

## **EXHIBIT 4**



**Havco Oil and Gas Inc.**  
1842 Eastbrook Road  
New Castle, Pa 16101

(724) 654-0001

**October 10, 2011**

**Mr. S. Stephen Platt  
United States Environmental Protection Agency  
Region III  
1650 Arch Street  
Philadelphia, Pennsylvania 19103-2029**

**Dear Mr. Platt:**

**I apologize for taking so long to respond to your correspondence of August 11, 2011 concerning Stnehaven Energy Management, LLC's application for a Produced Water Disposal permit. Permit ID PAS2D01BVEN. For a period of time it was believed that a completely different candidate was going to have to be selected for this project. This was due to issues involving the surface casing in the proposed Latshaw #9 well. A plan has been reviewed with you that will allow the Latshaw #9 to once again be proposed as a candidate for produced water disposal. It will be discussed in this response to your requests in the order that you requested them:**

**Attachment C: Corrective Action**

**The list below includes the names and addresses of land owners within one quarter mile of the proposed Latshaw #9 disposal well. A map is also included which displays where they are located with respect to the AOR:**

- |   |  |
|---|--|
| <b>1.) Ben and Catherine Stover<br/>1521 Pittsburgh Road<br/>Franklin, PA, 16323</b>    | <b>2.) Daniel W. Marlatt<br/>925 Innis Street<br/>Oil City, PA 16301</b>                     |
| <b>3.) James K Sidora<br/>RD#1<br/>527 Heckathorne Church Road<br/>Seneca, PA 16346</b> | <b>4.) Kimberly D. Heeter<br/>RD #1<br/>482 Heckathorne Church Road<br/>Seneca, PA 16346</b> |

5.) Maurice Latshaw  
471 Heckathorne Church Road  
Seneca, PA 16346

6.) Robert J. and Ernestine Hoover  
470 Heckathorne Church Road  
Seneca, PA 16346

7.) Jack E. Delahunty  
201 Hahn Lane  
Seneca, PA 16346

8.) Hecathorne United Methodist Church  
369 Heckathorne Church Road  
Seneca, PA 16346

Regarding your request for clarification on the Latshaw #12, it was drilled through the Speechley formation. The open hole log indicated that there was not much pay in the Speechley and what was there was very low in porosity. See Figure G2. The well was only completed in the Venango formations. Pea gravel is dumped into the wellbore during the completion operation and brought up to a depth just below the most shallow zone to be completed. It is circulated out as the zones are completed from the top down. After the deepest zone to be completed is finished an approximate 100' pocket is flushed out. The Latshaw #12 will have pea gravel in the well bore from about 1200' to its total depth 2108'. The pea gravel will not inhibit vertical migration of water and therefore it can still be utilized as a monitor well.

There is no additional information available on the four orphaned wells that have been located within the AOR. To date 13 old wells have been plugged on the Stover and Latshaw farms during the development of this project. None of them were found to be drilled below the Venango sands. Four were located within the AOR. The only way to know if the other four that have been located but not plugged penetrate the Venango sands only is to re-enter them. They currently are having no effect on the existing producing wells. It is respectfully suggested that their plugging be made a pre-requisite to injection into the disposal well but not for allowing the review to proceed. If the permit is denied Stonehaven would have incurred unnecessary expense with no value obtained.

The cementing records for all the wells developed on the Latshaw lease within the AOR are submitted for your review.

#### **Attachment E: Name and Depth of USDW's**

Upon review of the Latshaw #9 well construction it was determined that the surface casing was only set 36' below the Mountain sand. The bottom of the Mountain sand in the Latshaw #9 was 360' while the bottom of the 7" surface casing was at 396'. The cementing report also indicated that cement was not circulated to the surface during the job.

It is proposed to use the 7" casing as a conductor pipe and then cement a string of 5 ½" as the surface casing and cement it to the proper depth of at least 50' below the Mountain sand. That will change the well construction in that 3 ½" casing will replace the 4 ½" casing proposed in the original application as the cemented long string. 1 ½" tubing will replace the previously proposed 2 3/8" injection tubing. The enclosed Figure M1 shows the changes and it replaces the Figure M1 found in the original submission.

#### **Attachment G: Geological Data**

Figures G5A,B,C,and D are submitted and will be made part of the application. They display the pressure and rate information that was recorded during the fracture stimulation of the Speechley in The Latshaw #9. Two zones were treated in the well, 1978 and 1984. The pressure /rate curves indicate the zone at 1978 broke down @ 3250 psi while the one at 1984 broke down @ 3500 psi. The ISIP was 1435 for the zone at 1978 and 1477 for the zone at 1984.

#### **Attachment H: Operating Data**

Table H2 was supplied that displayed the daily injection of produced brine into the Speechley sand during the test that ran from April 15, 2011 to May 14, 2011. The maximum injection pressure that was permitted during the course of the test was 1365 psig surface pressure. The table shows that 1955 bbls of produced water was disposed into the Speechley under the hydrostatic pressure of the fluid.

Stonehaven is currently averaging approximately 100 bbs of produced water/day. Their intention is to use the well to only dispose of their daily produced water. The pressure limit of 1365 psi that was utilized for the test period should be more than adequate to allow them to dispose of their daily produced water.

#### **Attachment K: Injection Procedures**

Attachment K is supplied and made a part of the application.

#### **Attachment L: Construction Procedures**

Attachment L is supplied and has been made a part of the application

As previously discussed the original well construction has to be modified due to the fact that the surface casing was not cemented 50' below the Mountain sand. The cement job log for the Latsaw #9 well is submitted with the other Latshaw cement job logs.

A new figure M1 is supplied and will be made a part of the application. The construction details discussed in Attachment M will be modified to reflect the changes. An open hole log for the Latshaw #9 is submitted as per you request. A bond log will be run and submitted on the 3 ½" casing string after it is cemented in place.

**Attachment O: Plans for Well Failure**

The actual emergency plan is submitted for your review and made a part of the application.

**Attachment P: Monitoring Program**

Attachment P is supplied and made a part of the application

**Attachment Q: Plugging and Abandonement**

A schematic diagram is of the plugging of the Latshaw #9 is submitted and made part of the application.

