

Results of Directional Survey

API number:	30-025-40828		
OGRID:		Operator:	MANZANO LLC
		Property:	GREEN FROG CAFE FEDERAL # 1H

surface	ULSTR:	B	18	T	20S	R	33E
				810	FNL	2310	FEL

BH Loc	ULSTR:	C	17	T	20S	R	33E
14156	MD	10103.8	TVD	790	FNL	2030	FWL

Top Perf/OH	ULSTR:	B	18	T	20S	R	33E
10417	MD	10038.6	TVD	818	FNL	1707	FEL

Bot Perf/OH	ULSTR:	C	17	T	20S	R	33E
14130	MD	10103.4	TVD	791	FNL	2004	FWL

	MD	N/S	E/W	VD
	10405	-8.21	591.12	10038.58
TOP PERFS/OH	10417	-7.85	603.11	10038.64
	10437	-7.24	623.10	10038.75
	14010	17.63	4194.02	10101.30
BOT PERFS/OH	14130	19.44	4313.99	10103.35
	14156	19.83	4339.98	10103.79

NEXT TO LAST	14010	17.63	4194.02	10101.30
LAST READING	14156	19.83	4339.98	10103.79
TD	14156	19.83	4339.98	10103.79

Surface Location	810	FN	2310	FE
Projected BHL	790	FN	2030	FW
Location of				
Top Perfs/OH	818	FN	1707	FE
Bottom Perfs/OH	791	FN	2004	FW

SUMMARY of Subsurface Locations

Surface Location	B-18-20S-33E	810	FN	2310	FE	Vert. Depth
Top Perfs/OH	B-18-20S-33E	818	FN	1707	FE	10038.64
Bottom Perfs/OH	C-17-20S-33E	791	FN	2004	FW	10103.35
Projected TD	C-17-20S-33E	790	FN	2030	FW	10103.79

FEB 12 2014

Manzano, LLC

P.O. Box 2107

Roswell, New Mexico 88202-2107

(575) 623-1996

December 11, 2013

30 - 025-40828

New Mexico Oil Conservation Division
1625 N. French
Hobbs, NM 88240

HOBBS OCD

DEC 12 2013

Attention: Mr. Paul Kautz

RE: Manzano Green Frog Café Federal Com #1H
Directional survey for lateral

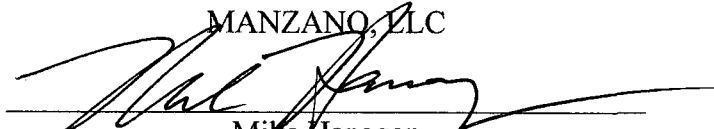
RECEIVED

Dear Mr. Kautz,

Please find attached the directional survey for the lateral section of the above referenced Green Frog Café #1H well in Lea County, NM. Should you need anything else please give me a call.

Sincerely,

MANZANO, LLC


Mike Hanagan

Manzano, LLC
Green Frog Cafe Federal #1H
Lea County, New Mexico

HOBBS OCD

DEC 12 2013

RECEIVED

KB ELEV: 3545
 GL ELEV: 3529

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	9519.00	1.13	214.58	9516.94	-7.27	-3.72	0.00	0.00	-3.75	
2	10329.93	89.16	89.58	10040.00	-11.88	506.08	11.98	-125.01	506.03	
3	14443.46	89.16	89.58	10100.00	18.15	4619.06	0.00	0.00	4619.10	PBHL

