
7445.00	7.00	7288.05	965.53	1.08	N42.00E	728.63		636.83	
7539.00	6.30	7381.40	976.57	.65	N45.00E	736.65		644.43	
7633.00	5.45	7474.86	986.60	.83	N47.00E	743.61		651.65	
7708.00	4.00	7541.61	991.82	5.34	N85.00E	745.99		656.75	
7750.00	1.15	7591.56	993.97	7.09	N25.00E	747.14		658.55	
7800.00	'2.00	7641.54	995.16	1.99	N01.00E	748.51		658.86	
7820.00	2.00	7661.52	995.61	2.09	N11.00W	749.21		658.80	
7891.00	3.30	7732.44	997.52	2.11	N11.00W	752.55		658.15	
7982.00	3.00	7823.29	1000.38	.55	N11.00W	757.61		657.17	
8082.00	3.00	7923.16	1003.37	0.00	N11.00W	762.75		656.17	

BOTTOM HOLE CLOSURE - 1006.20 FT. at N 40 DEG. 42 MIN. E

METHOD OF COMPUTATION - RADIUS OF CURVATURE

Kalium
P.N. 337-844-754

Johnson #3-1
Mecosta Co

PPG Industries, Inc. 2258 Enterprise Drive Mt. Pleasant, Michigan 48858 (517) 773-3949

September 26, 1985

Mineral Well Supervisor
Geological Survey Division
Michigan Department of Natural Resources
P. O. Box 30028
Lansing, MI 48909

Gentlemen:

Enclosed is the Well Plugging Record, Form 7213 for the Johnson 1-1, 2-1 and 3-1.

Upon receipt, please sign below and return one copy to our office. Should you have any questions, or if I can be of asistance, please feel free to contact me.

Sincerely,

Janet Caltrider

Operations Staff Assistant
Enclosure

Received on 9/30, 1985, by S. J. Szyszkowski.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL PLUGGING RECORD

File in DUPLICATE Within 30 Days After Plugging is Completed

Sol. Min

AMENDED 1-27-88

SOL MIN 337-844-754

PERMIT NUMBER: 337-844-754

DATE: 7/30-84

OWNER OR OPERATOR: PPG Oil & Gas Co., Inc.

ADDRESS: 2258 Enterprise Drive, Mt. Pleasant, MI 48858

WELL NAME: Johnson

WELL NUMBER: 3-1

WELL LOCATION: NW ¼ SE ¼ NE ¼ SEC. 1 T. 16N R. 9W

TOWNSHIP: Grant

COUNTY: Mecosta

TYPE OF WELL (Brine Disposal Storage or Test): Test Well

TOTAL DEPTH: 8073

FORMATION: Niagaran

DATE PLUGGING STARTED: 7-4-84

DATE PLUGGING COMPLETED: 7-5-84

WAS PERMISSION OF DEPT OF NATURAL RESOURCES OBTAINED BEFORE PLUGGING BEGAN? XX YES ☐ NO

NAME OF DEPARTMENT REPRESENTATIVE WHO AUTHORIZED OR SUPERVISED PLUGGING

CASING SIZE	WHERE SET	AMOUNT RECOVERED	SHOT OR RIPPED	TYPE OF BRIDGES OR PLUGS	DEPTH PLACED	NUMBER SACKS
13 3/8	905	None	----	Cement	8118	100 sx
9 5/8	5575	None	----	Cement	7823	365 sx
				Cement	6000	200 sx

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Ran drill pipe open ended to 8118' and spotted 100 sx, pulled drill pipe to 7823' and spotted 365 sx. pulled drill pipe to 6000 and spotted 200sx.

