TABLE 1

Southwest Alluvium and Zone 1 Wells
Having Samples Representative of Background Water Quality

Southwest Alluvium	Zone 1
29 A	619
624 (Jul 89 - Oct 95)	EPA 2
627	EPA 4 (POC)
639	EPA 8
642	
644	
645	
EPA 22 A	
EPA 25 (Jul 89 - Oct 95)	
EPA 27	
EPA 28 (POC)	
SBL 1	

Notes:

POC = Point-of-Compliance Well.

The following wells were included only for the pre-July 1989 metals results:

GW 4 and 623 (SWA)

EPA 5 (Zone 1)

TABLE 2

Zone 3 Wells Having Samples Representative of Background Water Quality

Well	Sampled Time Period
411	Jul 89 - Jan 98
504 B	Jul 89 - Apr 92
517 (POC)	Jul 89 - Apr 91
EPA 01	Jul 89 - Oct 97
EPA 03	Jul 89 - Oct 91
EPA 11	Jul 89 - Apr 90
EPA 12	Jul 89 - Apr 92
EPA 14	Jul 89 - Apr 95
EPA 15	Jul 89 - Apr 95
EPA 17	Jul 89 - Apr 92
NBL-01	Aug 01 - Jan 04

Note: POC = Point-of-Compliance well.

TABLE 3
Summary Statistics for COPCs and Trace Metals in Southwest Alluvium Background Groundwater

Parameter	Units	Total Data	Percent Nondetect	Minimum Detected	Maximum Detected	Mean of Detected	Median of Detected	UCL95 of Mean
Al	mg/L	391	94.6%	0.1	0.6	0.182	0.14	0.107
As	mg/L	391	93.1%	0.001	0.01	0.00237	0.001	0.00116
Be	mg/L	389	100.0%	N/A	N/A	N/A	N/A	N/A
Cd	mg/L	391	96.9%	0.006	0.07	0.0255	0.01	0.0108
Co	mg/L	391	81.6%	0.01	0.06	0.0186	0.02	0.0121
Pb	mg/L	388	99.5%	0.05	0.07	0.06	0.06	0.0502
Mn	mg/L	389	11.8%	0.01	3.35	0.339	0.13	0.414
Mo	mg/L	391	99.5%	0.03	0.03	N/A	N/A	N/A
Ni	mg/L	391	96.4%	0.05	0.17	0.08	0.08	0.0613
Se	mg/L	390	50.5%	0.001	0.195	0.00708	0.003	0.00516
V	mg/L	391	100.0%	N/A	N/A	N/A	N/A	N/A
Cl	mg/L	391	0.0%	9.8	169	74.82	67.8	83.72
SO4	mg/L	391	0.0%	605	5830	2401	2420	2468
NO3_as_N	mg/L	391	1.3%	0.09	1225	99.54	74.1	137.4
U	mg/L	390	0.3%	0.001	0.367	0.0419	0.031	0.0459
Chloroform	ug/L	391	100.0%	N/A	N/A	N/A	N/A	N/A
Lab_TDS	mg/L	390	0.0%	1310	10530	4630	4795	4745
Rad-226	pCi/L	391	34.3%	0.2	9.4	0.979	0.6	0.798
Rad-228	pCi/L	391	67.8%	1	7	2.55	2.2	1.611
Rad_totl	pCi/L	391	25.3%	0.2	12	1.9	1.3	1.621
Th-230	pCi/L	391	91.8%	0.2	14.3	2.841	1.6	0.509
Pb-210	pCi/L	391	78.3%	1	14.2	2.845	2.2	1.513
Gross_Alpha	pCi/L	391	70.6%	0.4	17.8	3.35	2.1	1.693
Sb	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Ba	mg/L	26	100.0%	N/A	N/A	N/A	N/A	N/A
Cr	mg/L	37	97.3%	0.29	0.29	N/A	N/A	N/A
Cu	mg/L	13	84.6%	0.01	0.01	N/A	N/A	N/A
Fe	mg/L	19	79.0%	0.06	1.4	0.418	0.105	0.275
Hg	mg/L	8	100.0%	N/A	N/A	N/A	N/A	N/A
Ag	mg/L	21	100.0%	N/A	N/A	N/A	N/A	N/A
Tl	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Zn	mg/L	25	40.0%	0.02	0.429	0.0891	0.05	0.0949

TABLE 4
Summary Statistics for COPCs and Trace Metals in Zone 1 Background Groundwater

Parameter	Units	Total Data	Percent Nondetect	Minimum Detected	Maximum Detected	Mean of Detected	Median of Detected	UCL95 of Mean
Al	mg/L	234	86.8%	0.1	0.6	0.185	0.14	0.117
As	mg/L	234	83.8%	0.001	0.004	0.00174	0.002	0.00117
Be	mg/L	234	100.0%	N/A	N/A	N/A	N/A	N/A
Cd	mg/L	234	98.7%	0.005	0.01	0.00733	0.007	0.0051
Co	mg/L	234	89.7%	0.01	0.06	0.0171	0.01	0.0112
Pb	mg/L	234	99.6%	0.05	0.05	N/A	N/A	N/A
Mn	mg/L	234	0.4%	0.66	4.15	2.434	2.65	2.519
Mo	mg/L	234	97.9%	0.03	0.27	0.12	0.13	0.132
Ni	mg/L	230	98.7%	0.06	0.07	0.0667	0.07	0.0602
Se	mg/L	234	95.7%	0.001	0.004	0.0019	0.0015	0.00107
V	mg/L	234	100.0%	N/A	N/A	N/A	N/A	N/A
Cl	mg/L	234	0.0%	19.4	252	37.13	37.9	39.03
SO4	mg/L	234	0.0%	1410	3882	2703	2952	2773
NO3_as_N	mg/L	233	71.7%	0.01	51.8	1.767	0.16	1.754
U	mg/L	233	16.7%	0.0004	0.975	0.00862	0.0013	0.0255
Chloroform	ug/L	234	99.6%	0.91	0.91	N/A	N/A	N/A
Lab_TDS	mg/L	234	0.0%	2490	5610	4225	4569	4319
Rad-226	pCi/L	233	1.7%	0.2	5.4	1.269	1.2	1.314
Rad-228	pCi/L	234	29.9%	1	13.8	3.457	3.1	2.946
Rad_totl	pCi/L	234	0.9%	0.2	14.8	3.618	3.35	3.841
Th-230	pCi/L	234	91.9%	0.2	4.9	0.974	0.7	0.403
Pb-210	pCi/L	234	80.8%	1.1	9.1	2.58	2.1	1.579
Gross_Alpha	pCi/L	234	35.0%	0.9	14	2.757	2	2.361
Sb	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Ba	mg/L	14	78.6%	0.079	0.091	0.0847	0.084	0.091
Cr	mg/L	11	100.0%	N/A	N/A	N/A	N/A	N/A
Cu	mg/L	4	75.0%	0.026	0.026	N/A	N/A	N/A
Fe	mg/L	12	8.3%	0.25	14	6.386	6.2	8.701
Hg	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Ag	mg/L	11	100.0%	N/A	N/A	N/A	N/A	N/A
Tl	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Zn	mg/L	16	56.3%	0.01	5	0.784	0.046	3.583

TABLE 5
Summary Statistics for COPCs and Trace Metals in Zone 3 Background Groundwater