**Attachment R: Necessary Resources**

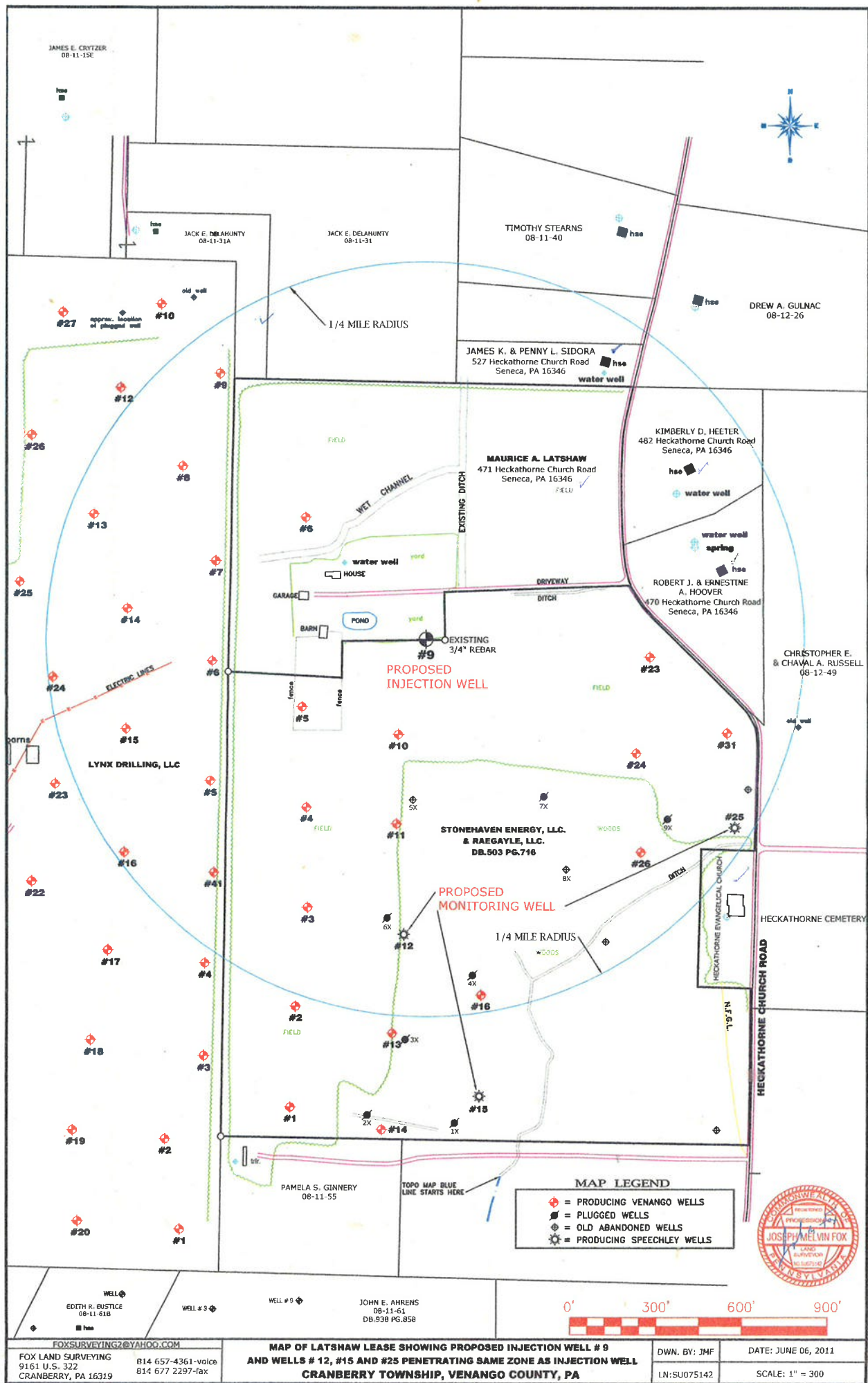
The financial mechanism form is submitted and made a part of the application.

Thank you for your time and consideration with respect to the information supplied in this response to your requests. Two new applications are submitted to you and one has been submitted to Dave Rectanwald.

Sincerely,



Thomas F. Havranek



JOB LOG

719 Latshaw

UNIVERSAL  
WELL SERVICES, INC.  
A PATTERSON-OIL ENERGY COMPANY

INVOICE NO.

216855

Figure G5A

## PRESSURES IN P.S.I.

## VOLUMES IN GAL.

BREAKDOWN \_\_\_\_\_ MAXIMUM \_\_\_\_\_

LOAD &amp; BKDN \_\_\_\_\_ PAD \_\_\_\_\_

AVERAGE \_\_\_\_\_ DISPLACEMENT \_\_\_\_\_

TREATMENT \_\_\_\_\_ DISPL \_\_\_\_\_

SHUT-IN: INSTANT \_\_\_\_\_ 5-MIN. 1380 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		2260	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 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 sks 20 1/2
					100 sks 26 1/2



## JOB LOG

**UNIVERSAL**  
WELL SERVICES, INC.  
A PATTERSON-UTI ENERGY COMPANY

INVOICE NO. 216855

Hartshaw #9

## PRESSURES IN P.S.I.

BREAKDOWN 3500 MAXIMUM \_\_\_\_\_  
AVERAGE 2359 DISPLACEMENT \_\_\_\_\_  
SHUT-IN: INSTANT 1477 5-MIN. 1370 10-MIN. \_\_\_\_\_