GEOLOGICAL SURVEY

(USE REVERSE SIDE IF NEEDED)

FEB 1988

Were tools tubing casing, etc., lost or left in the hole before or during plugging? ☐ YES XX NO — If yes, give details: Permits & Bonding Unit

Did a Service Company pump mud, spot cement, or set bridge plugs? XX YES ☐ NO — If yes, give name and address:

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES XX NO — If yes, give name and address:

Representatives of Owner Operator Company or Contractor who witnessed plugging

Marvin Wood

CERTIFICATE

I Donald D. Metzger of Kalium Chemicals (company) state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction and that the facts stated herein are true, correct and complete to the best of my knowledge.

SIGNATURE	ADDRESS	TITLE
Donald D. Metzger	11126 140th Ave, Hersey, MI	Resident Manager

FINAL INSPECTIONS

DEPARTMENT REPRESENTATIVE	DATE
DEPARTMENT REPRESENTATIVE	DATE

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

LANSING MFS COPY

WELL PLUGGING RECORD

(Submit in TRIPLICATE Within 30 Days After Plugging is Completed)

PERMIT NUMBER: MW337-844-754

FIELD NAME: Hersey

COMPLETE NAME(S) AND ADDRESS OF WELL OWNER: PPG Oil & Gas Co., Inc., 2258 Enterprise Drive, Mt. Pleasant, MI 48858

COMPLETE LEASE OR FARM NAME(S): Johnson 3-1

WELL NUMBER: 3-1

WELL LOCATION: NW ¼ SE ¼ NE ¼ SEC. 1 T 16N R. 9W

TOWNSHIP: Grant

COUNTY: Mecosta

TYPE OF WELL (Oil, Gas, Dry Hole, etc.): Mineral well

TOTAL DEPTH: 8073

FORMATION: Niagaran

DATE PLUGGING STARTED: 9-11-85

DATE PLUGGING COMPLETED: 9-11-85

DEPT. REPRESENTATIVE(S) WHO ISSUED PERMIT OR WITNESSED PLUGGING: Mike Moss

CASING RECORD

SIZE CASING	DEPTH SET	AMOUNT RECOVERED	SHOT OR RIPPED
13 3/8"	905'	--	--
9 5/8"	5575'	--	--

BRIDGES OR PLUGS

TYPE (Brush, Stone, Cement, Mechanical, etc.)	DEPTH PLACED	SACKS OF CEMENT AND ADDITIVES

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES ☒ NO — If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? ☒ YES ☐ NO — If yes, give name and address: Halliburton

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES ☒ NO — If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Slim Cookingham

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Plugged on 7-6-84 partially as follows: 100 sx @ 8118', 365 sx @ 7823', 200 sx @ 6000'

Plugged on 9-11-85 as follows: HOWCO Lite, spot 175 sacks, plugs @ 5411', 4571', 3731', 2891', 2051'

HOWCO Lite, 130 sx @ 1211'

Common 110 sx @ 636', 325'.

Cut off 9 5/8" wellhead 3' below ground and cap 9 5/8" casing.

(USE REVERSE SIDE IF NEEDED)

CERTIFICATION

"I state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge."

NAME AND TITLE (Typed or Printed): Donald P. Smith

SIGNATURE: D Smith

DATE (Month, Day, Year): 9-24-85

COMPANY NAME AND ADDRESS: PPG Oil & Gas Co., Inc.
2258 Enterprise Drive
Mt. Pleasant, MI 48858

R 7213
Rev 4/74

GEOLOGICAL SURVEY

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

PERMIT TO PLUG AND ABANDON

SEP 2 1985
Regulatory Control Unit

DNR DISTRIBUTION
Permittee — Orig. & 1 copy
Division Office — 2 copies
Field Office — File copy
Others — On request

PERMIT NUMBER: MW337-844-754

FIELD NAME: Hersey

NAME AND ADDRESS OF PERMITTEE: PPG Oil & Gas

LEASE NAME AND WELL NO: Johnson #3-1

LOCATION (¼ ¼ ¼ or other)	SECTION	TOWNSHIP	COUNTY
NW SE NE,	1 T 16N R 9W	Grant	Mecosta

TYPE OF WELL (Oil, Gas, Dry Hole, etc.)	DATE COMPLETED	DATE PLUGGING WILL START	PLUGGING PERMIT REQUESTED BY & DATE
Mineral well		a.s.a.p.	Don Smith

LAST PRODUCTION				PLUGGING TO BE DONE BY
BOPD	BWPD	MCFGPD	DATE	Lease Mgmt.

