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

INPUT BLOCK

CHEMICAL	Arsenic	

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:	1.6	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	0.750	0.04	0	0
	2	Unsaturated Bedrock	108,882,466	3.000	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	3.477	10.033	14.282	18.315	19.549	19.630	19.516	19.383	19.193	19.098	19.004	18.911	18.817	18.725	18.632
	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	0.279	0.513	0.338	0.321	0.109	0.021	0.006	0.005	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	3.483	6.407	4.219	4.013	1.358	0.262	0.076	0.056	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	0.279	0.513	0.338	0.321	0.109	0.021	0.006	0.005	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	3.483	9.884	14.252	18.295	19.673	19.811	19.705	19.572	19.383	19.193	19.098	19.004	18.911	18.817	18.725	18.632
	Total Chemicals in Cell	P1	O1 + N1	tons	0.000	0.000	3.762	10.397	14.589	18.616	19.781	19.832	19.711	19.577	19.383	19.193	19.098	19.004	18.911	18.817	18.725	18.632
PARTITION CHEMICALS	Kd	Q1		L/kg	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750
	Adsorbed Chemicals	R1	(Q1 x C1 x P1) / (Q1 x C1 + H1)	tons	0.000	0.000	3.301	9.525	13.559	17.388	18.560	18.636	18.528	18.402	18.221	18.131	18.042	17.953	17.865	17.777	17.689	17.602
	Solid Concentration	S1	R1 / C1 x 10e6	ppm	0.000	0.000	1.137	1.156	1.153	1.151	1.143	1.133	1.122	1.111	1.100	1.095	1.089	1.084	1.079	1.073	1.068	1.063
	Dissolved Chemicals	T1	P1 - R1	tons	0.000	0.000	0.461	0.872	1.031	1.229	1.222	1.196	1.184	1.175	1.162	1.062	1.056	1.051	1.046	1.041	1.036	1.031
	Liquid Concentration	U1	T1 / H1 x 10e6	ppm	0.000	0.000	1.516	1.541	1.538	1.535	1.524	1.510	1.496	1.481	1.467	1.460	1.452	1.445	1.438	1.431	1.424	1.417
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	0.285	0.364	0.307	0.302	0.232	0.202	0.196	0.193	0.190	0.095	0.094	0.094	0.093	0.093	0.092	0.092
	Chemicals Remaining in Water	Y1	T1 - X1	tons	0.000	0.000	0.176	0.508	0.723	0.927	0.990	0.994	0.988	0.981	0.972	0.967	0.962	0.958	0.953	0.948	0.943	0.939
	Total Chemicals Remaining	Z1	R1 + Y1	tons	0.000	0.000	3.477	10.033	14.282	18.315	19.549	19.630	19.516	19.383	19.193	19.098	19.004	18.911	18.817	18.725	18.632	18.541

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	0.284	0.648	0.955	1.256	1.487	1.689	1.884	2.076	2.266	2.360	2.453	2.547	2.639	2.731	2.823
	Chemicals from Above	J2	X1	tons	0.000	0.000	0.285	0.364	0.307	0.302	0.232	0.202	0.196	0.193	0.190	0.095	0.094	0.094	0.093	0.093	0.092	0.092
	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	0.285	0.649	0.956	1.257	1.488	1.690	1.885	2.077	2.267	2.360	2.454	2.547	2.640	2.732	2.824	2.915
PARTITION CHEMICALS	Kd	Q2		L/kg	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
	Adsorbed Chemicals	R2	(Q2 x C2 x P2) / (Q2 x C2 + H2)	tons	0.000	0.000	0.283	0.646	0.952	1.252	1.482	1.683	1.878	2.070	2.258	2.352	2.445	2.538	2.631	2.722	2.814	2.905
	Solid Concentration	S2	R2 / C2 x 10e6	ppm	0.000	0.000	0.003	0.006	0.009	0.011	0.014	0.015	0.017	0.019	0.021	0.022	0.022	0.023	0.024	0.025	0.026	0.027
	Dissolved Chemicals	T2	P2 - R2	tons	0.000	0.000	0.001	0.003	0.004	0.005	0.006	0.006	0.007	0.008	0.008	0.008	0.009	0.009	0.009	0.010	0.010	0.010
	Liquid Concentration	U2	T2 / H2 x 10e6	ppm	0.00000	0.00000	0.00087	0.00198	0.00291	0.00383	0.00454	0.00515	0.00575	0.00634	0.00691	0.00720	0.00749	0.00777	0.00805	0.00833	0.00861	0.00889
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	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.001	0.001	0.001	0.001	0.001
	Chemicals Remaining in Water	Y2	T2 - X2	tons	0.000	0.000	0.001	0.002	0.003	0.004	0.005	0.006	0.006	0.007	0.008	0.008	0.008	0.008	0.009	0.009	0.009	0.010
	Total Chemicals Remaining	Z2	R2 + Y2	tons	0.000	0.000	0.284	0.648	0.955	1.256	1.487	1.689	1.884	2.076	2.266	2.360	2.453	2.547	2.639	2.731	2.823	2.914

