

EXHIBIT 5

**Stonehaven Energy Management, LLC
Class II Produced Water Disposal Application
Tippery Field
Cranberry Township, Venango County, Pennsylvania**

**Prepared By: HAVCO Oil and Gas, Inc.
Thomas F. Havranek
Consulting Petroleum Engineer
1842 Eastbrook Road
New Castle, PA 16101**

**EPA UIC Permit Application - Class II
Produced Fluid Disposal Project
Tippery Field
Cranberry Township, Venango County, Pennsylvania**

**Prepared for: Stonehaven Energy Management, LLC
1251 Waterfront Place
Suite 540
Pittsburgh, Pennsylvania 15222
412-745-7770 Phone
412-391-7220 Fax**

**Prepared by: HAVCO Oil and Gas, Inc.
Thomas F. Havranek
Consulting Petroleum Engineer
1842 Eastbrook Road
New Castle, PA 16101
412 – 999-3958 Phone
724-654-0093 Fax**

**Submitted to: S. Stephen Platt
U.S. Environmental Protection Agency Region III
Ground Water and Enforcement Branch (3WP22)
Office of Drinking Water and Source Water Protection
1650 Arch Street
Philadelphia, PA 19103-2029**

Revised October, 2011

**Stonehaven Energy Management, LLC
EPA UIC Class II Produced Water Disposal Project
Tipperry Field Cranberry Township Venango County Pennsylvania**

Table of Contents

A.) Area of Review	1
B.) Maps	2
C.) Corrective Action Plan	3 - 4
E.) Name and Depth of USDW's	5
G.) Geological Data on Injection and Confining Zones	5 - 15
H.) Operating Data	16 - 21
K.) Injection Procedures	22 - 23
L.) Construction Procedures	24 - 25
M.) Construction Details	26 - 27
O.) Plans for Well Failure	28
P.) Monitoring Program	28
Q.) Plugging and Abandonment Plan	29 - 32
R.) Necessary Resources	33 - 34

A. Area of Review

Stonehaven Energy Management, LLC (Stonehaven) is applying for an EPA Class II "D" Produced Fluid Disposal Well permit. Their goal is to facilitate their oil production operations on their B.Stover, M. Latshaw, and J. Ahrens leases located in Cranberry township, Venango County, Pennsylvania. The Latshaw #9 well has been selected as the candidate for the produced water disposal and a fixed radius of ¼ mile around that well will be the Area of Review (AOR) for this application. The produced water will be disposed into the Speechley sand formation at an interval of 1934 – 1995 feet.

This area is located approximately 25 miles south of the Drake Well located in Titusville, Pennsylvania. That well is given credit for being the first commercial oil well ever drilled and the birthplace of the oil and gas industry. The industry spread rapidly throughout the Appalachian basin after the Drake discovery and many wells were drilled through the Oil Creek valley into Venango county. The Venango group of formations were the primary target of the early oil drillers. This group includes the Venango 1st, Red Valley, Venango 2nd, Grey, and Venango 3rd sandstone formations. These formations range between 750 – 1100 feet of depth on Stonehaven's properties.

Many of the old wells left over from the early oil boom have been located on these leases and have been plugged by Stonehaven. Four wells were developed on the Stover lease in 1985 through the Venango sands by a previous operator. They are now owned and operated by Stonehaven. In 2007, Stonehaven developed 21 wells on the Stover lease through the Venango sands.. In 2008, 17 wells were developed on the Stover lease, 6 on the Latshaw, and 7 on the Ahrens. These wells penetrated the Venango sands only. In 2009, they developed 8 wells on the Latshaw lease with 3 of them drilled through the Speechley sand which included the Latshaw #9 subject well. In 2010, 5 more wells were developed on the Latshaw lease with one of them drilled through the Speechley. This development is shown on Map B-1

In summary, Stonehaven is operating 68 producing wells on the three leases with four of them drilled through the Speechley sand. It should be noted that 16 additional Venango sand wells are located on the Ahrens property that are not operated by Stonehaven.

B. Maps

Map B-1

This is a 1" = 400' scale map that shows the chronological development of the 68 wells operated by Stonehaven as outlined in the Area of Review portion of this application.

Map B-2

This is a 1"=2000' scale USGS topographic map showing all existing producing wells operated by Stonehaven and others, all known plugged wells, all known water wells, located old wells that have not been plugged, the Latshaw #9 proposed disposal well with the ¼ mile AOR radius around it, and a one mile radius around the properties.

There are no hazardous waste treatment, storage, or disposal facilities on the property, Map B-3 shows in greater detail the location of the collection and distribution facilities for the produced water.

Map B-3

This is a 1" = 300 ' scale map that shows all of the wells within the ¼ mile AOR. It shows the location of the tank batteries for storing produced water and oil and the pipeline system that will be used to deliver produced water to the injection well.

Map B-4

This is a 1" = 200' showing the four Speechley wells and their distance from the Latshaw #9 injection candidate in greater detail.

C. Corrective Action Plan and Well Data

Excluding the M. Latshaw #9, the proposed injection well, only two other wells within the AOR penetrate the Speechley formation. They are the M. Latshaw #12 and the M. Latshaw #25. The M. Latshaw #12 is 1035 feet away from the M. Latshaw #9 while the M. Latshaw #25 is 1263 feet away. The M. Latshaw #25 was completed in the Speechley while the M. Latshaw #12 was not. The M. Latshaw #15 was completed in the Speechley but is outside the AOR at 1594 feet away. Despite its location it will be utilized along with the other two wells as the primary monitoring wells for fluid migration.

There are twenty two Venango sand wells drilled through the Grey sand at an approximate depth of 1200 feet that are within the AOR. Eleven are located on the Stover lease and eleven on the Latshaw lease. Map B-3 displays their location the best.

There are four old wells that have been located within the AOR that have been plugged and four that have not. The four plugged wells are 4X, 6X, 7X, and 9X. The four that have not are 5X, 8X and two that have not yet been registered with the PADEP. These were all orphan wells that have been left over from the early days of the oil industry. They had no known records or current operator. Most often they are discovered while completing a new well. They were plugged by the old operators either very poorly or not at all. When they are discovered the criteria for plugging is made based on whether they are adversely affecting the production of a new well. This is usually due to failed casing dumping fresh water into the producing formations. When they are entered they are found drilled through the Venango sands only.

Water wells within the AOR exist on the M. Latshaw, Kimberly D. Heeter, and Robert A. Hoover properties.

All of the wells developed by Stonehaven were drilled by spudding the well with a 12 ¼" bit and setting approximately 22'-42' of 9 5/8" – 26 #/ft conductor pipe depending on surface conditions.. Next an 8 ¾" bit is run and drilled to a depth of 60' below the deepest known aquifer. Depending on surface elevation this is usually between a depth of 450' to 525'. A surface casing string of 7" – 17 #/ft is run and cemented to surface. Finally a 6 ¼" bit is run and drilled to the pre-determined total depth. The only difference between wells drilled to the Speechley from wells drilled through the Venango sand wells is the depth of the 6 ¼" hole.

Every producing well operated by Stonehaven is equipped with a pump off control device that monitors the daily pump time of every well. In the event that injected produced water is migrating in some manner to cause risk to the environment or welfare of the residents in the area it will be detected quickly and steps to remedy the situation will be enacted. No wells within the AOR would be operating over the fracture pressure of the Speechley.

Table C-1 on the next below displays the date drilled, well type, casing data, total depth, deepest producing formation, and completion date of all the wells within the AOR:

Table C-1

<u>Well</u>	<u>Type</u>	<u>Date</u>	<u>9 5/8"</u>	<u>7"</u>	<u>Total Depth</u>	<u>Completion Date</u>
Stover #5	Venango	2/17/07	21'	467'	1210'	7/13/07
Stover #6	Venango	1/12/07	21'	469'	1198'	7/20/07
Stover #7	Venango	2/20/07	23'	503'	1258'	7/27/07
Stover #8	Venango	1/05/07	21'	482'	1205'	5/22/07
Stover #9	Venango	4/04/07	24'	454'	1202'	6/27/07
Stover #13	Venango	4/18/07	23'	480'	1202'	6/01/07
Stover #14	Venango	2/29/07	22'	485'	1260'	5/16/07
Stover #15	Venango	3/26/07	21'	500'	1210'	7/06/07
Stover #16	Venango	3/08/07	22'	508'	1263'	8/07/07
Stover #24	Venango	3/01/07	20'	531'	1243'	4/25/07
Stover #41	Venango	3/10/07	22'	454'	1226'	8/24/07
Latshaw #3	Venango	8/06/08	22'	418'	1108'	8/28/08
Latshaw #4	Venango	8/01/08	22'	428'	1106'	8/06/08
Latshaw #5	Venango	8/10/08	22'	420'	1109'	8/12/08
Latshaw #6	Venango	8/13/08	22'	418'	1109'	9/24/08
Latshaw #9	Speechley	3/21/09	22'	396'	2206'	10/14/09
Latshaw #10	Venango	3/25/09	22'	400'	1104'	10/21/09
Latshaw #11	Venango	3/27/09	21'	400'	1104'	10/26/09
Latshaw #12	Speechley	4/03/09	42'	400'	2108'	12/02/09
Latshaw #15	Speechley	5/02/09	42'	400'	2359'	12/10/09
Latshaw #16	Venango	4/27/09	42'	400'	1054'	12/18/09
Latshaw #23	Venango	1/02/10	42'	420'	1114'	3/09/10
Latshaw #24	Venango	12/23/09	42'	410'	1104'	1/04/10
Latshaw #25	Speechley	2/03/10	40'	410'	2107'	4/29/10
Latshaw #26	Venango	1/18/10	42'	411'	1057'	3/16/10
Latshaw #31	Venango	1/15/10	41'	415'	1128'	3/03/10

E. Name and Depth of USDWs

When Stonehaven began development in January 2007 of the Stover lease one of the first tasks was to drill a water well on the property. Its purpose was to provide fresh water for the completion of the new wells to be drilled. It was located within 50' of the Stover #24 well and is within the AOR. Small veins of water were encountered within 50-75 of depth and again in the 100'- 125' range.

The only named aquifer in this area is the Mountain sand which was encountered between 440' and 470'. The Stover #24 is the highest elevation well on the property. The Surface casing depths were adjusted for elevation and set 60' below the Mountain sand in all the developed wells.

