



OPERATOR		FIELD NAME		Well name/No.		Rig Name & No.		Panther Job No.		Calculation Method		Minimum Curvature			
Jay Bee Oil and Gas		Marcellous		Doc 2H		HWD 12		NE140043H		Proposed Azimuth		142.91°			
MWD OPERATOR		DIR SUPERVISOR		COUNTY		STATE		Start Date		Depth Reference:		RKB			
Don Hilliard		Merle Hall		Tyler		WV		02-Jan-15		Tie Into:		GyroMultiShot			
DipA: 66.89		Mag Field: 0.52311		Mag Dec: -8.53		Total Cor.: -7.72		Job Service:		Dir/Gamma					
Mag Spacing Req.		Mag Spacing Actual		Mag Spacing Req.		Mag Spacing Actual									
Below 25		Below 27		Above 40		Above 45									
Survey Number	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (°/100')	Build Rate (°/100')	Walk Rate (°/100')		
							N/S (ft)	E/W (ft)	Distance (ft)	Direction Azimuth					
Tie-In	0.00'	0.00°	0.00°	0.00'	0.00'	0.00'	0.00'	N	0.00'	W	0.00'	0.00°	0.00°	0.0°	0.0°
Gyro 1	100.00'	0.41°	168.51°	100.00'	100.00'	0.32'	0.35'	S	0.07'	E	0.36'	168.51°	0.41°	0.4°	168.5°
2	200	0.38	154.6	100.00'	200.00'	0.97'	1.00'	S	0.28'	E	1.04'	164.12°	0.10°	0.0°	-13.9°
3	300	0.37	149.42	100.00'	299.99'	1.62'	1.58'	S	0.59'	E	1.69'	159.46°	0.04°	0.0°	-5.2°
4	400	0.77	137.87	100.00'	399.99'	2.61'	2.35'	S	1.21'	E	2.65'	152.87°	0.41°	0.4°	-11.6°
5	500	1.39	154.97	100.00'	499.97'	4.46'	3.95'	S	2.17'	E	4.51'	151.23°	0.69°	0.6°	17.1°
6	600	2.69	155.62	100.00'	599.91'	7.94'	7.19'	S	3.65'	E	8.06'	153.07°	1.30°	1.3°	0.7°
7	700	2.8	161.35	100.00'	699.79'	12.54'	11.64'	S	5.40'	E	12.83'	155.11°	0.30°	0.1°	5.7°
8	800	3.43	156.16	100.00'	799.64'	17.77'	16.69'	S	7.39'	E	18.25'	156.11°	0.69°	0.6°	-5.2°
9	900	4.17	156.99	100.00'	899.42'	24.21'	22.77'	S	10.02'	E	24.88'	156.25°	0.74°	0.7°	0.8°
10	1000	4.8	156.43	100.00'	999.12'	31.80'	29.95'	S	13.12'	E	32.70'	156.35°	0.63°	0.6°	-0.6°
11	1100	5.41	154.81	100.00'	1098.72'	40.49'	38.06'	S	16.80'	E	41.60'	156.19°	0.63°	0.6°	-1.6°
12	1200	5.69	151.44	100.00'	1198.25'	50.00'	46.68'	S	21.17'	E	51.25'	155.60°	0.43°	0.3°	-3.4°
13	1300	6.25	149.73	100.00'	1297.71'	60.31'	55.73'	S	26.29'	E	61.62'	154.75°	0.59°	0.6°	-1.7°
14	1400	6.48	149.34	100.00'	1397.09'	71.32'	65.29'	S	31.91'	E	72.67'	153.95°	0.23°	0.2°	-0.4°
15	1500	7.09	148.36	100.00'	1496.39'	83.07'	75.39'	S	38.02'	E	84.44'	153.24°	0.62°	0.6°	-1.0°
16	1600	7.33	148.66	100.00'	1595.60'	95.56'	86.10'	S	44.58'	E	96.95'	152.63°	0.24°	0.2°	0.3°
17	1700	7.65	148.79	100.00'	1694.75'	108.53'	97.24'	S	51.34'	E	109.96'	152.16°	0.32°	0.3°	0.1°
18	1800	7.83	151.31	100.00'	1793.84'	121.89'	108.91'	S	58.06'	E	123.42'	151.94°	0.38°	0.2°	2.5°
19	1900	8.06	153.65	100.00'	1892.88'	135.52'	121.16'	S	64.45'	E	137.24'	151.99°	0.40°	0.2°	2.3°
20	2000	8.38	154.03	100.00'	1991.85'	149.55'	134.00'	S	70.75'	E	151.53'	152.17°	0.32°	0.3°	0.4°
21	2100	8.54	155.85	100.00'	2090.76'	163.94'	147.32'	S	76.98'	E	166.22'	152.41°	0.31°	0.2°	1.8°
22	2200	8.72	155.36	100.00'	2189.63'	178.58'	160.99'	S	83.18'	E	181.21'	152.68°	0.19°	0.2°	-0.5°
23	2300	8.33	157.45	100.00'	2288.52'	192.99'	174.57'	S	89.11'	E	196.00'	152.96°	0.50°	-0.4°	2.1°
24	2400	6.16	156.35	100.00'	2387.72'	205.22'	186.17'	S	94.04'	E	208.58'	153.20°	2.17°	-2.2°	-1.1°

Environmental Protection

WV Department of

Office of Oil and Gas





25	2500	4.01	154.47	100.00'	2487.32'	213.87'	194.25'	S	97.70'	E	217.43'	153.30°	2.16°	-2.2°	-1.9°
26	2600	2.29	146.51	100.00'	2587.16'	219.29'	199.07'	S	100.31'	E	222.91'	153.26°	1.77°	-1.7°	-8.0°