## VOLUMES IN GAL.

LOAD & BKDN 100 PAD 1000  
TREATMENT 8950 DISPL \_\_\_\_\_  
TOTAL VOLUME 10970

## HYDRAULIC HORSEPOWER

USED 981 TREATING 17.1 DISPL. 17.4 OVERALL \_\_\_\_\_

DESCRIPTION OF JOB 3 Stage oil Job Frac thru 3" casing

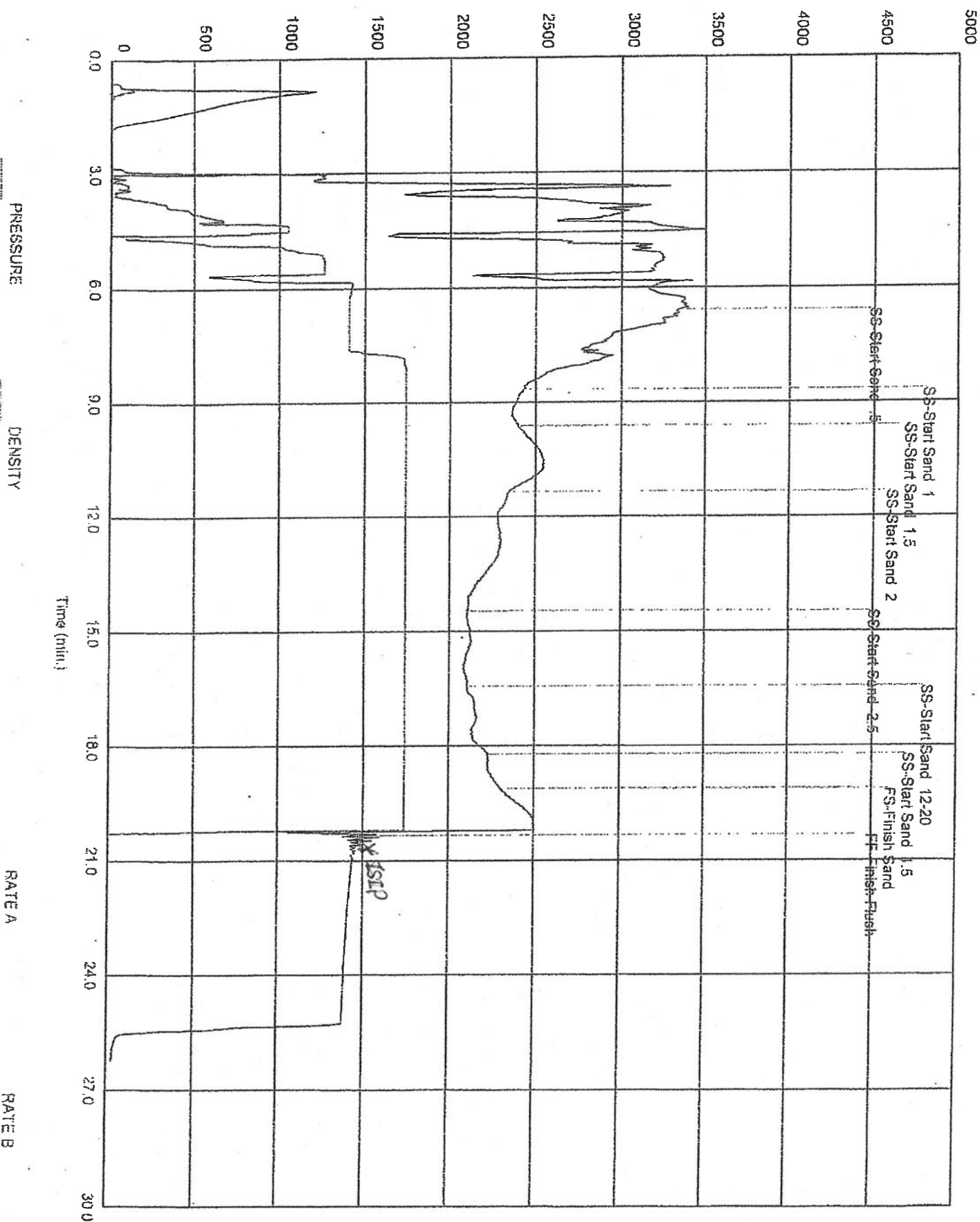
TIME	RATE (BPM)	VOLUME (GAL)	PRESSURE (PSI)		DESCRIPTION OF STAGE OR EVENT
			TUBING	CASING	
					notch 1984
				3500	Break formation
1334	14.0	1000		3400	Start Sand 1/2
1335	17.4	2023		2720	Start Sand 1
1336		3068		2360	Start Sand 1 1/2
1338		4250		2450	Start Sand 2
1341		6500		2100	Start Sand 2 1/2
1343		8100		2100	Start Sand 12-20 1 #
1345		9150		2130	Start Sand 1 1/2 15ip 147.5
1346		9950		2260	Finish Sealed psi 2359
1347		10970			Finish Flush Ret 17.1
					HHP 981
					Total sls 20 12/20 100 20/40





Figure G5D

Ardent Latchaw # 9 stage 2



## **K. Injection Procedures**

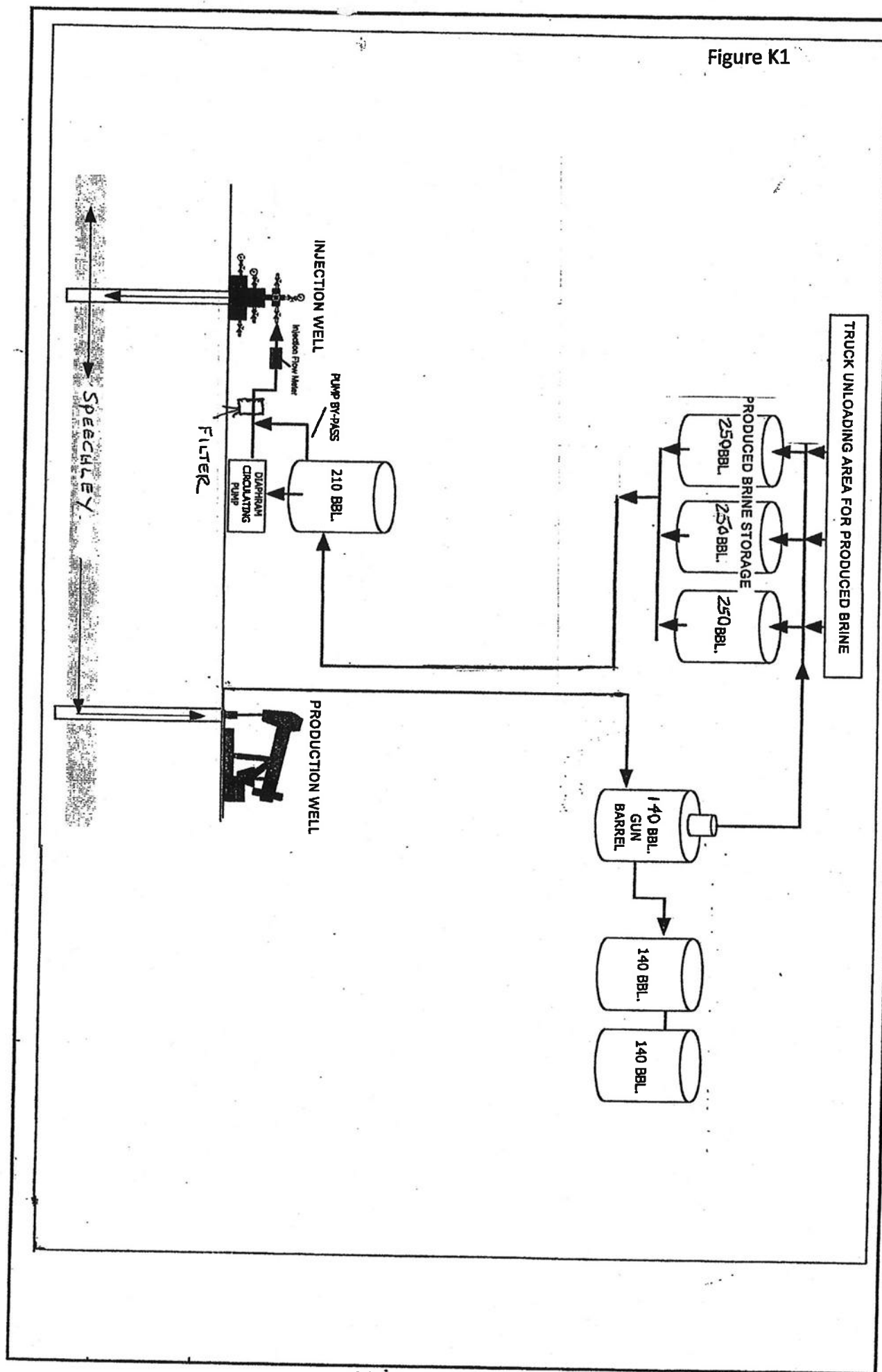
Currently three 250 barrel plastic tanks collect produced water on the Stover property and three other 250 barrel tanks collect it on the Latshaw property. The produced oil/water effluent from the wells is run through a gun barrel separator mounted on top of a 140 barrel stock tank. The tank acts as 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 1/4" 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**

