WHARF MINE
LEAD, SOUTH DAKOTA
NIRATE/ARSENIC GEOCHEMICAL MIXING CELL MODEL
Area - North American Eagle Pit

INPUT BLOCK

CHEMICAL	Nitrate	

INFILTRATION	Total Drainage Area:	586,416	ft^2
	Unreclaimned Infiltration Rate:	9	in/yr
	Reclaimed Infilgration Rate:	4.5	in/yr

SPENT ORE	Porewater Concentration:	35.6	ppm
	Moisture at Offload:	0.04	wt %

CELLS	Cell No.	Material	Mass (tons)	Kd (L/kg)	Moisture (wt%)	GW Inflow (tons)	GW Conc. (ppm)
	1	Barren Rock	Time Dependent	0.000	0.04	0	0
	2	Unsaturated Bedrock	11,993,028	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	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016

TIME DEPENDENT DATA																				
	Infiltration Rate	in/yr	3	3	3	3	3	3	3	3	9	9	9	9	9	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	0	0	0	0	0	0	0	0	155,526	3,481,515	0	0	0	0	0	0

CALCULATION BLOCK

CELL 1 - Barren Rock

DATA	VARIABLE		FORMULA	UNITS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
ROCK	Initial Solids in Cell	A1	C1 from previous year	tons	0	0	0	0	0	0	0	0	0	0	0	155,526	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041
	Material Added	B1		tons	0	0	0	0	0	0	0	0	0	0	155,526	3,481,515	0	0	0	0	0	0
	Total Solids in Cell	C1	A1 + B1	tons	0	0	0	0	0	0	0	0	0	0	155,526	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041
WATER	Initial Mass Water in Cell	D1	V1 from previous year	tons	0	0	0	0	0	0	0	0	0	0	0	6,221	145,482	145,482	145,482	145,482	145,482	145,482
	Inflow from Infiltration	E1	infiltration rate x area x conversion factor	tons	4,576	4,576	4,576	4,576	4,576	4,576	4,576	4,576	13,727	13,727	13,727	13,727	13,727	6,863	6,863	6,863	6,863	6,863
	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	0	0	0	0	0	0	0	0	6,221	139,261	0	0	0	0	0	0
	Total Water in Cell	H1	D1 + E1 + F1 + G1	tons	4,576	4,576	4,576	4,576	4,576	4,576	4,576	4,576	13,727	13,727	19,948	159,208	159,208	152,345	152,345	152,345	152,345	152,345
CHEMICALS	Initial Chemicals	I1	Z1 from previous year	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.069	4.593	4.197	4.008	3.828	3.655	3.491
	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.221	4.958	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.221	4.958	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.069	4.593	4.197	4.008	3.828	3.655	3.491
	Total Chemicals in Cell	P1	O1 + N1	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.221	5.027	4.593	4.197	4.008	3.828	3.655	3.491
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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.221	5.027	4.593	4.197	4.008	3.828	3.655	3.491
	Liquid Concentration	U1	T1 / H1 x 10e6	ppm	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.103	31.573	28.851	27.551	26.310	25.125	23.993	22.912
OUTFLOW	Water Remaining	V1	C1 x % moisture	tons	0	0	0	0	0	0	0	0	0	0	6,221	145,482	145,482	145,482	145,482	145,482	145,482	145,482
	Water Out	W1	H1 - V1	tons	4,576	4,576	4,576	4,576	4,576	4,576	4,576	4,576	13,727	13,727	13,727	13,727	13,727	6,863	6,863	6,863	6,863	6,863
	Chemicals Out in Water	X1	W1 x U1 / 10e6	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.152	0.433	0.396	0.189	0.181	0.172	0.165	0.157
	Chemicals Remaining in Water	Y1	T1 - X1	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.069	4.593	4.197	4.008	3.828	3.655	3.491	3.333
	Total Chemicals Remaining	Z1	R1 + Y1	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.069	4.593	4.197	4.008	3.828	3.655	3.491	3.333

