ROCKWELL INTERNATIONAL
NORTH AMERICAN SPACE OPERATIONS
ROCKY FLATS PLANT

Remedial Investigation Report For 903 Pad, Mound, and East Trenches Areas

Volume X

U S DEPARTMENT OF ENERGY

Rocky Flats Plant
Golden Colorado

31 December 1987

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UNITED STATES DEPARTMENT OF ENERGY
ADMINISTRATION CONTRACT DE-AC04-76DPO3533

ADMIN RECOR

APPENDIX F-2

GROUND-WATER ANALYTICAL DATA

VOLATILE ORGANICS

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	1 71 03 09 87	1-71 04-30 87	1-71-05 21-87	1 71 07-01 87
Volatile Organics (ug/L)				
1 1 Dichloroethene	12	22	4 U	535
Trans 1 2 D chloroethene	38	4 U	4 U	346
Chlorof rm	220	18	4 U	1525
1 2 Dichloroethane	4 U	24	400	4 U
1 1 1 Trichloroethane	4 U	4 U	4 U	2892
Carbon Tetrachloride	4800	2300	3 000	1405
Trichlo oethene	1120	1200	2 000	691
Tetrachloroethene	50	108	800	147

NOTES
- NA Not analyzed
- NR Not reported
- U Not detected
- J Estimated value Present below the detection limit
- B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	1-74-05-21 87	1-74 07 22 87	1-74-10 21 87
Volatile Organics (ug/L)			
Methylene Chloride	NA	NR	5 J
Acetone	NA	NR	6 JB
1 1 Dichloroethene	NA	90	5 00 U
Trichloroethene	NA	114	6 B
Tetrachloroethene	NA	115	5 00 U

NOTES
- NA Not analyzed
- NR Not reported
- U Not detected
- J Estimated value Present below the detection limit
- B - Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	2 71 03 11-87	2 71D-03 11 87	2 71 04 09 87	2 71-07 01 87
Volatile Organics (ug/L)				
1 1 Dichloroethene	4 U	17	4 U	673
Trans 1 2-Dichloroethene	50	92	4 U	4 U
Chloroform	260	410	400	4 U
1 1 1-Trichloroethane	4 U	24	4 U	4 U
Carbon Tetrachloride	4 U	6	4 U	4 U
Trichloroethene	28800	24200	26000	9440
Tetrachloroethene	4	152	1000	192

NOTES
- NA Not analyzed
- NR Not reported
- U Not detected
- J Estimated value Present below the detect on limit
- B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	3 74-03-17-87		3-74 06 03 87		3 74-10 22-87	
Volatile Organics (ug/L)						
Methylene Chloride	NR		NR		56	J
Acetone	NR		NR		84	JB
1 1-Dichloroethene	8		32		62 50	U
Trans-1 2-Dichloroethene	5		4	U	62 50	U
Chloroform	35		6		62 50	U
1 2-Dichloroethane	4	U	120		62 50	U
1 1 1-Trichloroethane	10		4	U	62 50	U
Carbon Tetrachloride	1200		1 200		62 50	U
Trichloroethene	200		400		140	B
Tetrachloroethene	480		1 080		62 50	U

NOTES
NA = Not analyzed
NR - Not reported
U Not detected
J - Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	7 74-05-07-87	7 74 05-28-87	7 74-11 04 87
Volatile Organics (ug/L)			
Acetone	NR	NR	8 JB
Chloroform	4 U	4 U	1 J
1 2-Dichloroethane	4 U	6	5 00 U
Tetrachloroethene	4 U	16	6

NOTES
NA = Not analyzed
NR Not reported
U - Not detected
J = Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations
for Ground Water Samples at the
Rocky Flats Plant

	9-87 10 12 87	9 87 10 12-87
Volatile Organics (ug/L)		
Methylene Chloride	NR	4 00 JB

NOTES
NA - Not analyzed
NR - Not reported
U Not detected
J Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations
for Ground Water Samples at the
Rocky Flats Plant

	10 81-05 11 87	10 81 06 18-87

Volatile Organics (ug/L)

No concentrations present above detection limit

NOTES
NA = Not analyzed
NR - Not reported
U = Not detected
J = Estimated value Present below the detection limit
B - Present in method blank

HSL Organic Results with Detectable Concentrations
for Ground Water Samples at the
Rocky Flats Plant

	11-87 09 16 87	11 87 09 16 87
Volatile Organics (ug/L)		
Chloroform	71	500 00 U
Carbon Tetrachloride	560	430 00 J
Trichloroethene	595	590 00
Tetrachloroethene	22	500 00 U

NOTES
NA Not analyzed
NR - Not reported
U - Not detected
J - Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	12-87-08-31-87
Volatile Organics (ug/kg)	
Chloroform	33
Carbon Tetrachloride	58
Trichloroethene	3570
Tetrachloroethene	43

NOTES
NA = Not analyzed
NR - Not reported
U Not detected
J Estimated value Present below the detection limit
B = Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	14 87 08 31 87		14 87 10 12 87		14 87 10 12-87	
Volatile Organics (ug/L)						
Methylene Chloride	NR		NR		3 00	JB
Acetone	NR		NR		26 00	B
1 1 Dichloroethene	5	U	5	U	1 00	J
Chloroform	23		17		14 00	
Carbon Tetrachloride	404		258		160 00	
Trichloroethene	109		47		52 00	B
Tetrachloroethene	5	U	5	U	1 00	J

NOTES
NA - Not analyzed
NR = Not reported
U = Not detected
J - Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	15 87 09 10 87		15 87 10 07 87	
Volatile Organics (ug/L)				
Methylene Chloride	NR		240 00	JB
Acetone	NR		1300 00	B
Trans 1 2-Dichloroethene	5	U	340 00	J
Carbon Tetrachloride	4080		2600 00	
Trichloroethene	510		230 00	J
Tetrachloroethene	900		690 00	

NOTES
- NA - Not analyzed
- NR Not reported
- U Not detected
- J Estimated value Present below the detection limit
- B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	16-87-09-10 87	16-87 10-16 87	16-87 10-16-87	16 87 1016-87
Volatile Organics (ug/L)				
Methylene Chloride	NR	NR	3 00 J	5 00 J
Acetone	NR	NR	7 00 JB	10 00 U

NOTES
NA Not analyzed
NR - Not reported
U - Not detected
J - Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	20 87 10-26 87	20-87 10 26 87	
Volatile Organics (ug/L)			
Methylene Chloride	NR	7	
Acetone	NR	58	B
Toluene	NR	1	J

NOTES
- NA Not analyzed
- NR Not reported
- U - Not detected
- J Estimated value Present below the detection limit
- B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	22 74 03 13 87	22 74 07-27 87	22-77-10-20-87	
Volatile Organics (ug/L)				
Vinyl Chloride	NR	NR	2	J
Methylene Chloride	NR	NR	2	J
1 1-Dichloroethane	NR	NR	1	J
Chloroform	12	NR	5 00	U
1 2 Dichloroethane	24	NR	5 00	U
Carbon Tetrachloride	64	NR	5 00	U
Trichloroethene	32	NR	19	B
Tetrachloroethene	92	NR	5 00	U

NOTES
NA - Not analyzed
NR - Not reported
U Not detected
J Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	23 87 09-10 87	23 87 10 21 87	23 87 10 21 87	23-87-10-21-87
Volatile Organics (ug/L)				
Methylene Chloride	NR	NR	3 00 J	4 JB
Acetone	NR	NR	3 00 JB	25 00 U
Trichloroethene	5 U	5 U	5 00 U	4 JB

NOTES
- NA Not analyzed
- NR Not reported
- U Not detected
- J Estimated value Present below the detection limit
- B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	25 87 09 10 87	25 87 10 21 87	25-87 10 21-87
Volatile Organics (ug/L)			
Methylene Chloride	NR	NR	13 00 JB
Acetone	NR	NR	110 00 B
Trans 1 2 Dichloroethene	5 U	5 U	11 00 J
Chloroform	18	5 U	5 00 J
Carbon Tetrachloride	61	75	49 00
Trichloroethene	56	42	47 00
Tetrachloroethene	320	528	340 00

NOTES
- NA - Not analyzed
- NR Not reported
- U Not detected
- J - Estimated value Present below the detection limit
- B Present in method blank

HSL Organic Results with Detectable Concentrations
for Ground Water Samples at the
Rocky Flats Plant

	25 87 10-27 87	
Volatile Organics (ug/L)		
Methylene Chloride	8	JB
Chloroform	6	JB

NOTES
NA Not analyzed
NR Not reported
U Not detected
J Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	29-87 10-28-87		29-87-10 28 87	
Volatile Organics (ug/L)				
Methylene Chloride	NR		26	B
Acetone	NR		9	JB
Trans 1 2 Dichloroethene	5	U	3	J
Tetrachloroethene	99		5 00	U

NOTES
- NA Not analyzed
- NR - Not reported
- U Not detected
- J Estimated value Present below the detection limit
- B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	31-87-10 28 87		31 87-10 28 87	
Volatile Organics (ug/L)				
Methylene Chloride	NR		13	B
Acetone	NR		37	B
Trans 1 2 Dichloroethene	5	U	2	J
Trichloroethene	5	U	3	J
Toluene	NR		1	J

NOTES
NA = Not analyzed
NR Not reported
U Not detected
J Estimated value Present below the detection limit
B = Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	32-87 10 26 87		32 87-1026 87	
Volatile Organics (ug/L)				
Methylene Chloride	NR		5	J
Acetone	NR		6	JB
1 1-Dichloroethene	33		5 00	U
Chloroform	5	U	3	J
1 1 1-Trichloroethane	56		5 00	U
Carbon Tetrachloride	5	U	1	J
Trichloroethene	27		6	
Tetrachloroethene	95		68	

NOTES
- NA - Not analyzed
- NR Not reported
- U Not detected
- J Estimated value Present below the detection limit
- B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	G348609860	G348609862	G348609861	34 86 03 17 87	34 86 04 06 87	34 86-06 02 87
Volatile Organics (ug/L)						
Methylene Chloride	4 J	2 J	3 J	NR	NR	NR
Acetone	7 BJ	7 BJ	15 B	NR	NR	NR
Carbon Disulfide	2 J	2 J	2 J	NR	NR	NR

NOTES
NA - Not analyzed
NR = Not reported
U - Not detected
J - Estimated value Present below the detection limit
B - Present in method blank

HSL Organic Results with Detectable Concentrations
for Ground Water Samples at the
Rocky Flats Plant

	34 86-07 27-87	34-86 10 16 87
Volatile Organics (ug/L)		
Methylene Chloride	NR	5 00 J

NOTES
NA Not analyzed
NR Not reported
U Not detected
J - Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	G358609860	35 86 03-17-87	35-86 06-02 87	35-86 07-27-87	35 86 10 16 87
Volatile Organics (ug/L)					
Vinyl Chloride	230	NR	NR	NR	790 00
Methylene Chloride	2 J	NR	NR	NR	36 00
Acetone	7 BJ	NR	NR	NR	50 00 U
Carbon Disulfide	1 J	NR	NR	NR	25 00 U
1 1-Dichloroethene	28	48 U	40	NR	11 00 J
1 1-Dichloroethane	54	NR	NR	NR	62 00
Trans-1 2-Dichloroethene	1 070	1600	140	NR	370 00
Chloroform	5 U	4 U	340	NR	25 00 U
1 2 Dichloroethane	1 J	4 U	4 U	NR	25 00 U
1 1 1-Trichloroethane	17	32	4 U	NR	11 00 J
Carbon Tetrachloride	5 U	4 U	12	NR	25 00 U
Trichloroethene	3 J	14	16	NR	13 00 JB

NOTES
- NA Not analyzed
- NR Not reported
- U - Not detected
- J Estimated value Present below the detection limit
- B - Present in method blank

HSL Organic Results with Detectable Concentrations
for Ground Water Samples at the
Rocky Flats Plant

	36-86 04 24-87	36 86 06 03 87
Volatile Organics (ug/L)		
Trichloroethene	6	4 U

NOTES
NA Not analyzed
NR = Not reported
U = Not detected
J = Estimated value Present below the detection limit
B = Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	G398609860	G398609861	39 86 05 06 87	39-86-06-03 87	39-86-09 03 87
Volatile Organics (ug/L)					
Acetone	10 U	3 BJ	NR	NR	NR
2-Butanone	10 U	4 BJ	NR	NR	NR

NOTES
NA = Not analyzed
NR Not reported
U Not detected
J - Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations
for Ground Water Samples at the
Rocky Flats Plant

	G398609862
Volatile Organics (ug/L)	
2-Butanone	3 BJ

NOTES
NA Not analyzed
NR - Not reported
U Not detected
J Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	40 86 05-06 87	40-86 06 01-87	40 86 10-26-87
Volatile Organics (ug/L)			
Methylene Chloride	NR	NR	1 J
Acetone	NR	NR	4 JB
Tetrachloroethene	4 U	130	5 00 U

NOTES
- NA - Not analyzed
- NR Not reported
- U Not detected
- J Estimated value Present below the detection limit
- B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	G418609860	41-86 05 06 87	41-86 06-01-87	41 86 07 20 87	41 86 10-22-87
Volatile Organics (ug/L)					
Methylene Chloride	5 U	NR	NR	NR	6 JB
Acetone	10 U	NR	NR	NR	17 J
Trichloroethene	5 U	4 U	4 U	4 U	3 JB
Tetrachloroethene	5 U	160	4 U	11	5 00 U

NOTES
NA Not analyzed
NR - Not reported
U - Not detected
J Estimated value Present below the detection limit
B = Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	G428609860	G428609862	G428609861	42 86-03 12 87	42-86 05 26-87	42 86 09 03 87
Volatile Organics (ug/L)						
Methylene Chloride	6	2 J	5 U	NR	NR	NR
Acetone	10 U	10 U	2 BJ	NR	NR	NR
1 1-Dichloroethene	4 J	4 J	5 U	4 U	4 U	26
Trans-1 2-Dichloroethene	53	63	5 U	17	4 U	5 U
Chloroform	159	89	5 U	40	100	107
1 2-Dichloroethane	5 U	5 U	5 U	4 U	320	5 U
2-Butanone	5 BJ	3 BJ	4 BJ	NR	NR	NR
1 1 1-Trichloroethane	4 J	5	5 U	4 U	4 U	5 U
Carbon Tetrachloride	1 560	1 500	5 U	750	3 300	4835
Trichloroethene	260	220	5 U	110	1 400	870
Tetrachloroethene	320	290	5 U	152	3 200	1040
1 1 2 2-Tetrachloroethane	5 U	6	5 U	NR	NR	NR

NOTES
- NA Not analyzed
- NR Not reported
- U Not detected
- J Estimated value Present below the detection limit
- B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	43-86-03-11 87	43 86-06 03 87	43 86 07-27-87
Volatile Organics (ug/L)			
Carbon Tetrachloride	6	4 U	NR
Trichloroethene	8	4 U	NR

NOTES
NA Not analyzed
NR Not reported
U Not detected
J = Estimated value P esent below the detection limit
B - Present in method blank

HSL Organic Results with Detectable Concentrations
for Ground Water Samples at the
Rocky Flats Plant

	G468611860	46-86-05 14 87	46 86-06 22-87	46-86 08-13-87	46 86 10 05 87
Volatile Organics (ug/L)					
Acetone	NA	NR	NR	NR	4 00 JB

NOTES
NA = Not analyzed
NR = Not reported
U - Not detected
J = Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations
for Ground Water Samples at the
Rocky Flats Plant

	48 86 04-08 87	48 86 06 18 87	48-86 08-24 87

Volatile Organics (ug/L)

No concentrations p esent above detection limit

NOTES
NA Not analyzed
NR Not reported
U Not detected
J Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations
for Ground Water Samples at the
Rocky Flats Plant

	G498611860	49 86 04-08-87	49-86-06 18 87	49 86 08 24 87

Volatile Organics (ug/L)

No concentrations present above detection limit

NOTES
NA = Not analyzed
NR Not reported
U - Not detected
J Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations
for Ground Water Samples at the
Rocky Flats Plant

	50 86-05-11-87	50-86 06 16 87	50-86 08 14 87
Volatile Organics (ug/L)			
No concentrations present above detection limit			