27	2700	1.33	138.37	100.00'	2687.11'	222.44'	201.60'	S	102.19'	E	226.02'	153.12°	0.99°	-1.0°	-8.1°
28	2800	0.88	150.42	100.00'	2787.10'	224.36'	203.14'	S	103.34'	E	227.91'	153.04°	0.50°	-0.5°	12.1°
29	2900	0.6	173.04	100.00'	2887.09'	225.57'	204.32'	S	103.78'	E	229.17'	153.07°	0.40°	-0.3°	22.6°
30	3000	0.64	200.2	100.00'	2987.08'	226.33'	205.37'	S	103.65'	E	230.04'	153.22°	0.29°	0.0°	27.2°
31	3100	0.55	195.56	100.00'	3087.08'	226.92'	206.35'	S	103.33'	E	230.78'	153.40°	0.10°	-0.1°	-4.6°
32	3200	0.28	194.25	100.00'	3187.07'	227.36'	207.05'	S	103.14'	E	231.32'	153.52°	0.27°	-0.3°	-1.3°
33	3300	0.4	176.81	100.00'	3287.07'	227.81'	207.64'	S	103.10'	E	231.83'	153.59°	0.16°	0.1°	-17.4°
34	3400	0.48	191.42	100.00'	3387.07'	228.37'	208.40'	S	103.04'	E	232.48'	153.69°	0.14°	0.1°	14.6°
35	3500	0.37	202.2	100.00'	3487.07'	228.82'	209.11'	S	102.83'	E	233.02'	153.81°	0.14°	-0.1°	10.8°
36	3600	0.5	189.67	100.00'	3587.06'	229.28'	209.84'	S	102.64'	E	233.59'	153.94°	0.16°	0.1°	-12.5°
37	3700	0.45	204.04	100.00'	3687.06'	229.77'	210.62'	S	102.40'	E	234.20'	154.07°	0.13°	-0.1°	14.4°
38	3800	0.39	207.42	100.00'	3787.06'	230.10'	211.29'	S	102.09'	E	234.66'	154.21°	0.06°	-0.1°	3.4°
39	3900	0.4	210.01	100.00'	3887.05'	230.39'	211.89'	S	101.75'	E	235.06'	154.35°	0.02°	0.0°	2.6°
40	4000	0.43	213.68	100.00'	3987.05'	230.65'	212.50'	S	101.37'	E	235.44'	154.50°	0.04°	0.0°	3.7°
41	4100	0.6	209.2	100.00'	4087.05'	230.98'	213.27'	S	100.91'	E	235.94'	154.68°	0.17°	0.2°	-4.5°
42	4200	0.64	211.25	100.00'	4187.04'	231.40'	214.21'	S	100.36'	E	236.55'	154.90°	0.05°	0.0°	2.1°
43	4300	0.47	206.11	100.00'	4287.04'	231.79'	215.05'	S	99.89'	E	237.12'	155.09°	0.18°	-0.2°	-5.1°
44	4400	0.46	221.87	100.00'	4387.03'	232.05'	215.72'	S	99.44'	E	237.54'	155.25°	0.13°	0.0°	15.8°
45	4500	0.39	237.11	100.00'	4487.03'	232.10'	216.21'	S	98.89'	E	237.75'	155.42°	0.13°	-0.1°	15.2°
46	4600	0.32	223.64	100.00'	4587.03'	232.12'	216.59'	S	98.41'	E	237.90'	155.56°	0.11°	-0.1°	-13.5°
47	4700	0.58	228.86	100.00'	4687.03'	232.20'	217.13'	S	97.84'	E	238.15'	155.74°	0.26°	0.3°	5.2°
48	4800	0.51	235.03	100.00'	4787.02'	232.22'	217.72'	S	97.09'	E	238.38'	155.97°	0.09°	-0.1°	6.2°
49	4900	0.5	250.13	100.00'	4887.02'	232.08'	218.12'	S	96.32'	E	238.44'	156.17°	0.13°	0.0°	15.1°
50	5000	0.67	236.88	100.00'	4987.01'	231.91'	218.59'	S	95.42'	E	238.50'	156.42°	0.22°	0.2°	-13.3°
51	5100	0.52	246.97	100.00'	5087.01'	231.76'	219.08'	S	94.51'	E	238.60'	156.67°	0.18°	-0.2°	10.1°
52	5200	0.54	254.79	100.00'	5187.00'	231.47'	219.38'	S	93.64'	E	238.53'	156.89°	0.07°	0.0°	7.8°
53	5300	0.47	285.18	100.00'	5287.00'	230.97'	219.40'	S	92.79'	E	238.21'	157.08°	0.27°	-0.1°	30.4°
54	5400	0.37	285.78	100.00'	5387.00'	230.39'	219.21'	S	92.08'	E	237.76'	157.21°	0.10°	-0.1°	0.6°
55	5500	0.47	276.42	100.00'	5486.99'	229.85'	219.07'	S	91.36'	E	237.36'	157.36°	0.12°	0.1°	-9.4°
56	5600	0.34	285.06	100.00'	5586.99'	229.33'	218.95'	S	90.67'	E	236.98'	157.51°	0.14°	-0.1°	8.6°
57	5700	0.42	285.04	100.00'	5686.99'	228.81'	218.78'	S	90.03'	E	236.58'	157.63°	0.08°	0.1°	0.0°
58	5800	0.71	294.41	100.00'	5786.98'	227.97'	218.43'	S	89.11'	E	235.90'	157.81°	0.30°	0.3°	9.4°
59	5824	0.7	301.9	24.00'	5810.98'	227.71'	218.29'	S	88.85'	E	235.68'	157.85°	0.39°	0.0°	31.2°
60	5868.00'	0.60°	299.10°	44.00'	5854.98'	227.25'	218.03'	S	88.42'	E	235.28'	157.93°	0.24°	-0.2°	-6.4°

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61	5913.00'	0.50°	317.40°	45.00'	5899.98'	226.83'	217.77'	S	88.08'	E	234.91'	157.98°	0.45°	-0.2°	40.7°