CELL 2 - Unsaturated Bedrock

DATA	VARIABLE		FORMULA	UNITS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
ROCK	Total Solids in Cell	C2		tons	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028
WATER	Initial Mass Water in Cell	D2	V2 from previous year	tons	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930
	Inflow from Cell Above	E2	W1	tons	4,576	4,576	4,576	4,576	4,576	4,576	4,576	4,576	13,727	13,727	13,727	13,727	13,727	6,863	6,863	6,863	6,863	6,863
	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	124,506	124,506	124,506	124,506	124,506	124,506	124,506	124,506	133,657	133,657	133,657	133,657	133,657	126,794	126,794	126,794	126,794	126,794
CHEMICALS	Initial Chemicals	I2	Z2 from previous year	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.137	0.512	0.814	0.949	1.069	1.174	1.266
	Chemicals from Above	J2	X1	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.152	0.433	0.396	0.189	0.181	0.172	0.165	0.157
	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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.152	0.570	0.908	1.003	1.130	1.241	1.339	1.423
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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.152	0.570	0.908	1.003	1.130	1.241	1.339	1.423
	Liquid Concentration	U2	T2 / H2 x 10e6	ppm	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.140	4.266	6.791	7.914	8.910	9.788	10.557	11.226
OUTFLOW	Water Remaining	V2	D2	tons	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930
	Water Out	W2	H2 - V2	tons	4,576	4,576	4,576	4,576	4,576	4,576	4,576	4,576	13,727	13,727	13,727	13,727	13,727	6,863	6,863	6,863	6,863	6,863
	Chemicals Out in Water	X2	W2 x U2 / 10e6	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016	0.059	0.093	0.054	0.061	0.067	0.072	0.077
	Chemicals Remaining in Water	Y2	T2 - X2	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.137	0.512	0.814	0.949	1.069	1.174	1.266	1.346
	Total Chemicals Remaining	Z2	R2 + Y2	tons	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.137	0.512	0.814	0.949	1.069	1.174	1.266	1.346

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
2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042

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

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041
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
3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041

145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482
6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863
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
152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345

3.333	3.183	3.040	2.903	2.772	2.647	2.528	2.414	2.305	2.201	2.102	2.008	1.917	1.831	1.748	1.669	1.594	1.522	1.454	1.388	1.326	1.266	1.209	1.155	1.103	1.053
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3.333	3.183	3.040	2.903	2.772	2.647	2.528	2.414	2.305	2.201	2.102	2.008	1.917	1.831	1.748	1.669	1.594	1.522	1.454	1.388	1.326	1.266	1.209	1.155	1.103	1.053
3.333	3.183	3.040	2.903	2.772	2.647	2.528	2.414	2.305	2.201	2.102	2.008	1.917	1.831	1.748	1.669	1.594	1.522	1.454	1.388	1.326	1.266	1.209	1.155	1.103	1.053

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3.333	3.183	3.040	2.903	2.772	2.647	2.528	2.414	2.305	2.201	2.102	2.008	1.917	1.831	1.748	1.669	1.594	1.522	1.454	1.388	1.326	1.266	1.209	1.155	1.103	1.053
21.880	20.894	19.953	19.054	18.196	17.376	16.593	15.846	15.132	14.450	13.799	13.177	12.584	12.017	11.475	10.958	10.465	9.993	9.543	9.113	8.703	8.311	7.936	7.579	7.237	6.911

145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482
6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863
0.150	0.143	0.137	0.131	0.125	0.119	0.114	0.109	0.104	0.099	0.095	0.090	0.086	0.082	0.079	0.075	0.072	0.069	0.065	0.063	0.060	0.057	0.054	0.052	0.050	0.047
3.183	3.040	2.903	2.772	2.647	2.528	2.414	2.305	2.201	2.102	2.008	1.917	1.831	1.748	1.669	1.594	1.522	1.454	1.388	1.326	1.266	1.209	1.155	1.103	1.053	1.005
3.183	3.040	2.903	2.772	2.647	2.528	2.414	2.305	2.201	2.102	2.008	1.917	1.831	1.748	1.669	1.594	1.522	1.454	1.388	1.326	1.266	1.209	1.155	1.103	1.053	1.005

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028

119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930
6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863
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
126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794

1.346	1.415	1.474	1.524	1.565	1.599	1.625	1.645	1.659	1.667	1.671	1.670	1.665	1.657	1.645	1.630	1.613	1.594	1.572	1.549	1.525	1.499	1.471	1.443	1.414	1.385
0.150	0.143	0.137	0.131	0.125	0.119	0.114	0.109	0.104	0.099	0.095	0.090	0.086	0.082	0.079	0.075	0.072	0.069	0.065	0.063	0.060	0.057	0.054	0.052	0.050	0.047
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.496	1.559	1.611	1.655	1.690	1.718	1.739	1.754	1.762	1.766	1.765	1.760	1.751	1.739	1.724	1.706	1.685	1.662	1.638	1.612	1.584	1.556	1.526	1.495	1.464	1.432