NOTES
NA Not analyzed
NR - Not reported
U Not detected
J Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	51 86-05 13 87	51 86 06 17-87	51 86-08-19 87

Volatile Organics (ug/L)

No concentrations present above detection limit

NOTES
NA Not analyzed
NR - Not reported
U - Not detected
J - Estimated value Present below the detection limit
B = Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	52 86 10-02-86	52-86 05 13 87	52 86-06-18 87	52-86 08-18-87
Volatile Organics (ug/L)				
Acetone	3 00 JB	NR	NR	NR

NOTES
NA = Not analyzed
NR = Not reported
U - Not detected
J Estimated value Present below the detection limit
B - Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	G548611861	54 86-04 08 87	54 86 05 27 87	54 86 07 13 87	54-86 09 30-87
Volatile Organics (ug/L)					
Acetone	NA	NR	NR	NR	1 00 JB

NOTES
NA - Not analyzed
NR = Not reported
U = Not detected
J - Estimated value Present below the detection limit
B - Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	G558610860	55 86 05 18 87	55 86-05 27 87	55-86 07 13-87	55-86 09-30 87
Volatile Organics (ug/L)					
Acetone	7 BJ	NR	NR	NR	8 00 JB
2-Butanone	6 J	NR	NR	NR	10 00 U
Styrene	1 J	NR	NR	NR	5 00 U

NOTES
NA - Not analyzed
NR - Not reported
U Not detected
J = Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations
for Ground Water Samples at the
Rocky Flats Plant

	G568610860	G568610861	56-86 05-19 87	56-86-05 27 87	56-86 07 14 87	56 86-09-30 87
Volatile Organics (ug/L)						
Methylene Chloride	5 B	5 U	NR	NR	NR	1 00 J
Acetone	10 U	45 B	NR	NR	NR	8 00 JB
2-Butanone	10 U	10 U	NR	NR	NR	8 00 J

NOTES
NA = Not analyzed
NR = Not reported
U Not detected
J Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	G628610860	62 86 04-09 87	62-86-04-29-87	62-86 05 26-87	62 86-05-26 87	62 86-07-06-87
Volatile Organics (ug/L)						
No concentrations present above detection limit						

NOTES
NA = Not analyzed
NR = Not reported
U - Not detected
J - Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations
for Ground Water Samples at the
Rocky Flats Plant

	64 86 04-29-87	64 86 05 28-87	64-86-07 16-87

Volatile Organics (ug/L)

No concentrations present above detection limit

NOTES
- NA Not analyzed
- NR Not reported
- U Not detected
- J Estimated value Present below the detection limit
- B Present in method blank

HSL Organic Results with Detectable Concentrations for Ground Water Samples at the Rocky Flats Plant

	65 86 05-13-87	65-86 05-28-87	65-86 07-16-87	65-86 09-08-87
Volatile Organics (ug/L)				
No concentrations present above detection limit				

NOTES
NA = Not analyzed
NR - Not reported
U - Not detected
J Estimated value Present below the detection limit
B Present i method blank

HSL Organic Results with Detectable Concentrations
for Ground Water Samples at the
Rocky Flats Plant

	66-86 05-11 87	66 86-05 28 87

Volatile Organics (ug/L)

No concentrations present above detection limit

NOTES
NA - Not analyzed
NR = Not reported
U = Not detected
J = Estimated value Present below the detection limit
B Present in method blank

HSL Organic Results with Detectable Concentrations
for Ground Water Samples at the
Rocky Flats Plant

	67-86-05-11 87	67-86-06-01 87	67 86 07 20-87
Volatile Organics (ug/L)			
No concentrations present above detection limit			

NOTES
NA = Not analyzed
NR - Not reported
U Not detected
J Estimated value Present below the detection limit
B Present in method blank

RADIONUCLIDES

WESTON ANALYTICS
RADIO CHEMISTRY
DATA SUMMARY

RFW Batch Number — Client ROCKWELL (ROCKY FLATS) — Page 1

Sample Information

RFW Batch ID	0187 123 003	0187 123 005	0187 123 007	0187 123 001
Customer ID	11 87 09 21 87	15 87 09 11 87	15 87 10 08 87	16 87 09 15 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha				
Gross Beta				
Uranium 233 234				
Uranium 234	9 568 0 980	2 916 0 378	2 188 0 382	5 836 0 755
Uranium 235				
Uranium 238	6 501 0 706	2 743 0 374	1 364 0 216	3 046 0 444
Strontium 90				
Plutonium 239	0 199 0 072	0 522 0 117	0 036 0 063	0 095 0 062
Americium 241	0 060 0 050	0 831 0 148	0 039 0 049	0 036 0 045
Cesium 137				
Tritium				

RFW Batch Number — Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0187 123 006	0187 123 015	0187 123 004	0187 123 002
Customer ID	2 71 10 08 87	2 87 10 08 87	23 87 09 11 87	25 87 09 11 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha				
Gross Beta				
Uranium 233 234				
Uranium 234	13 694 2 205	13 180 1 750	6 668 0 814	3 212 0 429
Uranium 235				
Uranium 238	8 605 1 338	4 644 0 634	4 299 0 563	2 845 0 401
Strontium 90				
Plutonium 239	0 022 0 055	0 211 0 074	0 002 0 052	
Americium 241	0 009 0 041	0 032 0 046	0 001 0 036	0 065 0 040
Cesium 137				
Tritium				

Data reported as activity +/ propagated two sigma confidence interval
Units pCi/L Water
pCi/GM Soil
pCi/ml Soil Moisture (Tritium)

WESTON ANALYTICS
RADIO CHEMISTRY
DATA SUMMARY

RFW Batch Number — Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0187 123 013	0187 123 017	0187 123 008	0187 123 009
Customer ID	45 86 10 01 87	46 86 10 06 87	52 86 10 02 87	52 86 10 02 87
Matrix	Water	Water	Water	Water
Radio Chemistry				
Gross Alpha				
Gross Beta				
Uranium 233 234				
Uranium 234	0 099 0 174	4 244 0 669	0 074 0 150	0 407 0 177
Uranium 235				
Uranium 238	0 085 0 053	2 306 0 330	0 053 0 058	0 307 0 084
Strontium 90				
Plutonium 239	0 106 0 062	0 034 0 038	0 003 0 060	0 019 0 056
Americium 241	0 019 0 036	0 020 0 037	0 021 0 036	0 003 0 039
Cesium 137				
Tritium				

RFW Batch Number — Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0187 123 012	0187 123 011	0187 123 010	0187 123 016
Customer ID	54 86 10 01 87	55 86 10 01 87	56 86 10 01 87	59 86 10 08 87
Matrix	Water	Water	Water	Water
Radio Chemistry				
Gross Alpha				
Gross Beta				
Uranium 233 234				
Uranium 234	1 780 0 380			
Uranium 235				
Uranium 238	0 644 0 127	0 115 0 054	0 172 0 064	
Strontium 90				
Plutonium 239	0 036 0 047	0 042 0 054	0 001 0 045	0 006 0 043
Americium 241	0 048 0 045	0 022 0 034	0 008 0 038	0 004 0 040
Cesium 137				
Tritium				

Data reported as activity +/ propagated two sigma confidence interval
Units pCi/L Water
pCi/GM Soil
pCi/ml Soil Moisture (Tritium)

WESTON ANALYTICS
RADIO CHEMISTRY
DATA SUMMARY

RFW Batch Number — Client ROCKWELL (ROCKY FLATS) —

Sample Information

RFW Batch ID	0187 123 014
Customer ID	69 86 10 08 87
Matrix	

Radio Chemistry

Gross Alpha		
Gross Beta		
Uranium 233 234		
Uranium 234	8 707	1 107
Uranium 235		
Uranium 238	6 275	0 761
Strontium 90		
Plutonium 239	0 042	0 037
Americium 241	0 004	0 040
Cesium 137		
Tritium		

Data reported as activity +/ propagated two sigma confidence interval

Units pCi/L Water
pCi/GM Soil
pCi/ml Soil Moisture (Tritium)

WESTON ANALYTICS
RADIO CHEMISTRY
DATA SUMMARY

RFW Batch Number — Client ROCKWELL (ROCKY FLATS) —

Sample Information

RFW Batch ID	0187 881-002	0287 881 004	0387 881 001	0187 881 010
Customer ID	1 71 03 09 87	1 71 05 21 87	1 71 07 02 87	1 74 03 11 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha	20 5	8 13	3 26	24 5
Gross Beta	14 1	26 24	18 39	11 10
Uranium 233 234	NR	NR		NR
Uranium 234	5 4 1 2	4 9 1 1	6 3 1 6	1 6 1 4
Uranium 235	0 25 0 39	0 07 0 34	0 5 0 4	0 11 0 32
Uranium 238	3 3 0 8	2 8 0 8	4 1 1 1	1 6 1 1
Strontium 90	NR	NR	2 6	0 8
Plutonium 239	0 91 0 63	0 0 0 59	NR	0 0 0 65
Americium 241	0 0 1 8	0 0 1 3	1 50 1 50	0 0 1 2
Cesium 137	NR	NR		NR
Tritium	NR	NR	<515	260

RFW Batch Number — Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0287 881 006	0387 881 025	0287 881 052	0387 881 077
Customer ID	1 74 05 22 87	1 74 07 23 87	10 81 06 18 87	10 81 08 21 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha	5 7	9 23	5 15	7 17
Gross Beta	22 8	8 39	5 28	29 45
Uranium 233 234	NR		NR	
Uranium 234	4 4 1 3	2 0 1 3	0 0 0 57	0 0 1 0
Uranium 235	0 2 0 4	0 0 0 2	0 0 0 3	0 4 0 4
Uranium 238	1 8 0 8	2 5 0 8	0 17 0 42	0 3 0 6
Strontium 90	1 38	5 0	NR	<1 0
Plutonium 239	0 9 1 1	0 0 0 7	0 32 0 77	32 46
Americium 241	0 0 1 2	16 58	0 0 1 2	04 56
Cesium 137	NR		NR	
Tritium	NR	<475	NR	<526

Data reported as activity +/ propagated two sigma confidence interval
Units pCi/L Water
pCi/GM Soil
pCi/ml Soil Moisture (Tritium)

WESTON ANALYTICS
RADIO CHEMISTRY
DATA SUMMARY

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 078	0387 881 082	0387 881 083	0687 881 009
Customer ID	10 81DUP 08 21 87	10 81LABDUP 08 21 87	10 81LABDUP 08 25 87	11 87 09 18 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha	8 19			28 24
Gross Beta	39 43			8 40
Uranium 233 234				
Uranium 234	0 4 1 7			NR
Uranium 235	3 2 1 9			NR
Uranium 238	1 1 2 3			NR
Strontium 90	1 3			NR
Plutonium 239	04 50			NR
Americium 241	04 18			NR
Cesium 137				NR
Tritium	<471	<513	<513	<440

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0187 123 003	0687 881 002	0687 881 001	0687 881 016
Customer ID	11 87 09 21 87	12 87 09 02 87	14 87 09 01 87	14 87 10 13 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha		121 48	17 21	6 17
Gross Beta		47 45	23 41	16 40
Uranium 233 234				
Uranium 234	9 568 0 980	NR	NR	0 00 07
Uranium 235		NR	NR	0 00 05
Uranium 238	6 501 0 706	NR	NR	0 00 06
Strontium 90		NR	NR	NR
Plutonium 239	0 199 0 072	NR	NR	0 00 15
Americium 241	0 060 0 050	NR	NR	0 00 22
Cesium 137		NR	NR	NR
Tritium		NR	<500	<460

Data reported as activity +/ propagated two sigma confidence interval
Units pCi/L Water
pCi/GM Soil
pCi/ml Soil Moisture (Tritium)

WESTON ANALYTICS
RADIO CHEMISTRY
DATA SUMMARY

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0687 881 003	0187 123 005	0687 881 012	0187 123 007
Customer ID	15 87 09 11 87	15 87 09 11 87	15 87 10 08 87	15 87 10 08 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha	46 33		27 22	
Gross Beta	37 41		24 42	
Uranium 233 234				
Uranium 234	NR	2 916 0 378	97 21	2 188 0 382
Uranium 235	NR		06 05	
Uranium 238	NR	2 743 0 374	73 18	1 364 0 216
Strontium 90	NR		NR	
Plutonium 239	NR	0 522 0 117	0 00 16	0 036 0 063
Americium 241	NR	0 831 0 148	0 00 25	0 039 0 049
Cesium 137	NR		NR	
Tritium	<460		<500	

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0687 881 008	0187 123 001	0687 881 017	0687 881 023
Customer ID	16 87 09 14 87	16 87 09 15 87	16 87 10 17 87	17 87 11 06 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha	14 24		48 27	9 20
Gross Beta	23 40		17 39	18 41
Uranium 233 234				
Uranium 234	NR	5 836 0 755	3 7 0 5	NR
Uranium 235	NR		21 08	NR
Uranium 238	NR	3 046 0 444	2 2 34	NR
Strontium 90	NR		NR	NR
Plutonium 239	NR	0 095 0 062	05 09	NR
Americium 241	NR	0 036 0 045	01 07	NR
Cesium 137	NR		NR	NR
Tritium	<500		<460	NR

Data reported as activity +/ propagated two sigma confidence interval
Units pCi/L Water
pCi/GM Soil
pCi/ml Soil Moisture (Tritium)

WESTON ANALYTICS
RADIO CHEMISTRY
DATA SUMMARY

RFW Batch Number — Client ROCKWELL (ROCKY FLATS) —

Sample Information

RFW Batch ID	0187 881 007	0187 881 008	0287 881 003	0387 881 002
Customer ID	2 71 03 11 87	2 71 03 11 87	2 71 05 21 87	2 71 07 02 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha	93 18	35 14	5 0 13	16 22
Gross Beta	86 20	36 22	23 38	19 36
Uranium 233 234	NR	NR	NR	
Uranium 234	6 4 1 9	3 7 1 3	5 4 1 1	10 9 2 4
Uranium 235	0 0 0 55	0 0 0 62	0 11 0 32	0 9 0 6
Uranium 238	4 7 1 6	1 4 1 0	3 4 0 8	7 9 1 8
Strontium 90	3 6	0 9	2 28	<1 0
Plutonium 239	1 9 1 0	0 0 3 6	0 02 0 76	NR
Americium 241	0 4 4 0	0 0 7 6	0 0 1 2	NR
Cesium 137	NR	NR	NR	
Tritium	NR	NR	NR	<515

RFW Batch Number — Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0187 123 006	0387 881 034	0287 881 005	0687 881 004
Customer ID	2 71 10 08 87	22 74 07 28 87	22 74 5 21 87	23 87 09 11 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha		6 19	22 13	4 23
Gross Beta		22 45	36 22	14 38
Uranium 233 234			NR	
Uranium 234	13 694 2 205	5 3 1 7	0 79 0 94	NR
Uranium 235		0 1 0 3	0 18 0 41	NR
Uranium 238	8 605 1 338	1 7 0 9	3 1 1 2	NR
Strontium 90		<1 0	NR	NR
Plutonium 239	0 022 0 055	23 93	0 00 0 70	NR
Americium 241	0 009 0 041	1 4 5 2	0 0 1 2	NR
Cesium 137			NR	NR
Tritium		<478	NR	<460

Data reported as activity +/ propagated two sigma confidence interval
Units pCi/L Water
pCi/GM Soil
pCi/ml Soil Moisture (Tritium)

WESTON ANALYTICS
RADIO CHEMISTRY
DATA SUMMARY

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0187 123 004	0687 881 018	0687 881 005	0187 123 002
Customer ID	23 87 09 11 87	23 87 10 22 87	25 87 09 11 87	25 87 09 11 87
Matrix	Water	Water	Water	Water
Radio Chemistry				
Gross Alpha		39 27	14 25	
Gross Beta		30 45	30 36	
Uranium 233 234				
Uranium 234	6 668 0 814	NR	NR	3 212 0 429
Uranium 235		NR	NR	
Uranium 238	4 299 0 563	NR	NR	2 845 0 401
Strontium 90		NR	NR	
Plutonium 239	0 002 0 052	NR	NR	
Americium 241	0 001 0 036	NR	NR	0 065 0 040
Cesium 137		NR	NR	
Tritium		<520	<460	

