pCi/g (Solids) or pCi/l (liquid)

SNEC Sample No	Analysis Date	Location/Description	H-3	Sr-90	Co-60	Cs-137	Am-241	Pu-238	Pu-239	Pu-241	C-14	Ni-63	Eu-152
None Assigned	10/13/94	Soil			0.228	11.9					< 3		
SXSGL84S	11/5/94	1994 Soil Remediation Report Results		< 0.4	< 0.03	0.45		< 0.04	< 0.08	< 8	< 3	< 1	
SXSGF81S(5)	11/9/94	1994 Soil Remediation Report Results (Recount 1999)			1.1	38.6					< 0.4		
SXSGF81S	11/9/94	1994 Soil Remediation Report Results		< 0.5	0.968	33.1		< 0.01	< 0.01	< 6	< 2	< 1	
SXSGG72S	11/9/94	1994 Soil Remediation Report Results		< 0.5	< 0.04	3.58		< 0.03	< 0.03	< 7	< 3	< 1	
SXSGG761	11/19/94	1994 Soil Remediation Report Results		< 0.4	2.35	319		< 0.02	< 0.04	< 4	< 4	< 1	
SX881960173SD	5/7/96	Sediment - Weir Pipe (~70' out Toward River from Weir)			0.51	46							
SX881960174SD	5/7/96	Sediment - Weir Pipe (~10' out Toward River from Weir)			< 0.8	36							
SXGWG16	1/19/98	Ground Water	< 140										
SXGWG16	4/7/98	CV Pipe Tunnel Water Sample (April 7, 1998)	160		< 4	5.8							
SXGWG16	6/29/98	CV Pipe Tunnel Water Sample (June 29, 1998)	< 120		< 1.5	7.4							
SX822990235CO	4/15/99	Scabble Dust of CV Cavity 779' El. - Wall			22.9	66500					96		
SX861990236CO	4/15/99	Scabble Dust of CV Cavity 779' El. - Floor			22	31400					< 7		
None Assigned	6/2/99	Scabble Dust from SNEC SW			< 5	29900					< 5		
None Assigned	6/2/99	Scabble Dust from SNEC Sump			< 0.4	2170					< 2		
SXSOBKG1	7/14/99	Composite BKGND Soil			< 0.02	0.55	< 2	< 0.05	< 0.05				
DA-SXSOBKG1	7/14/99	Composite BKGND Soil			< 0.02	0.51	< 0.6	< 0.05	< 0.05				
SXSOBKG1	7/14/99	Composite Soil Background			< 0.03	0.467	0.43	0.91	0.73	< 70	< 20	< 20	< 0.09
SXSOBKG2	7/14/99	Composite BKGND Soil			< 0.02	0.15	< 0.6	< 0.05	< 0.04				
SXSOBKG2	7/14/99	Composite Soil Background			< 0.02	0.134	0.6	< 0.3	0.67	< 50	< 8	< 20	< 0.06
SXSO3KG1A	7/14/99	Background Soil Composite (10 miles off-site)					< 0.02	< 0.04	< 0.03	< 4			
SXSO3KG2A	7/14/99	Background Soil Composite (10 miles off-site)					< 0.03	< 0.01	< 0.01	< 2			
SX10SD990136	7/15/99	South Garage Storm Main			< 0.06	0.26							
SX11SD990134	7/15/99	South - Old Parking Lot Storm Drain			< 0.03	0.21							
SX10SL990032	7/19/99	Weir Discharge to River - 30' in from Excavation Beyond Fence			< 0.2	3.5							
SXSL0032	7/19/99	Weir Discharge to River 30' Feet In at Excavation Beyond Fence					< 0.006	< 0.0008	< 0.002				
SX10SD990022	7/21/99	Discharge Tunnel Sediment - End of Tunnel	210	< 8	< 3	21.2	< 0.4	< 0.3	< 0.3	< 70	< 2	< 30	< 6
SX8SD990027	7/21/99	South Garage Toilet Effluent to Septic Tank			< 0.14	0.47							
SXSD0027	7/21/99	South Garage Toilet Effluent to Septic Tank					< 0.03	< 0.016	< 0.007				
SXGWMWGEO	7/22/99	Composite of All GEO Well Water Samples TI#-14181									< 20	< 200	
SX10SD990033	7/22/99	Discharge Tunnel 6" Drain Line Scraping	< 100	< 8	30	4800	5.4	1.6	2.5	< 60	< 6	55	< 20
SX10SD990034	7/22/99	1st Seal Chamber Crud Pile Below 3" Vertical Drain Line			< 0.09	62	< 0.05	< 0.04	< 0.04				
SX10WA990035	7/22/99	Seal Chamber #1 Water	< 130										
SX10WA990036	7/22/99	Steam Tunnel Water ~12'	< 130										
DA-SX10SD990024	7/22/99	South Garage Storm Drain Line			< 0.13	< 0.18							
SX10SD99223	7/22/99	Southwest Garage #4 Floor Drain Rim			< 0.3	6.4							
SX10SD990024	7/22/99	South Garage Storm Drain Line			< 0.06	0.16							
SX5SD99223	7/22/99	Actual Sample Number SX10SD99223 (SW Garage #4 Drain)					< 0.014	< 0.0007	< 0.002				
SX10SD990031	7/29/99	Discharge Tunnel Wall Scraping			0.84	120	< 0.2	< 0.04	< 0.04				

pCi/g (Solids) or pCi/l (liquid)

SNEC Sample No	Analysis Date	Location/Description	H-3	Sr-90	Co-60	Cs-137	Am-241	Pu-238	Pu-239	Pu-241	C-14	Ni-63	Eu-152
SX11SD990133	8/12/99	Shunt Line Man Hole Sample			< 0.04	< 0.04							
DA-SX11SD990135	9/2/99	SW Garage - South of Fence - 12" Line			< 0.07	< 0.07							
SX10SD990137	9/2/99	South Garage Storm Drain Feed Pipe 12" Line			< 0.04	0.52							
SX11SD990135	9/2/99	SW Garage - South of Fence - 12" Line			< 0.05	0.072							
SXGWGEO4	10/14/99	Groundwater Well - Overburden Groundwater	< 130		< 7	< 7							
SXGWGEO3	10/14/99	Groundwater Well - Overburden Groundwater	< 130		< 6	< 5							
SXGWGEO8	10/14/99	Groundwater Well - Overburden Groundwater	< 130		< 6	< 5							
SXGWMW1	10/14/99	Bedrock Monitoring Well 1 Water	130	< 0.8	< 6	< 5							
SXSWA1-4	10/14/99	Juniata River Surface Water			< 5	< 5							
SXGWMW4	10/14/99	Bedrock Monitoring Well 4 Water	130		< 4	< 4							
DA-SXGWGEO1	10/14/99	Groundwater Well - Overburden Groundwater	< 130		< 4	< 3							
SXGWGEO2	10/14/99	Groundwater Well - Overburden Groundwater	< 130		< 3	< 3							
SXGWGEO5	10/14/99	Groundwater Well - Overburden Groundwater	< 130		< 3	< 3							
SXGWGEO6	10/14/99	Groundwater Well - Overburden Groundwater	< 130		< 3	< 3							
SXGWGEO10	10/14/99	Groundwater Well - Overburden Groundwater	< 130		< 2	< 3							
SXGWMW3	10/14/99	Bedrock Monitoring Well 3 Water	< 130		< 3	< 3							
SXGWE1-1	10/14/99	Line Shack Faucet Well Water	< 130		< 4	< 3							
SXGWGEO1	10/14/99	Groundwater Well - Overburden Groundwater	140		< 3	< 2							
SXGWGEO7	10/14/99	Groundwater Well - Overburden Groundwater	< 130		< 3	< 2							
SXGWMW2	10/14/99	Bedrock Monitoring Well 2 Water	< 130	< 0.8	< 3	< 2							
SX11SL990128	10/14/99	Spray Pond - Sample #5			< 0.02	0.29							
SX4PC990104	10/14/99	CV Dome Paint Chips (see 110593) (PS-12)			400	27000	2.5	1.9	5.8				
SX4PC990105	10/14/99	CV Dome Paint Chips (see 110609) (PS-13)			290	18000							
SX4PC990106	10/14/99	CV Dome Paint Chips (see 110609) (PS-14)			140	8700							
SX4PC990103	10/14/99	CV Dome Paint Chips (see 110609) (PS-11)			69	6100							
SX4PC990094	10/14/99	CV Dome Paint Chips (see 110607) (PS-2)			9.6	1400							
SX4PC990100	10/14/99	CV Dome Paint Chips (see 110608) (PS-8)			< 3	1300							
SX4PC990102	10/14/99	CV Dome Paint Chips (see 110608) (PS-10)			14	1200							
SX4PC990098	10/14/99	CV Dome Paint Chips (see 110607) (PS-6)			38	570							
SX4PC990098	10/14/99	CV Dome Paint Chips (see 110607) (PS-6)			37	530	2	0.38	1.1				
SX4PC990101	10/14/99	CV Dome Paint Chips (see 110608) (PS-9)			< 9	470							
SX4PC990095	10/14/99	CV Dome Paint Chips (see 110607) (PS-3)			< 6	150							
SX4PC990097	10/14/99	CV Dome Paint Chips (see 110607) (PS-5)			< 6	110							
SX4PC990096	10/14/99	CV Dome Paint Chips (see 110607) (PS-4)			< 8	88							
SX4PC990099	10/14/99	CV Dome Paint Chips (see 110608) (PS-7)			< 3	35							
SXPCTRU1	10/14/99	CV Dome Paint-SX4PC990093 (110582) (PS-1)			< 2	32	0.012	< 0.005	0.0091				
SXPCTRU2	10/14/99	CV Dome Paint-SX4PC990094, 95, 96, 97 & 98 (PS-2,3,4,5 &6)					0.096	0.041	0.065				
SXPCTRU3	10/14/99	CV Dome Paint-SX4PC990099, 100, 101 & 102 (PS-7,8,9 &10)					0.11	< 0.0004	< 0.0012				
SXPCTRU4	10/14/99	CV Dome Paint-SX4PC990103, 104, 105 & 106 (PS-11,12,13,&14)					0.61	0.49	0.91				

pCi/g (Solids) or pCi/l (liquid)

SNEC Sample No	Analysis Date	Location/Description	H-3	Sr-90	Co-60	Cs-137	Am-241	Pu-238	Pu-239	Pu-241	C-14	Ni-63	Eu-152
SX11SD990129	10/14/99	First Man Hole Sample #1-B Outside Fence Away From Plant			< 0.04	0.48							
SXGWG16	10/20/99	CV Pipe Tunnel Water Sample (October 1999)	150										
SX4PC990110	10/21/99	CV Dome Paint Chips (see 110610) (PSO-1)			< 0.7	< 1.8							
SX4PC990111	10/21/99	CV Dome Paint Chips (see 110610) (PSO-2)			< 3	< 1.5							
SX11SD990131	10/21/99	Man Hole Sample With Ladder, Outside Fence Toward Plant			< 0.04	< 0.19							
SX11SD990130	10/21/99	First Man Hole Sample #1-B Outside Fence Away From Plant			< 0.18	< 0.17							
SX4PC990114	10/25/99	CV Dome Paint Chips (see 110611) (PSO-5)			< 3	< 4							
SX4PC990115	10/25/99	CV Dome Paint Chips (see 110611) (PSO-6)			< 3	< 4							
SX4PC990113	10/25/99	CV Dome Paint Chips (see 110612) (PSO-4)			< 6	< 3							
SX4PC990116	10/25/99	CV Dome Paint Chips (see 110611) (PSO-7)			< 1	< 0.9							
SX4PC990112	10/25/99	CV Dome Paint Chips (see 110610) (PSO-3)			< 0.7	11							
SXPCTRU5	10/25/99	CV Dome Paint-SX4PC990110, 111 & 112 (PSO-1, 2, & 3)					0.017	0.0058	0.0084				
SXPCTRU6	10/25/99	CV Dome Paint-SX4PC990114, 115 & 116 (PSO-5, 6 & 7)					< 0.017	< 0.0012	< 0.003				
SX11SD990132	10/25/99	Man Hole Sample With Ladder, 1 to 4 Field to Shoup Run			< 0.08	0.23							
DA-SX4PC990114	10/25/99	CV Dome Paint Chips (see 110611) (PSO-5)			< 1.5	< 1.7							
SX4PC990117	10/26/99	CV Dome Paint Chips (see 110612) (PSO-8)			< 3	< 1.4							
SX4PC990118	10/26/99	CV Dome Paint Chips (see 110612) (PSO-9)			< 0.6	< 1.4							
SXPCTRU7	10/26/99	CV Dome Paint-SX4PC990113, 117 & 118 (PSO-4, 8 & 9)					< 0.008	< 0.003	< 0.002				
SX11SL990121	10/28/99	Spray Pond - Sample #7			< 0.05	< 0.05							
SX11SL990119	10/28/99	Spray Pond - Sample #6			< 0.03	< 0.03							
SX11SL990122	10/28/99	Spray Pond - Sample #9			< 0.03	< 0.03							
SX11SL990123	10/28/99	Spray Pond - Sample #8			< 0.03	< 0.03							
SX11SL990120	10/28/99	Spray Pond - Sample #10			< 0.019	< 0.02							
SX11SL990127	10/28/99	Spray Pond - Sample #4			< 0.05	2.2							
SX11SL990126	10/28/99	Spray Pond - Sample #3			< 0.06	1.8							
SX11SL990125	10/28/99	Spray Pond - Sample #2			< 0.05	0.72							
SX11SL990124	10/28/99	Spray Pond - Sample #1			< 0.02	0.62							
SXSL25262	10/28/99	Composite of Spray Pond Soil 125, 126 & 127					0.0035	< 0.0009	0.0043				
SX10SD99274	11/11/99	Brick Samples of South Garage Window Sill			< 0.17	< 0.14							
SX10SL99182	11/16/99	Subsurface Sample #17 (0-3 ft)			< 0.16	< 0.19							
SX11SL99192	11/16/99	Subsurface Sample #23 (0-3')			< 0.1	< 0.12							
SX10SL99189	11/16/99	Subsurface Sample #34 (4-6')			< 0.08	< 0.08							
SX11SL99193	11/16/99	Subsurface Sample #22 (4-6')			< 0.06	< 0.07							
SX9SL99186	11/16/99	Subsurface Sample #13 (10-14.5 ft)			< 0.1	3.3							
SX9SL99185	11/16/99	Subsurface Sample #13 (0-3 ft)			< 0.08	1.5							
SX10SL99191	11/16/99	Subsurface Sample #24 (0-4')			< 0.17	0.57							
SX10SL99225	11/16/99	Subsurface Sample #9 (0-3')			< 0.19	0.56							
SX10SL99198	11/16/99	Subsurface Sample #24 (0-4')			< 0.14	0.38							
SX11SL99190	11/16/99	Subsurface Sample #22 (0-3')			< 0.15	0.33							

pCi/g (Solids) or pCi/l (liquid)

SNEC Sample No	Analysis Date	Location/Description	H-3	Sr-90	Co-60	Cs-137	Am-241	Pu-238	Pu-239	Pu-241	C-14	Ni-63	Eu-152
SX10SL99187	11/16/99	Subsurface Sample #24 (5-6')			< 0.08	0.078							
SX5DW99176	11/17/99	1st Seal Chamber Water	220	< 1.3	< 5	< 8	< 0.03	< 0.03	< 0.03				
SX5DW99175	11/17/99	2nd Seal Chamber Water	150		< 6	< 5							
SX5DW99178	11/17/99	10' Tunnel Floor Water Sample	< 140		< 5	< 5							
SX5DW99179	11/17/99	170' Tunnel Floor Water Sample	< 140		< 5	< 5							
SX5DW99180	11/17/99	290' Tunnel Floor Water Sample	< 140		< 4	< 4							
SX5SD99254	11/17/99	2nd S.C.- 6" Pipe Internals			< 0.4	< 0.6							
SX5SD99258	11/17/99	3rd S. Chamber Sediment			< 0.3	43							
SX5SD99259	11/17/99	SSPDT Floor Sediment ~32'			< 0.9	27							
SX5DW99177	11/17/99	3rd Seal Chamber Water	200		< 6	20							
SX5SD99262	11/17/99	SSPDT Floor Sediment ~326'			< 0.3	7							
SX5SD99261	11/17/99	SSPDT Floor Sediment ~100'			< 0.4	4.3							
SX5SD99252	11/17/99	16" Pipe Internal ~138' SSPDT			< 0.5	3.8							
SX5SD99255	11/17/99	SSPDT- 15" Pipe Internals ~160'			< 0.2	2.2							
SX5SD99256	11/17/99	SSPDT 8" Pipe Internal ~163'			< 0.15	2.2							
SX5SD99263	11/17/99	SSPDT Floor Sediment ~24'			< 0.3	2.1							
SX5SD99257	11/17/99	SSPDT 2nd S.C. Sediment ~40'			< 0.6	1.9							
SX5SD99253	11/17/99	SSPDT Floor Sediment ~220'			< 0.3	1.4							
SX5SD99260	11/17/99	SSPDT Floor Sediment ~158'			< 0.3	1.1							
SX5SD99259	11/17/99	SSGSDT Floor Sediment @ 32'					0.021	0.0037	0.012				
SX5SD261& 262	11/17/99	SSGSDT Floor Sediment Composite @ 100 & 326'					0.035	< 0.0005	0.0042				
SX5SD255 & 256	11/17/99	SSGSDT 8" & 15" Pipe Internal Composite (160 &163')					< 0.018	< 0.002	0.0081				
SX5DW175-177	11/17/99	Composite Discharge Tunnel Water					< 0.018	< 0.017	< 0.006				
SX5SD99258	11/17/99	SSGSDT Seal Chamber #3 Sediment					< 0.02	< 0.0015	0.0071				
SXDW178-179-180	11/17/99	Composite Discharge Tunnel Water					< 0.02	< 0.006	< 0.02				
SX5SD99252	11/17/99	SSGSDT 16" Pipe Internal @ 138'					< 0.04	< 0.0016	0.02				
SX5SD99257	11/17/99	SSGSDT Seal Chamber @40' Sediment					< 0.3	< 0.005	0.009				
SX9SL99215	11/17/99	Subsurface Sample #19 (3-4')			< 0.2	< 0.32							
SX9SL99200	11/17/99	Subsurface Sample #21 (0-3')			< 0.13	< 0.2							
SX9SL99213	11/17/99	Subsurface Sample #19 (0-3')			< 0.2	< 0.2							
SX9SL99220	11/17/99	Subsuface Sample #20 (4-8')			< 0.12	< 0.2							
SX9SL99206	11/17/99	Subsurface Sample #M-1 (0-3')			< 0.18	< 0.18							
SX9SL99218	11/17/99	Subsurface Sample #12 (0-3')			< 0.04	< 0.11							
SX9SL99214	11/17/99	Subsurface Sample #20 (9-12')			< 0.11	< 0.11							
SX9SL99202	11/17/99	Subsurface Sample #11 (4-6')			< 0.3	9.3							
SX9SL99195	11/17/99	Subsurface Sample #M-2 (0-3')			< 0.19	1.8							
SX9SL99210	11/17/99	Subsurface Sample #10 (7-12')			< 0.2	1.4							
SX9SL99209	11/17/99	Subsurface Sample #11 (0-3')			< 0.13	0.79							
SX9SL99217	11/17/99	Subsurface Sample #28 (7-12')			< 0.12	0.69							

pCi/g (Solids) or pCi/l (liquid)

