Dose Calculations

Table D-1. Distribution of Population in 80-km Radius of the 100-K Area by Grid Sector[(a)]

	Number of People										
Direction	0-1 mi	1-2 mi	2-3 mi	3-4 mi	4-5 mi	5-10 mi	10-20 mi	20-30 mi	30-40 mi	40-50 mi	Totals
S	0	0	0	0	0	0	3	6547	182	211	6943
SSW	0	0	0	0	0	0	9	2119	23063	170	25361
SW	0	0	0	0	0	0	26	2273	25238	228	27765
WSW	0	0	0	0	0	0	41	60	13230	20815	34146
W	0	0	0	0	0	31	1308	0	3685	120158	125182
WNW	0	0	0	0	0	53	3859	10	108	4359	8389
NW	0	0	0	0	0	162	282	665	168	430	1707
NNW	0	0	0	0	0	95	456	765	2241	6901	10458
N	0	0	0	0	0	28	2591	235	1698	10057	14609
NNE	0	0	0	0	0	19	645	804	29927	1136	32531
NE	0	0	0	0	0	0	714	856	4014	165	5749
ENE	0	0	0	0	0	0	898	10028	239	178	11343
E	0	0	0	0	0	12	464	992	3237	418	5123
ESE	0	0	0	0	0	4	685	2393	207	1016	4305
SE	0	0	0	0	0	0	27	2116	52980	10811	65934
SSE	0	0	0	0	0	0	0	35431	65528	1353	102312
Totals	0	0	0	0	0	404	12008	65294	225745	178406	481857

(a) PNNL-14428. 2004. *Hanford Area 2000 Population*. DB Elliott, MJ Scott, EJ Antonio, and K Rhoades, Pacific Northwest National Laboratory, Richland, Washington.

Table D-2. Distribution of Population in 80-km Radius of the 200 Areas by Grid Sector[(a)]

	Number of People										
Direction	0-1 mi	1-2 mi	2-3 mi	3-4 mi	4-5 mi	5-10 mi	10-20 mi	20-30 mi	30-40 mi	40-50 mi	Totals
S	0	0	0	0	0	0	959	790	176	4281	6206
SSW	0	0	0	0	0	0	180	12966	293	299	13738
SW	0	0	0	0	0	0	32	30654	3204	95	33985
WSW	0	0	0	0	0	0	53	2309	23398	7055	32815
W	0	0	0	0	0	7	36	188	10558	118630	129419
WNW	0	0	0	0	0	0	1366	33	10	6178	7587
NW	0	0	0	0	0	12	3358	933	92	2336	6731
NNW	0	0	0	0	0	4	320	750	1713	7123	9910
N	0	0	0	0	0	0	170	2980	438	3018	6606
NNE	0	0	0	0	0	0	29	1085	4150	27277	32541
NE	0	0	0	0	0	0	115	10821	3652	670	15258
ENE	0	0	0	0	0	0	348	1184	1704	220	3456
E	0	0	0	0	0	0	547	2387	1953	325	5212
ESE	0	0	0	0	0	0	304	1851	514	1301	3970
SE	0	0	0	0	0	0	213	51919	96942	1250	150324
SSE	0	0	0	0	0	0	2317	17659	905	7655	28536
Totals	0	0	0	0	0	23	10347	138509	149702	187713	486294

(a) PNNL-14428. 2004. *Hanford Area 2000 Population*. DB Elliott, MJ Scott, EJ Antonio, and K Rhoades, Pacific Northwest National Laboratory, Richland, Washington.

Table D-3. Distribution of Population in 80-km Radius of the 300 Area by Grid Sector[(a)]

	Number of People										
Direction	0-1 mi	1-2 mi	2-3 mi	3-4 mi	4-5 mi	5-10 mi	10-20 mi	20-30 mi	30-40 mi	40-50 mi	Totals
S	0	0	186	2683	8114	22011	5169	199	28270	2710	69342
SSW	0	0	1	76	72	7114	678	126	4003	3790	15860
SW	0	0	7	440	99	3053	2490	71	84	329	6573
WSW	0	0	1	23	21	734	4317	11670	13983	195	30944
W	0	0	0	0	3	370	79	701	22225	20941	44319
WNW	0	0	0	0	0	0	0	54	39	382	475
NW	0	0	0	0	0	0	0	14	4921	1347	6282
NNW	0	0	0	0	0	4	17	8	1062	3135	4226
N	0	0	0	0	0	6	350	1688	9709	2372	14125
NNE	0	0	5	12	21	282	1978	1151	801	3359	7609
NE	0	6	24	28	64	330	864	3504	271	205	5296
ENE	0	21	43	108	59	414	368	80	313	154	1560
E	0	18	21	28	132	302	199	907	226	533	2366
ESE	0	14	16	27	49	205	726	335	173	22299	23844
SE	0	3	50	70	39	4465	48507	960	804	1181	56079
SSE	0	0	555	1841	331	5897	50942	92	190	319	60167
Totals	0	62	909	5336	9004	45187	116684	21560	87074	63251	349067

(a) PNNL-14428. 2004. *Hanford Area 2000 Population*. DB Elliott, MJ Scott, EJ Antonio, and K Rhoades, Pacific Northwest National Laboratory, Richland, Washington.