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0687 881 019	0687 881 021	0187 881 016	0287 881 028
Customer ID	25 87 10 22 87	29 87 10 29 87	3 74 03 17 87	3 74 06 03 87
Matrix	Water	Water	Water	Water
Radio Chemistry				
Gross Alpha	4 16	23 38	24 8	2 9
Gross Beta	12 37	34 49	35 17	29 19
Uranium 233 234			NR	NR
Uranium 234	NR	NR	0 39 0 72	1 5 0 8
Uranium 235	NR	NR	0 0 0 35	0 03 0 33
Uranium 238	NR	NR	0 68 0 59	1 8 0 7
Strontium 90	NR	NR	9 2	NR
Plutonium 239	NR	NR	0 0 0 67	0 0 0 79
Americium 241	NR	NR	0 0 3 2	0 0 1 2
Cesium 137	NR	NR	NR	NR
Tritium	<520	<460	230	NR

Data reported as activity +/ propagated two sigma confidence interval
Units pCi/L Water
pCi/GM Soil
pCi/ml Soil Moisture (Tritium)

WESTON ANALYTICS
RADIO CHEMISTRY
DATA SUMMARY

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 026	0687 881 022	0687 881 020	0187 881 017
Customer ID	3 74 07 23 87	31 87 10 29 87	32 87 10 27 87	34 86 03 17 87
Matrix	Water	Water	Water	Water
Radio Chemistry				
Gross Alpha	6 22	36 34	78 50	46 13
Gross Beta	25 41	26 43	61 48	18 10
Uranium 233 234				NR
Uranium 234	2 0 1 3	NR	NR	0 0 0 45
Uranium 235	0 2 0 3	NR	NR	0 0 0 38
Uranium 238	1 8 0 8	NR	NR	0 5 1 1
Strontium 90	<1 0	NR	NR	0 6
Plutonium 239	10 69	NR	NR	0 0 0 92
Americium 241	04 28	NR	NR	0 0 2 2
Cesium 137		NR	NR	NR
Tritium	<475	<460	<460	NR

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0287 881 024	0387 881 035	0187 881 018	0287 881 026
Customer ID	34 86 06 02 87	34 86 07 28 87	35 86 03 17 87	35 86 06 02 87
Matrix	Water	Water	Water	Water
Radio Chemistry				
Gross Alpha	66 0	0 59	30 7	14 20
Gross Beta	18 20	9 62	22 10	31 11
Uranium 233 234	NR		NR	NR
Uranium 234	0 39 0 85	1 4 1 3	5 2 2 4	6 0 1 9
Uranium 235	0 0 0 34	0 2 0 4	2 7 1 7	0 06 0 39
Uranium 238	0 04 0 53	0 4 0 7	1 3 3 5	1 4 1 0
Strontium 90	1 4	<1 0	0 6	NR
Plutonium 239	0 98 0 99	06 72	0 24 0 89	0 0 0 72
Americium 241	0 0 1 8	0 4 5 5	0 0 1 3	0 0 1 2
Cesium 137	NR		NR	NR
Tritium	NR	<478	NR	NR

Data reported as activity +/ propagated two sigma confidence interval
Units pCi/L Water
pCi/GM Soil
pCi/ml Soil Moisture (Tritium)

WESTON ANALYTICS
RADIO CHEMISTRY
DATA SUMMARY

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 036	0687 881 024	0287 881 027	0387 881 030
Customer ID	35 86 07 28 87	36 87 11 06 87	39 86 06 03 87	39 86 07 24 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha	3 24	2 20	0 7	4 21
Gross Beta	7 41	6 39	6 5	21 43
Uranium 233 234			NR	
Uranium 234	4 8 1 7	NR	1 8 0 8	2 8 1 3
Uranium 235	0 0 0 3	NR	0 0 0 3	0 2 0 3
Uranium 238	3 2 1 3	NR	1 4 0 6	1 8 0 8
Strontium 90	1 2	NR	NR	1 2
Plutonium 239	32 96	NR	0 21 0 73	05 60
Americium 241	0 9 6 7	NR	0 0 1 2	38 53
Cesium 137		NR	NR	
Tritium	<478	NR	NR	<502

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0287 881 025	0387 881 022	0187 881 013	0287 881 007
Customer ID	41 86 06 01 87	41 86 07 21 87	42 86 03 12 87	42 86 05 26 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha	8 12	0 24	52 18	371 90
Gross Beta	30 20	85 48	54 32	213 36
Uranium 233 234	NR		NR	NR
Uranium 234	2 0 0 9	1 6 1 2	2 7 1 2	1 4 0 8
Uranium 235	0 1 0 35	0 4 0 4	0 09 0 49	0 0 0 26
Uranium 238	0 93 0 65	1 2 0 7	2 2 1 1	1 6 0 6
Strontium 90	NR	1 2	0 9	NR
Plutonium 239		04 66	0 12 0 48	0 0 0 55
Americium 241	0 0 1 2	27 57	0 3 4 2	0 0 0 12
Cesium 137	NR		NR	NR
Tritium	NR	<475	NR	NR

Data reported as activity +/ propagated two sigma confidence interval
Units pCi/L Water
pCi/GM Soil
pCi/ml Soil Moisture (Tritium)

WESTON ANALYTICS
RADIO CHEMISTRY
DATA SUMMARY

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 029	0187 881 011	0287 881 030	0387 881 038
Customer ID	42 86 07 24 87	43 86 03 11 87	43 86 06 03 87	43 86 07 29 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha	215 157	20 11	16 9	5 25
Gross Beta	144 62	22 8	13 0	14 42
Uranium 233 234		NR	NR	
Uranium 234	2 8 1 4	2 6 1 1	1 7 0 8	1 2 1 2
Uranium 235	0 0 0 2	0 0 0 48	0 2 0 35	0 0 0 3
Uranium 238	2 6 1 0	3 9 1 1	1 0 0 5	1 7 0 9
Strontium 90	<1 0	0 9	2 4	1 2
Plutonium 239	36 74	0 23 0 59	0 0 0 65	20 85
Americium 241	0 0 2 8	0 0 1 4	0 0 0 12	11 32
Cesium 137		NR	NR	
Tritium	<502	NR	NR	<493

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0287 881 059	0387 881 066	0187 123 017	0287 881 054
Customer ID	46 86 06 22 87	46 86 08 14 87	46 86 10 06 87	48 86 06 18 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha	16 3	23 22		27 3
Gross Beta	4 17	5 38		67 22
Uranium 233 234	NR			NR
Uranium 234	4 0 1 4	3 9 1 6	4 244 0 669	1 8 0 8
Uranium 235	0 5 0 6	0 3 0 4		0 06 0 32
Uranium 238	2 3 1 0	7 5 1 7	2 306 0 330	1 2 0 6
Strontium 90	NR	1 9		NR
Plutonium 239	0 0 0 7	01 92	0 034 0 038	0 03 0 63
Americium 241	0 0 1 2	04 38	0 020 0 037	0 0 1 2
Cesium 137	NR			NR
Tritium	NR	<526		NR

Data reported as activity +/ propagated two sigma confidence interval
Units pCi/L Water
pCi/GM Soil
pCi/ml Soil Moisture (Tritium)

WESTON ANALYTICS
RADIO CHEMISTRY
DATA SUMMARY

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 084	0287 881 053	0387 881 085	0287 881 049
Customer ID	48 86 08 25 87	49 86 06 18 87	49 86 08 25 87	50 86 06 16 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha	9 18	71 15	6 16	4 0
Gross Beta	6 37	118 29	9 34	26 5
Uranium 233 234		NR		NR
Uranium 234	0 8 1 5	3 5 0 9	0 9 1 4	0 08 0 65
Uranium 235	0 1 0 6	0 09 0 32	0 6 0 7	0 0 0 03
Uranium 238	0 0 1 5	4 0 0 9	0 0 1 0	0 2 0 44
Strontium 90	3 7	NR	1 5	NR
Plutonium 239	32 78	0 42 0 82	32 64	0 0 0 67
Americium 241	03 37	0 0 1 3	03 45	0 0 1 2
Cesium 137		NR		NR
Tritium	<526	NR	2218 397	NR

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 068	0287 881 058	0387 881 074	0387 881 072
Customer ID	50 86 08 14 87	51 86 06 17 87	51 86 08 20 87	52 86 08 19 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha	6 15	5 0	4 19	10 19
Gross Beta	8 42	24 28	6 44	38 46
Uranium 233 234		NR		
Uranium 234	NR	0 0 0 06	0 4 1 1	0 0 1 1
Uranium 235	NR	0 0 0 33	0 0 0 3	0 1 0 4
Uranium 238	NR	0 12 0 37	0 0 0 5	0 0 0 7
Strontium 90	3 5	NR	<1 0	<1 0
Plutonium 239	32 65	0 29 0 8	1 6 6 0	1 8 1 3
Americium 241	04 43	0 0 1 3	04 47	NR
Cesium 137		NR		
Tritium	487 291	NR	<492	<459

Data reported as activity +/ propagated two sigma confidence interval
Units pCi/L Water
pCi/GM Soil
pCi/ml Soil Moisture (Tritium)

WESTON ANALYTICS
RADIO CHEMISTRY
DATA SUMMARY

RFW Batch Number — Client ROCKWELL (ROCKY FLATS) — Page 10

Sample Information

RFW Batch ID	0187 123 008	0187 123 009	0287 881 014	0387 881 013
Customer ID	52 86 10 02 87	52 86 10 02 87	54 86 05 27 87	54 86 07 14 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha			19 3	0 21
Gross Beta			5 11	10 41
Uranium 233 234			NR	
Uranium 234	0 074 0 150	0 407 0 177	0 4 1 0	2 4 1 3
Uranium 235			0 0 0 74	0 0 0 2
Uranium 238	0 053 0 058	0 307 0 084	0 07 0 87	0 3 0 6
Strontium 90			NR	<1 0
Plutonium 239	0 003 0 060	0 019 0 056	0 008 0 75	08 60
Americium 241	0 021 0 036	0 003 0 039	0 9 3 7	04 60
Cesium 137			NR	
Tritium			NR	<593

RFW Batch Number — Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0187 123 012	0287 881 015	0387 881 014	0187 123 011
Customer ID	54 86 10 01 87	55 86 05 27 87	55 86 07 14 87	55 86 10 01 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha		95 45	4 19	
Gross Beta		82 7	12 40	
Uranium 233 234		NR		
Uranium 234	1 780 0 380	0 31 0 67	0 3 1 1	
Uranium 235		0 0 0 31	0 0 0 3	
Uranium 238	0 644 0 127	0 45 0 48	0 0 0 5	0 115 0 054
Strontium 90		3 32	<1 0	
Plutonium 239	0 036 0 047	0 07 0 82	14 53	0 042 0 054
Americium 241	0 048 0 045	0 0 1 2	04 44	0 022 0 034
Cesium 137		NR		
Tritium		2 6	<593	

Data reported as activity +/ propagated two sigma confidence interval
Units pCi/L Water
pCi/GM Soil
pCi/ml Soil Moisture (Tritium)

WESTON ANALYTICS
RADIO CHEMISTRY
DATA SUMMARY

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 015	0287 881 013	0387 881 016	0187 123 010
Customer ID	55 86DUP 07 14 87	56 86 05 27 87	56 86 07 15 87	56 86 10 01 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha	0 15	23 8	7 24	
Gross Beta	14 36	32 17	88 49	
Uranium 233 234		NR		
Uranium 234	1 1 1 2	0 0 0 85	0 8 1 1	
Uranium 235	0 2 0 4	0 0 0 72	0 5 0 3	
Uranium 238	0 1 0 8	0 0 0 71	0 4 0 6	0 172 0 064
Strontium 90	<1 0	1 76	1 3	
Plutonium 239	04 57	0 003 0 76	00 46	0 001 0 045
Americium 241	04 56	0 0 1 2	04 59	0 008 0 038
Cesium 137		NR		
Tritium	<543	NR	<493	

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0287 881 009	0387 881 024	0287 881 020	0387 881 093
Customer ID	62 86 05 26 87	64 86 07 21 87	65 86 05 28 87	65 86 09 09 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha	14 3		16 0	15 19
Gross Beta	35 13		42 31	23 27
Uranium 233 234	NR		NR	
Uranium 234	3 4 1 2		4 0 1 1	4 2 1 9
Uranium 235	0 1 0 35		0 22 0 37	0 4 0 5
Uranium 238	2 8 1 0		3 3 1 0	1 6 1 5
Strontium 90	NR		NR	2 0
Plutonium 239	0 04 0 76		0 16 0 78	03 16
Americium 241	0 0 1 2		0 0 1 2	02 32
Cesium 137	NR		NR	
Tritium	NR		NR	<509

Data reported as activity +/ propagated two sigma confidence interval
Units pCi/L Water
pCi/GM Soil
pCi/ml Soil Moisture (Tritium)

WESTON ANALYTICS
RADIO CHEMISTRY
DATA SUMMARY

RFW Batch Number — Client ROCKWELL (ROCKY FLATS) —

Sample Information

RFW Batch ID	0287 881 018	0287 881 021	0387 881 023	0287 881 017
Customer ID	66 86 05 28 87	67 86 06 01 87	67 86 07 21 87	7 74 05 28 87
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha	21 8	6 9	19 33	27 31
Gross Beta	55 6	40 8	49 44	79 22
Uranium 233 234	NR	NR		NR
Uranium 234	0 4 0 71	3 4 1 1	1 6 1 3	1 4 0 8
Uranium 235	0 07 0 39	0 0 0 32	0 0 0 4	0 0 0 33
Uranium 238	0 94 0 6	1 7 0 8	2 5 1 0	0 29 0 5
Strontium 90	3 3	NR	1 1	NR
Plutonium 239	0 0 0 63	0 0 0 62	25 80	0 03 0 76
Americium 241	0 0 1 3	0 0 1 2	0 6 1 4	0 0 1 2
Cesium 137	NR	NR		NR
Tritium	NR	420	<475	NR

RFW Batch Number — Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 027	0387 881 028	0687 881 015
Customer ID	7 74 07 23 87	7 74LAB DUP 07 23 87	9 87 10 13 87
Matrix	Water	Water	Water

Radio Chemistry

Gross Alpha	4 20	0 22	14 18
Gross Beta	34 46	34 39	27 44
Uranium 233 234			
Uranium 234	1 5 1 3		61 19
Uranium 235	0 1 0 3		02 04
Uranium 238	1 3 0 9		38 14
Strontium 90	<1 0		NR
Plutonium 239	0 0 0 6		08 10
Americium 241	13 34		0 00 06
Cesium 137			NR
Tritium	<475		5 1 2 9

Data reported as activity +/ propagated two sigma confidence interval
Units pCi/L Water
pCi/GM Soil
pCi/ml Soil Moisture (Tritium)

INORGANICS

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0587 881 015	0187 881 003	0187 881 072	0587 881 016
Customer ID	1 71 03 09 87	1 71 03 09 87	1 71 04 30 87	1 71 05 01 87
Matrix	Water	Water	Water	Water
Inorganics				
Chloride	21 2	21 1	21 5	21 5
Cyanide Total	1 0 U	1 0 U	1 0 U	1 0 U
Fluoride				
Nitrate Nitrite Nitrogen	7 30	7 30	4 40	4 40
Total Organic Carbon				
pH				
Sulfate	24 0	24 0	18 0	18 0
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	311	311	276	276
HCO3	203	203	212	212
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 024	0287 881 004	0187 881 008	0287 881 006
Customer ID	1 71 07 02 87	1 71 5 21 87	1 74 03 11 87	1 74 05 22 87
Matrix	Water	Water	Water	Water