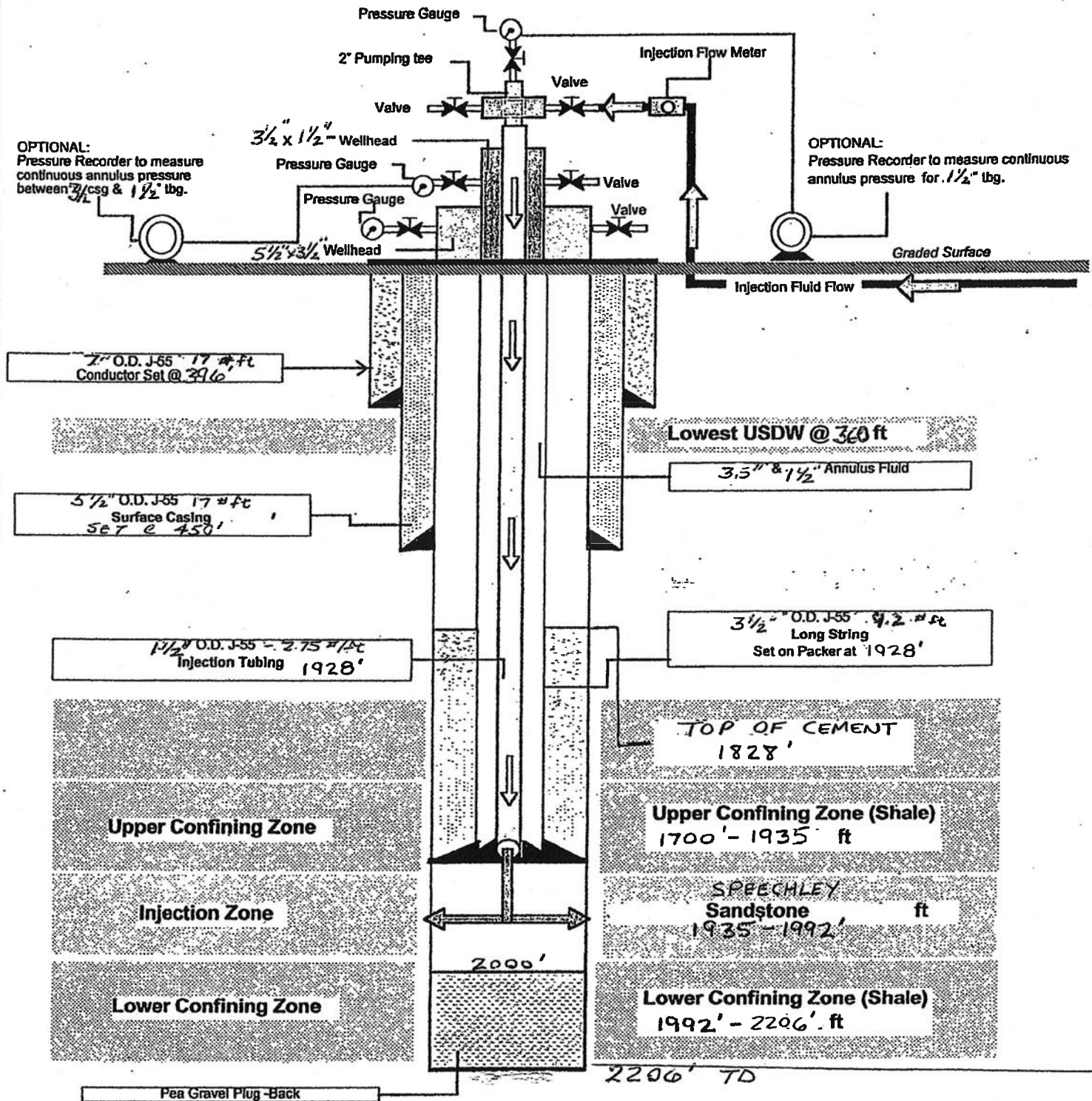
**Upon review of the Latshaw #9 well it was determined that two deficiencies existed that had to be corrected in order to use it as a produced water disposal well:**