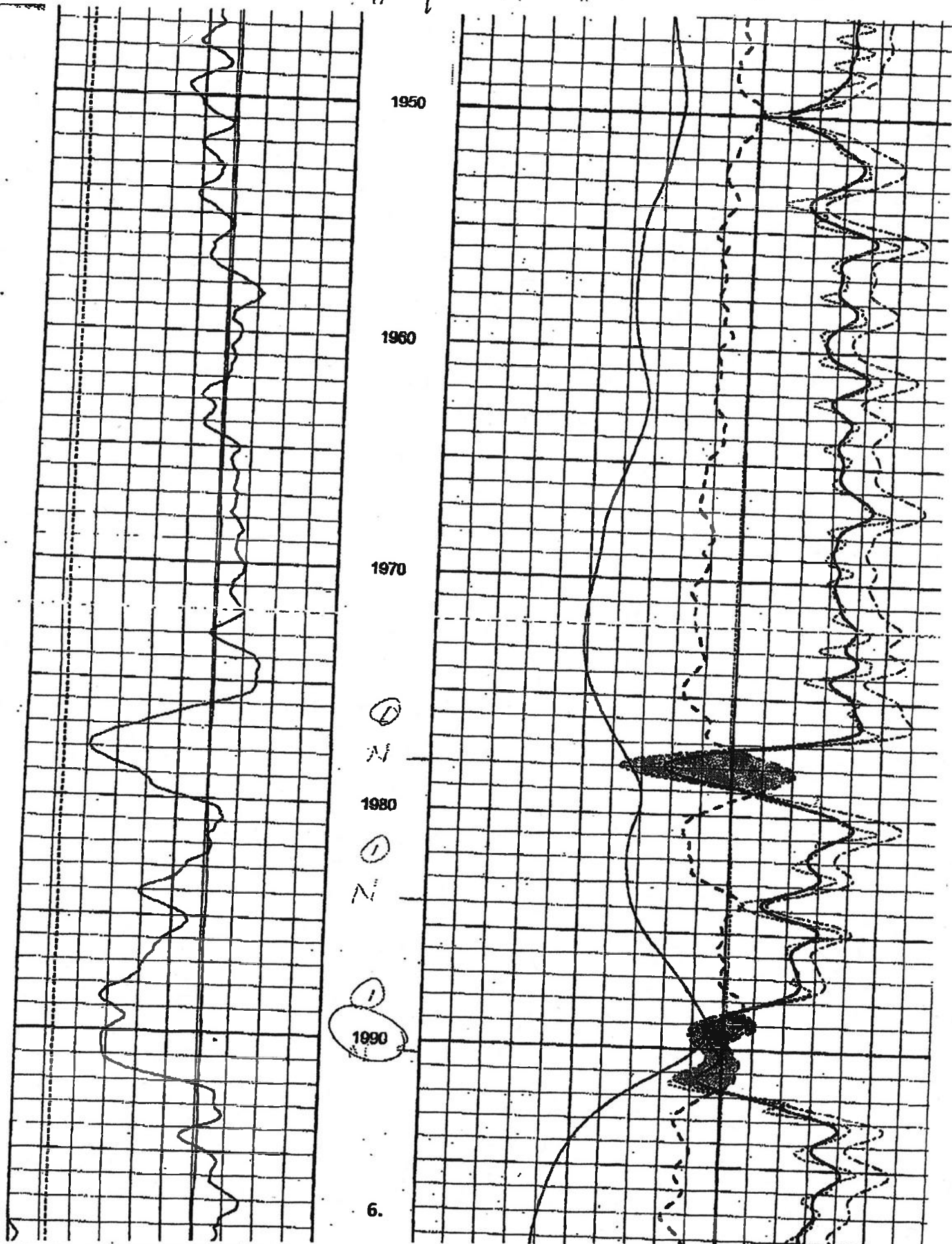
G. Geological Data on Injection and Confining Zones

The Speechley sandstone is an Upper Devonian formation within the Bradford series. In this area the Speechley is encased in gray shale in excess of over 200' above and below the formation. The table below shows the gross thickness, the net pay, average porosity of the net pay, and the fracture pressures for the three wells completed in the Speechley:

<u>Well</u>	<u>Depth</u>	<u>Gross</u>	<u>Net Pay</u>	<u>Avg. Porosity</u>	<u>Frac Press.</u>
Latshaw #9	1977-1992	15'	8'	12%	3250 psi
Latshaw #12	1977-1993	16'	7'	7%	
Latshaw #15	1963-1982	19'	5'	10%	3734 psi
Latshaw #25	1980-1998	18'	6'	9%	4018 psi

The openhole logs of the four wells are shown in Figures G1, G2, G3, and G4. The treatment reports for the three wells fractured in the Speechley are shown in Figures G5, G6 and G7.

#9



#12

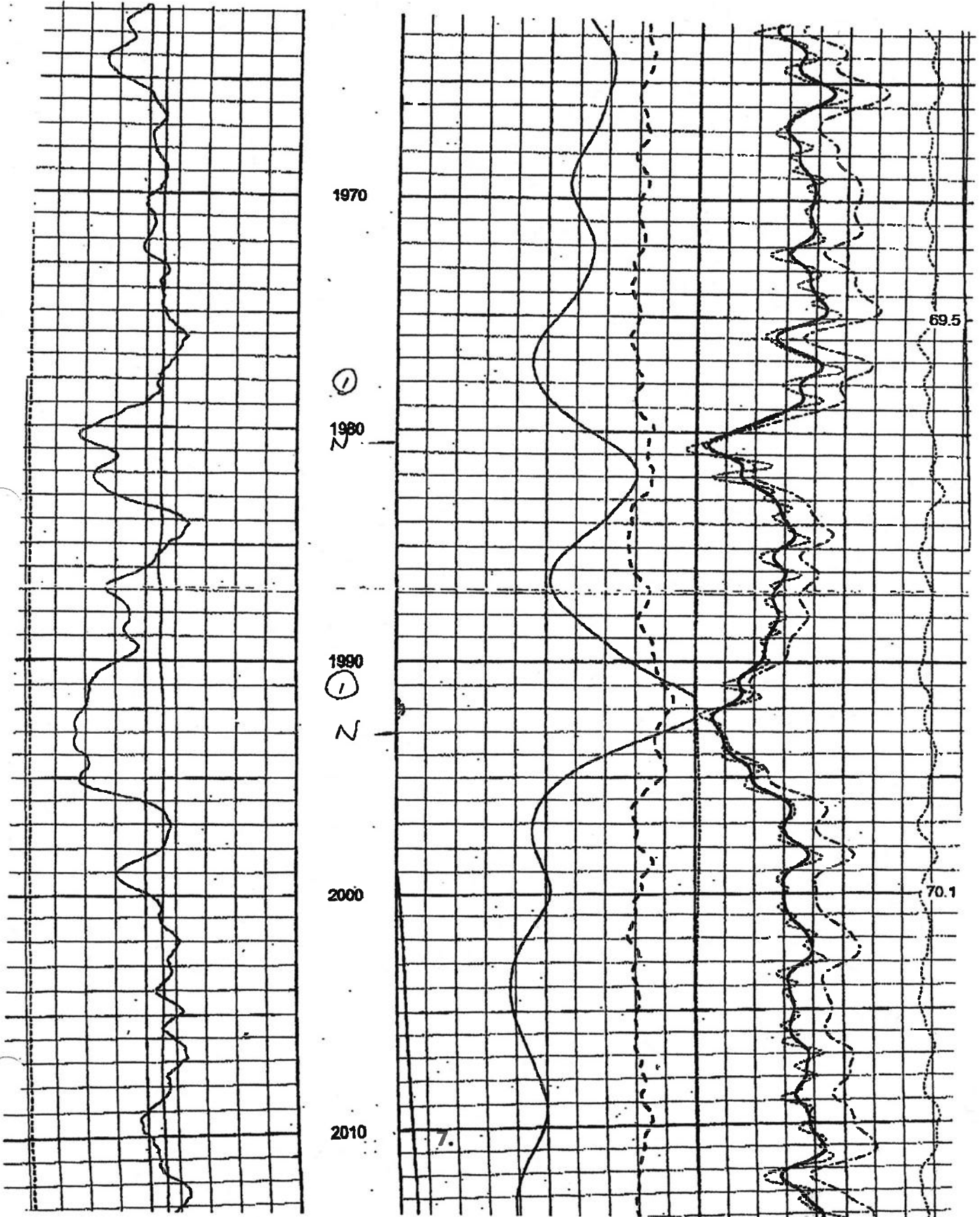
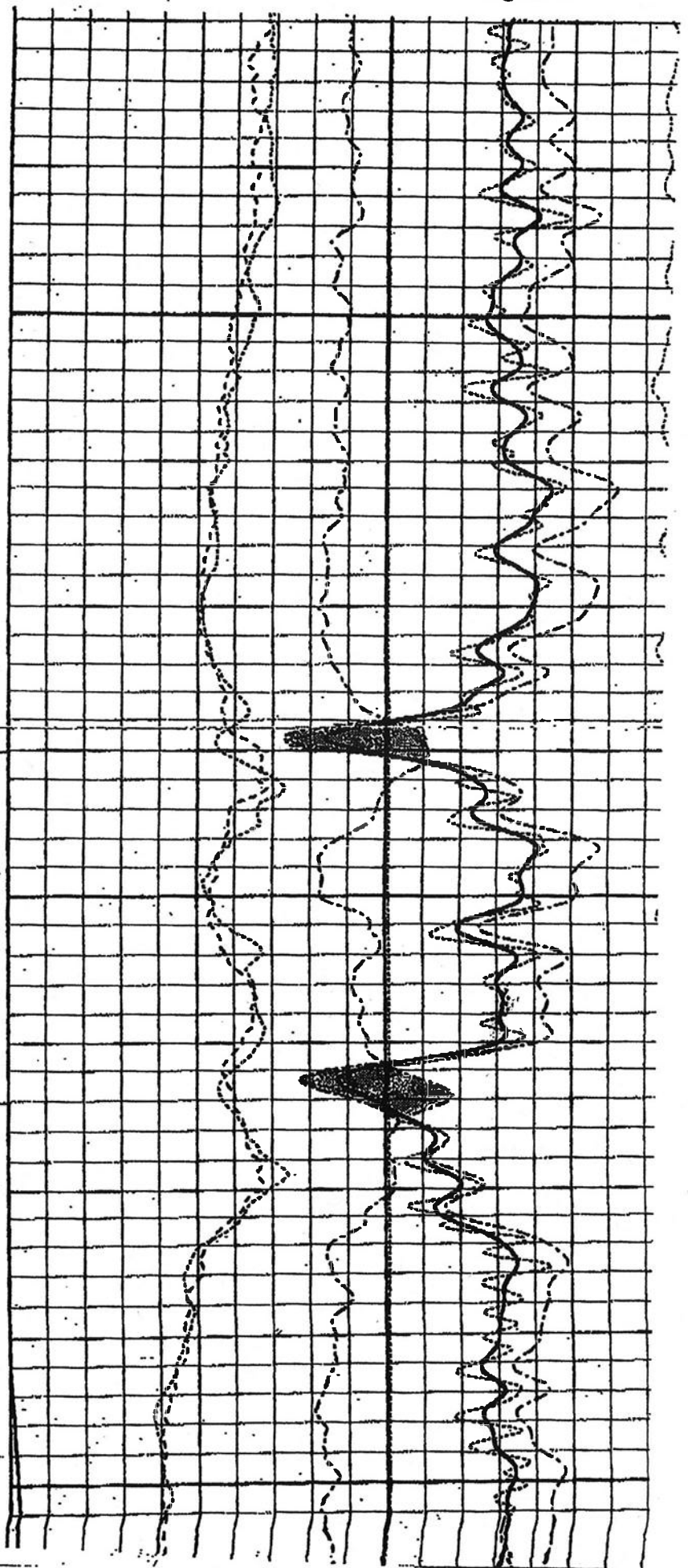