SNEC Sample No	Analysis Date	Location/Description	H-3	Sr-90	Co-60	Cs-137	Am-241	Pu-238	Pu-239	Pu-241	C-14	Ni-63	Eu-152
SX9SL99194	11/17/99	Subsurface Sample #M-1 (4-8')			< 0.14	0.66							
SX9SL99219	11/17/99	Subsuface Sample #29 (0-5')			< 0.07	0.59							
SX9SL99201	11/17/99	Subsurface Sample #10 (0-8')			< 0.07	0.51							
DA-SX9SL99201	11/17/99	Subsurface Sample #10 (0-8')			< 0.18	0.51							
SX9SL99197	11/17/99	Subsurface Sample #M-2 (7-12')			< 0.12	0.49							
SX9SL99211	11/17/99	Subsurface Sample #18 (0-2')			< 0.09	0.48							
SX9SL99227	11/17/99	Subsurface Sample #28 (4-6')			< 0.08	0.42							
SX9SL99203	11/17/99	Subsurface Sample #11 (7-12')			< 0.15	0.34							
SX9SL99216	11/17/99	Subsurface Sample #20 (0-3')			< 0.14	0.27							
SX9SL99207	11/17/99	Subsurface Sample #M-1 (9-16')			< 0.14	0.17							
SX9SL99212	11/17/99	Subsurface Sample #21 (4-6')			< 0.11	0.12							
SX5SD99202	11/17/99	Actual Sample Number SX9SL99202 (Subsurface #11 (4-6'))					0.012	< 0.0007	< 0.003				
SX11SL99226	11/18/99	Subsurface Sample #3 (0-3')			< 0.3	< 0.2							
SX9SL99204	11/18/99	Subsurface Sample #2 (4-6')			< 0.17	< 0.06							
SX11SL99229	11/18/99	Subsurface Sample #1 (0-3')			< 0.12	0.47							
SX9SL99208	11/18/99	Subsurface Sample #1 (4-6')			< 0.14	0.45							
DA-SX11SL99229	11/18/99	Subsurface Sample #1 (0-3')			< 0.11	0.35							
SX11SL99233	11/18/99	Subsurface Sample #2 (0-3')			< 0.12	0.33							
SX11SL99230	11/18/99	Subsurface Sample #4 (0-4')			< 0.3	0.21							
SX10SL99243	11/18/99	Subsurface Sample #38 @1" in 3 Areas (2' Radius)			< 0.18	< 0.17							
SX11SL99240	11/18/99	Subsurface Sample #26 (4-6')			< 0.17	< 0.16							
SX11SL99234	11/18/99	Subsurface Sample #35 (0-3')			< 0.13	< 0.13							
SX11SL99237	11/18/99	Subsurface Sample #26 (0-4')			< 0.12	< 0.13							
SX9SL99228	11/18/99	Subsurface Sample #14 (0-3')			< 0.2	< 0.12							
SX9SL99205	11/18/99	Subsurface Sample #3 (4-6')			< 0.1	< 0.11							
SX11SL99231	11/18/99	Subsurface Sample #35 (0-4')			< 0.14	< 0.11							
SX9SL99242	11/18/99	Subsurface Sample #15 (0-4')			< 0.14	< 0.1							
SX9SL99224	11/18/99	Subsurface Sample #14 (4-5')			< 0.11	< 0.08							
SX9SL99236	11/18/99	Subsurface Sample #15 (4-5')			< 0.09	< 0.06							
SX1199239	11/18/99	Subsurface Sample #27 (0-3.5')			< 0.14	0.97							
SX12SL99241	11/18/99	Subsurface Sample #7 (0-4')			< 0.08	0.22							
DA-SX11SL99238	11/18/99	Subsurface Sample #25 (0-3')			< 0.14	0.2							
SX11SL99238	11/18/99	Subsurface Sample #25 (0-3')			< 0.15	0.19							
SX11SL99251	11/19/99	Subsurface Sample #5 (0-1')			< 0.14	< 0.2							
SX10SL99246	11/19/99	Subsurface Sample #37 (4-6')			< 0.15	< 0.12							
SX10SL99244	11/19/99	Subsurface Sample #37 (0-4')			< 0.06	< 0.1							
SX10SL99247	11/19/99	Subsurface Sample #39 (0-2')			< 0.09	< 0.07							
SX9SL99248	11/19/99	Subsurface Sample #36 (0-4')			< 0.09	1.1							
SX9SL99245	11/19/99	Subsurface Sample #36 (4-8')			< 0.1	0.69							
SX9SL99250	11/19/99	Subsurface Sample #36 (0-6')			< 0.08	0.44							

pCi/g (Solids) or pCi/l (liquid)

SNEC Sample No	Analysis Date	Location/Description	H-3	Sr-90	Co-60	Cs-137	Am-241	Pu-238	Pu-239	Pu-241	C-14	Ni-63	Eu-152
DA-SX9SL99249	11/19/99	Subsurface Sample #36 (8-12')			< 0.19	0.36							
SX9SL99249	11/19/99	Subsurface Sample #36 (8-12')			< 0.15	0.33							
SX8SD99269	11/19/99	Line Shack Septic Tank (West End)			< 0.1	< 0.13							
SX8SD99272	11/19/99	Line Shack Septic Tank (East End)			< 0.1	< 0.09							
SX8SD99271	11/19/99	South Garage Septic Tank (South End)			< 0.3	0.73							
SX8SD99270	11/19/99	South Garage Septic Tank (North End)			< 0.7	0.52							
SX5SD99266	11/22/99	SSPDT Floor Sediment ~610'			< 0.3	2.3							
DA-SX5SD99268	11/22/99	SSPDT Floor Sediment ~490'			< 0.2	2.2							
SX5SD99265	11/22/99	SSPDT Floor Sediment ~390'			< 0.14	2							
SX5SD99267	11/22/99	SSPDT Floor Sediment ~550'			< 0.16	2							
SX5SD99268	11/22/99	SSPDT Floor Sediment ~490'			< 0.2	1.8							
SX5SD99264	11/22/99	SSPDT Floor Sediment ~670'			< 0.2	1.6							
SX8SD99273	11/30/99	MHB Floor (Above CV Tunnel)			< 0.09	1.3							
SX10CW99275	12/2/99	South Garage Terra-cotta Edge of Roof			< 0.14	< 0.12							
SX12SD99286	12/3/99	Sample #17 Discharge Tunnel Outfall			< 0.04	< 0.06							
SX12SD99280	12/3/99	Sample #18 Discharge Tunnel Outfall			< 0.02	< 0.03							
SX12SD99281	12/3/99	Sample #19 Discharge Tunnel Outfall			< 0.04	0.16							
SX12SD99284	12/3/99	Sample #15 Discharge Tunnel Outfall			< 0.07	0.078							
SX12SD99282	12/3/99	Sample #27 Discharge Tunnel Outfall			< 0.05	0.052							
SX12SD99287	12/3/99	Sample #13 Shoup's Run Shunt Outfall			< 0.11	< 0.12							
SX12SD99276	12/3/99	River Sample #2 (South of Entrance to Shoup's Run)			< 0.09	< 0.08							
SX12SD99279	12/3/99	Sample #11 Shoup's Run Shunt Outfall			< 0.07	< 0.06							
SX12SD99278	12/3/99	Sample #9 Steam Plant Intake Tunnel Entrance			< 0.04	0.11							
SX12SD99283	12/3/99	Sample #1 In River South of Entrance to Shoup's Run			< 0.05	0.11							
SX12SD99277	12/3/99	Sample #21 Weir Discharge Outfall			< 0.03	0.41							
SX12SD99285	12/3/99	Sample #22 Weir Discharge Outfall			< 0.05	0.38							
SXSM00314	1/24/00	Garage Steam Pipe Smear Composite			< 7	15							
SX10SL00320	3/27/00	Sediment - Westinghouse Lab Pad Drain Line Composite			0.067	6.8	9.20E-02	< 0.07	< 0.08				
SX10SL00319	3/28/00	Subsurface Soil - SSGS Intake Screen Area, AV-138 @ 18' Depth			< 0.02	0.33							
SXGWG16	4/19/00	CV Pipe Tunnel Water Sample (April 19, 2000)			< 3	7							
SX10GW00321	4/25/00	Sediment Phase - SSGS East Sump @ 25', AV183, Well #1			< 3	85	8.80E-02	< 0.03	< 0.04				
SX10GW00321	4/25/00	Water Phase - SSGS East Sump @ 25', AV183, Well #1	< 120		< 6	53							
SX10SL00329	4/25/00	SSGS Footprint AV-134, 0'-3', Well #2		< 0.03	< 0.05	1.5	< 0.1	< 0.0014	< 0.006	< 0.3			
SX10SL00331	4/26/00	SSGS Footprint AT-139, 9'-12', Well #4		< 0.018	< 0.05	0.33	< 0.02	< 0.0015	< 0.005	< 0.4			
SX10SL00334	4/26/00	SSGS Footprint AT-139 @ 6'		< 0.02	< 0.05	0.27	< 0.02	< 0.007	< 0.005	< 0.6			
SX10SL00337	4/27/00	SSGS Footprint AW-132 @ 21', Well #3		< 0.03	< 0.04	0.47	< 0.009	< 0.002	< 0.006	< 0.6			
SX9SL00339	5/2/00	Grid F-8 @ 809' El. (SMPRQ Soil001)		< 0.015	< 0.07	43	< 0.016	< 0.007	< 0.006	< 0.4			
SX9SL00342	5/4/00	CV Yard G-8 Loc. # 12/Truck #7 (SMPRQ Soil001)		< 0.014	< 0.06	5	< 0.03	< 0.007	< 0.006	< 0.4			
SX9SL00340	5/4/00	CV Yard G-8 Loc. # 12 (SMPRQ Soil001)		< 0.018	< 0.13	3.2	< 0.03	< 0.0013	< 0.006	< 0.3			

pCi/g (Solids) or pCi/l (liquid)

SNEC Sample No	Analysis Date	Location/Description	H-3	Sr-90	Co-60	Cs-137	Am-241	Pu-238	Pu-239	Pu-241	C-14	Ni-63	Eu-152
SX9SL00341	5/4/00	CV Yard F-7, Lco.# 11-9 (SMPRQ Soil001)	< 30	< 0.03	< 0.0248	1.55	< 0.06	< 0.2	< 0.09	< 60	< 0.6	< 9	< 0.0556
SX9SL00343	5/8/00	CV Yard F-7, Loc.# 2, Truck R-2 (SMPRQ Soil001)	< 40	< 0.07	0.175	210	< 0.1	< 0.2	< 0.1	< 80	< 2	< 20	< 0.144
SXSD344	5/10/00	SSGS Tunnel 18" Pipe, Sample From Robotic Entry			< 0.015	1.4	< 0.6	< 0.01	< 0.04				
SX13DW00345	5/10/00	SSGS Tunnel 21" Pipe Water	< 120										
SX9SL00347	5/16/00	CV Yard Grid# F-8 AY-129, (SMPRQ Soil001)	< 50	< 0.07	0.104	612	< 0.08	< 0.08	< 0.08	< 60	< 0.5	< 10	< 0.0898
SX9SL00363	5/17/00	CV Yard R-2-4 (G-8) AZ-129 (SMPRQ Soil001)	110	< 0.06	0.0842	555	< 0.06	< 0.07	< 0.1	< 50	< 0.4	< 8	< 0.0656
SX9SL00364	5/18/00	CV Yard Truck 18-2 (SMPRQ Soil001)		< 0.016	< 0.05	< 0.07	< 0.1	< 0.002	< 0.006	< 0.5			
SX13SD00365D	5/24/00	SSGS DT 18" Line		< 0.02	< 0.07	3.1	< 0.03	< 0.007	< 0.007	< 0.6			
SX13SD00365	5/24/00	SSGS DT 18" Line		< 0.019	< 0.07	3	< 0.07	< 0.01	< 0.007	< 0.7			
SX10SD00366	6/5/00	SSGS Footprint East Turbine Sump Area AV-133 (Pumped)	< 90	< 0.06	0.37	97.8	< 0.2	< 0.2	< 0.2	< 100	< 2	< 20	< 0.18
SX10SD00367	6/5/00	SSGS Footprint West Turbine Sump Area AV-134 (Pumped)		< 0.02	< 0.2	6.7	< 0.13	< 0.007	< 0.012	< 1.5			
SX10SD00368	6/6/00	SSGS Footprint Collection Tank Area AW-132 (Pumped)		< 0.02	< 0.2	5.5	< 0.04	< 0.015	< 0.016	< 1.8			
SX10SD00369	6/8/00	SSGS Footprint in Intake Tunnel AT-139 (Pumped)	< 30	< 0.05	< 0.151	0.22	< 0.2	< 0.1	< 0.1	< 100	1.8	< 20	< 0.187
SX-SM-HAP37	7/24/00	HAP-37 Smears, 18" Wall in Primary (AREA 2) 779' El.			14	1300	0.82	0.15	0.35				
SX-SM-HAP8	7/25/00	HAP-8 Smears, 18" Wall in Storage Well (AREA 6)			55	14000	15	1.8	4.7				
SNEC -ST-100	7/26/00	Discharge Tunnel Water - 100' Down Tunnel	< 120	< 1.2									
SNEC-ST-2	7/26/00	Discharge Tunnel Water - Seal Chamber #2	< 120	< 1									
SNEC-ST-1	7/26/00	Discharge Tunnel Water - Seal Chamber #1	< 120	< 1									
SNEC-ST-3	7/26/00	Discharge Tunnel Water - Seal Chamber #3	< 120	< 1.6									
SNEC -ST-160	7/26/00	Discharge Tunnel Water - 160' Down Tunnel	< 120	< 1.3									
SNEC-ST-40	7/27/00	Discharge Tunnel Water - 40' Down Tunnel	< 120	< 1.3									
SX-WA-LADDER	8/21/00	Discharge Water, SSGS DT @ Ladder ~5' in	< 1700		< 14	< 15							
SX-WA-CHAM2	8/21/00	Discharge Water, SSGS DT Chamber #2	< 1700		< 15	< 14							
SX-WA-CHAM1	8/21/00	Discharge Water, SSGS DT Chamber #1	< 1700		< 15	< 12							
SX-WA-TUN130	8/21/00	Discharge Water, SSGS DT @ 130'	< 1700		< 14	< 11							
SX-WA-TUN320	8/21/00	Discharge Water, SSGS DT @ 320'	< 1700		< 14	< 11							
SX-WA-CHAM3	8/21/00	Discharge Water, SSGS DT Chamber #3	< 1700		< 60	18							
SX-SD-00-410	8/24/00	SSGS Footprint, Well # 7 Pumped Sediment			1.5	77	< 0.07	< 0.3	< 0.17				
SX-WA-CV-WEST	9/13/00	CV Tunnel Water			< 13	< 16							
SX-WA-CV-EAST	9/13/00	CV Tunnel Water			< 11	< 13							
	9/26/00	HAP # 5, CV Concrete Material, Rx Cavity, 18" Wall-NW	259.3	< 4.93	52.2	2510	1.18	0.051	0.119	1.97	85.5		< 2.99
	9/26/00	HAP # 11, CV Concrete Material, Rx Cavity ~798' El, 18" Wall-North	165.7	< 5.3	17.1	597	0.859	0.031	0.039	< 0.757	51.07		< 2.33
	9/26/00	HAP # 46, CV Concrete Material, 797' El., Primary North 5' Wall	371.6	< 5.04	3.95	275	0.018	< 0.011	< 0.008	4.17	74.5		< 2.33
#6386	11/22/00	SSGS Soil Bag #05	< 10.9	< 0.54	0.4	11.4	< 0.008	< 0.029	< 0.02	< 3.26	< 5.85	< 8.7	< 0.03
SX01CW00637	12/14/00	SNEC CV, Composite Concrete Samples AN-1, 2 & 3	190.6		< 0.07	58.5	0.55	< 0.91	< 0.58	31.0	114.7		< 0.39
SX01CW00640	12/14/00	Composite Core Bore Wafers -	518.6		< 0.08	27.7	< 1.45	< 1.2	< 0.57	10.07	98.4		< 0.26
SX01CW00638	12/14/00	SNEC CV Composite Concrete Samples PO-1 & PO-8	225.3		< 0.07	11.1	< 0.46	< 0.52	< 0.61	23.5	67.5		< 0.21
SX01CW00636	12/14/00	SNEC CV Concrete, AO-18	66.6		< 0.09	5.08	< 1.27	< 1.06	< 0.39	46.8	22.4		< 0.18
SX01CW00574	12/14/00	SNEC CV Rod Room Concrete	40.9		0.04	1.37	< 1.19	< 1.2	< 0.78	275.0	33.6		0.1
SX01CW00626	12/14/00	SNEC CV Basement Sump Concrete	270.9		< 0.08	0.55	1.08	< 0.49	< 0.77	39.7	90.3		< 0.13

pCi/g (Solids) or pCi/l (liquid)

SNEC Sample No	Analysis Date	Location/Description	H-3	Sr-90	Co-60	Cs-137	Am-241	Pu-238	Pu-239	Pu-241	C-14	Ni-63	Eu-152
SX02CW00639	12/14/00	SNEC CV Concrete PE-1	376.2		< 0.07	0.21	< 0.37	< 0.4	< 0.4	28.8	80.4		< 0.12
#6550	1/10/01	4th Quarter Liquid Composite -Water	< 571	< 0.9									
CV Tunnel	2/14/01	CV Tunnel Sediment Composite	< 9.4	9.67	1.26	1250	< 0.18	< 0.55	<0.22	< 44.69	< 9.34	< 4.02	< 0.13
SXSD721	2/15/01	SSGS North Sump	< 12.7	< 0.01	0.07	2.55	< 0.004	< 0.004	< 0.003	< 0.478	< 4.13	< 7.26	< 0.07
SXSD723	2/20/01	SSGS SE Sump, AU-133, SR-0003	< 12.1	< 0.02	0.54	159	< 0.014	< 0.003	< 0.004	< 0.562	< 4.07	< 7.2	< 0.04
SXCW735	3/6/01	SSGS Tunnel, North Wall - 5'-8" From Floor	< 10.3	< 0.03	< 0.07	22.6	< 0.044	< 0.047	< 0.044	< 6.57	< 3.96	< 7.88	< 0.33
SXSD744	3/21/01	SSGS Mezzanine, East, SR-0004	< 123	< 0.18	2.26	39.6	< 0.709	< 0.33	< 0.33	< 50.8	< 37.9	< 82.6	< 1.46
SX9SL01746-#6889	3/26/01	North CV Yard Area Soil Bag #34L	< 12.29	0.27	1.31	5.04	0.07	0.02	0.04	< 1.23	< 4.21	< 1.29	< 0.23
OW-3R	4/25/01	Groundwater Level Well - SE	< 600	< 1.05	< 12	< 9.99	< 0.52	< 0.58	< 0.23	< 63.24	< 45.32	< 12.77	< 18.9
OW-5	4/25/01	Groundwater Level Well - NW	< 600	< 1.23	< 11.7	< 9.06	< 0.19	< 0.25	< 0.25	< 87.78	< 44.01	< 11.56	< 18.6
OW-4R	4/25/01	Groundwater Level Well - NE	< 600	< 0.65	< 9.65	< 8.49	< 0.2	< 0.63	< 0.36	< 56.48	< 44.34	< 13.7	< 15.6
OW-6	4/25/01	Groundwater Level Well - SW	< 600	< 0.82	< 9.34	< 7.22	< 0.28	< 0.49	< 0.2	< 54.53	< 46.14	< 9.9	< 15.3
OW-5R	4/25/01	Groundwater Level Well - NW	< 600	< 1.3	< 7.19	< 6.91	< 0.32	< 0.34	< 0.37	< 40.03	< 43.79	< 11.11	< 18
OW-3	4/25/01	Groundwater Level Well - SE	< 600	< 0.8	< 8.37	< 6.34	< 0.23	< 0.24	< 0.22	< 55.43	< 43.69	< 12.13	< 14
SXSD756	4/25/01	SSGS North Sump Penetration - 4" Pipe	< 12.2	< 0.05	0.28	4.39	< 0.053	< 0.01	< 0.004	< 0.491	< 3.52	< 7.68	< 0.07
SXCF828	5/4/01	SSGS, East, Disk # 1	< 11.7	< 0.05	2.01	660	0.29	< 0.046	0.145	< 6.819	< 3.68	< 7.73	< 0.31
SXSD923	5/22/01	SSGS Tunnel, Rubble @ 700', SR-0008	< 11.2	< 0.05	< 0.01	0.15	< 0.006	< 0.003	< 0.003	< 0.549	< 3.43	< 7.02	< 0.05
SX11SD01937	5/24/01	Weir Line 135' Above River Outlet	< 45.13	< 0.14	< 0.27	61.59	< 0.04	< 0.05	< 0.04	< 11.75	< 8.02	< 6.25	< 0.77
SXCF971	6/13/01	SSGS Seal Chamber # 2, SR-0013	< 11.8	0.2	< 0.01	1.05	< 0.032	< 0.015	< 0.015	< 2.22	< 3.81	< 7.59	< 0.04
SXCF1098	6/28/01	SSGS Seal Chamber, West End, Disk # 1, SR-0013	< 11.9	< 0.07	< 0.04	< 0.03	< 0.056	< 0.049	< 0.038	< 6.9	< 3.71	< 24.8	< 0.17
SXGWE11	7/2/01	Well Water	< 189		< 7.61	< 5.99							< 16.3
SXGWOW7R	7/2/01	Well Water		< 0.77			< 0.59	< 1.79	< 1.07	< 317.69	< 53.23	< 68.53	
SXGWMW2Q	7/3/01	Well Water			< 14.4	< 13.5							< 21.9
SXGWOP3	7/5/01	Well Water		< 1.46			< 0.71	< 0.39	< 0.39	< 120.67	< 53.31	< 154.9	
SXGWOP4	7/5/01	Well Water		< 0.75			< 0.82	< 0.59	< 0.18	< 60.88	< 52.08	< 73.55	
SXGWG1Q1	7/5/01	Well Water	< 189										
SX9SL01746-R	7/5/01	Unknown Soil Sample - Gamma Scan Recount			1.26	4.77							< 0.26
SXSD1192	7/17/01	SSGS Footprint, East, SR-0004, NW Sump	< 12.5	< 0.09	0.14	11.6	< 0.136	< 0.003	< 0.003	< .559	< 3.83	< 9.08	< 0.06
SXCF1210	7/20/01	SSGS Footprint, Center Section, Core Bore # 2, Disk # 1	< 11.8	< 0.06	< 0.04	0.27	< 0.048	< 0.049	< 0.049	< 6.79	< 3.72	< 7.33	< 0.21
SXSL1270	7/26/01	AX-129, 3-3, Soil, CV SE Side < 5' From CV, 800' El.	< 11.31	< 0.02	< 0.01	23.1	< 0.037	< 0.007	< 0.007	< 2.104	< 3.93	< 8.68	< 0.07
SXSL1281	7/26/01	AX-128, 3-1, Soil, CV SW Side < 5' From CV, 800' El	< 11.52	< 0.03	< 0.01	4.38	< 0.031	< 0.016	< 0.007	< 1.908	< 4	< 7.78	< 0.04
SXSD1377	9/4/01	SSGS 790' El., East - Debris From Pump Stand Small Pipe	< 11	< 0.04	3.98	3130	< 0.11	0.07	0.08	< 4.74	< 4.15	< 8.61	< 0.24
SXSD1472	10/10/01	Weir Site # 1, Sediment	< 10.2	< 0.014	0.0201	2.87	< 4.89E-03	< 3.41E-03	< 3.41E-03	< 0.96	< 4.58	< 7.46	< 6.24E-02
SXSD1504	10/15/01	River Site # 1, Sediment	< 10.1	< 0.01	< 2.74E-02	0.154	< 2.83E-03	< 3.48E-03	< 3.12E-03	< 1.06	< 4.82	< 6.94	< 0.139
SXSD1537	10/17/01	River Sediment Background @ Riddlesburg	< 9.62	< 0.01	< 1.37E-02	0.0662	< 3.50E-03	< 3.56E-03	< 3.56E-03	< 1.15	< 4.94	< 7.98	< 0.0686
SX-10-SD-00-369	12/24/01	SSGS Footprint in Intake Tunnel AT-139 (Pumped)									<2		
SX10SL00363	12/24/01	CV Yard R-2-4 (G-8) AZ-129 (SMPRQ Soil001)	61										
SXSD1622	1/17/02	Intake Tunnel Sediment - South - Suction @ 60', QC Sample		<0.03	< 0.06	2.18	< 0.147	< 0.038	< 0.041	< 4.59			< 0.16
SXSD1998	1/17/02	Intake Tunnel Sediment - North - North Wall/Mid-Section @ 85'		<0.01	< 0.02	2.08	< 0.004	< 0.008	< 0.007	< 0.86			< 0.04

pCi/g (Solids) or pCi/l (liquid)

