

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

INJECTION PERIOD --- 34.00 YEAR
POST CLOSURE PERIOD --- 30.00 YEAR

NO FAULT INCLUDED IN CALCULATION

DEFAULT BORE RADIUS (0.5 FT) USED FOR ALL WELLS

NO SKIN FACTORS APPLIED TO INJECTION WELLS

PRESSURES CALCULATED ON A GRID FOR CONTOUR PLOTTING

CONTOURS CALCULATED OUT TO 8.00 MILES

THE CONTOUR PLOT DATA WILL BE CENTERED AT THE CENTROID
OF ACTIVE WELLS IN EACH INJECTION LAYER

CONTOURS CALCULATED FOR THE FOLLOWING YEAR :

20 2021
21 2022
34 2035

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Injection Well #1-WDW-1

INJECTION HISTORY

YEAR	WELL ID
(1)	
1 2002	84.2
1	
2 2003	98.3
1	
3 2004	175.2
1	
4 2005	217.6
1	
5 2006	236.1
1	
6 2007	257.8
1	
7 2008	197.0
1	
8 2009	265.5
1	
9 2010	246.6
1	
10 2011	161.6
1	

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11 2012	61.7
1	
12 2013	65.4
1	
13 2014	22.3
1	
14 2015	91.3
1	
15 2016	64.4
1	
16 2017	41.3
1	
17 2018	27.3
1	
18 2019	42.3
1	
19 2020	9.4
1	
20 2021	11.6
1	
21 2022	11.8
1	
22 2023	550.0
1	

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23	2024*	550.0
	1	
24	2025*	550.0
	1	
25	2026*	550.0
	1	
26	2027*	550.0
	1	
27	2028*	550.0
	1	
28	2029*	550.0
	1	
29	2030*	550.0
	1	
30	2031*	550.0
	1	
31	2032*	550.0
	1	
32	2033*	550.0
	1	
33	2034*	550.0
	1	
34	2035*	550.0
	1	

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Injection Well #1-WDW-1

35 PC 1#	0.0
1	
36 PC 2#	0.0
1	
37 PC 3#	0.0
1	
38 PC 4#	0.0
1	
39 PC 5#	0.0
1	
40 PC 6#	0.0
1	
41 PC 7#	0.0
1	
42 PC 8#	0.0
1	
43 PC 9#	0.0
1	
44 PC10#	0.0
1	
45 PC11#	0.0
1	
46 PC12#	0.0
1	

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47 PC13#	0.0
1	
48 PC14#	0.0
1	
49 PC15#	0.0
1	
50 PC16#	0.0
1	
51 PC17#	0.0
1	
52 PC18#	0.0
1	
53 PC19#	0.0
1	
54 PC20#	0.0
1	
55 PC21#	0.0
1	
56 PC22#	0.0
1	
57 PC23#	0.0
1	
58 PC24#	0.0
1	

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Injection Well #1-WDW-1

59 PC25# 0.0

1

60 PC26# 0.0

1

61 PC27# 0.0

1

62 PC28# 0.0

1

63 PC29# 0.0

1

64 PC30# 0.0

1

* 2023 INJECTION RATES PROJECTED FORWARD

YEAR POST CLOSURE

INJECTION IN AQUIFER LEVELS 4

1

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

INPUT PARAMETERS

LEVEL

THICKNESS POROSITY PERMEABILITY VISCOSITY COMPRESSIBILITY*

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Injection Well #1-WDW-1

	FT	DARCY	CP	1/PSI		
1 CONFINING LAYER 1	100.00	0.001	0.1000E-14	1.000	0.800E-05	
2 OVERLYING SAND LAYER 2	100.00	0.200	0.5000	1.000	0.526E-06	
3 CONFINING LAYER 3	100.00	0.001	0.1000E-14	1.000	0.800E-05	
4 Pawhuska Sand Injection	502.00	0.184	0.6000E-01	0.810	0.660E-06	

* Alpha as defined in Groundwater, Freeze and Cherry, Eqn. 2.52, pg. 54
 == (porosity) * (oilfield formation compressibility)

DERIVED PARAMETERS

LEVEL	STORATIVITY		VERT. LEAKANCE	TRANSMISSIVITY
	1/YEAR	DARCY-FT		
1 CONFINING LAYER 1	0.3468E-03	0.9971E-14	0.1000E-12	
2 OVERLYING SAND LAYER 2	0.4909E-04	4.986	50.00	
3 CONFINING LAYER 3	0.3468E-03	0.9971E-14	0.1000E-12	
4 Pawhuska Sand Injection	0.2650E-03	0.1471	30.12	