Figure G3



FROM : GRAHAM CONSULTING

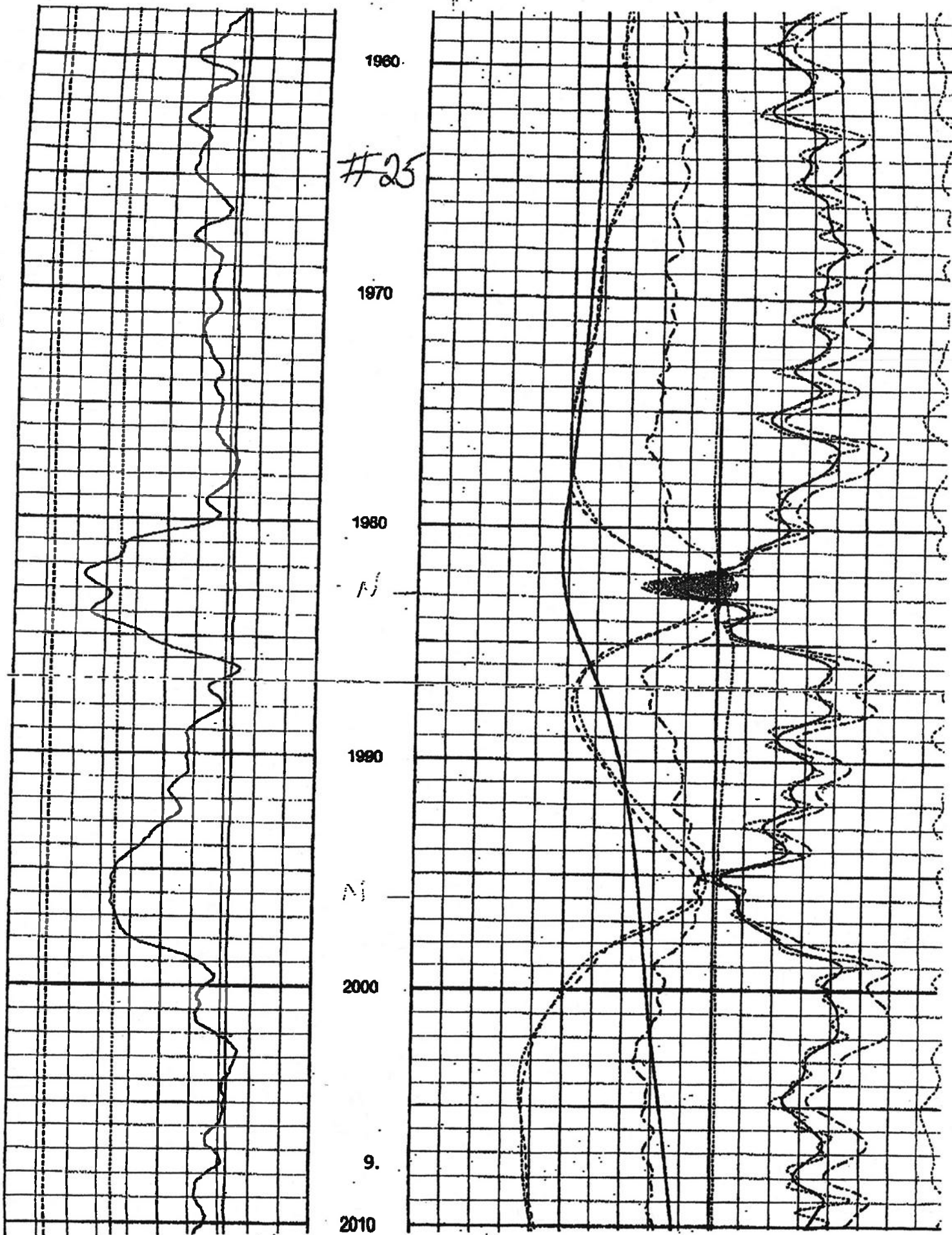
FAX NO. : 814 768 7672

Jun. 08 2011 09:29AM P1

1940
 # 15
 1950
 1960
 N
 1970
 N
 1980
 1990
 8.

13474110

Figure G4



JOB LOG
 #19 Latshaw



INVOICE NO. 216855

Figure G5A

PRESSURES IN P.S.I.

VOLUMES IN GAL.

BREAKDOWN _____ MAXIMUM _____ LOAD & BKDN _____ PAD _____
 AVERAGE _____ DISPLACEMENT _____ TREATMENT _____ DISPL _____
 SHUT-IN: INSTANT _____ 5-MIN. 1900 10-MIN. _____ TOTAL VOLUME _____

HYDRAULIC HORSEPOWER

AVERAGE RATES IN B.P.M.

USED _____ TREATING _____ DISPL _____ OVERALL _____

DESCRIPTION OF JOB 2 stage oil Job frac thru 3" casing

TIME	RATE (BPM)	VOLUME (GAL)	PRESSURE (PSI)		DESCRIPTION OF STAGE OR EVENT
			TUBING	CASING	
1045					Safety meeting Notch 1978
		Stage 1			
1232	17.4	1000		2000	Start Sand 1/2 Gel
1233		2500		2360	Start Sand 1
1235		3568		2110	Start Sand 1 1/2
1237		4500		2370	Start Sand 1 increase Gel
1237		5200		2110	Start Sand 1 1/2
1239		6500		2040	Start Sand 2
1240		7400		2240	Start Sand 1 1/2
1241		7800		1570	Finish Sand
1242		8000		2140	Start Sand 1 1/2
1245		9850		2140	Finish 20/40 Sand Start 1/20
1246		10850		2170	Start Sand 1 1/2
1248		11900		2230	Finish Sand
1250		12920			Finish Flush
					15ip 1435 Psi 2106 Ratio 15.2 HHP 792
					Total Skes 20 1/2 100 Skes 40

JOB LOG

Latshaw #9



INVOICE NO. 216855

PRESSURES IN P.S.I.

VOLUMES IN GAL.

BREAKDOWN 3500 MAXIMUM _____ LOAD & BKDN 100 PAD 1000
 AVERAGE 2359 DISPLACEMENT _____ TREATMENT 8950 DISPL _____
 SHUT-IN: INSTANT 1477 5-MIN. 1370 10-MIN. _____ TOTAL VOLUME 10970

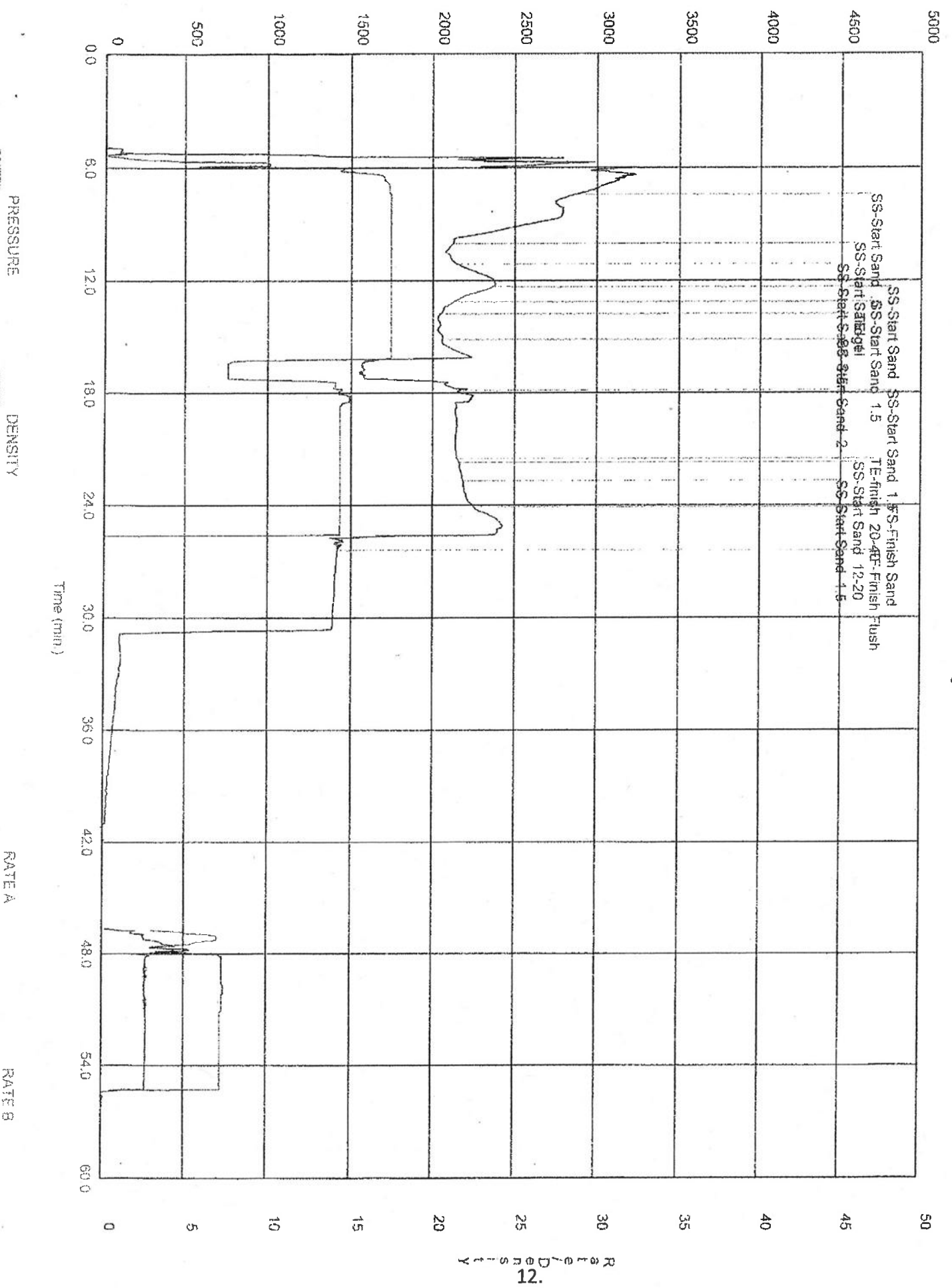
HYDRAULIC HORSEPOWER

AVERAGE RATES IN B.P.M.