Inorganics

Chloride	16	18 9	30 5	23 2
Cyanide Total	1 0 U	1 0 U	1 0 U	1 0 U
Fluoride				
Nitrate Nitrite Nitrogen	6 4	6 4	9 80	8 50
Total Organic Carbon				
pH				
Sulfate	18 0	19 0	30 0	44 0
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	329	319	405	381
HCO3	217	211	218	209
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 052	0187 881 088	0387 881 098	0387 881 099
Customer ID	1 74 07 23 87	10 81 05 11 87	10 81 08 21 87	10 81DUP 08 21 87
Matrix	Water	Water	Water	Water
Inorganics				
Chloride	20 5	8 60	3 79	3 76
Cyanide Total	1 U	1 0 U	1 U	1 U
Fluoride				
Nitrate Nitrite Nitrogen	5 9	2 00	7 65	7 85
Total Organic Carbon				
pH				
Sulfate	30 0	20 0	21 0	18 0
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	465	123	163	138
HCO3	220	28 0	39	40
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units			
pH	Standard Units	Ignitability	Degrees F
% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
All other analytes	MG/L (Water)		
	MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0687 881 009	0687 881 001	0687 881 002	0687 881 017
Customer ID	11 87 09 17 87	12 87 09 01 87	14 87 09 01 87	14 87 10 13 87
Matrix	Water	Water	Water	Water

Inorganics

Chloride	88 5	60 5	27 0	30 2
Cyanide Total	1 U	1 U	1 U	NR
Fluoride				
Nitrate Nitrite Nitrogen	2 25	1 30	1 70	1 60
Total Organic Carbon				
pH				
Sulfate	104	108	27 0	41
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	611	654	661	635
HCO3	289	368	530	48
CO3			91	505
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0687 881 003	0687 881 013	0687 881 004	0687 881 020
Customer ID	15 87 09 11 87	15 87 10 08 87	16 87 09 11 87	16 87 10 17 87
Matrix	Water	Water	Water	Water

Inorganics

Chloride	35 2	56 7	4 14	3 7
Cyanide Total	1 U	NR	1 U	NR
Fluoride				
Nitrate Nitrite Nitrogen	7 6	9 1	0 46	1 58
Total Organic Carbon				
pH				
Sulfate	66	15 5	124	77
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	453	487	256	264
HCO3	260	261	119	133
CO3			9 2	5 8
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0687 881 027	0187 881 010	0187 881 011	0187 881 048
Customer ID	17 87 11 06 87	2 71 03 11 87	2 71 03 11 87	2 71 04 09 87
Matrix	Water	Water	Water	Water
Inorganics				
Chloride	275	244	239	164
Cyanide Total	NR	1 0 U	1 0 U	1 0 U
Fluoride				
Nitrate Nitrite Nitrogen	0 79	5 40	5 00	4 70
Total Organic Carbon				
pH				
Sulfate	46 7	134	145	150
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	466	710	720	733
HCO3	275	139	147	144
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0287 881 003	0387 881 025	0687 881 023	0187 881 015
Customer ID	2 71 05 21 87	2 71 07 02 87	20 87 10 26 87	22 74 03 13 87
Matrix	Water	Water	Water	Water

Inorganics

Chloride	230	269		58 0
Cyanide Total	1 0 U	1 0 U	NR	1 0
Fluoride				
Nitrate Nitrite Nitrogen	1 50	5 6		9 10
Total Organic Carbon				
pH				
Sulfate	250	165		32 0
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	863	956		425
HCO3	159	158		198
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0287 881 005	0378 881 060	0687 881 005	0687 881 021
Customer ID	22 74 05 21 87	22 74 07 28 87	23 87 09 11 87	23 87 10 22 87
Matrix	Water	Water	Water	Water
Inorganics				
Chloride	40 8	37 4	51 8	55 9
Cyanide Total	1 0 U	1 U	1 U	NR
Fluoride				
Nitrate Nitrite Nitrogen	3 6	6 30	2 6	2 77
Total Organic Carbon				
pH				
Sulfate	37 0	22 8	70 4	27 0
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	385	414	397	414
HCO3	272	268	242	243
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units			
pH	Standard Units	Ignitability	Degrees F
% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
All other analytes	MG/L (Water)		
	MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0687 881 006	0687 881 022	0687 881 025	0187 881 017
Customer ID	25 87 09 11 87	25 87 10 22 87	29 87 10 29 87	3 74 03 17 87
Matrix	Water	Water	Water	Water

Inorganics

Chloride	29 9	36 0	611	56 0
Cyanide Total	1 U	NR	NR	1 0 U
Fluoride				
Nitrate Nitrite Nitrogen	7 6	7 69	0 34	9 60
Total Organic Carbon				
pH				
Sulfate	52	35 5	850	30 0
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	407	448	2661	441
HCO3	238	250	261	273
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 053	0687 881 026	0687 881 024	0187 881 018
Customer ID	3 74 07 23 87	31 87 10 29 87	32 87 10 27 87	34 86 03 17 87
Matrix	Water	Water	Water	Water

Inorganics

Chloride	122	10 3	35 9	65 9
Cyanide Total	1 U	NR	NR	1 0 U
Fluoride				
Nitrate Nitrite Nitrogen	6 2	0 20 U	15 45	0 20 U
Total Organic Carbon				
pH				
Sulfate	42 0	125	74	800
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	489	346	623	1 789
HCO3	256	60 8	243	372
CO3		72 5		
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0187 881 040	0387 881 061	0187 881 019	0387 881 062
Customer ID	34 86 04 06 87	34 86 07 28 87	35 86 03 17 87	35 86 07 28 87
Matrix	Water	Water	Water	Water

Inorganics

Chloride	53 5	54 4	107	83 2
Cyanide Total	1 0 U	1 U	1 0 U	1 U
Fluoride				
Nitrate Nitrite Nitrogen	0 20 U	1 U	0 20 U	1 U
Total Organic Carbon				
pH				
Sulfate	40 0	990	100	160
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	1 772	1813	952	1004
HCO3	357	319	642	565
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0687 881 028	0187 881 081	0387 881 056	0187 881 080
Customer ID	36 87 11 06 87	39 86 05 06 87	39 86 07 24 87	40 86 05 06 87
Matrix	Water	Water	Water	Water
Inorganics				
Chloride	218	31 9	31 9	19 9
Cyanide Total	NR	1 0 U	1 U	1 0 U
Fluoride				
Nitrate Nitrite Nitrogen	4 57	7 20	4 80	1 40
Total Organic Carbon				
pH				
Sulfate	43 5	60 0	57 5	470
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	375	407	396	1 011
HCO3	218	218	209	205
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0187 881 079	0187 881 079	0387 881 050	0187 881 013
Customer ID	41 86 05 06 87	41 86 05 06 87	41 86 07 21 87	42 86 03 12 87
Matrix	Water	Water	Water	Water
Inorganics				
Chloride		36 9	34 0	57 0
Cyanide Total		1 0 U	1 U	1 0 U
Fluoride				
Nitrate Nitrite Nitrogen		9 60	10 9	7 20
Total Organic Carbon				
pH				
Sulfate		65 0	66 1	70 0
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids		480	427	526
HCO3		249	233	171
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units				
	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0287 881 007	0387 881 055	0187 881 009	0387 881 063
Customer ID	42 86 05 26 87	42 86 07 24 87	43 86 03 11 87	43 86 07 28 87
Matrix	Water	Water	Water	Water

Inorganics

Chloride	34 7	50 5	51 0	33 4
Cyanide Total	1 0 U	1 U	1 0 U	1 U
Fluoride				
Nitrate Nitrite Nitrogen	5 9	4 10	5 1	7 90
Total Organic Carbon				
pH				
Sulfate	24 0	20 0	30 0	28 0
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	468	475	338	409
HCO3	297	279	179	184
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0187 881 104	0387 881 088	0187 881 042	0387 881 101
Customer ID	46 86 05 14 87	46 86 08 14 87	48 86 04 08 87	48 86 08 25 87
Matrix	Water	Water	Water	Water

Inorganics

Chloride	3 90	2 64	15 6	12 50
Cyanide Total	1 0 U	1 U	1 0 U	1 U
Fluoride				
Nitrate Nitrite Nitrogen	0 54	1 U	0 20 U	1 U
Total Organic Carbon				
pH				
Sulfate	20 0	12 5	96 0	12 0
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	228	244	133	211
HCO3	248	210	80 2	167
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

RFW Batch ID	0187 881 043	0387 881 102	0187 881 084	0387 881 090
Customer ID	49 86 04 08 87	49 86 08 25 87	50 86 05 11 87	50 86 08 14 87
Matrix	Water	Water	Water	Water

Inorganics

Chloride	20 2	30 6	10 4	9 70
Cyanide Total	1 0 U	1 U	1 0 U	1 U
Fluoride				
Nitrate Nitrite Nitrogen	9 10	12 6	0 87	0 87
Total Organic Carbon				
pH				
Sulfate	150	19 0	28 0	12 5
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	264	201	167	159
HCO3	32 8	41	95 0	95 7
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0187 881 097	0387 881 095	0187 881 098	0387 881 093
Customer ID	51 86 05 13 87	51 86 08 20 87	52 86 05 13 87	52 86 08 19 87
Matrix	Water	Water	Water	Water
Inorganics				
Chloride	5 70	4 75	1 70	21 4
Cyanide Total	1 0 U	1 U	1 0 U	1 U
Fluoride				
Nitrate Nitrite Nitrogen	4 65	5 15	0 20 U	1 U
Total Organic Carbon				
pH				
Sulfate	31 0	26 5	64 0	66 0
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	145	149	147	153
HCO3	36 0	38 5	58 0	35 6
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0187 881 045	0287 881 014	0387 881 040	0187 881 108
Customer ID	54 86 04 08 87	54 86 05 27 87	54 86 07 14 87	55 86 05 18 87
Matrix	Water	Water	Water	Water

Inorganics

Chloride	20 7	18 9	24 0	6 40
Cyanide Total	1 0 U	1 0 U	1 U	1 0 U
Fluoride				
Nitrate Nitrite Nitrogen	0 20 U	0 20 U	1 U	0 80
Total Organic Carbon				
pH				
Sulfate	43 0	52 0	41 0	27 0
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	428	433	433	167
HCO3	246	318	267	74 6
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0287 881 015	0387 881 041	0387 881 042	0187 881 110
Customer ID	55 86 05 27 87	55 86 07 14 87	55 86DUP 07 14 87	56 86 05 19 87
Matrix	Water	Water	Water	Water
-- -				
Inorganics				
Chloride	8 0	6 2	6 1	15 1
Cyanide Total	1 0 U	1 U	1 U	1 0 U
Fluoride				
Nitrate Nitrite Nitrogen	0 97	1 28	1 32	0 48
Total Organic Carbon				
pH				
Sulfate	25 0	23 0	23 0	19 0
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	147	140	139	185
HCO3	77 9	75 0	73 8	105
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units				
	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 043	0187 881 047	0587 881 021	0187 881 069
Customer ID	56 86 07 15 87	62 86 04 09 87	62 86 04 10 87	62 86 04 29 87
Matrix	Water	Water	Water	Water
--				
Inorganics				
Chloride	13 0	28 0	28 0	26 9
Cyanide Total	1 U	1 0 U	1 0 U	1 0 U
Fluoride				
Nitrate Nitrite Nitrogen	1 U	2 30	2 30	2 60
Total Organic Carbon				
pH				
Sulfate	15 9	60 0	60 0	90 0
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	186	274	274	286
HCO3	124	67 5	67 5	124
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units				
	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0587 881 022	0287 881 009	0387 881 031	0587 881 023
Customer ID	62 86 04 30 87	62 86 05 26 87	62 86 07 07 87	64 86 04 29 87
Matrix	Water	Water	Water	Water
Inorganics				
Chloride	26 9	25 5	102	38 0
Cyanide Total	1 0 U	1 0 U	1 U	1 0 U
Fluoride				
Nitrate Nitrite Nitrogen	2 60	3 4	2 3	1 28
Total Organic Carbon				
pH				
Sulfate	90 0	48 0	23 0	168
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	286	295	280	438
HCO3	124	164	157	162
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units	pH	Standard Un ts	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0187 881 068	0387 881 048	0187 881 100	0287 881 020
Customer ID	64 86 04 29 87	64 86 07 17 87	65 86 05 13 87	65 86 05 28 87
Matrix	Water	Water	Water	Water

Inorganics

Chloride	38 0	44 0	43 7
Cyanide Total	1 0 U	1 U	1 0 U
Fluoride			
Nitrate Nitrite Nitrogen	1 28	0 99	0 20 U
Total Organic Carbon			
pH			
Sulfate	168	133	89 0
Specific Conductance			
Turbidity			
Sulfide			
Oil and Grease			
Ignitability			
% Solids			
Total Dissolved Solids	438	742	444
HCO3	162	306	234
CO3			
Suspended Solids			
Hexavalent Chromium (Cr+6)			

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number ---- Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 110	0187 881 086	0187 881 087	0387 881 051
Customer ID	65 86 09 09 87	66 86 05 11 87	67 86 05 11 87	67 86 07 21 87
Matrix	Water	Water	Water	Water

Inorganics

Chloride	64 0	17 0	43 8	46 5
Cyanide Total	1 U	1 0 U	1 0 U	1 U
Fluoride				
Nitrate Nitrite Nitrogen	1 U	0 20 U	4 90	3 4
Total Organic Carbon				
pH				
Sulfate	190	26 5	70 0	95 5
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease				
Ignitability				
% Solids				
Total Dissolved Solids	655	193	560	564
HCO3	306	100	358	344
CO3				
Suspended Solids				
Hexavalent Chromium (Cr+6)				

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0187 881 083	0387 881 054	0687 881 016
Customer ID	7 74 05 07 87	7 74 07 23 87	9 87 10 13 87
Matrix	Water	Water	Water

Inorganics

Chloride	30 9	34 0	4 3
Cyanide Total	1 0 U	1 U	NR
Fluoride			
Nitrate Nitrite Nitrogen	3 30	6 30	2 96
Total Organic Carbon			
pH			
Sulfate	40 0	73 0	27
Specific Conductance			
Turbidity			
Sulfide			
Oil and Grease			
Ignitability			
% Solids			
Total Dissolved Solids	375	433	285
HCO3	184	176	189
CO3			
Suspended Solids			
Hexavalent Chromium (Cr+6)			

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

METALS

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

		RFW Batch ID	0587 881 015			0187 881 002			0187 881 069			0587 881 016		
		Customer ID	1 71 03 09 87			1 71 03 09 87			1 71 04 30 87			1 71 05 01 87		
		Matrix	Water			Water			Water			Water		
		Units	MG/L			MG/L			MG/L			MG/L		
Metals														
Silver	(Ag)	total				0 0076	U		0 0076	U				
Aluminum	(Al)	total				0 0290	U		0 0290	U				
Arsenic	(As)	total	0 01	U		0 01	U		0 01	U		0 01	U	
Barium	(Ba)	total				0 3006	U		0 2387					
Beryllium	(Be)	total				0 0050	U		0 005	U				
Calcium	(Ca)	total				74 2379			71 7187					
Cadmium	(Cd)	total	0 005	U		0 0050	U		0 005	U		0 005	U	
Cobalt	(Co)	total				0 0220	U		0 0220	U				
Chromium	(Cr)	total				0 0100	U		0 0100	U				
Cesium	(Cs)	total	0 2	U		0 2	U		0 2	U		0 2	U	
Copper	(Cu)	total				0 0063	U		0 0063	U				
Iron	(Fe)	total				0 4360			0 2571					
Mercury	(Hg)	total	0 0002	U		0 0002	U		0 0002	U		0 0002	U	
Potassium	(K)	total	5 0	U		5 0	U		5 0	U		5 0	U	
Lithium	(Li)	total												
Magnesium	(Mg)	total				14 5046			16 2021					
Manganese	(Mn)	total				0 1243			0 1025					
Molybdenum	(Mo)	total				0 0220	U		0 0220	U				
Sodium	(Na)	total				16 5882			18 9527					
Nickel	(Ni)	total				0 0370	U		0 0370	U				
Lead	(Pb)	total	0 005	U		0 005	U		0 005	U		0 005	U	
Antimony	(Sb)	total	0 06	U		0 0600	U		0 0600	U		0 06	U	
Selenium	(Se)	total	0 005	U		0 0050	U		0 0050	U		0 005	U	
Strontium	(Sr)	total				0 4816			0 5248					
Thallium	(Tl)	total	0 01	U		0 01	U		0 01	U		0 01	U	
Vanadium	(V)	total				0 0240	U		0 0240	U				
Zinc	(Zn)	total	0 02	U		0 0200	U		0 02	U		0 02	U	