PERMIT MAILED TO

COPIES MAILED TO

CASING AND CEMENTING RECORD

HOLE DIA.	CASING DIA. & WT./FT.	DEPTHS SET	CEMENT QUANTITY, TYPE, ADDITIVES	CMT. TOP	PERFORATIONS
	13-3/8"	905			
	9-5/8"	5575'	2,000 sx 2-stage	circl	

GEOLOGIC DATA; GAS AND OIL SHOWS; DRILLING AND COMPLETION DATA:

T.D. 8118'
(hole size 8½")

PLUGGING REQUIREMENTS*

Plugging requirements outlined are to be executed in accordance with the provisions of Act 61, P.A. 1939, as amended and rules and orders adopted thereunder

(Previously PB 8118-5475 with 665 sx cmt.)
Run tubg. to 5475'.
Spot 900 sx lite cmt. and 220 sx Cl A cmt.
Cut csg. 3' below grd. & cap w/cmt & steel plate.

NOTIFY CADILLAC OFFICE 48 HOURS PRIOR TO PLUGGING.

*NOTE: BONDS CANNOT BE RELEASED UNTIL A PLUGGING IS COMPLETED, CELLAR RAT HOLE AND PITS FILLED, WELL SITE RESTORED AND RECORDS FILED. WATER WELLS MUST BE PLUGGED ACCORDING TO RULE 166 OF ACT 294 P.A. 1965, "GROUND WATER QUALITY CONTROL". It is further made a requirement of this permit that the applicant give notice to the public utilities in accordance with Act 53, P.A. 1974 C.L. 460.701 to 460.718 and comply with each of the requirements of the act.

AUTHORIZED BY (signature)	OFFICE	DATE
Michael J. Moss	Cadillac D#6	9/19/85

NOTE: WELL PLUGGING RECORD Form R-7213 to be filed in TRIPLICATE within 30 days after completion.

R-7229
Rev 11/77

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL PLUGGING RECORD

File in DUPLICATE Within 30 Days After Plugging is Completed

TEMPORARILY ABANDONED

PERMIT NUMBER: 377-844-754

DATE: 7/30/84

OWNER OR OPERATOR: PPG Oil & Gas Co., Inc.

ADDRESS: 2258 Enterprise Drive, Mt. Pleasant, MI 48858

WELL NAME: Johnson

WELL NUMBER: 3-1

WELL LOCATION: NW ¼ SE ¼ NE ¼ SEC. 1 T. 16N R. 9W

TOWNSHIP: Grant

COUNTY: Mecosta

TYPE OF WELL (Brine Disposal Storage or Test): Test Well

TOTAL DEPTH: 8073

FORMATION: Niagaran

DATE PLUGGING STARTED: 7-4-84

DATE PLUGGING COMPLETED: 7-5-84

WAS PERMISSION OF DEPT. OF NATURAL RESOURCES OBTAINED BEFORE PLUGGING BEGAN? XX YES ☐ NO

NAME OF DEPARTMENT REPRESENTATIVE WHO AUTHORIZED OR SUPERVISED PLUGGING

CASING SIZE	WHERE SET	AMOUNT RECOVERED	SHOT OR RIPPED	TYPE OF BRIDGES OR PLUGS	DEPTH PLACED	NUMBER SACKS
13 3/8	905	None	----	Cement	8118	100 sx
9 5/8	5575	None	----	Cement	7823	365 sx
				Cement	6000	200 sx

DESCRIBE IN DETAIL HOW WELL WAS PLUGGED

Ran drill pipe open ended to 8118' and spotted 100 sx, pulled drill pipe to 7823' and spotted 365 sx, pulled drill pipe to 6000 and spotted 200 sx.