SNEC Sample No	Analysis Date	Location/Description	H-3	Sr-90	Co-60	Cs-137	Am-241	Pu-238	Pu-239	Pu-241	C-14	Ni-63	Eu-152
SXSD2232	1/17/02	Intake Tunnel Sediment - East @ 220'		<0.01	< 0.03	0.24	< 0.003	< 0.005	< 0.006	< 0.87			< 0.05
SXSD2351	1/17/02	Intake Tunnel Sediment - South - Wall Composite 0 - 100'		<0.02	< 0.04	2.18	< 0.004	< 0.009	< 0.011	< 1.422			< 0.1

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9/13/01
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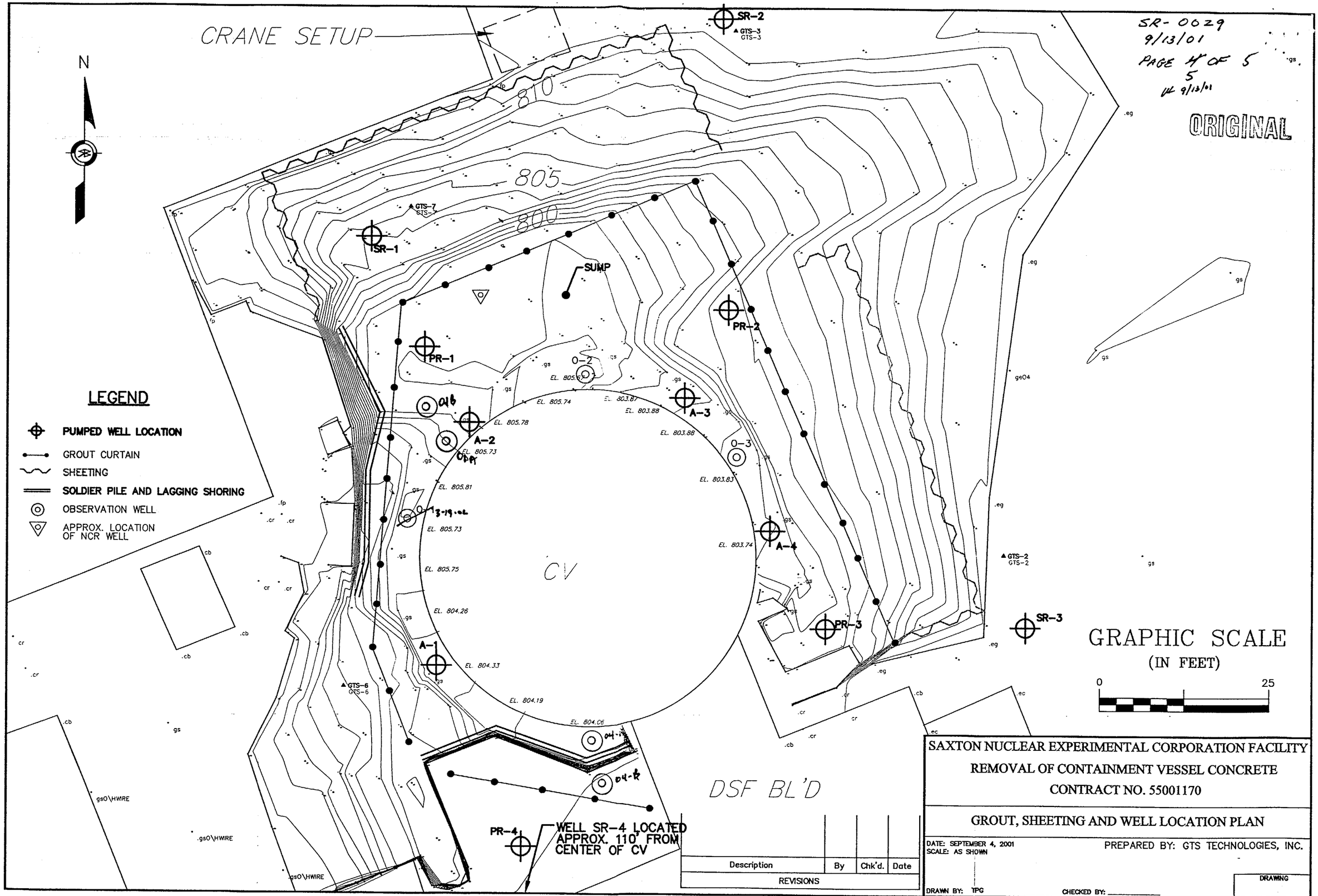
9/13/01

ORIGINAL



Description	By	Chk'd.	Date
REVISIONS			

SAXTON NUCLEAR EXPERIMENTAL CORPORATION FACILITY

REMOVAL OF CONTAINMENT VESSEL CONCRETE

CONTRACT NO. 55001170

GROUT, SHEETING AND WELL LOCATION PLAN

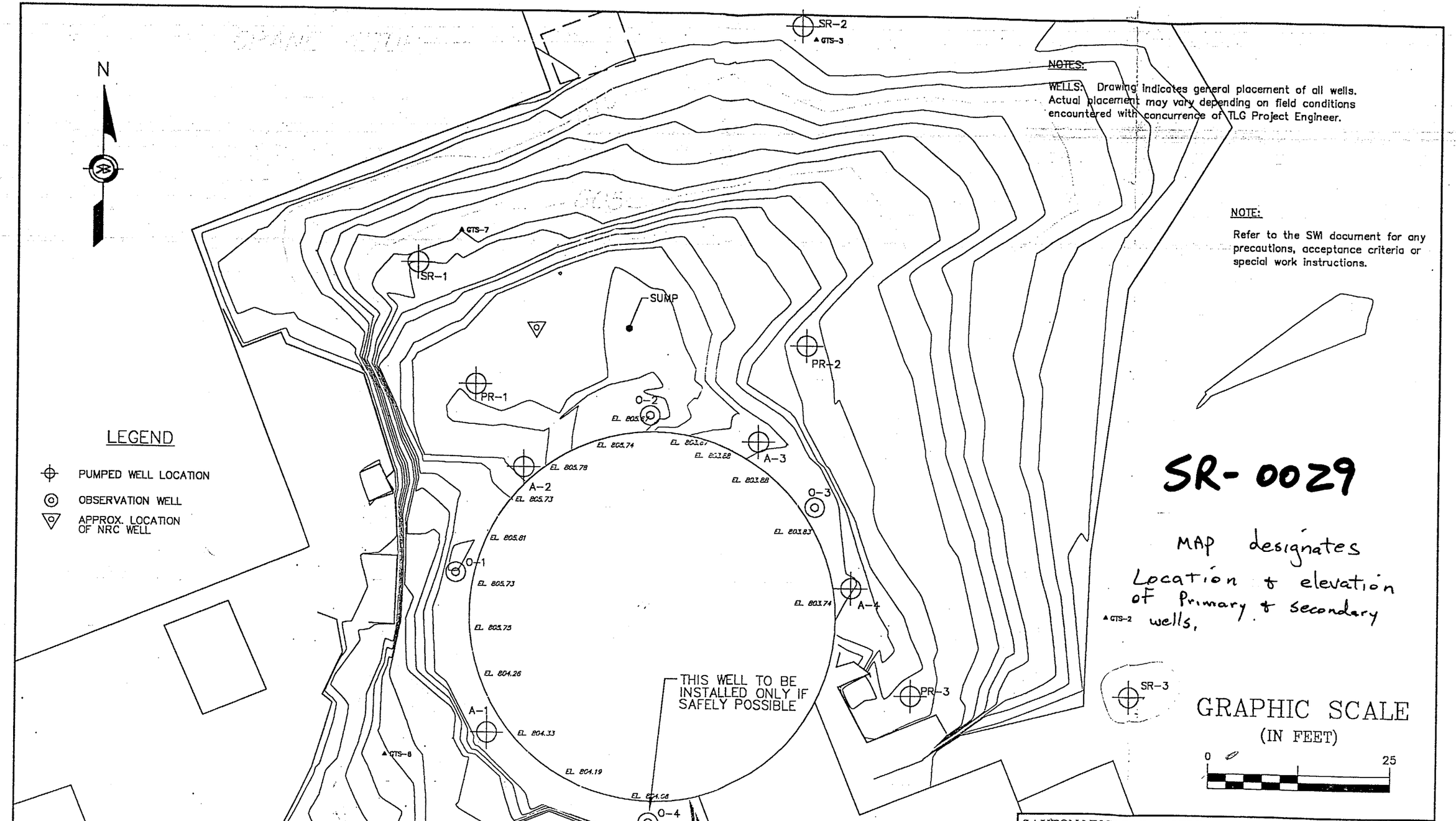
DATE: SEPTEMBER 4, 2001
SCALE: AS SHOWN

PREPARED BY: GTS TECHNOLOGIES, INC.

DRAWN BY: TPG

CHECKED BY: _____

DRAWING



NOTES:

WELLS: Drawing indicates general placement of all wells. Actual placement may vary depending on field conditions encountered with concurrence of TLG Project Engineer.

NOTE:

Refer to the SWI document for any precautions, acceptance criteria or special work instructions.

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MAP designates Location & elevation of Primary & Secondary wells.

Description	By	Chk'd.	Date
REVISIONS			

SAXTON NUCLEAR EXPERIMENTAL CORPORATION FACILITY

REMOVAL OF CONTAINMENT VESSEL CONCRETE

CONTRACT NO. 55001170

WELL LOCATION PLAN

DATE: SEPTEMBER 4, 2001
SCALE: AS SHOWN

PREPARED BY: GTS TECHNOLOGIES, INC.
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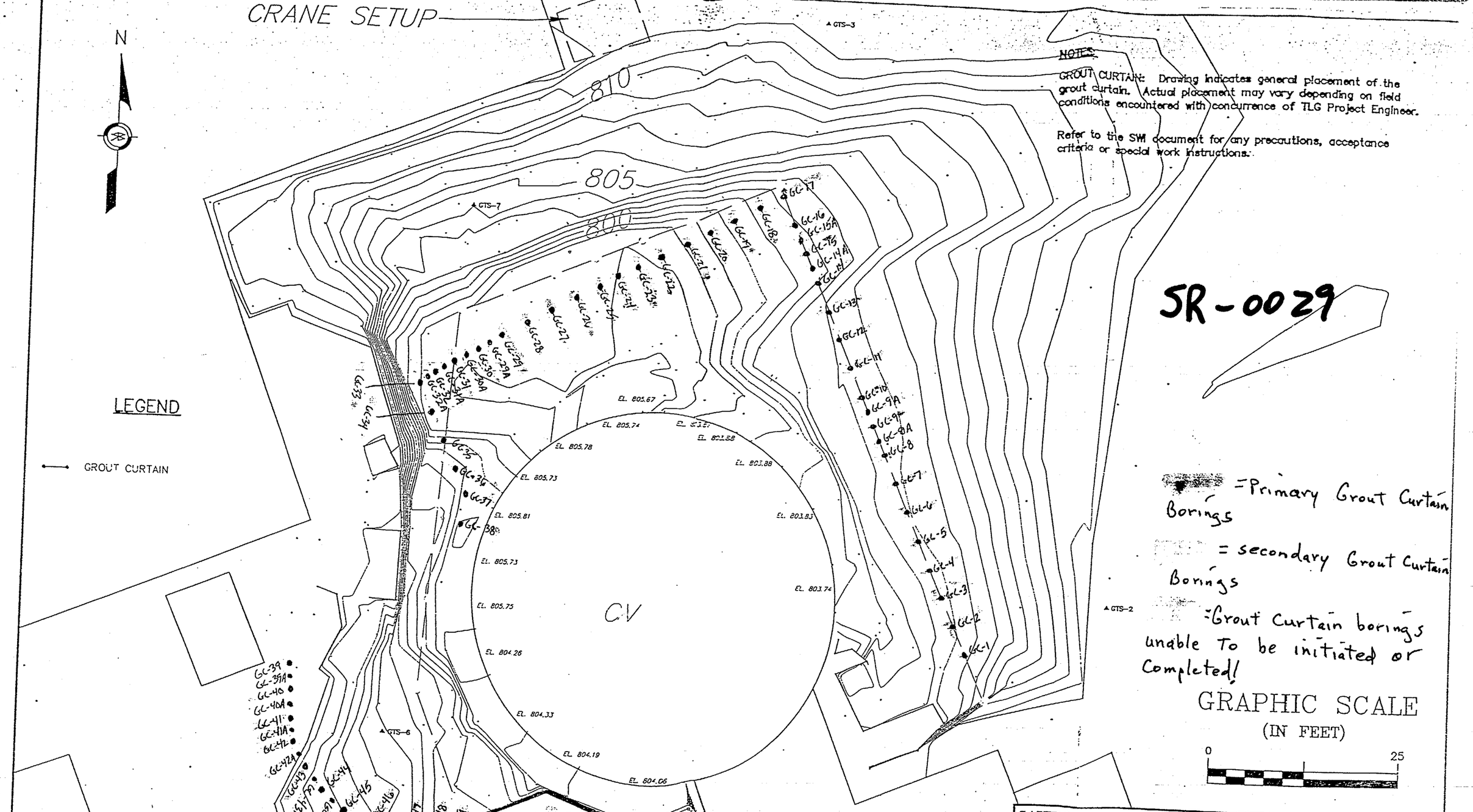
ATTACHMENT 7.2

DRAWN BY: TPG CHECKED BY: ENGINEER:

DRAWING SNEC-W4



NOTES:

GROUT CURTAIN: Drawing indicates general placement of the grout curtain. Actual placement may vary depending on field conditions encountered with concurrence of TLG Project Engineer.

Refer to the SWI document for any precautions, acceptance criteria or special work instructions.

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AS NOTED	JNN	SJM	10/6/01
Description	By	Chk'd.	Date
REVISIONS			

SAXTON NUCLEAR EXPERIMENTAL CORPORATION FACILITY

REMOVAL OF CONTAINMENT VESSEL CONCRETE

CONTRACT NO. 55001170

GROUT CURTAIN LOCATION PLAN

DATE: SEPTEMBER 4, 2001
SCALE: AS SHOWN

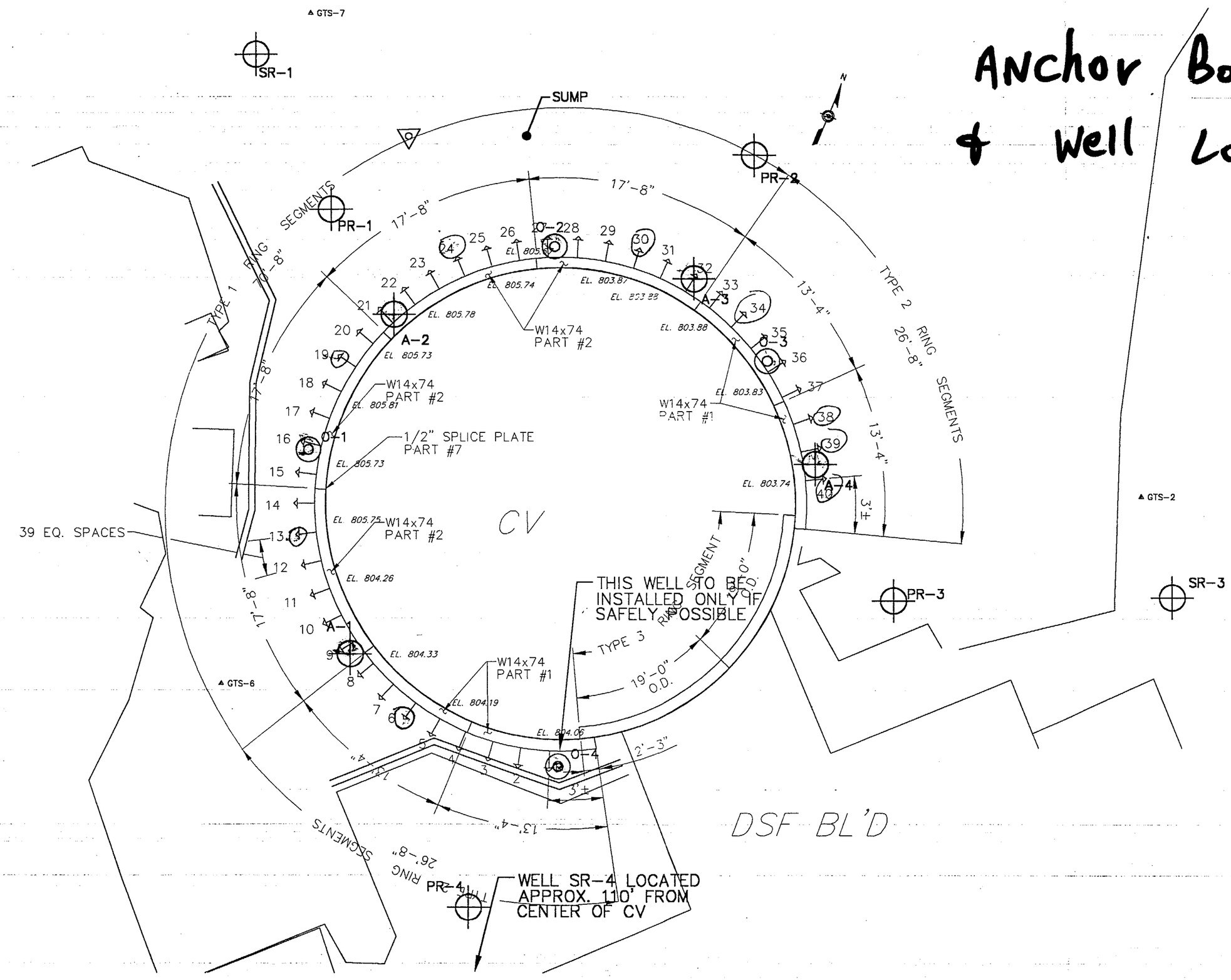
PREPARED BY: GTS TECHNOLOGIES, INC.
SWI-01-003.1.2 Page 4 of 5
ATTACHMENT 7.1.3
7.1 JNN

DRAWN BY: TPG
CHECKED BY: JNN

DRAWING
SNEC-W4

M:\4100\4121\CADD\GEO\FIGURES\4121GRSHEETWELLPLN.DWG

Anchor Bolt Hole & Well Locations.



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CALCULATION COVER SHEET

Subject:	Calculation No.	Revision Number
SNEC Facility DCGL Values for Volumetric Contamination	6900-02-008	0

DESCRIPTION OF REVISION

	Signature	Date
Originator	B. Brosey/	2/7/02
Reviewer	J. P. Donnachie/	2/7/02
Additional Reviewer		
Additional Reviewer		
Additional Reviewer		
Management Approval		

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Calculation Sheet

Subject	Calculation No.	Rev. No.	Sheet No.
SNEC Facility DCGL Values for Volumetric Contamination	6900-02-008	0	1 of 325

Originator	Date	Reviewed by	Date
Barry H. Brosey B. Brosey	February 5, 2002	Pat Donnachie	2/6/02

1.0 PROBLEM STATEMENT

The purpose of this calculation is to determine SNEC Facility site Derived Concentration Guideline Levels (DCGLs) for volumetric contamination. These calculated DCGL values are determined using the dose modeling computer code RESRAD, version 6.1. The code offers a probabilistic calculation option which was used to develop these values and their applicable Area Factors for all relevant site radionuclides.

2.0 SUMMARY OF RESULTS

A Table of summarized results is presented in **Attachments 1-1.**

3.0 REFERENCES

3.1 SNEC Site Characterization Report, GPU Nuclear, 1996.

3.2 "Summary for RESRAD Parameters Inputs (Revision 1), Dated October 18, 2001, from Haley & Aldrich, Incorporated of 150 Mineral Spring Drive, Dover, New Jersey (Underground Engineering & Environmental Solutions), 07801-1635 to J. Patrick Donnachie of GPU Nuclear.

3.3 ANL/EAIS-8, "Data Collection handbook to Support Modeling the Impacts of Radioactive Material in Soil", Environmental Assessment and Information Sciences Division, Argonne National Laboratory, US DOE, April 1993.

3.4 Argonne National Laboratory Report, "K_d Study of Site Soils and Construction Debris from the SNEC Decommissioning Project", February 2002.