Table D-4. Distribution of Population in 80-km Radius of the 400 Area by Grid Sector[(a)]

	Number of People										
Direction	0-1 mi	1-2 mi	2-3 mi	3-4 mi	4-5 mi	5-10 mi	10-20 mi	20-30 mi	30-40 mi	40-50 mi	Totals
S	0	0	0	0	0	4625	7638	52	13774	19359	45448
SSW	0	0	0	0	52	852	4946	172	1113	3944	11079
SW	0	0	0	0	43	269	2456	7982	160	278	11188
WSW	0	0	0	0	0	10	217	14171	23070	303	37771
W	0	0	0	0	0	0	11	212	5364	23858	29445
WNW	0	0	0	0	0	0	0	105	1017	1090	2212
NW	0	0	0	0	0	0	0	476	4463	348	5287
NNW	0	0	0	0	0	0	0	205	3343	992	4540
N	0	0	0	0	0	0	106	715	1332	22038	24191
NNE	0	0	0	4	0	26	508	10856	2541	2355	16290
NE	0	0	0	0	0	206	1791	1963	272	158	4390
ENE	0	0	0	0	0	298	1037	1704	163	383	3585
E	0	0	0	0	2	311	702	102	188	117	1422
ESE	0	0	0	0	0	605	578	658	918	367	3126
SE	0	0	0	0	0	334	47925	14898	332	1155	64644
SSE	0	0	0	0	0	12055	68931	6864	706	538	89094
Totals	0	0	0	4	97	19591	136846	61135	58756	77283	353712

(a) PNNL-14428. 2004. *Hanford Area 2000 Population*. DB Elliott, MJ Scott, EJ Antonio, and K Rhoades, Pacific Northwest National Laboratory, Richland, Washington.

Table D-5. Annual Average Dispersion Factors Around the 100-K Area During 2004 for 10-meter Release Height

	X/Q'									
Direction	0.8 km	2 km	4 km	6 km	7 km	12 km	24 km	40 km	56 km	72 km
N	3.7E-06	7.6E-07	3.6E-07	2.2E-07	1.6E-07	7.7E-08	3.0E-08	1.5E-08	9.5E-09	6.8E-09
NNE	3.1E-06	6.5E-07	3.1E-07	1.9E-07	1.3E-07	6.5E-08	2.5E-08	1.3E-08	8.1E-09	5.8E-09
NE	4.1E-06	8.5E-07	4.0E-07	2.5E-07	1.8E-07	8.6E-08	3.4E-08	1.7E-08	1.1E-08	7.8E-09
ENE	6.8E-06	1.5E-06	7.0E-07	4.4E-07	3.1E-07	1.5E-07	5.9E-08	3.0E-08	1.9E-08	1.4E-08
E	1.0E-05	2.2E-06	1.1E-06	6.6E-07	4.6E-07	2.3E-07	8.8E-08	4.5E-08	2.9E-08	2.1E-08
ESE	7.1E-06	1.4E-06	6.8E-07	4.2E-07	2.9E-07	1.4E-07	5.5E-08	2.8E-08	1.8E-08	1.3E-08
SE	5.5E-06	1.1E-06	5.2E-07	3.2E-07	2.2E-07	1.1E-07	4.1E-08	2.1E-08	1.3E-08	9.4E-09
SSE	3.9E-06	7.7E-07	3.6E-07	2.2E-07	1.5E-07	7.4E-08	2.8E-08	1.4E-08	8.9E-09	6.3E-09
S	3.8E-06	7.2E-07	3.3E-07	2.0E-07	1.4E-07	6.7E-08	2.5E-08	1.2E-08	7.8E-09	5.6E-09
SSW	3.0E-06	5.9E-07	2.7E-07	1.7E-07	1.2E-07	5.6E-08	2.1E-08	1.1E-08	6.7E-09	4.8E-09
SW	3.0E-06	6.1E-07	2.9E-07	1.8E-07	1.2E-07	6.0E-08	2.3E-08	1.2E-08	7.4E-09	5.3E-09
WSW	3.6E-06	7.1E-07	3.4E-07	2.1E-07	1.5E-07	7.0E-08	2.7E-08	1.4E-08	8.6E-09	6.2E-09
W	4.0E-06	7.9E-07	3.7E-07	2.3E-07	1.6E-07	7.7E-08	3.0E-08	1.5E-08	9.5E-09	6.8E-09
WNW	4.0E-06	7.9E-07	3.7E-07	2.3E-07	1.6E-07	7.7E-08	3.0E-08	1.5E-08	9.4E-09	6.7E-09
NW	4.3E-06	8.5E-07	4.0E-07	2.5E-07	1.7E-07	8.3E-08	3.2E-08	1.6E-08	1.0E-08	7.3E-09
NNW	4.3E-06	8.5E-07	4.0E-07	2.5E-07	1.7E-07	8.4E-08	3.3E-08	1.6E-08	1.0E-08	7.4E-09