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.496	1.559	1.611	1.655	1.690	1.718	1.739	1.754	1.762	1.766	1.765	1.760	1.751	1.739	1.724	1.706	1.685	1.662	1.638	1.612	1.584	1.556	1.526	1.495	1.464	1.432
11.802	12.294	12.709	13.052	13.331	13.550	13.715	13.830	13.900	13.930	13.923	13.883	13.812	13.715	13.594	13.451	13.290	13.111	12.918	12.712	12.495	12.269	12.034	11.793	11.546	11.295

119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930
6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863
0.081	0.084	0.087	0.090	0.091	0.093	0.094	0.095	0.095	0.096	0.096	0.095	0.095	0.094	0.093	0.092	0.091	0.090	0.089	0.087	0.086	0.084	0.083	0.081	0.079	0.078
1.415	1.474	1.524	1.565	1.599	1.625	1.645	1.659	1.667	1.671	1.670	1.665	1.657	1.645	1.630	1.613	1.594	1.572	1.549	1.525	1.499	1.471	1.443	1.414	1.385	1.355
1.415	1.474	1.524	1.565	1.599	1.625	1.645	1.659	1.667	1.671	1.670	1.665	1.657	1.645	1.630	1.613	1.594	1.572	1.549	1.525	1.499	1.471	1.443	1.414	1.385	1.355

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
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
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
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

2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041	3,637,041

145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482
6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863
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
152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345	152,345

1.005	0.960	0.917	0.876	0.836	0.798	0.763	0.728	0.695	0.664	0.634	0.606	0.578	0.552	0.527	0.504	0.481	0.459
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.005	0.960	0.917	0.876	0.836	0.798	0.763	0.728	0.695	0.664	0.634	0.606	0.578	0.552	0.527	0.504	0.481	0.459
1.005	0.960	0.917	0.876	0.836	0.798	0.763	0.728	0.695	0.664	0.634	0.606	0.578	0.552	0.527	0.504	0.481	0.459

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.005	0.960	0.917	0.876	0.836	0.798	0.763	0.728	0.695	0.664	0.634	0.606	0.578	0.552	0.527	0.504	0.481	0.459
6.600	6.302	6.019	5.747	5.488	5.241	5.005	4.780	4.564	4.359	4.162	3.975	3.796	3.625	3.461	3.305	3.157	3.014

145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482	145,482
6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863
0.045	0.043	0.041	0.039	0.038	0.036	0.034	0.033	0.031	0.030	0.029	0.027	0.026	0.025	0.024	0.023	0.022	0.021
0.960	0.917	0.876	0.836	0.798	0.763	0.728	0.695	0.664	0.634	0.606	0.578	0.552	0.527	0.504	0.481	0.459	0.439
0.960	0.917	0.876	0.836	0.798	0.763	0.728	0.695	0.664	0.634	0.606	0.578	0.552	0.527	0.504	0.481	0.459	0.439

2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028	11,993,028

119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930
6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794	126,794

1.355	1.324	1.293	1.262	1.231	1.200	1.169	1.139	1.108	1.078	1.048	1.018	0.989	0.960	0.931	0.903	0.876	0.849
0.045	0.043	0.041	0.039	0.038	0.036	0.034	0.033	0.031	0.030	0.029	0.027	0.026	0.025	0.024	0.023	0.022	0.021
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.400	1.367	1.335	1.302	1.269	1.236	1.204	1.171	1.139	1.108	1.076	1.045	1.015	0.985	0.955	0.926	0.898	0.870

0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
1.400	1.367	1.335	1.302	1.269	1.236	1.204	1.171	1.139	1.108	1.076	1.045	1.015	0.985	0.955	0.926	0.898	0.870
11.041	10.785	10.527	10.268	10.009	9.751	9.494	9.239	8.986	8.736	8.488	8.244	8.003	7.766	7.533	7.304	7.080	6.860

119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930	119,930
6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863	6,863
0.076	0.074	0.072	0.070	0.069	0.067	0.065	0.063	0.062	0.060	0.058	0.057	0.055	0.053	0.052	0.050	0.049	0.047
1.324	1.293	1.262	1.231	1.200	1.169	1.139	1.108	1.078	1.048	1.018	0.989	0.960	0.931	0.903	0.876	0.849	0.823
1.324	1.293	1.262	1.231	1.200	1.169	1.139	1.108	1.078	1.048	1.018	0.989	0.960	0.931	0.903	0.876	0.849	0.823