3.5 Rogers & Associates Engineering Branch, URS Corporation, "Calculation of Sub-Surface DCGLs for the Saxton Nuclear Experimental Corporation Site", RAE-42613-003-5030-2, January 29, 2002.

3.6 Microsoft Excel 97, Microsoft Corporation Inc., SR-2, 1985-1997.

4.0 ASSUMPTIONS AND BASIC DATA

4.1 While Cs-137 is the predominant radionuclide present at the SNEC Facility produced during plant operation, other radionuclides of lower concentration have been detected. This calculation determines applicable guideline levels (DCGL) for all twenty six (26) radionuclides shown in the following Table.

TABLE 1 - Radionuclides Present at the SNEC Facility

Am-241	C-14	Cm-243	Cm-244	Co-60	Cs-134
Cs-137	Eu-152	Eu-154	Eu-155	Fe-55	H-3
Nb-94	Ni-59	Ni-63	Pu-238	Pu-239	Pu-240
Pu-241	Pu-242	Sb-125	Sr-90	Tc-99	U-234
U-235	U-238				

NOTE 1: Np-237 has not been detected to date greater than MDA and therefore was not included.
NOTE 2: Table 1 radionuclides have been positively detected in samples from the SNEC Facility as reported in the SNEC "Site Characterization Report"(Reference 3.1).

4.2 Input for the RESRAD dose modeling computer code requires numerous groundwater hydrology and geological parameters. Many of these parameters have been determined by Haley & Aldrich, Incorporated for the SNEC site (Reference 3.2). The summary report from Haley & Aldrich includes the latest groundwater hydrology and geological information for the SNEC site. This information has been used as input to the RESRAD code. The Haley & Aldrich summary report is **Attachment 2** of this calculation.

4.3 Argonne National Laboratories (ANL) was contracted by GPU Nuclear to determine distribution coefficients (K_d) for soils and construction debris from the SNEC Facility site. K_d values are the ratio of the mass of the solute species absorbed or precipitated on the solids per unit of dry mass of the soil, S, to the solute concentration in the liquids, C (Reference 3.3). The values ANL has provided were for a group of sample types including construction debris and flyash as well as soils and bedrock from the site. The analysis results of the ANL study of SNEC site materials is shown in **Attachment 3-1**.

4.4 For purposes of this calculation only one set of Kd values were input into the RESRAD computer code. The Kd values selected were the lowest values determined for all data provided by ANL (Reference 3.4). for each element type (or representative element), regardless of the sample from which they came. The reason for the selection of the lowest reported Kd value was to allow GPU Nuclear to calculate DCGLs for each radionuclide that could then be used in any surface or subsurface site location regardless of material type.

4.5 This calculation models SNEC site surface materials located within the upper 1 meter of soil layer. The model was assumed to be a 1 meter thick contaminated zone without cover. A basic 10,000 square meter contaminated area is assumed for the site surface model. Basic input parameters are included in **Attachment 4-1** through **4-4**.

4.6 The determination of subsurface DCGL for the SNEC Facility has been performed by URS Corporation of 756 East Winchester Street, Suit 400, Salt Lake City, Utah. Their results are summarized in **Attachment 5-1** (see Reference 3.5). The SNEC Facility will ultimately employ the most appropriate DCGL values for site areas as selected from the surface and/or subsurface modeling effort. The lowest DCGL values from both these models have been combined and are listed in Chapter 5 of the SNEC Facility License Termination Plan (LTP).

4.7 Area factors are developed from the surface modeling parameters. In the base case model the contaminated fraction of plant, meat and milk products is assumed to be equal to one (1) using the resident farmer scenario. Default values of –1 are substituted for these three variables for area sizes less than 10,000 square meters. The three default parameters (-1) appropriately size the contaminated fractions of plants, meat and milk obtained from the site when smaller and smaller area sizes are input into the REARAD computer code.

4.8 The most apparently sensitive RESRAD input parameters have been determined using the sensitivity analysis feature of the RESRAD computer code and by multiple runs of the base case model with varying input values. The following list of parameters appear to more significantly impact calculated dose values for Cs-137. However, not all radionuclides are sensitive to the same parameter changes.

TABLE 2 - MOST SENSITIVE RESRAD PARAMETERS, Cs-137

(As Determined By RESRAD Sensitivity Analysis)

Radionuclide	Parameter	Range of Input		TEDE Range of Dose Rate mrem/y		% of 25 mrem/y Limit	Drinking Water Range of Dose Rate mrem/y		% of 4 mrem/y Limit
Cs-137	Indoor Time Fraction	0.25	1	2.14	3.74	6.40%	0	0	0.00%
..	External Gamma Shielding Factor	0.4895	1	2.197	3.13	3.73%	0	0	0.00%
..	Livestock Fodder Intake for Meat	34	136	2.34	2.75	1.64%	0	0	0.00%
..	Thickness of Contaminated Zone	0.5	2	2.34	2.67	1.32%	0	0	0.00%
..	Contaminated Fraction of Meat	0.0625	1	2.36	2.67	1.24%	0	0	0.00%
..	Contaminated Fraction of Plant Food	0.0625	1	2.43	2.66	0.92%	0	0	0.00%
..	Depth of Roots	0.4500	1.8	2.21	2.44	0.92%	0	0	0.00%
..	Contaminated Fraction of Milk	0.0625	1	2.21	2.44	0.92%	0	0	0.00%
..	Contaminated Fraction of Milk	0.0625	1	2.45	2.67	0.88%	0	0	0.00%
..	Contaminated Fraction of Meat	0.125	0.5	2.4	2.5	0.40%	0	0	0.00%
..	Milk Consumption	116.5	466	2.45	2.55	0.40%	0	0	0.00%
..	Livestock Fodder Intake for Milk	27.5	110	2.45	2.55	0.40%	0	0	0.00%
..	Fruit, Vegetable, and Grain Consumption	56	224	2.45	2.5	0.20%	0	0	0.00%
..	Leafy Vegetable Consumption	10.7	42.8	2.45	2.5	0.20%	0	0	0.00%
..	Meat and Poultry Consumption	33.5	134	2.45	2.5	0.20%	0	0	0.00%
..	Area of Contaminated Zone	5000	20000	2.64	2.68	0.16%	0	0	0.00%

NOTE: Zeros in the above dose columns do not mean zero dose was calculated. When there was no net change in the dose as a result of varying input parameters, no results were input to Tables 2 or 3.

In Table 3 below, Am-241 was the selected radionuclide. Parameter changes cause somewhat different dose change results depending on the dose of concern. For the SNEC Facility, both the 25 mrem/y TEDE limit and the 4 mrem/y drinking water dose goal are important. Therefore, the most sensitive parameters listing should include parameters from both categories.

TABLE 3 - MOST SENSITIVE RESRAD PARAMETERS, Am-241
(As Determined By RESRAD Sensitivity Analysis)

Radionuclide	Parameter	Range of Input		TEDE Range of Dose Rate mrem/y		% of 25 mrem/y Limit	Drinking Water Range of Dose Rate mrem/y		% of 4 mrem/y Limit
Am-241	Fruit, Vegetable, and Grain Consumption	56	224	0.377	0.992	**2.46%**	0	0	**0.00%**
..	Contaminated Fraction of Plant Food	0.0625	1	0.123	0.577	**1.82%**	0	0	0.00%
..	Thickness of Contaminated Zone	0.5	2	0.368	0.582	**0.86%**	4.79E-03	6.11E-03	0.03%
..	Leafy Vegetable Consumption	10.7	42.8	0.542	0.663	**0.48%**	0	0	0.00%
..	Depth of Roots	0.2045	3.96	0.123	0.213	**0.36%**	0	0	0.00%
..	Indoor Time Fraction	0.25	1	0.553	0.632	**0.32%**	0	0	0.00%
..	Soil Ingestion	9.13125	36.525	0.558	0.632	**0.30%**	0	0	0.00%
..	Outdoor Time Fraction	0.125	0.5	0.558	0.613	**0.22%**	0	0	0.00%
..	Mass Loading for Inhalation	0.00005	0.0002	0.568	0.591	**0.09%**	0	0	0.00%
..	Inhalation Rate	4200	16800	0.568	0.59	**0.09%**	0	0	0.00%
..	Meat and Poultry Consumption	33.5	134	0.577	0.591	**0.06%**	0	0	0.00%
..	Inhalation Shielding Factor	0.2	0.8	0.573	0.582	**0.04%**	0	0	0.00%
..	Contaminated Fraction of Meat	0.0625	1	0.212	0.219	**0.03%**	0	0	0.00%
..	Evapotranspiration Coefficient	0.349	0.997	0	0	0.00%	1.56E-02	0	**0.39%**
..	Well Pump Intake Depth	10	90	0	0	0.00%	1.87E-03	1.68E-02	**0.37%**
..	Density of Unsaturated Zone	0.8	3.2	0	0	0.00%	0.001	0.013	**0.30%**
..	Thickness of Unsaturated Zone	0.125	0.5	0	0	0.00%	0.001	0.013	**0.30%**
..	Unsaturated Zone Kd	500	2000	0	0	0.00%	9.47E-04	1.29E-02	**0.30%**
..	Total Porosity of Unsaturated Zone	0.23	0.92	0	0	0.00%	0.001	0.0129	**0.30%**
..	Effective Porosity of Unsaturated Zone	0.205	0.82	0	0	0.00%	0.001	0.0129	**0.30%**
..	Saturated Zone Total Porosity	0.18	0.72	0	0	0.00%	0.0028	0.013	**0.26%**
..	Drinking Water Intake	239.25	957	0	0	0.00%	0.00286	0.0113	**0.21%**
..	Saturated Zone Effective Porosity	5.09E-03	0.154	0	0	0.00%	3.00E-03	1.10E-02	**0.20%**
..	Saturated Zone Kd	500	2000	0	0	0.00%	0.003	0.011	**0.20%**
..	Precipitation Rate	0.659	1.329	0	0	0.00%	2.46E-03	1.00E-02	**0.19%**
..	Contaminated Zone Kd	500	2000	0	0	0.00%	0.003	0.0105	**0.19%**
..	Run Off Coefficient	0.175	0.7	0	0	0.00%	1.24E-03	8.52E-03	**0.18%**
..	Density of Saturated Zone	1.07	2.4	0	0	0.00%	3.73E-03	8.47E-03	**0.12%**
..	Contaminated Zone Erosion Rate	0.0001725	0.00069	0	0	0.00%	5.05E-03	5.95E-03	**0.02%**

In a general sense, the following Table 4 values have the potential for the largest changes in dose of either kind for most radionuclides. Individual radionuclides should be evaluated on a case by case basis to determine the parameter changes with the highest impact for that radionuclide.

Table 4, Parameters Significantly Impacting Dose

Thickness of Contaminated Zone
Indoor Time Fraction
Contaminated Zone Erosion Rate
Run Off Coefficient
External Gamma Shielding Factor
Watershed Area for Nearby Stream or Pond
Fruit, Vegetable, and Grain Consumption
Contaminated Fraction of Plant Food
Evapotranspiration Coefficient
Well Pump Intake Depth
Thickness of Unsaturated Zone
Contaminated Zone Kd
Saturated Zone Kd
Unsaturated Zone Kd
External Gamma Shielding Factor
Livestock Fodder Intake for Meat
Contaminated Fraction of Plant Food
Contaminated Fraction of Meat
Depth of Roots
Leafy Vegetable Consumption

NOTE: Not shown in any ranked order.

4.9 K_d values are not (excepting ^3H & ^{14}C) included in the RESRAD probabilistic analysis. Instead, the lowest empirically derived K_d value was used as the input for each radionuclide. An assigned range around the ANL postulated K_d values for ^3H & ^{14}C has been included in the probabilistic RESRAD analysis (see **Attachments 4-2 & 4-3**).

4.10 Several parameters appear to have no impact on dose for any SNEC radionuclide. These parameters are shown in the following Table, and were not included in the probabilistic analysis.

TABLE 5 – SOME OF THE LEAST SENSITIVE RESRAD PARAMETERS
(As Determined By RESRAD 6.1 Sensitivity Analysis)

Parameter
Average Annual Wind Speed
Contaminated Zone Parameter b
Contaminated Zone Field Capacity
Saturated Zone Field Capacity
Well Pumping Rate
Unsaturated Zone Parameter b
Unsaturated Zone Field Capacity
Wet Crop Yield for Fodder

4.11 Area Factor development was performed using the probabilistic RESRAD option. As discussed previously, a default value of –1 was substituted for the contamination fractions for Plant, Meat & Milk food. This was done so that RESRAD could scale smaller contaminated areas (10,000 m^2, 2,500 m^2, 400 m^2, 100 m^2, 25 m^2 and 1 m^2). See **Attachments 6-1 to 6-3**.

4.12 In addition to computer runs for Area Factors and the 25 mrem/y dose limit, a drinking water RESRAD run was also performed for each radionuclide using only the drinking water option from the pathways options listing. All results are provided on page 23 of the RESRAD uncertainty report "MCSUMMAR.REP". Page 23 for all probabilistic output has been included in **Attachments 7-1** to **7-182**. The summary spreadsheet table for these runs is provided in **Attachments 8-1**. The RESRAD computer file names on these attachments are organized as in the following example:

- AM241.RAD = 25 mrem/y TEDE, 10,000 m^2 area dose
- AM241 DW.RAD = 4 mrem/y drinking water, 10,000 m^2 area dose
- AM241A.RAD = 25 mrem/y TEDE, 2500 m^2 area dose
- AM241B.RAD = 25 mrem/y TEDE, 400 m^2 area dose
- AM241C.RAD = 25 mrem/y TEDE, 100 m^2 area dose
- AM241D.RAD = 25 mrem/y TEDE, 25 m^2 area dose
- AM241E.RAD = 25 mrem/y TEDE, 1 m^2 area dose

4.13 The complete probabilistic output file for Cs-137 named MCSUMMAR.REP, is shown as an example of all probabilistic output files in **Attachment 9-1 through 9-61**.

4.14 The deterministic run containing all radionuclides and associated input parameters is presented in **Attachment 10-1 through 10-50**. However, each radionuclide was run separately to obtain the deterministic values shown on **Attachment 11-1**.

5.0 CALCULATIONS

5.1 All calculations are performed using an Excel spreadsheet or are internal to the RESRAD 6.1 computer code. A "Read Only" CD ROM is provided with this calculation containing all RESRAD computer generated input & output files.

6.0 LIST OF ATTACHMENTS

6.1 Attachment 1-1, Summary Table of RESRAD output results.

6.2 Attachment 2- to 2-13, Haley & Aldrich communication (Reference 3.2).

6.3 Attachments 3-1, Summary Table of ANL provided K_d values (Reference 3.3).

6.4 Attachment 4-1 and 4-4, RESRAD input values for probabilistic & deterministic analysis.

6.5 Attachment 5-1, Summary Table of URS developed sub-surface DCGLs (Reference 3.5).

6.6 Attachment 6-1 to 6-3, Area Factor summary Table and individual radionuclide results.

6.7 Attachments 7-1 to 7-182, Probabilistic output results for individual radionuclides for 10,000 m^2, 2500 m^2, 400 m^2, 100 m^2, 25 m^2 and 1 m^2 area sizes. Also, includes the drinking water dose for 10,000 m^2 areas.

6.8 Attachment 8-1, Summary Table of probabilistic results for each SNEC radionuclide.

6.9 Attachment 9-1 and 9-61, RESRAD probabilistic report for Cs-137.

6.10 Attachment 10-1 and 10-50, Deterministic output result for an all radionuclide input run.

6.11 Attachment 11-1, Summary Table of all deterministic results for each SNEC radionuclide.

	SURFACE (Upper ~1 Meter) SNEC RESRAD 6.1 Probabilistic DCGL's (pCi/g)				SUBSURFACE (Below ~1 Meter) SNEC RESRAD 6.1 Probabilistic DCGL's (pCi/g)		
	January-02				January-02		
	25 mrem/y Limit	Peak Dose Year(s)	4 mrem/y DW Limit	Peak Dose Year(s)	Based on DCGL 25 mrem/y, All Pathway Standard	Based on DCGL 4 mrem/y, Drinking-Water Standard	MINIMUM SITE DCGLs
Am-241	21.4	0	196	758.6 - 1000	18	45	18
C-14	27	0	1038	1 - 3	89	31	27
Cm-243	25	0	1949	525	120	970	25
Cm-244	39	0	868	525	180	560	39
Co-60	3.9	0	9.44E+05	13.18 - 19.05	21	4.1E+04	3.9
Cs-134	5.1	0	3.01E+09	3 - 9.12	29	5.6E+15 (> SA Limit)	5.1
Cs-137	8.7	0	1.93E+07	83.2	51	9.4E+05	8.7
Eu-152	10.8	0	1.24E+08	35 - 57.54	54	3.9E+06	10.8
Eu-154	10	0	2.10E+08	27.54 - 39.81	50	9.8E+06	10
Eu-155	415	0	4.80E+09	19.05 - 27.54	2100	7.7E+08	415
Fe-55	2.3E+04	0	8.23E+13	13.18 - 39.81	1.7E+05	7.6E+22 (> SA Limit)	2.3E+04
H-3	2730	0	1461	2.089	8600	1400	1400
Nb-94	7.6	0	529	251	38	370	7.6
Ni-59	3216	0	4.74E+05	2291 - 3311	1.7.E+04	2.1E+05	3216
Ni-63	1175	0	3.48E+07	251.2 - 300	6300	2.5E+06	1175
Pu-238	24.1	0	21.5	174	42	6.7	6.7
Pu-239	9.2	363.1	2.2	525	9.4	1.5	1.5
Pu-240	9.5	363.1	2.3	5.25E+02	9.7	1.6	1.6
Pu-241	1021	27.54 - 35	3889	758.6 - 1000	3400	1100	1021
Pu-242	9.6	363.1	2.3	525	9.7	1.6	1.6
Sb-125	33.6	0	1.15E+07	6.31 - 9.12	100	16	16
Sr-90	1.3	0	6.7	27.5	7	4.2	1.3
Tc-99	11.4	0	46.6	4.4	54	33	11.4
U-234	12.6	39.81 - 57.54	2.7	5.75E+01	12	1.9	1.9
U-235	12	39.81 - 57.54	2.8	57.5	12	1.9	1.9
U-238	13	39.81 - 57.54	2.9	5.75E+01	12	2	2

NOTE: Values in BLUE represent the lowest calculated value (25 mrem/y TEDE limit Vs the 4 mrem/y drinking water limit).

Yellow highlighted radionuclides are drinking water dose contributors.

ATTACHMENT 1.1

UNDERGROUND
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Haley & Aldrich, Inc.
150 Mineral Spring Drive
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HALEY & ALDRICH

18 October 2001
File No. 74683-000

GPU Nuclear, Inc.
Route 441 South
Post Office Box 480
Middletown, PA 17057-0480

Attention: Mr. J. Patrick Donnachie

Subject: Summary for RESRAD Parameters Inputs (Revision 1)

Dear Mr. Donnachie:

As we discussed, the attached document presents the summary for an updated version of RESRAD (Revision 1) containing revised inputs which were identified in our 12 September 2001 report.

The primary reason for the revisions is that recent supplemental field investigations provided site-specific information. These recent reports which were a follow-up to these field investigations are noted in Section I of the attachment while the recommended inputs for RESRAD are incorporated into Section II.

Figure 1, which accompanied our 12 September 2001 is also attached and replaces Figure 1 that was included with the initial RESRAD parameter inputs.

Figure 1 provides a generalized sketch of subsurface conditions. In the center column, subsurface materials are identified (labeled geologic), while hydrogeologic and RESRAD considerations are presented in the left and right columns respectively. Regarding specific inputs to RESRAD, in some instances revisions were made to total porosity, effective porosity, field capacity, hydraulic gradient, hydraulic conductivity and other related parameters.

In Figure 1, under the geologic heading, three subsurface materials are noted: Fill (A), Boulder layer (overburden) unit B and the Siltstone bedrock (C). The interface between the base of the boulder layer and the bedrock (B/C) is also characterized in our 12 September 2001 report.

Based on our 12 September 2001 report we recommended the following considerations for RESRAD. The Fill (A) unit is unsaturated throughout most of the hydrologic year and contains the contaminated zone. The Boulder layer (overburden) unit (B) a feature associated with the rivers depositional processes, is saturated, however, due to its low

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ATTACHMENT 2 - 1

permeability serves as a hydraulic barrier to flow between the Fill and the underlying Siltstone bedrock. Regarding the saturated interface (B/C) between the Boulder layer (B) and the underlying saturated Siltstone bedrock (C) we recommend using inputs for the bedrock, since the aquifer testing results for hydraulic conductivity for both units are similar (the same order of magnitude). The saturated thickness of the bedrock is much thicker than the interface layer.

If you have any questions regarding Revision 1, please contact us.

Sincerely yours,
HALEY & ALDRICH, INC.

Charles R. Butts, P.G.

Enclosures

c: Mr. Art Paynter
Mr. Barry Brosey

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HALEY & ALDRICH

ATTACHMENT 2 . 2

The preceding cover letter dated October 18, 2001 provides a brief introduction and overview to this attachment (referred to as Revision 1). This revision contains some new inputs to RESRAD for the SNEC facility, based on the results of supplemental subsurface information from recent site investigations. Revisions have been made in some cases to total porosity, effective porosity, field capacity, hydraulic gradient and hydraulic conductivity and other related parameters.

