WHARF MINE
LEAD, SOUTH DAKOTA
NIRATE/ARSENIC GEOCHEMICAL MIXING CELL MODEL
Area - Foley Pit Spent Ore

INPUT BLOCK

CHEMICAL	Nitrate	

INFILTRATION	Total Drainage Area:	5,536,920	ft^2
	Unreclaimned Infiltration Rate:	9	in/yr
	Reclaimed Infilgration Rate:	4.5	in/yr

SPENT ORE	Porewater Concentration:	100	ppm
	Moisture at Offload:	0.06	wt %

CELLS	Cell No.	Material	Mass (tons)	Kd (L/kg)	Moisture (wt%)	GW Inflow (tons)	GW Conc. (ppm)
	1	Spent Ore	Time Dependent	0.000	0.04	0	0
	2	Unsaturated Bedrock	108,882,466	0.000	0.01	0	0
	3	Unused	0	0.000	0	0	0
	4	Unused	0	0.000	0	0	0
	5	Unused	0	0.000	0	0	0
	6	Unused	0	0.000	0	0	0
	7	Unused	0	0.000	0	0	0

TIME																					
	Start Time		yrs	0.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00
	Time Step		yrs	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	End Time		yrs	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00
	Calendar Year		year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014

TIME DEPENDENT DATA																					
	Infiltration Rate		in/yr	9	9	9	9	9	9	9	9	9	9	9	4.5	4.5	4.5	4.5	4.5	4.5	4.5
	Chemicals in Infiltration		ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Backfill Added		tons	0	0	2,902,469	5,339,322	3,516,012	3,344,575	1,131,637	218,166	63,010	46,962	0	0	0	0	0	0	0	0

CALCULATION BLOCK

CELL 1 - Spent Ore

DATA	VARIABLE		FORMULA	UNITS	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
ROCK	Initial Solids in Cell	A1	C1 from previous year	tons	0	0	0	2,902,469	8,241,791	11,757,803	15,102,378	16,234,015	16,452,181	16,515,191	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153
	Material Added	B1		tons	0	0	2,902,469	5,339,322	3,516,012	3,344,575	1,131,637	218,166	63,010	46,962	0	0	0	0	0	0	0	0
	Total Solids in Cell	C1	A1 + B1	tons	0	0	2,902,469	8,241,791	11,757,803	15,102,378	16,234,015	16,452,181	16,515,191	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153
WATER	Initial Mass Water in Cell	D1	V1 from previous year	tons	0	0	0	116,099	329,672	470,312	604,095	649,361	658,087	660,608	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486
	Inflow from Infiltration	E1	infiltration rate x area x conversion factor	tons	129,605	129,605	129,605	129,605	129,605	129,605	129,605	129,605	129,605	129,605	129,605	64,803	64,803	64,803	64,803	64,803	64,803	64,803
	Inflow from Groundwater	F1		tons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	New ore Moisture	G1	B1 x % moisture at offload	tons	0	0	174,148	320,359	210,961	200,675	67,898	13,090	3,781	2,818	0	0	0	0	0	0	0	0
	Total Water in Cell	H1	D1 + E1 + F1 + G1	tons	129,605	129,605	303,754	566,064	670,238	800,592	801,599	792,056	791,473	793,031	792,092	727,289	727,289	727,289	727,289	727,289	727,289	727,289
CHEMICALS	Initial Chemicals	I1	Z1 from previous year	tons	0.000	0.000	0.000	6.656	22.534	30.616	38.243	36.481	31.398	26.522	22.391	18.728	17.059	15.539	14.154	12.893	11.744	10.698
	Chemicals from Above	J1	E1 x infiltration chemical concentration	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Chemicals from Groundwater	K1	F1 x groundwater chemical concentration	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Chemicals in New Porewater	L1	G1 x porewater chemical concentration	tons	0.000	0.000	17.415	32.036	21.096	20.067	6.790	1.309	0.378	0.282	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Adsorbed Chemicals in Ore	M1	B1 x Q1 x porewater chemical concentration	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total Chemicals in Liquid	N1	J1 + K1 + L1	tons	0.000	0.000	17.415	32.036	21.096	20.067	6.790	1.309	0.378	0.282	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total Chemicals on Solids	O1	I1 + M1	tons	0.000	0.000	0.000	6.656	22.534	30.616	38.243	36.481	31.398	26.522	22.391	18.728	17.059	15.539	14.154	12.893	11.744	10.698
	Total Chemicals in Cell	P1	O1 + N1	tons	0.000	0.000	17.415	38.692	43.630	50.683	45.033	37.790	31.776	26.804	22.391	18.728	17.059	15.539	14.154	12.893	11.744	10.698
PARTITION CHEMICALS	Kd	Q1		L/kg	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Adsorbed Chemicals	R1	(Q1 x C1 x P1) / (Q1 x C1 + H1)	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Solid Concentration	S1	R1 / C1 x 10e6	ppm	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Dissolved Chemicals	T1	P1 - R1	tons	0.000	0.000	17.415	38.692	43.630	50.683	45.033	37.790	31.776	26.804	22.391	18.728	17.059	15.539	14.154	12.893	11.744	10.698
	Liquid Concentration	U1	T1 / H1 x 10e6	ppm	0.000	0.000	57.332	68.353	65.096	63.307	56.179	47.711	40.148	33.799	28.269	25.750	23.456	21.366	19.462	17.728	16.148	14.709
OUTFLOW	Water Remaining	V1	C1 x % moisture	tons	0	0	116,099	329,672	470,312	604,095	649,361	658,087	660,608	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486
	Water Out	W1	H1 - V1	tons	129,605	129,605	187,655	236,392	199,926	196,497	152,238	133,969	130,866	130,545	129,605	64,803	64,803	64,803	64,803	64,803	64,803	64,803
	Chemicals Out in Water	X1	W1 x U1 / 10e6	tons	0.000	0.000	10.759	16.158	13.014	12.440	8.553	6.392	5.254	4.412	3.664	1.669	1.520	1.385	1.261	1.149	1.046	0.953
	Chemicals Remaining in Water	Y1	T1 - X1	tons	0.000	0.000	6.656	22.534	30.616	38.243	36.481	31.398	26.522	22.391	18.728	17.059	15.539	14.154	12.893	11.744	10.698	9.745
	Total Chemicals Remaining	Z1	R1 + Y1	tons	0.000	0.000	6.656	22.534	30.616	38.243	36.481	31.398	26.522	22.391	18.728	17.059	15.539	14.154	12.893	11.744	10.698	9.745