- 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.**

# 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.

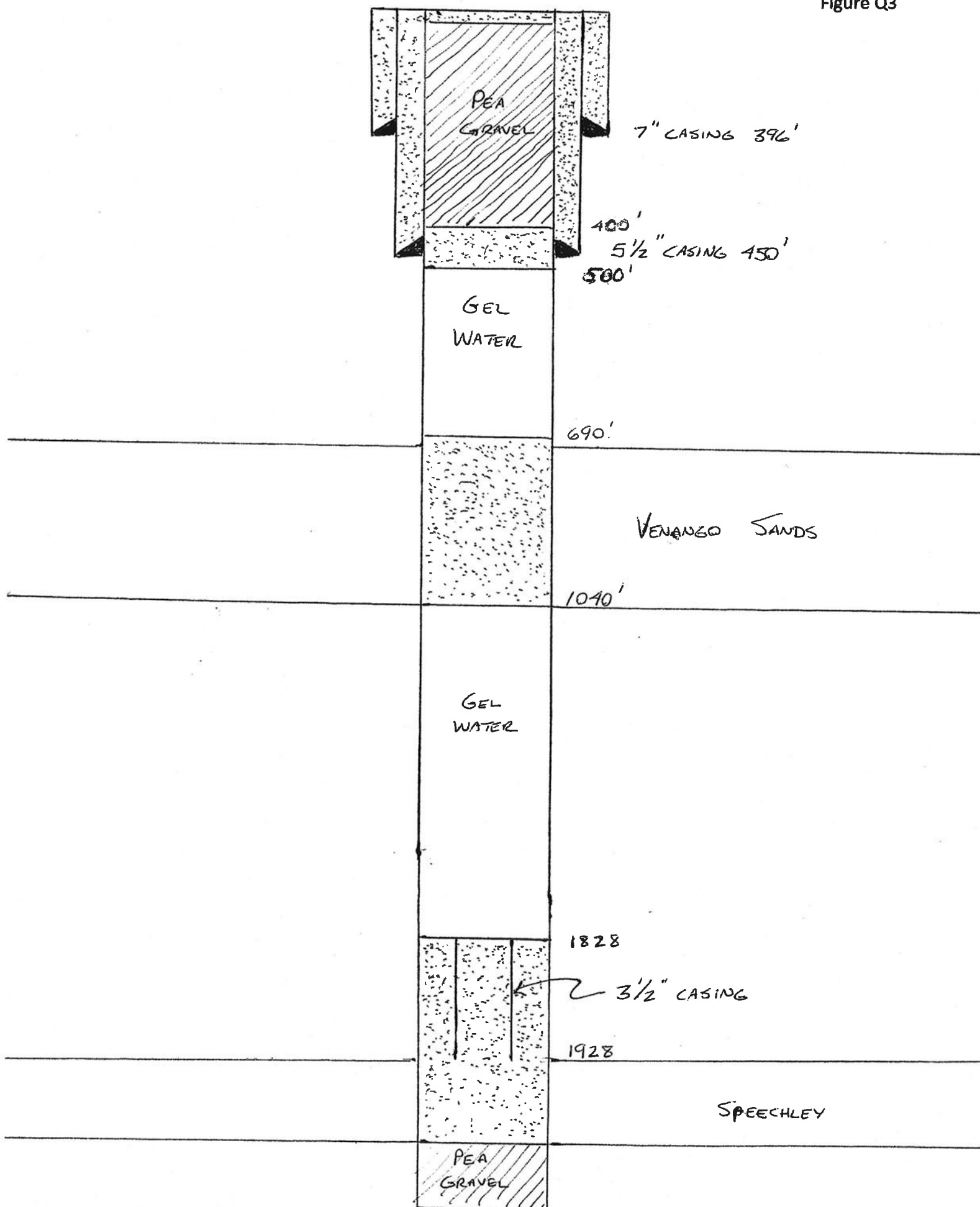
#### **P. Monitoring Program**

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. The Schematic shown in Figure M1 displays the pressure monitoring and recording devices that will be installed on the well.

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.



Figure Q3



## **Land Owners in Area of Review**

- 1 Timothy J Stearn**  
Box 559  
Heckthorn Church Rd  
Oil City, PA 16301  
814-677-0375
- 2 Drew A Gulnac**  
Box 548  
Heckthorn Church Rd  
Oil City, PA 16301
- 3 Christopher and Chaval Russell**  
183 Tool House Rd  
Seneca, PA 16346  
814-677-5578

INVOICE NO. 235378

STAGE NO. \_\_\_\_\_

CUSTOMER ArdenLEASE NAME Latchaw #3

## JOB LOG

DATE 8-5-08

NO. OF SACKS	COMPOSITION OF CEMENT	YIELD	GAL. WTR/SK	DENSITY	BBL. OF MIX WTR.	CU. FT. OF SLURRY	BBL. OF SLURRY
1. 120	Class A 3% ccl <sub>2</sub> 1/2 unicele	1.18	5.2	15.6	14.8	141.6	25.2
2.							
3.							
TOTAL					14.8	141.6	25.2

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	423		500
TUBING						
OPEN HOLE		8 3/4	GL			
PERFORATIONS						
DISPLACEMENT CAPACITY	16.3	BBL.	DISPLACEMENT DEPTH	393	FT.	

TIME	RATE (BPM)	VOLUME (BBL)	PRESSURE (PSI)		DESCRIPTION OF STAGE OR EVENT
			TUBING	CASING	
0845					Safety Meeting Pull on loc
0855					Spot trks Hook up
0915	3-5	10			Pump H <sub>2</sub> O
0917	3-5	25			Run Gel + Blackoil
0922	3-5				Start cement
0928	3-5	25.2			Finish cement
0929	3-5				Start Displ
0933	3-5	16.3			Finish Displ
0940					Wash up Rock up
1000					leave loc

REMARKS 10 Bbl cement Return
Thank Latchaw & No. Service
Thank You

SERVICE ENGINEER	<u>Eric Wolgan</u>
CUSTOMER REPRESENTATIVE	<u>Thom K. [Signature]</u>



INVOICE NO. 23536.1**UNIVERSAL**  
WELL SERVICES, INC.