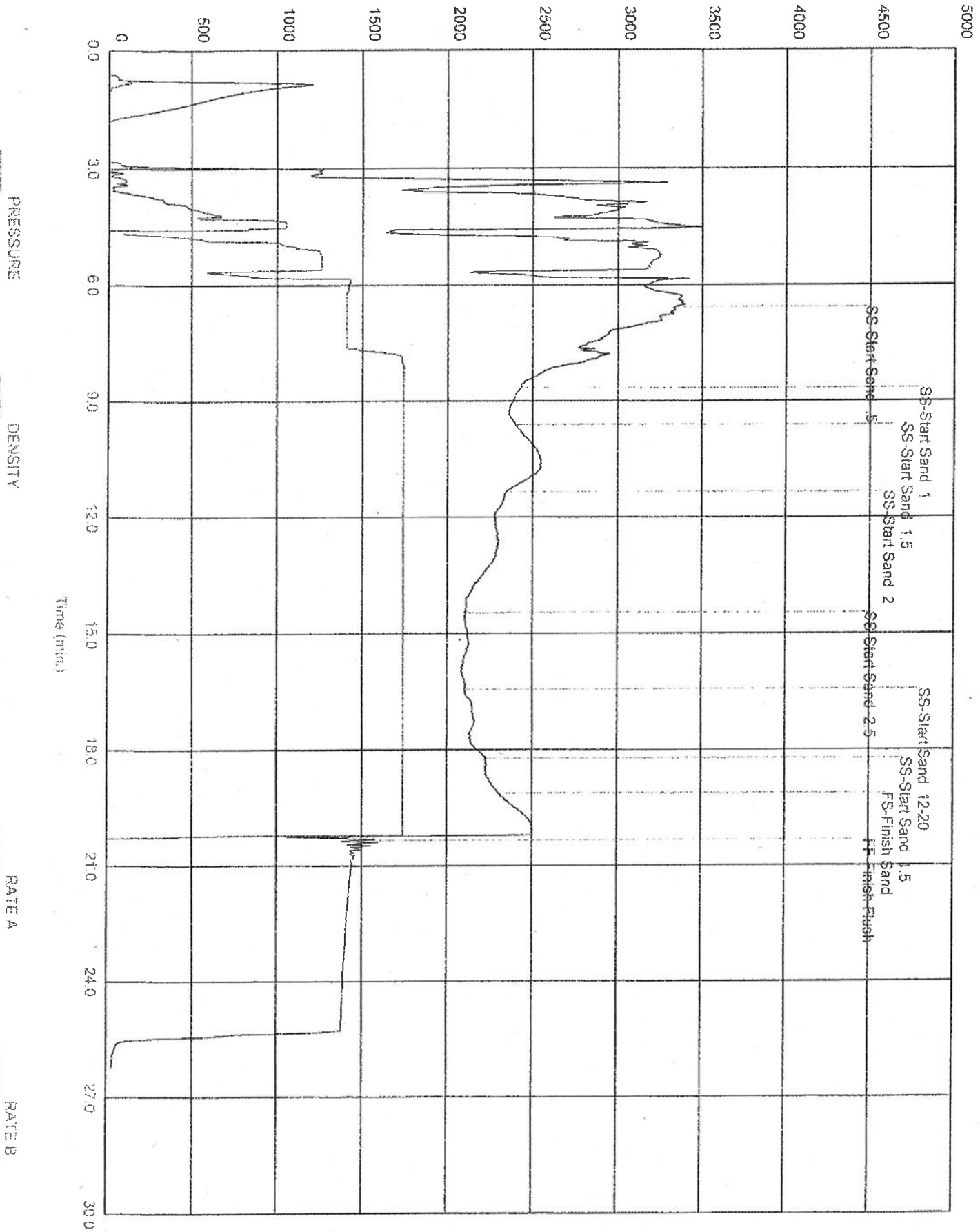
USED 981 TREATING 17.1 DISPL. 17.4 OVERALL _____
 DESCRIPTION OF JOB 3 Stage oil Job frac thru 3" casing

TIME	RATE (BPM)	VOLUME (GAL)	PRESSURE (PSI)		DESCRIPTION OF STAGE OR EVENT
			TUBING	CASING	
		Stage 2			Notch 1984
				3500	Break Formations
1334	18.0	1000		3400	Start Sand 1/2
1335	17.4	2023		2720	Start Sand 1
1336		3068		2360	Start Sand 1 1/2
1338		4250		2450	Start Sand 2
1341		6500		2100	Start Sand 2 1/2
1343		8100		2100	Start Sand 12-20 1 #
1345		9150		2130	Start Sand 1 1/2 15ip 1477
1346		9950		2260	Finish Second psi 2359
1347		10970			Finish Flush Rate 17.5
					HHP 981
					Total sls 20 1/2 100 20/96

Ardent Lalshaw # 9 stage 1



Ardent Latchaw # 9 stage 2



Rate Density
13.

12-10-09
JOB LOG

Stage 12



INVOICE NO. 216715

LATSHAW #15

PRESSURES IN P.S.I.

VOLUMES IN GAL.

BREAKDOWN _____ MAXIMUM _____
AVERAGE _____ DISPLACEMENT _____
SHUT-IN: INSTANT _____ 5-MIN. _____ 10-MIN. _____

LOAD & BKDN _____ PAD _____
TREATMENT _____ DISPL _____
TOTAL VOLUME _____

HYDRAULIC HORSEPOWER

AVERAGE RATES IN B.P.M.

USED _____ TREATING _____ DISPL _____ OVERALL _____

DESCRIPTION OF JOB Stage 12 of Job FROG thru 3" casing

TIME	RATE (BPM)	VOLUME (GAL)	PRESSURE (PSI)		DESCRIPTION OF STAGE OR EVENT
			TUBING	CASING	
					Match 1965
1657	5.1	200		3000	Col
1707					Ret flush
				3734	Break formation
1724	17.1	1950		3050	Start Sand 1/2
1725		2000		3010	Start Sand 1
1726		3900		2700	Start Sand 1 1/2
1728		4700		2600	Start Sand 2
1729		5850		2550	Start Sand 2 1/2
1733		8900		2560	Finish Sand
1735		9950			Finish Flush
					ISIP 1177 Psi 2671 Rate 17.4 HHP 1135
					Stage 13 Match 1977 Total Sbs 108 24/40
					SKIP PAD PACKER RUNNING
1157					Pump down back hole
1900		1102		190	Shut down

4-29-10
 JOB LOG
 Latshaw #25



INVOICE NO. 15-10037

PRESSURES IN P.S.I.
 BREAKDOWN _____ MAXIMUM _____
 AVERAGE _____ DISPLACEMENT _____
 SHUT-IN: INSTANT _____ 5-MIN. _____ 10-MIN. _____

VOLUMES IN GAL.
 LOAD & BKDN _____ PAD _____
 TREATMENT _____ DISPL _____
 TOTAL VOLUME _____

HYDRAULIC HORSEPOWER
 USED _____
AVERAGE RATES IN B.P.M.
 TREATING _____ DISPL _____ OVERALL _____

DESCRIPTION OF JOB: 12 Stage oil Job for thru 3" casing

TIME	RATE (BPM)	VOLUME (GAL)	PRESSURE (PSI)		DESCRIPTION OF STAGE OR EVENT
			TUBING	CASING	
Skipped		Stage 10	10		Notch 1929
1717		Stage 11	11		Notch 1939
1747	6			3600	Spitting gas
1755				3597	Break formation
1758	12	2300		3150	Start Sanding 30/100
1801		4600		3060	Start Sand 1
1804		6700		2950	Start Sand 1 1/2
1808		7900		2910	Start Sand 2
1810		11100		3150	Finish Sand
1816		11400			Finish Flush
					1510 1094 PSI 3044 Rate 16.2 HHP 1205 Total lbs. 95 20/50
1832		Stage 12	12		Notch 1956
1835	17	800			Spitting gas
1838		1400		3060	
1839	15			40	
1841		1700		4018	Break formation
1845		1900		3060	Start Sand 2 30/100 8 Gal
1847		3300		2840	Start Sand 1
1849		5600		2670	Start Sand 1 1/2
1851		7600		2540	Start Sand 2
1854		8900		2500	Start Sand 2 1/2
1855		10270		2790	Finish Sand
		11270			Finish Flush
					1510 1741 PSI 2741 Rate 16.7 HHP 1127 Total 105 20/50

H. Operating Data

In a letter dated February 17, 2011, from S. Stephen Platt, of the United States Environmental Protection Agency, Region III, Stonehaven was given permission to perform a controlled injection test into the Speechley formation in the Latshaw #9.

A copy of the letter is shown as Figure H1. The conditions outlined in the letter allowed for the test to be conducted for a duration not to exceed thirty days and for a total volume injected not to exceed 5000 BBls. The injection pressure was also limited to a maximum injection pressure of 1365 psi.

The test was conducted by running an openhole packer into the well on 3 ½" 10 rd tubing and setting it just above the Speechley formation at 1928'. The annulus between the 3 ½" tubing and the 7" casing was left open at the surface so it could be monitored. The test began on April 15, 2011 and was completed on May 14, 2011. The well took the fluid for the most part under the hydrostatic pressure of the fluid column. During the thirty day test 1955 BBls of the produced brine was disposed into the well. Figure H2 contains a table displaying the daily volumes and pressures.

Figures H3 and H4 show the sample analysis and specific gravity of the brine being produced by the Stonehaven wells. The testing was conducted by Mahaffey Laboratory, LTD. Located at 551 State Street, Curwensville, PA 16833.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

February 17, 2011

Mr. Mark Axel
Stonehaven Energy, LLC
1251 Waterfront Place, Suite 540
Pittsburgh, PA 15222

Dear Mr. Axel:

EPA Region III Underground Injection Control (UIC) program staff has completed review of your request to conduct a second injectivity test using the Ardent Latshaw #9 well. This request has been approved and Stonehaven Energy is hereby granted authorization to conduct this test, utilizing the Ardent Latshaw #9 (API #37-121-44484), located in Tippery Township, Venango County, Pennsylvania, under the following conditions.

1. **Injection Zone** – The well will be utilized to perform testing of the Speechley Sandstone. Injection into the Speechley will be conducted through tubing and packer set immediately above the upper notched interval in the Speechley (1978 feet).

2. **Duration of Test** – The duration of the injectivity test shall not exceed a maximum of thirty (30) consecutive days.

3. **Total Volume Limitation** - During the testing period, the total volume of fluid to be injected shall not exceed a maximum of 5000 barrels of produced fluid (brine).

4. **Maximum Injection Pressure** - The maximum injection pressure for the test into the Speechley is based on an instantaneous shut-in pressure of 1435 psi (based on the first stage fracture information) and a specific gravity of the injection fluid of 1.08. The injection pressure for this test shall not exceed the maximum surface injection pressure of 1365 psi. If, during testing, it is observed that this pressure causes formation breakdown/fracturing to occur, the test shall be stopped and EPA contacted immediately to discuss alternative testing procedures.

5. **Injection Fluid** - Injection fluid shall consist of produced fluid (brine) obtained from Stonehaven Energy production operations with a specific gravity of approximately 1.08.

6. Monitoring - Injection volume and pressure shall be monitored and recorded on a continuous basis. We encourage you to continue to monitor formation pressure decline after injection has concluded. This data should further enhance your analysis of the transmissivity and storage capacity of the proposed injection formation and allow for an estimation of the protracted effects on the formation. A final report must be submitted to EPA within 30 days of the conclusion of the test.

The authorization for this test will expire on May 15, 2011. Please contact Dave Rectenwald, our UIC field inspector, at 814-827-1952 (office) or 814-449-9577 (cell) when you are ready to schedule the injectivity testing. If you should have any questions, please give me a call at 215-814-5464.