INJECTION WELL	DIST TO OTHER INJ WELLS (FT)		
# ID COORDINATES	(1)		
1 (1) 0. 0. 0.0			

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Injection Well #1-WDW-1

PRESS MONITOR POINTS	DIST TO INJ WELLS (FT)		
# ID	COORDINATES	()
1 (1)	-837. 3493.	3591.9	
2 (2)	2364. 3101.	3899.3	
3 (3)	4653. 1984.	5058.3	
4 (4)	1040. 1680.	1975.9	
5 (5)	1358. 1390.	1943.3	
6 (6)	-3765. 1139.	3933.5	
7 (7)	-3929. -1036.	4063.3	
8 (8)	1007. -1973.	2215.1	
9 (9)	4468. -1520.	4719.5	
10 (10)	190. -1471.	1483.2	
11 (11)	-488. -2384.	2433.4	
12 (12)	-1590. -4747.	5006.2	
13 (13)	-4246. -3616.	5577.1	
14 (17)	-5240. 2583.	5842.0	
15 (18)	-3209. 9576.	10099.4	
16 (19)	3105. 8979.	9500.7	
17 (20)	6616. 8108.	10464.8	
18 (21)	5357. 3470.	6382.7	
19 (22)	6014. 3359.	6888.5	
20 (23)	5990. 2008.	6317.6	
21 (24)	5962. 635.	5995.7	

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22 (25)	8927.	4312.	9913.9
23 (27)	8913.	2967.	9393.9
24 (30)	8532.	-3951.	9402.4
25 (31)	7600.	-4959.	9074.8
26 (32)	6248.	-3706.	7264.4
27 (34)	3634.	-6308.	7279.9
28 (A1)	0.	10560.	10560.0

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 1 (2002)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 115.41*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 84.20

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Injection Well #1-WDW-1

CUMULATIVE INJECTION TO DATE (MMGAL) 44.3

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	17.75	16.87	14.10	24.23	24.41	16.78	16.37	22.99	14.82	27.38
	21.97	14.21	13.09	12.61	7.14	7.65	6.84	11.61	10.88	11.71
	12.22	7.30	7.75	7.74	8.04	10.36	10.34	6.77		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 2 (2003)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	138.55*

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Injection Well #1-WDW-1

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 98.30

CUMULATIVE INJECTION TO DATE (MMGAL) 96.0

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 24.48 23.44 20.15 32.09 32.31 23.33 22.87 30.64 21.01 35.78
29.44 20.28 18.94 18.36 11.71 12.38 11.32 17.21 16.30 17.34
17.96 11.91 12.51 12.50 12.89 15.67 15.64 11.22

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Injection Well #1-WDW-1

-----YEAR 3 (2004)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 246.83*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 175.20

CUMULATIVE INJECTION TO DATE (MMGAL) 188.1

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 43.53 41.68 35.84 57.09 57.47 41.48 40.67 54.49 37.37 63.65

52.36 36.07 33.69 32.66 20.88 22.06 20.19 30.61 29.00 30.83

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31.93 21.23 22.27 22.26 22.94 27.88 27.83 20.02

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-----YEAR 4 (2005)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 310.39*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 217.60

CUMULATIVE INJECTION TO DATE (MMGAL) 302.6

PRESSURES AT MONITOR COORD (PSI)

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MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	57.84	55.53	48.24	74.72	75.19	55.29	54.30	71.49	50.16	82.87
	68.83	48.53	45.55	44.26	29.41	30.93	28.52	41.72	39.68	42.00
	43.39	29.87	31.22	31.19	32.08	38.26	38.21	28.30		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 5 (2006)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	341.20*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection	236.10
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Injection Well #1-WDW-1

CUMULATIVE INJECTION TO DATE (MMGAL) 426.8

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	67.13	64.62	56.68	85.49	86.00	64.36	63.30	81.97	58.78	94.34
	79.09	56.99	53.73	52.33	36.01	37.72	35.02	49.58	47.33	49.88
	51.42	36.53	38.04	38.02	39.01	45.76	45.70	34.76		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 6 (2007)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	375.56*

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Injection Well #1-WDW-1

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 257.80

CUMULATIVE INJECTION TO DATE (MMGAL) 562.3

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 76.29 73.54 64.86 96.34 96.90 73.25 72.10 92.51 67.15 106.01
89.35 65.20 61.63 60.09 42.19 44.08 41.09 57.09 54.62 57.42
59.12 42.76 44.43 44.41 45.51 52.90 52.83 40.81