62	5957.00'	5.10°	202.40°	44.00'	5943.92'	227.64'	219.44'	S	87.21'	E	236.13'	158.33°	12.11°	10.5°	-261.4°
63	6001.00'	13.00°	196.90°	44.00'	5987.34'	231.55'	226.00'	S	85.02'	E	241.46'	159.38°	18.04°	18.0°	-12.5°
64	6045.00'	15.50°	195.20°	44.00'	6029.98'	238.05'	236.41'	S	82.04'	E	250.24'	160.86°	5.76°	5.7°	-3.9°
65	6090.00'	17.10°	195.70°	45.00'	6073.17'	245.73'	248.58'	S	78.67'	E	260.73'	162.44°	3.57°	3.6°	1.1°
66	6134.00'	18.10°	195.70°	44.00'	6115.11'	253.78'	261.39'	S	75.07'	E	271.95'	163.98°	2.27°	2.3°	0.0°
67	6179.00'	20.10°	195.10°	45.00'	6157.63'	262.75'	275.58'	S	71.16'	E	284.62'	165.52°	4.47°	4.4°	-1.3°
68	6223.00'	23.80°	194.40°	44.00'	6198.44'	272.91'	291.49'	S	66.98'	E	299.08'	167.06°	8.43°	8.4°	-1.6°
69	6268.00'	26.20°	195.70°	45.00'	6239.22'	284.57'	309.85'	S	62.04'	E	316.00'	168.68°	5.47°	5.3°	2.9°
70	6312.00'	28.80°	194.30°	44.00'	6278.24'	297.06'	329.47'	S	56.79'	E	334.33'	170.22°	6.09°	5.9°	-3.2°
71	6354.00'	33.00°	194.00°	42.00'	6314.27'	310.57'	350.38'	S	51.52'	E	354.15'	171.63°	10.01°	10.0°	-0.7°
72	6399.00'	36.20°	194.00°	45.00'	6351.31'	326.61'	375.17'	S	45.34'	E	377.90'	173.11°	7.11°	7.1°	0.0°
73	6443.00'	39.60°	195.50°	44.00'	6386.02'	343.30'	401.30'	S	38.45'	E	403.14'	174.53°	8.01°	7.7°	3.4°
74	6488.00'	43.90°	194.20°	45.00'	6419.59'	361.78'	430.26'	S	30.78'	E	431.36'	175.91°	9.75°	9.6°	-2.9°
75	6532.00'	48.20°	192.10°	44.00'	6450.12'	382.05'	461.10'	S	23.60'	E	461.71'	177.07°	10.36°	9.8°	-4.8°
76	6576.00'	52.00°	191.90°	44.00'	6478.34'	404.15'	494.11'	S	16.59'	E	494.39'	178.08°	8.64°	8.6°	-0.5°
77	6621.00'	55.70°	191.30°	45.00'	6504.88'	428.14'	529.70'	S	9.29'	E	529.78'	179.00°	8.29°	8.2°	-1.3°
78	6665.00'	59.40°	189.70°	44.00'	6528.49'	453.18'	566.20'	S	2.53'	E	566.21'	179.74°	8.95°	8.4°	-3.6°
79	6710.00'	59.70°	189.90°	45.00'	6551.29'	479.69'	604.43'	S	4.07'	W	604.44'	180.39°	0.77°	0.7°	0.4°
80	6754.00'	59.90°	189.50°	44.00'	6573.43'	505.73'	641.92'	S	10.48'	W	642.00'	180.94°	0.91°	0.5°	-0.9°
81	6798.00'	59.80°	189.60°	44.00'	6595.53'	531.85'	679.44'	S	16.79'	W	679.64'	181.42°	0.30°	-0.2°	0.2°
82	6843.00'	59.60°	189.90°	45.00'	6618.23'	558.43'	717.73'	S	23.37'	W	718.11'	181.87°	0.73°	-0.4°	0.7°
83	6887.00'	59.30°	190.00°	44.00'	6640.59'	584.25'	755.05'	S	29.92'	W	755.64'	182.27°	0.71°	-0.7°	0.2°
84	6931.00'	61.80°	184.10°	44.00'	6662.24'	611.74'	793.05'	S	34.59'	W	793.80'	182.50°	12.98°	5.7°	-13.4°
85	6975.00'	64.70°	179.10°	44.00'	6682.05'	642.41'	832.30'	S	35.67'	W	833.07'	182.45°	12.10°	6.6°	-11.4°
86	7020.00'	66.00°	175.80°	45.00'	6700.82'	676.10'	873.15'	S	33.84'	W	873.81'	182.22°	7.26°	2.9°	-7.3°
87	7062.00'	67.50°	172.50°	42.00'	6717.41'	709.09'	911.53'	S	29.90'	W	912.02'	181.88°	8.05°	3.6°	-7.9°
88	7106.00'	68.60°	170.70°	44.00'	6733.85'	744.88'	951.90'	S	23.94'	W	952.20'	181.44°	4.54°	2.5°	-4.1°
89	7151.00'	72.30°	167.20°	45.00'	6748.91'	782.98'	993.50'	S	15.80'	W	993.63'	180.91°	11.01°	8.2°	-7.8°
90	7195.00'	73.60°	163.80°	44.00'	6761.82'	821.81'	1034.22'	S	5.27'	W	1034.24'	180.29°	7.96°	3.0°	-7.7°
91	7239.00'	75.60°	161.80°	44.00'	6773.50'	861.70'	1074.74'	S	7.28'	E	1074.76'	179.61°	6.31°	4.5°	-4.5°
92	7284.00'	79.30°	159.10°	45.00'	6783.28'	903.57'	1116.12'	S	21.98'	E	1116.33'	178.87°	10.09°	8.2°	-6.0°
93	7326.00'	83.80°	155.10°	42.00'	6789.45'	943.83'	1154.37'	S	38.15'	E	1155.00'	178.11°	14.27°	10.7°	-9.5°
94	7371.00'	88.10°	152.10°	45.00'	6792.63'	987.92'	1194.56'	S	58.10'	E	1195.97'	177.22°	11.64°	9.6°	-6.7°