Parameter	Units	Total Data	Percent Nondetect	Minimum Detected	Maximum Detected	Mean of Detected	Median of Detected	UCL95 of Mean
Al	mg/L	186	68.28%	0.1	1.68	0.422	0.31	0.231
As	mg/L	186	26.88%	0.001	1.01	0.121	0.0235	0.175
Be	mg/L	186	100.00%	N/A	N/A	N/A	N/A	N/A
Cd	mg/L	186	95.16%	0.01	0.09	0.02	0.01	0.0113
Co	mg/L	186	9.14%	0.01	0.53	0.0835	0.06	0.0877
Pb	mg/L	185	97.84%	0.05	0.08	0.065	0.065	0.0701
Mn	mg/L	186	0.54%	0.42	7.5	3.25	3.3	3.436
Mo	mg/L	184	14.13%	0.02	75	11.88	3.76	17.43
Ni	mg/L	186	39.25%	0.05	0.67	0.173	0.12	0.14
Se	mg/L	186	77.42%	0.001	0.015	0.0026	0.001	0.00159
V	mg/L	186	100.00%	N/A	N/A	N/A	N/A	N/A
Cl	mg/L	186	0%	15	66	31.62	30.85	32.65
SO4	mg/L	186	0%	1319	4674	2588	2651	2674
NO3_as_N	mg/L	186	17.20%	0.01	61	11.34	4.785	15.61
U	mg/L	186	1.08%	0.0007	0.38	0.0791	0.039	0.107
Chloroform	ug/L	186	99.46%	1.1	1.1	N/A	N/A	N/A
Lab_TDS	mg/L	186	0%	2244	6930	4115	4237	4239
Rad-226	pCi/L	186	11.83%	0.2	23.7	5.01	4.5	4.996
Rad-228	pCi/L	185	29.19%	1	22.3	5.34	4.3	4.509
Rad_totl	pCi/L	185	9.73%	0.2	40.9	9.099	7.9	10.66
Th-230	pCi/L	186	89.78%	0.2	57	6.705	2.3	1.426
Pb-210	pCi/L	186	69.35%	1	11	2.549	2	1.618
Gross_Alpha	pCi/L	186	15.59%	1	69	8.191	5.4	8.217
Sb	mg/L	1	100.0%	N/A	N/A	N/A	N/A	N/A
Ba	mg/L	36	94.4%	0.54	0.54	N/A	N/A	N/A
Cr	mg/L	37	100.0%	N/A	N/A	N/A	N/A	N/A
Cu	mg/L	13	76.9%	0.028	0.06	0.042	0.038	0.06
Fe	mg/L	23	39.1%	0.03	67	9.682	1.45	12.16
Hg	mg/L	4	100.0%	N/A	N/A	N/A	N/A	N/A
Ag	mg/L	29	100.0%	N/A	N/A	N/A	N/A	N/A
Tl	mg/L	0	N/A	N/A	N/A	N/A	N/A	N/A
Zn	mg/L	31	19.4%	0.02	6.859	0.766	0.193	3.539

TABLE 6

Contaminant-Specific Groundwater Cleanup Levels and Other Comparison Values
United Nuclear Corporation, Church Rock Site
Church Rock, New Mexico

Source	Standards Used for 3rd 5-Year Review (September 2008, Table 3-1) and ROD (September 1988)				NRC Source Materials	Potential ARARs					Standard Compared to in 2010 Annual Review		Current Health-Based Criteria (+)		
Contaminant	New Mexico WQCC Standards	Health-based	Maximum Concentration Limit (MCL)	Background Level	License Compliance Standards	NRC Appendix List*	New Mexico WQCC Standards		EPA Drinking Water MCL	EPA Drinking Water Other**	EPA	NRC	Health-Based Criterion	Source	
Sulfate				2160			2125***				2125***				SO4
Total Dissolved Solids				3170			4800***				4800***				TDS
NO3 as N				30			190***		10		190***		10	MCL	NO3
Manganese				2.6			0.2	O			2.6		0.88	RSL	Mn
Chloride	250						250	O			250				Cl2
Aluminum	5						5	I			5		37	RSL	Al
Antimony		0.014							0.006				0.006	MCL	Sb
Arsenic			0.05		0.05	0.05	0.1	HH	0.01		0.05	0.05	0.01	MCL	As
Barium	1		1			1	1	HH	2				2	MCL	Ba
Beryllium		0.017			0.05				0.004		0.017	0.05	0.004	MCL	Be
Cadmium	0.01		0.01		0.01	0.01	0.01	HH	0.005		0.01	0.01	0.005	MCL	Cd
Chromium	0.05		0.05			0.05	0.05	HH	0.1				0.1	MCL	Cr
Cobalt	0.05						0.05	I			0.05		0.011	RSL	Co
Copper	1						1	O	1.3	MCLG & TT			1.3	MCL(++)	Cu
Iron				5.5			1	O					26	RSL	Fe
Lead	0.05		0.05		0.05	0.05	0.05	HH	0.015	MCLG & TT	0.05	0.05	0.015	MCL(++)	Pb
Mercury	0.002		0.002			0.002	0.002	HH	0.002				0.002	MCL	Hg
Molybdenum	1						1	I			1		0.18	RSL	Mo
Nickel	0.2				0.05		0.2	I			0.2	0.05	0.73	RSL	Ni
Selenium			0.01		0.01	0.01	0.05	HH	0.05		0.01	0.01	0.05	MCL	Se
Silver	0.05		0.05			0.05	0.05	HH					0.18	RSL	Ag
Thallium		0.014							0.002	MCLG = 0.0005			0.002	MCL	Tl
Vanadium		0.7			0.1						0.7	0.1	0.18	RSL	V
Zinc	10						10	O					11	RSL	Zn
TTHMs****					0.08		0.1	HH	0.08	MCLG = 0.07****		0.08	0.08	MCL	TTHMs
Uranium	5				0.3		0.03	HH	0.03		5	0.3	0.03	MCL	U
Radium 226 and 228			5 pCi/l		*****	5 pCi/l	30 pCi/l	HH	5 pCi/l		5 pCi/l	*****	5 pCi/l	MCL	comb Ra
Lead-210					1 pCi/l							1 pCi/l	0.0601 pCi/L	PRG	Pb-210
Thorium-230			15 pCi/l		5 pCi/L							5 pCi/l	0.581 pCi/l	PRG	Th-230
Gross Alpha			15 pCi/l		15 pCi/l	15 pCi/l			15 pCi/l		15 pCi/l	15 pCi/l	15 pCi/l	MCL	GA

Notes:
Units = mg/L unless otherwise noted
Yellow cells = constituents not analyzed since site active remediation started in 1989, per EPA FS (August 1988) and ROD (September 1988)
* 10 CFR Appendix A to Part 40
** "Other" includes non-zero Maximum Contaminant Level Goals (MCLG) or Treatment Technology Action Levels (TT)
*** New Mexico Environment Department recommended background values (letter to EPA of January 6, 1998); EPA has not formally adopted these revisions
**** TTHMs (total trihalomethanes) include chloroform; TTHMs MCL = 0.08 mg/L; in addition, chloroform has an MCLG = 0.07 mg/L
***** Combined radium NRC Site Groundwater Protection Standards are 5.0 pCi/L for Zone 3; 5.2 pCi/L for Southwest Alluvium (background); and 9.4 pCi/L for Zone 1 (background)
(+) Sources of health-based criteria include the November 2010 EPA Regional Screening Level (RSL) Summary Table (tapwater RSLs) and August 2010 EPA Preliminary Remediation Goals for Radionuclides (PRGs) (resident tapwater PRGs). For those contaminants with federal MCLs, the MCL is shown as the health-based screening level, per January 25, 2008 letter from EPA to UNC (General Comment 5).
(++) Lead and copper are regulated by a Treatment Technique that requires systems to control the corrosiveness of their water. If more than 10% of tap water samples exceed the action level, water systems must take additional steps. For copper, the action level is 1.3 mg/L, and for lead is 0.015 mg/L.
HH = Human Health Standard
I = Irrigation Standard
O = Other Standards for domestic water supply

green = "Comparison Values" column in N.A. Water Systems report (2008b): Calculation of Background Statistics with Comparison Values (also see Appendix B Tables 7, 8, and 9 in the present report)

TABLE 7A

Summary comparisons of Upper Prediction Limits (k=SWA POC samples X 4 qtrs = 28) for Parameter Concentrations in Southwest Alluvium Background Groundwater to Site Groundwater Protection Standards (GPS)

Parameter	Units	NRC GPS	Max RL[2]	UPL95 (k=28)	UPL95>GPS?	NRC TABLE 5C	EPA MCL	Percent < RL	Potential Background Level
As	mg/L	0.05	0.001	0.0033	**NO**	0.05	0.01	93%	**0.003**
Be	mg/L	0.05	0.1	N/A	N/A	N/A	0.004	100%	N/A
Cd	mg/L	0.01	0.01	0.0213	**YES**	0.01	0.005	97%	**0.02**
Pb	mg/L	0.05	0.05	0.0529	**YES**	0.05	0.015	99%	0.07[3]
Ni	mg/L	0.05	0.05	0.0725	**YES**	N/A	N/A	96%	**0.07**
Se	mg/L	0.01	0.001	0.0567	**YES**	0.01	0.05	51%	**0.057**
V	mg/L	0.1	0.1	N/A	N/A	N/A	N/A	100%	N/A
U	mg/L	0.3	0.0003	0.1726	**NO**	N/A	0.03	0%	**0.173**
Chloroform	mg/L	0.08	0.01	N/A	N/A	N/A	0.08	100%	N/A
Rad_totl	pCi/L	5.2	0.2	6.824	**YES**	5	5	25%	**6.8**
Th-230	pCi/L	5	0.2	3.684	**NO**	N/A	N/A	92%	**3.7**
Pb-210	pCi/L	1	1	5.017	**YES**	N/A	N/A	78%	**5.0**
Gross_Alpha[4]	pCi/L	15	1	8.094	**NO**	15	15	71%	**8.1**

Note:

1. See Table 6 for sources of Site Groundwater Protection Standards (GPS)
2. RL is an abbreviation of reporting limit
3. only two detections, maximum detected 0.07 proposed BTV
4. NRC Table 5C standard for gross alpha-particle activity excludes radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material. EPA MCL for gross alpha-particle activity excludes radon and uranium.