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

18.541	18.449	18.358	18.268	18.178	18.088	17.999	17.910	17.822	17.734	17.647	17.560	17.473	17.387	17.302	17.216	17.131	17.047	16.963	16.879	16.796	16.713	16.631	16.549	16.468	16.386
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
18.541	18.449	18.358	18.268	18.178	18.088	17.999	17.910	17.822	17.734	17.647	17.560	17.473	17.387	17.302	17.216	17.131	17.047	16.963	16.879	16.796	16.713	16.631	16.549	16.468	16.386
18.541	18.449	18.358	18.268	18.178	18.088	17.999	17.910	17.822	17.734	17.647	17.560	17.473	17.387	17.302	17.216	17.131	17.047	16.963	16.879	16.796	16.713	16.631	16.549	16.468	16.386

0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750
17.515	17.429	17.343	17.257	17.172	17.088	17.004	16.920	16.836	16.753	16.671	16.589	16.507	16.426	16.345	16.264	16.184	16.104	16.025	15.946	15.867	15.789	15.711	15.634	15.557	15.480
1.058	1.052	1.047	1.042	1.037	1.032	1.027	1.022	1.017	1.012	1.007	1.002	0.997	0.992	0.987	0.982	0.977	0.972	0.968	0.963	0.958	0.953	0.949	0.944	0.939	0.935
1.026	1.020	1.015	1.010	1.005	1.000	0.996	0.991	0.986	0.981	0.976	0.971	0.966	0.962	0.957	0.952	0.948	0.943	0.938	0.934	0.929	0.924	0.920	0.915	0.911	0.906
1.410	1.403	1.396	1.389	1.382	1.376	1.369	1.362	1.355	1.349	1.342	1.335	1.329	1.322	1.316	1.309	1.303	1.296	1.290	1.284	1.277	1.271	1.265	1.259	1.252	1.246

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
0.091	0.091	0.090	0.090	0.090	0.089	0.089	0.088	0.088	0.087	0.087	0.087	0.086	0.086	0.085	0.085	0.084	0.084	0.084	0.083	0.083	0.082	0.082	0.082	0.081	0.081
0.934	0.930	0.925	0.920	0.916	0.911	0.907	0.902	0.898	0.894	0.889	0.885	0.880	0.876	0.872	0.867	0.863	0.859	0.855	0.850	0.846	0.842	0.838	0.834	0.830	0.826
18.449	18.358	18.268	18.178	18.088	17.999	17.910	17.822	17.734	17.647	17.560	17.473	17.387	17.302	17.216	17.131	17.047	16.963	16.879	16.796	16.713	16.631	16.549	16.468	16.386	16.306

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

2.914	3.005	3.096	3.185	3.275	3.364	3.452	3.540	3.628	3.715	3.801	3.888	3.973	4.059	4.144	4.228	4.312	4.396	4.479	4.561	4.644	4.726	4.807	4.888	4.969	5.049
0.091	0.091	0.090	0.090	0.090	0.089	0.089	0.088	0.088	0.087	0.087	0.087	0.086	0.086	0.085	0.085	0.084	0.084	0.084	0.083	0.083	0.082	0.082	0.082	0.081	0.081
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3.006	3.096	3.186	3.275	3.364	3.453	3.541	3.628	3.716	3.802	3.888	3.974	4.060	4.144	4.229	4.313	4.396	4.480	4.562	4.645	4.726	4.808	4.889	4.970	5.050	5.129

3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
2.995	3.085	3.175	3.264	3.353	3.441	3.528	3.616	3.702	3.789	3.875	3.960	4.045	4.130	4.214	4.298	4.381	4.464	4.546	4.628	4.710	4.791	4.872	4.952	5.032	5.111
0.028	0.028	0.029	0.030	0.031	0.032	0.032	0.033	0.034	0.035	0.036	0.036	0.037	0.038	0.039	0.039	0.040	0.041	0.042	0.043	0.043	0.044	0.045	0.045	0.046	0.047
0.011	0.011	0.011	0.012	0.012	0.012	0.012	0.013	0.013	0.013	0.014	0.014	0.014	0.015	0.015	0.015	0.015	0.016	0.016	0.016	0.017	0.017	0.017	0.017	0.018	0.018
0.00917	0.00945	0.00972	0.00999	0.01026	0.01053	0.01080	0.01107	0.01133	0.01160	0.01186	0.01212	0.01238	0.01264	0.01290	0.01316	0.01341	0.01367	0.01392	0.01417	0.01442	0.01467	0.01491	0.01516	0.01540	0.01565

