



Directional Survey Certification

2948 I-70 Business Loop
Grand Junction, CO 81504
(970)-245-9447 Fax (970)-245-9454

Operator	TEP Rocky Mountain, LLC.
Well Name & No.	PA 343-26
County & State	Garfield County, CO
SDI Job No.	OP.005750
Rig	H&P 271

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 95 feet to a measured depth of 8,345 feet is true and correct as determined from all available records.

A handwritten signature in black ink, appearing to read 'Mel Mireles Jr.', written over a horizontal line.

Signature

4-Dec-17

Date

Mel Mireles Jr.

Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well PA 343-26 - Slot PA 343-26 (A2)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 5224' & RKB 24' @ 5248.00usft
Site:	PA 22-25 Pad	MD Reference:	GL 5224' & RKB 24' @ 5248.00usft
Well:	PA 343-26	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

Project	Garfield County, CO NAD83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		PA 22-25 Pad			
Site Position:		Northing:	1,615,186.77 usft	Latitude:	39.4968742
From:	Map	Easting:	2,308,728.18 usft	Longitude:	-107.9499045
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.55 °

Well	PA 343-26 - Slot PA 343-26 (A2), A2					
Well Position	+N/-S	0.00 usft	Northing:	1,615,189.86 usft	Latitude:	39.4968836
	+E/-W	0.00 usft	Easting:	2,308,740.29 usft	Longitude:	-107.9498619
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,224.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	11/9/2017	9.40	65.82	51,689

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	247.49	

Survey Program	Date	12/4/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
95.00	1,047.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
1,141.00	8,345.00	Survey #2 - Production MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.01	0.00	190.99	0.01	0.00	0.00	0.00	0.00	0.00	0.00	
SHL (PA 343-26)										
95.00	0.18	190.99	95.00	-0.15	-0.03	0.08	0.19	0.19	0.00	
First SDI Gyro MWD Survey										
153.00	0.79	217.09	153.00	-0.55	-0.29	0.48	1.09	1.05	45.00	
215.00	0.79	221.31	214.99	-1.22	-0.83	1.23	0.09	0.00	6.81	
307.00	0.26	135.70	306.99	-1.84	-1.10	1.72	0.88	-0.58	-93.05	
400.00	0.53	123.75	399.99	-2.23	-0.59	1.40	0.30	0.29	-12.85	