Table D-6. Annual Average Dispersion Factors Around the 200 Area During 2004 for 10-meter Release Height.

	X/Q'									
Direction	0.8 km	2.4 km	4.0 km	5.6 km	7.2 km	12 km	24 km	40 km	56 km	72 km
N	2.9E-06	5.9E-07	2.8E-07	1.7E-07	1.2E-07	5.9E-08	2.3E-08	1.2E-08	7.4E-09	5.3E-09
NNE	2.7E-06	5.6E-07	2.7E-07	1.6E-07	1.2E-07	5.7E-08	2.2E-08	1.1E-08	7.1E-09	5.1E-09
NE	3.8E-06	7.9E-07	3.8E-07	2.3E-07	1.6E-07	8.0E-08	3.1E-08	1.6E-08	1.0E-08	7.2E-09
ENE	5.8E-06	1.2E-06	5.8E-07	3.6E-07	2.5E-07	1.2E-07	4.9E-08	2.5E-08	1.6E-08	1.1E-08
E	6.5E-06	1.4E-06	6.6E-07	4.1E-07	2.9E-07	1.4E-07	5.6E-08	2.8E-08	1.8E-08	1.3E-08
ESE	7.4E-06	1.5E-06	7.3E-07	4.5E-07	3.2E-07	1.6E-07	6.1E-08	3.1E-08	2.0E-08	1.4E-08
SE	6.6E-06	1.3E-06	6.0E-07	3.7E-07	2.6E-07	1.3E-07	4.8E-08	2.4E-08	1.5E-08	1.1E-08
SSE	4.5E-06	8.3E-07	3.8E-07	2.3E-07	1.6E-07	7.6E-08	2.8E-08	1.4E-08	8.7E-09	6.1E-09
S	3.5E-06	6.3E-07	2.9E-07	1.7E-07	1.2E-07	5.6E-08	2.1E-08	1.0E-08	6.3E-09	4.5E-09
SSW	2.6E-06	4.9E-07	2.2E-07	1.3E-07	9.3E-08	4.4E-08	1.6E-08	8.0E-09	5.0E-09	3.6E-09
SW	2.6E-06	4.6E-07	2.1E-07	1.3E-07	8.6E-08	4.1E-08	1.5E-08	7.2E-09	4.5E-09	3.2E-09
WSW	2.3E-06	4.3E-07	2.0E-07	1.2E-07	8.3E-08	4.0E-08	1.5E-08	7.3E-09	4.6E-09	3.3E-09
W	2.1E-06	4.1E-07	1.9E-07	1.2E-07	8.0E-08	3.9E-08	1.5E-08	7.2E-09	4.5E-09	3.2E-09
WNW	2.4E-06	4.6E-07	2.2E-07	1.3E-07	9.0E-08	4.3E-08	1.6E-08	8.1E-09	5.1E-09	3.6E-09
NW	3.2E-06	6.1E-07	2.8E-07	1.7E-07	1.2E-07	5.8E-08	2.2E-08	1.1E-08	6.9E-09	4.9E-09
NNW	3.4E-06	6.9E-07	3.3E-07	2.0E-07	1.4E-07	6.8E-08	2.6E-08	1.3E-08	8.4E-09	6.0E-09

Table D-7. Annual Average Dispersion Factors Around the 200 Area During 2004 for 89-meter Release Height.