95	7415.00'	89.40°	152.60°	44.00'	6793.59'	1031.32'	1233.52'	S	78.52'	E	1236.02'	176.36°	3.17°	3.0°	1.1°
96	7457.00'	92.30°	152.90°	42.00'	6792.97'	1072.69'	1270.85'	S	97.74'	E	1274.61'	175.60°	6.94°	6.9°	0.7°





97	7501.00'	92.80°	152.80°	44.00'	6791.01'	1115.99'	1309.97' S	117.80'	E	1315.25'	174.86°	1.16°	1.1°	-0.2°
98	7546.00'	90.60°	148.90°	45.00'	6789.68'	1160.52'	1349.24' S	139.70'	E	1356.45'	174.09°	9.95°	-4.9°	-8.7°
99	7590.00'	90.30°	146.30°	44.00'	6789.33'	1204.37'	1386.39' S	163.28'	E	1395.97'	173.28°	5.95°	-0.7°	-5.9°
100	7634.00'	89.70°	144.50°	44.00'	6789.33'	1248.33'	1422.60' S	188.26'	E	1435.00'	172.46°	4.31°	-1.4°	-4.1°
101	7679.00'	89.30°	142.80°	45.00'	6789.72'	1293.32'	1458.84' S	214.93'	E	1474.59'	171.62°	3.88°	-0.9°	-3.8°
102	7723.00'	88.80°	140.40°	44.00'	6790.45'	1337.30'	1493.32' S	242.26'	E	1512.84'	170.79°	5.57°	-1.1°	-5.5°
103	7768.00'	88.90°	140.80°	45.00'	6791.36'	1382.26'	1528.08' S	270.81'	E	1551.90'	169.95°	0.92°	0.2°	0.9°
104	7812.00'	89.70°	138.10°	44.00'	6791.89'	1426.17'	1561.51' S	299.41'	E	1589.96'	169.15°	6.40°	1.8°	-6.1°
105	7856.00'	89.30°	138.40°	44.00'	6792.28'	1470.02'	1594.34' S	328.71'	E	1627.87'	168.35°	1.14°	-0.9°	0.7°
106	7899.00'	88.80°	138.10°	43.00'	6792.99'	1512.87'	1626.41' S	357.34'	E	1665.20'	167.61°	1.36°	-1.2°	-0.7°
107	7941.00'	89.50°	135.60°	42.00'	6793.61'	1554.63'	1657.05' S	386.06'	E	1701.42'	166.89°	6.18°	1.7°	-6.0°
108	7985.00'	90.00°	136.60°	44.00'	6793.81'	1598.32'	1688.75' S	416.57'	E	1739.37'	166.14°	2.54°	1.1°	2.3°
109	8030.00'	91.50°	136.70°	45.00'	6793.22'	1643.04'	1721.47' S	447.45'	E	1778.67'	165.43°	3.34°	3.3°	0.2°
110	8074.00'	91.00°	136.50°	44.00'	6792.26'	1686.77'	1753.43' S	477.68'	E	1817.33'	164.76°	1.22°	-1.1°	-0.5°
111	8118.00'	90.80°	136.20°	44.00'	6791.57'	1730.47'	1785.26' S	508.05'	E	1856.15'	164.11°	0.82°	-0.5°	-0.7°
112	8163.00'	90.30°	136.10°	45.00'	6791.13'	1775.16'	1817.71' S	539.22'	E	1896.01'	163.48°	1.13°	-1.1°	-0.2°
113	8207.00'	89.50°	136.10°	44.00'	6791.21'	1818.85'	1849.42' S	569.73'	E	1935.18'	162.88°	1.82°	-1.8°	0.0°
114	8251.00'	89.10°	135.60°	44.00'	6791.75'	1862.51'	1880.99' S	600.37'	E	1974.48'	162.30°	1.46°	-0.9°	-1.1°
115	8296.00'	88.70°	136.10°	45.00'	6792.61'	1907.16'	1913.27' S	631.71'	E	2014.86'	161.73°	1.42°	-0.9°	1.1°
116	8340.00'	90.20°	136.30°	44.00'	6793.03'	1950.86'	1945.02' S	662.17'	E	2054.65'	161.20°	3.44°	3.4°	0.5°
117	8385.00'	89.80°	135.70°	45.00'	6793.03'	1995.53'	1977.39' S	693.42'	E	2095.45'	160.68°	1.60°	-0.9°	-1.3°
118	8430.00'	89.10°	135.30°	45.00'	6793.47'	2040.15'	2009.49' S	724.96'	E	2136.26'	160.16°	1.79°	-1.6°	-0.9°
119	8474.00'	90.50°	135.60°	44.00'	6793.62'	2083.78'	2040.84' S	755.83'	E	2176.31'	159.68°	3.25°	3.2°	0.7°
120	8518.00'	90.10°	135.20°	44.00'	6793.39'	2127.40'	2072.17' S	786.72'	E	2216.49'	159.21°	1.29°	-0.9°	-0.9°
121	8563.00'	90.00°	134.20°	45.00'	6793.35'	2171.94'	2103.82' S	818.71'	E	2257.51'	158.74°	2.23°	-0.2°	-2.2°
122	8607.00'	89.70°	133.10°	44.00'	6793.47'	2215.36'	2134.20' S	850.55'	E	2297.44'	158.27°	2.59°	-0.7°	-2.5°
123	8651.00'	90.70°	135.60°	44.00'	6793.31'	2258.87'	2164.95' S	882.01'	E	2337.72'	157.83°	6.12°	2.3°	5.7°
124	8695.00'	90.40°	135.00°	44.00'	6792.89'	2302.48'	2196.22' S	912.95'	E	2378.42'	157.43°	1.52°	-0.7°	-1.4°
125	8740.00'	90.40°	135.00°	45.00'	6792.58'	2347.05'	2228.04' S	944.77'	E	2420.08'	157.02°	0.00°	0.0°	0.0°