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-----YEAR 7 (2008)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 296.64*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 197.00

CUMULATIVE INJECTION TO DATE (MMGAL) 666.0

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 67.84 65.73 59.02 83.25 83.68 65.50 64.67 80.30 60.81 90.64

77.88 59.29 56.50 55.31 41.19 42.76 40.28 53.02 51.06 53.29

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54.64 41.67 43.05 43.03 43.94 49.69 49.63 40.04

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-----YEAR 8 (2009)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 391.11*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 265.50

CUMULATIVE INJECTION TO DATE (MMGAL) 805.6

PRESSURES AT MONITOR COORD (PSI)

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Injection Well #1-WDW-1

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	82.89	80.07	71.12	103.55	104.12	79.77	78.59	99.60	73.49	113.50
	96.35	71.48	67.80	66.21	47.77	49.73	46.63	63.12	60.58	63.47
	65.21	48.37	50.09	50.06	51.20	58.80	58.73	46.34		

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-----YEAR 9 (2010)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	369.42*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection	246.60
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Injection Well #1-WDW-1

CUMULATIVE INJECTION TO DATE (MMGAL) 935.3

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	83.09	80.45	72.09	102.32	102.86	80.17	79.10	98.64	74.31	111.57
	95.62	72.42	68.97	67.48	50.06	51.96	48.96	64.62	62.20	64.94
	66.60	50.64	52.31	52.28	53.38	60.52	60.45	48.67		

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-----YEAR 10 (2011)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	255.06*

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* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 161.60

CUMULATIVE INJECTION TO DATE (MMGAL) 1020.3

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	67.30	65.55	59.99	80.00	80.35	65.37	64.71	77.57	61.49	86.07
	75.58	60.22	57.89	56.89	44.97	46.35	44.16	55.03	53.35	55.25
	56.40	45.39	46.61	46.59	47.40	52.18	52.14	43.95		

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Injection Well #1-WDW-1

-----YEAR 11 (2012)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 116.21*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 61.70

CUMULATIVE INJECTION TO DATE (MMGAL) 1052.7

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 44.38 43.68 41.46 49.34 49.48 43.61 43.42 48.39 42.08 51.66

47.61 41.55 40.58 40.17 34.98 35.69 34.57 39.47 38.72 39.57

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Injection Well #1-WDW-1

40.09 35.20 35.83 35.82 36.23 38.19 38.17 34.46

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 12 (2013)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 116.22*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 65.40

CUMULATIVE INJECTION TO DATE (MMGAL) 1087.1

PRESSURES AT MONITOR COORD (PSI)

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	40.19	39.47	37.19	45.36	45.51	39.40	39.15	44.38	37.81	47.82
	43.56	37.29	36.32	35.91	30.88	31.51	30.52	35.16	34.45	35.25
	35.74	31.07	31.62	31.61	31.97	33.95	33.93	30.43		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 13 (2014)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	54.62*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection	22.30
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Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

CUMULATIVE INJECTION TO DATE (MMGAL) 1098.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	28.61	28.35	27.51	30.44	30.49	28.32	28.27	30.09	27.75	31.28
	29.80	27.54	27.17	27.00	24.91	25.23	24.72	26.76	26.45	26.80
	27.02	25.01	25.29	25.29	25.48	26.23	26.22	24.68		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 14 (2015)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	145.63*

APPENDIX 3 MULTILAYER PRESSURE MODEL
File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 91.30

CUMULATIVE INJECTION TO DATE (MMGAL) 1146.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 39.64 38.67 35.59 46.74 46.94 38.56 38.16 45.38 36.40 50.17
 44.27 35.71 34.44 33.90 27.54 28.22 27.14 32.84 31.96 32.95
 33.56 27.74 28.35 28.34 28.73 31.34 31.32 27.04

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

-----YEAR 15 (2016)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 109.64*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 64.40

CUMULATIVE INJECTION TO DATE (MMGAL) 1180.8

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 34.82 34.12 31.90 39.87 40.01 34.04 33.78 38.91 32.50 42.29

38.11 31.99 31.06 30.67 25.91 26.47 25.59 29.92 29.26 30.01

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

30.47 26.08 26.57 26.56 26.89 28.79 28.77 25.51

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 16 (2017)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 76.98*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 41.30

CUMULATIVE INJECTION TO DATE (MMGAL) 1202.5

PRESSURES AT MONITOR COORD (PSI)

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	28.96	28.51	27.06	32.23	32.32	28.46	28.31	31.61	27.46	33.78
	31.09	27.12	26.51	26.25	23.06	23.45	22.82	25.78	25.32	25.84
	26.15	23.18	23.53	23.52	23.75	25.01	24.99	22.76		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 17 (2018)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	56.11*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection	27.30
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Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