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Site:	PA 22-25 Pad	MD Reference:	GL 5224' & RKB 24' @ 5248.00usft
Well:	PA 343-26	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
491.00	0.70	117.77	490.98	-2.73	0.25	0.82	0.20	0.19	-6.57
582.00	1.23	263.41	581.97	-3.10	-0.23	1.40	2.03	0.58	160.04
674.00	3.34	257.96	673.90	-3.77	-3.83	4.98	2.30	2.29	-5.92
766.00	6.42	249.26	765.55	-6.15	-11.27	12.76	3.43	3.35	-9.46
858.00	9.50	244.69	856.66	-11.22	-22.94	25.49	3.42	3.35	-4.97
953.00	12.14	244.95	949.96	-18.80	-39.08	43.30	2.78	2.78	0.27
1,047.00	14.34	249.79	1,041.46	-27.01	-58.96	64.81	2.62	2.34	5.15
Last SDI Gyro MWD Survey									
1,141.00	16.07	251.75	1,132.16	-35.11	-82.25	89.42	1.92	1.84	2.09
First SDI Production MWD Survey									
1,235.00	18.65	251.13	1,221.88	-44.04	-108.83	117.40	2.75	2.74	-0.66
1,329.00	21.30	248.67	1,310.21	-55.12	-138.96	149.47	2.96	2.82	-2.62
1,424.00	23.23	250.78	1,398.13	-67.56	-172.73	185.43	2.20	2.03	2.22
1,518.00	26.07	250.38	1,483.55	-80.60	-209.70	224.58	3.03	3.02	-0.43
1,613.00	27.81	249.00	1,568.24	-95.55	-250.05	267.58	1.95	1.83	-1.45
1,708.00	28.25	244.73	1,652.11	-113.09	-291.07	312.20	2.16	0.46	-4.49
1,803.00	27.20	245.02	1,736.20	-131.86	-331.09	356.35	1.11	-1.11	0.31
1,929.00	28.90	249.06	1,847.40	-154.91	-385.64	415.56	2.02	1.35	3.21
2,024.00	29.50	246.37	1,930.34	-172.49	-428.51	461.90	1.52	0.63	-2.84
2,119.00	29.44	246.92	2,013.04	-191.02	-471.41	508.63	0.29	-0.06	0.58
2,213.00	28.48	243.59	2,095.29	-210.05	-512.74	554.09	2.00	-1.02	-3.54
2,308.00	27.97	246.20	2,179.00	-229.11	-553.41	598.96	1.41	-0.54	2.75
2,402.00	27.27	246.67	2,262.29	-246.54	-593.36	642.54	0.78	-0.74	0.50
2,497.00	27.63	243.13	2,346.60	-265.11	-632.99	686.27	1.76	0.38	-3.73
2,591.00	29.11	243.22	2,429.31	-285.27	-672.85	730.80	1.58	1.57	0.10
2,686.00	28.66	244.97	2,512.49	-305.32	-714.13	776.61	1.01	-0.47	1.84
2,780.00	27.55	244.90	2,595.40	-324.08	-754.24	820.85	1.18	-1.18	-0.07
2,875.00	28.51	246.82	2,679.26	-342.32	-794.98	865.47	1.39	1.01	2.02
2,969.00	28.33	246.83	2,761.93	-359.93	-836.10	910.20	0.19	-0.19	0.01
3,064.00	28.63	246.26	2,845.44	-377.96	-877.66	955.49	0.43	0.32	-0.60
3,158.00	27.98	246.71	2,928.20	-395.75	-918.53	1,000.06	0.73	-0.69	0.48
3,253.00	27.47	245.33	3,012.29	-413.70	-958.91	1,044.24	0.86	-0.54	-1.45
3,347.00	28.72	247.96	3,095.22	-431.23	-999.55	1,088.49	1.87	1.33	2.80
3,441.00	27.94	247.06	3,177.96	-448.29	-1,040.76	1,133.10	0.95	-0.83	-0.96
3,536.00	27.22	250.61	3,262.17	-464.18	-1,081.76	1,177.05	1.89	-0.76	3.74
3,631.00	26.38	249.77	3,346.96	-478.69	-1,122.06	1,219.83	0.97	-0.88	-0.88
3,726.00	27.45	250.37	3,431.67	-493.34	-1,162.49	1,262.79	1.16	1.13	0.63
3,821.00	28.91	250.30	3,515.41	-508.44	-1,204.73	1,307.60	1.54	1.54	-0.07
3,916.00	28.19	250.26	3,598.86	-523.76	-1,247.47	1,352.95	0.76	-0.76	-0.04
4,010.00	27.87	250.20	3,681.83	-538.70	-1,289.04	1,397.07	0.34	-0.34	-0.06
4,105.00	27.68	248.37	3,765.89	-554.36	-1,330.45	1,441.31	0.92	-0.20	-1.93
4,200.00	27.50	247.14	3,850.08	-571.01	-1,371.17	1,485.31	0.63	-0.19	-1.29
4,295.00	27.36	249.18	3,934.41	-587.29	-1,411.78	1,529.06	1.00	-0.15	2.15
4,390.00	26.59	247.99	4,019.07	-603.02	-1,451.90	1,572.15	0.99	-0.81	-1.25

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Well:	PA 343-26	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