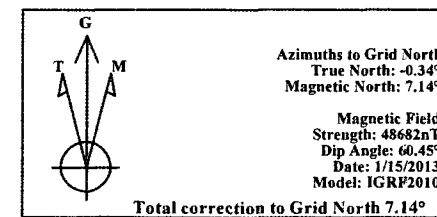
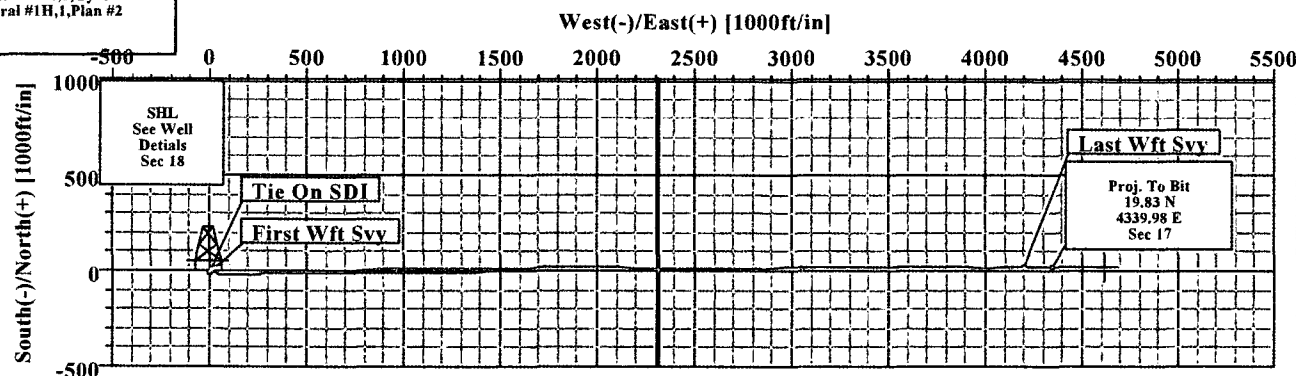
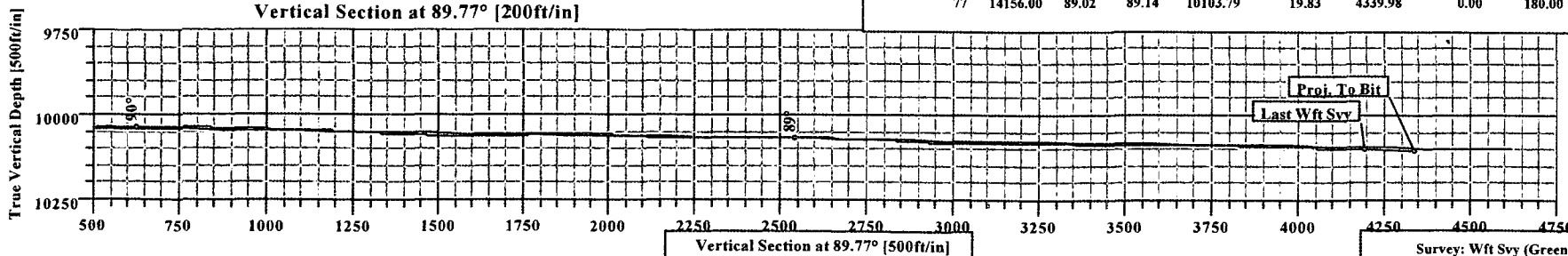
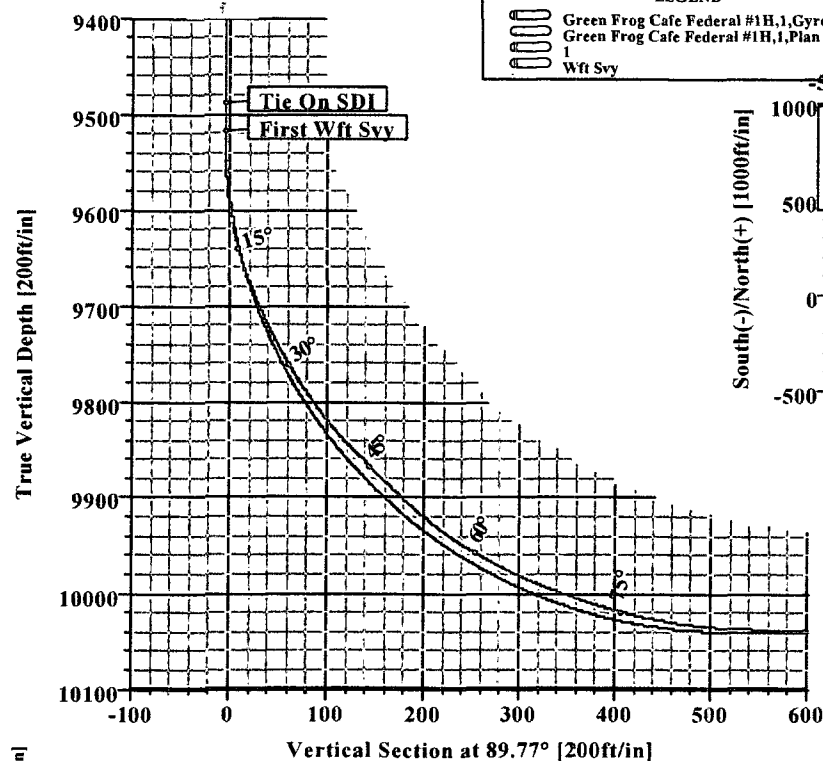
WELL DETAILS							
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
Green Frog Cafe Federal #1H	0.00	0.00	574653.17	735953.40	32°34'41.464N	103°42'05.505W	N/A

TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL	10100.00	18.15	4619.06	574671.32	740572.46	Point

LEGEND	
	Green Frog Cafe Federal #1H, 1, Gyro
	Green Frog Cafe Federal #1H, 1, Plan #2
	Wft Svy

SITE DETAILS	
Green Frog Cafe Federal #1H	
Site Centre Northing:	574653.17
Easting:	735953.40
Ground Level:	3529.00
Positional Uncertainty:	0.00
Convergence:	0.34

FIELD DETAILS	
Lea Co., NM (NAD 83)	
Geodetic System:	US State Plane Coordinate System 1983
Ellipsoid:	GRS 1980
Zone:	New Mexico, Eastern Zone
Magnetic Model:	IGRP2010
System Datum:	Mean Sea Level
Local North:	Grid North



Survey: Wft Svy (Green Frog Cafe Federal #1H/1)										
No	MD	Inc	Az	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	
77	14156.00	89.02	89.14	10103.79	19.83	4339.98	0.00	180.00	4340.02	

Weatherford

Wft Survey Report X Y's.



Weatherford

Company: Manzano LLC Field: Lea Co., NM (NAD 83) Site: Green Frog Cafe Federal #1H Well: Green Frog Cafe Federal #1H Wellpath: 1	Date: 1/16/2013 Co-ordinate(NE) Reference: Well: Green Frog Cafe Federal #1H Vertical (TVD) Reference: SITE 3545.0 Section (VS) Reference: Well (0.00N,0.00E,89.77Azi) Survey Calculation Method: Minimum Curvature	Time: 05:28:35 Page: 1
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Survey: Wft Svy Company: Weatherford Tool: MWD;MWD - Standard	Start Date: 1/4/2013 Engineer: Russell W. Joyner Tied-to: User Defined
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Site: Green Frog Cafe Federal #1H

Site Position: From: Map Position Uncertainty: 0.00 ft Ground Level: 3529.00 ft	Northing: 574653.17 ft Easting: 735953.40 ft	Latitude: 32 34 41.464 N Longitude: 103 42 5.505 W North Reference: Grid Grid Convergence: 0.34 deg
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Well: Green Frog Cafe Federal #1H **Slot Name:**

Well Position: +N/-S 0.00 ft +E/-W 0.00 ft Position Uncertainty: 0.00 ft	Northing: 574653.17 ft Easting: 735953.40 ft	Latitude: 32 34 41.464 N Longitude: 103 42 5.505 W
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Wellpath: 1 Current Datum: SITE Magnetic Data: 1/15/2013 Field Strength: 48682 nT Vertical Section: Depth From (TVD) ft	Height 3545.00 ft +N/-S ft 0.00	Drilled From: Surface Tie-on Depth: 0.00 ft Above System Datum: Mean Sea Level Declination: 7.48 deg Mag Dip Angle: 60.45 deg +E/-W ft 0.00
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Survey										
MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	DLS deg/100ft	VS ft	MapN ft	MapE ft	Comment
9491.00	0.87	206.06	9488.94	-6.85	-3.47	0.00	-3.50	574646.32	735949.93	Tie On SDI First Wft Svy
9519.00	1.13	214.58	9516.94	-7.27	-3.72	1.07	-3.75	574645.90	735949.68	
9550.00	1.35	153.37	9547.93	-7.85	-3.73	4.12	-3.76	574645.32	735949.67	
9582.00	6.26	103.89	9579.86	-8.60	-1.87	17.12	-1.90	574644.57	735951.53	
9613.00	10.84	101.52	9610.50	-9.59	2.63	14.81	2.60	574643.58	735956.03	
9645.00	15.18	98.77	9641.67	-10.83	9.73	13.70	9.68	574642.34	735963.13	
9676.00	19.59	99.34	9671.25	-12.29	18.87	14.24	18.82	574640.88	735972.27	
9708.00	23.63	99.35	9701.00	-14.21	30.50	12.63	30.44	574638.96	735983.90	
9740.00	26.75	98.36	9729.95	-16.30	43.95	9.84	43.89	574636.87	735997.35	
9771.00	29.45	95.60	9757.29	-18.06	58.44	9.66	58.37	574635.11	736011.84	
9803.00	33.33	92.22	9784.61	-19.16	75.06	13.31	74.99	574634.01	736028.46	
9835.00	37.08	91.18	9810.75	-19.70	93.50	11.87	93.42	574633.47	736046.90	
9866.00	40.94	90.04	9834.83	-19.90	113.01	12.66	112.93	574633.27	736066.41	
9898.00	44.57	88.89	9858.33	-19.69	134.73	11.60	134.65	574633.48	736088.13	
9929.00	45.63	89.05	9880.21	-19.30	156.68	3.44	156.60	574633.87	736110.08	
9961.00	47.49	88.87	9902.21	-18.88	179.91	5.83	179.83	574634.29	736133.31	
9993.00	50.92	88.35	9923.11	-18.29	204.13	10.79	204.05	574634.88	736157.53	
10024.00	55.54	87.71	9941.67	-17.43	228.94	14.99	228.87	574635.74	736182.34	
10056.00	60.27	87.94	9958.66	-16.40	256.02	14.79	255.95	574636.77	736209.42	
10087.00	63.14	87.95	9973.36	-15.42	283.29	9.26	283.23	574637.75	736236.69	
10119.00	66.49	87.70	9986.97	-14.32	312.23	10.49	312.17	574638.85	736265.63	
10151.00	69.84	88.18	9998.87	-13.26	341.91	10.56	341.85	574639.91	736295.31	
10182.00	72.15	88.73	10008.97	-12.47	371.21	7.64	371.15	574640.70	736324.61	
10214.00	74.26	88.32	10018.21	-11.68	401.83	6.71	401.78	574641.49	736355.23	
10245.00	78.52	88.41	10025.51	-10.82	431.94	13.74	431.89	574642.35	736385.34	
10277.00	82.00	88.69	10030.92	-10.02	463.46	10.91	463.42	574643.15	736416.86	
10309.00	84.88	90.45	10034.57	-9.78	495.25	10.53	495.20	574643.39	736448.65	
10342.00	87.06	88.94	10036.89	-9.61	528.16	8.03	528.12	574643.56	736481.56	
10374.00	88.74	88.81	10038.07	-8.98	560.13	5.27	560.09	574644.19	736513.53	
10405.00	89.37	88.34	10038.58	-8.21	591.12	2.54	591.08	574644.96	736544.52	