CUMULATIVE INJECTION TO DATE (MMGAL) 1216.8

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	24.35	24.05	23.08	26.52	26.59	24.02	23.92	26.11	23.35	27.55
	25.77	23.12	22.71	22.53	20.34	20.63	20.18	22.22	21.91	22.26
	22.48	20.43	20.68	20.68	20.84	21.69	21.68	20.14		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 18 (2019)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	74.96*

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 42.30

CUMULATIVE INJECTION TO DATE (MMGAL) 1239.1

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	25.82	25.37	23.92	29.14	29.23	25.32	25.14	28.50	24.31	30.72
	27.98	23.98	23.38	23.12	20.05	20.40	19.84	22.63	22.20	22.69
	22.98	20.15	20.46	20.46	20.66	21.90	21.89	19.79		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

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Injection Well #1-WDW-1

-----YEAR 19 (2020)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 29.39*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 9.40

CUMULATIVE INJECTION TO DATE (MMGAL) 1244.0

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 18.41 18.30 17.93 19.19 19.21 18.28 18.27 19.04 18.04 19.55

18.92 17.95 17.78 17.71 16.76 16.92 16.67 17.61 17.46 17.63

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

17.72 16.81 16.94 16.94 17.03 17.36 17.36 16.65

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 20 (2021)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 30.44*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 11.60

CUMULATIVE INJECTION TO DATE (MMGAL) 1250.1

PRESSURES AT MONITOR COORD (PSI)

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	16.93	16.80	16.38	17.87	17.89	16.79	16.75	17.69	16.50	18.30
	17.54	16.40	16.22	16.14	15.17	15.30	15.09	16.01	15.87	16.03
	16.13	15.21	15.33	15.33	15.41	15.77	15.77	15.07		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 21 (2022)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	29.53*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection	11.80
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Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL
File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

CUMULATIVE INJECTION TO DATE (MMGAL) 1256.3

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	15.80	15.67	15.25	16.74	16.77	15.66	15.62	16.56	15.37	17.19
	16.42	15.27	15.09	15.01	14.06	14.19	13.99	14.88	14.74	14.90
	14.99	14.10	14.21	14.21	14.28	14.65	14.64	13.97		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 22 (2023)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	766.32*

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 550.00

CUMULATIVE INJECTION TO DATE (MMGAL) 1545.6

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 128.37 122.62 104.48 170.74 171.92 122.01 119.35 162.62 109.18 191.32

155.95 105.18 97.85 94.70 58.84 62.23 56.87 88.23 83.38 88.88

92.21 59.87 62.85 62.80 64.77 80.00 79.86 56.37

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

-----YEAR 23 (2024)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 789.99*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 550.00

CUMULATIVE INJECTION TO DATE (MMGAL) 1834.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 151.64 145.81 127.37 194.32 195.51 145.19 142.69 186.15 132.22 214.93

179.43 128.10 120.55 117.30 79.69 83.56 77.45 110.88 105.71 111.57

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

115.11 80.87 84.28 84.22 86.47 102.11 101.97 76.87

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 24 (2025)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 803.65*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 550.00

CUMULATIVE INJECTION TO DATE (MMGAL) 2124.1

PRESSURES AT MONITOR COORD (PSI)

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	165.17	159.31	140.78	207.96	209.15	158.69	156.24	199.77	145.68	228.57
	193.04	141.51	133.89	130.61	92.41	96.45	90.06	124.20	118.93	124.91
	128.53	93.63	97.20	97.14	99.48	115.26	115.11	89.46		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 25 (2026)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	813.26*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection	550.00
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Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL
File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

CUMULATIVE INJECTION TO DATE (MMGAL) 2413.4

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	174.71	168.84	150.26	217.55	218.74	168.22	165.80	209.35	155.18	238.17
	202.61	151.00	143.34	140.04	101.54	105.67	99.14	133.65	128.32	134.36
	138.01	102.80	106.44	106.37	108.77	124.61	124.46	98.53		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 26 (2027)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	820.67*

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 550.00

CUMULATIVE INJECTION TO DATE (MMGAL) 2702.7

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 182.08 176.20 157.59 224.95 226.14 175.57 173.17 216.75 162.52 245.57

210.00 158.33 150.65 147.34 108.67 112.85 106.23 140.95 135.59 141.67

145.35 109.94 113.62 113.56 115.99 131.86 131.71 105.61

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

-----YEAR 27 (2028)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL
 2 OVERLYING SAND LAYER 2 0.00
 4 Pawhuska Sand Injection 826.69*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL
 4 Pawhuska Sand Injection 550.00