Sincerely,



S. Stephen Platt
Ground Water and Enforcement Branch (3WP22)
Office of Drinking Water and Source Water Protection

cc: Dave Rectenwald
S. Craig Lobins, PADEP Meadville

Latshaw #9 Injection Well Test Results

Meter #7964980

Date:	Meter Reading	PSI	Gallons Disposed	BBLs Disposed	Total BBLs Disposed
4/15/2011	120	39	120	3	3
4/16/2011	3860	39	3,740	89	92
4/17/2011	7650	39	3,790	90	182
4/18/2011	11460	39	3,810	91	273
4/19/2011	15010	39	3,550	85	357
4/20/2011	15270	0	260	6	364
4/21/2011	18600	4	3,330	79	443
4/22/2011	21720	3	3,120	74	517
4/23/2011	24940	3	3,220	77	594
4/24/2011	28040	0	3,100	74	668
4/25/2011	31150	0	3,110	74	742
4/26/2011	34120	0	2,970	71	812
4/27/2011	36900	0	2,780	66	879
4/28/2011	39850	0	2,950	70	949
4/29/2011	42540	0	2,690	64	1,013
4/30/2011	45770	32	3,230	77	1,090
5/1/2011	48870	32	3,100	74	1,164
5/2/2011	51960	32	3,090	74	1,237
5/3/2011	54870	27.5	2,910	69	1,306
5/4/2011	57780	35	2,910	69	1,376
5/5/2011	60600	36	2,820	67	1,443
5/6/2011	63370	35	2,770	66	1,509
5/7/2011	66030	35	2,660	63	1,572
5/8/2011	68790	35	2,760	66	1,638
5/9/2011	71410	35	2,620	62	1,700
5/10/2011	73490	4	2,080	50	1,750
5/11/2011	75640	3	2,150	51	1,801
5/12/2011	77820	2	2,180	52	1,853
5/13/2011	80020	0	2,200	52	1,905
5/14/2011	82110	0	2,090	50	1,955
Totals			82,110	1,955	

Average PSI for test

18.3



551 State Street
Curwensville, PA 16833

Phone: 814-236-3540
Fax: 814-236-1952

Email info@mahaffeylaboratory.com
www.mahaffeylaboratory.com


PA DEP Certified
Lab ID# 17-00213

Certificate of Analysis

Graham
Stonehaven Energy, LLC

Project Brine
Date Reported 6/4/2010
Date Received 5/25/2010
Date Complete 6/4/2010

Sample No.: 1005202-001	Sample ID: Brine Sample	Description:				
Sampler: client	Date Sample 5/24/2010	Matrix	Brine			
Test	Result	Units	Method	Qlf	Test Date	Analyst
Chloride	63629.0	mg/L	SM 4110B		5/29/2010	CH
Total Dissolved Solids - WW	97468	mg/L	USGS I-1750-85		6/4/2010	
Calcium	8217.0	mg/L	200.7		6/2/2010	DW
Magnesium	1560.0	mg/L	200.7		6/2/2010	DW
Sodium	26657.0	mg/L	200.7		6/2/2010	DW

Approved By 
Carlton R. McCracken, Jr. Chemist



551 State Street
Curwensville, PA 16833

Phone: 814-236-3540

Fax: 814-236-1952

Email info@mahaffeylaboratory.com

www.mahaffeylaboratory.com

PA DEP Certified
Lab ID# 17-00213

Certificate of Analysis

Graham
Stonehaven Energy, LLC

Project
Date Reported 10/27/2010
Date Received 9/23/2010
Date Complete 9/30/2010

Sample No.: 1009213-001	Sample ID:	Description:				
Sampler: client	Date Sample 9/23/2010	Matrix				
Test	Result	Units	Method	Qif	Test Date	Analyst
Specific Gravity	1.078	gm/ml	ASTM D 1429		9/24/2010	GEOT

Approved By

Carlton R. McCracken, Jr. Chemist

K. Injection Procedures

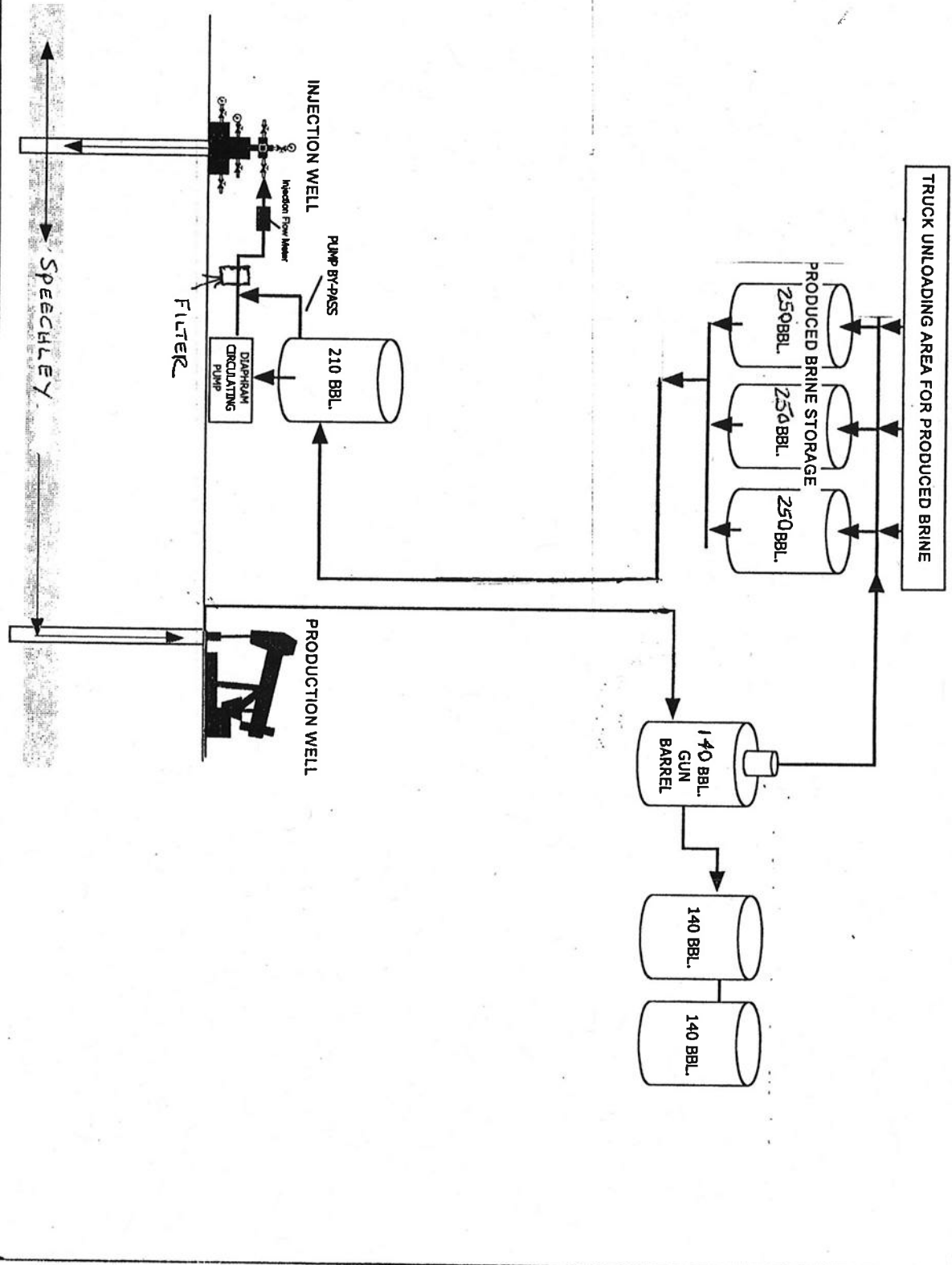
Currently three 250 barrel plastic tanks collect produced water on the Stover property and three other 250 barrel tanks collect it on the Latshaw property. The produced oil/water effluent from the wells is run through a gun barrel separator mounted on top of a 140 barrel stock tank. The tank acts as an additional separator before the produced water is flowed under gravity to the collecting tanks.

During the injection test that was performed the water was flowed under gravity through 1 ¼" plastic lines already in place to the Latshaw #9 site. Once there it was circulated through a particulate filter and then allowed to flow into the well. No pressure was required for the well to take the water during the test as shown in H2.

In the event that the well begins to require pressure for injection an additional 140 bbl collecting tank will be set at the Latshaw #9 site. It will be equipped with float controls that will actuate a piston injection pump that will discharge the water through the filter into the well.

Initially a chain link fence will be installed around the well only. It will be inspected and monitored daily by Stonehaven personnel. In the event that a tank and pump have to be constructed at the well site the fence will be expanded to include all of the facilities. The tank would be diked and lined with a 20 mill pit liner. Figure K1 is a schematic showing a flow diagram of the Latshaw tank battery. An identical system exists on the Stover property. A gravity system will bring the water from the three storage tanks to the Latshaw #9. Map B3 show the location of both systems and the water lines transporting the brine to the Latshaw #9. The schematic shows a storage tank and pump at the well site although it is not anticipated to be necessary initially.

Figure K1



L. Construction Procedures

Upon review of the Latshaw #9 well it was determined that two deficiencies existed that had to be corrected in order to use it as a produced water disposal well:

- 1.) The 7" casing was set only 36' below the Mountain sand which is the deepest USDW in the area. EPA law requires the surface casing to be set a minimum of 50' below the deepest USDW**
- 2.) A review of the cementing job log indicated that cement was not returned to surface when the 7" casing was cemented. Figure L1 is a copy of the Job log of the cement job.**

An open hole log is supplied that has Gamma Ray, Caliper, Compensated Density, Neutron, Temperature, and Induction logs displayed. Attachment M provides the details of the construction of the well that will correct the deficiencies and allow the well to be utilized for produced water disposal.

INVOICE NO. 235984
 STAGE NO. 1



CUSTOMER Ardent Resources
 LEASE NAME Latslow #9
 DATE 3-17-09

JOB LOG

NO. OF SACKS	COMPOSITION OF CEMENT	YIELD	GAL. WTR/SK	DENSITY	BBL. OF MIX WTR.	CU. FT. OF SLURRY	BBL. OF SLURRY
1. 100	Class A 390 cact = 1/2 unicele	1.18	5.2	15.6	12.3	118	21
2.							
3.							
TOTAL					12.3	118	21

CIRCULATE CEMENT TO SURFACE

Yes No Not Applicable

JOB TYPE

Surface Longstring Acid
 Other _____

	NEW USED	SIZE	FROM	TO	WEIGHT	MAXIMUM PSI ALLOWANCE
CASING		7	KB	400		500
TUBING						
OPEN HOLE		8 3/4	GL			
PERFORATIONS						
DISPLACEMENT CAPACITY		14.9	BBL.	DISPLACEMENT DEPTH	370	FT.