RESRAD Input Parameters:

R013 Cover depth (m)
R013 Density of cover material (g/cm^3)
R013 Cover depth erosion rate (m/yr)
R013 Density of contaminated zone (g/cm^3)
R013 Contaminated zone erosion rate (m/yr)
R013 Contaminated zone total porosity
R013 Contaminated zone effective porosity
R013 Contaminated zone hydraulic conductivity (m/yr)
R013 Contaminated zone b parameter
R013 Average annual wind speed (m/sec)
R013 Humidity in air (g/m^3)
R013 Evapotranspiration coefficient
R013 Precipitation (m/yr)
R013 Irrigation (m/yr)
R013 Irrigation mode
R013 Runoff coefficient
R013 Watershed area for nearby stream or pond (m^2)

R014 Density of saturated zone (g/cm^3)
R014 Saturated zone total porosity
R014 Saturated zone effective porosity
R014 Saturated zone hydraulic conductivity (m/yr)
R014 Saturated zone hydraulic gradient
R014 Saturated zone b parameter
R014 Water table drop rate (m/yr)
R014 Well pump intake depth (m below water table)
R014 Model: nondispersion (ND) or Mass-balance (MB)
R014 Well pumping rate (m^3/yr)

R015 Number of unsaturated zone strata
R015 Unsaturated zone 1, thickness (m)
R015 Unsaturated zone 1, soil density (g/cm^3)
R015 Unsaturated zone 1, total porosity
R015 Unsaturated zone 1, effective porosity
R015 Unsaturated zone 1, soil-specific b parameter
R015 Unsaturated zone 1, hydraulic conductivity (m/yr)

- Contaminated Zone Thickness (m)
- Field Capacity

ATTACHMENT 2 . 3

Section I - Background Information and Objectives for Site Investigations

Several investigations concerning subsurface conditions at the site have been undertaken since 1981. The following section provides a brief summary of the scope, objectives and results for these investigations that formed the basis for the initial RESRAD inputs. However, three additional Haley & Aldrich investigations (one geotechnical and two hydrogeologic reports dated May 1999, March 2001 and August 2001 respectively) provide additional site-specific information which is the basis for this revision (Revision 1). Revisions that were noted in the Haley & Aldrich 12 September 2001 report have been incorporated into Section II.

Groundwater Technology's, Inc. investigation (1981) provided the basic hydrogeologic framework for the site, serving as a guide for future groundwater monitoring. Monitoring well installations have occurred, since the initial investigation in 1981, in a staged approach, first by GEO Engineering (1992, and 1994) and by Haley & Aldrich (1998). Depending on the purpose for monitoring, wells were installed at several locations typically adjacent to site structures of interest. Monitoring wells were installed in both soil and bedrock.

The Preliminary Hydrological Investigation, Saxton Nuclear Station, Saxton, Pennsylvania, 1981 by GROUNDWATER TECHNOLOGY, INC. reviewed information obtained from the Pennsylvania State Geologist and the United States Geological Survey (Water Resource Branch). In conjunction with geologic reconnaissance, this provided the initial geologic interpretation for the Saxton site. Test borings located near the containment vessel (CV) and the radioactive waste disposal facility (RWDF) were installed to characterize the soils and bedrock and the groundwater in each media.

Results of investigation lead to following conclusions:

- The result of this investigation identified three distinct subsurface materials: fill, a boulder layer with silty clay matrix and bedrock (occurring in this order from ground surface when present).
- Field permeability tests were conducted in boreholes and soil laboratory mechanical analysis was performed on construction fill materials. Based on the field permeability testing, the highest permeability is at the boulder layer/bedrock interface.
- The boulder layer appears to act as a barrier to the flow of groundwater between the construction fill and the bedrock.
- Preliminary groundwater level observations in test borings indicate a hydraulic gradient of 10 to 15 feet of a distance of 600-800 feet from the site to the river.
- The combination of hydraulic gradient, bedrock permeability, and bedrock structure (bedding and fracture patterns) indicates that the groundwater has a potential to flow from the site to the river.

The main objective of the Phase I Report of Findings-Groundwater Investigation Saxton Nuclear Experimental Station, Saxton, Pennsylvania, 1992 GEO Engineering was the installation of 8 monitoring wells at locations near the CV and RWDF. The wells were screened (and sanded) across the top bedrock and boulder layer contact. This was an area identified in the 1981 investigation as an area of relatively higher permeability compared to its immediate surroundings. Other pertinent information follows:

- A relative elevation survey of each well using an arbitrary datum of 100.00 feet at GEO-1 was completed. Water level information from these eight wells was used to produce computer-generated contour maps of the groundwater surface. The resultant direction of

ATTACHMENT 2 - 4

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groundwater flow (groundwater flowing perpendicular from locations with higher contour to those with lower elevations) is in a westerly direction towards the Raystown Branch of Juniata River.

- For the purpose of monitoring radionuclide contamination in groundwater, several wells were installed hydraulically downgradient of the CV and several other upgradient of this structure.
- The investigation confirmed the orientation of potential groundwater pathways in the bedrock (fractures and bedding)
- A recommendation was proposed for the installation of two groundwater monitoring wells in bedrock adjacent to the CV.

In 1994, two gas-actuated monitoring wells devices were installed into the bedrock near the CV as reported in GEO Engineering's, Summary of Field Work, 1994. These two devices were installed into the bedrock to a depth similar to the base of the CV. The devices were installed west and northwest of the CV, at approximately 25 degree angles, to facilitate the interception of groundwater flowing in the bedrock.

During this field activity a 50-foot observation well (GEO-9) was installed in bedrock making it possible to obtain water level elevation data from the bedrock unit. As part of this field activity, monitoring wells GEO-1 to GEO-8 were retrofitted with gas actuated samplers.

In The Report of Field Work by Haley & Aldrich (1998) two additional gas actuated groundwater monitoring devices were installed adjacent to the RWDF (to the depth of the sump) to investigate the potential presence of tritium in groundwater. Also, GEO-10 was installed at the bedrock /soil interface to supplement the existing monitoring wells. It was situated downgradient of GEO-5 to evaluate trace amounts of tritium detected in the groundwater at GEO-5.

Section II - Summary of Descriptions and Justifications for Individual Parameters

R013 Cover depth (m) - Physical Parameter
Based on information provided by GPU Nuclear, cover will not be placed over the area for which the modeling applies, and therefore, the cover depth was input as 0.0 meters.

R013 Density of cover material (g/cm^3) - Physical Parameter
Since the above-described parameter (cover depth) is input as 0.0, density of the cover material is not applicable and therefore not input into the RESRAD model.

R013 Cover depth erosion rate (m/yr) - Physical Parameter
Since the above-described parameter (cover depth) is input as 0.0, density of the cover material is not applicable and therefore not input into the RESRAD model.

R013 Density of contaminated zone (g/cm^3) - Physical Parameter
Based on information provided by GPU Nuclear regarding locations and depths of sampling points with radionuclide concentrations above background, the contaminated zone is located between approximately 0 and 1.0 meters, as shown on Figure 1. Based on subsurface investigations as described in Section I, the geologic stratigraphy at this depth is described as mixed soils, sandy or silty clay to well graded sand and gravel with rock fragments. Based on the May 1982 Department of Navy Naval Facilities Engineering Command (NAVFAC) DM-7.1 Manual, dry weight density for this type of material is in the range of 80 to 120 lb./ft^3 (or 1.28 to 1.92 g/cm^3). The range for dry weight as opposed to wet, or submerged

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weight, was used as the depth of soil contamination is unsaturated. The value input into the RESRAD model was 1.60 g/cm^3, the average of the above-stated range.

R013 Contaminated zone erosion rate (m/yr) - Physical Parameter
Based on the Data Collection Handbook to Support Modeling Impacts of Radioactive Material in Soil (C. Yu, C. Loureiro, J. J. Cheng, L.G. Jones, Y.Y Wang, Y.P Chia, and E. Faillace, Environmental Assessment Division Argonne National Laboratory - www.ead.anl.gov) and assuming future use scenario as row-crop agriculture with an approximate 2% slope, the range of $9x10^{-5}$ to $6x10^{-4}$ to m/yr was used. The value input into the RESRAD model was $3.45x10^{-4}$ m/yr, the average of the above-stated range.

R013 Contaminated zone total porosity - Physical Parameter
Based on subsurface investigations as described in Section I, the geologic stratigraphy of the contaminated zone is described as mixed soils, sandy or silty clay to well graded sand and gravel with rock fragments. Referencing Maidment, Handbook of Hydrology (pp. 5.14), 1993, these soil types correspond to total porosity ranges of between 0.35 and 0.56. Total porosity is defined as the part of the soil volume that is void space. The recommended value input into the RESRAD model is 0.46, the average of the above-stated range.

R013 Contaminated zone effective porosity - Physical Parameter
The effective porosity range for the site was based on the soil types. Referencing Maidment, Handbook of Hydrology (pp. 5.14), 1993 expressed the effective porosity range of 0.28 to 0.54 based on the soil types found at the site. Effective porosity is defined as the percentage of inter-connected void space, and is applied to characterize soil. The recommended value input into the RESRAD model is 0.41, the average of the above-stated range. This value is not used by RESRAD 6.0.

R013 Contaminated zone hydraulic conductivity (m/yr) - Physical Parameter
Hydraulic conductivity values are based on the results of field tests, soil characterization, empirical relationships, published values and the experience of our expert consultant. Packer tests (rock pressure tests) were performed during the 1981 Preliminary Hydrogeologic Investigation in order to estimate the range in values for hydraulic conductivity of the bedrock below the site. The packer test involves pumping water under pressure into selected sections of an open borehole isolated using pneumatic packers. Packer tests indicated hydraulic conductivity of the bedrock to range between $1x10^{-3}$ cm/s to negligible flow.

In addition to packer testing for the 1981 report, sieve analyses were conducted on samples of the silty sand fill and ash fill. Initial estimates of hydraulic conductivity suggested a high of $1x10^{-6}$ cm/s for the fill.

Based on recent analyses for the purpose of the RESRAD modeling, data from the grain size distributions of the fill collected from the 1981 investigation were entered into several empirical relationships in order to refine the estimates of hydraulic conductivity. These empirical relationships relate median effective grain diameter (typically, the grain diameter which represents the 10% finer by weight on a grain size distribution) as well as other properties including sorting and porosity to hydraulic conductivity. The empirical relationships used have been shown to correspond well with field measured hydraulic conductivity (Vukovic, Milan and Soro, Andjelko. Determination of Hydraulic Conductivity of Porous Media from Grain-Size Composition, 1992).

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The following presents one of the empirical equations as taken from Vukovic, Milan and Soro, Andjelko, Determination of Hydraulic Conductivity of Porous Media from Grain-Size Composition, 1992:

Slichter:

$$K = {}^{g}\!/_{v} * C_s * n^{3.287} * d_{10}^2$$

Where:
- K = hydraulic conductivity (cm/sec)
- g = acceleration due to gravity: 980 cm/sec^2
- v = kinematic viscosity of water [at 20 deg C]: 1.125×10^{-2}
- C_s = constant: 1.0×10^{-2}
- n = porosity
- d_{10} = effective grain diameter

Hydraulic conductivity values for the fill generated through the empirical relationships using grain size data were somewhat higher than the estimates initially suggested in the 1981 Preliminary Hydrogeologic Investigation report. Specifically, the original report suggested hydraulic conductivity values ranging from 1×10^{-6} to 1×10^{-5} to cm/s (0.315 to 3.15 m/yr). However, recent evaluations of grain size data (soil samples S-1, S-2 from the 1981 Ground/Water Technology investigation and TB-1, similar to TB-3 from the Haley&Aldrich geotechnical investigation 1999) suggest hydraulic conductivity values ranging from 1×10^{-6} to 8×10^{-2} cm/s (3.62×10^{-1} to 2.54×10^{4} to m/yr), which is the range used in the RESRAD modeling. The recommended value input into the RESRAD model is 32.3 m/yr (1×10^{-4} cm/sec), the geometric mean of the above-stated range.

In addition to methods described above, hydraulic conductivity was qualitatively assessed given the experience of our expert consultant and based on their visual observation during installation of the soil borings and soil sample characterization. The values given above also correspond with published values for silts, sandy silts, and clayey sands (Applied Hydrogeology, Fetter, C.W., 1988).

R013 Contaminated zone b parameter - Physical Parameter

As described in the Data Collection Handbook to Support Modeling Impacts of Radioactive Material in Soil (C. Yu, C. Loureiro, J.-J. Cheng, L.G. Jones, Y.Y Wang, Y.P Chia, and E. Faillace, Environmental Assessment Division Argonne National Laboratory - www.ead.anl.gov) the soil-specific exponential b parameter is an empirical and dimensionless parameter that is used to evaluate the saturation ratio (or the volumetric water saturation) of the soil. Published data based on laboratory testing indicate a range of the exponential b parameter is between 4.05 and 7.12. The RESRAD input for this parameter was based on the values corresponding from sand to loam in Table 13.1 of the Data Collection Handbook. The recommended value input into the RESRAD model is 5.6, the average of the above-stated range.

R013 Average annual wind speed (m/sec) - Physical Parameter

The input value for this parameter were based on data provided from the National Climatic Data Center (1999 Annual Summary Local Climatological Data for Pittsburgh, Pennsylvania). The RESRAD input reflects the minimum monthly mean wind speed (3.13 m/sec or 7.0 mph) and maximum monthly mean wind speed (4.83 m/sec or 10.8 mph) over a

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42 year span. The value input into the RESRAD model is the annual mean wind speed based on 42 years of data of 4.07 m/sec (9.1 mph).

R013 Humidity in air (g/m^3) – Physical Parameter
The default value of 8.0 g/m^3 was used in the RESRAD model.

R013 Evapotranspiration coefficient – Physical Parameter
The value range for this input parameter was based primarily on guidance in the Data Collection Handbook to Support Modeling Impacts of Radioactive Material in Soil, and was estimated through an iterative solution with other parameter values including precipitation, irrigation and runoff coefficient. The range was based on a runoff coefficient (C_r) range of 0.3 to 0.4; a precipitation range (P_r) of 0.688 to 1.327 m/yr; and an irrigation value (IR_r) of 0.2 (refer to individual parameter justifications, as described below). Using these values, an evapotranspiration rate (ET_r) was estimated (this value is not used implicitly in RESRAD, but is an intermediate step in calculating the evapotranspiration coefficient). Based on the Evaporation Atlas of the United States (NOAA, 1982), evaporation is estimated to be approximately half of the total (annual) precipitation for the Saxton, PA area. Given this, the evapotranspiration coefficient was estimated as follows:

$$C_e = \frac{ET_r}{(1 - C_r) * P_r + IR_r}$$

Calculated Range of C_e = 0.50 to 0.67 m/yr

The value input into the RESRAD model was 0.59, the average of the above-stated range.

R013 Precipitation (m/yr) – Physical Parameter
The input values for this parameter were based on data provided from the National Weather Service (1999 Annual Summary Local Climatological Data for Pittsburgh, Pennsylvania). The RESRAD input range reflects the 30 year minimum (0.688 m/yr or 27.09 inches/yr) and maximum (1.327 m/yr or 52.24 inches/yr) annual precipitation amounts. The value input into the RESRAD model was 0.936 m/yr (36.85 inches/yr), which is the 30 year annual precipitation average.

R013 Irrigation (m/yr) – Physical Parameter
Based on the agricultural use scenario, the default value for irrigation (0.2 m/yr) was input into the RESRAD model.

R013 Irrigation mode – Physical Parameter
It was assumed that the irrigation would be distributed overhead.

R013 Runoff coefficient – Physical Parameter
The input values for this parameter were based on data provided from two sources: U.S. Geological Survey Hydrologic Investigation Atlas HA-710 – Average Annual Runoff in the United States, 1951-1980; and Table 10.1 of the Data Collection Handbook to Support Modeling Impacts of Radioactive Material in Soil. The RESRAD input range represents coefficient values corresponding to an agricultural environment comprised of flat to rolling land (slopes of 0.3 to 6.1 m/mi). The corresponding range for runoff coefficient is 0.3 to 0.4. The value input into the RESRAD model was 0.35, the average of the above-stated range.

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R013 Watershed area for nearby stream or pond (m^2) - Physical Parameter

Based on the topographic quadrangles for Saxton, PA and Hopewell, PA, the watershed area surrounding the facility was estimated as the total area of land bounded by the Juniata River and surrounding topographic high areas. The value input in the RESRAD model was $5x10^6$ m^2.

R014 Density of saturated zone (g/cm^3) - Physical Parameter

Based on information provided by GPU Nuclear regarding water levels in the vicinity of the site, the saturated zone begins at between 0.7 and 2.3 meters below ground surface. Based on subsurface investigations as described in Section I, the geologic stratigraphy at this depth and below, is described as mixed soils and bedrock. Based on the May 1982 Department of Navy Naval Facilities Engineering Command (NAVFAC) DM-7.1 Manual, density for this type of material is in the range of 80 to 120 lb./ft^3 (or 1.28 to 1.92 g/cm^3). The range for wet weight was used as this pertains to saturated soil/rock. The value input into the RESRAD model was 1.60 g/cm^3, the average of the above-stated range.

R014 Saturated zone total porosity - Physical Parameter

Based on subsurface investigations as described in Section I, the geologic stratigraphy of the saturated zone is described as mixed soils and bedrock. As denoted in Figure 1, units B, B/C and C are considered saturated and only units B/C and C subject to any appreciable flow of groundwater. Further, based on the thicker saturated thickness of unit C in relationship to unit B/C and other pertinent information we recommended combining the interface and bedrock units (B/C and C) and using values for the siltstone bedrock for the RESRAD inputs.

Referencing Domenico and Schwartz, Physical and Chemical Hydrogeology (1990, p. 29) the siltstone bedrock's total porosity ranges between 0.31 and 0.41. Total porosity in bedrock is related to fracture porosity, which for this rock type, provides the majority of the void space. The recommended value input into the RESRAD model is 0.36, the average of the above-stated range.

R014 Saturated zone effective porosity - Physical Parameter

The effective porosity range is based on bedrock. Referencing Domenico and Schwartz, Physical and Chemical Hydrogeology (1990, p.29) expressed the effective porosity range of 0.005 to 0.05 based on shale bedrock. The recommended value input into the RESRAD model is 0.028, the average of the above-stated range.

R014 Saturated zone hydraulic conductivity (m/yr) - Physical Parameter

The hydraulic conductivity for the bedrock based on testing of bedrock wells OW-3R, OW-4R, OW-5R and OW-7R is 67.91 m/yr, the geometric mean of these four test results, (value reported in Haley & Aldrich's August 2001 report) in the saturated zone. The recommended value input into the RESRAD model is 67.91 m/yr.

R014 Saturated zone hydraulic gradient - Physical Parameter

The hydraulic gradient in the bedrock based on water level information recorded on January 11, 2001 ranges between 0.02 and 0.03 (gradient between the tunnel and the river and the site to the discharge tunnel respectively). A review of water level information on June 13, 2001 indicated a decrease in the hydraulic gradient from the tunnel to the river (0.013) while the value from the site to the tunnel remained the same as that calculated for the January water

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level information. The recommended value input into the RESRAD model is 0.02, the average of the lower value of the tunnel to the river and the value of the site to the tunnel.

R014 Saturated zone b parameter – Physical Parameter

Refer to the discussion of the zone b parameter for the contaminated zone, presented above. The recommended value input in the RESRAD model is 5.6.

R014 Water table drop rate (m/yr) – Physical Parameter

Annual variation of the groundwater elevation at the SNEC facility is approximately 0.5 meters in the fill deposits and approximately 1.6 meters in the bedrock unit. This information is based on water level measurements collected over the period March 1999 to April 2001 by GPU Nuclear personnel. Although seasonal variation is up to approximately 1.6 meters, and possibly could be higher, a decline in long term groundwater elevations is expected to be significantly less, if any, since water table conditions are moderated by the strong hydrogeologic influence of the Juniata River, including existing river elevation controls. In addition, there is no unusually high consumptive use of groundwater locally. Based on this, a value of 0 m was input into the RESRAD model.

R014 Well pump intake depth (m below water table) – Physical Parameter

Based on recommended well pump intake depths (Driscoll, Fletcher, Groundwater and Wells, Second Edition, 1986) and the subsurface conditions as described in Section I, the range for the well pump intake depth was input as 10 to 50 meters below the water table. Actual pump intake depths may vary based on the actual depth of the well, in addition to actual well yield and usage requirements. The value input into the RESRAD model was 30 m, the average of the above-stated range.

R014 Model: nondispersion (ND) or Mass-balance (MB) – Physical Parameter

Guidelines from Appendix C – Rev 0 of the NMSS Decommissioning SRP indicate that the nondispersion approach should be acceptable when the area of contamination is known to be larger than the assumed capture area of a hypothetical well. The guidance provides a calculation to estimate the capture area of a hypothetical well, however the calculation assumes a flat water table, which, based on subsurface investigations decried in Section I, is not the case at the SNEC facility. The gradient based on data from monitoring wells collected as part of the 18 November 1992 report entitled Phase I Report of Findings - Groundwater Investigation, ranges from 0.02 to 0.04. Given static hydraulic gradient, hydraulic conductivity, and saturated thickness of the geologic strata, potential capture zone of a hypothetical well can be estimated as follows:

- **Downgradient flow boundary (null point):*

$$X_l = Q/(2\pi * K * b * i) \qquad X_l = 286.2/(2\pi * 67.91 * 50 * 0.02) \qquad X_l = 0.67m$$

- **Transverse boundary (width of capture):*

$$Y_l = Q/(K * b * i) \qquad Y_l = 286.2/(67.91 * 50 * 0.02) \qquad Y_l = 4.21m$$

Where,

Q = average pumping rate of RESRAD input range (m^3/yr)
K = average hydraulic conductivity of RESRAD input range (m/yr)
b = saturated thickness of the aquifer (m)
i = average hydraulic gradient of RESRAD input range (m/m)

- Equation taken from Wellhead Protection Strategies, US Geological Society, 1991.
- Since the transverse boundary is equivalent to a linear distance (width of capture zone), to extrapolate to a total capture area, the transverse boundary is multiplied times pi.