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

RFW Batch ID	0287 881 004	0387 881 018	0187 881 001	0187 881 010
Customer ID	1 71 05 22 87	1 71 07 02 87	1 71FB 03 09 87	1 74 03 11 87
Matrix	Water	Water	Water	Water
Units	MG/L	MG/L	MG/L	MG/L

Metals

Silver	(Ag)	total	0 0076	U	0 0076	U	0 0076	U	0 0076	U
Aluminum	(Al)	total	0 0290	U	0 0505		0 029	U	0 0290	U
Arsenic	(As)	total	0 01	U	0 005	U	0 01	U	0 01	U
Barium	(Ba)	total	0 2969		0 2990		0 010	U	0 1854	
Beryllium	(Be)	total	0 005	U	0 005	U	0 005	U	0 005	U
Calcium	(Ca)	total	86 5157		79 9108		0 75	U	107 6855	
Cadmium	(Cd)	total	0 005	U	0 001	U	0 005	U	0 005	U
Cobalt	(Co)	total	0 0220	U	0 0220	U	0 22	U	0 0220	U
Chromium	(Cr)	total	0 0100	U	0 0100	U	0 010	U	0 0100	U
Cesium	(Cs)	total	0 2	U	0 02	U	0 2	U	0 2	U
Copper	(Cu)	total	0 0063	U	0 0138		0 0063	U	0 0063	U
Iron	(Fe)	total	1 2330		0 7001		0 0069	U	0 0069	U
Mercury	(Hg)	total	0 0002	U	0 0002	U	0 0002	U	0 0002	U
Potassium	(K)	total	5 0	U	1 2		5 0	U	5 0	U
Lithium	(Li)	total								
Magnesium	(Mg)	total	14 9964		13 5221		0 020	U	14 7324	
Manganese	(Mn)	total	0 1627		0 1437		0 0051	U	0 0051	U
Molybdenum	(Mo)	total	0 0220	U	0 0220	U	0 022	U	0 0220	U
Sodium	(Na)	total	19 9155		19 1208		2 10	U	8 7453	
Nickel	(Ni)	total	0 0370	U	0 0502		0 037	U	0 0370	U
Lead	(Pb)	total	0 020		0 005	U	0 005	U	0 005	U
Antimony	(Sb)	total	0 06	U	0 02	U			0 0600	U
Selenium	(Se)	total	0 005	U	0 005	U	0 0050	U	0 0050	U
Strontium	(Sr)	total	0 4885		0 5254		0 020	U	0 5391	
Thallium	(Tl)	total	0 01	U	0 01	U	0 01	U	0 01	U
Vanadium	(V)	total	0 0240	U	0 0240	U	0 024	U	0 0240	U
Zinc	(Zn)	total	0 0417		0 0310		0 02	U	0 02	U

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

	RFW Batch ID	0287 881 006	0387 881 048	0187 881 089	0287 881 052
	Customer ID	1 74 05 22 87	1 74 07 23 87	10 81 05 11 87	10 81 06 18 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L
Metals					
Silver (Ag) total		0 0076 U	0 0076 U	0 0076 U	0 0076 U
Aluminum (Al) total		0 0655	0 0290 U	0 0433	0 0290 U
Arsenic (As) total		0 01 U	0 005 U	0 01 U	0 01 U
Barium (Ba) total		0 1781	0 1830	0 1354	0 0461
Beryllium (Be) total		0 005 U	0 005 U	0 005 U	0 005 U
Calcium (Ca) total		115 7480	105 9773	14 6231	17 2256
Cadmium (Cd) total		0 005 U	0 001 U	0 005 U	0 005 U
Cobalt (Co) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Chromium (Cr) total		0 0100 U	0 0100 U	0 0100 U	0 0100 U
Cesium (Cs) total		0 2 U	0 02 U	0 2 U	0 2 U
Copper (Cu) total		0 0063 U	0 0072	0 0090	0 0063 U
Iron (Fe) total		0 0333	0 0069 U	0 0282	0 0144
Mercury (Hg) total		0 0002 U	0 0002	0 0002 U	0 002 U
Potassium (K) total		5 0 U	0 8	5 0 U	5 0 U
Lithium (Li) total					
Magnesium (Mg) total		15 2494	13 5031	2 7824	2 9793
Manganese (Mn) total		0 0111	0 0060	0 0051 U	0 0051 U
Molybdenum(Mo) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Sodium (Na) total		13 1215	9 0118	10 6409	9 5838
Nickel (Ni) total		0 0370 U	0 0370 U	0 0370 U	0 0370 U
Lead (Pb) total		0 008	0 005 U	0 005 U	0 010
Antimony (Sb) total		0 06 U	0 02 U	0 0600 U	0 06 U
Selenium (Se) total		0 005 U	0 005 U	0 0050 U	0 005 U
Strontium (Sr) total		0 5225	0 5248	0 0832	0 0908
Thallium (Tl) total		0 01 U	0 01 U	0 01 U	0 01 U
Vanadium (V) total		0 0240 U	0 0240 U	0 0240 U	0 0245
Zinc (Zn) total		0 0335	0 0200 U	0 04	0 0200 U

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

	RFW Batch ID	0387 881 10'	0387 881 103	0687 881 009	0687 881 001
	Customer ID	10 81 08 21 87	10 81D 08 21 87	11 87 09 17 87	12 87 09 01 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L
Metals					
Silver (Ag) total		0 0076 U	0 0076 U	0 0076 U	0 0076 U
Aluminum (Al) total		0 0400	0 0509	0 0290 U	0 0852
Arsenic (As) total		0 005 U	0 005 U	0 005 U	0 005 U
Barium (Ba) total		0 1010	0 1024	0 1299	0 0843
Beryllium (Be) total		0 005 U	0 005 U	0 005 U	0 005 U
Calcium (Ca) total		17 7583	17 3812	116 9472	35 1950
Cadmium (Cd) total		0 001 U	0 001 U	0 001 U	0 0005 J
Cobalt (Co) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Chromium (Cr) total		0 0144	0 0100 U	0 0100 U	0 0100 U
Cesium (Cs) total		0 02 U	0 02 U	0 07	0 02
Copper (Cu) total		0 0099	0 0066	0 0063 U	0 0063 U
Iron (Fe) total		0 0246	0 0263	0 0069 U	0 0385
Mercury (Hg) total		0 0002 U	0 0002 U	0 0002 U	0 0002 U
Potassium (K) total		1 0	0 8	7 9	3 5
Lithium (Li) total					13
Magnesium (Mg) total		3 3620	3 2901	29 0439	6 5848
Manganese (Mn) total		0 0051 U	0 0051 U	0 2596	0 1233
Molybdenum(Mo) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Sodium (Na) total		14 4885	13 9764	51 3263	213 3728
Nickel (Ni) total		0 0370 U	0 0370 U	0 0370 U	0 1084
Lead (Pb) total		0 005 U	0 005 U	0 003 J	0 005 U
Antimony (Sb) total		0 02 U	0 02 U	0 02 U	0 02 U
Selenium (Se) total		0 005 U	0 005 U	0 024	0 005 U
Strontium (Sr) total		0 0963	0 0961	0 9591	0 2646
Thallium (Tl) total		0 01 U	0 01 U	0 01 U	0 01 U
Vanadium (V) total		0 0240 U	0 0240 U	0 0240 U	0 0240 U
Zinc (Zn) total		0 1858	0 1135	0 0200 U	0 0210

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number — Client ROCKWELL (ROCKY FLATS) —

Sample Information

	RFW Batch ID	0687 881 002	0687 881 016	0687 881 003	0387 881 012
	Customer ID	14 87 09 02 87	14 87 10 13 87	15 87 09 11 87	15 87 10 08 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L
Metals					
Silver (Ag) total		0 0076 U	0 0076 U	0 0076 U	0 0076 U
Aluminum (Al) total		0 5102	1 1972	0 0290 U	0 0358
Arsenic (As) total		0 005 U		0 005 U	0 005 U
Barium (Ba) total		0 9321	0 1196	0 2255	0 1917
Beryllium (Be) total		0 005 U		0 005 U	0 005 U
Calcium (Ca) total		408 4416	81 2350	127 6927	133 3401
Cadmium (Cd) total		0 001 U		0 001 U	0 001 U
Cobalt (Co) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Chromium (Cr) total		0 0399	0 0382	0 0100 U	0 0100 U
Cesium (Cs) total		0 02 U		0 02 U	
Copper (Cu) total		0 0090	0 0090	0 0063 U	0 0087
Iron (Fe) total		0 0069 U	0 0599	0 0069 U	0 0069 U
Mercury (Hg) total		0 0002 U		0 0002 U	0 0002 U
Potassium (K) total		31		1 49	
Lithium (Li) total		0 055		0 015	
Magnesium (Mg) total		0 0295	0 1458	9 8934	10 5314
Manganese (Mn) total		0 0051 U	0 0051 U	0 3044	0 1396
Molybdenum(Mo) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Sodium (Na) total		96 2131	76 9625	10 0809	9 3217
Nickel (Ni) total		0 0370 U	0 0370 U	0 0370 U	0 0370 U
Lead (Pb) total		0 005 U		0 005 U	
Antimony (Sb) total		0 02 U		0 02 U	
Selenium (Se) total		0 005 U		0 005 U	0 005 U
Strontium (Sr) total		7 7076	1 4379	0 4483	0 4795
Thallium (Tl) total		0 01 U		0 01 U	0 01 U
Vanadium (V) total		0 0240 U	0 0915	0 0240 U	0 0240 U
Zinc (Zn) total		0 0200 U	0 0200 U	0 0200 U	0 0200 U

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

	RFW Batch ID	0687 881 012	0687 881 013	0687 881 004	0687 881 018
	Customer ID	15 87 10 08 87	15 87D 10 08 87	16 87 09 11 87	16 87 10 17 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L

Metals

Silver	(Ag)	total	0 0076 U	0 0076 U	0 0076 U	0 0076 U
Aluminum	(Al)	total	0 0358	0 0290 U	0 0290 U	0 0876
Arsenic	(As)	total	0 005 U		0 005 U	
Barium	(Ba)	total	0 1917	0 1920	0 0613	0 0354
Beryllium	(Be)	total	0 005 U		0 005 U	
Calcium	(Ca)	total	133 3401	134 0580	26 8178	20 5145
Cadmium	(Cd)	total	0 001 U		0 001 U	
Cobalt	(Co)	total	0 0220 U	0 0220 U	0 0220 U	0 0220 U
Chromium	(Cr)	total	0 0100 U	0 0100 U	0 0100 U	0 0278
Cesium	(Cs)	total	NA		0 02 U	
Copper	(Cu)	total	0 0087	0 0088	0 0063 U	0 0063 U
Iron	(Fe)	total	0 0069 U	0 0069 U	0 0069 U	0 1371
Mercury	(Hg)	total	0 0002 U		0 0002 U	
Potassium	(K)	total	NA		5 6	
Lithium	(Li)	total			0 035	
Magnesuim	(Mg)	total	10 5314	10 4154	1 7309	2 6440
Manganese	(Mn)	total	0 1396	0 1393	0 0051 U	0 0051 U
Molybdenum	(Mo)	total	0 0220 U	0 0220 U	0 0367	0 0250
Sodium	(Na)	total	9 3217	7 6207	61 3752	60 8289
Nickel	(Ni)	total	0 0370 U	0 0370 U	0 0370 U	0 0370 U
Lead	(Pb)	total	NA		0 005 U	
Antimony	(Sb)	total	NA		0 02 U	
Selenium	(Se)	total	0 005 U		0 005 U	
Strontium	(Sr)	total	0 4795	0 4800	0 2202	0 2522
Thallium	(Tl)	total	0 01 U		0 01 U	
Vanadium	(V)	total	0 0240 U	0 0240 U	0 0240 U	0 0256
Zinc	(Zn)	total	0 0200 U	0 0200 U	0 0200 U	0 0200 U

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

RFW Batch ID	0687 881 024	0187 881 007	0187 881 046	0287 881 003
Customer ID	17 87 11 06 87	2 71 03 11 87	2 71 04 09 87	2 71 05 22 87
Matrix	Water	Water	Water	Water
Units	MG/L	MG/L	MG/L	MG/L

Metals

Silver	(Ag)	total	0 0076	U	0 0076	U	0 0076	U	0 0076	U
Aluminum	(Al)	total	0 0306		0 0290	U	0 0290	U	0 0643	
Arsenic	(As)	total			0 01	U	0 01	U	0 01	U
Barium	(Ba)	total	0 1587		0 1175		0 0748		0 0829	
Beryllium	(Be)	total			0 005	U	0 005	U	0 005	U
Calcium	(Ca)	total	93 1877		65 6058		66 4747		86 2693	
Cadmium	(Cd)	total			0 005	U	0 005	U	0 005	U
Cobalt	(Co)	total	0 0220	U	0 0220	U	0 0220	U	0 0220	U
Chromium	(Cr)	total	0 0109		0 0100	U	0 0100	U	0 0100	U
Cesium	(Cs)	total			0 2000	U	0 2	U	0 2	U
Copper	(Cu)	total	0 4235		0 0063	U	0 0063	U	0 0063	U
Iron	(Fe)	total	0 0523		0 9181		0 0069	U	0 7071	
Mercury	(Hg)	total			0 0002	U	0 0002	U	0 0002	U
Potassium	(K)	total			5 0000	U	5 0	U	5 0	U
Lithium	(Li)	total								
Magnesium	(Mg)	total	13 3333		16 4740		20 0582		22 6418	
Manganese	(Mn)	total	1 2694		0 1551		0 0456		0 0428	
Molybdenum	(Mo)	total	0 0220	U	0 0220	U	0 0220	U	0 0220	U
Sodium	(Na)	total	28 5863		187 0130		187 6075		195 6574	
Nickel	(Ni)	total	0 6874		0 0370	U	0 0370	U	0 0370	U
Lead	(Pb)	total			0 0050	U	0 005	U	0 019	
Antimony	(Sb)	total			0 0600	U	0 0600	U	0 06	U
Selenium	(Se)	total			0 0210		0 03		0 036	
Strontium	(Sr)	total	0 5982		0 5942		0 6070		0 6492	
Thallium	(Tl)	total			0 0100	U	0 01	U	0 01	U
Vanadium	(V)	total	0 0240	U	0 0240	U	0 0240	U	0 0240	U
Zinc	(Zn)	total	2 5552		0 0400		0 04		0 0346	

WESTON ANALYTICS
METALS
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RFW Batch Number -- Client ROCKWELL (ROCKY FLATS)

Sample Information

	RFW Batch ID	0387 881 019		0187 881 008		0187 881 014		0287 881 005	
	Customer ID	2 71 07 02 87		2 71D 03 11 87		22 74 03 13 87		22 74 05 22 87	
	Matrix	Water		Water		Water		Water	
	Units	MG/L		MG/L		MG/L		MG/L	
Metals									
Silver (Ag) total		0 0076	U	0 0076	U	0 0076	U	0 0076	U
Aluminum (Al) total		0 0367		0 0290	U	0 0290	U	0 0290	U
Arsenic (As) total		0 003	J	0 0100	U	0 0100	U	0 01	U
Barium (Ba) total		0 0909		0 1139		0 2133		0 1969	
Beryllium (Be) total		0 005	U	0 005	U	0 0050	U	0 005	U
Calcium (Ca) total		95 6300		66 2810		97 3944		103 8300	
Cadmium (Cd) total		0 001	U	0 0050	U	0 0050	U	0 005	U
Cobalt (Co) total		0 0220	U	0 0220	U	0 0220	U	0 0200	U
Chromium (Cr) total		0 0100	U	0 0100	U	0 0100	U	0 0100	U
Cesium (Cs) total		0 02	U	0 2000	U	0 2000	U	0 02	U
Copper (Cu) total		0 0169		0 0063	U	0 0063	U	0 0078	
Iron (Fe) total		0 0132		0 9204		0 0069	U	0 0143	
Mercury (Hg) total		0 0003		0 0002	U	0 0002	U	0 0002	U
Potassium (K) total		2 6		5 0	U	5 0000	U	5 0	U
Lithium (Li) total									
Magnesium (Mg) total		25 7632		16 3429		19 4344		18 1591	
Manganese (Mn) total		0 0333		0 1477		0 0051	U	0 0051	U
Molybdenum(Mo) total		0 0220	U	0 0220	U	0 0220	U	0 0220	U
Sodium (Na) total		221 1795		190 1731		29 3958		33 3721	
Nickel (Ni) total		0 0370	U	0 0370	U	0 0370	U	0 0370	U
Lead (Pb) total		0 005	U	0 0050	U	0 0050	U	0 022	
Antimony (Sb) total		0 02	U	0 0600	U	0 0600	U	0 06	U
Selenium (Se) total		0 026		0 0230		0 0050	U	0 005	U
Strontium (Sr) total		0 8473		0 5929		0 9296		0 8147	
Thallium (Tl) total		0 01	U	0 0100	U	0 0100	U	0 01	U
Vanadium (V) total		0 0240	U	0 0240	U	0 0240	U	0 0240	U
Zinc (Zn) total		0 0351		0 0500		0 03		0 0393	