A PATTERSON-UTI ENERGY COMPANY

CUSTOMER Ardent

STAGE NO. \_\_\_\_\_

LEASE NAME La784w #4**JOB LOG**DATE 7-31-08

	NO. OF SACKS	COMPOSITION OF CEMENT	YIELD	GAL. WTR/SK	DENSITY	BBL. OF MIX WTR.	CU. FT. OF SLURRY	BBL. OF SLURRY
1.	40	Unifill 1:17c 3% cacl <sub>2</sub> 1/2" unicele	1.52	7.5	13.6	7.1	10.8	10.8
2.	75	Class A 3% cacl <sub>2</sub> 1/2" unicele	1.18	5.2	15.6	9.2	88.5	15.7
3.								
						TOTAL	12.3	146.3
							26.5	

CIRCULATE CEMENT TO SURFACE

☒ Yes ☐ No ☐ Not Applicable

JOB TYPE

☒ Surface ☐ Longstring ☐ Acid☐ Other \_\_\_\_\_

	NEW USED	SIZE	FROM	TO	WEIGHT	MAXIMUM PSI ALLOWANCE
CASING	New	7"		428	17	500
TUBING						
OPEN HOLE		8 3/4"				
PERFORATIONS						
DISPLACEMENT CAPACITY	16.6		BBL.	DISPLACEMENT DEPTH	400	FT.

TIME	RATE (BPM)	VOLUME (BBL)	PRESSURE (PSI)		DESCRIPTION OF STAGE OR EVENT
			TUBING	CASING	
0600					Safety Meeting / Spot Trucks
0615					Hook-up
0639	3-5	20		0-50	Pump H <sub>2</sub> O
0643	3-5	25		0-50	Run Gel & Bar Seal
0647	3-5			0-50	Start Cem
0655	3-5	26.5		100	Finish Cem
0656	3-5			150	Start Displ
0704	2-3	16.6		200	Finish Displ
0705				200	Release PSI
0720					Wash-up / Rack-up
0735					Leave loc.

REMARKS 13 BBL ReturnThank  
You

Took wet &amp; dry samples

SERVICE ENGINEER	<u>Greg Parsons</u>
CUSTOMER REPRESENTATIVE	<u>Thom F. H.</u>



STAGE NO. 1

CUSTOMER Arden

LEASE NAME LaTshaw #5

## JOB LOG

DATE 8/1/08

NO. OF SACKS	COMPOSITION OF CEMENT	YIELD	GAL. WTR/SK	DENSITY	BBL. OF MIX WTR.	CU. FT. OF SLURRY	BBL. OF SLURRY
1. 40	unifill lite 3 1/2 coc 1 1/2" unicel	1.52	7.5	13.68	7.14	60.8	10.8
2. 75	CLASS A 3 1/2 coc 1 1/2" unicel	1.18	5.2	15.6	9.28	88.5	15.7
3.							
TOTAL					16.42	149.3	26.5

**CIRCULATE CEMENT TO SURFACE**

☒ Yes      ☐ No      ☐ Not Applicable

## JOB TYPE

☒ Surface    ☐ Longstring    ☐ Acid☐ Other \_\_\_\_\_

	NEW USED	SIZE	FROM	TO	WEIGHT	MAXIMUM PSI ALLOWANCE
CASING	N	7	KB	422		500
TUBING						
OPEN HOLE			GL	425		
PERFORATIONS						
DISPLACEMENT CAPACITY	16.6			BBL.	DISPLACEMENT DEPTH	400 FT

[illegible]

REMARKS

10 Bbbs cem

SERVICE  
ENGINEER

CUSTOMER  
REPRESENTATIVE



STAGE NO. \_\_\_\_\_



LEASE NAME Litshaw #6

DATE 8-12-08

## 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.	40	LITE 6" 6EC 3" CMC 12' 70W 1.1E	1.52	7.5	13.4	7.1	60.8	10.8
2.	75	CLASS A 3" CMC 12' 70W 1.1E	1.18	5.2	15.4	9.2	88.5	15.7
3.								
					TOTAL	16.3	149.3	26.5

**CIRCULATE CEMENT TO SURFACE**

☐ Yes    ☒ No    ☐ Not Applicable

## JOB TYPE

☒ Surface    ☐ Longstring    ☐ Acid

☐ Other

	NEW USED	SIZE	FROM	TO	WEIGHT	MAXIMUM PSI ALLOWANCE
CASING	N	7		419	17	500
TUBING						
OPEN HOLE		8 5/8				
PERFORATIONS						
DISPLACEMENT CAPACITY		16.1	BBL	DISPLACEMENT DEPTH	389	FT

TIME	RATE (BPM)	VOLUME (BBL)	PRESSURE (PSI)		DESCRIPTION OF STAGE OR EVENT
			TUBING	CASING	
1000					Safety meeting All on well set track
1015					Hook up
1046	3.4	5		0-50	Pump H <sub>2</sub> O
1050	3.4	25		0-50	Pump GEL - Barson 1
1055	3.4			0-50	Start Cement
1100	3.4	26.5		0-50	Finish Cement
					<del>Disc Plug</del>
1101	3.4			100	Start Disc
1104	2.3	16.1		200	Finish Disc
1105				200	Release Plug
1125					Wash up Race
1140					Leave well

REMARKS

SERVICE  
ENGINEER

CUSTOMER  
REPRESENTATIVE

STAGE NO. 1



CUSTOMER Ardent Resources

LEASE NAME Latshaw #9

DATE 3-17-09

## JOB LOG

	NO. OF SACKS	COMPOSITION OF CEMENT	YIELD	GAL. WTR/SK	DENSITY	BSL OF MIX WTR.	CU. FT. OF SLURRY	BSL OF SLURRY
1.	100	Class A 39% 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.

[illegible]REMARKS *No circulation*

Thank You Took Wet + Dry Sample

**SERVICE  
ENGINEER**

**CUSTOMER  
REPRESENTATIVE**



STAGE NO. 1

LEASE NAME LaBrow 10

DATE 3/24/07

## 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.	105	Class A 3 1/2 Cwt 1/2" max. size	1.18	5.2	15.6	13.0	123.9	22.0
2.								
3.								
TOTAL						13.0	123.9	22.0

☒ Yes      ☐ No      ☐ Not Applicable

### JOB TYPE

☒ Surface      ☐ Longstring      ☐ Acid

☐ Other \_\_\_\_\_

	NEW USED	SIZE	FROM	TO	WEIGHT	MAXIMUM PSI ALLOWANCE
CASING	W	7"	KB	400		500
TUBING						
OPEN HOLE		8 1/4"	GL			
PERFORATIONS						
DISPLACEMENT CAPACITY	15.3			BBL.	DISPLACEMENT DEPTH	370
						FT.