TABLE 7B

Summary comparisons of Upper Prediction Limits (k= SWA POC samples X 10 yrs = 70) for Parameter Concentrations in Southwest Alluvium Background Groundwater to Site Groundwater Protection Standards (GPS)

Parameter	Units	NRC GPS	Max RL[2]	UPL95 (k=70)	UPL95>GPS?	NRC TABLE 5C	EPA MCL	Percent < RL	Potential Background Level
As	mg/L	0.05	0.001	0.0035	**NO**	0.05	0.01	93%	**0.004**
Be	mg/L	0.05	0.1	N/A	N/A	N/A	0.004	100%	N/A
Cd	mg/L	0.01	0.01	0.0227	**YES**	0.01	0.005	97%	**0.02**
Pb	mg/L	0.05	0.05	0.0532	**YES**	0.05	0.015	99%	0.07[3]
Ni	mg/L	0.05	0.05	0.0746	**YES**	N/A	N/A	96%	**0.07**
Se	mg/L	0.01	0.001	0.0616	**YES**	0.01	0.05	51%	**0.062**
V	mg/L	0.1	0.1	N/A	N/A	N/A	N/A	100%	N/A
U	mg/L	0.3	0.0003	0.185	**NO**	N/A	0.03	0%	**0.185**
Chloroform	mg/L	0.08	0.01	N/A	N/A	N/A	0.08	100%	N/A
Rad_totl	pCi/L	5.2	0.2	7.334	**YES**	5	5	25%	**7.3**
Th-230	pCi/L	5	0.2	3.995	**NO**	N/A	N/A	92%	**4.0**
Pb-210	pCi/L	1	1	5.362	**YES**	N/A	N/A	78%	**5.4**
Gross_Alpha[4]	pCi/L	15	1	8.720	**NO**	15	15	71%	**8.7**

Note:

1. See Table 6 for sources of Site Groundwater Protection Standards (GPS)
2. RL is an abbreviation of reporting limit
3. only two detections, maximum detected 0.07 proposed BTV
4. NRC Table 5C standard for gross alpha-particle activity excludes radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material. EPA MCL for gross alpha-particle activity excludes radon and uranium.

TABLE 7C

Summary comparisons of Upper Prediction Limits (k= SWA POC samples X ((4 qtrs X 6 yrs) + 10 yrs) = 238) for Parameter Concentrations in Southwest Alluvium Background Groundwater to Site Groundwater Protection Standards (GPS)

Parameter	Units	NRC GPS	Max RL[2]	UPL95 (k=238)	UPL95>GPS?	NRC TABLE 5C	EPA MCL	Percent < RL	Potential Background Level
As	mg/L	0.05	0.001	0.0038	**NO**	0.05	0.01	93%	**0.004**
Be	mg/L	0.05	0.1	N/A	N/A	N/A	0.004	100%	N/A
Cd	mg/L	0.01	0.01	0.0245	**YES**	0.01	0.005	97%	**0.02**
Pb	mg/L	0.05	0.05	0.0535	**YES**	0.05	0.015	99%	0.07[3]
Ni	mg/L	0.05	0.05	0.0771	**YES**	N/A	N/A	96%	**0.08**
Se	mg/L	0.01	0.001	0.0677	**YES**	0.01	0.05	51%	**0.068**
V	mg/L	0.1	0.1	N/A	N/A	N/A	N/A	100%	N/A
U	mg/L	0.3	0.0003	0.1999	**NO**	N/A	0.03	0%	**0.200**
Chloroform	mg/L	0.08	0.01	N/A	N/A	N/A	0.08	100%	N/A
Rad_totl	pCi/L	5.2	0.2	7.963	**YES**	5	5	25%	**8.0**
Th-230	pCi/L	5	0.2	4.380	**NO**	N/A	N/A	92%	**4.4**
Pb-210	pCi/L	1	1	5.787	**YES**	N/A	N/A	78%	**5.8**
Gross_Alpha[4]	pCi/L	15	1	9.492	**NO**	15	15	71%	**9.5**

Note:

1. See Table 6 for sources of Site Groundwater Protection Standards (GPS)
2. RL is an abbreviation of reporting limit
3. only two detections, maximum detected 0.07 proposed BTV
4. NRC Table 5C standard for gross alpha-particle activity excludes radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material. EPA MCL for gross alpha-particle activity excludes radon and uranium.

TABLE 7D

Summary comparisons of Upper Prediction Limits (k=site POC samples X 4 qtrs = 64) for Parameter Concentrations in Southwest Alluvium Background Groundwater to Site Groundwater Protection Standards (GPS)

Parameter	Units	NRC GPS	Max RL[2]	UPL95 (k=64)	UPL95>GPS?	NRC TABLE 5C	EPA MCL	Percent < RL	Potential Background Level
As	mg/L	0.05	0.001	0.00348	**NO**	0.05	0.01	93%	**0.003**
Be	mg/L	0.05	0.1	N/A	N/A	N/A	0.004	100%	N/A
Cd	mg/L	0.01	0.01	0.0226	**YES**	0.01	0.005	97%	**0.02**
Pb	mg/L	0.05	0.05	0.0531	**YES**	0.05	0.015	99%	0.07[3]
Ni	mg/L	0.05	0.05	0.0744	**YES**	N/A	N/A	96%	**0.07**
Se	mg/L	0.01	0.001	0.0612	**YES**	0.01	0.05	51%	**0.061**
V	mg/L	0.1	0.1	N/A	N/A	N/A	N/A	100%	N/A
U	mg/L	0.3	0.0003	0.184	**NO**	N/A	0.03	0%	**0.184**
Chloroform	mg/L	0.08	0.01	N/A	N/A	N/A	0.08	100%	N/A
Rad_totl	pCi/L	5.2	0.2	7.286	**YES**	5	5	25%	**7.3**
Th-230	pCi/L	5	0.2	3.966	**NO**	N/A	N/A	92%	**4.0**
Pb-210	pCi/L	1	1	5.329	**YES**	N/A	N/A	78%	**5.3**
Gross_Alpha[4]	pCi/L	15	1	8.661	**NO**	15	15	71%	**8.7**

Note:

1. See Table 6 for sources of Site Groundwater Protection Standards (GPS)
2. RL is an abbreviation of reporting limit
3. only two detections, maximum detected 0.07 proposed BTV
4. NRC Table 5C standard for gross alpha-particle activity excludes radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material. EPA MCL for gross alpha-particle activity excludes radon and uranium.

TABLE 7E
Summary comparisons of Upper Prediction Limits (k= site POC samples X 10 yrs = 160) for Parameter Concentrations in Southwest Alluvium Background Groundwater to Site Groundwater Protection Standards (GPS)

Parameter	Units	NRC GPS	Max RL[2]	UPL95 (k=160)	UPL95>GPS?	NRC TABLE 5C	EPA MCL	Percent < RL	Potential Background Level
As	mg/L	0.05	0.001	0.0037	**NO**	0.05	0.01	93%	**0.004**
Be	mg/L	0.05	0.1	N/A	N/A	N/A	0.004	100%	N/A
Cd	mg/L	0.01	0.01	0.0239	**YES**	0.01	0.005	97%	**0.02**
Pb	mg/L	0.05	0.05	0.0534	**YES**	0.05	0.015	99%	0.07[3]
Ni	mg/L	0.05	0.05	0.0763	**YES**	N/A	N/A	96%	**0.08**
Se	mg/L	0.01	0.001	0.0658	**YES**	0.01	0.05	51%	**0.066**
V	mg/L	0.1	0.1	N/A	N/A	N/A	N/A	100%	N/A
U	mg/L	0.3	0.0003	0.195	**NO**	N/A	0.03	0%	**0.195**
Chloroform	mg/L	0.08	0.01	N/A	N/A	N/A	0.08	100%	N/A
Rad_totl	pCi/L	5.2	0.2	7.765	**YES**	5	5	25%	**7.8**
Th-230	pCi/L	5	0.2	4.259	**NO**	N/A	N/A	92%	**4.3**
Pb-210	pCi/L	1	1	5.653	**YES**	N/A	N/A	78%	**5.7**
Gross_Alpha[4]	pCi/L	15	1	9.248	**NO**	15	15	71%	**9.2**

Note:

1. See Table 6 for sources of Site Groundwater Protection Standards (GPS)
2. RL is an abbreviation of reporting limit
3. only two detections, maximum detected 0.07 proposed BTV
4. NRC Table 5C standard for gross alpha-particle activity excludes radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material. EPA MCL for gross alpha-particle activity excludes radon and uranium.