WESTON ANALYTICS
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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

	RFW Batch ID	0387 881 059	0687 881 005	0687 881 019	0687 881 006
	Customer ID	22 74 07 28 87	23 87 09 11 87	23 87 10 22 87	25 87 09 11 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L
Metals					
Silver (Ag) total		0 0076 U	0 0076 U	0 0076 U	0 0076 U
Aluminum (Al) total		0 0887	0 0417	0 1725	0 0290 U
Arsenic (As) total		0 005 U	0 005 U		0 005 U
Barium (Ba) total		0 2474	0 1842	0 1632	0 1720
Beryllium (Be) total		0 005 U	0 005 U		0 005 U
Calcium (Ca) total		101 2017	112 9795	94 3186	115 8560
Cadmium (Cd) total		0 001 U	0 001 U		0 001 U
Cobalt (Co) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Chromium (Cr) total		0 0100 U	0 0100 U	0 0676	0 0100 U
Cesium (Cs) total		0 02 U	0 02 U		0 02 U
Copper (Cu) total		0 0064	0 0063 U	0 0063 U	0 0063 U
Iron (Fe) total		0 0515	0 0069 U	0 1942	0 0069 U
Mercury (Hg) total		0 0002 U	0 0002 U		0 0002
Potassium (K) total		2 3	4 6		3 9
Lithium (Li) total			0 01 J		0 05
Magnesium (Mg) total		17 3086	14 4141	12 8861	8 5770
Manganese (Mn) total		0 0416	0 2832	0 2422	0 7061
Molybdenum(Mo) total		0 0220 U	0 0220 U	0 0220 U	0 0227
Sodium (Na) total		37 2635	12 9332	8 8855	12 3185
Nickel (Ni) total		0 0370 U	0 0370 U	0 0370 U	0 0370 U
Lead (Pb) total		0 005 U	0 005 U		0 005 U
Antimony (Sb) total		0 02 U	0 02 U		0 02 U
Selenium (Se) total		0 005 U	0 005 U		0 005 U
Strontium (Sr) total		0 8662	0 6216	0 5299	0 3776
Thallium (Tl) total		0 01 U	0 01		0 01 U
Vanadium (V) total		0 0251	0 0240 U	0 0282	0 0240 U
Zinc (Zn) total		0 0234	0 0822	0 0301	0 0200 U

WESTON ANALYTICS
METALS
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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

	RFW Batch ID	0687 881 020	0687 881 022	0187 881 016	0287 881 028
	Customer ID	25 87 10 22 87	29 87 10 29 87	3 74 03 17 87	3 74 06 04 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L
Metals					
Silver (Ag) total		0 0076 U	0 0076 U	0 0076 U	0 0076 U
Aluminum (Al) total		2 6796	0 0503	0 3854	0 0290 U
Arsenic (As) total				0 01 U	0 01 U
Barium (Ba) total		0 1524	0 0686	0 2881	0 2045
Beryllium (Be) total				0 005 U	0 005 U
Calcium (Ca) total		110 7037	288 2088	134 7004	111 5307
Cadmium (Cd) total				0 005 U	0 005 U
Cobalt (Co) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Chromium (Cr) total		0 0785	0 0348	0 0100 U	0 0100 U
Cesium (Cs) total				0 2 U	0 2 U
Copper (Cu) total		0 0063 U	0 0088	0 0085	0 0063 U
Iron (Fe) total		4 3470	0 0798	0 0580	0 0069 U
Mercury (Hg) total				0 0002 U	0 0002 U
Potassium (K) total				5 0 U	5 0 U
Lithium (Li) total					
Magnesium (Mg) total		8 0261	112 0688	11 9124	11 0585
Manganese (Mn) total		0 3485	0 3851	0 0625	0 0051 U
Molybdenum(Mo) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Sodium (Na) total		9 3252	360 1402	21 9046	29 1251
Nickel (Ni) total		0 0370 U	0 0505	0 0370 U	0 0452
Lead (Pb) total				0 005 U	0 005 U
Antimony (Sb) total				0 06 U	0 06 U
Selenium (Se) total				0 005 U	0 005 U
Strontium (Sr) total		0 3112	3 8208	0 4007	0 3992
Thallium (Tl) total				0 01 U	0 01 U
Vanadium (V) total		0 0401	0 0240 U	0 0240 U	0 0240 U
Zinc (Zn) total		0 0886	0 1800	0 36	0 0200 U

WESTON ANALYTICS
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RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 049	0687 881 023	0687 881 021	0187 881 017
Customer ID	3 74 07 23 87	31 87 10 29 87	32 87 10 27 87	34 86 03 17 87
Matrix	Water	Water	Water	Water
Units	MG/L	MG/L	MG/L	MG/L

Metals

Silver	(Ag)	total	0 0076	U	0 0076	U	0 0076	U	0 0076	U
Aluminum	(Al)	total	0 0290	U	0 2634		0 0349		0 0290	U
Arsenic	(As)	total	0 005	U					0 01	U
Barium	(Ba)	total	0 1884		0 0562		0 1902		0 0288	
Beryllium	(Be)	total	0 005	U					0 005	U
Calcium	(Ca)	total	126 5740		15 3345		97 7697		241 5299	
Cadmium	(Cd)	total	0 001	U					0 005	U
Cobalt	(Co)	total	0 0220	U	0 0220	U	0 0220	U	0 0220	U
Chromium	(Cr)	total	0 0100	U	0 0260		0 0417		0 0100	U
Cesium	(Cs)	total	0 02	U					0 2	U
Copper	(Cu)	total	0 0064		0 0141		0 0063	U	0 0063	U
Iron	(Fe)	total	0 0086		0 1701		0 0945		0 6726	
Mercury	(Hg)	total	0 0002	U					0 0002	U
Potassium	(K)	total	0 9						8 6	
Lithium	(Li)	total								
Magnesium	(Mg)	total	11 1472		0 1157		15 4193		62 6727	
Manganese	(Mn)	total	0 0051	U	0 0051	U	0 6198		0 0718	
Molybdenum	(Mo)	total	0 0220	U	0 0568		0 0220	U	0 0220	U
Sodium	(Na)	total	31 6352		78 5306		24 5042		227 7501	
Nickel	(Ni)	total	0 0370	U	0 0370	U	0 0463		0 0370	U
Lead	(Pb)	total	0 005	U					0 005	U
Antimony	(Sb)	total	0 02	U					0 06	U
Selenium	(Se)	total	0 004	J					0 005	U
Strontium	(Sr)	total	0 3951		0 1768		0 5598		2 8304	
Thallium	(Tl)	total	0 01	U					0 01	U
Vanadium	(V)	total	0 0240	U	0 1137		0 0240	U	0 0240	U
Zinc	(Zn)	total	0 0200	U	0 0237		0 0200	U	0 06	

WESTON ANALYTICS
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RFW Batch Number ---- Client ROCKWELL (ROCKY FLATS)

Sample Information

	RFW Batch ID	0187 881 038	0287 881 024	0387 881 060	0187 881 018
	Customer ID	34 86 04 06 87	34 86 06 02 87	34 86 07 28 87	35 86 03 17 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L
Metals					
Silver (Ag) total		0 0076 U	0 0076 U	0 0076 U	0 0076 U
Aluminum (Al) total		0 0290 U	0 0334	0 0524	0 0290 U
Arsenic (As) total		0 0100 U	0 01 U	0 005 U	0 01 U
Barium (Ba) total		0 0878	0 0247	0 0354	0 0610
Beryllium (Be) total		0 005 U	0 005 U	0 005 U	0 005 U
Calcium (Ca) total		236 2398	235 2524	242 3112	135 3189
Cadmium (Cd) total		0 0050 U	0 005 U	0 001 U	0 005 U
Cobalt (Co) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Chromium (Cr) total		0 0100 U	0 0114	0 0100 U	0 0100 U
Cesium (Cs) total		0 2 U	0 2 U	0 02 U	0 2 U
Copper (Cu) total		0 0063 U	0 0096	0 0063 U	0 0063 U
Iron (Fe) total		0 4421	1 0040	1 5312	0 1039
Mercury (Hg) total		0 0002 U	0 0002 U	0 0002 U	0 0002 U
Potassium (K) total		8 0	8 2	3 2	5 0 U
Lithium (Li) total					
Magnesuim (Mg) total		65 0379	72 6015	72 7323	30 6946
Manganese (Mn) total		0 1019	0 0159	0 1205	3 8078
Molybdenum(Mo) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Sodium (Na) total		220 6902	221 9862	231 0510	207 7142
Nickel (Ni) total		0 0370 U	0 0370 U	0 0370 U	0 0434
Lead (Pb) total		0 0050 U	0 005 U	0 005 U	0 0050 U
Antimony (Sb) total		0 06 U	0 06 U	0 02 U	0 06 U
Selenium (Se) total		0 005 U	0 005 U	0 005 U	0 005 U
Strontium (Sr) total		2 8040	2 8541	2 9499	0 8188
Thallium (Tl) total		0 0100 U	0 01 U	0 01 U	0 01 U
Vanadium (V) total		0 0240 U	0 0240 U	0 245	0 0240 U
Zinc (Zn) total		0 08	0 0200 U	0 02004	0 04

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RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0287 881 026	0387 881 061	0687 881 025	0187 881 077
Customer ID	35 86 06 03 87	35 86 07 28 87	36 87 11 06 87	39 86 05 06 87
Matrix	Water	Water	Water	Water
Units	MG/L	MG/L	MG/L	MG/L

Metals

Silver	(Ag)	total	0 0076	U	0 0076	U	0 0076	U	0 0076	U
Aluminum	(Al)	total	0 0290	U	0 1061		0 0327		0 0290	U
Arsenic	(As)	total	0 01	U	0 005	U			0 01	U
Barium	(Ba)	total	0 0461		0 1152		0 1858		0 2274	
Beryllium	(Be)	total	0 005	U	0 005	U			0 005	U
Calcium	(Ca)	total	81 1221		144 6914		98 4384		120 5403	
Cadmium	(Cd)	total	0 005	U	0 0005	J			0 005	U
Cobalt	(Co)	total	0 0220	U	0 0220	U	0 0220	U	0 0220	U
Chromium	(Cr)	total	0 0100	U	0 0100	U	0 0100	U	0 0100	U
Cesium	(Cs)	total	0 2	U	0 02	U			0 2	U
Copper	(Cu)	total	0 0084		0 0097		0 0109		0 0063	U
Iron	(Fe)	total	0 0206		0 1100		0 0261		0 0069	U
Mercury	(Hg)	total	0 0002	U	0 0002	U			0 0002	U
Potassium	(K)	total	5 0	U	1 5				5 0	U
Lithium	(Li)	total								
Magnesium	(Mg)	total	25 0285		29 8413		9 6752		11 8066	
Manganese	(Mn)	total	0 4866		3 4848		0 3544		0 0067	
Molybdenum	(Mo)	total	0 0220	U	0 0220	U	0 0220	U	0 0220	U
Sodium	(Na)	total	172 5748		210 0584		11 0671		15 8685	
Nickel	(Ni)	total	0 0370	U	0 0370	U	0 0548		0 0370	U
Lead	(Pb)	total	0 005	U	0 005	U			0 005	U
Antimony	(Sb)	total	0 06	U	0 02	U			0 0600	U
Selenium	(Se)	total	0 005	U	0 005	U			0 0050	U
Strontium	(Sr)	total	0 6088		0 8092		0 3658		0 5293	
Thallium	(Tl)	total	0 01	U	0 01	U			0 01	U
Vanadium	(V)	total	0 0240	U	0 0241		0 0240	U	0 0240	U
Zinc	(Zn)	total	0 0200	U	0 0443		0 0365		0 02	U

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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

	RFW Batch ID	0287 881 027		0387 881 054		0187 881 076		0187 881 079	
	Customer ID	39 86 06 03 87		39 86 07 23 87		40 86 05 06 87		41 86 05 06 87	
	Matrix	Water		Water		Water		Water	
	Units	MG/L		MG/L		MG/L		MG/L	
Metals									
Silver (Ag) total		0 0076	U	0 0076	U	0 0076	U	0 0076	U
Aluminum (Al) total		0 0384		0 0756		0 4668		0 0290	U
Arsenic (As) total		0 01	U	0 005	U	0 0100	U	0 01	U
Barium (Ba) total		0 2166		0 2411		0 0719		0 1802	
Beryllium (Be) total		0 005	U	0 005	U	0 005	U	0 005	U
Calcium (Ca) total		93 0783		112 5738		152 5210		130 3624	
Cadmium (Cd) total		0 005	U	0 0003	J	0 0050	U	0 005	U
Cobalt (Co) total		0 0220	U	0 0220	U	0 0220	U	0 0220	U
Chromium (Cr) total		0 0100	U	0 0100	U	0 0100	U	0 0100	U
Cesium (Cs) total		0 2	U	0 02	U	0 2	U	0 2	U
Copper (Cu) total		0 0078		0 0094		0 0130		0 0063	U
Iron (Fe) total		0 0274		0 0433		0 2441		0 0069	U
Mercury (Hg) total		0 0002	U	0 005		0 0002	U	0 0002	U
Potassium (K) total		5 0	U	1 1		6 0		3 0	
Lithium (Li) total									
Magnesium (Mg) total		10 0903		11 0669		31 2705		17 7762	
Manganese (Mn) total		0 0051	U	0 0084		0 5351		0 2290	
Molybdenum(Mo) total		0 0220	U	0 0220	U	0 1305		0 0220	U
Sodium (Na) total		15 5111		16 2862		134 5506		25 9055	
Nickel (Ni) total		0 0370	U	0 0370	U	0 0551		0 0370	U
Lead (Pb) total		0 005	U	0 005	U	0 0050	U	0 005	U
Antimony (Sb) total		0 06	U	0 02	U	0 06	U	0 0600	U
Selenium (Se) total		0 005	U	0 002	J	0 005	U	0 0050	U
Strontium (Sr) total		0 4562		0 4936		1 4881		0 6754	
Thallium (Tl) total		0 01	U	0 01	U	0 0100	U	0 01	U
Vanadium (V) total		0 0240	U	0 0289		0 0240	U	0 0240	U
Zinc (Zn) total		0 0200	U	0 0563		0 05		0 02	U

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RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