$A_c = Y_l * \pi \qquad A_c = 13.23m^2$

Based on information provided by GPU Nuclear, the area of contamination ranges from 182.4 to 1,161 m^2. Based on the above equations, an estimate of capture zone for a hypothetical well at the SNEC facility is approximately 13.23 m^2. Based on this, the area of the contamination is greater than the capture area of a hypothetical well, and therefore the non-dispersion mode was applied for the RESRAD modeling.

R014 Well pumping rate (m^3/yr) - Physical Parameter
Based on data collected in the American Water Works Association Research Foundation's Residential End Use Study, 1998, the typical usage volume for a single domestic well varies from approximately 207.3 m^3/yr to 365 m^3/yr. The value input into the RESRAD model was 286.2 m^3/yr, the average of the above-stated range.

R015 Number of unsaturated zone strata - Physical Parameter
As noted earlier, the contaminated zone is present to 1.0 m below ground surface for the modeled area (Figure 1). The saturated zone begins at approximately 1.5 m below ground surface, and given the seasonal variation of the water table, the unsaturated zone exists (and varies) from 1 to 1.5 m below ground surface. During a period of one to two months in the spring water levels may be higher than throughout most of the hydrologic year resulting in a period of transient saturation. Therefore, 1 was input for the number of unsaturated zone strata.

R015 Unsaturated zone 1, thickness (m) - Physical Parameter
As noted above, the unsaturated zone exists (and varies) from 1 to 1.5 m below ground surface. Therefore, the unsaturated zone thickness ranges from 0 to 0.5 m (see Figure 1). The value input into the RESRAD model was 0.25 m, the average of the above-stated range.

R015 Unsaturated zone 1, soil density (g/cm^3) - Physical Parameter
Based on subsurface investigations as described in Section I, the geologic stratigraphy at this depth is described as mixed soils, sandy or silty clay to well graded sand and gravel with rock fragments. Based on the May 1982 Department of Navy Naval Facilities Engineering Command (NAVFAC) DM-7.1 Manual, dry weight density for this type of material is in the range of 80 to 120 $lb./ft^3$ (or 1.28 to 1.92 g/cm^3). The range for dry weight as opposed to wet, or submerged weight, was used as the depth of soil contamination is unsaturated. The value input into the RESRAD model was 1.60 g/cm^3, the average of the above-stated range.

R015 Unsaturated zone 1, total porosity - Physical Parameter
The total porosity range for the site in the unsaturated zone is based in three soil types (fill materials). Specifically, soil samples S-1 and S-2 from the 1981 Ground/Water Technology

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investigation and TB-1, similar to TB-3 from the Haley & Aldrich geotechnical investigation 1999 were selected. Referencing Maidment, Handbook of Hydrology (pp. 5.14), 1993, the on-site soil types correspond to a range in total porosity between 0.35 and 0.56. Total porosity is defined as the part of the soil volume that is void space. The recommended value input into the RESRAD model is 0.46, the average of the above-stated range.

R015 Unsaturated zone 1, effective porosity – Physical Parameter
The effective porosity range for the site was based on the soil types. Referencing Maidment, Handbook of Hydrology (pp. 5.14), 1993, the range of 0.28 to 0.54 for effective porosity is the recommended as the appropriate parameter input based on the soil types found at the site. The recommended value input into the RESRAD model is 0.41, the average of the above-stated range.

R015 Unsaturated zone 1, soil-specific b parameter – Physical Parameter
Refer to the discussion of the zone b parameter for the contaminated zone, presented above. The recommended value input into the RESRAD model is 5.6.

R015 Unsaturated zone 1, hydraulic conductivity (m/yr) – Physical Parameter
Refer to the discussion of hydraulic conductivity for the contaminated zone, presented above. As the geologic profile does not change significantly with regard to hydraulic conductivity, the input range for the contaminated zone hydraulic conductivity was used again as the range for the unsaturated zone hydraulic conductivity. The recommended value input into the RESRAD model is 32.3 m/yr (1 x 10^{-4} cm/sec), the geometric mean of three site soil types.

- Contaminated Zone Thickness (m) – Physical Parameter

  Based on information provided by GPU Nuclear and for the specific application of the RESRAD modeling, the contaminated zone is considered to be the upper 1 meter throughout the modeled area (Figure 1). The value input into the RESRAD model was therefore 1 meter.

- Field Capacity – Physical Parameter (All Zones)

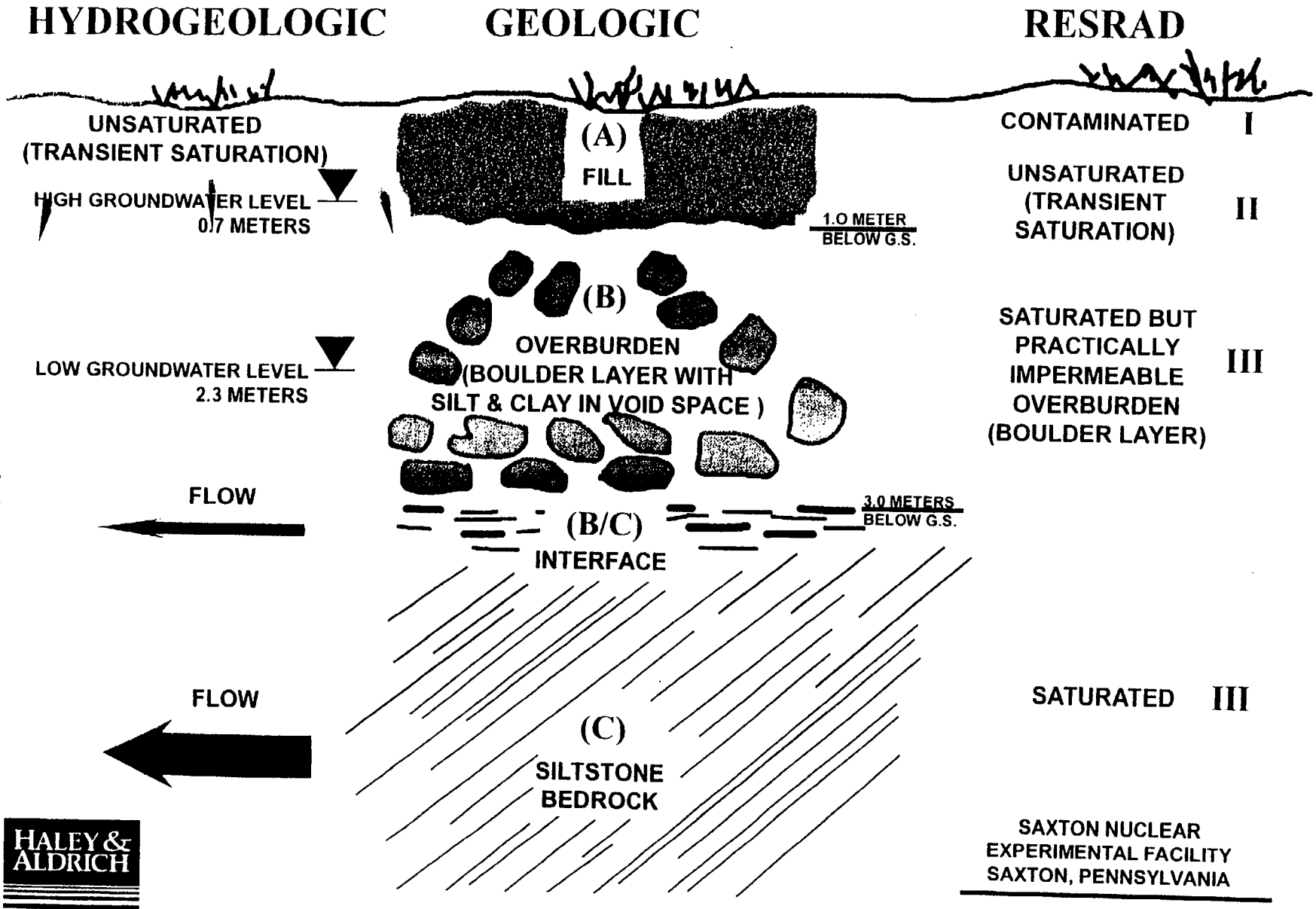
  Based on information provided by GPU Nuclear and RESRAD developers at Argonne National Laboratory, field capacity, a value included in the RESRAD 6.0 code, refers to specific retention as it applies to unsaturated soil. Based on published values for field capacity for soil materials classified as similar to on-site soil (Brady, The Nature & Property of Soils, 1974) field capacity ranges from 0.079 to 0.192. The recommended value input into the RESRAD model is 0.136, the average of the minimum and maximum estimated values.

Endnote:

Anthony Bonasera originally compiled the list of RESRAD input parameters and references supporting the values. The equations presented in the text were hand checked by Daniel G. Eurich of Haley & Aldrich, Inc in March 2001. The June 2001 updated version includes revisions to the evapotranspiration and model parameter equations due to changes in the input parameters. The 12 June 2001 version includes edits to the evapotranspiration, precipitation values (increased precipitation decimal places, field capacity, hydraulic conductivity, effective porosity and model parameter equations. Nancy van Dyke & Charlie Butts of Haley & Aldrich, Inc checked the June 2001 equation revisions. As you requested, Haley & Aldrich, Inc. created a file of citations for this document, this file is being maintained and updated for GPU's future reference.

G:\documents\74\74683\74683m06.doc

SKETCH OF UNDERGROUND MATERIALS



SAXTON NUCLEAR
EXPERIMENTAL FACILITY
SAXTON, PENNSYLVANIA

FIGURE 1
REVISION 1

2.13

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SNEC SAMPLES ASSAYED FOR Kd VALUES AT ANL

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8						
Location	River (composite) Sediment Sample	SSGS SE Sump	South of Warehouse by Old Access Road	CV Area	CV Area, Near Switchyard	CV Area	CV Area	CV Area						
Material Type	Sediment	Construction Debris	Fly Ash & Cinders	Back-Fill Materials	Fill Soil	Clay Material	Weathered Bedrock	Unweathered Bedrock (crushed)						
Reference Grid No. & Coordinates	Bank Above Bridge & Off Tip Of Island	AV-133	AJ-131, 21' N by 2' W	AZ-129, 14' W by 10' N	BA-129, 1' N	BA-129, 1' N by 2' W	AZ-128, 13' N	AZ-129, 15' N by 12 to 18' E						
Depth (Grade=811' El)	0' - 1' Below Sediment Surface	~787' El	~811'	~795'	~810.8'	~809.12'	~800'	~800'	Lowest Value	Highest Value				
Elements											AVERAGE	SIGMA	Sigma as a %	
H	~1	~1	~1	~1	~1	~1	~1	~1	1	1	1	0	0.0%	H
C	~1	~1	~1	~1	~1	~1	~1	~1	1	1	1	0	0.0%	C
Ni	10000	10000	4000	10000	10000	10000	**1300**	**1500**	**1300**	10000	7100	4082	57.5%	Ni
Zr, Nb	600	**80**	500	500	500	500	500	500	**80**	600	460	157	34.2%	Zr, Nb
Tc	**8.1**	**54**	**54**	**8.6**	**1.4**	**1.6**	**1.3**	**1.3**	**1.3**	**54**	16	23	144.1%	Tc
U	**37**	**16**	5200	**17**	**34**	**106**	5200	**226**	**16**	5200	1355	2375	175.3%	U
Pu	600	160	600	400	400	400	600	400	160	600	445	152	34.1%	Pu
Ce, Eu	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	0	0.0%	Ce, Eu
Co	1000	1000	**200**	1000	1000	1000	1000	1000	**200**	1000	900	283	31.4%	Co
Cs	**2340**	**2433**	**2131**	14149	**13618**	**2864**	9746	28341	**2131**	28341	9453	9205	97.4%	Cs
Fe	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	0	0.0%	Fe
Am, Cm	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	0	0.0%	Am, Cm
Sr	**60**	**25**	**475**	**28**	**11**	**24**	**114**	**60**	**11**	**475**	100	155	155.7%	Sr
Sb	**1100**	**153**	**5200**	**2070**	**1100**	**1800**	5000	**1900**	**153**	**5200**	2291	1838	80.2%	Sb
Pb	**46000**	**1.60E+05**	**58000**	**81000**	**31000**	**98000**	**9700**	**26000**	**9700**	**160000**	63713	48553	76.2%	Pb

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RESRAD INPUT VALUES FOR PROBALISTIC ANALYSIS

Menu	Class	PARAMETERS	Basic RESRAD Input	Range of Values Evaluated Min.	Range of Values Evaluated Max.	Assigned Distribution
C14	P	Thickness of Soil Evasion Layer of C-14 in Soil (m)	0.3	0.2	0.6	Triangular
N/A	P	Contaminated Zone Effective Porosity	Not Used by RESRAD	N/A	N/A	N/A
RO11	P	Area of Contaminated Zone (m^2)	10000	N/A	N/A	Not Included in Probalistic Analysis
RO11	NRC	Basic Radiation Dose Limit (mrem/y) (NRC)	25	N/A	N/A	Not Included in Probalistic Analysis
RO11	P	Length Parallel to Aquifer Flow (m)	112.8	N/A	N/A	Not Included in Probalistic Analysis
RO11	P	Thickness of Contaminated Zone 1 (m)	1	0.5	1.5	Uniform
RO11	P	Time Since Placement of Materials (yr)	0	N/A	N/A	Not Included in Probalistic Analysis
RO11	P	Times for Calculations (yr)	1	N/A	N/A	Not Included in Probalistic Analysis
RO11	P	Times for Calculations (yr)	3	N/A	N/A	Not Included in Probalistic Analysis
RO11	P	Times for Calculations (yr)	10	N/A	N/A	Not Included in Probalistic Analysis
RO11	P	Times for Calculations (yr)	30	N/A	N/A	Not Included in Probalistic Analysis
RO11	P	Times for Calculations (yr)	150	N/A	N/A	Not Included in Probalistic Analysis
RO11	P	Times for Calculations (yr)	350	N/A	N/A	Not Included in Probalistic Analysis
RO11	P	Times for Calculations (yr)	1000	N/A	N/A	Not Included in Probalistic Analysis
RO11	P	Times for Calculations (yr)	10000	N/A	N/A	Not Included in Probalistic Analysis
RO13	P	Average Annual Wind Speed (m/sec)	4.07	3.13	4.83	Not Included in Probalistic Analysis
RO13	P	Contaiminated Zone Field Capacity	0.136	0.079	0.192	Not Included in Probalistic Analysis
RO13	P	Contaminated Zone b Parameter	5.6	4.07	7.12	Not Included in Probalistic Analysis
RO13	P	Contaminated Zone Erosion Rate (m/yr)	0.000345	0.00009	0.0006	Loguniform
RO13	P	Contaminated Zone Hydraulic Conductivity (m/yr)	32.3	0.362	25400	Loguniform
RO13	P	Contaminated Zone Total Porosity	0.46	0.35	0.56	Uniform
RO13	P	Cover Depth (m)	0	N/A	N/A	N/A
RO13	P, B	Cover Depth Erosion Rate (m/yr)	Not Used by RESRAD	N/A	N/A	N/A
RO13	P	Density of Contaminated Zone (g/cc)	1.6	1.28	1.92	Uniform
RO13	P	Density of Cover Material (g/cc)	Not Used	N/A	N/A	N/A
RO13	P	Evapotranspiration Coefficient (m/yr)	0.59	0.5	0.67	Uniform
RO13	P	Humidity in Air (Default Value Used) (g/m^3)	8	Default Value	Default Value	Truncated Lognormal-N
RO13	B	Irrigation (m/yr) (Default Value Used)	0.2	0.1	0.4	Uniform
RO13	B	Irrigation Mode (Overhead)	Overhead	N/A	N/A	N/A
RO13	P	Precipitation (m/y)	0.936	0.688	1.327	Uniform
RO13	P	Runoff Coefficient	0.35	0.3	0.4	Uniform
RO13	P	Watershed Area for Nearby Stream or Pond (m^2)	5.00E+06	2.500E+06	7.500E+06	Uniform
RO14	P	Density of Saturated Zone (g/cc)	1.6	1.28	1.92	Uniform
RO14	P	Model: Non-dispersion (ND) or Mass-Balance (MB)	Non-Dispersion	N/A	N/A	N/A
RO14	P	Saturated Zone b Parameter	Not Used by RESRAD	N/A	N/A	N/A
RO14	P	Saturated Zone Effective Porosity	0.028	0.005	0.05	Loguniform
RO14	P	Saturated Zone Hydraulic Conductivity (m/yr)	67.91	15.59	909.53	Uniform
RO14	P	Saturated Zone Hydraulic Gradient	0.02	0.013	0.03	Uniform
RO14	P	Saturated Zone Total Porosity	0.36	0.31	0.41	Uniform
RO14	P	Water Table Drop Rate (m/yr)	0	N/A	N/A	N/A
RO14	P	Well Pump Intake Depth (m)	30	10	50	Uniform
RO14	B, P	Well Pumping Rate (m^3/yr)	286.2	207.3	365	Not Included in Probalistic Analysis
RO14	P	Saturated Zone Field Capacity	0.136	0.079	0.192	Not Included in Probalistic Analysis
RO15	P	Density of Unsaturated Zone 1 (g/cc)	1.6	1.28	1.92	Uniform
RO15	P	Effective Porosity of Unsaturated Zone 1	0.41	0.28	0.54	Uniform
RO15	P	Hydraulic Conductivity of Unsaturated Zone 1 (m/yr)	32.3	0.362	25400	Loguniform
RO15	P	Number of Unsaturated Zone Strata	1	N/A	N/A	N/A

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RO15	P	Thickness of Unsaturated Zone 1 (m)	0.25	0	0.5	Uniform
RO15	P	Total porosity of Unsaturated Zone 1	0.46	0.35	0.56	Uniform
RO15	P	Unsaturated Zone 1 b Parameter	5.6	4.05	7.12	Not Included in Probalistic Analysis
RO15	P	Unsaturated Zone Field Capacity	0.136	0.079	0.192	Not Included in Probalistic Analysis
RO17	P	External Gamma Shielding Factor	0.7	0.044	1	Bounded Lognormal-N
RO17	P	Indoor Dust Filtration Factor	0.4	0.15	0.95	Uniform
RO17	M, B	Indoor Time Fraction	0.5	0	1	Continuous Linear
RO17	M, B	Inhalation Rate (m^3/yr)	8400	4380	13100	Triangular
RO17	P	Mass Loading for Inhalation (g/m^3)	0.0001	0	0.0001	Continuous Linear
RO18	B, P	Contaminated Fraction of Aquatic Food	0.5	0	1	Triangular
RO18	B, P	Contaminated Fraction of Drinking Water	1	N/A	N/A	Not Included in Probalistic Analysis
RO18	B, P	Contaminated Fraction of Household Water	Not Used	N/A	N/A	N/A
RO18	B, P	Contaminated Fraction of Irrigation Water	0.75	0.5	1	Uniform
RO18	B, P	Contaminated Fraction of Livestock Water	0.75	0.5	1	Uniform
RO18	B, P	Contaminated Fraction of Plant Food	1	N/A	N/A	Not Included in Probalistic Analysis
RO18	B, P	Contaminated Fraction of Meat	1	N/A	N/A	Not Included in Probalistic Analysis
RO18	B, P	Contaminated Fraction of Milk	1	N/A	N/A	Not Included in Probalistic Analysis
RO18	M, B	Drinking Water Intake (L/yr)	478.5		730	Uniform
RO18	M, B	Fish Consumption (kg/yr)	20.6		21	Uniform
RO18	M, B	Fruit, Vegetable, and Grain Consumption (kg/yr)	112		520	Uniform
RO18	M, B	Leafy Vegetable Consumption (kg/yr)	21.4		64	Uniform
RO18	M, B	Meat and Poultry Consumption (kg/yr)	67		110	Uniform
RO18	M, B	Milk Consumption	233		310	Uniform
RO18	M, B	Other Seafood Consumption (kg/yr)	0.9	0.9	5	Uniform
RO18	M, B	Soil Ingestion Rate (g/yr)	18.3		36.5	Uniform
RO19	P	Depth of Roots (m)	0.9	0.3	4	Uniform
RO19	P	Depth of Soil Mixing Layer (m)	0.15	0	0.6	Triangular
RO19B	P	Weathering Removal Constant of all Vegetation	20	5.1	84	Triangular
RO19B	P	Wet Crop Yield for Fodder (kg/m^2)	1.1	0.55	2.2	Not Included in Probalistic Analysis
RO19B	P	Wet Crop Yield for Leafy (kg/m^2)	1.5	0.75	3	Uniform
RO19B	P	Wet Crop Yield for Non-Leafy (kg/m^2)	0.7	Default Value	Default Value	Truncated Lognormal-N
RO19B	P	Wet Foliar Inception Fraction of Leafy Vegetables	0.25	0.06	0.95	Triangular
		Distribution Coefficient for Americium & Curium	***Value Used***	***ANL Min.***	***ANL Max.***	***Distribution Type***
R16	P	1. Contaminated Zone (cm^3/g)	1000	1000	5000	Not Included in Probalistic Analysis
R16	P	2. Unsaturated Zone (cm^3/g)	1000	1000	5000	Not Included in Probalistic Analysis
R16	P	3. Saturated Zone (cm^3/g)	1000	1000	5000	Not Included in Probalistic Analysis
		Distribution Coefficient for Carbon	***Value Used (ANL)***	***GPU Min.***	***GPU Max.***	***Distribution Type***
R16	P	1. Contaminated Zone (cm^3/g)	1	0	5	Uniform
R16	P	2. Unsaturated Zone (cm^3/g)	1	0	5	Uniform
R16	P	3. Saturated Zone (cm^3/g)	1	0	5	Uniform
		Distribution Coefficient for Cobalt	***Value Used***	***ANL Min.***	***ANL Max.***	***Distribution Type***
R16	P	1. Contaminated Zone (cm^3/g)	200	200	1000	Not Included in Probalistic Analysis
R16	P	2. Unsaturated Zone (cm^3/g)	200	200	1000	Not Included in Probalistic Analysis
R16	P	3. Saturated Zone (cm^3/g)	200	200	1000	Not Included in Probalistic Analysis
		Distribution Coefficient for Cesium	***Value Used***	***ANL Min.***	***ANL Max.***	***Distribution Type***
R16	P	1. Contaminated Zone (cm^3/g)	2131	2131	28341	Not Included in Probalistic Analysis
R16	P	2. Unsaturated Zone (cm^3/g)	2131	2131	28341	Not Included in Probalistic Analysis
R16	P	3. Saturated Zone (cm^3/g)	2131	2131	28341	Not Included in Probalistic Analysis