	X/Q'									
Direction	0.8 km	2.4 km	4.0 km	5.6 km	7.2 km	12 km	24 km	40 km	56 km	72 km
N	5.5E-09	1.9E-08	1.6E-08	1.2E-08	9.9E-09	5.9E-09	2.7E-09	1.4E-09	9.6E-10	7.0E-10
NNE	7.2E-09	2.1E-08	1.8E-08	1.4E-08	1.1E-08	6.4E-09	2.9E-09	1.5E-09	1.0E-09	7.4E-10
NE	1.5E-08	2.4E-08	2.0E-08	1.5E-08	1.2E-08	7.0E-09	3.2E-09	1.7E-09	1.1E-09	8.4E-10
ENE	1.1E-08	2.5E-08	2.2E-08	1.7E-08	1.4E-08	8.2E-09	3.8E-09	2.1E-09	1.4E-09	1.0E-09
E	9.5E-09	2.5E-08	2.2E-08	1.8E-08	1.5E-08	9.4E-09	4.6E-09	2.6E-09	1.8E-09	1.4E-09
ESE	6.1E-09	3.4E-08	3.2E-08	2.7E-08	2.3E-08	1.4E-08	7.1E-09	4.1E-09	2.8E-09	2.1E-09
SE	1.9E-08	7.2E-08	6.4E-08	5.1E-08	4.2E-08	2.5E-08	1.2E-08	6.5E-09	4.4E-09	3.2E-09
SSE	1.7E-08	5.9E-08	4.9E-08	3.8E-08	3.1E-08	1.8E-08	8.0E-09	4.3E-09	2.9E-09	2.1E-09
S	2.4E-08	5.9E-08	4.8E-08	3.6E-08	2.8E-08	1.6E-08	6.9E-09	3.6E-09	2.3E-09	1.7E-09
SSW	2.4E-08	5.2E-08	4.0E-08	3.0E-08	2.3E-08	1.3E-08	5.4E-09	2.8E-09	1.8E-09	1.3E-09
SW	2.4E-08	4.7E-08	3.6E-08	2.7E-08	2.0E-08	1.1E-08	4.6E-09	2.4E-09	1.5E-09	1.1E-09
WSW	1.4E-08	3.4E-08	2.6E-08	2.0E-08	1.5E-08	8.5E-09	3.6E-09	1.9E-09	1.2E-09	8.7E-10
W	1.5E-08	3.9E-08	3.2E-08	2.4E-08	1.9E-08	1.1E-08	4.5E-09	2.3E-09	1.5E-09	1.1E-09
WNW	1.5E-08	3.8E-08	3.0E-08	2.2E-08	1.7E-08	9.6E-09	4.1E-09	2.1E-09	1.4E-09	9.7E-10
NW	1.5E-08	3.9E-08	3.2E-08	2.5E-08	1.9E-08	1.1E-08	4.8E-09	2.5E-09	1.6E-09	1.2E-09
NNW	8.8E-09	3.4E-08	2.9E-08	2.3E-08	1.8E-08	1.1E-08	4.8E-09	2.6E-09	1.7E-09	1.2E-09

Table D-8. Annual Average Dispersion Factors Around the 300 Area During 2004 for 10-meter Release Height.

	X/Q'									
Direction	0.8 km	2.4 km	4.0 km	5.6 km	7.2 km	12 km	24 km	40 km	56 km	72 km
N	4.4E-06	9.1E-07	4.3E-07	2.7E-07	1.9E-07	9.2E-08	3.6E-08	1.8E-08	1.2E-08	8.3E-09
NNE	4.3E-06	8.3E-07	3.9E-07	2.4E-07	1.7E-07	8.1E-08	3.1E-08	1.6E-08	9.9E-09	7.1E-09
NE	3.5E-06	6.8E-07	3.2E-07	1.9E-07	1.3E-07	6.5E-08	2.5E-08	1.2E-08	7.8E-09	5.6E-09
ENE	2.5E-06	4.7E-07	2.2E-07	1.4E-07	9.5E-08	4.6E-08	1.8E-08	8.8E-09	5.6E-09	4.0E-09
E	2.1E-06	4.2E-07	2.0E-07	1.2E-07	8.4E-08	4.1E-08	1.6E-08	7.9E-09	5.0E-09	3.6E-09
ESE	2.4E-06	4.9E-07	2.3E-07	1.4E-07	1.0E-07	4.9E-08	1.9E-08	9.6E-09	6.1E-09	4.4E-09
SE	4.0E-06	8.3E-07	3.9E-07	2.4E-07	1.7E-07	8.3E-08	3.2E-08	1.6E-08	1.0E-08	7.4E-09
SSE	5.1E-06	1.1E-06	5.2E-07	3.2E-07	2.3E-07	1.1E-07	4.3E-08	2.2E-08	1.4E-08	9.9E-09
S	4.1E-06	8.4E-07	4.0E-07	2.5E-07	1.7E-07	8.5E-08	3.3E-08	1.6E-08	1.1E-08	7.5E-09
SSW	2.2E-06	4.5E-07	2.1E-07	1.3E-07	9.0E-08	4.4E-08	1.7E-08	8.5E-09	5.4E-09	3.9E-09
SW	1.4E-06	2.6E-07	1.2E-07	7.3E-08	5.0E-08	2.4E-08	9.0E-09	4.4E-09	2.8E-09	2.0E-09
WSW	1.4E-06	2.8E-07	1.3E-07	7.9E-08	5.5E-08	2.6E-08	9.9E-09	4.9E-09	3.1E-09	2.2E-09
W	1.8E-06	3.5E-07	1.6E-07	9.8E-08	6.8E-08	3.3E-08	1.2E-08	6.1E-09	3.9E-09	2.7E-09
WNW	4.8E-06	9.8E-07	4.6E-07	2.9E-07	2.0E-07	9.8E-08	3.8E-08	1.9E-08	1.2E-08	8.7E-09
NW	6.4E-06	1.4E-06	6.6E-07	4.1E-07	2.9E-07	1.4E-07	5.5E-08	2.8E-08	1.8E-08	1.3E-08
NNW	4.6E-06	9.6E-07	4.6E-07	2.8E-07	2.0E-07	9.7E-08	3.8E-08	1.9E-08	1.2E-08	8.7E-09