		RFW Batch ID	0287 881 025			0387 881 046			0187 881 013			0287 881 007	
		Customer ID	41 86 06 02 87			41 86 07 21 87			42 86 03 12 87			42 86 05 26 87	
		Matrix	Water			Water			Water			Water	
		Units	MG/L			MG/L			MG/L			MG/L	
Metals													
Silver	(Ag)	total	0 0076	U		0 0076	U		0 0076	U		0 0076	U
Aluminum	(Al)	total	0 0290	U		0 0397			2 6303			0 0290	U
Arsenic	(As)	total	0 01	U		0 005	U		0 01	U		0 01	U
Barium	(Ba)	total	0 1372			0 1832			0 3254			0 1893	
Beryllium	(Be)	total	0 005	U		0 005	U		0 005	U		0 005	U
Calcium	(Ca)	total	41 9511			111 9865			164 5958			145 0887	
Cadmium	(Cd)	total	0 005	U		0 001	U		0 005	U		0 005	U
Cobalt	(Co)	total	0 0220	U		0 0220	U		0 0220	U		0 0220	U
Chromium	(Cr)	total	0 0100	U		0 0100	U		0 0100	U		0 0100	U
Cesium	(Cs)	total	0 2	U		0 02	U		0 2	U		0 2	U
Copper	(Cu)	total	0 0077			0 0112			0 0070			0 0063	U
Iron	(Fe)	total	0 5796			0 0112			2 1119			0 0109	
Mercury	(Hg)	total	0 0002	U		0 0002	U		0 0002	U		0 0002	U
Potassium	(K)	total	8 2			3 1			5 0	U		5 0	U
Lithium	(Li)	total											
Magnesium	(Mg)	total	16 0342			16 1562			14 9256			13 0698	
Manganese	(Mn)	total	0 0051	U		0 0754			0 3424			0 0391	
Molybdenum	(Mo)	total	0 0220	U		0 0220	U		0 0220	U		0 0220	U
Sodium	(Na)	total	18 0695			18 2521			17 9722			14 4499	
Nickel	(Ni)	total	0 0370	U		0 0613			0 1005			0 0370	U
Lead	(Pb)	total	0 005	U		0 005	U		0 005	U		0 013	
Antimony	(Sb)	total	0 06	U		0 02	U		0 0600	U		0 06	U
Selenium	(Se)	total	0 005	U		0 005	U		0 0050	U		0 005	U
Strontium	(Sr)	total	0 5429			0 5832			0 5742			0 5034	U
Thallium	(Tl)	total	0 01	U		0 01	U		0 01	U		0 01	U
Vanadium	(V)	total	0 0240	U		0 0366			0 240	U		0 0240	U
Zinc	(Zn)	total	0 0200	U		0 0200	U		0 03			0 0200	U

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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

	RFW Batch ID	0387 881 053	0187 881 011	0287 881 030	0387 881 062
	Customer ID	42 86 07 24 87	43 86 03 11 87	43 86 06 04 87	43 86 07 28 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L

Metals

Silver	(Ag)	total	0 0076	U	0 0076	U	0 0076	U	0 0076	U
Aluminum	(Al)	total	0 5356		0 0290	U	0 0290	U	0 0412	
Arsenic	(As)	total	0 005	U	0 01	U	0 01	U	0 005	U
Barium	(Ba)	total	0 2371		0 0994		0 1065		0 1602	
Beryllium	(Be)	total	0 005	U	0 005	U	0 005	U	0 005	U
Calcium	(Ca)	total	130 8069		90 8264		68 0295		94 7105	
Cadmium	(Cd)	total	0 0004	J	0 005	U	0 005	U	0 0004	J
Cobalt	(Co)	total	0 0220	U	0 0220	U	0 0220	U	0 0220	U
Chromium	(Cr)	total	0 0100	U	0 0100	U	0 0100	U	0 0100	U
Cesium	(Cs)	total	0 02	U	0 2	U	0 2	U	0 02	U
Copper	(Cu)	total	0 0141		0 0063	U	0 0063	U	0 0063	U
Iron	(Fe)	total	0 3656		0 0069	U	0 0126		0 0159	
Mercury	(Hg)	total	0 013		0 0002	U	0 0002	U	0 0002	U
Potassium	(K)	total	1 2		5 0	U	5 0	U	1 3	
Lithium	(Li)	total								
Magnesium	(Mg)	total	10 9716		10 5382		6 7585		7 9498	
Manganese	(Mn)	total	0 0203		0 0051	U	0 0051	U	0 0054	
Molybdenum	(Mo)	total	0 0220	U	0 0220	U	0 0238		0 0220	U
Sodium	(Na)	total	15 3966		13 5408		8 1258		14 1637	
Nickel	(Ni)	total	0 0375		0 0370	U	0 0370	U	0 0370	U
Lead	(Pb)	total	0 005		0 005	U	0 005	U	0 005	U
Antimony	(Sb)	total	0 02	U	0 0600	U	0 06	U	0 02	U
Selenium	(Se)	total	0 005	U	0 0050	U	0 005	U	0 005	U
Strontium	(Sr)	total	0 4566		0 4313		0 3216		0 3888	
Thallium	(Tl)	total	0 01	U	0 01	U	0 01	U	0 01	U
Vanadium	(V)	total	0 0240	U	0 0240	U	0 0240	U	0 0240	U
Zinc	(Zn)	total	0 0200	U	0 04		0 0200	U	0 0219	

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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

	RFW Batch ID	0187 881 101	0287 881 059	0387 881 090	0187 881 039
	Customer ID	46 86 05 14 87	46 86 06 23 87	46 86-08 14 87	48 86 04 08 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L
Metals					
Silver (Ag) total		0 0076 U	0 0076 U	0 0076 U	0 0076 U
Aluminum (Al) total		0 7932	0 0290 U	0 0370	0 0510
Arsenic (As) total		0 01 U	0 01 U	0 005 U	0 0100 U
Barium (Ba) total		0 2010	0 1498	0 2224	0 0357
Beryllium (Be) total		0 005 U	0 005 U	0 005 U	0 005 U
Calcium (Ca) total		33 8259	36 0500	43 8021	7 0742
Cadmium (Cd) total		0 005 U	0 005 U	0 001 U	0 0050 U
Cobalt (Co) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Chromium (Cr) total		0 0100 U	0 0100 U	0 0100 U	0 0100 U
Cesium (Cs) total		0 2 U	0 2 U	0 02 U	0 2 U
Copper (Cu) total		0 0093	0 0063 U	0 0090	0 0063 U
Iron (Fe) total		0 5391	0 0279	0 0137	0 0087
Mercury (Hg) total		0 0002 U	0 0003	0 0002 U	0 0002 U
Potassium (K) total		5 0 U	8 0	4 4	6 0 U
Lithium (Li) total					
Magnesium (Mg) total		9 6724	10 7961	11 7295	1 4113
Manganese (Mn) total		0 0884	0 0680	0 0710	0 0051 U
Molybdenum(Mo) total		0 0220 U	0 0244	0 0224	0 0327
Sodium (Na) total		28 5185	32 6587	37 7556	37 2643
Nickel (Ni) total		0 0370 U	0 0370 U	0 0370 U	0 0370 U
Lead (Pb) total		0 005 U	0 030 U	0 005 U	0 0050 U
Antimony (Sb) total		0 0600 U	0 06 U	0 02 U	0 06 U
Selenium (Se) total		0 0050 U	0 005 U	0 005 U	0 005 U
Strontium (Sr) total		0 3764	0 4548	0 4952	0 1795
Thallium (Tl) total		0 01 U	0 01 U	0 01 U	0 0100 U
Vanadium (V) total		0 0240 U	0 0240 U	0 0240 U	0 0240 U
Zinc (Zn) total		0 02 U	0 0200 U	0 0200 U	0 09

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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

	RFW Batch ID	0287 881 054	0387 881 105	0187 881 041	0287 881 053
	Customer ID	48 86 06 18 87	48 86 08 25 87	49 86 04 08 87	49 86 06 18 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L
Metals					
Silver (Ag) total		0 0076 U	0 0076 U	0 0076 U	0 0076 U
Aluminum (Al) total		0 0407	0 0353	0 2107	0 0290 U
Arsenic (As) total		0 01 U	0 004 J	0 0100 U	0 01 U
Barium (Ba) total		0 0100 U	0 1318	0 5163	0 0551
Beryllium (Be) total		0 005 U	0 005 U	0 005 U	0 005 U
Calcium (Ca) total		9 0635	18 1628	34 7669	29 4858
Cadmium (Cd) total		0 005 U	0 001 U	0 0050 U	0 005 U
Cobalt (Co) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Chromium (Cr) total		0 0100 U	0 0100 U	0 0100 U	0 0100 U
Cesium (Cs) total		0 2 U	0 02 U	0 2 U	0 2 U
Copper (Cu) total		0 0063 U	0 0083	0 0063 U	0 0063 U
Iron (Fe) total		0 0646	0 0089	0 0293	0 0078
Mercury (Hg) total		0 0002 U	0 0002 U	0 0002 U	0 0002 U
Potassium (K) total		5 8	5 7	5 0 U	5 0 U
Lithium (Li) total					
Magnesium (Mg) total		1 9987	5 6337	7 3621	5 6582
Manganese (Mn) total		0 0051 U	0 0769	0 2289	0 0248
Molybdenum(Mo) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Sodium (Na) total		45 4743	46 7407	36 0378	27 8577
Nickel (Ni) total		0 0370 U	0 0370 U	0 0370 U	0 0370 U
Lead (Pb) total		0 029	0 005 U	0 0050 U	0 020
Antimony (Sb) total		0 06 U	0 02 U	0 06 U	0 06 U
Selenium (Se) total		0 005 U	0 005 U	0 005 U	0 005 U
Strontium (Sr) total		0 1417	0 3266	0 1843	0 1487
Thallium (Tl) total		0 01 U	0 01 U	0 0100 U	0 01 U
Vanadium (V) total		0 0334	0 0240 U	0 0240 U	0 0240 U
Zinc (Zn) total		0 0200 U	0 0200 U	0 49	0 0200 U

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RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

		RFW Batch ID	0387 881 106		0187 881 081		0287 881 049		0387 881 092	
		Customer ID	49 86 08 25 87		50 86 05 11 87		50 86 06 17 877		50 86 08 14 87	
		Matrix	Water		Water		Water		Water	
		Units	MG/L		MG/L		MG/L		MG/L	

Metals

Silver	(Ag)	total	0 0076	U	0 0076	U	0 0076	U	0 0076	U
Aluminum	(Al)	total	0 0392		0 0567		0 0290	U	0 0290	U
Arsenic	(As)	total	0 005	U	0 0100	U	0 01	U	0 005	U
Barium	(Ba)	total	0 1204		0 1588		0 0597		0 0822	
Beryllium	(Be)	total	0 005	U	0 005	U	0 005	U	0 005	U
Calcium	(Ca)	total	20 5711		36 4507		34 4230		31 0017	
Cadmium	(Cd)	total	0 001	U	0 0011		0 005	U	0 001	U
Cobalt	(Co)	total	0 0220	U	0 0220	U	0 0220	U	0 0220	U
Chromium	(Cr)	total	0 0100	U	0 1356		0 0100	U	0 0114	
Cesium	(Cs)	total	0 02	U	0 2	U	0 2	U	0 02	U
Copper	(Cu)	total	0 0084		0 0261		0 0063	U	0 0063	U
Iron	(Fe)	total	0 0211		0 5953		0 0069	U	0 0106	
Mercury	(Hg)	total	0 0002	U	0 0002	U	0 0002	U	0 0002	U
Potassium	(K)	total	1 3		5 0	U	5 0	U	0 8	
Lithium	(Li)	total								
Magnesium	(Mg)	total	4 3797		5 3889		5 1092		5 0253	
Manganese	(Mn)	total	0 0210		0 1940		0 0051	U	0 0051	U
Molybdenum	(Mo)	total	0 0220	U	0 0220	U	0 0220	U	0 0220	U
Sodium	(Na)	total	26 6908		12 9888		9 6210		10 7212	
Nickel	(Ni)	total	0 0370	U	0 0701		0 0370	U	0 0370	U
Lead	(Pb)	total	0 005	U	0 0050	U	0 015		0 005	U
Antimony	(Sb)	total	0 02	U	0 06	U	0 06	U	0 02	U
Selenium	(Se)	total	0 005	U	0 005	U	0 005	U	0 005	U
Strontium	(Sr)	total	0 1356		0 1750		0 1768		0 1791	
Thallium	(Tl)	total	0 01	U	0 0100	U	0 01	U	0 01	U
Vanadium	(V)	total	0 0240	U	0 0240	U	0 0240	U	0 0240	U
Zinc	(Zn)	total	0 0267		0 07		0 0200	U	0 0237	

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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

	RFW Batch ID	0187 881 093	0287 881 058	0387 881 098	0387 881 099
	Customer ID	51 86 05 13 87	51 86 06 18 87	51 86 08 20 87	51 86D 08 20 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L
Metals					
Silver (Ag) total		0 0076 U	0 0076 U	0 0076 U	0 0076 U
Aluminum (Al) total		0 1042	0 0290 U	0 8289	1 1184
Arsenic (As) total		0 0100 U	0 01 U	0 005 U	
Barium (Ba) total		0 1330	0 0514	0 1502	0 1532
Beryllium (Be) total		0 005 U	0 005 U	0 005 U	
Calcium (Ca) total		23 0047	19 1503	18 9247	19 4397
Cadmium (Cd) total		0 0050 U	0 005 U	0 001 U	
Cobalt (Co) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Chromium (Cr) total		0 0100 U	0 0100 U	0 0173	0 0140
Cesium (Cs) total		0 2 U	0 2 U	0 02 U	
Copper (Cu) total		0 0174 U	0 0063 U	0 0063 U	0 0063 U
Iron (Fe) total		0 0711	0 0069 U	0 5748	0 6475
Mercury (Hg) total		0 0002 U	0 0002 U	0 0002 U	
Potassium (K) total		5 0 U	5 0 U	0 6	
Lithium (Li) total					
Magnesium (Mg) total		4 5871	3 3494	3 4800	3 5468
Manganese (Mn) total		0 0265	0 0065	0 0242	0 0263
Molybdenum(Mo) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Sodium (Na) total		14 6574	9 4233	16 3487	15 7681
Nickel (Ni) total		0 0370 U	0 0370 U	0 0370 U	0 0370 U
Lead (Pb) total		0 0050 U	0 036	0 005 U	
Antimony (Sb) total		0 06 U	0 06 U	0 02 U	
Selenium (Se) total		0 005 U	0 005 U	0 005 U	
Strontium (Sr) total		0 1227	0 0913	0 0984	0 0990
Thallium (Tl) total		0 0100 U	0 01 U	0 01 U	
Vanadium (V) total		0 0240 U	0 0240 U	0 0240 U	0 0240 U
Zinc (Zn) total		0 07	0 0200 U	0 0336	0 0404

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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

RFW Batch ID	0287 881 084	0387 881 095	0187 881 045	0287 881 014
Customer ID	52 86 06 18 87	52 86 08 19 87	54 86 04 08 87	54 86 05 28 87
Matrix	Water	Water	Water	Water
Units	MG/L	MG/L	MG/L	MG/L

Metals

Silver	(Ag)	total			0 0076	U	0 0076	U	0 0076	U
Aluminum	(Al)	total			0 0329		0 0290	U	0 0290	U
Arsenic	(As)	total	0 01	U	0 004	J	0 01	U	0 01	U
Barium	(Ba)	total			0 0755		0 1062		0 0570	
Beryllium	(Be)	total	0 005	U	0 005	U	0 005	U	0 005	U
Calcium	(Ca)	total			25 1182		104 4088		110 4414	
Cadmium	(Cd)	total	0 005	U	0 001	U	0 005	U	0 005	U
Cobalt	(Co)	total			0 0220	U	0 0220	U	0 0220	U
Chromium	(Cr)	total			0 0100	U	0 0100	U	0 0100	U
Cesium	(Cs)	total	0 2	U	0 02	U	0 2	U	0 2	U
Copper	(Cu)	total			0 0083		0 0063	U	0 0098	
Iron	(Fe)	total			0 0114		0 0069	U	0 0069	U
Mercury	(Hg)	total	0 0002	U	0 0002	U	0 0002	U	0 0002	U
Potassium	(K)	total	5 0	U	1 2		5 0	U	5 0	U
Lithium	(Li)	total								
Magnesium	(Mg)	total			1 8027		25 0889		22 3296	
Manganese	(Mn)	total			0 0051	U	0 2275		0 0850	
Molybdenum	(Mo)	total			0 0553		0 0220	U	0 0220	U
Sodium	(Na)	total			21 5207		36 0480		35 7643	
Nickel	(Ni)	total			0 0370	U	0 0370	U	0 0370	U
Lead	(Pb)	total	0 011		0 005	U	0 005	U	0 019	
Antimony	(Sb)	total	0 06	U	0 02	U	0 0600	U	0 06	U
Selenium	(Se)	total	0 005	U	0 005	U	0 0050	U	0 005	U
Strontium	(Sr)	total			0 1715		0 8713		0 8216	
Thallium	(Tl)	total	0 01	U	0 01	U	0 01	U	0 01	U
Vanadium	(V)	total			0 0304		0 0240	U	0 0240	U
Zinc	(Zn)	total	0 02	U	0 0200	U	0 05		0 0326	