CELL 2 - Unsaturated Bedrock

DATA	VARIABLE		FORMULA	UNITS	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
ROCK	Total Solids in Cell	C2		tons	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466
WATER	Initial Mass Water in Cell	D2	V2 from previous year	tons	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825
	Inflow from Cell Above	E2	W1	tons	129,605	129,605	187,655	236,392	199,926	196,497	152,238	133,969	130,866	130,545	129,605	64,803	64,803	64,803	64,803	64,803	64,803	64,803
	Inflow from Groundwater	F2		tons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Water in Cell	H2	D2 + E2 + F2	tons	1,218,430	1,218,430	1,276,480	1,325,217	1,288,750	1,285,322	1,241,063	1,222,793	1,219,690	1,219,369	1,218,430	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627
CHEMICALS	Initial Chemicals	I2	Z2 from previous year	tons	0.000	0.000	0.000	9.177	20.816	28.582	34.750	37.991	39.520	39.970	39.631	38.690	38.091	37.386	36.593	35.728	34.805	33.838
	Chemicals from Above	J2	X1	tons	0.000	0.000	10.759	16.158	13.014	12.440	8.553	6.392	5.254	4.412	3.664	1.669	1.520	1.385	1.261	1.149	1.046	0.953
	Chemicals from Groundwater	K2	F2 x groundwater chemical concentration	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Total Chemicals in Cell	P2	I2 + J2 + K2	tons	0.000	0.000	10.759	25.335	33.830	41.022	43.303	44.383	44.774	44.383	43.295	40.358	39.611	38.771	37.854	36.876	35.851	34.791
PARTITION CHEMICALS	Kd	Q2		L/kg	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Adsorbed Chemicals	R2	(Q2 x C2 x P2) / (Q2 x C2 + H2)	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Solid Concentration	S2	R2 / C2 x 10e6	ppm	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Dissolved Chemicals	T2	P2 - R2	tons	0.000	0.000	10.759	25.335	33.830	41.022	43.303	44.383	44.774	44.383	43.295	40.358	39.611	38.771	37.854	36.876	35.851	34.791
	Liquid Concentration	U2	T2 / H2 x 10e6	ppm	0.000	0.000	8.428	19.118	26.250	31.916	34.892	36.296	36.710	36.398	35.533	34.984	34.336	33.608	32.813	31.966	31.077	30.158
OUTFLOW	Water Remaining	V2	D2	tons	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825
	Water Out	W2	H2 - V2	tons	129,605	129,605	187,655	236,392	199,926	196,497	152,238	133,969	130,866	130,545	129,605	64,803	64,803	64,803	64,803	64,803	64,803	64,803
	Chemicals Out in Water	X2	W2 x U2 / 10e6	tons	0.000	0.000	1.582	4.519	5.248	6.271	5.312	4.863	4.804	4.752	4.605	2.267	2.225	2.178	2.126	2.071	2.014	1.954
	Chemicals Remaining in Water	Y2	T2 - X2	tons	0.000	0.000	9.177	20.816	28.582	34.750	37.991	39.520	39.970	39.631	38.690	38.091	37.386	36.593	35.728	34.805	33.838	32.836
	Total Chemicals Remaining	Z2	R2 + Y2	tons	0.000	0.000	9.177	20.816	28.582	34.750	37.991	39.520	39.970	39.631	38.690	38.091	37.386	36.593	35.728	34.805	33.838	32.836