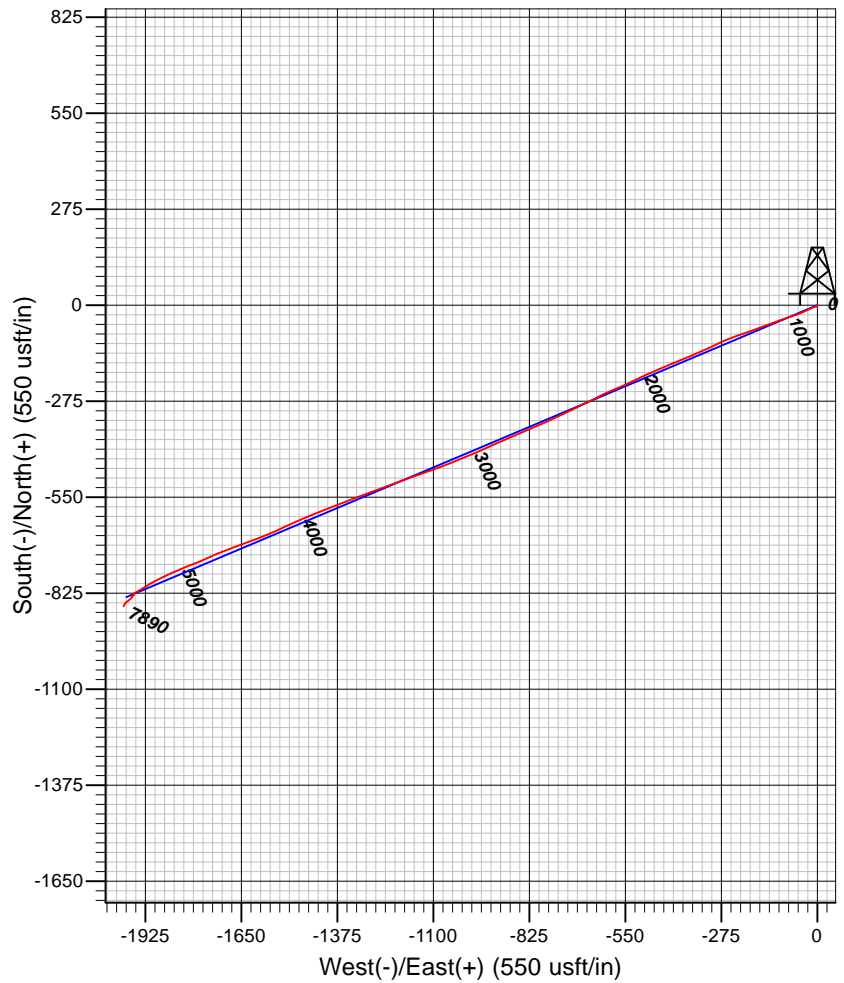
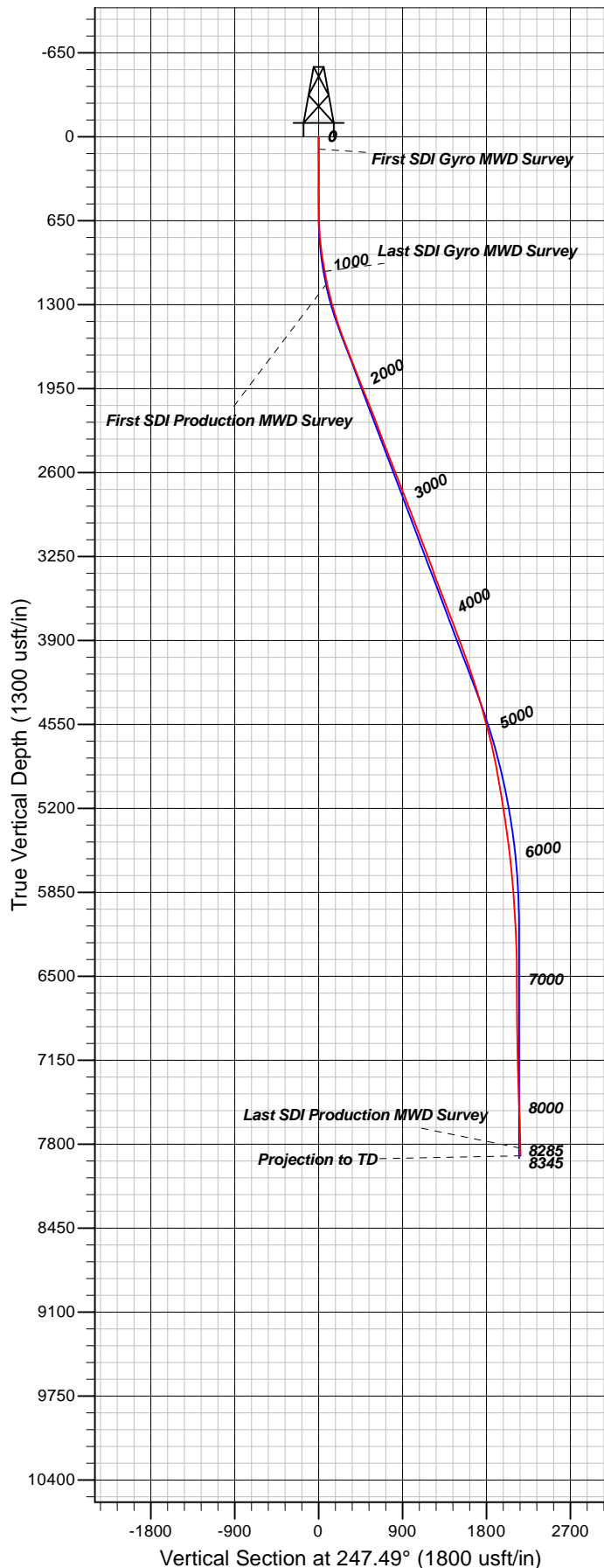
Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,484.00	25.48	246.43	4,103.53	-618.99	-1,489.94	1,613.40	1.39	-1.18	-1.66
4,579.00	24.37	245.62	4,189.68	-635.25	-1,526.52	1,653.42	1.22	-1.17	-0.85
4,689.00	22.70	245.43	4,290.53	-653.44	-1,566.50	1,697.32	1.52	-1.52	-0.17
4,769.00	21.96	249.41	4,364.53	-665.12	-1,594.54	1,727.70	2.10	-0.93	4.98
4,864.00	21.13	250.09	4,452.89	-677.20	-1,627.27	1,762.56	0.91	-0.87	0.72
4,864.76	21.12	250.08	4,453.61	-677.30	-1,627.53	1,762.83	1.13	-0.92	-1.80
PA 343-26 MVRD									
4,958.00	20.27	248.33	4,540.83	-688.99	-1,658.33	1,795.76	1.13	-0.91	-1.87
5,053.00	20.19	250.54	4,629.97	-700.52	-1,689.08	1,828.59	0.81	-0.08	2.33
5,148.00	17.28	246.98	4,719.93	-711.51	-1,717.53	1,859.08	3.29	-3.06	-3.75
5,243.00	15.86	246.30	4,810.98	-722.24	-1,742.41	1,886.17	1.51	-1.49	-0.72
5,338.00	14.53	244.77	4,902.66	-732.54	-1,765.08	1,911.05	1.46	-1.40	-1.61
5,432.00	13.26	249.23	4,993.91	-741.39	-1,785.82	1,933.60	1.77	-1.35	4.74
5,527.00	13.46	249.87	5,086.34	-749.06	-1,806.39	1,955.54	0.26	0.21	0.67
5,622.00	13.05	247.04	5,178.80	-757.05	-1,826.65	1,977.31	0.81	-0.43	-2.98
5,717.00	11.29	245.75	5,271.67	-765.05	-1,845.01	1,997.34	1.87	-1.85	-1.36
5,811.00	10.61	244.55	5,363.95	-772.55	-1,861.21	2,015.17	0.76	-0.72	-1.28
5,906.00	10.03	242.88	5,457.42	-780.08	-1,876.47	2,032.16	0.69	-0.61	-1.76
6,001.00	9.81	243.31	5,551.00	-787.48	-1,891.06	2,048.47	0.24	-0.23	0.45
6,095.00	8.72	242.18	5,643.77	-794.41	-1,904.52	2,063.56	1.18	-1.16	-1.20
6,190.00	6.10	236.78	5,737.97	-800.53	-1,915.11	2,075.69	2.85	-2.76	-5.68