Table D-9. Annual Average Dispersion Factors Around the 400 Area During 2004 for 10-meter Release Height.

	X/Q'									
Direction	0.8 km	2.4 km	4.0 km	5.6 km	7.2 km	12 km	24 km	40 km	56 km	72 km
N	4.8E-06	9.6E-07	4.6E-07	2.8E-07	2.0E-07	9.5E-08	3.7E-08	1.9E-08	1.2E-08	8.5E-09
NNE	4.6E-06	9.1E-07	4.3E-07	2.6E-07	1.8E-07	8.9E-08	3.4E-08	1.7E-08	1.1E-08	7.8E-09
NE	3.4E-06	6.9E-07	3.3E-07	2.0E-07	1.4E-07	6.8E-08	2.6E-08	1.3E-08	8.4E-09	6.1E-09
ENE	2.4E-06	4.8E-07	2.3E-07	1.4E-07	9.7E-08	4.7E-08	1.8E-08	9.2E-09	5.9E-09	4.2E-09
E	1.9E-06	3.9E-07	1.8E-07	1.1E-07	7.8E-08	3.8E-08	1.5E-08	7.3E-09	4.7E-09	3.3E-09
ESE	2.9E-06	6.0E-07	2.8E-07	1.8E-07	1.2E-07	6.0E-08	2.3E-08	1.2E-08	7.5E-09	5.3E-09
SE	4.4E-06	8.9E-07	4.2E-07	2.6E-07	1.8E-07	8.8E-08	3.4E-08	1.7E-08	1.1E-08	7.8E-09
SSE	4.2E-06	8.6E-07	4.1E-07	2.5E-07	1.8E-07	8.6E-08	3.3E-08	1.7E-08	1.1E-08	7.7E-09
S	3.1E-06	6.2E-07	2.9E-07	1.8E-07	1.3E-07	6.1E-08	2.3E-08	1.2E-08	7.4E-09	5.3E-09
SSW	3.0E-06	6.1E-07	2.9E-07	1.8E-07	1.2E-07	6.0E-08	2.3E-08	1.2E-08	7.4E-09	5.3E-09
SW	2.2E-06	4.3E-07	2.0E-07	1.2E-07	8.6E-08	4.2E-08	1.6E-08	7.9E-09	5.0E-09	3.6E-09
WSW	1.8E-06	3.5E-07	1.6E-07	9.9E-08	6.9E-08	3.3E-08	1.3E-08	6.3E-09	4.0E-09	2.9E-09
W	1.9E-06	3.5E-07	1.6E-07	9.9E-08	6.9E-08	3.3E-08	1.2E-08	6.1E-09	3.9E-09	2.8E-09
WNW	1.9E-06	3.6E-07	1.7E-07	1.0E-07	7.0E-08	3.4E-08	1.3E-08	6.3E-09	4.0E-09	2.8E-09
NW	2.9E-06	5.7E-07	2.7E-07	1.6E-07	1.1E-07	5.6E-08	2.1E-08	1.1E-08	6.7E-09	4.8E-09
NNW	4.3E-06	8.8E-07	4.2E-07	2.6E-07	1.8E-07	8.8E-08	3.4E-08	1.7E-08	1.1E-08	7.9E-09