18.00	19.00	20.00	21.00	22.00	23.00	24.00	25.00	26.00	27.00	28.00	29.00	30.00	31.00	32.00	33.00	34.00	35.00	36.00	37.00	38.00	39.00	40.00	41.00	42.00	43.00
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19.00	20.00	21.00	22.00	23.00	24.00	25.00	26.00	27.00	28.00	29.00	30.00	31.00	32.00	33.00	34.00	35.00	36.00	37.00	38.00	39.00	40.00	41.00	42.00	43.00	44.00
2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040

4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153

662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486
64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289

9.745	8.877	8.086	7.365	6.709	6.111	5.567	5.071	4.619	4.207	3.832	3.491	3.180	2.897	2.638	2.403	2.189	1.994	1.816	1.655	1.507	1.373	1.251	1.139	1.038	0.945
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9.745	8.877	8.086	7.365	6.709	6.111	5.567	5.071	4.619	4.207	3.832	3.491	3.180	2.897	2.638	2.403	2.189	1.994	1.816	1.655	1.507	1.373	1.251	1.139	1.038	0.945
9.745	8.877	8.086	7.365	6.709	6.111	5.567	5.071	4.619	4.207	3.832	3.491	3.180	2.897	2.638	2.403	2.189	1.994	1.816	1.655	1.507	1.373	1.251	1.139	1.038	0.945

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9.745	8.877	8.086	7.365	6.709	6.111	5.567	5.071	4.619	4.207	3.832	3.491	3.180	2.897	2.638	2.403	2.189	1.994	1.816	1.655	1.507	1.373	1.251	1.139	1.038	0.945
13.399	12.205	11.117	10.127	9.225	8.403	7.654	6.972	6.351	5.785	5.269	4.800	4.372	3.983	3.628	3.305	3.010	2.742	2.498	2.275	2.072	1.888	1.720	1.566	1.427	1.300

662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486
64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803
0.868	0.791	0.720	0.656	0.598	0.545	0.496	0.452	0.412	0.375	0.341	0.311	0.283	0.258	0.235	0.214	0.195	0.178	0.162	0.147	0.134	0.122	0.111	0.101	0.092	0.084
8.877	8.086	7.365	6.709	6.111	5.567	5.071	4.619	4.207	3.832	3.491	3.180	2.897	2.638	2.403	2.189	1.994	1.816	1.655	1.507	1.373	1.251	1.139	1.038	0.945	0.861
8.877	8.086	7.365	6.709	6.111	5.567	5.071	4.619	4.207	3.832	3.491	3.180	2.897	2.638	2.403	2.189	1.994	1.816	1.655	1.507	1.373	1.251	1.139	1.038	0.945	0.861

2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466

1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825
64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627

32.836	31.811	30.771	29.722	28.672	27.626	26.588	25.563	24.553	23.562	22.592	21.646	20.723	19.827	18.957	18.114	17.298	16.511	15.751	15.019	14.314	13.637	12.986	12.362	11.764	11.190
0.868	0.791	0.720	0.656	0.598	0.545	0.496	0.452	0.412	0.375	0.341	0.311	0.283	0.258	0.235	0.214	0.195	0.178	0.162	0.147	0.134	0.122	0.111	0.101	0.092	0.084
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
33.705	32.602	31.491	30.379	29.270	28.170	27.084	26.014	24.965	23.937	22.934	21.957	21.007	20.085	19.192	18.328	17.493	16.688	15.913	15.166	14.449	13.759	13.098	12.464	11.856	11.274

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
33.705	32.602	31.491	30.379	29.270	28.170	27.084	26.014	24.965	23.937	22.934	21.957	21.007	20.085	19.192	18.328	17.493	16.688	15.913	15.166	14.449	13.759	13.098	12.464	11.856	11.274
29.216	28.261	27.298	26.333	25.372	24.419	23.477	22.550	21.640	20.749	19.880	19.033	18.209	17.410	16.636	15.887	15.164	14.466	13.794	13.147	12.525	11.927	11.354	10.804	10.277	9.773