6,284.00	6.49	240.12	5,831.40	-805.92	-1,923.90	2,085.86	0.57	0.41	3.55
6,379.00	5.40	237.33	5,925.89	-811.01	-1,932.32	2,095.59	1.19	-1.15	-2.94
6,473.00	5.35	237.02	6,019.48	-815.78	-1,939.72	2,104.25	0.06	-0.05	-0.33
6,568.00	4.10	239.15	6,114.15	-819.93	-1,946.35	2,111.97	1.33	-1.32	2.24
6,663.00	2.56	246.08	6,208.99	-822.53	-1,951.20	2,117.45	1.67	-1.62	7.29
6,757.00	2.64	247.76	6,302.89	-824.20	-1,955.13	2,121.71	0.12	0.09	1.79
6,852.00	2.14	228.49	6,397.81	-826.21	-1,958.48	2,125.58	0.99	-0.53	-20.28
6,946.00	0.42	162.37	6,491.79	-827.70	-1,959.69	2,127.27	2.14	-1.83	-70.34
7,041.00	1.09	170.02	6,586.78	-828.92	-1,959.43	2,127.49	0.71	0.71	8.05
7,135.00	0.47	132.90	6,680.77	-830.06	-1,958.99	2,127.53	0.82	-0.66	-39.49
7,230.00	0.21	76.09	6,775.77	-830.29	-1,958.54	2,127.19	0.42	-0.27	-59.80
7,324.00	1.07	202.65	6,869.76	-831.06	-1,958.71	2,127.64	1.28	0.91	134.64
7,419.00	1.50	223.48	6,964.74	-832.78	-1,959.90	2,129.41	0.66	0.45	21.93
7,513.00	1.67	220.42	7,058.70	-834.71	-1,961.64	2,131.75	0.20	0.18	-3.26
7,607.00	2.46	221.21	7,152.64	-837.27	-1,963.86	2,134.78	0.84	0.84	0.84
7,701.00	2.43	222.49	7,246.56	-840.26	-1,966.53	2,138.39	0.07	-0.03	1.36
7,796.00	3.04	227.12	7,341.45	-843.46	-1,969.74	2,142.58	0.68	0.64	4.87
7,891.00	2.91	232.81	7,436.32	-846.63	-1,973.50	2,147.28	0.34	-0.14	5.99
7,985.00	3.25	234.13	7,530.18	-849.63	-1,977.56	2,152.18	0.37	0.36	1.40
8,080.00	3.01	227.65	7,625.04	-852.89	-1,981.59	2,157.14	0.45	-0.25	-6.82
8,174.00	2.46	204.08	7,718.94	-856.40	-1,984.24	2,160.93	1.32	-0.59	-25.07
8,268.00	2.47	204.51	7,812.85	-860.08	-1,985.90	2,163.88	0.02	0.01	0.46