TABLE 7F

Summary comparisons of Upper Prediction Limits (k= site POC samples X ((4 qtrs X 6 yrs) + 10 yrs) = 544) for Parameter Concentrations in Southwest Alluvium Background Groundwater to Site Groundwater Protection Standards (GPS)

Parameter	Units	NRC GPS	Max RL[2]	UPL95 (k=544)	UPL95>GPS?	NRC TABLE 5C	EPA MCL	Percent < RL	Potential Background Level
As	mg/L	0.05	0.001	0.004	**NO**	0.05	0.01	93%	**0.004**
Be	mg/L	0.05	0.1	N/A	N/A	N/A	0.004	100%	N/A
Cd	mg/L	0.01	0.01	0.026	**YES**	0.01	0.005	97%	**0.03**
Pb	mg/L	0.05	0.05		**YES**	0.05	0.015	99%	0.07[3]
Ni	mg/L	0.05	0.05	0.079	**YES**	N/A	N/A	96%	**0.08**
Se	mg/L	0.01	0.001	0.072	**YES**	0.01	0.05	51%	**0.072**
V	mg/L	0.1	0.1	N/A	N/A	N/A	N/A	100%	N/A
U	mg/L	0.3	0.0003	0.209	**NO**	N/A	0.03	0%	**0.209**
Chloroform	mg/L	0.08	0.01	N/A	N/A	N/A	0.08	100%	N/A
Rad_totl	pCi/L	5.2	0.2	8.361	**YES**	5	5	25%	**8.4**
Th-230	pCi/L	5	0.2	4.623	**NO**	N/A	N/A	92%	**4.6**
Pb-210	pCi/L	1	1	6.056	**YES**	N/A	N/A	78%	**6.1**
Gross_Alpha[4]	pCi/L	15	1	9.980	**NO**	15	15	71%	**10.0**

Note:

1. See Table 6 for sources of Site Groundwater Protection Standards (GPS)
2. RL is an abbreviation of reporting limit
3. only two detections, maximum detected 0.07 proposed BTV
4. NRC Table 5C standard for gross alpha-particle activity excludes radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material. EPA MCL for gross alpha-particle activity excludes radon and uranium.

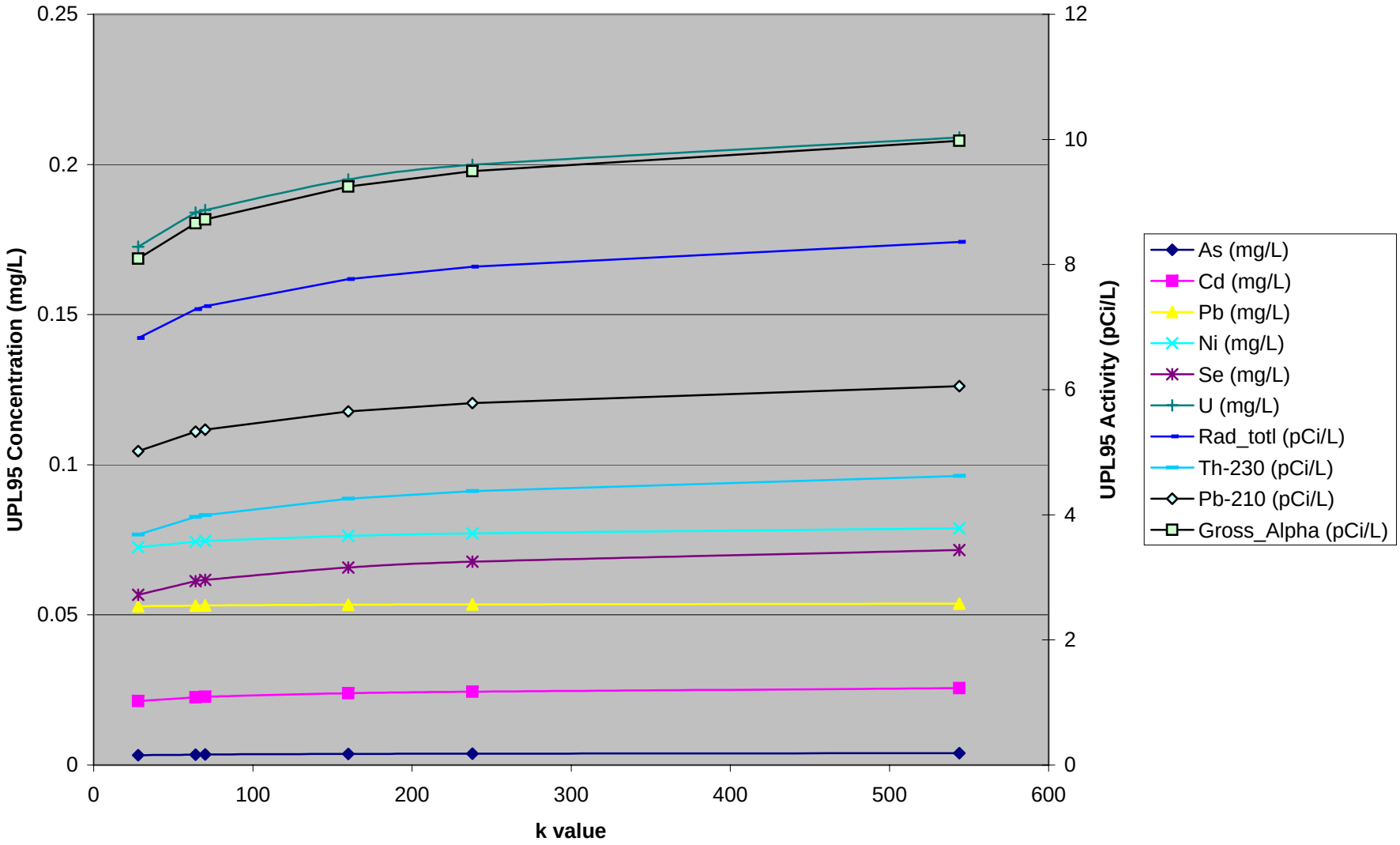

UPL95 vs k for SWA Analytes in Background Groundwater
UPL95 Concentration (mg/L)
UPL95 Activity (pCi/L)
k value
0.25
0.2
0.15
0.1
0.05
0
12
10
8
6
4
2
0
0
100
200
300
400
500
600
As (mg/L)
Cd (mg/L)
Pb (mg/L)
Ni (mg/L)
Se (mg/L)
U (mg/L)
Rad_totl (pCi/L)
Th-230 (pCi/L)
Pb-210 (pCi/L)
Gross_Alpha (pCi/L)

TABLE 8A

Summary comparisons of Upper Prediction Limits (k=Zone 1 POC samples X 4 qtrs = 20) for Parameter Concentrations in Zone 1 Background Groundwater to Site Groundwater Protection Standards (GPS)

Parameter	Units	NRC GPS	Max RL[2]	UPL95 (k=20)	UPL95>GPS?	NRC TABLE 5C	EPA MCL	Percent < RL	Potential Background Level
As	mg/L	0.05	0.001	0.00227	**NO**	0.05	0.01	84%	0.004[3]
Be	mg/L	0.05	0.05	N/A	N/A	N/A	0.004	100%	N/A
Cd	mg/L	0.01	0.01	0.00613	**NO**	0.01	0.005	99%	0.01[4]
Pb	mg/L	0.05	0.05	N/A	N/A	0.05	0.015	100%	0.05[5]
Ni	mg/L	0.05	0.05	0.0627	**YES**	N/A	N/A	99%	0.07[6]
Se	mg/L	0.01	0.001	0.00184	**NO**	0.01	0.05	96%	0.004[7]
V	mg/L	0.1	0.1	N/A	N/A	N/A	N/A	100%	N/A
U	mg/L	0.3	0.0004	0.189	**NO**	N/A	0.03	17%	**0.189**
Chloroform	mg/L	0.08	1	N/A	N/A	N/A	0.08	100%	N/A
Rad_totl	pCi/L	9.4	0.2	10.23	**YES**	5	5	1%	**10.2**
Th-230	pCi/L	5	0.2	1.326	**NO**	N/A	N/A	92%	**1.3**
Pb-210	pCi/L	1	1	3.953	**YES**	N/A	N/A	81%	**4.0**
Gross_Alpha[8]	pCi/L	15	1	7.501	**NO**	15	15	35%	**7.5**

Note:

1. See Table 6 for sources of Site Groundwater Protection Standards (GPS)
2. RL is an abbreviation of reporting limit
3. only 4 distinct detections. Maximum detection 0.004 proposed BTV
4. only 3 distinct detections. Maximum detection 0.01 proposed BTV
5. only 1 detection. Maximum detection 0.05 proposed BTV
6. only 2 distinct detections. Maximum detection 0.07 proposed BTV
7. only 4 distinct detections. Maximum detection 0.004 proposed BTV
8. NRC Table 5C standard for gross alpha-particle activity excludes radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material. EPA MCL for gross alpha-particle activity excludes radon and uranium.