Weatherford

Wft Survey Report X Y's.



Weatherford

Company: Manzano LLC Field: Lea Co., NM (NAD 83) Site: Green Frog Cafe Federal #1H Well: Green Frog Cafe Federal #1H Wellpath: 1	Date: 1/16/2013 Co-ordinate(NE) Reference: Well: Green Frog Cafe Federal #1H Vertical (TVD) Reference: SITE 3545.0 Section (VS) Reference: Well (0.00N,0.00E,89.77Azi) Survey Calculation Method: Minimum Curvature	Time: 05:28:35 Page: 2 Db: Sybase
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Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	DLS deg/100ft	VS ft	MapN ft	MapE ft	Comment
10437.00	90.00	88.20	10038.75	-7.24	623.10	2.02	623.07	574645.93	736576.50	
10469.00	90.42	88.12	10038.64	-6.22	655.09	1.34	655.06	574646.95	736608.49	
10500.00	90.91	87.92	10038.28	-5.15	686.07	1.71	686.04	574648.02	736639.47	
10532.00	90.84	87.05	10037.79	-3.74	718.03	2.73	718.01	574649.43	736671.43	
10564.00	89.44	86.70	10037.71	-2.00	749.98	4.51	749.97	574651.17	736703.38	
10595.00	89.30	86.25	10038.05	-0.09	780.92	1.52	780.92	574653.08	736734.32	
10690.00	88.53	86.83	10039.85	5.64	875.73	1.01	875.75	574658.81	736829.13	
10785.00	87.76	88.55	10042.92	9.47	970.60	1.98	970.63	574662.64	736924.00	
10880.00	88.11	88.94	10046.35	11.55	1065.52	0.55	1065.55	574664.72	737018.92	
10974.00	88.95	88.76	10048.76	13.43	1159.47	0.91	1159.51	574666.60	737112.87	
11069.00	87.41	90.18	10051.78	14.31	1254.41	2.20	1254.46	574667.48	737207.81	
11164.00	88.32	89.55	10055.32	14.54	1349.34	1.16	1349.39	574667.71	737302.74	
11258.00	87.34	90.32	10058.87	14.64	1443.27	1.33	1443.32	574667.81	737396.67	
11353.00	88.60	89.89	10062.24	14.47	1538.21	1.40	1538.25	574667.64	737491.61	
11448.00	90.28	89.22	10063.17	15.21	1633.20	1.90	1633.25	574668.38	737586.60	
11543.00	92.17	89.19	10061.14	16.52	1728.16	1.99	1728.22	574669.69	737681.56	
11638.00	91.47	89.94	10058.12	17.25	1823.11	1.08	1823.17	574670.42	737776.51	
11733.00	89.37	90.02	10057.42	17.28	1918.10	2.21	1918.16	574670.45	737871.50	
11827.00	87.76	90.21	10059.78	17.09	2012.07	1.72	2012.12	574670.26	737965.47	
11922.00	86.15	90.74	10064.82	16.30	2106.93	1.78	2106.98	574669.47	738060.33	
12017.00	88.46	90.63	10069.29	15.17	2201.81	2.43	2201.85	574668.34	738155.21	
12112.00	90.84	90.23	10069.87	14.46	2296.80	2.54	2296.84	574667.63	738250.20	
12207.00	90.56	90.91	10068.71	13.51	2391.79	0.77	2391.82	574666.68	738345.19	
12302.00	90.70	91.14	10067.67	11.81	2486.77	0.28	2486.79	574664.98	738440.17	