CUMULATIVE INJECTION TO DATE (MMGAL) 2992.0

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL
 4 Pawhuska Sand Injection 188.08 182.19 163.57 230.97 232.16 181.57 179.18 222.76 168.51 251.59
 216.02 164.31 156.61 153.30 114.50 118.72 112.05 146.91 141.53 147.64

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

151.33 115.78 119.50 119.44 121.89 137.78 137.63 111.43

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 28 (2029)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 831.77*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 550.00

CUMULATIVE INJECTION TO DATE (MMGAL) 3281.2

PRESSURES AT MONITOR COORD (PSI)

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	193.14	187.25	168.61	236.05	237.24	186.63	184.25	227.84	173.56	256.67
	221.09	169.35	161.64	158.33	119.45	123.69	116.98	151.95	146.55	152.67
	156.37	120.74	124.48	124.42	126.88	142.79	142.64	116.35		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 29 (2030)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	836.16*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection	550.00
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Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL
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Injection Well #1-WDW-1

CUMULATIVE INJECTION TO DATE (MMGAL) 3570.5

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	197.52	191.63	172.98	240.44	241.63	191.00	188.63	232.23	177.93	261.06
	225.47	173.72	166.00	162.69	123.74	128.01	121.27	156.30	150.90	157.03
	160.74	125.04	128.79	128.73	131.20	147.13	146.98	120.63		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 30 (2031)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	840.03*

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
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Injection Well #1-WDW-1

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 550.00

CUMULATIVE INJECTION TO DATE (MMGAL) 3859.8

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	201.38	195.48	176.83	244.30	245.50	194.86	192.49	236.09	181.78	264.93
	229.34	177.57	169.85	166.53	127.54	131.81	125.05	160.15	154.73	160.87
	164.59	128.83	132.60	132.54	135.02	150.96	150.81	124.41		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

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Injection Well #1-WDW-1

-----YEAR 31 (2032)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 843.49*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 550.00

CUMULATIVE INJECTION TO DATE (MMGAL) 4149.1

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 204.83 198.93 180.27 247.76 248.96 198.31 195.94 239.55 185.23 268.39

232.79 181.01 173.28 169.96 130.93 135.22 128.44 163.58 158.16 164.31

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
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Injection Well #1-WDW-1

168.03 132.23 136.02 135.95 138.44 154.38 154.23 127.80

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 32 (2033)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 846.62*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 550.00

CUMULATIVE INJECTION TO DATE (MMGAL) 4438.3

PRESSURES AT MONITOR COORD (PSI)

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
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Injection Well #1-WDW-1

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	207.95	202.05	183.38	250.89	252.08	201.43	199.06	242.67	188.35	271.51
	235.92	184.13	176.40	173.07	134.01	138.31	131.51	166.70	161.27	167.43
	171.15	135.32	139.11	139.04	141.54	157.49	157.33	130.88		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 33 (2034)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	849.48*

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection	550.00
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Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
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APPENDIX 3 MULTILAYER PRESSURE MODEL

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Injection Well #1-WDW-1

CUMULATIVE INJECTION TO DATE (MMGAL) 4727.6

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	210.80	204.90	186.23	253.74	254.94	204.28	201.92	245.53	191.20	274.37
	238.77	186.97	179.24	175.92	136.83	141.13	134.32	169.54	164.11	170.27
	173.99	138.13	141.93	141.87	144.37	160.32	160.17	133.68		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 34 (2035)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	852.11*

APPENDIX 3 MULTILAYER PRESSURE MODEL
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Injection Well #1-WDW-1

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 550.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 213.42 207.53 188.85 256.37 257.57 206.90 204.54 248.16 193.82 277.00
241.40 189.59 181.86 178.53 139.42 143.73 136.91 172.16 166.72 172.89
176.61 140.73 144.53 144.47 146.97 162.93 162.78 136.27

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

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Injection Well #1-WDW-1

-----YEAR 35 (PC 1)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 100.68

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 99.91 99.75 99.19 100.52 100.53 99.74 100.06 100.41 99.46 100.56

100.33 99.23 98.80 98.62 95.18 96.16 94.62 98.72 98.10 98.80

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Injection Well #1-WDW-1

99.22 95.48 96.34 96.33 96.90 97.67 97.65 94.47

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 36 (PC 2)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 78.02