(USE REVERSE SIDE IF NEEDED)

Were tools, tubing, casing, etc., lost or left in the hole before or during plugging? ☐ YES XX NO If yes, give details:

Did a Service Company pump mud, spot cement, or set bridge plugs? XX YES ☐ NO If yes, give name and address: Halliburton

Was the well plugged by a Company or Contractor other than Owner or Operator? ☐ YES XX NO If yes, give name and address:

Representatives of Owner, Operator, Company, or Contractor who witnessed plugging: Marvin Wood

CERTIFICATE

I, William E. Booker of Strickler Geological Services, Inc. (company), state that I am authorized by said Owner or Operator to make this report; and that this report was prepared under my supervision and direction, and that the facts stated herein are true, correct and complete to the best of my knowledge.

SIGNATURE	ADDRESS	TITLE
William E. Booker	1425 S. Mission, Mt. Pleasant, MI	Geologist

FINAL INSPECTIONS

DEPARTMENT REPRESENTATIVE	DATE
DEPARTMENT REPRESENTATIVE	DATE

R 7506-1 2/73

OPERATORS USE

DEPARTMENT USE ONLY

Supplemental Plugging Data and Site Conditions:

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

MINERAL WELL COMPLETION REPORT

TO BE FILED WITH THE SUPERVISOR WITHIN 60 DAYS
AFTER COMPLETION OF WELL (ACT 315 P.A. 1969)

SUBMIT IN TRIPLICATE

NAME OF OWNER OR OPERATOR	ADDRESS OF OWNER OR OPERATOR
PPG Oil & Gas Co., Inc.	2258 Enterprise Drive Mt. Pleasant, MI 48858
NAME OF DRILLING CONTRACTOR	**ADDRESS OF DRILLING CONTRACTOR**
T. D. Provins Drilling Co.	2113 Enterprise Drive Mt. Pleasant, MI 48858

WELL NAME	WELL NUMBER	PERMIT NUMBER		
Johnson	3-1	337-844-754		
LOCATION	**SECTION**	**TWP**	**RANGE**	
NW SE NE	1	16N	9W	
TOWNSHIP	**COUNTY**			
Grant	Mecosta			

FOOTAGE: 1077 Ft from South (N or S) Line and 1237 Ft from East (E or W) Line of quarter section

DATE DRILLING COMMENCED	DATE DRILLING COMPLETED	DATE WELL COMPLETED	TYPE OF WELL
6-3-84	7-2-84	7-2-84	Abandoned Test

FORMATION COMPLETED IN	TOTAL DEPTH	ELEVATION	KB	RB	RT	RF	GN
Niagaran	8073		1172.4			1171.1	1156.4

ROTARY TOOLS	CABLE TOOLS
From 0 Feet to 8073 Feet	From Feet to Feet

WELL CASING RECORD

TUBING AND CASING DATA				CEMENTING DATA			PERFORATIONS OR OPEN HOLE		
SIZE	LB./FT.	GRADE	DEPTH	SACKS	TYPE	STAGING DEPTH(S)	NO. HOLES	FROM	TO
13 3/8"	54.5#	K-55	905	400	Cl A	525 Lite Surface and dropped back,	grouted w/	100	sx.
9 5/8"	129 Jts. 42.5#	N-80	1st stage	900	sx				
	10 Jts. 40#	N-80	5575	2nd stage	1200	sx 3600			

WATER ZONES

FORMATION	FROM	TO	AMOUNT
(Fresh)			

WIRE LINE LOGS RUN

SERVICE COMPANY	TYPE LOG	INTERVAL LOGGED	COPY TO SURVEY
Schlumberger	LDT-CNL-GR	100 - 5578	Yes
		5520 - 8070	Yes

FRACTURE OR ACID TREATMENT

DATE	FROM	TO	QUANTITY
None			

SOLUTION MINING

NAME AND NUMBER OF INJECTION AND TARGET WELL — DISTANCE APART
None

The information in and attached to this report is complete and correct.