TABLE 8B

Summary comparisons of Upper Prediction Limits (k= Zone 1 POC samples X 10 yrs = 50) for Parameter Concentrations in Zone 1 Background Groundwater to Site Groundwater Protection Standards (GPS)

Parameter	Units	NRC GPS	Max RL[2]	UPL95 (k=50)	UPL95>GPS?	NRC TABLE 5C	EPA MCL	Percent < RL	Potential Background Level
As	mg/L	0.05	0.001	0.0024	**NO**	0.05	0.01	84%	0.004[3]
Be	mg/L	0.05	0.05	N/A	N/A	N/A	0.004	100%	N/A
Cd	mg/L	0.01	0.01	0.0062	**NO**	0.01	0.005	99%	0.01[4]
Pb	mg/L	0.05	0.05	N/A	N/A	0.05	0.015	99.6%	0.05[5]
Ni	mg/L	0.05	0.05	0.0630	**YES**	N/A	N/A	99%	0.07[6]
Se	mg/L	0.01	0.001	0.0019	**NO**	0.01	0.05	96%	0.004[7]
V	mg/L	0.1	0.1	N/A	N/A	N/A	N/A	100%	N/A
U	mg/L	0.3	0.0004	0.207	**NO**	N/A	0.03	17%	**0.207**
Chloroform	mg/L	0.08	1	N/A	N/A	N/A	0.08	100%	N/A
Rad_totl	pCi/L	9.4	0.2	10.913	**YES**	5	5	1%	**10.9**
Th-230	pCi/L	5	0.2	1.436	**NO**	N/A	N/A	92%	**1.4**
Pb-210	pCi/L	1	1	4.217	**YES**	N/A	N/A	81%	**4.2**
Gross_Alpha[8]	pCi/L	15	1	8.056	**NO**	15	15	35%	**8.1**

Note:

1. See Table 6 for sources of Site Groundwater Protection Standards (GPS)
2. RL is an abbreviation of reporting limit
3. only 4 distinct detections. Maximum detection 0.004 proposed BTV
4. only 3 distinct detections. Maximum detection 0.01 proposed BTV
5. only 1 detection. Maximum detection 0.05 proposed BTV
6. only 2 distinct detections. Maximum detection 0.07 proposed BTV
7. only 4 distinct detections. Maximum detection 0.004 proposed BTV
8. NRC Table 5C standard for gross alpha-particle activity excludes radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material. EPA MCL for gross alpha-particle activity excludes radon and uranium.

TABLE 8C

Summary comparisons of Upper Prediction Limits (k= Zone 1 POC samples X ((4 qtrs X 6 yrs) + 10 yrs) =170) for Parameter Concentrations in Zone 1 Background Groundwater to Site Groundwater Protection Standards (GPS)

Parameter	Units	NRC GPS	Max RL[2]	UPL95 (k=170)	UPL95>GPS?	NRC TABLE 5C	EPA MCL	Percent < RL	Potential Background Level
As	mg/L	0.05	0.001	0.00254	**NO**	0.05	0.01	84%	0.004[3]
Be	mg/L	0.05	0.05	N/A	N/A	N/A	0.004	100%	N/A
Cd	mg/L	0.01	0.01	0.00637	**NO**	0.01	0.005	99%	0.01[4]
Pb	mg/L	0.05	0.05	N/A	N/A	0.05	0.015	100%	0.05[5]
Ni	mg/L	0.05	0.05	0.0633	**YES**	N/A	N/A	99%	0.07[6]
Se	mg/L	0.01	0.001	0.00202	**NO**	0.01	0.05	96%	0.004[7]
V	mg/L	0.1	0.1	N/A	N/A	N/A	N/A	100%	N/A
U	mg/L	0.3	0.0004	0.23	**NO**	N/A	0.03	17%	**0.230**
Chloroform	mg/L	0.08	1	N/A	N/A	N/A	0.08	100%	N/A
Rad_totl	pCi/L	9.4	0.2	11.75	**YES**	5	5	1%	**11.8**
Th-230	pCi/L	5	0.2	1.57	**NO**	N/A	N/A	92%	**1.6**
Pb-210	pCi/L	1	1	4.543	**YES**	N/A	N/A	81%	**4.5**
Gross_Alpha[8]	pCi/L	15	1	8.74	**NO**	15	15	35%	**8.7**

Note:

1. See Table 6 for sources of Site Groundwater Protection Standards (GPS)
2. RL is an abbreviation of reporting limit
3. only 4 distinct detections. Maximum detection 0.004 proposed BTV
4. only 3 distinct detections. Maximum detection 0.01 proposed BTV
5. only 1 detection. Maximum detection 0.05 proposed BTV
6. only 2 distinct detections. Maximum detection 0.07 proposed BTV
7. only 4 distinct detections. Maximum detection 0.004 proposed BTV
8. NRC Table 5C standard for gross alpha-particle activity excludes radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material. EPA MCL for gross alpha-particle activity excludes radon and uranium.

TABLE 8D
Summary comparisons of Upper Prediction Limits (k=site POC samples X 4 qtrs = 64) for Parameter Concentrations in Zone 1 Background Groundwater to Site Groundwater Protection Standards (GPS)

Parameter	Units	NRC GPS	Max RL[2]	UPL95 (k=64)	UPL95>GPS?	NRC TABLE 5C	EPA MCL	Percent < RL	Potential Background Level
As	mg/L	0.05	0.001	0.00242	**NO**	0.05	0.01	84%	0.004[3]
Be	mg/L	0.05	0.05	N/A	N/A	N/A	0.004	100%	N/A
Cd	mg/L	0.01	0.01	0.00627	**NO**	0.01	0.005	99%	0.01[4]
Pb	mg/L	0.05	0.05	N/A	N/A	0.05	0.015	100%	0.05[5]
Ni	mg/L	0.05	0.05	0.0631	**YES**	N/A	N/A	99%	0.07[6]
Se	mg/L	0.01	0.001	0.00194	**NO**	0.01	0.05	96%	0.004[7]
V	mg/L	0.1	0.1	N/A	N/A	N/A	N/A	100%	N/A
U	mg/L	0.3	0.0004	0.212	**NO**	N/A	0.03	17%	**0.212**
Chloroform	mg/L	0.08	1	N/A	N/A	N/A	0.08	100%	N/A
Rad_totl	pCi/L	9.4	0.2	11.09	**YES**	5	5	1%	**11.1**
Th-230	pCi/L	5	0.2	1.464	**NO**	N/A	N/A	92%	**1.5**
Pb-210	pCi/L	1	1	4.285	**YES**	N/A	N/A	81%	**4.3**
Gross_Alpha[8]	pCi/L	15	1	8.198	**NO**	15	15	35%	**8.2**

Note:

1. See Table 6 for sources of Site Groundwater Protection Standards (GPS)
2. RL is an abbreviation of reporting limit
3. only 4 distinct detections. Maximum detection 0.004 proposed BTV
4. only 3 distinct detections. Maximum detection 0.01 proposed BTV
5. only 1 detection. Maximum detection 0.05 proposed BTV
6. only 2 distinct detections. Maximum detection 0.07 proposed BTV
7. only 4 distinct detections. Maximum detection 0.004 proposed BTV
8. NRC Table 5C standard for gross alpha-particle activity excludes radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material. EPA MCL for gross alpha-particle activity excludes radon and uranium.

