

Radius of Fluid Displacement within the Minnelusa Injection Zone

Porosity =	0.21	0.1	K=	4.67 ft/d
Formation Thickness =	164 ft		hydraulic gradient=	0.0001 ft/ft
Injection Rate =	75 gpm		108000 gpd	14440 ft ³ /day
	116 gpm		167040 gpd	22330.07 ft ³ /day

r = radius of fluid displacement

Q = injection volume (ft³)

$$r = (Q / ((\pi) * h * \text{porosity}))^{0.5}$$

Elapsed Time (yrs)

Injection Rate=75 gpm

porosity=21%

	Qt (ft ³)	radius (ft)	radius (miles)		Hydraulic Gradient Displacement (ft)	Total Fluid Displacement (ft)
1	5270454		221	0.04	0.81	221.52
5	26370319.5		494	0.09	4.06	497.74
10	52740639		698	0.13	8.12	706.29
12	63288766.8		765	0.14	9.74	775

Elapsed Time (yrs)

Injection Rate=116 gpm

porosity=10%

	Qt (ft ³)	radius (ft)	radius (miles)		Hydraulic Gradient Displacement (ft)	Total Fluid Displacement (ft)
1	8150477.098		398	0.08	1.70	399.44
5	40780298.08		890	0.17	8.53	898.20
10	81560596.16		1258	0.24	17.05	1275.23
12	63288766.8		1108	0.21	20.47	1129