TIME	RATE (BPM)	VOLUME (BBL)	PRESSURE (PSI)		DESCRIPTION OF STAGE OR EVENT
			TUBING	CASING	
1445					Safety Meeting Pull on loc
1455					Spot trks Hook up
1522	3-5	10		0	Pump H2O
1524	3-5	25		0	Run Gel + Flake + Barium!
1529	3-5			0	Start cement
1534	3-5	21		50	Finish cement
1535	3-5			0	Start Displ
1543	3-5	14.9		200	Finish Displ
1545					Wash up Rack up
1615					Leave loc

REMARKS No circulation

Thank You Took Wet + DA Sample

SERVICE ENGINEER Ethan Polgar
 CUSTOMER REPRESENTATIVE

M. Construction Details

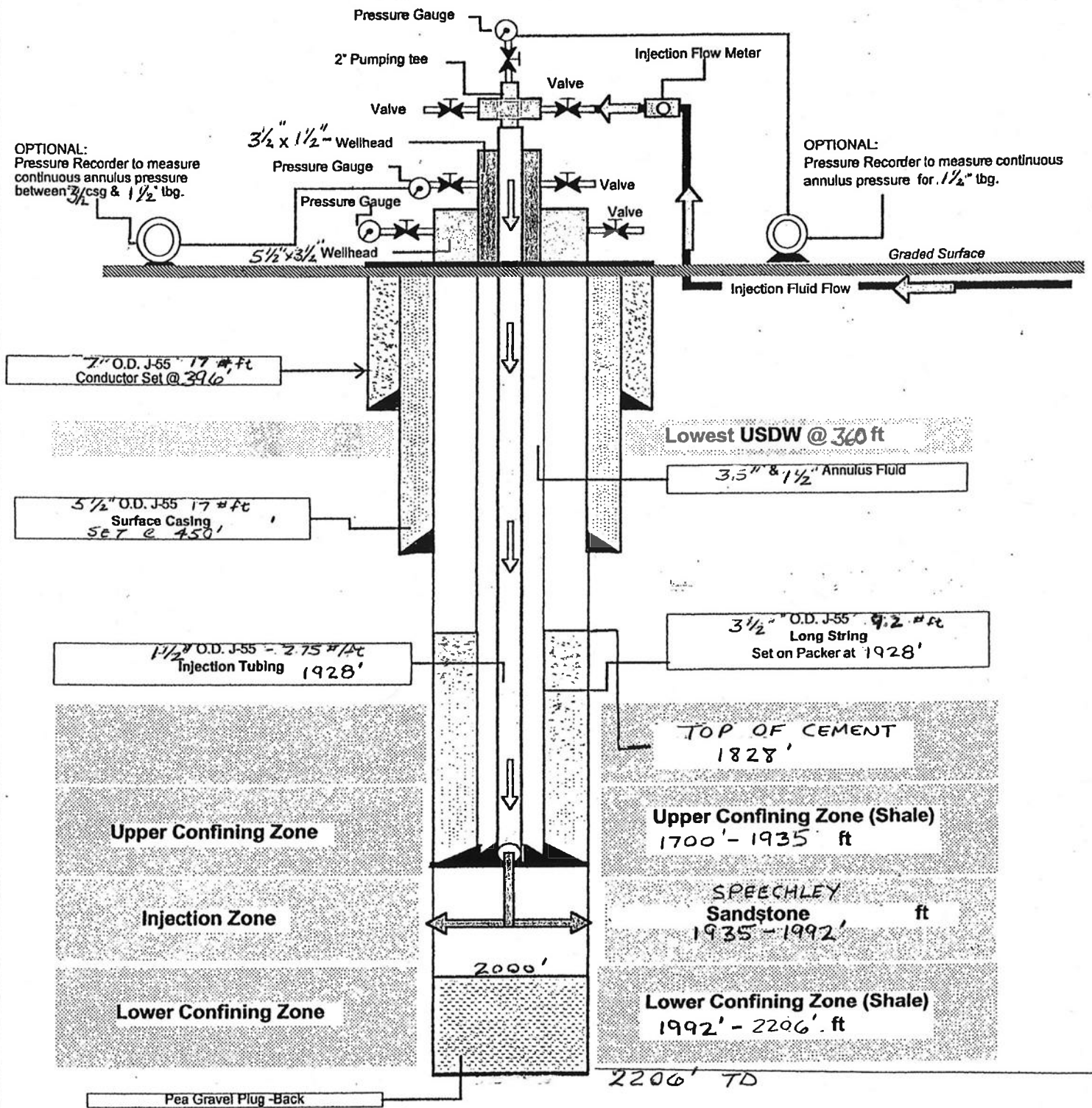
Most of the components for this project are already in place. The main tank batteries are located as shown on Map B-3. Gun barrel separators are used to separate the produced water from the oil and siphon it down to three 250 barrel storage tanks on both the Stover and Latshaw leases. An existing 1 ¼" plastic line will be utilized to deliver the produced water to the Latshaw #9. On the Stover property it takes a route from the storage tanks to Stover #16, past Stover #41, past Stover #5, past Stover #6, past Latshaw #5, past Latshaw #10 and finally to Latshaw #9. On the Latshaw property it flows directly from the Latshaw tank battery to the Latshaw #9

At the well site a diatomaceous earth filter will be used to filter out dissolved solids. From There it will be gravity fed into injection string. A pump may be eventually located at the well site to assist in the disposal. Surface pressure is never to exceed the 1365 psi maximum injection pressure.

The well itself will be re-constructed by installing 450' of 5 ½" casing and then cementing it back to surface. A bond log will be run to evaluate the 5 ½" cement job. A string of 3 ½" J-55 9.2 #/ft casing on an open hole cementing packer down to 1928'. The pipe will be cemented in place with 100 feet of class A cement mixed at a density of 15.6 #/gal with a yield of 1.18 ft³/sk. The top of the cement will be approximately 1828'. A 1 ½" J-55 2.75 #/ft injection string will be hung on a 3 ½" X 1 ½" hook wall packer after the hole is circulated with a fresh water gel monitoring fluid containing corrosion inhibitors. The packer will be set, the fresh water gel will be swabbed out of the tubing, and the well will be ready to be used for disposal. Pressure monitoring and recording devices will be installed and utilized on both the tubing and annulus of the well. A flow meter will monitor and record the daily flow of produced water into the well. If a pump is ever utilized for injection it will be equipped with Murphy pressure switches that will automatically shut it down if preset conditions of High or low pressure is experienced. Figure M1 shows a schematic of the proposed construction.

TYPE PROPOSED WELL CONSTRUCTION

Figure M1



O. Plans for Well Failure

Attachment M discussed that pressure monitoring and recording devices that would be utilized on both the tubing and annulus of the injection well. Also, that the daily volume would be measured and totaled with a flow meter. This equipment and the entire facility would be inspected daily by Stonehaven personnel.

In the event of a piping or equipment failure the following plan would be implemented:

- 1.) Immediately manually shut down the injection of the well.
- 2.) Determine the source of the failure. (piping, mechanical, etc.)
- 3.) Alert Stonehaven management of the failure.
- 4.) Alert EPA representative Dave Rectenwald or his replacement of the failure.
- 5.) Begin process of repairing the failure.

P. Monitoring Program

The Stonehaven personnel will maintain a daily log of the tubing and annulus pressures of the well. They will record them along with the daily injected volumes. This information will be kept at the shop facility and will be made available to the EPA inspector at any time.

In the Corrective Action portion of the application it was noted that each Well that Stonehaven operates is equipped with pump off control device. This equipment monitors the daily pump time for every well in the field. Stonehaven personnel will monitor and record the pump times for all the wells within the AOR to detect any changes resulting from fluid being injected into the Latshaw #9. These will also be made available to EPA personnel upon request

Q. Plugging and Abandonment Plan

A estimate was solicited from S & T Service and Supply, Inc., a local plugging contractor, with respect to the ultimate plugging of the well. The well would be plugged as per PADEP regulations in the following manner:

- 1.) The 1 ½" X 3 ½" hookwall packer would be released and recovered from the well.**
- 2.) The 1 ½" tubing would be tripped back in and a 100' cement plug would spotted 1828' - 2000'.**
- 2.) The 1 ½" tubing would be recovered from the well.**
- 3.) The 3 ½" casing would be shot off above the cement top @ 1828"**
- 4.) The Venango series would be cemented as per PADEP specs from 1040 to 690'**
- 5.) A 100 ft cement plug would straddle the 7" casing seat from 400-500'**
- 6.) The 7" casing would be filled with pea gravel to surface as per PADEP specs.**
- 7.) A 1' cement cap and monument would be placed on top of the well**

Figure Q1 shows S & T's written estimate and Figure Q2 is EPA form 7520-14 filled out showing the placement of the plugs. Figure Q3 is a schematic of the well after it is plugged.



United States Environmental Protection Agency
Washington, DC 20460

PLUGGING AND ABANDONMENT PLAN

Name and Address of Facility: **TIPPERY FIELD #9**

Name and Address of Owner/Operator: **STONEHAVEN ENERGY MANAGEMENT, LLC
1251 WATERFRONT PLACE SUITE 540
PITTSBURGH, PA 15222**

Locate Well and Outline Unit on Section Plat - 640 Acres

State: **PENNSYLVANIA** County: **VENANGO** Permit Number: **37-121-14484**

Surface Location Description: **1/4 of 1/4 of 1/4 of 1/4 of Section Township Range**

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

Surface Location: **ft. from (N/S) Line of quarter section and ft. from (E/W) Line of quarter section.**

TYPE OF AUTHORIZATION:
 Individual Permit
 Area Permit
 Rule
 Number of Wells: **1**

WELL ACTIVITY:
 CLASS I
 CLASS II
 Brine Disposal
 Enhanced Recovery
 Hydrocarbon Storage
 CLASS III

Lease Name: **M. LATSHAW** Well Number: **#9**

CASING AND TUBING RECORD AFTER PLUGGING					METHOD OF EMPLACEMENT OF CEMENT PLUGS	
SIZE	WT (LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE		
9 7/8"	26	22'	22'	12 1/4"	<input checked="" type="checkbox"/> The Balance Method	
7"	17	396'	396'	8 7/8"	<input type="checkbox"/> The Dump Bailer Method	
5 1/2"	17	450'	450'	6 1/4"	<input type="checkbox"/> The Two-Plug Method	
3 1/2"	9.2	1928	100'		<input type="checkbox"/> 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 (inches)	4 1/2"	6 1/4"	6 5/8"				
Depth to Bottom of Tubing or Drill Pipe (ft)	1928'	1040	500				
Sacks of Cement To Be Used (each plug)	8	63	18				
Slurry Volume To Be Pumped (cu. ft.)	9.44	74.34	21.24				
Calculated Top of Plug (ft.)	1828'	690	400				
Measured Top of Plug (if tagged ft.)	1828	690	400				
Slurry Wt. (Lb./Gal.)	15.6	15.6	15.6				
Type Cement or Other Material (Class III)	Class A	CLASS A	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
\$9483.00