TABLE 8E

Summary comparisons of Upper Prediction Limits (k= site POC samples X 10 yrs = 160) for Parameter Concentrations in Zone 1 Background Groundwater to Site Groundwater Protection Standards (GPS)

Parameter	Units	NRC GPS	Max RL[2]	UPL95 (k=160)	UPL95>GPS?	NRC TABLE 5C	EPA MCL	Percent < RL	Potential Background Level
As	mg/L	0.05	0.001	0.0025	**NO**	0.05	0.01	84%	0.004[3]
Be	mg/L	0.05	0.05	N/A	N/A	N/A	0.004	100%	N/A
Cd	mg/L	0.01	0.01	0.0064	**NO**	0.01	0.005	99%	0.01[4]
Pb	mg/L	0.05	0.05	N/A	N/A	0.05	0.015	99.6%	0.05[5]
Ni	mg/L	0.05	0.05	0.0633	**YES**	N/A	N/A	99%	0.07[6]
Se	mg/L	0.01	0.001	0.0020	**NO**	0.01	0.05	96%	0.004[7]
V	mg/L	0.1	0.1	N/A	N/A	N/A	N/A	100%	N/A
U	mg/L	0.3	0.0004	0.229	**NO**	N/A	0.03	17%	**0.229**
Chloroform	mg/L	0.08	1	N/A	N/A	N/A	0.08	100%	N/A
Rad_totl	pCi/L	9.4	0.2	11.710	**YES**	5	5	1%	**11.7**
Th-230	pCi/L	5	0.2	1.564	**NO**	N/A	N/A	92%	**1.6**
Pb-210	pCi/L	1	1	4.527	**YES**	N/A	N/A	81%	**4.5**
Gross_Alpha[8]	pCi/L	15	1	8.707	**NO**	15	15	35%	**8.7**

Note:

1. See Table 6 for sources of Site Groundwater Protection Standards (GPS)
2. RL is an abbreviation of reporting limit
3. only 4 distinct detections. Maximum detection 0.004 proposed BTV
4. only 3 distinct detections. Maximum detection 0.01 proposed BTV
5. only 1 detection. Maximum detection 0.05 proposed BTV
6. only 2 distinct detections. Maximum detection 0.07 proposed BTV
7. only 4 distinct detections. Maximum detection 0.004 proposed BTV
8. NRC Table 5C standard for gross alpha-particle activity excludes radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material. EPA MCL for gross alpha-particle activity excludes radon and uranium.

TABLE 8F

Summary comparisons of Upper Prediction Limits (k= site POC samples X ((4 qtrs X 6 yrs) + 10 yrs) =544) for Parameter Concentrations in Zone 1 Background Groundwater to Site Groundwater Protection Standards (GPS)

Parameter	Units	NRC GPS	Max RL[2]	UPL95 (k=544)	UPL95>GPS?	NRC TABLE 5C	EPA MCL	Percent < RL	Potential Background Level
As	mg/L	0.05	0.001	0.00267	**NO**	0.05	0.01	84%	0.004[3]
Be	mg/L	0.05	0.05	N/A	N/A	N/A	0.004	100%	N/A
Cd	mg/L	0.01	0.01	0.0065	**NO**	0.01	0.005	99%	0.01[4]
Pb	mg/L	0.05	0.05	N/A	N/A	0.05	0.015	99.6%	0.05[5]
Ni	mg/L	0.05	0.05	0.0636	**YES**	N/A	N/A	99%	0.07[6]
Se	mg/L	0.01	0.001	0.00211	**NO**	0.01	0.05	96%	0.004[7]
V	mg/L	0.1	0.1	N/A	N/A	N/A	N/A	100%	N/A
U	mg/L	0.3	0.0004	0.25	**NO**	N/A	0.03	17%	**0.250**
Chloroform	mg/L	0.08	1	N/A	N/A	N/A	0.08	100%	N/A
Rad_totl	pCi/L	9.4	0.2	12.5	**YES**	5	5	1%	**12.5**
Th-230	pCi/L	5	0.2	1.689	**NO**	N/A	N/A	92%	**1.7**
Pb-210	pCi/L	1	1	4.83	**YES**	N/A	N/A	81%	**4.8**
Gross_Alpha[8]	pCi/L	15	1	9.342	**NO**	15	15	35%	**9.3**

Note:

1. See Table 6 for sources of Site Groundwater Protection Standards (GPS)
2. RL is an abbreviation of reporting limit
3. only 4 distinct detections. Maximum detection 0.004 proposed BTV
4. only 3 distinct detections. Maximum detection 0.01 proposed BTV
5. only 1 detection. Maximum detection 0.05 proposed BTV
6. only 2 distinct detections. Maximum detection 0.07 proposed BTV
7. only 4 distinct detections. Maximum detection 0.004 proposed BTV
8. NRC Table 5C standard for gross alpha-particle activity excludes radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material. EPA MCL for gross alpha-particle activity excludes radon and uranium.

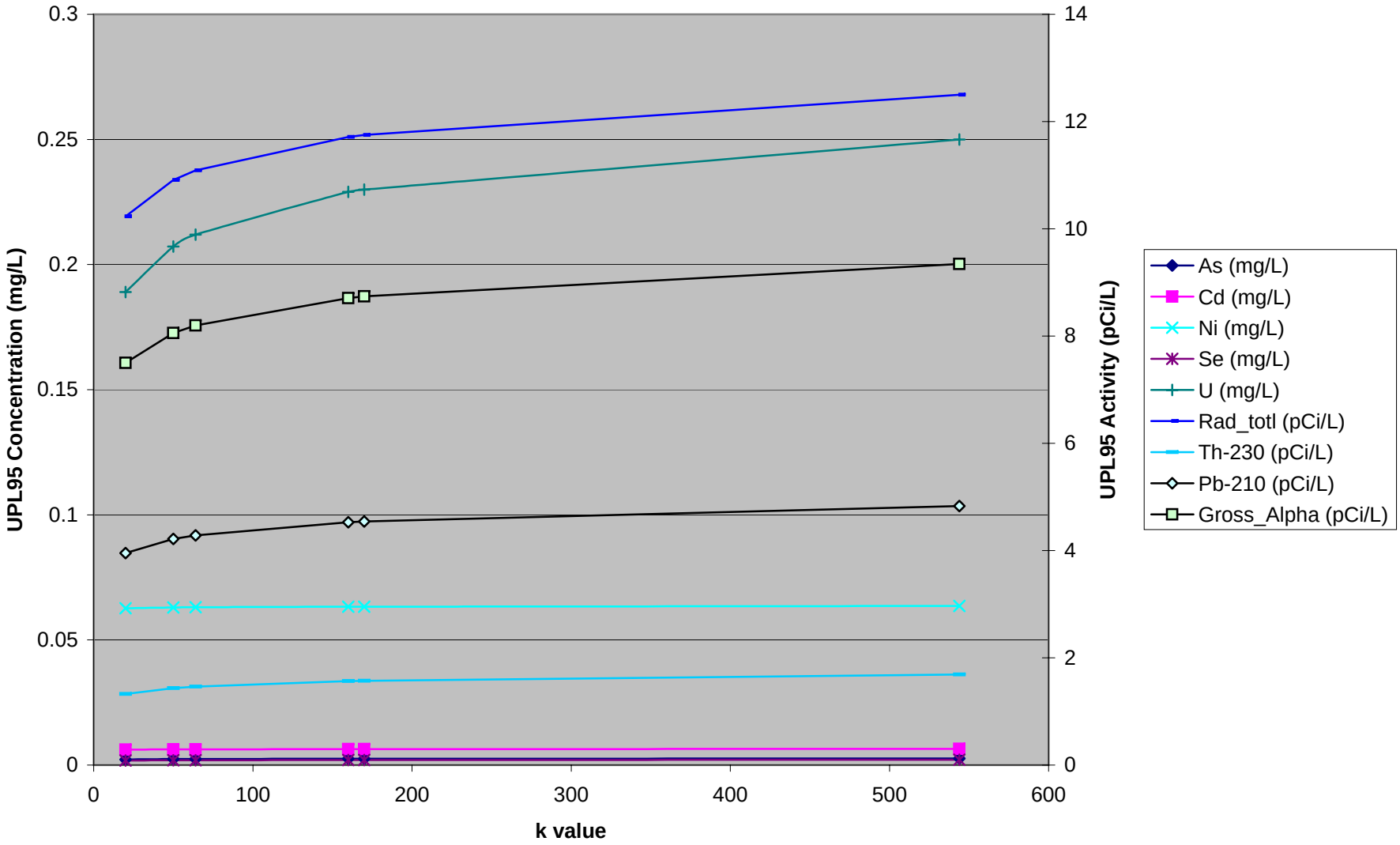

UPL95 vs k for Zone 1 Analytes in Background Groundwater
UPL95 Concentration (mg/L)
UPL95 Activity (pCi/L)
k value
0.3
0.25
0.2
0.15
0.1
0.05
0
14
12
10
8
6
4
2
0
0
100
200
300
400
500
600
As (mg/L)
Cd (mg/L)
Ni (mg/L)
Se (mg/L)
U (mg/L)
Rad_totl (pCi/L)
Th-230 (pCi/L)
Pb-210 (pCi/L)
Gross_Alpha (pCi/L)

TABLE 9A

Summary comparisons of Upper Prediction Limits (k=Zone 3 POC samples X 4 qtrs =16) for Parameter Concentrations in Zone 3 Background Groundwater to Site Groundwater Protection Standards (GPS)