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
0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
0.010	0.010	0.011	0.011	0.011	0.011	0.012	0.012	0.012	0.013	0.013	0.013	0.013	0.014	0.014	0.014	0.015	0.015	0.015	0.015	0.016	0.016	0.016	0.017	0.017	0.017
3.005	3.096	3.185	3.275	3.364	3.452	3.540	3.628	3.715	3.801	3.888	3.973	4.059	4.144	4.228	4.312	4.396	4.479	4.561	4.644	4.726	4.807	4.888	4.969	5.049	5.128

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

16.306	16.225	16.145	16.066	15.987	15.908	15.829	15.751	15.674	15.596	15.520	15.443	15.367	15.291	15.216	15.141	15.066	14.992	14.918	14.845
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
16.306	16.225	16.145	16.066	15.987	15.908	15.829	15.751	15.674	15.596	15.520	15.443	15.367	15.291	15.216	15.141	15.066	14.992	14.918	14.845
16.306	16.225	16.145	16.066	15.987	15.908	15.829	15.751	15.674	15.596	15.520	15.443	15.367	15.291	15.216	15.141	15.066	14.992	14.918	14.845

0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750
15.404	15.328	15.252	15.177	15.102	15.028	14.954	14.880	14.807	14.734	14.661	14.589	14.517	14.445	14.374	14.303	14.233	14.163	14.093	14.024
0.930	0.925	0.921	0.916	0.912	0.907	0.903	0.898	0.894	0.890	0.885	0.881	0.877	0.872	0.868	0.864	0.859	0.855	0.851	0.847
0.902	0.897	0.893	0.889	0.884	0.880	0.876	0.871	0.867	0.863	0.858	0.854	0.850	0.846	0.842	0.837	0.833	0.829	0.825	0.821
1.240	1.234	1.228	1.222	1.216	1.210	1.204	1.198	1.192	1.186	1.180	1.174	1.169	1.163	1.157	1.151	1.146	1.140	1.135	1.129

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
0.080	0.080	0.080	0.079	0.079	0.078	0.078	0.078	0.077	0.077	0.076	0.076	0.076	0.075	0.075	0.075	0.074	0.074	0.074	0.073
0.822	0.817	0.813	0.809	0.805	0.801	0.798	0.794	0.790	0.786	0.782	0.778	0.774	0.770	0.767	0.763	0.759	0.755	0.752	0.748
16.225	16.145	16.066	15.987	15.908	15.829	15.751	15.674	15.596	15.520	15.443	15.367	15.291	15.216	15.141	15.066	14.992	14.918	14.845	14.771

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

5.128	5.208	5.287	5.365	5.443	5.521	5.598	5.675	5.752	5.828	5.903	5.979	6.054	6.128	6.202	6.276	6.349	6.422	6.495	6.567
0.080	0.080	0.080	0.079	0.079	0.078	0.078	0.078	0.077	0.077	0.076	0.076	0.076	0.075	0.075	0.075	0.074	0.074	0.074	0.073
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5.209	5.288	5.366	5.444	5.522	5.599	5.676	5.753	5.829	5.905	5.980	6.055	6.129	6.204	6.277	6.351	6.424	6.496	6.569	6.640

3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
5.190	5.269	5.347	5.425	5.503	5.580	5.656	5.733	5.808	5.884	5.959	6.034	6.108	6.182	6.255	6.328	6.401	6.473	6.545	6.617
0.048	0.048	0.049	0.050	0.051	0.051	0.052	0.053	0.053	0.054	0.055	0.055	0.056	0.057	0.057	0.058	0.059	0.059	0.060	0.061
0.018	0.019	0.019	0.019	0.019	0.020	0.020	0.020	0.021	0.021	0.021	0.021	0.022	0.022	0.022	0.022	0.023	0.023	0.023	0.023
0.01589	0.01613	0.01637	0.01661	0.01685	0.01708	0.01732	0.01755	0.01778	0.01801	0.01824	0.01847	0.01870	0.01892	0.01915	0.01937	0.01960	0.01982	0.02004	0.02026

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
0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
0.017	0.018	0.018	0.018	0.018	0.019	0.019	0.019	0.019	0.020	0.020	0.020	0.020	0.021	0.021	0.021	0.021	0.022	0.022	0.022
5.208	5.287	5.365	5.443	5.521	5.598	5.675	5.752	5.828	5.903	5.979	6.054	6.128	6.202	6.276	6.349	6.422	6.495	6.567	6.639