126	8782.00'	90.90°	136.40°	42.00'	6792.10'	2388.71'	2258.10' S	974.10'	E	2459.25'	156.67°	3.54°	1.2°	3.3°
127	8826.00'	90.40°	136.60°	44.00'	6791.60'	2432.43'	2290.01' S	1004.39'	E	2500.59'	156.32°	1.22°	-1.1°	0.5°
128	8871.00'	90.00°	136.20°	45.00'	6791.44'	2477.14'	2322.60' S	1035.42'	E	2542.95'	155.97°	1.26°	-0.9°	-0.9°
129	8915.00'	88.90°	135.80°	44.00'	6791.87'	2520.82'	2354.25' S	1065.99'	E	2584.34'	155.64°	2.66°	-2.5°	-0.9°
130	8959.00'	88.60°	137.40°	44.00'	6792.83'	2564.54'	2386.21' S	1096.21'	E	2625.96'	155.33°	3.70°	-0.7°	3.6°
131	9004.00'	87.70°	137.00°	45.00'	6794.28'	2609.30'	2419.21' S	1126.77'	E	2668.74'	155.03°	2.19°	-2.0°	-0.9°
132	9049.00'	89.90°	141.00°	45.00'	6795.22'	2654.17'	2453.16' S	1156.28'	E	2712.00'	154.76°	10.14°	4.9°	8.9°

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133	9093.00'	90.80°	141.60°	44.00'	6794.95'	2698.15'	2487.49' S	1183.79' E	2754.81'	154.55°	2.46°	2.0°	1.4°
134	9135.00'	90.40°	141.30°	42.00'	6794.51'	2740.13'	2520.34' S	1209.96' E	2795.73'	154.36°	1.19°	-1.0°	-0.7°
135	9180.00'	90.00°	140.40°	45.00'	6794.36'	2785.11'	2555.24' S	1238.37' E	2839.50'	154.14°	2.19°	-0.9°	-2.0°
136	9221.00'	89.50°	139.50°	41.00'	6794.53'	2826.05'	2586.62' S	1264.75' E	2879.27'	153.94°	2.51°	-1.2°	-2.2°
137	9266.00'	88.80°	138.90°	45.00'	6795.20'	2870.95'	2620.68' S	1294.15' E	2922.80'	153.72°	2.05°	-1.6°	-1.3°
138	9310.00'	90.00°	138.80°	44.00'	6795.66'	2914.84'	2653.81' S	1323.10' E	2965.35'	153.50°	2.74°	2.7°	-0.2°
139	9352.00'	89.30°	138.10°	42.00'	6795.92'	2956.71'	2685.24' S	1350.96' E	3005.93'	153.29°	2.36°	-1.7°	-1.7°
140	9396.00'	89.60°	138.90°	44.00'	6796.34'	3000.57'	2718.19' S	1380.11' E	3048.49'	153.08°	1.94°	0.7°	1.8°
141	9441.00'	91.70°	139.30°	45.00'	6795.83'	3045.47'	2752.20' S	1409.57' E	3092.17'	152.88°	4.75°	4.7°	0.9°
142	9485.00'	91.20°	139.20°	44.00'	6794.72'	3089.37'	2785.52' S	1438.28' E	3134.93'	152.69°	1.16°	-1.1°	-0.2°
143	9529.00'	90.80°	139.40°	44.00'	6793.95'	3133.27'	2818.88' S	1466.97' E	3177.75'	152.51°	1.02°	-0.9°	0.5°
144	9574.00'	90.10°	138.50°	45.00'	6793.60'	3178.16'	2852.81' S	1496.52' E	3221.51'	152.32°	2.53°	-1.6°	-2.0°
145	9616.00'	89.10°	137.50°	42.00'	6793.89'	3220.01'	2884.02' S	1524.62' E	3262.22'	152.14°	3.37°	-2.4°	-2.4°
146	9661.00'	88.40°	137.40°	45.00'	6794.87'	3264.79'	2917.16' S	1555.05' E	3305.76'	151.94°	1.57°	-1.6°	-0.2°
147	9705.00'	89.80°	138.20°	44.00'	6795.56'	3308.61'	2949.75' S	1584.60' E	3348.43'	151.76°	3.66°	3.2°	1.8°
148	9749.00'	89.70°	139.10°	44.00'	6795.75'	3352.49'	2982.78' S	1613.67' E	3391.30'	151.59°	2.06°	-0.2°	2.0°
149	9794.00'	91.60°	137.70°	45.00'	6795.24'	3397.34'	3016.43' S	1643.54' E	3435.12'	151.42°	5.24°	4.2°	-3.1°
150	9838.00'	91.30°	137.50°	44.00'	6794.13'	3441.14'	3048.91' S	1673.20' E	3477.85'	151.24°	0.82°	-0.7°	-0.5°
151	9883.00'	91.50°	138.20°	45.00'	6793.03'	3485.95'	3082.26' S	1703.39' E	3521.63'	151.07°	1.62°	0.4°	1.6°
152	9927.00'	91.30°	137.60°	44.00'	6791.96'	3529.77'	3114.90' S	1732.88' E	3564.47'	150.91°	1.44°	-0.5°	-1.4°
153	9971.00'	90.80°	137.70°	44.00'	6791.15'	3573.58'	3147.41' S	1762.51' E	3607.31'	150.75°	1.16°	-1.1°	0.2°
154	10014.00'	90.60°	137.70°	43.00'	6790.62'	3616.39'	3179.22' S	1791.45' E	3649.21'	150.60°	0.47°	-0.5°	0.0°
155	10058.00'	90.40°	137.80°	44.00'	6790.24'	3660.21'	3211.78' S	1821.03' E	3692.12'	150.45°	0.51°	-0.5°	0.2°
156	10102.00'	90.10°	137.90°	44.00'	6790.05'	3704.04'	3244.40' S	1850.56' E	3735.07'	150.30°	0.72°	-0.7°	0.2°