Parameter	Units	NRC GPS	Max RL[2]	UPL95 (k=16)	UPL95>GPS?	NRC TABLE 5C	EPA MCL	Percent < RL	Potential Background Level
As	mg/L	0.05	0.001	0.607	**YES**	0.05	0.01	27%	**0.607**
Be	mg/L	0.05	0.05	N/A	N/A	N/A	0.004	100%	N/A
Cd	mg/L	0.01	0.01	0.0268	**YES**	0.01	0.005	95%	0.09[3]
Pb	mg/L	0.05	0.05	0.0579	**YES**	0.05	0.015	98%	0.08[4]
Ni	mg/L	0.05	0.05	0.47	**YES**	N/A	N/A	39%	**0.47**
Se	mg/L	0.01	0.001	0.00608	**NO**	0.01	0.05	77%	**0.006**
V	mg/L	0.1	0.1	N/A	N/A	N/A	N/A	100%	N/A
U	mg/L	0.3	0.0003	0.324	**YES**	N/A	0.03	1%	**0.324**
Chloroform	mg/L	0.08	1	N/A	N/A	N/A	0.08	99%	N/A
Rad_totl	pCi/L	5	0.2	29.14	**YES**	5	5	10%	**29.1**
Th-230	pCi/L	5	0.2	13.38	**YES**	N/A	N/A	90%	**13.4**
Pb-210	pCi/L	1	1	5.064	**YES**	N/A	N/A	69%	**5.1**
Gross_Alpha[5]	pCi/L	15	1	32.41	**YES**	15	15	16%	**32.4**

Note:

1. See Table 6 for sources of Site Groundwater Protection Standards Standards (GPS)
2. RL is an abbreviation of reporting limit
3. only 3 distinct detections. Maximum detected 0.09 proposed BTV
4. only 4 distinct detections. Maximum detected 0.08 proposed BTV
5. NRC Table 5C standard for gross alpha-particle activity excludes radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material. EPA MCL for gross alpha-particle activity excludes radon and uranium.

TABLE 9B
Summary comparisons of Upper Prediction Limits (k= Zone 3 POC samples X 10 yrs =40) for Parameter Concentrations in Zone 3 Background Groundwater to Site Groundwater Protection Standards (GPS)

Parameter	Units	NRC GPS	Max RL[2]	UPL95 (k=40)	UPL95>GPS?	NRC TABLE 5C	EPA MCL	Percent < RL	Potential Background Level
As	mg/L	0.05	0.001	0.6635	**YES**	0.05	0.01	27%	**0.664**
Be	mg/L	0.05	0.05	N/A	N/A	N/A	0.004	100%	N/A
Cd	mg/L	0.01	0.01	0.0286	**YES**	0.01	0.005	95%	0.09[3]
Pb	mg/L	0.05	0.05	0.0587	**YES**	0.05	0.015	98%	0.08[4]
Ni	mg/L	0.05	0.05	0.5070	**YES**	N/A	N/A	39%	**0.51**
Se	mg/L	0.01	0.001	0.0066	**NO**	0.01	0.05	77%	**0.007**
V	mg/L	0.1	0.1	N/A	N/A	N/A	N/A	100%	N/A
U	mg/L	0.3	0.0003	0.3507	**YES**	N/A	0.03	1%	**0.35**
Chloroform	mg/L	0.08	1	N/A	N/A	N/A	0.08	99%	N/A
Rad_totl	pCi/L	5	0.2	31.40	**YES**	5	5	10%	**31.4**
Th-230	pCi/L	5	0.2	14.73	**YES**	N/A	N/A	90%	**14.7**
Pb-210	pCi/L	1	1	5.085	**YES**	N/A	N/A	69%	**5.1**
Gross_Alpha[5]	pCi/L	15	1	35.15	**YES**	15	15	16%	**35.1**

Note:

1. See Table 6 for sources of Site Groundwater Protection Standards Standards (GPS)
2. RL is an abbreviation of reporting limit
3. only 3 distinct detections. Maximum detected 0.09 proposed BTV
4. only 4 distinct detections. Maximum detected 0.08 proposed BTV
5. NRC Table 5C standard for gross alpha-particle activity excludes radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material. EPA MCL for gross alpha-particle activity excludes radon and uranium.

TABLE 9C

Summary comparisons of Upper Prediction Limits (k= Zone 3 POC samples X ((4 qtrs X 6 yrs) + 10 yrs) =136) for Parameter Concentrations in Zone 3 Background Groundwater to Site Groundwater Protection Standards (GPS)

Parameter	Units	NRC GPS	Max RL[2]	UPL95 (k=136)	UPL95>GPS?	NRC TABLE 5C	EPA MCL	Percent < RL	Potential Background Level
As	mg/L	0.05	0.001	0.733	**YES**	0.05	0.01	27%	**0.733**
Be	mg/L	0.05	0.05	N/A	N/A	N/A	0.004	100%	N/A
Cd	mg/L	0.01	0.01	0.0308	**YES**	0.01	0.005	95%	0.09[3]
Pb	mg/L	0.05	0.05	0.0597	**YES**	0.05	0.015	98%	0.08[4]
Ni	mg/L	0.05	0.05	0.553	**YES**	N/A	N/A	39%	**0.55**
Se	mg/L	0.01	0.001	0.00608	**NO**	0.01	0.05	77%	**0.006**
V	mg/L	0.1	0.1	N/A	N/A	N/A	N/A	100%	N/A
U	mg/L	0.3	0.0003	0.383	**YES**	N/A	0.03	1%	**0.383**
Chloroform	mg/L	0.08	1	N/A	N/A	N/A	0.08	99%	N/A
Rad_totl	pCi/L	5	0.2	34.19	**YES**	5	5	10%	**34.2**
Th-230	pCi/L	5	0.2	16.4	**YES**	N/A	N/A	90%	**16.4**
Pb-210	pCi/L	1	1	5.519	**YES**	N/A	N/A	69%	**5.5**
Gross_Alpha[5]	pCi/L	15	1	38.52	**YES**	15	15	16%	**38.5**

Note:

1. See Table 6 for sources of Site Groundwater Protection Standards Standards (GPS)
2. RL is an abbreviation of reporting limit
3. only 3 distinct detections. Maximum detected 0.09 proposed BTV
4. only 4 distinct detections. Maximum detected 0.08 proposed BTV
5. NRC Table 5C standard for gross alpha-particle activity excludes radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material. EPA MCL for gross alpha-particle activity excludes radon and uranium.

TABLE 9D

Summary comparisons of Upper Prediction Limits (k=site POC samples X 4 qtrs =64) for Parameter Concentrations in Zone 3 Background Groundwater to Site Groundwater Protection Standards (GPS)

Parameter	Units	NRC GPS	Max RL[2]	UPL95 (k=64)	UPL95>GPS?	NRC TABLE 5C	EPA MCL	Percent < RL	Potential Background Level
As	mg/L	0.05	0.001	0.691	**YES**	0.05	0.01	27%	**0.691**
Be	mg/L	0.05	0.05	N/A	N/A	N/A	0.004	100%	N/A
Cd	mg/L	0.01	0.01	0.0294	**YES**	0.01	0.005	95%	0.09[3]
Pb	mg/L	0.05	0.05	0.0591	**YES**	0.05	0.015	98%	0.08[4]
Ni	mg/L	0.05	0.05	0.525	**YES**	N/A	N/A	39%	**0.53**
Se	mg/L	0.01	0.001	0.00684	**NO**	0.01	0.05	77%	**0.007**
V	mg/L	0.1	0.1	N/A	N/A	N/A	N/A	100%	N/A
U	mg/L	0.3	0.0003	0.364	**YES**	N/A	0.03	1%	**0.364**
Chloroform	mg/L	0.08	1	N/A	N/A	N/A	0.08	99%	N/A
Rad_totl	pCi/L	5	0.2	32.5	**YES**	5	5	10%	**32.5**
Th-230	pCi/L	5	0.2	15.39	**YES**	N/A	N/A	90%	**15.4**
Pb-210	pCi/L	1	1	5.256	**YES**	N/A	N/A	69%	**5.3**
Gross_Alpha[5]	pCi/L	15	1	36.48	**YES**	15	15	16%	**36.5**

Note:

1. See Table 6 for sources of Site Groundwater Protection Standards Standards (GPS)
2. RL is an abbreviation of reporting limit
3. only 3 distinct detections. Maximum detected 0.09 proposed BTV
4. only 4 distinct detections. Maximum detected 0.08 proposed BTV
5. NRC Table 5C standard for gross alpha-particle activity excludes radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material. EPA MCL for gross alpha-particle activity excludes radon and uranium.