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Site:	PA 22-25 Pad	MD Reference:	GL 5224' & RKB 24' @ 5248.00usft
Well:	PA 343-26	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,285.00	2.29	204.78	7,829.84	-860.72	-1,986.19	2,164.40	1.06	-1.06	1.59	
Last SDI Production MWD Survey										
8,345.00	2.29	204.78	7,889.79	-862.90	-1,987.20	2,166.16	0.00	0.00	0.00	
Projection to TD - PA 343-26 PBHL - PBHL (PA 343-26)										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
95.00	95.00	-0.15	-0.03	First SDI Gyro MWD Survey	
1,047.00	1,041.46	-27.01	-58.96	Last SDI Gyro MWD Survey	
1,141.00	1,132.16	-35.11	-82.25	First SDI Production MWD Survey	
8,285.00	7,829.84	-860.72	-1,986.19	Last SDI Production MWD Survey	
8,345.00	7,889.79	-862.90	-1,987.20	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____



Well Details: PA 343-26

TVD Reference: GL 5224' & RKB 24' @ 5248.00usft		Ground Level: 5224.00		Slot	
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1615189.86	2308740.29	39.4968835	-107.9498619

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well PA 343-26 - Slot PA 343-26 (A2), True North
 Vertical (TVD) Reference: GL 5224' & RKB 24' @ 5248.00usft
 Section (VS) Reference: Slot - PA 343-26 (A2)(0.00N, 0.00E)
 Measured Depth Reference: GL 5224' & RKB 24' @ 5248.00usft
 Calculation Method: Minimum Curvature

PROJECT DETAILS: Garfield County, CO NAD83

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Central Zone

System Datum: Mean Sea Level

Plan: OH

10:58, December 04 2017
 Created By: Mel Mireles Jr.