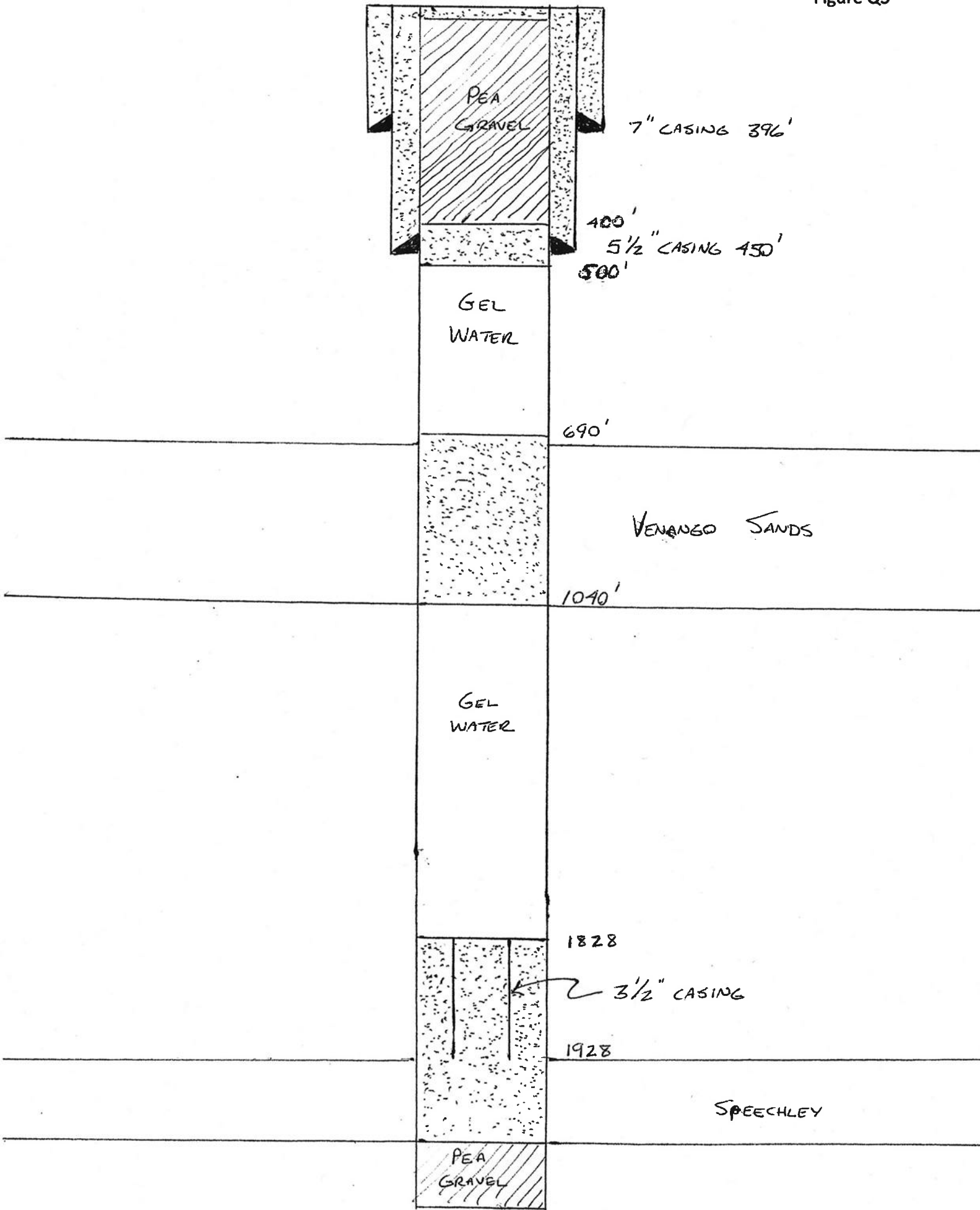
Certification

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): **David Down Vice President**

Signature: *[Signature]*

Date Signed: **10/22/11**



ESTIMATE

CUSTOMER PHONE _____

NAME Stonehaven, LLC

DATE 5/12/11

ADDRESS _____

CONDITIONS _____

WORK PERFORMED:

QUANTITY	DESCRIPTION	PRICE	AMOUNT
	Plug Latshaw #9		
16 hrs	Mobilization and Demobilization	90 -	1440 00
	Shoot off 3" (if needed)		
9 hrs	Rig Time	135 -	1215 00
	Top Hole		
130 sacks	Cement & Plugging		400 00
4 bags	GEL	42 -	5628 00
			<u>9,483 00</u>

Thank you! *John De G...*

SIGNATURE _____

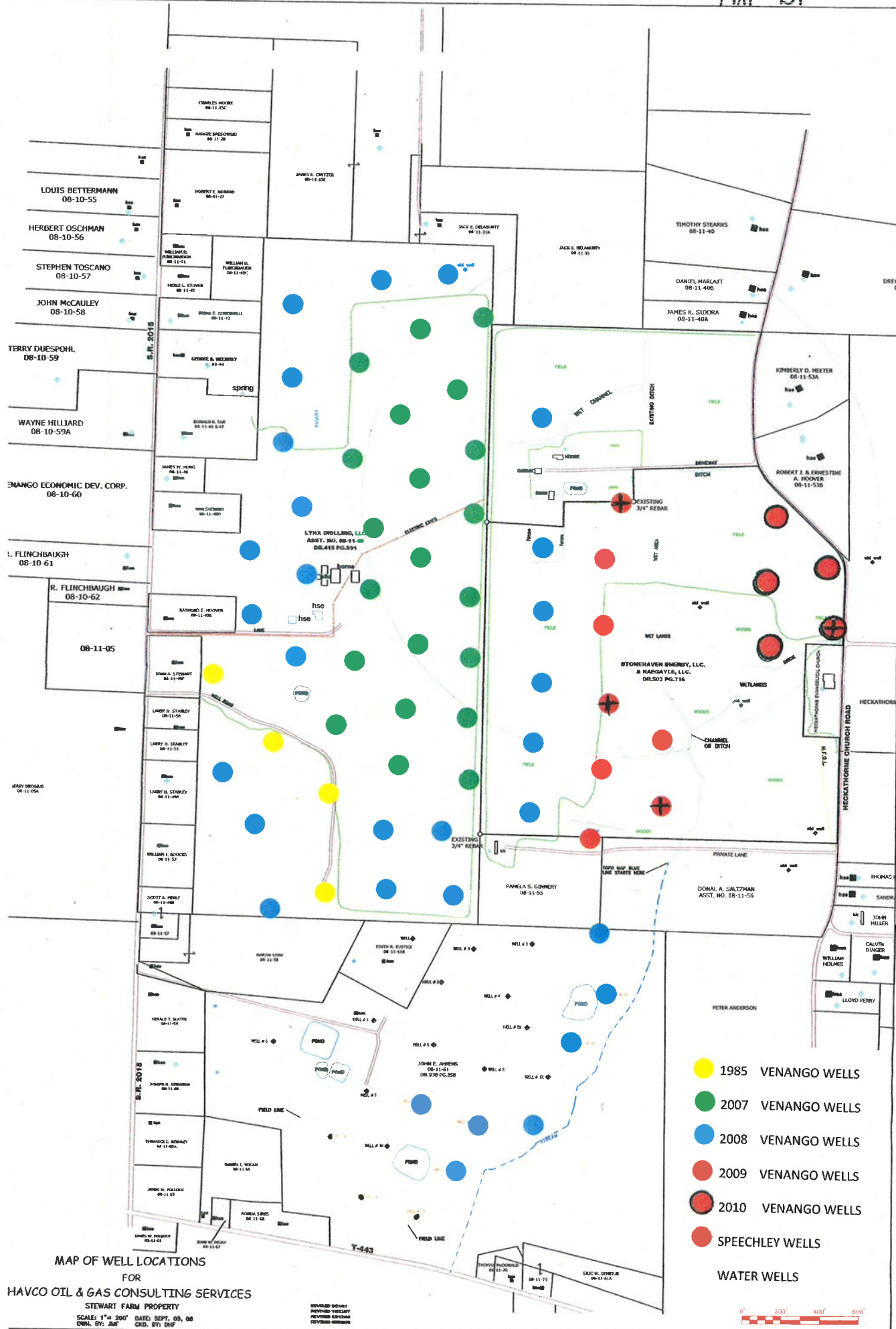
SUBTOTAL	
TAX	
TOTAL	

KEEP THIS SLIP FOR REFERENCE.

Thank You.

R.) Necessary Resources

Figure R1 displays the necessary resources to plug and abandon the well



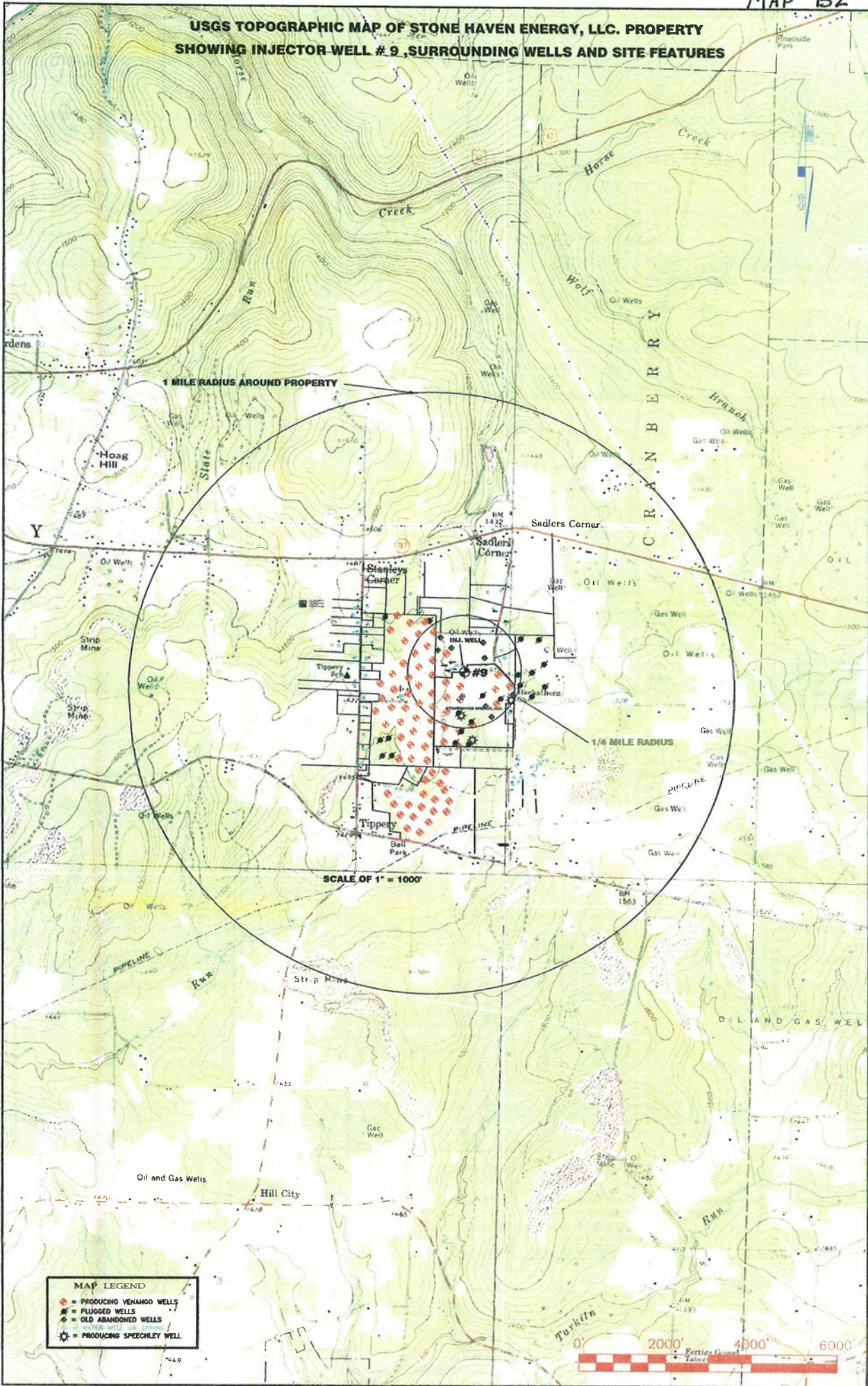
- 1985 VENANGO WELLS
- 2007 VENANGO WELLS
- 2008 VENANGO WELLS
- 2009 VENANGO WELLS
- 2010 VENANGO WELLS
- SPEECHLEY WELLS
- WATER WELLS