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		Distribution Coefficient for Europium	Value Used	ANL Min.	ANL Max.	Distribution Type
R16	P	1. Contaminated Zone (cm^3/g)	1000	1000	5000	Not Included in Probalistic Analysis
R16	P	2. Unsaturated Zone (cm^3/g)	1000	1000	5000	Not Included in Probalistic Analysis
R16	P	3. Saturated Zone (cm^3/g)	1000	1000	5000	Not Included in Probalistic Analysis
		Distribution Coefficient for Iron	Value Used	ANL Min.	ANL Max.	Distribution Type
R16	P	1. Contaminated Zone (cm^3/g)	10000	10000	50000	Not Included in Probalistic Analysis
R16	P	2. Unsaturated Zone (cm^3/g)	10000	10000	50000	Not Included in Probalistic Analysis
R16	P	3. Saturated Zone (cm^3/g)	10000	10000	50000	Not Included in Probalistic Analysis
		Distribution Coefficient for Hydrogen	Value Used (ANL)	GPU Min.	GPU Max.	Distribution Type
R16	P	1. Contaminated Zone (cm^3/g)	1	0	5	Uniform
R16	P	2. Unsaturated Zone (cm^3/g)	1	0	5	Uniform
R16	P	3. Saturated Zone (cm^3/g)	1	0	5	Uniform
		Distribution Coefficient for Niobium	Value Used	ANL Min.	ANL Max.	Distribution Type
R16	P	1. Contaminated Zone (cm^3/g)	80	80	600	Not Included in Probalistic Analysis
R16	P	2. Unsaturated Zone (cm^3/g)	80	80	600	Not Included in Probalistic Analysis
R16	P	3. Saturated Zone (cm^3/g)	80	80	600	Not Included in Probalistic Analysis
		Distribution Coefficient for Nickel	Value Used	ANL Min.	ANL Max.	Distribution Type
R16	P	1. Contaminated Zone (cm^3/g)	1300	1300	10000	Not Included in Probalistic Analysis
R16	P	2. Unsaturated Zone (cm^3/g)	1300	1300	10000	Not Included in Probalistic Analysis
R16	P	3. Saturated Zone (cm^3/g)	1300	1300	10000	Not Included in Probalistic Analysis
		Distribution Coefficient for Plutonium	Value Used	ANL Min.	ANL Max.	Distribution Type
R16	P	1. Contaminated Zone (cm^3/g)	160	160	600	Not Included in Probalistic Analysis
R16	P	2. Unsaturated Zone (cm^3/g)	160	160	600	Not Included in Probalistic Analysis
R16	P	3. Saturated Zone (cm^3/g)	160	160	600	Not Included in Probalistic Analysis
		Distribution Coefficient for Antimony	Value Used	ANL Min.	ANL Max.	Distribution Type
R16	P	1. Contaminated Zone (cm^3/g)	153	153	5200	Not Included in Probalistic Analysis
R16	P	2. Unsaturated Zone (cm^3/g)	153	153	5200	Not Included in Probalistic Analysis
R16	P	3. Saturated Zone (cm^3/g)	153	153	5200	Not Included in Probalistic Analysis
		Distribution Coefficient for Strontium	Value Used	ANL Min.	ANL Max.	Distribution Type
R16	P	1. Contaminated Zone (cm^3/g)	11	11	475	Not Included in Probalistic Analysis
R16	P	2. Unsaturated Zone (cm^3/g)	11	11	475	Not Included in Probalistic Analysis
R16	P	3. Saturated Zone (cm^3/g)	11	11	475	Not Included in Probalistic Analysis
		Distribution Coefficient for Technetium	Value Used	ANL Min.	ANL Max.	Distribution Type
R16	P	1. Contaminated Zone (cm^3/g)	1.3	1.3	54	Not Included in Probalistic Analysis
R16	P	2. Unsaturated Zone (cm^3/g)	1.3	1.3	54	Not Included in Probalistic Analysis
R16	P	3. Saturated Zone (cm^3/g)	1.3	1.3	54	Not Included in Probalistic Analysis
		Distribution Coefficient for Uranium	Value Used	ANL Min.	ANL Max.	Distribution Type
R16	P	1. Contaminated Zone (cm^3/g)	16	16	5200	Not Included in Probalistic Analysis
R16	P	2. Unsaturated Zone (cm^3/g)	16	16	5200	Not Included in Probalistic Analysis
R16	P	3. Saturated Zone (cm^3/g)	16	16	5200	Not Included in Probalistic Analysis
		Distribution Coefficient for Lead	Value Used	ANL Min.	ANL Max.	Distribution Type
R16	P	1. Contaminated Zone (cm^3/g)	9700	9700	160000	Not Included in Probalistic Analysis
R16	P	2. Unsaturated Zone (cm^3/g)	9700	9700	160000	Not Included in Probalistic Analysis
R16	P	3. Saturated Zone (cm^3/g)	9700	9700	160000	Not Included in Probalistic Analysis

RG 1.109 Values are highlighted in GREEN

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[redacted]

NOTE: Additional RAI Information Requested But Not Shown In Above Table

			Values Used	Distribution Type
D34	P	**Food Transfer Factors:**		
		Plant/soil concentration ratios, dimensionless	RESRAD 6.1 Defaults	LOGNORMAL - N
		Beef/livestock-intake ratios, (pCi/kg/(pCi/d)	RESRAD 6.1 Defaults	LOGNORMAL - N
		Milk/livestock-intake ratios, (pCi/L)/(pCi/d)	RESRAD 6.1 Defaults	LOGNORMAL - N
D5	P	**Bioaccumulation factors, fresh water, L/kg:**		
		Fish	RESRAD 6.1 Defaults	LOGNORMAL - N
		Crustacea and mollusks	RESRAD 6.1 Defaults	Not Included in Probalistic Analysis

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Table 5-1

Site-Wide DCGL Summary (pCi/g)

NUCLIDES OF CONCERN	BEDROCK LAYER below CV, Steam Plant, and Spray Pond: DCGL based on 25 mrem/yr all-pathway standard	BEDROCK LAYER below CV, Steam Plant, and Spray Pond: DCGL based on 4 mrem/yr drinking-water standard	OVERBURDEN LAYER near CV, near Steam Plant, and below Spray Pond: DCGL based on 25 mrem/yr all-pathway standard	MINIMUM SITE SUBSURFACE DCGL	RIVER SEDIMENTS FROM RECREATION SCENARIO: DCGL based on 25 mrem/yr all-pathway standard
Am-241	2.8E+02	4.5E+01	1.8E+01	1.80E+01	5.3E+06
C-14	1.9E+02	3.1E+01	8.9E+01	3.10E+01	5.3E+04
Cm-243	6.1E+03	9.7E+02	1.2E+02	1.20E+02	1.2E+05
Cm-244	3.5E+03	5.6E+02	1.8E+02	1.80E+02	8.9E+07
Co-60	2.5E+05	4.1E+04	2.1E+01	2.10E+01	1.8E+03
Cs-134	3.5E+16	5.6E+15	2.9E+01	2.90E+01	4.0E+03
Cs-137	5.9E+06	9.4E+05	5.1E+01	5.10E+01	1.1E+04
Eu-152	2.5E+07	3.9E+06	5.4E+01	5.40E+01	4.7E+03
Eu-154	6.1E+07	9.8E+06	5.0E+01	5.00E+01	3.7E+03
Eu-155	4.8E+09	7.7E+08	2.1E+03	2.10E+03	6.4E+05
Fe-55	7.6E+22 *	7.6E+22 *	1.7E+05	1.70E+05	4.5E+11
H-3	8.6E+03	1.4E+03	8.9E+03	1.40E+03	6.9E+10
Nb-94	2.3E+03	3.7E+02	3.8E+01	3.80E+01	3.7E+03
Ni-59	1.3E+06	2.1E+05	1.7E+04	1.70E+04	3.4E+11
Ni-63	1.6E+07	2.5E+06	6.3E+03	6.30E+03	1.2E+11
Pu-238	4.2E+01	6.7E+00	1.1E+02	6.70E+00	9.1E+06
Pu-239	9.4E+00	1.5E+00	1.0E+02	1.50E+00	8.1E+06
Pu-240	9.7E+00	1.6E+00	1.0E+02	1.60E+00	8.2E+06
Pu-241	7.0E+03	1.1E+03	3.4E+03	1.10E+03	4.3E+08
Pu-242	9.7E+00	1.6E+00	1.1E+02	1.60E+00	8.7E+06
Sb-125	1.0E+02	1.6E+01	1.5E+02	1.60E+01	1.8E+04
Sr-90	2.6E+01	4.2E+00	7.0E+00	4.20E+00	6.6E+06
Tc-99	2.1E+02	3.3E+01	5.4E+01	3.30E+01	2.4E+08
U-234	1.2E+01	1.9E+00	4.6E+02	1.90E+00	2.8E+07
U-235	1.2E+01	1.9E+00	2.5E+02	1.90E+00	9.8E+04
U-238	1.2E+01	2.0E+00	1.4E+03	2.00E+00	3.1E+07

* Nuclide Specific Activity Limit

ATTACHMENT 5 . 1

	File Names⇒	SNECXXXXX.RAD*		SNECXXXXXA.RAD		SNECXXXXXB.RAD		SNECXXXXXC.RAD		SNECXXXXXD.RAD		SNECXXXXXE.RAD	
	AREA⇒	> 2500 m^2 to 10000 m^2		> 400 m^2 to 2500 m^2		> 100 m^2 to 400 m^2		> 25 m^2 to 100 m^2		> 1 m^2 to 25 m^2		< or = 1 m^2	
	Radionuclides	DCGL	AF	DCGL EMC	AF	DCGL EMC	AF	DCGL EMC	AF	DCGL EMC	AF	DCGL EMC	AF
1	Am-241	21.4	1.0	40.5	1.9	97.6	4.6	332.7	15.5	914.6	42.7	6388.4	298.5
2	C-14	27.4	1.0	137.3	5.0	815.7	29.8	4954.4	180.8	2.36E+04	861.8	5.12E+05	1.87E+04
3	Cm-243	25.0	1.0	41.2	1.6	70.9	2.8	116.7	4.7	170.4	6.8	1023.5	40.9
4	Cm-244	39.0	1.0	74.9	1.9	186.4	4.8	725.9	18.6	2662.7	68.3	2.31E+04	592.1
5	Co-60	3.9	1.0	4.7	1.2	5.2	1.3	5.8	1.5	7.5	1.9	46.3	11.9
6	Cs-134	5.1	1.0	7.9	1.5	9.4	1.8	10.8	2.1	14.0	2.7	84.7	16.6
7	Cs-137	8.7	1.0	16.1	1.8	20.9	2.4	25.2	2.9	33.1	3.8	201.5	23.2
8	Eu-152	10.8	1.0	11.2	1.0	11.8	1.1	12.9	1.2	16.6	1.5	100.6	9.3
9	Eu-154	10	1.0	10.3	1.0	10.9	1.1	11.9	1.2	15.3	1.5	94.6	9.5
10	Eu-155	415	1.0	434.6	1.0	454.6	1.1	492.2	1.2	618.1	1.5	3358.1	8.1
11	Fe-55	23205	1.0	1.20E+05	5.2	4.45E+05	19.2	1.78E+06	76.6	7.10E+06	305.9	1.69E+08	7295.7
12	H-3	2730	1.0	6362.4	2.3	1.57E+04	5.7	4.20E+04	15.4	1.13E+05	41.4	1.39E+06	509.5
13	Nb-94	7.6	1.0	7.9	1.0	8.3	1.1	9.1	1.2	11.7	1.5	70.5	9.3
14	Ni-59	3216	1.0	1.15E+04	3.6	3.42E+04	10.6	1.37E+05	42.5	5.47E+05	170.0	1.36E+07	4232.2
15	Ni-63	1175	1.0	4203.8	3.6	1.25E+04	10.6	4.99E+04	42.5	2.00E+05	170.0	4.97E+06	4234.7
16	Pu-238	24.1	1.0	46.3	1.9	115.3	4.8	372.7	15.5	932.7	38.7	9284.5	385.2
17	Pu-239	9.2	1.0	16.7	1.8	38.4	4.2	87.5	9.5	214.2	23.3	2312.7	251.4
18	Pu-240	9.5	1.0	17.2	1.8	39.4	4.2	89.8	9.5	219.9	23.2	2367.4	249.2
19	Pu-241	1021	1.0	1881.6	1.8	4433.1	4.3	13950.9	13.7	34525.6	33.8	218086.7	213.7
20	Pu-242	9.6	1.0	17.4	1.8	40.0	4.2	91.3	9.5	223.7	23.3	223.7	23.3
21	Sb-125	33.6	1.0	35.1	1.0	36.8	1.1	40.3	1.2	51.3	1.5	305.2	9.1
22	Sr-90	1.3	1.0	3.1	2.4	8.2	6.3	32.4	24.9	125.9	96.8	2661.4	2047.2
23	Tc-99	11.4	1.0	24.4	2.1	61.3	5.4	242.5	21.3	949.5	83.3	20990.8	1841.3
24	U-234	12.6	1.0	22.8	1.8	51.2	4.1	114.9	9.1	276.3	21.9	2979.5	236.5
25	U-235	12.0	1.0	21.4	1.8	42.3	3.5	72.8	6.1	124.1	10.3	815.4	67.9
26	U-238	13.0	1.0	24.1	1.9	54.0	4.2	108.5	8.3	237.0	18.2	2257.7	173.7

* Where "XXXXX" is the radionuclide name, as an example "AM241".

NOTE: Base case values for 10,000 square meter area is for 25 mrem/y dose limit

ATTACHMENT 6 - 1

	mrem/y RESULTS 2500 m^2 (A)			Average mrem/h/pCi/g	25 mrem/y Limit - pCi/g	mrem/y RESULTS 400 m^2 (B)			Average mrem/h/pCi/g	25 mrem/y Limit - pCi/g	mrem/y RESULTS 100 m^2 (C)			Average mrem/h/pCi/g	25 mrem/y Limit - pCi/g
Am-241	6.11E-01	6.20E-01	6.20E-01	0.62	40.50	2.54E-01	2.57E-01	2.57E-01	0.26	97.63	7.46E-02	7.55E-02	7.54E-02	0.08	332.67
C-14	1.83E-01	1.81E-01	1.82E-01	0.18	137.29	3.09E-02	3.04E-02	3.06E-02	0.03	815.75	5.22E-03	4.96E-03	4.96E-03	0.01	4954.42
Cm-243	6.28E-01	0.5975	0.596	0.61	41.17	0.361	0.3487	0.3484	0.35	70.88	0.2162	0.2131	0.2134	0.21	116.70
Cm-244	3.51E-01	3.26E-01	3.24E-01	0.33	74.94	1.41E-01	1.31E-01	1.30E-01	0.13	186.43	3.62E-02	3.37E-02	3.35E-02	0.03	725.90
Co-60	5.359	5.334	5.372	5.36	4.67	4.837	4.83	4.853	4.84	5.17	4.323	4.315	4.336	4.32	5.78
Cs-134	3.161	3.165	3.179	3.17	7.89	2.666	2.665	2.677	2.67	9.37	2.315	2.311	2.322	2.32	10.79
Cs-137	1.563	1.546	1.555	1.55	16.08	1.198	1.188	1.197	1.19	20.93	0.9922	0.986	0.9939	0.99	25.23
Eu-152	2.231	2.226	2.237	2.23	11.20	2.128	2.138	2.093	2.12	11.79	1.939	1.948	1.906	1.93	12.95
Eu-154	2.418	2.413	2.425	2.42	10.34	2.296	2.292	2.303	2.30	10.88	2.093	2.089	2.099	2.09	11.94
Eu-155	5.75E-02	5.74E-02	5.77E-02	5.75E-02	4.35E+02	5.50E-02	5.49E-02	5.51E-02	5.50E-02	4.55E+02	5.08E-02	5.07E-02	5.09E-02	5.08E-02	4.92E+02
Fe-55	2.07E-04	2.06E-04	2.10E-04	2.08E-04	1.20E+05	5.62E-05	5.56E-05	5.69E-05	5.62E-05	4.45E+05	1.41E-05	1.39E-05	1.42E-05	1.41E-05	1.78E+06
H-3	3.92E-03	3.93E-03	3.93E-03	3.93E-03	6.36E+03	1.60E-03	1.59E-03	1.60E-03	1.60E-03	1.57E+04	6.05E-04	5.94E-04	5.87E-04	5.95E-04	4.20E+04
Nb-94	3.153	3.136	3.161	3.15	7.94	2.997	2.981	3.006	2.99	8.35	2.735	2.72	2.743	2.73	9.15
Ni-59	2.19E-03	2.18E-03	2.16E-03	2.17E-03	1.15E+04	7.41E-04	7.27E-04	7.27E-04	7.32E-04	3.42E+04	1.85E-04	1.82E-04	1.82E-04	1.83E-04	1.37E+05
Ni-63	5.98E-03	5.96E-03	5.90E-03	5.95E-03	4.20E+03	2.03E-03	1.99E-03	1.99E-03	2.00E-03	1.25E+04	5.07E-04	4.97E-04	4.98E-04	5.01E-04	4.99E+04
Pu-238	0.5498	0.5406	0.5305	0.54	46.27	0.2206	0.2169	0.2129	0.22	115.31	7.31E-02	6.76E-02	6.04E-02	0.07	372.73
Pu-239	1.529	1.48	1.489	1.50	16.67	0.7024	0.6113	0.6416	0.65	38.36	0.2968	0.2735	0.287	0.29	87.48
Pu-240	1.486	1.439	1.447	1.46	17.15	0.683	0.5944	0.6238	0.63	39.45	0.29	0.2659	0.279	0.28	89.83
Pu-241	1.33E-02	1.33E-02	1.33E-02	0.01	1881.59	5.62E-03	5.67E-03	5.63E-03	0.01	4433.15	1.78E-03	1.82E-03	1.78E-03	0.00	13950.89
Pu-242	1.465	1.419	1.427	1.44	17.40	0.6733	0.5859	0.6149	0.62	40.02	0.2845	0.2622	0.275	0.27	91.27
Sb-125	7.14E-01	7.10E-01	7.16E-01	0.71	35.05	6.80E-01	6.76E-01	6.82E-01	0.68	36.81	6.21E-01	6.18E-01	6.23E-01	0.62	40.27
Sr-90	8.127	7.834	7.887	7.95	3.14	3.132	3.013	3.036	3.06	8.17	0.7902	0.76	0.7661	0.77	32.38
Tc-99	1.01E+00	1.03	1.031	1.02	24.40	0.4033	0.4094	0.4103	0.41	61.32	1.02E-01	1.03E-01	1.04E-01	0.10	242.48
U-234	1.097	1.081	1.107	1.10	22.83	0.5013	0.4975	0.465	0.49	51.24	0.2211	0.2272	0.2045	0.22	114.89
U-235	1.225	1.127	1.16	1.17	21.36	0.6076	0.5934	0.5726	0.59	42.29	0.345	0.3475	0.3381	0.34	72.77
U-238	1.046	1.022	1.041	1.04	24.12	4.98E-01	0.4311	0.4594	0.46	54.02	0.2384	0.2215	0.2316	0.23	108.46