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

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Injection Well #1-WDW-1

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	77.66	77.58	77.32	77.94	77.95	77.58	77.73	77.90	77.45	77.97
	77.86	77.34	77.13	77.04	75.40	75.89	75.11	77.10	76.80	77.14
	77.34	75.54	75.98	75.97	76.25	76.59	76.58	75.04		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 37 (PC 3)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	65.56

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection	0.00
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Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
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APPENDIX 3 MULTILAYER PRESSURE MODEL

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Injection Well #1-WDW-1

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	65.34	65.29	65.12	65.52	65.52	65.28	65.38	65.48	65.20	65.53
	65.46	65.13	65.00	64.95	63.90	64.22	63.72	64.98	64.79	65.01
	65.14	64.00	64.28	64.27	64.45	64.66	64.66	63.67		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 38 (PC 4)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	57.22

APPENDIX 3 MULTILAYER PRESSURE MODEL

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Injection Well #1-WDW-1

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	57.05	57.02	56.90	57.18	57.18	57.02	57.09	57.16	56.96	57.19
	57.14	56.91	56.82	56.78	56.03	56.26	55.90	56.80	56.67	56.82
	56.91	56.10	56.30	56.30	56.43	56.57	56.57	55.87		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

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Injection Well #1-WDW-1

-----YEAR 39 (PC 5)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 51.08

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 50.95 50.93 50.84 51.05 51.05 50.92 50.98 51.03 50.88 51.06

51.02 50.84 50.77 50.74 50.18 50.35 50.08 50.76 50.66 50.78

APPENDIX 3 MULTILAYER PRESSURE MODEL
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Injection Well #1-WDW-1

50.85 50.23 50.38 50.38 50.48 50.59 50.58 50.05

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 40 (PC 6)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 46.30

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

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Injection Well #1-WDW-1

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	46.21	46.19	46.11	46.28	46.29	46.18	46.23	46.27	46.15	46.29
	46.26	46.12	46.06	46.04	45.59	45.73	45.51	46.06	45.97	46.07
	46.12	45.63	45.75	45.75	45.83	45.92	45.91	45.49		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 41 (PC 7)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	42.46

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection	0.00
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Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
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APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	42.38	42.36	42.30	42.44	42.44	42.36	42.39	42.43	42.33	42.44
	42.42	42.30	42.26	42.24	41.87	41.98	41.80	42.25	42.18	42.26
	42.31	41.90	42.00	42.00	42.07	42.14	42.14	41.79		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 42 (PC 8)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	39.27

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APPENDIX 3 MULTILAYER PRESSURE MODEL

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Injection Well #1-WDW-1

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	39.20	39.19	39.14	39.25	39.26	39.19	39.21	39.24	39.16	39.26
	39.24	39.14	39.10	39.09	38.78	38.87	38.72	39.10	39.04	39.11
	39.14	38.81	38.89	38.89	38.94	39.00	39.00	38.71		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

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APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

-----YEAR 43 (PC 9)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL
 2 OVERLYING SAND LAYER 2 0.00
 4 Pawhuska Sand Injection 36.57

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL
 4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL
 4 Pawhuska Sand Injection 36.52 36.50 36.46 36.56 36.56 36.50 36.53 36.55 36.48 36.57
 36.55 36.47 36.43 36.42 36.15 36.24 36.11 36.43 36.38 36.43

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APPENDIX 3 MULTILAYER PRESSURE MODEL

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Injection Well #1-WDW-1

36.47 36.18 36.25 36.25 36.30 36.35 36.34 36.09

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 44 (PC10)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 34.26

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	34.21	34.20	34.16	34.25	34.25	34.20	34.22	34.24	34.18	34.25
	34.24	34.17	34.14	34.13	33.90	33.97	33.86	34.13	34.09	34.14
	34.17	33.92	33.98	33.98	34.02	34.06	34.06	33.84		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 45 (PC11)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	32.24

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection	0.00
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APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	32.20	32.19	32.16	32.24	32.24	32.19	32.21	32.23	32.18	32.24
	32.23	32.16	32.14	32.13	31.93	31.99	31.89	32.13	32.10	32.14
	32.16	31.95	32.00	32.00	32.03	32.07	32.07	31.88		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 46 (PC12)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	30.47

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 30.43 30.43 30.40 30.46 30.47 30.43 30.44 30.46 30.41 30.47
30.46 30.40 30.38 30.37 30.19 30.25 30.16 30.38 30.34 30.38
30.40 30.21 30.26 30.26 30.29 30.32 30.32 30.15

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

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Injection Well #1-WDW-1

-----YEAR 47 (PC13)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 28.90

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 28.87 28.86 28.83 28.89 28.89 28.86 28.87 28.89 28.85 28.89