157	10147.00'	90.00°	137.40°	45.00'	6790.01'	3748.85'	3277.66' S	1880.88' E	3778.99'	150.15°	1.13°	-0.2°	-1.1°
158	10191.00'	90.00°	138.10°	44.00'	6790.01'	3792.67'	3310.23' S	1910.46' E	3821.97'	150.01°	1.59°	0.0°	1.6°
159	10236.00'	89.80°	138.30°	45.00'	6790.09'	3837.52'	3343.78' S	1940.45' E	3866.03'	149.87°	0.63°	-0.4°	0.4°
160	10280.00'	89.40°	138.40°	44.00'	6790.39'	3881.38'	3376.65' S	1969.69' E	3909.15'	149.74°	0.94°	-0.9°	0.2°
161	10325.00'	89.60°	138.90°	45.00'	6790.79'	3926.26'	3410.43' S	1999.42' E	3953.32'	149.62°	1.20°	0.4°	1.1°
162	10367.00'	89.50°	138.80°	42.00'	6791.12'	3968.15'	3442.06' S	2027.06' E	3994.59'	149.51°	0.34°	-0.2°	-0.2°
163	10412.00'	89.10°	138.40°	45.00'	6791.67'	4013.02'	3475.81' S	2056.82' E	4038.78'	149.39°	1.26°	-0.9°	-0.9°
164	10457.00'	89.10°	138.40°	45.00'	6792.37'	4057.87'	3509.46' S	2086.69' E	4082.96'	149.26°	0.00°	0.0°	0.0°
165	10501.00'	88.90°	137.70°	44.00'	6793.14'	4101.71'	3542.18' S	2116.10' E	4126.12'	149.15°	1.65°	-0.5°	-1.6°
166	10545.00'	88.70°	137.60°	44.00'	6794.06'	4145.51'	3574.69' S	2145.73' E	4169.24'	149.03°	0.51°	-0.5°	-0.2°
167	10590.00'	89.70°	137.20°	45.00'	6794.69'	4190.30'	3607.81' S	2176.19' E	4213.32'	148.90°	2.39°	2.2°	-0.9°
168	10634.00'	89.40°	137.20°	44.00'	6795.04'	4234.08'	3640.09' S	2206.08' E	4256.41'	148.78°	0.68°	-0.7°	0.0°





169	10679.00'	90.80°	137.20°	45.00'	6794.96'	4278.86'	3673.11' S	2236.66'	E	4300.51'	148.66°	3.11°	3.1°	0.0°
170	10721.00'	90.60°	137.60°	42.00'	6794.45'	4320.66'	3704.02' S	2265.08'	E	4341.70'	148.55°	1.06°	-0.5°	1.0°
171	10763.00'	90.40°	136.90°	42.00'	6794.08'	4362.45'	3734.86' S	2293.59'	E	4382.89'	148.45°	1.73°	-0.5°	-1.7°
172	10807.00'	90.40°	136.80°	44.00'	6793.77'	4406.20'	3766.96' S	2323.68'	E	4426.00'	148.33°	0.23°	0.0°	-0.2°
173	10851.00'	89.90°	136.50°	44.00'	6793.66'	4449.94'	3798.96' S	2353.89'	E	4469.10'	148.22°	1.33°	-1.1°	-0.7°
174	10895.00'	89.50°	136.90°	44.00'	6793.89'	4493.68'	3830.98' S	2384.06'	E	4512.22'	148.11°	1.29°	-0.9°	0.9°
175	10940.00'	90.60°	137.40°	45.00'	6793.85'	4538.46'	3863.97' S	2414.66'	E	4556.41'	148.00°	2.69°	2.4°	1.1°
176	10985.00'	90.50°	137.60°	45.00'	6793.42'	4583.25'	3897.14' S	2445.06'	E	4600.66'	147.90°	0.50°	-0.2°	0.4°
177	11029.00'	90.10°	137.70°	44.00'	6793.19'	4627.07'	3929.66' S	2474.71'	E	4643.97'	147.80°	0.94°	-0.9°	0.2°
178	11071.00'	89.60°	136.60°	42.00'	6793.30'	4668.85'	3960.45' S	2503.27'	E	4685.25'	147.70°	2.88°	-1.2°	-2.6°
179	11116.00'	89.40°	136.40°	45.00'	6793.69'	4713.57'	3993.09' S	2534.24'	E	4729.40'	147.60°	0.63°	-0.4°	-0.4°
180	11160.00'	91.20°	136.10°	44.00'	6793.46'	4757.27'	4024.88' S	2564.67'	E	4772.54'	147.49°	4.15°	4.1°	-0.7°
181	11204.00'	90.80°	135.10°	44.00'	6792.69'	4800.91'	4056.31' S	2595.45'	E	4815.60'	147.39°	2.45°	-0.9°	-2.3°
182	11246.00'	90.50°	135.30°	42.00'	6792.21'	4842.52'	4086.11' S	2625.04'	E	4856.66'	147.28°	0.86°	-0.7°	0.5°
183	11291.00'	91.10°	135.80°	45.00'	6791.58'	4887.15'	4118.23' S	2656.55'	E	4900.72'	147.18°	1.74°	1.3°	1.1°
184	11335.00'	90.80°	135.70°	44.00'	6790.86'	4930.80'	4149.74' S	2687.25'	E	4943.85'	147.07°	0.72°	-0.7°	-0.2°
185	11380.00'	89.70°	136.10°	45.00'	6790.66'	4975.46'	4182.06' S	2718.56'	E	4988.00'	146.97°	2.60°	-2.4°	0.9°
186	11422.00'	89.40°	136.00°	42.00'	6790.99'	5017.16'	4212.29' S	2747.71'	E	5029.25'	146.88°	0.75°	-0.7°	-0.2°