1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825
64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803
1.893	1.831	1.769	1.706	1.644	1.582	1.521	1.461	1.402	1.345	1.288	1.233	1.180	1.128	1.078	1.030	0.983	0.937	0.894	0.852	0.812	0.773	0.736	0.700	0.666	0.633
31.811	30.771	29.722	28.672	27.626	26.588	25.563	24.553	23.562	22.592	21.646	20.723	19.827	18.957	18.114	17.298	16.511	15.751	15.019	14.314	13.637	12.986	12.362	11.764	11.190	10.641
31.811	30.771	29.722	28.672	27.626	26.588	25.563	24.553	23.562	22.592	21.646	20.723	19.827	18.957	18.114	17.298	16.511	15.751	15.019	14.314	13.637	12.986	12.362	11.764	11.190	10.641

44.00	45.00	46.00	47.00	48.00	49.00	50.00	51.00	52.00	53.00	54.00	55.00	56.00	57.00	58.00	59.00	60.00	61.00	62.00	63.00
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
45.00	46.00	47.00	48.00	49.00	50.00	51.00	52.00	53.00	54.00	55.00	56.00	57.00	58.00	59.00	60.00	61.00	62.00	63.00	64.00
2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060

4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153	16,562,153

662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486
64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289	727,289

0.861	0.784	0.714	0.651	0.593	0.540	0.492	0.448	0.408	0.372	0.339	0.308	0.281	0.256	0.233	0.212	0.193	0.176	0.160	0.146
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.861	0.784	0.714	0.651	0.593	0.540	0.492	0.448	0.408	0.372	0.339	0.308	0.281	0.256	0.233	0.212	0.193	0.176	0.160	0.146
0.861	0.784	0.714	0.651	0.593	0.540	0.492	0.448	0.408	0.372	0.339	0.308	0.281	0.256	0.233	0.212	0.193	0.176	0.160	0.146

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.861	0.784	0.714	0.651	0.593	0.540	0.492	0.448	0.408	0.372	0.339	0.308	0.281	0.256	0.233	0.212	0.193	0.176	0.160	0.146
1.184	1.078	0.982	0.895	0.815	0.742	0.676	0.616	0.561	0.511	0.466	0.424	0.386	0.352	0.321	0.292	0.266	0.242	0.221	0.201

662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486	662,486
64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803
0.077	0.070	0.064	0.058	0.053	0.048	0.044	0.040	0.036	0.033	0.030	0.027	0.025	0.023	0.021	0.019	0.017	0.016	0.014	0.013
0.784	0.714	0.651	0.593	0.540	0.492	0.448	0.408	0.372	0.339	0.308	0.281	0.256	0.233	0.212	0.193	0.176	0.160	0.146	0.133
0.784	0.714	0.651	0.593	0.540	0.492	0.448	0.408	0.372	0.339	0.308	0.281	0.256	0.233	0.212	0.193	0.176	0.160	0.146	0.133

2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466	108,882,466

1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825
64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627	1,153,627

10.641	10.116	9.613	9.133	8.675	8.238	7.820	7.422	7.043	6.682	6.338	6.010	5.698	5.402	5.120	4.852	4.597	4.355	4.126	3.907
0.077	0.070	0.064	0.058	0.053	0.048	0.044	0.040	0.036	0.033	0.030	0.027	0.025	0.023	0.021	0.019	0.017	0.016	0.014	0.013
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10.718	10.185	9.677	9.191	8.728	8.286	7.864	7.462	7.079	6.715	6.368	6.038	5.724	5.425	5.141	4.871	4.615	4.371	4.140	3.920

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10.718	10.185	9.677	9.191	8.728	8.286	7.864	7.462	7.079	6.715	6.368	6.038	5.724	5.425	5.141	4.871	4.615	4.371	4.140	3.920
9.290	8.829	8.388	7.967	7.566	7.182	6.817	6.469	6.137	5.821	5.520	5.234	4.961	4.702	4.456	4.222	4.000	3.789	3.589	3.398

1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825	1,088,825
64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803	64,803
0.602	0.572	0.544	0.516	0.490	0.465	0.442	0.419	0.398	0.377	0.358	0.339	0.322	0.305	0.289	0.274	0.259	0.246	0.233	0.220
10.116	9.613	9.133	8.675	8.238	7.820	7.422	7.043	6.682	6.338	6.010	5.698	5.402	5.120	4.852	4.597	4.355	4.126	3.907	3.700
10.116	9.613	9.133	8.675	8.238	7.820	7.422	7.043	6.682	6.338	6.010	5.698	5.402	5.120	4.852	4.597	4.355	4.126	3.907	3.700