SIGNATURE	TITLE	DATE
William E. Barker	Geologist	7/30/84

GIVE COMPLETE FORMATION RECORD ON REVERSE SIDE

R 7504 2/73

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

Exhibit C

SURVEY RECORD OF WELL LOCATION

(Submit five copies with Application for Permit to Drill a Well for Oil or Gas, Brine Disposal, Hydrocarbon Storage or Secondary Recovery)

84024

LESSEE (OWNER OF LEASE RIGHTS)
PPG INDUSTRIES, INC.

LESSOR (OWNER OF MINERAL RIGHTS)
Don and Caroline Johnson (Johnson #3-1)

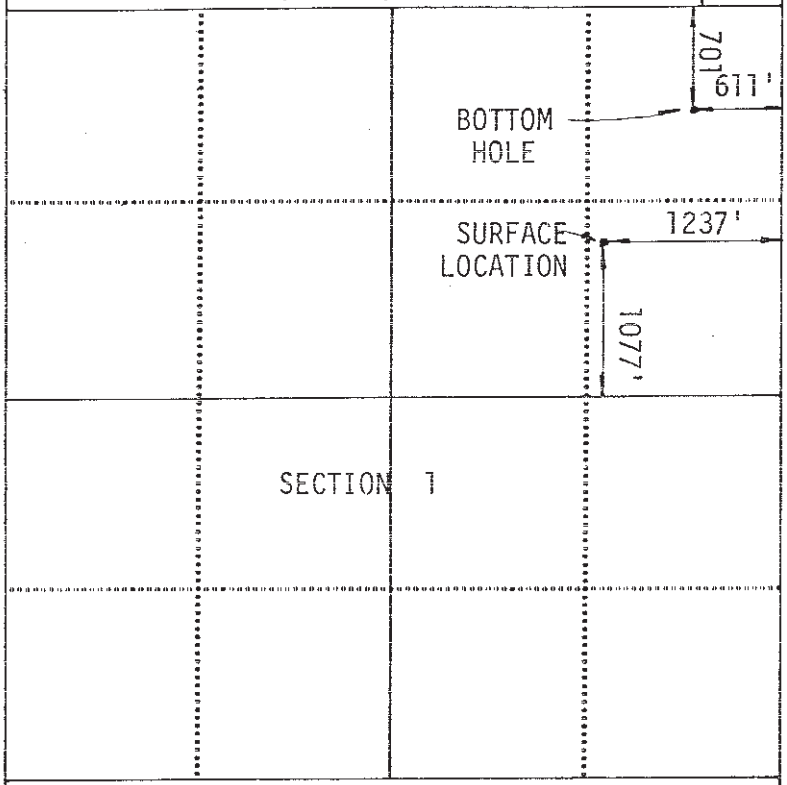
WELL NO
3-1

LOCATION
NW ¼ OF SE ¼ OF NE FRC'L ¼ SECTION 1 T. 16 N R. 9 W

TOWNSHIP
Grant

COUNTY
Mecosta

PLAT BELOW REPRESENTS ONE FULL SECTION
(1 Mile Square)



(Scale of Plat — 1 inch equals 1320 ft.)

1. Outline drilling unit and spot well location on plat at left. Where drilling unit crosses section lines, divide the plat into an east half and a west half **OR** a north half and a south half (which ever applies). Outline the unit and locate the well in two directions from **NEAREST** quarter section and unit lines.