28.88 28.83 28.82 28.81 28.65 28.70 28.62 28.81 28.78 28.82

APPENDIX 3 MULTILAYER PRESSURE MODEL
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Injection Well #1-WDW-1

28.84 28.66 28.71 28.71 28.73 28.76 28.76 28.61

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 48 (PC14)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 27.49

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
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Injection Well #1-WDW-1

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	27.46	27.46	27.43	27.49	27.49	27.45	27.47	27.48	27.44	27.49
	27.48	27.43	27.42	27.41	27.27	27.31	27.24	27.41	27.39	27.42
	27.44	27.28	27.32	27.32	27.34	27.37	27.37	27.23		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 49 (PC15)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	26.22

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection	0.00
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Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

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Injection Well #1-WDW-1

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	26.20	26.19	26.17	26.22	26.22	26.19	26.20	26.21	26.18	26.22
	26.21	26.17	26.16	26.15	26.02	26.06	26.00	26.15	26.13	26.16
	26.17	26.03	26.07	26.07	26.09	26.11	26.11	25.99		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 50 (PC16)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	25.07

APPENDIX 3 MULTILAYER PRESSURE MODEL

File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	25.05	25.04	25.03	25.07	25.07	25.04	25.05	25.07	25.03	25.07
	25.06	25.03	25.01	25.01	24.89	24.93	24.87	25.01	24.99	25.01
	25.03	24.90	24.93	24.93	24.95	24.97	24.97	24.86		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

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Injection Well #1-WDW-1

-----YEAR 51 (PC17)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 24.03

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 24.00 24.00 23.98 24.02 24.02 24.00 24.01 24.02 23.99 24.02

24.02 23.98 23.97 23.97 23.86 23.89 23.84 23.97 23.95 23.97

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Injection Well #1-WDW-1

23.98 23.87 23.90 23.90 23.92 23.94 23.94 23.83

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 52 (PC18)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 23.07

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

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Injection Well #1-WDW-1

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	23.05	23.04	23.03	23.06	23.07	23.04	23.05	23.06	23.04	23.07
	23.06	23.03	23.02	23.01	22.91	22.94	22.90	23.02	23.00	23.02
	23.03	22.92	22.95	22.95	22.97	22.99	22.98	22.89		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 53 (PC19)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	22.19

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection	0.00
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Injection Well #1-WDW-1

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	22.17	22.16	22.15	22.18	22.18	22.16	22.17	22.18	22.16	22.19
	22.18	22.15	22.14	22.14	22.05	22.07	22.03	22.14	22.12	22.14
	22.15	22.05	22.08	22.08	22.09	22.11	22.11	22.02		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 54 (PC20)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	21.38

APPENDIX 3 MULTILAYER PRESSURE MODEL

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Injection Well #1-WDW-1

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 21.36 21.35 21.34 21.37 21.37 21.35 21.36 21.37 21.35 21.37
21.37 21.34 21.33 21.33 21.24 21.27 21.23 21.33 21.31 21.33
21.34 21.25 21.27 21.27 21.29 21.30 21.30 21.22

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

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Injection Well #1-WDW-1

-----YEAR 55 (PC21)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 20.62

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 20.61 20.60 20.59 20.62 20.62 20.60 20.61 20.62 20.60 20.62

20.62 20.59 20.58 20.58 20.50 20.52 20.49 20.58 20.57 20.58

APPENDIX 3 MULTILAYER PRESSURE MODEL

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Injection Well #1-WDW-1

20.59 20.51 20.53 20.53 20.54 20.56 20.56 20.48

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 56 (PC22)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 19.92

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

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 September 2023

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Injection Well #1-WDW-1

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	19.91	19.90	19.89	19.92	19.92	19.90	19.91	19.92	19.90	19.92
	19.92	19.89	19.89	19.88	19.81	19.83	19.80	19.88	19.87	19.89
	19.89	19.82	19.84	19.84	19.85	19.86	19.86	19.79		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 57 (PC23)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	19.27

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection	0.00
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APPENDIX 3 MULTILAYER PRESSURE MODEL

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Injection Well #1-WDW-1

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	19.26	19.25	19.24	19.27	19.27	19.25	19.26	19.27	19.25	19.27
	19.27	19.24	19.24	19.23	19.17	19.19	19.15	19.24	19.22	19.24
	19.25	19.17	19.19	19.19	19.20	19.21	19.21	19.15		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 58 (PC24)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	18.66