[illegible]

REMARKS

7 Bb/s com return

Thank  
you

**SERVICE  
ENGINEER**

**CUSTOMER**

Anthony W. Beddoe



INVOICE NO. 236002

STAGE NO. \_\_\_\_\_



## JOB LOG

CUSTOMER ARDENTLEASE NAME LAT SHAW 11DATE 3-26-09

NO. OF SACKS	COMPOSITION OF CEMENT	YIELD	GAL. WTR/SK	DENSITY	BBL. OF MIX WTR.	CU. FT. OF SLURRY	BBL. OF SLURRY
105	CLASS A 32 BAG 42 FLAUE	1.11	5.2	15.6	13	1039	22.0
2.							
3.							
TOTAL					13	1039	22.0

CIRCULATE CEMENT TO SURFACE.

☒ Yes
 ☐ No
 ☐ Not Applicable

JOB TYPE

☒ Surface
 ☐ Longstring
 ☐ Acid

☐ Other \_\_\_\_\_

	NEW USED	SIZE	FROM	TO	WEIGHT	MAXIMUM PSI ALLOWANCE
CASING	1	7 1/2	0	700		
TUBING						
OPEN HOLE		8 1/2	0			
PERFORATIONS						
DISPLACEMENT CAPACITY	15					
			BBL.	DISPLACEMENT DEPTH	380	FT.

TIME	RATE (BPM)	VOLUME (BBL)	PRESSURE (PSI)		DESCRIPTION OF STAGE OR EVENT
			TUBING	CASING	
1730					Pull on loc. get Tries SAFETY MEETING
1743					HOOKUP
1746	3-4	15		0	Pump in
1749	3-4	15		0	Pump Gel
1753	4			0	START CEMENT
1809	4	22		0	Finish CEMENT
1805	4			0	START DISPL
1810	2-3	15		300	Finish Displ
1811					Release PT.
1815					WASHUP PLUG
1840					LEAVE LOC

REMARKS

2 BBL CEMENT REMAININGTOOL WET + DAY 57 WBS

SERVICE ENGINEER

CUSTOMER REPRESENTATIVE



INVOICE NO. 235790STAGE NO. 1CUSTOMER ArdentLEASE NAME Latshaw 12

## JOB LOG

DATE 3-31-09

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 3% water 1/2 sack	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	CL			
PERFORATIONS						
DISPLACEMENT CAPACITY	15.3		BBL.	DISPLACEMENT DEPTH	370	FT.

TIME	RATE (BPM)	VOLUME (BBL)	PRESSURE (PSI)		DESCRIPTION OF STAGE OR EVENT
			TUBING	CASING	
1115					Safety Meeting Pull on loc
1120					Spot ticks Hook up
1125	3-5	10		50	Pump Hoo
1127	3-5	25		50	Run Gel + Bar Seal
1132	3-5			100	Start Cement
1137	3-5	21		100	Finish cement
1138	3-5			100	Start Displ
1143	3-5	15.3		250	Finish Displ
1145					Wash up Rock up
1216					Leave loc

REMARKS

6.6 Bbl cement ReturnTook wet + Dry sample

Thank  
You

SERVICE  
ENGINEERErnest WolfgramCUSTOMER  
REPRESENTATIVE[Signature]



STAGE NO. \_\_\_\_\_



CUSTOMER 120001

LEASE NAME Chickadee

## JOB LOG

DATE 5-14-09

NO. OF SACKS		COMPOSITION OF CEMENT	YIELD	GAL. WTR/SK	DENSITY	BBL. OF MIX WTR.	CU. FT. OF SLURRY	SBL. OF SLURRY
1.	105	CLASS A 3" CEMENT 1/4" DIA. CO. 10	1.16	52	15.6	13	133.9	22.0
2.								
3.								
TOTAL						13	133.9	22.0

CIRCULATE CEMENT TO SURFACE

**CIRCULATE CEMENT TO SURFACE**

☒ Yes      ☐ No      ☐ Not Applicable

**JOB TYPE**☒ Surface    ☐ Longstring    ☐ Acid☐ Other \_\_\_\_\_

	NEW USED	SIZE	FROM	TO	WEIGHT	MAXIMUM PSI ALLOWANCE
CASING	N	7		400	17	500
TUBING						
OPEN HOLE		8 1/2				
PERFORATIONS						
DISPLACEMENT CAPACITY		15.3	BBL.	DISPLACEMENT DEPTH	370	FT.

[illegible]

EMARKS

EMARKS 5 DLS Return THANK YOU  
1. don't use 7" plug  
took 12 det + DZ4 sand

SERVICE  
ENGINEER

CUSTOMER  
REPRESENTATIVE



INVOICE NO. 235 994

STAGE NO. \_\_\_\_\_



CUSTOMER Ardent

LEASE NAME Lutschaw #15

DATE 5-1-09

## 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.	105	Class A 3% calc. $\frac{1}{4}$ unicle	1.18	5.2	15.1	13	123.9	22
2.								
3.								
					TOTAL	13	123.9	22

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		15.3	BBL.	DISPLACEMENT DEPTH	370	F

[illegible]

REMARKS

Thank  
You

SERVICE ENGINEER	Erica Wolfgram
CUSTOMER REPRESENTATIVE	John Smith

INVOICE NO. 235983STAGE NO. 1CUSTOMER A.J. 1LEASE NAME Lateline #16

## JOB LOG

DATE 4-28-09

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 39.6 cc/sk	118	6.3	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	15	400		900
TUBING						
OPEN HOLE		8 1/2	61			
PERFORATIONS						
DISPLACEMENT CAPACITY		15.3	BBL.	DISPLACEMENT DEPTH	370	FT.