MAP OF WELL LOCATIONS
 FOR
 HAVCO OIL & GAS CONSULTING SERVICES
 STEWART FARM PROPERTY
 SCALE: 1" = 200' DATE: SEPT. 05, 08
 DWN. BY: JAF CKD. BY: DNF

REVISIONS:
 REVISION 01: 08/11/08
 REVISION 02: 08/11/08
 REVISION 03: 08/11/08
 REVISION 04: 08/11/08

USGS TOPOGRAPHIC MAP OF STONE HAVEN ENERGY, LLC. PROPERTY
SHOWING INJECTOR WELL # 9, SURROUNDING WELLS AND SITE FEATURES



1 MILE RADIUS AROUND PROPERTY

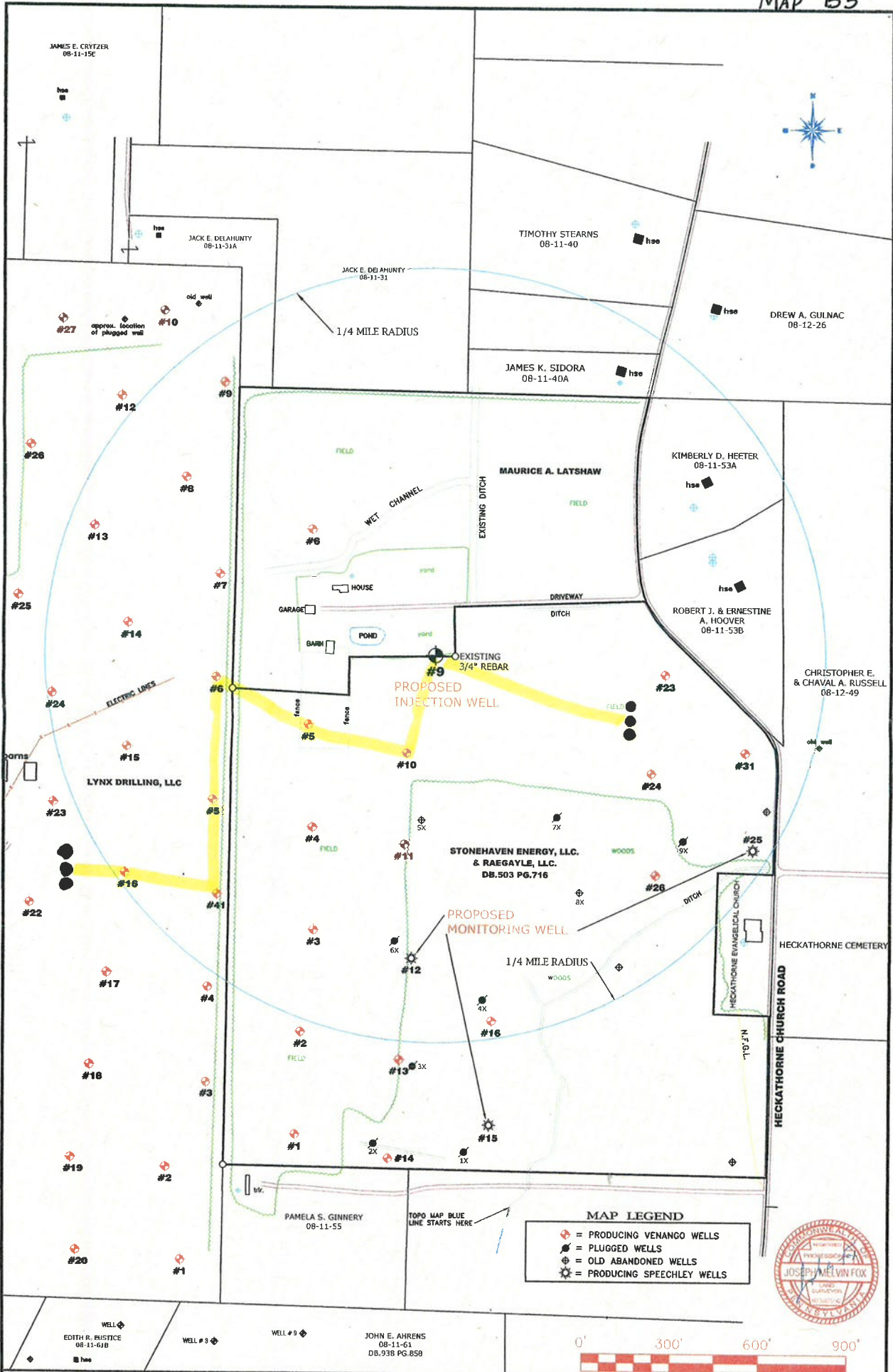
1/4 MILE RADIUS

SCALE OF 1" = 1000'

MAP LEGEND

- ◆ PRODUCING VENANGO WELLS
- PLUGGED WELLS
- ◊ OLD ABANDONED WELLS
- WATER WELL OR SPRING
- ⊛ PRODUCING SPEECHLEY WELL



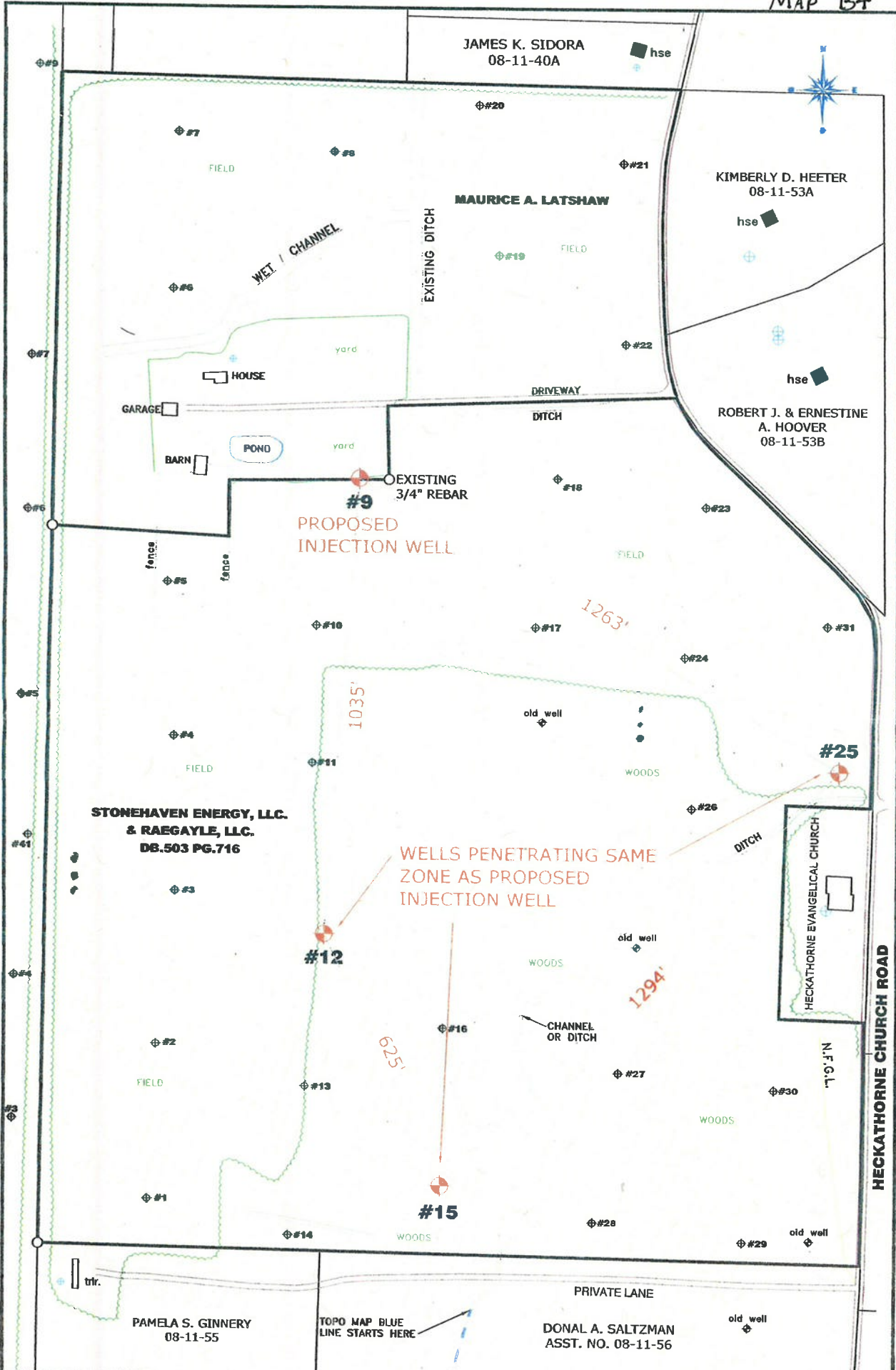


FOX SURVEYING
 9161 U.S. 322
 CRANBERRY, PA 16319

MAP OF LATSHAW LEASE SHOWING PROPOSED INJECTION WELL # 9 AND WELLS # 12, #15 AND #25 PENETRATING SAME ZONE AS INJECTION WELL CRANBERRY TOWNSHIP, VENANGO COUNTY, PA

DWN. BY: JMF
 DATE: JUNE 06, 2011
 LN: SU075142
 SCALE: 1" = 300'





FOX SURVEYING @ YAHOO.COM
 FOX LAND SURVEYING
 9161 U.S. 322
 CRANBERRY, PA 16319
 814 657-4361-voice
 814 677 2297-fax

MAP OF LATSHAW LEASE SHOWING PROPOSED INJECTION WELL # 9 AND WELLS # 12, #15 AND #25 PENETRATING SAME ZONE AS INJECTION WELL
 CRANBERRY TOWNSHIP, VENANGO COUNTY, PA

DWN. BY: JMF
 LN: SU075142
 DATE: 9-24-10
 SCALE: 1" = 200'