APPENDIX 3 MULTILAYER PRESSURE MODEL
File- oge_maxcase_530_60md.sum

Injection Well #1-WDW-1

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 18.65 18.65 18.64 18.66 18.66 18.65 18.65 18.66 18.64 18.66
 18.66 18.64 18.63 18.63 18.56 18.58 18.55 18.63 18.62 18.63
 18.64 18.57 18.59 18.59 18.60 18.61 18.61 18.55

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

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Injection Well #1-WDW-1

-----YEAR 59 (PC25)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 18.09

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 18.08 18.08 18.07 18.09 18.09 18.08 18.08 18.09 18.07 18.09

18.09 18.07 18.06 18.06 18.00 18.02 17.99 18.06 18.05 18.06

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Injection Well #1-WDW-1

18.07 18.01 18.02 18.02 18.03 18.04 18.04 17.99

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 60 (PC26)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 17.56

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

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 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

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Injection Well #1-WDW-1

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	17.55	17.55	17.54	17.56	17.56	17.55	17.55	17.56	17.54	17.56
	17.55	17.54	17.53	17.53	17.47	17.49	17.46	17.53	17.52	17.53
	17.54	17.48	17.49	17.49	17.50	17.51	17.51	17.46		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 61 (PC27)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	17.06

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection	0.00
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APPENDIX 3 MULTILAYER PRESSURE MODEL

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Injection Well #1-WDW-1

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	17.05	17.04	17.04	17.05	17.05	17.04	17.05	17.05	17.04	17.06
	17.05	17.04	17.03	17.03	16.97	16.99	16.97	17.03	17.02	17.03
	17.04	16.98	16.99	16.99	17.00	17.01	17.01	16.96		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 62 (PC28)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2	0.00
4 Pawhuska Sand Injection	16.58

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Injection Well #1-WDW-1

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 16.57 16.57 16.56 16.58 16.58 16.57 16.57 16.58 16.57 16.58
16.58 16.56 16.56 16.55 16.51 16.52 16.50 16.56 16.55 16.56
16.56 16.51 16.52 16.52 16.53 16.54 16.54 16.49

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

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Injection Well #1-WDW-1

-----YEAR 63 (PC29)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 16.14

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(11) (12) (13) (17) (18) (19) (20) (21) (22) (23)

(24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection 16.13 16.12 16.12 16.13 16.13 16.12 16.13 16.13 16.12 16.13

16.13 16.12 16.11 16.11 16.06 16.08 16.05 16.11 16.10 16.11

APPENDIX 3 MULTILAYER PRESSURE MODEL

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Injection Well #1-WDW-1

16.12 16.07 16.08 16.08 16.09 16.10 16.10 16.05

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

-----YEAR 64 (PC30)-----

PRESSURES AT INJECTION WELL COORD (PSI)

WELL ID (1)

FORMATION LEVEL

2 OVERLYING SAND LAYER 2 0.00

4 Pawhuska Sand Injection 15.71

* PERFORATED INJECTION ZONE

INJECTION RATES (GPM)

WELL ID (1)

INJECTION LEVEL

4 Pawhuska Sand Injection 0.00

CUMULATIVE INJECTION TO DATE (MMGAL) 5016.9

PRESSURES AT MONITOR COORD (PSI)

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
 September 2023

APPENDIX 3 MULTILAYER PRESSURE MODEL

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Injection Well #1-WDW-1

MONITOR ID (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)
 (11) (12) (13) (17) (18) (19) (20) (21) (22) (23)
 (24) (25) (27) (30) (31) (32) (34) (A1)

FORMATION LEVEL

4 Pawhuska Sand Injection	15.70	15.70	15.69	15.71	15.71	15.70	15.70	15.71	15.70	15.71
	15.71	15.69	15.69	15.69	15.64	15.66	15.63	15.69	15.68	15.69
	15.70	15.65	15.66	15.66	15.67	15.67	15.67	15.63		

*** OGE - Annual Maximum Rate (530 GPM 2023-YE2035)60-md ***

RESIDUAL UPWARD PENETRATION INTO CONFINING LAYERS -- [FEET]
 CALCULATED USING INJECTION HISTORY FROM 2002 TO PC30

CONFINING THICKNESS
 LAYERS [FEET]

WELLS

(1)

1	100.0	0.000
3	100.0	0.000

* PENETRATION GREATER THAN CONFINING LAYER THICKNESS

Oklahoma Gas and Electric LLC– McClain Facility; Newcastle, Oklahoma – 2023 ODEQ Permit Renewal
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APPENDIX 3 MULTILAYER PRESSURE MODEL

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Injection Well #1-WDW-1