2. Location of well in two directions from **NEAREST** quarter section and unit lines is:
SURFACE LOCATION

1077 ft. from South (north-south) line of Quarter Section

1237 ft. from East (east-west) line of Quarter Section

_____ ft. from _____ (north-south) line of unit

_____ ft. from _____ (east-west) line of unit

3. Describe wellsite marker. Show or describe access route if it is not readily accessible.
Wellsite is marked with a painted wood stake. Site can be reached from the North off Balsam Road. See supplemental plat.

Ground Elevation = 1156.4 feet, U.S.G.S. datum.

4. ON SEPARATE PLAT OR PLOT PLAN:

A. Locate, identify, and show distances to all roads, power lines, residences, farm buildings, and other structures within 300 feet of the stake;

B. Locate, identify, and show distances to all lakes, streams, swamps, drainage-ways or any other surface water features within 1320 feet of the stake.

5. In an ENVIRONMENTAL IMPACT ASSESSMENT describe all structures and surface features shown detailing plans for hazards prevention and erosion control (See instructions and guidelines for preparation of an environmental impact assessment).

STATE OF MICHIGAN JERRY L. WILCOX 14102 REGISTERED LAND SURVEYOR

NAME OF INDIVIDUAL WHO SURVEYED WELL SITE	DATE	TITLE
Jerry L. Wilcox, LS#14102	5-4-84	President

ADDRESS
J. L. WILCOX & ASSOCIATES, INC. 7230 North U.S.-131 Manton, Michigan 49663

I CERTIFY THE ABOVE INFORMATION IS COMPLETE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF

SIGNATURE (LESSEE OR AUTHORIZED REPRESENTATIVE)	ADDRESS (IF DIFFERENT THAN LESSEE)	DATE (MONTH, DAY, YEAR)

R 7208 REV 3/80

Exhibit A

Surface Casing (13-3/8" in 17-1/2" hole @ 900')

1. Use insert float and Texas Pattern Shoe and lock to shoe joint with thread lock.
2. No centralizers.
3. Circulate hole a minimum of one complete circulation.
4. Do not reciprocate casing.
5. Run bottom (red) wiper plug. Do not use if carrying L.C.M. in cement.
6. Pump 70 bbls. fresh water ahead of cement.
7. Cement with:
    a. 475 sx. 50/50 Pox., 6% total gel, 3% CaCl
    1.54 $ft.^3$/sk., 13.3#/gal., 7.66 gals./sk.
    b. 200 sx. Class A, 3% $CaCl_2$
    1.18 $ft.^3$/sk., 15.6#/gal., 7.66 gals./sk.

PPG INDUSTRIES, INC.

JOHNSON 3-1

MECOSTA COUNTY , MICHIGAN

PLAN VIEW
1 IN. = 300 FT.

OBJECTIVE NO. 1:
1065' N35.59'E OF
SURFACE LOCATION
7734' M.D. 7550' TVD.
862' NORTH 626' EAST

OBJECTIVE NO. 2:
1065' N35.59'E OF
SURFACE LOCATION
8234' M.D. 8050' TVD.
862' NORTH 626' EAST

SUBMITTED BY:

TRIPLE G DIRECTIONAL DRLG.
TRAVERSE CITY, MICHIGAN

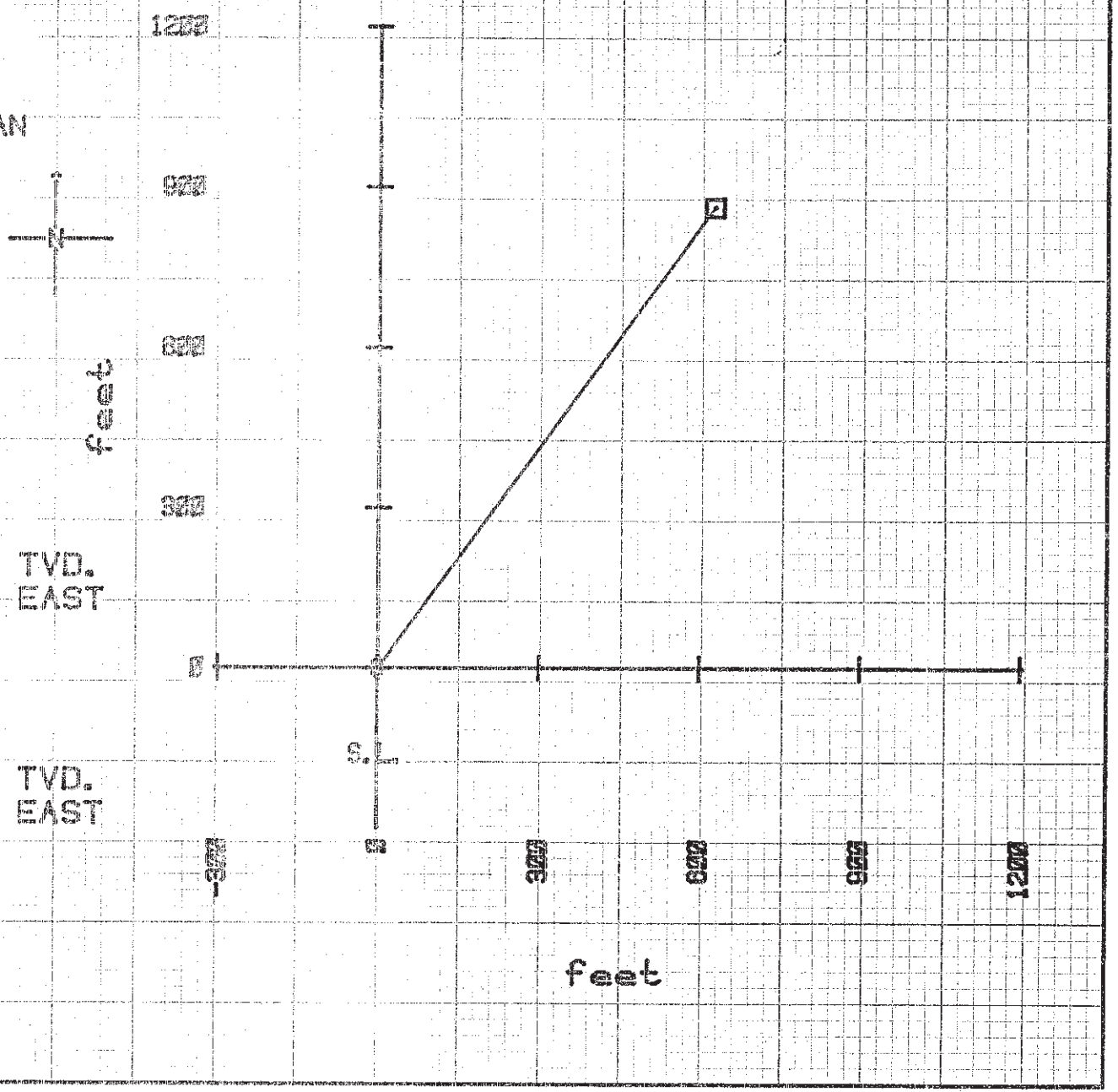


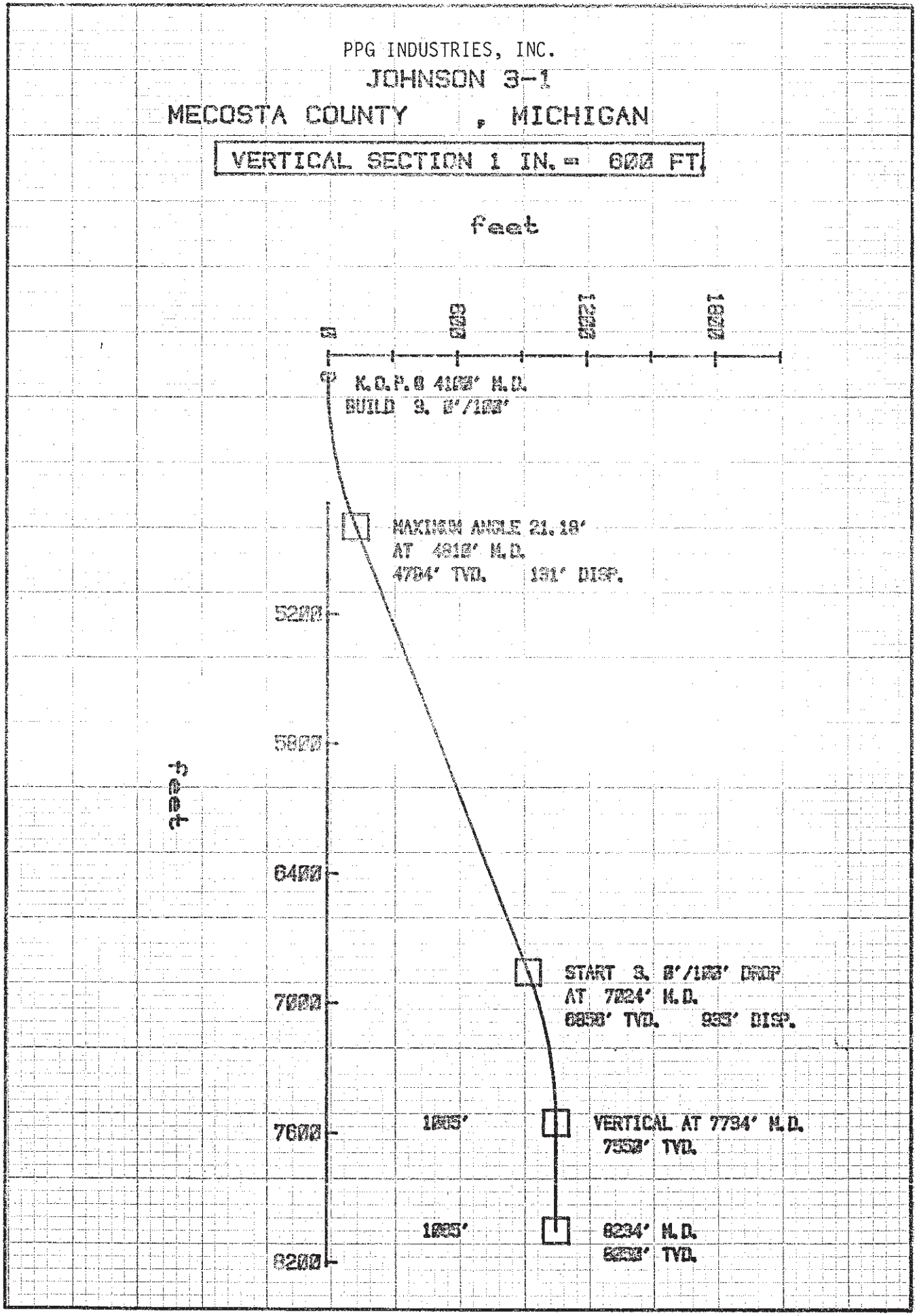
Exhibit B

PPG INDUSTRIES, INC.

JOHNSON 3-1

MECOSTA COUNTY , MICHIGAN

VERTICAL SECTION 1 IN. = 800 FT.



NEAREST PUBLIC TELEPHONE

East 0.2 miles on Balsam Road; then North 3/4 of a mile on 120th Avenue; then West 1 1/2 miles on Schofield Road to 135th Avenue; Then North on 135th Avenue two miles; then West 4 1/2 miles on Hersey Road to the general store in the town of Hersey, on 180th Avenue. Phone is located in front of store.

MUD TREATMENT

A gas buster will be provided.

NOTE: For location of residences, public gathering places and evacuation routes, see vicinity map.