187	11467.00'	89.20°	135.60°	45.00'	6791.54'	5061.81'	4244.55' S	2779.08'	E	5073.41'	146.79°	0.99°	-0.4°	-0.9°
188	11511.00'	89.10°	135.40°	44.00'	6792.19'	5105.44'	4275.93' S	2809.92'	E	5116.56'	146.69°	0.51°	-0.2°	-0.5°
189	11556.00'	88.80°	135.50°	45.00'	6793.02'	5150.05'	4307.99' S	2841.48'	E	5160.70'	146.59°	0.70°	-0.7°	0.2°
190	11600.00'	88.30°	134.80°	44.00'	6794.13'	5193.63'	4339.18' S	2872.50'	E	5203.82'	146.50°	1.95°	-1.1°	-1.6°
191	11644.00'	89.30°	136.90°	44.00'	6795.05'	5237.29'	4370.74' S	2903.14'	E	5247.06'	146.41°	5.29°	2.3°	4.8°
192	11689.00'	89.50°	137.00°	45.00'	6795.52'	5282.04'	4403.62' S	2933.86'	E	5291.45'	146.33°	0.50°	0.4°	0.2°
193	11733.00'	89.20°	136.70°	44.00'	6796.02'	5325.79'	4435.72' S	2963.95'	E	5334.85'	146.25°	0.96°	-0.7°	-0.7°
194	11777.00'	89.10°	137.20°	44.00'	6796.67'	5369.55'	4467.87' S	2993.98'	E	5378.27'	146.17°	1.16°	-0.2°	1.1°
195	11822.00'	90.50°	137.40°	45.00'	6796.83'	5414.33'	4500.94' S	3024.50'	E	5422.73'	146.10°	3.14°	3.1°	0.4°
196	11866.00'	90.20°	137.30°	44.00'	6796.56'	5458.12'	4533.30' S	3054.31'	E	5466.23'	146.03°	0.72°	-0.7°	-0.2°
197	11908.00'	90.10°	136.90°	42.00'	6796.45'	5499.91'	4564.07' S	3082.90'	E	5507.72'	145.96°	0.98°	-0.2°	-1.0°
198	11953.00'	89.80°	137.30°	45.00'	6796.49'	5544.68'	4597.03' S	3113.53'	E	5552.19'	145.89°	1.11°	-0.7°	0.9°
199	11998.00'	90.00°	138.00°	45.00'	6796.57'	5589.49'	4630.29' S	3143.84'	E	5596.73'	145.82°	1.62°	0.4°	1.6°
200	12042.00'	89.50°	136.90°	44.00'	6796.76'	5633.29'	4662.70' S	3173.60'	E	5640.26'	145.76°	2.75°	-1.1°	-2.5°
201	12086.00'	89.30°	135.40°	44.00'	6797.22'	5676.98'	4694.43' S	3204.08'	E	5683.64'	145.69°	3.44°	-0.5	-3.4
202	12130.00'	88.60°	135.70°	44.00'	6798.03'	5720.61'	4725.84' S	3234.88'	E	5726.95'	145.61°	1.73°	-1.6	0.7
203	12174.00'	90.50°	134.40°	43.00'	6798.37'	5763.20'	4756.26' S	3265.26'	E	5769.23'	145.53°	5.35°	4.4	-3.0
204	12218.00'	90.20°	133.80°	45.00'	6798.09'	5807.67'	4787.58' S	3297.58'	E	5813.34'	145.44°	1.49°	-0.7	-1.3

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205	12263.00'	89.90°	133.50°	45.00'	6798.05'	5852.08'	4818.64' S	3330.14'	E	5857.40'	145.35°	0.94°	-0.7	-0.7
206	12307.00'	89.90°	134.30°	44.00'	6798.13'	5895.54'	4849.15' S	3361.84'	E	5900.53'	145.27°	1.82°	0.0	1.8
207	12352.00'	89.20°	133.10°	45.00'	6798.48'	5939.95'	4880.24' S	3394.37'	E	5944.62'	145.18°	3.09°	-1.6	-2.7
208	12396.00'	89.30°	134.60°	44.00'	6799.06'	5983.40'	4910.72' S	3426.10'	E	5987.76'	145.10°	3.42°	0.2	3.4
209	12440.00'	89.40°	135.20°	44.00'	6799.56'	6026.97'	4941.77' S	3457.26'	E	6031.07'	145.02°	1.38°	0.2	1.4
210	12485.00'	90.30°	138.20°	45.00'	6799.68'	6071.70'	4974.52' S	3488.12'	E	6075.59'	144.96°	6.96°	2.0	6.7
211	12529.00'	90.00°	137.30°	44.00'	6799.56'	6115.52'	5007.09' S	3517.71'	E	6119.25'	144.91°	2.16°	-0.7	-2.0
212	12574.00'	89.30°	137.50°	45.00'	6799.84'	6160.31'	5040.21' S	3548.16'	E	6163.86'	144.86°	1.62°	-1.6	0.4
213	12618.00'	89.60°	139.10°	44.00'	6800.26'	6204.16'	5073.06' S	3577.43'	E	6207.57'	144.81°	3.70°	0.7	3.6
214	12663.00'	89.20°	138.20°	45.00'	6800.73'	6249.04'	5106.84' S	3607.16'	E	6252.31'	144.76°	2.19°	-0.9	-2.0
215	12707.00'	89.10°	138.00°	44.00'	6801.38'	6292.88'	5139.59' S	3636.54'	E	6296.01'	144.72°	0.51°	-0.2	-0.5
216	12748.00'	88.90°	137.20°	41.00'	6802.10'	6333.69'	5169.86' S	3664.18'	E	6336.69'	144.67°	2.01°	-0.5	-2.0
217	12793.00'	90.00°	136.80°	45.00'	6802.53'	6378.45'	5202.77' S	3694.87'	E	6381.29'	144.62°	2.60°	2.4	-0.9