ATTACHMENT 6 - 2

mrem/y RESULTS 25 m^2 (D)			Average mrem/h/pCi/g	25 mrem/y Limit - pCi/g	mrem/y RESULTS 1 m^2 (E)			Average mrem/h/pCi/g	25 mrem/y Limit - pCi/g
2.72E-02	2.74E-02	2.74E-02	0.03	914.63	3.92E-03	3.92E-03	3.91E-03	0.00	6388.42
1.15E-03	1.01E-03	1.01E-03	0.00	23614.61	5.40E-05	4.53E-05	4.73E-05	0.00	511596.18
0.1471	0.1463	0.1467	0.15	170.42	2.44E-02	2.44E-02	2.45E-02	0.02	1023.47
9.83E-03	9.20E-03	9.14E-03	0.01	2662.69	1.11E-03	1.08E-03	1.06E-03	0.00	23091.13
3.345	3.339	3.355	3.35	7.47	5.40E-01	5.39E-01	5.41E-01	0.54	46.31
1.788	1.785	1.793	1.79	13.98	2.95E-01	2.95E-01	2.96E-01	0.30	84.70
0.7562	0.752	0.7581	0.76	33.09	0.1242	0.1235	0.1245	0.12	201.50
1.515	1.522	1.489	1.51	16.57	0.2495	0.2507	0.2453	0.25	100.60
1.629	1.626	1.633	1.63	15.34	0.2641	0.2636	0.2649	0.26	94.63
4.04E-02	4.04E-02	4.06E-02	4.04E-02	6.18E+02	7.44E-03	7.43E-03	7.46E-03	7.44E-03	3.36E+03
3.52E-06	3.48E-06	3.57E-06	3.52E-06	7.10E+06	1.48E-07	1.46E-07	1.49E-07	1.48E-07	1.69E+08
2.24E-04	2.18E-04	2.21E-04	2.21E-04	1.13E+05	1.81E-05	1.78E-05	1.80E-05	1.80E-05	1.39E+06
2.141	2.129	2.147	2.14	11.69	3.55E-01	3.53E-01	3.56E-01	0.35	70.48
4.63E-05	4.54E-05	4.55E-05	4.57E-05	5.47E+05	1.86E-06	1.82E-06	1.83E-06	1.84E-06	1.36E+07
1.27E-04	1.24E-04	1.25E-04	1.25E-04	2.00E+05	5.09E-06	4.99E-06	5.00E-06	5.03E-06	4.97E+06
2.96E-02	2.60E-02	2.49E-02	0.03	932.72	2.87E-03	2.62E-03	2.59E-03	0.00	9284.48
0.1176	0.1152	0.1173	0.12	214.22	1.07E-02	1.07E-02	1.11E-02	0.01	2312.67
0.1149	0.112	0.1141	0.11	219.94	1.04E-02	1.04E-02	1.08E-02	0.01	2367.42
7.21E-04	7.29E-04	7.23E-04	0.00	34525.62	1.15E-04	1.14E-04	1.15E-04	0.00	218086.65
0.1125	0.1104	0.1124	0.11	223.68	1.13E-01	1.10E-01	1.12E-01	0.11	223.68
4.88E-01	4.85E-01	4.89E-01	0.49	51.28	8.20E-02	8.16E-02	8.22E-02	0.08	305.21
0.2032	0.1955	0.1971	0.20	125.88	9.56E-03	9.32E-03	9.31E-03	0.01	2661.37
2.61E-02	2.63E-02	2.66E-02	0.03	949.49	1.19E-03	1.19E-03	1.19E-03	0.00	20990.76
9.08E-02	9.07E-02	9.00E-02	0.09	276.26	8.29E-03	8.60E-03	8.29E-03	0.01	2979.50
0.2031	0.1999	0.2015	0.20	124.07	3.08E-02	3.09E-02	3.03E-02	0.03	815.39
0.1057	0.1048	0.106	0.11	236.97	1.10E-02	1.09E-02	1.13E-02	0.01	2257.68

ATTACHMENT 6 - 3

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.154E+00
2	0.000E+00	1.173E+00
3	0.000E+00	1.172E+00

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	1.000E+03	2.112E-02
2	1.000E+03	1.991E-02
3	7.586E+02	2.020E-02

obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
e File: AM241A.RAD

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	6.112E-01
2	0.000E+00	6.204E-01
3	0.000E+00	6.201E-01

obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
e
File: AM241B.RAD

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.537E-01
2	0.000E+00	2.573E-01
3	0.000E+00	2.572E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	7.456E-02
2	0.000E+00	7.545E-02
3	0.000E+00	7.544E-02

ATTACHMENT 7.5

robabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ne
File: AM241D.RAD

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.719E-02
2	0.000E+00	2.740E-02
3	0.000E+00	2.741E-02

ATTACHMENT 7.6

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.915E-03
2	0.000E+00	3.920E-03
3	0.000E+00	3.905E-03

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	9.139E-01
2	0.000E+00	9.080E-01
3	0.000E+00	9.148E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	1.000E+00	3.933E-03
2	1.445E+00	3.442E-03
3	3.000E+00	4.187E-03

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.827E-01
2	0.000E+00	1.813E-01
3	0.000E+00	1.823E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.093E-02
2	0.000E+00	3.041E-02
3	0.000E+00	3.060E-02

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	5.223E-03
2	0.000E+00	4.960E-03
3	0.000E+00	4.955E-03

ESRAD, Version 6.1 T½ Limit = 0.5 year 01/26/2002 15:56 Page 23
robabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ne File: C14D.RAD

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.151E-03
2	0.000E+00	1.013E-03
3	0.000E+00	1.012E-03

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	5.403E-05
2	0.000E+00	4.532E-05
3	0.000E+00	4.725E-05

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.012E+00
2	0.000E+00	9.804E-01
3	0.000E+00	1.010E+00

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	5.248E+02	2.036E-03
2	5.248E+02	2.087E-03
3	5.248E+02	2.035E-03

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	6.283E-01
2	0.000E+00	5.975E-01
3	0.000E+00	5.960E-01

:SRAD, Version 6.1 T½ Limit = 0.5 year 01/26/2002 18:28 Page 23
:obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ıe File: CM243B.RAD

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.610E-01
2	0.000E+00	3.487E-01
3	0.000E+00	3.484E-01

ATTACHMENT 7.18

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.162E-01
2	0.000E+00	2.131E-01
3	0.000E+00	2.134E-01

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.471E-01
2	0.000E+00	1.463E-01
3	0.000E+00	1.467E-01

ATTACHMENT 7.20

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.444E-02
2	0.000E+00	2.439E-02
3	0.000E+00	2.445E-02

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	6.308E-01
2	0.000E+00	6.195E-01
3	0.000E+00	6.752E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	5.248E+02	4.760E-03
2	5.248E+02	4.521E-03
3	5.248E+02	4.536E-03

:SRAD, Version 6.1 T½ Limit = 0.5 year 01/26/2002 19:38 Page 23
:obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ıe File: CM244A.RAD

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.508E-01
2	0.000E+00	3.260E-01
3	0.000E+00	3.243E-01

ATTACHMENT 7 - 24

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.409E-01
2	0.000E+00	1.311E-01
3	0.000E+00	1.303E-01

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.616E-02
2	0.000E+00	3.368E-02
3	0.000E+00	3.348E-02

Probabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ne File: CM244D.RAD

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	9.828E-03
2	0.000E+00	9.201E-03
3	0.000E+00	9.138E-03

Peak of the mean dose (averaged over observations) at graphical times

.epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.109E-03
2	0.000E+00	1.077E-03
3	0.000E+00	1.062E-03

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	6.389E+00
2	0.000E+00	6.434E+00
3	0.000E+00	6.438E+00

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	1.318E+01	5.111E-06
2	1.905E+01	3.677E-06
3	1.905E+01	3.924E-06

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	5.359E+00
2	0.000E+00	5.334E+00
3	0.000E+00	5.372E+00

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	4.837E+00
2	0.000E+00	4.830E+00
3	0.000E+00	4.853E+00

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	4.323E+00
2	0.000E+00	4.315E+00
3	0.000E+00	4.336E+00

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.345E+00
2	0.000E+00	3.339E+00
3	0.000E+00	3.355E+00

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	5.397E-01
2	0.000E+00	5.386E-01
3	0.000E+00	5.412E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	4.897E+00
2	0.000E+00	4.871E+00
3	0.000E+00	4.878E+00

:obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ie File: CS134 DW.RAD

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	6.310E+00	4.651E-10
2	3.000E+00	3.222E-09
3	9.120E+00	2.940E-10

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.161E+00
2	0.000E+00	3.165E+00
3	0.000E+00	3.179E+00

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.666E+00
2	0.000E+00	2.665E+00
3	0.000E+00	2.677E+00

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.315E+00
2	0.000E+00	2.311E+00
3	0.000E+00	2.322E+00

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.788E+00
2	0.000E+00	1.785E+00
3	0.000E+00	1.793E+00

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.951E-01
2	0.000E+00	2.945E-01
3	0.000E+00	2.959E-01

:SRAD, Version 6.1 T½ Limit = 0.5 year 01/26/2002 21:45 Page 23
:obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ıe File: CS137.RAD

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.873E+00
2	0.000E+00	2.857E+00
3	0.000E+00	2.854E+00

Peak of the mean dose (averaged over observations) at graphical times

›etition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	8.318E+01	2.419E-07
2	8.318E+01	1.658E-07
3	8.318E+01	2.141E-07

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.563E+00
2	0.000E+00	1.546E+00
3	0.000E+00	1.555E+00

obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
e
File: CS137B.RAD

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.198E+00
2	0.000E+00	1.188E+00
3	0.000E+00	1.197E+00

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	9.922E-01
2	0.000E+00	9.860E-01
3	0.000E+00	9.939E-01

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	7.562E-01
2	0.000E+00	7.520E-01
3	0.000E+00	7.581E-01

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.242E-01
2	0.000E+00	1.235E-01
3	0.000E+00	1.245E-01

Peak of the mean dose (averaged over observations) at graphical times

Repetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.309E+00
2	0.000E+00	2.304E+00
3	0.000E+00	2.315E+00

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	5.754E+01	2.262E-08
2	5.754E+01	2.293E-08
3	3.500E+01	5.148E-08

RESULTS SUMMARY : SNEC SOIL DCGLs (10000 m2) & 1 m Deep Contam. Z-
ie
File: EU152A.RAD

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.231E+00
2	0.000E+00	2.226E+00
3	0.000E+00	2.237E+00

ATTACHMENT 7.52

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.128E+00
2	0.000E+00	2.138E+00
3	0.000E+00	2.093E+00

e

[illegible] summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
File: EU152C.RAD

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.939E+00
2	0.000E+00	1.948E+00
3	0.000E+00	1.906E+00

ie

:petition

[illegible] : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
File: EU152D.RAD

Peak of the mean dose (averaged over observations) at graphical times

	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.515E+00
2	0.000E+00	1.522E+00
3	0.000E+00	1.489E+00

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.495E-01
2	0.000E+00	2.507E-01
3	0.000E+00	2.453E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.504E+00
2	0.000E+00	2.500E+00
3	0.000E+00	2.511E+00

:obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
.e File: EU154 DW.RAD

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	2.754E+01	1.411E-08
2	3.981E+01	9.013E-09
3	2.754E+01	3.414E-08

e

SNEC Soil DCGLs (10000 m2) @ 1 m Deep Contam. Z-
File: EU154A.RAD

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.418E+00
2	0.000E+00	2.413E+00
3	0.000E+00	2.425E+00

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.296E+00
2	0.000E+00	2.292E+00
3	0.000E+00	2.303E+00

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.093E+00
2	0.000E+00	2.089E+00
3	0.000E+00	2.099E+00

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.629E+00
2	0.000E+00	1.626E+00
3	0.000E+00	1.633E+00

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.641E-01
2	0.000E+00	2.636E-01
3	0.000E+00	2.649E-01

obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
e
File: EU155.RAD

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	6.014E-02
2	0.000E+00	6.006E-02
3	0.000E+00	6.033E-02

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	1.905E+01	6.569E-10
2	2.754E+01	2.541E-10
3	1.905E+01	1.591E-09

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	5.750E-02
2	0.000E+00	5.741E-02
3	0.000E+00	5.768E-02

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	5.497E-02
2	0.000E+00	5.487E-02
3	0.000E+00	5.513E-02

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	5.078E-02
2	0.000E+00	5.068E-02
3	0.000E+00	5.093E-02

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	4.043E-02
2	0.000E+00	4.036E-02
3	0.000E+00	4.055E-02

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	7.442E-03
2	0.000E+00	7.428E-03
3	0.000E+00	7.464E-03

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.073E-03
2	0.000E+00	1.074E-03
3	0.000E+00	1.085E-03

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.981E+01	8.105E-17
2	1.318E+01	1.454E-13
3	3.981E+01	3.424E-16

:obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ie File: FE55A.RAD

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.071E-04
2	0.000E+00	2.060E-04
3	0.000E+00	2.097E-04

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	5.615E-05
2	0.000E+00	5.555E-05
3	0.000E+00	5.691E-05

·obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ıe File: FE55C.RAD

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.405E-05
2	0.000E+00	1.390E-05
3	0.000E+00	1.424E-05

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.519E-06
2	0.000E+00	3.481E-06
3	0.000E+00	3.566E-06

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.476E-07
2	0.000E+00	1.460E-07
3	0.000E+00	1.494E-07

Probabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ne
File: H3.RAD

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	9.156E-03
2	0.000E+00	9.140E-03
3	0.000E+00	9.176E-03

:obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ie
File: H3 DW.RAD

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	2.089E+00	2.704E-03
2	2.089E+00	2.737E-03
3	2.089E+00	2.773E-03

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.923E-03
2	0.000E+00	3.932E-03
3	0.000E+00	3.933E-03

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.600E-03
2	0.000E+00	1.586E-03
3	0.000E+00	1.604E-03

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	1.000E+00	6.047E-04
2	1.000E+00	5.938E-04
3	1.445E+00	5.869E-04

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·obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ıe File: H3D.RAD

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	1.000E+00	2.236E-04
2	1.000E+00	2.184E-04
3	1.445E+00	2.214E-04

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	1.445E+00	1.812E-05
2	1.445E+00	1.777E-05
3	1.445E+00	1.803E-05

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.279E+00
2	0.000E+00	3.261E+00
3	0.000E+00	3.288E+00

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:obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ıe
File: NB94 DW.RAD

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	2.512E+02	7.416E-03
2	2.512E+02	7.603E-03
3	2.512E+02	7.659E-03

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.153E+00
2	0.000E+00	3.136E+00
3	0.000E+00	3.161E+00

obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
e
File: NB94B.RAD

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.997E+00
2	0.000E+00	2.981E+00
3	0.000E+00	3.006E+00

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.735E+00
2	0.000E+00	2.720E+00
3	0.000E+00	2.743E+00

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.141E+00
2	0.000E+00	2.129E+00
3	0.000E+00	2.147E+00

obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
e
File: NB94E.RAD

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	3.550E-01
2	0.000E+00	3.531E-01
3	0.000E+00	3.560E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	7.696E-03
2	0.000E+00	7.957E-03
3	0.000E+00	7.671E-03

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	2.291E+03	8.250E-06
2	3.311E+03	8.621E-06
3	3.311E+03	8.460E-06

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.185E-03
2	0.000E+00	2.177E-03
3	0.000E+00	2.155E-03

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	7.410E-04
2	0.000E+00	7.265E-04
3	0.000E+00	7.272E-04

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.853E-04
2	0.000E+00	1.816E-04
3	0.000E+00	1.818E-04

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	4.633E-05
2	0.000E+00	4.542E-05
3	0.000E+00	4.546E-05

obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
e File: NI59E.RAD

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.861E-06
2	0.000E+00	1.824E-06
3	0.000E+00	1.826E-06

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.107E-02
2	0.000E+00	2.178E-02
3	0.000E+00	2.100E-02

Peak of the mean dose (averaged over observations) at graphical times

ɜpetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	2.512E+02	1.176E-07
2	3.000E+02	1.148E-07
3	2.512E+02	1.126E-07

obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
e
File: NI63A.RAD

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	5.983E-03
2	0.000E+00	5.960E-03
3	0.000E+00	5.898E-03

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.029E-03
2	0.000E+00	1.989E-03
3	0.000E+00	1.991E-03

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	5.072E-04
2	0.000E+00	4.973E-04
3	0.000E+00	4.977E-04

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.268E-04
2	0.000E+00	1.243E-04
3	0.000E+00	1.245E-04

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	5.091E-06
2	0.000E+00	4.991E-06
3	0.000E+00	4.996E-06

robabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ne
File: PU238.RAD

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.058E+00
2	0.000E+00	1.040E+00
3	0.000E+00	1.019E+00

.e

[illegible] DCGLs (10000 m2) & 1 m Deep Contam. Z-
File: PU238 DW.RAD

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	1.738E+02	1.805E-01
2	1.738E+02	1.897E-01
3	1.738E+02	1.874E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	5.498E-01
2	0.000E+00	5.406E-01
3	0.000E+00	5.305E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	2.206E-01
2	0.000E+00	2.169E-01
3	0.000E+00	2.129E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	8.318E+01	7.314E-02
2	8.318E+01	6.764E-02
3	8.318E+01	6.044E-02

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	8.318E+01	2.955E-02
2	8.318E+01	2.599E-02
3	1.202E+02	2.487E-02

:obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ıe
File: PU238E.RAD

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	8.318E+01	2.874E-03
2	5.754E+01	2.618E-03
3	5.754E+01	2.586E-03

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obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
e File: PU239.RAD

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.631E+02	2.757E+00
2	3.631E+02	2.702E+00
3	3.631E+02	2.690E+00

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	5.248E+02	1.791E+00
2	5.248E+02	1.758E+00
3	5.248E+02	1.833E+00

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.6?1E+02	1.529E+00
2	3.6 1E+02	1.480E+00
3	3.631E+02	1.489E+00

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.631E+02	7.024E-01
2	3.631E+02	6.113E-01
3	3.631E+02	6.416E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose years	Peak mean dose mrem/yr
1	3.631E+02	2.968E-01
2	3.631E+02	2.735E-01
3	3.631E+02	2.870E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.000E+02	1.176E-01
2	3.631E+02	1.152E-01
3	3.631E+02	1.173E-01

robabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ne
File: PU239E.RAD

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.000E+02	1.069E-02
2	3.000E+02	1.069E-02
3	3.000E+02	1.105E-02

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.631E+02	2.681E+00
2	3.631E+02	2.627E+00
3	3.631E+02	2.616E+00

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	5.248E+02	1.720E+00
2	5.248E+02	1.688E+00
3	5.248E+02	1.760E+00

robabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ne
File: PU240A.RAD

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.631E+02	1.486E+00
2	3.631E+02	1.439E+00
3	3.631E+02	1.447E+00

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.631E+02	6.830E-01
2	3.631E+02	5.944E-01
3	3.631E+02	6.238E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.000E+02	2.900E-01
2	3.631E+02	2.659E-01
3	3.631E+02	2.790E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.000E+02	1.149E-01
2	3.631E+02	1.120E-01
3	3.631E+02	1.141E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.000E+02	1.044E-02
2	3.000E+02	1.044E-02
3	2.512E+02	1.080E-02

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	2.754E+01	2.449E-02
2	3.500E+01	2.446E-02
3	3.500E+01	2.453E-02

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	7.586E+02	1.123E-03
2	7.586E+02	1.026E-03
3	1.000E+03	9.370E-04

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.500E+01	1.325E-02
2	3.981E+01	1.330E-02
3	3.981E+01	1.331E-02

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.981E+01	5.622E-03
2	3.981E+01	5.667E-03
3	3.981E+01	5.629E-03

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	5.754E+01	1.778E-03
2	3.981E+01	1.821E-03
3	5.754E+01	1.777E-03

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	5.754E+01	7.207E-04
2	3.981E+01	7.287E-04
3	5.754E+01	7.229E-04

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	5.754E+01	1.147E-04
2	5.754E+01	1.141E-04
3	5.754E+01	1.151E-04

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.631E+02	2.642E+00
2	3.631E+02	2.589E+00
3	3.631E+02	2.578E+00

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	5.248E+02	1.724E+00
2	5.248E+02	1.692E+00
3	5.248E+02	1.764E+00

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.631E+02	1.465E+00
2	3.631E+02	1.419E+00
3	3.631E+02	1.427E+00

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.631E+02	6.733E-01
2	3.631E+02	5.859E-01
3	3.631E+02	6.149E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.631E+02	2.845E-01
2	3.631E+02	2.622E-01
3	3.631E+02	2.750E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.000E+02	1.125E-01
2	3.631E+02	1.104E-01
3	3.6[illegible]1E+02	1.124E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	3.000E+02	1.023E-02
2	3.000E+02	1.023E-02
3	3.000E+02	1.058E-02

robabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ne File: SB125.RAD

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	7.451E-01
2	0.000E+00	7.409E-01
3	0.000E+00	7.469E-01

robabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ne
File: SB125 DW.RAD

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	9.120E+00	4.196E-07
2	9.120E+00	2.769E-07
3	6.310E+00	3.437E-07

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose years	Peak mean dose mrem/yr
1	0.000E+00	7.139E-01
2	0.000E+00	7.100E-01
3	0.000E+00	7.158E-01

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	6.797E-01
2	0.000E+00	6.761E-01
3	0.000E+00	6.816E-01

Peak of the mean dose (averaged over observations) at graphical times

petition	Time of peak mean dose years	Peak mean dose mrem/yr
1	0.000E+00	6.212E-01
2	0.000E+00	6.180E-01
3	0.000E+00	6.230E-01

Peak of the mean dose (averaged over observations) at graphical times

:petition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	4.879E-01
2	0.000E+00	4.853E-01
3	0.000E+00	4.893E-01

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	8.197E-02
2	0.000E+00	8.155E-02
3	0.000E+00	8.221E-02

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	0.000E+00	1.936E+01
2	0.000E+00	1.883E+01
3	0.000E+00	1.887E+01

:obabilistic results summary : SNEC Soil DCGLs (10000 m2) & 1 m Deep Contam. Z-
ıe
File: SR90 DW.RAD

Peak of the mean dose (averaged over observations) at graphical times

epetition	Time of peak mean dose Years	Peak mean dose mrem/yr
1	2.754E+01	5.875E-01
2	2.754E+01	6.045E-01
3	2.754E+01	6.070E-01