TIME	RATE (BPM)	VOLUME (BBL)	PRESSURE (PSI)		DESCRIPTION OF STAGE OR EVENT
			TUBING	CASING	
1510					Safety Meeting Drill on Loc
1515					Spud 4.80 Hook on
1530	3-5	10		0	Run up H2O
1533	3-5	25		50	Run 1st + 2nd
1538	3-5			50	Stop & Cement
1543	3-5	21		50	Finish Cement
1544	3-5			0	Start Displ
1549	3-5	15.5		100	Run 1st + 2nd
1555					Run 1st + 2nd
1615					Leave Loc

REMARKS No circulation

SERVICE ENGINEER

CUSTOMER REPRESENTATIVE R. Johnson



STAGE NO. \_\_\_\_\_



CUSTOMER Arden

LEASE NAME Latschow 23

DATE 12-31-09

## JOB LOG

NO. OF SACKS	COMPOSITION OF CEMENT	YIELD	GAL WTR/SK	DENSITY	BBL. OF MIX WTR.	CU. FT. OF SLURRY	BBL. OF SLURRY
120	Class A 4% coal tar grout	1.18	5.2	15.6	15.4	129.8	28.2
TOTAL					15.4	129.8	28.2

3. CIRCULATE CEMENT TO SURFACE

☐ Yes    ☒ No    ☐ Not Applicable

OB TYPE

☒ Surface      ☐ Longstring      ☐ Acid

☐ Other \_\_\_\_\_

	NEW USED	SIZE	FROM	TO	WEIGHT	MAXIMUM PSI ALLOWANCE
CASING		7	VB	420		500
TUBING						
OPEN HOLE		8 3/4	CL			
PERFORATIONS						
DISPLACEMENT CAPACITY		16.1	BBL.	DISPLACEMENT DEPTH	920	FT

[illegible]REMARKS Leaf circulation

Test Unit 1: Dan Samoylov

Thank  
you

SERVICE ENGINEER	<i>George H. Hays</i>
CUSTOMER REPRESENTATIVE	<i>John H. Hays</i>



VOICE NO. 15-003

PAGE NO. \_\_\_\_\_



## JOB LOG

CUSTOMER 1-101LEASE NAME 15-003DATE 10-22-09

NO. OF SPELERS	DESCRIPTION OF CEMENT	WELL	IN WTRCK	CLAYITY	SP. GR. OF MIX WTR	SP. GR. OF SLURRY	SP. GR. OF SLURRY
00	CLASS 5 FT 47% CEMENT 12" VERTICAL	118	51.2	15.6	12.3	118	21
TOTAL						12.3	118 21

STATE OF MENT TO SURFACE

☒ Yes ☐ No ☐ Not Applicable

TYPE

☒ Surface ☐ Longstring ☐ Acid

Other \_\_\_\_\_

	NEW WELL	SIZE	FROM	TO	WEIGHT	MAXIMUM PSI AT 1000 FT
CASING	N	7	KR	4/11		500
TUBING						
OPEN HOLE		8 1/2	CL	.20		
PERFORATIONS						
DISPLACEMENT CAPACITY		15.7	BBL		DISPLACEMENT DEPTH	380 FT

TIME	RATE (BPM)	VOLUME (BBL)	PRESSURE (PSI)		DESCRIPTION OF STAGE OR EVENT
			TUBING	CASING	
00					Safety Meeting
10					Pull on loc spot TRS
15					Hook up Load + Stab Head
39	3-5	10		100	PUMP H2O
41	3-5	25		100	Run Gel + Bar Seal
44	3-5			200	Start Cement
58	3-5	21		200	Finish Cement
58	3-5			200	Start Displ
203	3-5	15.7		400	Finish Displ
215					WASH up Rack up
245					Leave loc

ARKS

15 Bbl Returns

THANK YOU

Oil Wet + Drill Samples

SERVICE  
ENGINEERCUSTOMER  
REPRESENTATIVE

STAGE NO. \_\_\_\_\_



CUSTOMER Arden

LEASE NAME LASHAW #25

DATE 9-9-10

## 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.	105	CLASS 17. 3% CAC <sup>12</sup> 1/20 UN 1215	1.18	5.2	15.6	15.4	147.5	26.2
2.								
3.								
TOTAL						15.4	147.5	26.2

### CIRCULATE CEMENT TO SURFACE

☒ Yes      ☐ No      ☐ Not Applicable

**JOB TYPE**☒ Surface    ☐ Longstring    ☐ Acid☐ Other \_\_\_\_\_

	NEW USED	SIZE	FROM	TO	WEIGHT	MAXIMUM PSI ALLOWANCE
CASING	N	7		411	17	500
TUBING						
OPEN HOLE		8 3/4				
PERFORATIONS						
DISPLACEMENT CAPACITY		15.8	BBL.	DISPLACEMENT DEPTH	381	FT.

TIME	RATE (BPM)	VOLUME (BBL)	PRESSURE (PSI)		DESCRIPTION OF STAGE OR EVENT
			TUBING	CASING	
1120					safety meeting follow loc start truck
1130					HOOK UP
1135	3-11	5		0-80	PUMP H2O
1137	3-4	25		0-80	PUMP GEL - BARSEAL
1144	3-4			100	start CEMENT
1149	3-4	26.2		150	finish CEMENT
1150	3-4			100	start DISP
1153	2-3	15.8		250	FINISH DISP
1154				200	RELEASE P.S.I
1205					WASH UP IRACK UP
1225					LEAVE LOC

REMARKS

## 7. Ables Motor

July 11, 1960

Look under the chair

**SERVICE  
ENGINEER**

**CUSTOMER**  
**REPRESENTATIVE**



INVOICE NO. 15-30431CUSTOMER ARZENT

STAGE NO. \_\_\_\_\_

LEASE NAME CATCHING # 31

## JOB LOG

DATE 1-14-10

NO. OF SACKS	COMPOSITION OF CEMENT	YIELD	GAL WTR/SK	DENSITY	BBL OF MIX WTR.	CU. FT. OF SLURRY	BBL OF SLURRY
1. 110	CLASS II 4" CEMENT 130 WTR	118	52	15.6	13.4	129.8	33.1
2.							
3.							
TOTAL					13.4	129.8	33.1

## 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		415	17	500
TUBING						
OPEN HOLE		3 1/2				
PERFORATIONS						
DISPLACEMENT CAPACITY	15.9		BBL.	DISPLACEMENT DEPTH	385	
					FT.	

TIME	RATE (BPM)	VOLUME (BBL)	PRESSURE (PSI)		DESCRIPTION OF STAGE OR EVENT
			TUBING	CASING	
1450					Safety meeting Pull on log start pump
1445					Hook up
1446	3-4	5		0-50	Pump H2O
1449	3-4	35		0-50	Pump 60% Barosan
1454	3-4			0-50	Start cement
1500	3-4	33.1		0-50	Finish cement
1501	3-4			100	start DISP
1505	3-4	15.6		500	Finish DISP
1507				800	Release H.S.I
1525					WASH UP / BACK UP
1540					LEAVE LOG

REMARKS 10.55% E. Form THANK YOU

SERVICE ENGINEER	<u>ED. ANTUNY</u>
CUSTOMER REPRESENTATIVE	<u>Arz</u>