218	12837.00'	90.10°	136.90°	44.00'	6802.49'	6422.21'	5234.87' S	3724.96'	E	6424.89'	144.57°	0.32°	0.2	0.2
219	12879.00'	91.90°	136.90°	42.00'	6801.76'	6463.97'	5265.53' S	3753.65'	E	6466.51'	144.52°	4.29°	4.3	0.0
220	12924.00'	91.70°	136.80°	45.00'	6800.34'	6508.69'	5298.34' S	3784.42'	E	6511.09'	144.46°	0.50°	-0.4	-0.2
221	12968.00'	92.10°	138.40°	44.00'	6798.89'	6552.48'	5330.82' S	3814.07'	E	6554.75'	144.42°	3.75°	0.9	3.6
222	13013.00'	91.60°	139.00°	45.00'	6797.43'	6597.33'	5364.60' S	3843.75'	E	6599.50'	144.38°	1.74°	-1.1	1.3
223	13057.00'	91.30°	138.90°	44.00'	6796.32'	6641.21'	5397.78' S	3872.64'	E	6643.29'	144.34°	0.72°	-0.7	-0.2
224	13102.00'	91.30°	138.40°	45.00'	6795.30'	6686.08'	5431.55' S	3902.36'	E	6688.06'	144.30°	1.11°	0.0	-1.1
225	13146.00'	91.20°	138.80°	44.00'	6794.34'	6729.94'	5464.54' S	3931.45'	E	6731.83'	144.27°	0.94°	-0.2	0.9
226	13191.00'	90.70°	139.40°	45.00'	6793.59'	6774.84'	5498.55' S	3960.91'	E	6776.64'	144.23°	1.74°	-1.1	1.3
227	13235.00'	90.10°	138.30°	44.00'	6793.29'	6818.73'	5531.68' S	3989.86'	E	6820.45'	144.20°	2.85°	-1.4	-2.5
228	13275.00'	88.80°	134.60°	40.00'	6793.67'	6858.46'	5560.67' S	4017.41'	E	6860.08'	144.15°	9.80°	-3.2	-9.3
229	13322.00'	87.80°	132.60°	47.00'	6795.06'	6904.82'	5593.06' S	4051.43'	E	6906.26'	144.08°	4.76°	-2.1	-4.3
230	13366.00'	88.70°	136.30°	44.00'	6796.41'	6948.31'	5623.86' S	4082.82'	E	6949.62'	144.02°	8.65°	2.0	8.4
231	13411.00'	89.90°	137.10°	45.00'	6796.96'	6993.04'	5656.60' S	4113.68'	E	6994.25'	143.97°	3.20°	2.7	1.8
232	13455.00'	89.30°	136.40°	44.00'	6797.27'	7036.79'	5688.65' S	4143.83'	E	7037.90'	143.93°	2.10°	-1.4	-1.6
233	13499.00'	89.40°	136.70°	44.00'	6797.76'	7080.51'	5720.59' S	4174.09'	E	7081.54'	143.88°	0.72°	0.2	0.7
234	13544.00'	90.30°	137.80°	45.00'	6797.88'	7125.29'	5753.63' S	4204.63'	E	7126.24'	143.84°	3.16°	2.0	2.4
235	13588.00'	90.50°	137.20°	44.00'	6797.58'	7169.10'	5786.07' S	4234.36'	E	7169.97'	143.80°	1.44°	0.5	-1.4
236	13632.00'	88.00°	137.80°	44.00'	6798.15'	7212.89'	5818.51' S	4264.08'	E	7213.69'	143.76°	5.84°	-5.7	1.4
237	13675.00'	87.60°	138.20°	43.00'	6799.80'	7255.70'	5850.44' S	4292.83'	E	7256.45'	143.73°	1.32°	-0.9	0.9
238	13719.00'	85.90°	139.00°	44.00'	6802.30'	7299.51'	5883.39' S	4321.88'	E	7300.20'	143.70°	4.27°	-3.9	1.8
239	13763.00'	86.80°	140.60°	44.00'	6805.10'	7343.35'	5916.93' S	4350.22'	E	7344.01'	143.68°	4.17°	2.0	3.6
240	13808.00'	86.20°	139.10°	45.00'	6807.84'	7388.20'	5951.26' S	4379.18'	E	7388.82'	143.65°	3.58°	-1.3	-3.3

WV Department of Environmental Protection



241	13852.00'	86.20°	139.20°	44.00'	6810.76'	7432.01'	5984.47' S	4407.90' E	7432.59'	143.63°	0.23°	0.0	0.2
242	13897.00'	85.80°	139.10°	45.00'	6813.90'	7476.80'	6018.42' S	4437.26' E	7477.34'	143.60°	0.92°	-0.9	-0.2
243	13941.00'	85.60°	140.20°	44.00'	6817.20'	7520.61'	6051.86' S	4465.67' E	7521.12'	143.58°	2.53°	-0.5	2.5
244	13986.00'	88.20°	139.50°	45.00'	6819.63'	7565.47'	6086.20' S	4494.64' E	7565.95'	143.55°	5.98°	5.8	-1.6
245	14030.00'	87.80°	139.20°	44.00'	6821.17'	7609.36'	6119.57' S	4523.28' E	7609.81'	143.53°	1.14°	-0.9	-0.7
246	14075.00'	87.50°	140.00°	45.00'	6823.01'	7654.25'	6153.81' S	4552.42' E	7654.66'	143.51°	1.90°	-0.7	1.8
247	14119.00'	87.60°	140.00°	44.00'	6824.89'	7698.15'	6187.48' S	4580.68' E	7698.54'	143.49°	0.23°	0.2	0.0
Pro. TD	14161.00'	87.20°	139.50°	42.00'	6826.80'	7740.04'	6219.50' S	4607.79' E	7740.41'	143.47°	0.00°	0.0	0.0