TABLE 9E
Summary comparisons of Upper Prediction Limits (k= site POC samples X 10 yrs =160) for Parameter Concentrations in Zone 3 Background Groundwater to Site Groundwater Protection Standards (GPS)

Parameter	Units	NRC GPS	Max RL[2]	UPL95 (k=160)	UPL95>GPS?	NRC TABLE 5C	EPA MCL	Percent < RL	Potential Background Level
As	mg/L	0.05	0.001	0.7410	**YES**	0.05	0.01	27%	**0.741**
Be	mg/L	0.05	0.05	N/A	N/A	N/A	0.004	100%	N/A
Cd	mg/L	0.01	0.01	0.0310	**YES**	0.01	0.005	95%	0.09[3]
Pb	mg/L	0.05	0.05	0.0599	**YES**	0.05	0.015	98%	0.08[4]
Ni	mg/L	0.05	0.05	0.5590	**YES**	N/A	N/A	39%	**0.56**
Se	mg/L	0.01	0.001	0.0073	**NO**	0.01	0.05	77%	**0.007**
V	mg/L	0.1	0.1	N/A	N/A	N/A	N/A	100%	N/A
U	mg/L	0.3	0.0003	0.3880	**YES**	N/A	0.03	1%	**0.39**
Chloroform	mg/L	0.08	1	N/A	N/A	N/A	0.08	99%	N/A
Rad_totl	pCi/L	5	0.2	34.54	**YES**	5	5	10%	**34.5**
Th-230	pCi/L	5	0.2	16.61	**YES**	N/A	N/A	90%	**16.6**
Pb-210	pCi/L	1	1	5.574	**YES**	N/A	N/A	69%	**5.6**
Gross_Alpha[5]	pCi/L	15	1	38.95	**YES**	15	15	16%	**39.0**

Note:

1. See Table 6 for sources of Site Groundwater Protection Standards Standards (GPS)
2. RL is an abbreviation of reporting limit
3. only 3 distinct detections. Maximum detected 0.09 proposed BTV
4. only 4 distinct detections. Maximum detected 0.08 proposed BTV
5. NRC Table 5C standard for gross alpha-particle activity excludes radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material. EPA MCL for gross alpha-particle activity excludes radon and uranium.

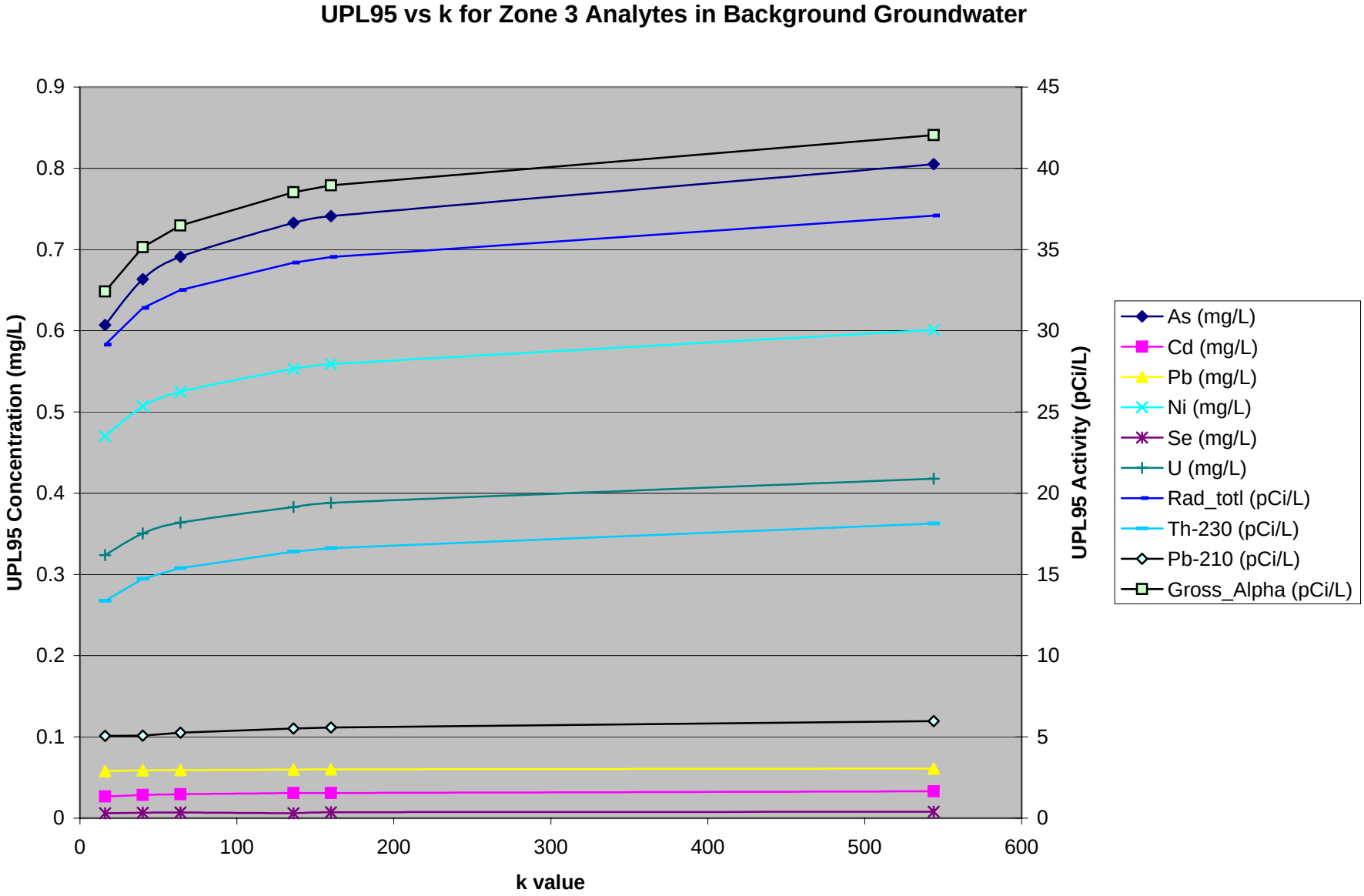
TABLE 9F

Summary comparisons of Upper Prediction Limits (k= site POC samples X ((4 qtrs X 6 yrs) + 10 yrs) =544) for Parameter Concentrations in Zone 3 Background Groundwater to Site Groundwater Protection Standards (GPS)

Parameter	Units	NRC GPS	Max RL[2]	UPL95 (k=544)	UPL95>GPS?	NRC TABLE 5C	EPA MCL	Percent < RL	Potential Background Level
As	mg/L	0.05	0.001	0.805	**YES**	0.05	0.01	27%	**0.805**
Be	mg/L	0.05	0.05	N/A	N/A	N/A	0.004	100%	N/A
Cd	mg/L	0.01	0.01	0.033	**YES**	0.01	0.005	95%	0.09[3]
Pb	mg/L	0.05	0.05	0.0608	**YES**	0.05	0.015	98%	0.08[4]
Ni	mg/L	0.05	0.05	0.601	**YES**	N/A	N/A	39%	**0.60**
Se	mg/L	0.01	0.001	0.00788	**NO**	0.01	0.05	77%	**0.008**
V	mg/L	0.1	0.1	N/A	N/A	N/A	N/A	100%	N/A
U	mg/L	0.3	0.0003	0.418	**YES**	N/A	0.03	1%	**0.418**
Chloroform	mg/L	0.08	1	N/A	N/A	N/A	0.08	99%	N/A
Rad_totl	pCi/L	5	0.2	37.09	**YES**	5	5	10%	**37.1**
Th-230	pCi/L	5	0.2	18.13	**YES**	N/A	N/A	90%	**18.1**
Pb-210	pCi/L	1	1	5.971	**YES**	N/A	N/A	69%	**6.0**
Gross_Alpha[5]	pCi/L	15	1	42.04	**YES**	15	15	16%	**42.0**

Note:

1. See Table 6 for sources of Site Groundwater Protection Standards Standards (GPS)
2. RL is an abbreviation of reporting limit
3. only 3 distinct detections. Maximum detected 0.09 proposed BTV
4. only 4 distinct detections. Maximum detected 0.08 proposed BTV
5. NRC Table 5C standard for gross alpha-particle activity excludes radon and uranium when producing uranium byproduct material or radon and thorium when producing thorium byproduct material. EPA MCL for gross alpha-particle activity excludes radon and uranium.


UPL95 vs k for Zone 3 Analytes in Background Groundwater
UPL95 Concentration (mg/L)
UPL95 Activity (pCi/L)
k value
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
0
5
10
15
20
25
30
35
40
45
0
100
200
300
400
500
600
As (mg/L)
Cd (mg/L)
Pb (mg/L)
Ni (mg/L)
Se (mg/L)
U (mg/L)
Rad_totl (pCi/L)
Th-230 (pCi/L)
Pb-210 (pCi/L)
Gross_Alpha (pCi/L)