12396.00	90.28	90.39	10066.86	10.56	2580.75	0.91	2580.77	574663.73	738534.15	
12428.00	88.11	89.45	10067.31	10.60	2612.75	7.39	2612.77	574663.77	738566.15	
12460.00	86.78	88.95	10068.74	11.05	2644.71	4.44	2644.74	574664.22	738598.11	
12491.00	87.06	88.82	10070.40	11.65	2675.66	1.00	2675.69	574664.82	738629.06	
12523.00	87.90	88.79	10071.81	12.32	2707.62	2.63	2707.65	574665.49	738661.02	
12555.00	88.39	88.75	10072.85	13.00	2739.60	1.54	2739.63	574666.17	738693.00	
12586.00	89.30	88.81	10073.47	13.66	2770.59	2.94	2770.62	574666.83	738723.99	
12681.00	86.15	89.09	10077.24	15.40	2865.48	3.33	2865.52	574668.57	738818.88	
12776.00	88.04	88.55	10082.06	17.36	2960.34	2.07	2960.38	574670.53	738913.74	
12871.00	90.14	88.46	10083.56	19.84	3055.29	2.21	3055.34	574673.01	739008.69	
12966.00	89.58	90.47	10083.80	20.72	3150.28	2.20	3150.33	574673.89	739103.68	
13061.00	89.44	90.55	10084.61	19.88	3245.27	0.17	3245.32	574673.05	739198.67	
13156.00	89.30	90.15	10085.65	19.30	3340.26	0.45	3340.31	574672.47	739293.66	
13250.00	89.02	89.97	10087.03	19.20	3434.25	0.35	3434.30	574672.37	739387.65	
13345.00	88.74	90.30	10088.89	18.97	3529.23	0.46	3529.28	574672.14	739482.63	
13440.00	89.44	90.73	10090.40	18.12	3624.22	0.86	3624.26	574671.29	739577.62	
13535.00	90.00	90.41	10090.86	17.18	3719.21	0.68	3719.25	574670.35	739672.61	
13631.00	89.72	90.08	10091.10	16.77	3815.21	0.45	3815.24	574669.94	739768.61	
13725.00	89.09	90.86	10092.07	15.99	3909.20	1.07	3909.23	574669.16	739862.60	
13820.00	87.97	90.02	10094.51	15.26	4004.16	1.47	4004.19	574668.43	739957.56	
13915.00	87.41	88.99	10098.34	16.08	4099.08	1.23	4099.11	574669.25	740052.48	
14010.00	89.02	89.14	10101.30	17.63	4194.02	1.70	4194.05	574670.80	740147.42	Last Wft Svy
14156.00	89.02	89.14	10103.79	19.83	4339.98	0.00	4340.02	574673.00	740293.38	Proj. To Bit

Weatherford

Wft Survey Report X Y's.

**Weatherford**

Company: Manzano LLC	Date: 1/16/2013	Time: 05:28:35	Page: 3
Field: Lea Co., NM (NAD 83)	Co-ordinate(NE) Reference:	Well: Green Frog Cafe Federal #1H	
Site: Green Frog Cafe Federal #1H	Vertical (TVD) Reference:	SITE 3545.0	
Well: Green Frog Cafe Federal #1H	Section (VS) Reference:	Well (0.00N,0.00E,89.77Azi)	
Wellpath: 1	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Annotation

MD ft	TVD ft	
9491.00	9488.94	Tie On SDI
9519.00	9516.94	First Wft Svy
14010.00	10101.30	Last Wft Svy
14156.00	10103.79	Proj. To Bit