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RFW Batch Number — Client ROCKWELL (ROCKY FLATS) —

Sample Information

	RFW Batch ID	0187 881 104		0287 881 015		0187 881 108		0287 881 013	
	Customer ID	55 86 05 18 87		55 86 05 28 87		56 86 05 19 87		56 86 05 27 87	
	Matrix	Water		Water		Water		Water	
	Units	MG/L		MG/L		MG/L		MG/L	
Metals									
Silver (Ag)	total	0 0076	U	0 0076	U	0 0076	U	0 0076	U
Aluminum (Al)	total	0 2226		0 0331		0 0921		0 3316	
Arsenic (As)	total	0 0100	U	0 01	U	0 01	U	0 01	U
Barium (Ba)	total	0 0495		0 0477		0 0668		0 0599	
Beryllium (Be)	total	0 005	U	0 005	U	0 005	U	0 005	U
Calcium (Ca)	total	32 5947		33 7842		30 7456		25 8710	
Cadmium (Cd)	total	0 0050	U	0 005	U	0 005	U	0 005	U
Cobalt (Co)	total	0 0220	U	0 0220	U	0 0220	U	0 0220	U
Chromium (Cr)	total	0 0100	U	0 0100	U	0 0257		0 0100	U
Cesium (Cs)	total	0 2	U	0 2	U	0 2	U	0 2	U
Copper (Cu)	total	0 0063	U	0 0063	U	0 0063	U	0 0071	
Iron (Fe)	total	0 1248		0 0069	U	0 3115		0 3674	
Mercury (Hg)	total	0 0002	U	0 0002	U	0 0002	U	0 0002	U
Potassium (K)	total	5 0	U	5 0	U	5 0	U	5 0	U
Lithium (Li)	total								
Magnesium (Mg)	total	5 8869		5 6911		6 8858		5 4196	
Manganese (Mn)	total	0 0655		0 0235		0 0481		0 0197	
Molybdenum(Mo)	total	0 0220	U	0 0220	U	0 0222		0 0220	U
Sodium (Na)	total	13 0930		12 1739		21 4615		19 2985	
Nickel (Ni)	total	0 0370	U	0 0370	U	0 0370	U	0 0370	U
Lead (Pb)	total	0 0050	U	0 010		0 005	U	0 018	
Antimony (Sb)	total	0 06	U	0 06	U	0 0600	U	0 06	U
Selenium (Se)	total	0 005	U	0 005	U	0 0050	U	0 005	U
Strontium (Sr)	total	0 1497		0 1430		0 1668		0 1393	
Thallium (Tl)	total	0 0100	U	0 01	U	0 01	U	0 01	U
Vanadium (V)	total	0 0240	U	0 0240		0 0240	U	0 0240	U
Zinc (Zn)	total	0 02	U	0 0200		0 02	U	0 0306	

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RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

	RFW Batch ID	0187 881 044	0587 881 021	0187 881 068	0587 881 022
	Customer ID	62 86 04 09 87	62 86 04 10 87	62 86 04 29 87	62 86 04 30 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L
Metals					
Silver (Ag) total		0 0076 U		0 0076 U	
Aluminum (Al) total		0 1455		0 0839	
Arsenic (As) total		0 01 U	0 01 U	0 01 U	0 01 U
Barium (Ba) total		0 0239		0 0191	
Beryllium (Be) total		0 005 U		0 005 U	
Calcium (Ca) total		37 1320		32 5061	
Cadmium (Cd) total		0 005 U	0 005 U	0 005 U	0 005 U
Cobalt (Co) total		0 0220 U		0 0220 U	
Chromium (Cr) total		0 0128		0 0100 U	
Cesium (Cs) total		0 2 U	0 2 U	0 2 U	0 2 U
Copper (Cu) total		0 0063 U		0 0063 U	
Iron (Fe) total		0 0069 U		0 0069 U	
Mercury (Hg) total		0 0002 U	0 0002 U	0 0002 U	0 0002 U
Potassium (K) total		13 0	13 0	10 0	10 0
Lithium (Li) total					
Magnesium (Mg) total		4 1261		4 3072	
Manganese (Mn) total		0 0051 U		0 0051 U	
Molybdenum(Mo) total		0 0220 U		0 0220 U	
Sodium (Na) total		53 4960		58 5839	
Nickel (Ni) total		0 0370 U		0 0370 U	
Lead (Pb) total		0 005 U	0 005 U	0 005 U	0 005 U
Antimony (Sb) total		0 0600 U	0 06 U	0 0600 U	0 06 U
Selenium (Se) total		0 06	0 057	0 04	0 044
Strontium (Sr) total		0 4131		0 3812	
Thallium (Tl) total		0 01 U	0 01 U	0 01 U	0 01 U
Vanadium (V) total		0 0240 U		0 0240 U	
Zinc (Zn) total		0 05	0 05 U	0 02 U	0 02 U

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RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

	RFW Batch ID	0287 881 009	0387 881 024	0587 881 023	0187 881 065
	Customer ID	62 86 05 27 87	62 86 07 07 87	64 86 04 29 87	64 86 04 29 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L
Metals					
Silver (Ag) total		0 0076 U	0 0076 U		0 0076 U
Aluminum (Al) total		0 0647	0 0600		0 0290 U
Arsenic (As) total		0 01 U	0 005 U	0 01 U	0 0100 U
Barium (Ba) total		0 0322	0 0356		0 1111
Beryllium (Be) total		0 005 U	0 005 U		0 005 U
Calcium (Ca) total		38 7927	35 4258		52 1962
Cadmium (Cd) total		0 005 U	0 0003 J	0 005 U	0 0050 U
Cobalt (Co) total		0 0220 U	0 0220 U		0 0220 U
Chromium (Cr) total		0 0100 U	0 0189		0 0100 U
Cesium (Cs) total		0 2 U	0 02 U	0 2 U	0 2 U
Copper (Cu) total		0 0103	0 0166		0 0063 U
Iron (Fe) total		0 0225	0 0272		0 0069 U
Mercury (Hg) total		0 0002 U	0 0008	0 0002 U	0 0002 U
Potassium (K) total		9 5 U	8 2	5 0 U	5 0 U
Lithium (Li) total					
Magnesium (Mg) total		6 8863	8 1709		16 1115
Manganese (Mn) total		0 0051 U	0 0051 U		0 2782
Molybdenum(Mo) total		0 0220 U	0 0220 U		0 0220 U
Sodium (Na) total		56 0170	60 8007		88 4763
Nickel (Ni) total		0 0370 U	0 0370		0 4380
Lead (Pb) total		0 021	0 005 U	0 005 U	0 0050 U
Antimony (Sb) total		0 06 U	0 02 U	0 06 U	0 06 U
Selenium (Se) total		0 044	0 05	0 005 U	0 005 U
Strontium (Sr) total		0 3969	0 4878		0 4237
Thallium (Tl) total		0 01 U	0 01 U	0 01 U	0 0100 U
Vanadium (V) total		0 0240 U	0 0240 U		0 0240 U
Zinc (Zn) total		0 0200 U	0 0200 U	0 02 U	0 02

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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

	RFW Batch ID	0387 881 044	0187 881 090	0287 881 020	0387 881 116
	Customer ID	64 86 07 17 87	65 86 05 13 87	65 86 05 29 87	65 86 09 09 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L
Metals					
Silver (Ag) total		0 0076 U	0 0076 U	0 0076 U	0 0076 U
Aluminum (Al) total		0 0430	0 0290 U	0 0290 U	0 2410
Arsenic (As) total		0 005 U	0 0100 U	0 01 U	0 005 U
Barium (Ba) total		0 0774	0 0922	0 1085	0 2399
Beryllium (Be) total		0 005 U	0 005 U	0 005 U	0 005 U
Calcium (Ca) total		76 4896	85 8800	92 4841	99 8950
Cadmium (Cd) total		0 0003 J	0 0050 U	0 005 U	0 001
Cobalt (Co) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Chromium (Cr) total		0 0100 U	0 0100 U	0 0100 U	0 0100 U
Cesium (Cs) total		0 02 U	0 2 U	0 2 U	0 02 U
Copper (Cu) total		0 0341	0 0063 U	0 0063 U	0 0202
Iron (Fe) total		0 0069 U	0 0154	0 0086	0 4065
Mercury (Hg) total		0 006	0 0002 U	0 0002 U	0 0002 U
Potassium (K) total		2 4	5 0 U	5 0 U	2 7
Lithium (Li) total					
Magnesium (Mg) total		23 3312	20 9975	20 0700	26 1863
Manganese (Mn) total		0 1053	0 0145	0 0092	0 1589
Molybdenum(Mo) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Sodium (Na) total		167 2014	74 5395	72 2864	75 5453
Nickel (Ni) total		0 0370 U	0 0370 U	0 0370 U	0 0534
Lead (Pb) total		0 005 U	0 0050 U	0 024	0 001 J
Antimony (Sb) total		0 02 U	0 06 U	0 06 U	0 02 U
Selenium (Se) total		0 002 J	0 005 U	0 005 U	0 005 U
Strontium (Sr) total		0 6982	0 5659	0 5725	0 7864
Thallium (Tl) total		0 01 U	0 0100 U	0 01 U	0 01 U
Vanadium (V) total		0 0368	0 0240 U	0 0240 U	0 0240 U
Zinc (Zn) total		0 0218	0 02 U	0 0271	0 0990

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RFW Batch Number -- Client ROCKWELL (ROCKY FLATS)

Sample Information

			RFW Batch ID	0187 881 084			0287 881 018			0187 881 083			0287 881 021			
			Customer ID	66 86 05 11 87			66 86 05 29 87			67 86 05 11 87			67 86 06 01 87			
			Matrix	Water			Water			Water			Water			
			Units	MG/L			MG/L			MG/L			MG/L			
Metals																
Silver	(Ag)	total		0 0076	U		0 0076	U		0 0076	U		0 0076	U		
Aluminum	(Al)	total		0 0411			0 0290	U		0 0434			0 0290	U		
Arsenic	(As)	total		0 0100	U		0 01	U		0 0100	U		0 01	U		
Barium	(Ba)	total		0 0726			0 1065			0 0909			0 1412			
Beryllium	(Be)	total		0 005	U		0 005	U		0 005	U		0 005	U		
Calcium	(Ca)	total		33 8505			49 7015			88 8143			85 1284			
Cadmium	(Cd)	total		0 0050	U		0 005	U		0 0050	U		0 005	U		
Cobalt	(Co)	total		0 0220	U		0 0220	U		0 0220	U		0 0220	U		
Chromium	(Cr)	total		0 0100	U		0 0100	U		0 0100	U		0 0100	U		
Cesium	(Cs)	total		0 2	U		0 2	U		0 2	U		0 2	U		
Copper	(Cu)	total		0 0063	U		0 0063	U		0 0091			0 0063	U		
Iron	(Fe)	total		0 0193			0 0125			0 0223			0 0069	U		
Mercury	(Hg)	total		0 0002	U		0 0002	U		0 0002	U		0 0002	U		
Potassium	(K)	total		5 0	U		5 0	U		5 0	U		5 0	U		
Lithium	(Li)	total														
Magnesium	(Mg)	total		7 6188			9 5567			38 0920			33 2019			
Manganese	(Mn)	total		0 1277			0 1474			0 0051	U		0 0051	U		
Molybdenum	(Mo)	total		0 0220	U		0 0220	U		0 0220	U		0 0220	U		
Sodium	(Na)	total		23 3693			28 6255			91 2838			80 9195			
Nickel	(Ni)	total		0 0983			0 0370	U		0 0370	U		0 0370	U		
Lead	(Pb)	total		0 0050	U		0 018			0 0050	U		0 022			
Antimony	(Sb)	total		0 06	U		0 06	U		0 06	U		0 06	U		
Selenium	(Se)	total		0 005	U		0 005	U		0 005	U		0 005	U		
Strontium	(Sr)	total		0 2074			0 2748			1 2075			1 0895			
Thallium	(Tl)	total		0 0100	U		0 01	U		0 0100	U		0 01	U		
Vanadium	(V)	total		0 0240	U		0 0240	U		0 0240	U		0 0240	U		
Zinc	(Zn)	total		0 02	U		0 0200	U		0 02	U		0 0677			

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

		RFW Batch ID	0387 881 047			0187 881 080			0287 881 017			0387 881 050			
		Customer ID	67 86 07 21 87			7 74 05 07 87			7 74 05 29 87			7 74 07 23 87			
		Matrix	Water			Water			Water			Water			
		Units	MG/L			MG/L			MG/L			MG/L			
Metals															
Silver	(Ag)	total	0 0076	U		0 0076	U		0 0076	U		0 0076	U		
Aluminum	(Al)	total	0 0379			0 0290	U		0 0290	U		0 0300			
Arsenic	(As)	total	0 005	U		0 01	U		0 01	U		0 005	U		
Barium	(Ba)	total	0 0824			0 1447			0 1559			0 1728			
Beryllium	(Be)	total	0 005	U		0 005	U		0 005	U		0 005	U		
Calcium	(Ca)	total	84 8549			99 6755			102 9226			9905678			
Cadmium	(Cd)	total	0 001	U		0 005	U		0 005	U		0 001	U		
Cobalt	(Co)	total	0 0220	U		0 0220	U		0 0220	U		0 0220	U		
Chromium	(Cr)	total	0 0100	U		0 0100	U		0 0100	U		0 0100	U		
Cesium	(Cs)	total	0 02	U		0 2	U		0 2	U		0 02	U		
Copper	(Cu)	total	0 0175			0 0063	U		0 0063	U		0 0066			
Iron	(Fe)	total	0 0531			0 0081			0 0128			0 0069	U		
Mercury	(Hg)	total	0 0002	U		0 0002	U		0 0002	U		0 0002	U		
Potassium	(K)	total	0 8			5 0	U		5 0	U		1 3			
Lithium	(Li)	total													
Magnesium	(Mg)	total	32 6420			11 3116			11 6059			13 0517			
Manganese	(Mn)	total	0 0051	U		0 0051	U		0 0051	U		0 0051	U		
Molybdenum	(Mo)	total	0 0220	U		0 0220	U		0 0220	U		0 0220	U		
Sodium	(Na)	total	91 2942			17 2628			13 0137			18 7144			
Nickel	(Ni)	total	0 0370	U		0 0370	U		0 0370	U		0 0370	U		
Lead	(Pb)	total	0 005	U		0 005	U		0 006			0 005	U		
Antimony	(Sb)	total	0 02	U		0 0600	U		0 06	U		0 002	U		
Selenium	(Se)	total	0 003	J		0 0050	U		0 005	U		0 002	J		
Strontium	(Sr)	total	1 0861			0 3836			0 3916			0 4422			
Thallium	(Tl)	total	0 01	U		0 01	U		0 01	U		0 01	U		
Vanadium	(V)	total	0 0359			0 0240	U		0 0240	U		0 0240	U		
Zinc	(Zn)	total	0 0200	U		0 02	U		0 0200	U		0 0200	U		

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 051	0687 881 015
Customer ID	7 74DUP 07 23 87	9 87 10 13 87
Matrix	Water	Water
Units	MG/L	MG/L

Metals

Silver	(Ag)	total	0 0076	U	0 0076	U
Aluminum	(Al)	total	0 0309		0 0439	
Arsenic	(As)	total			0 005	U
Barium	(Ba)	total	0 1757		0 1173	
Beryllium	(Be)	total			0 005	U
Calcium	(Ca)	total	99 1419		68 6964	
Cadmium	(Cd)	total			0 0005	J
Cobalt	(Co)	total	0 0220	U	0 0220	U
Chromium	(Cr)	total	0 0100	U	0 0208	
Cesium	(Cs)	total			0 01	J
Copper	(Cu)	total	0 0063	U	0 0063	U
Iron	(Fe)	total	0 0069	U	0 0728	
Mercury	(Hg)	total			0 0002	
Potassium	(K)	total			0 98	
Lithium	(Li)	total				
Magnesium	(Mg)	total	13 0791		6 0421	
Manganese	(Mn)	total	0 0051	U	0 0051	U
Molybdenum	(Mo)	total	0 0220	U	0 0220	U
Sodium	(Na)	total	17 5660		8 7941	
Nickel	(Ni)	total	0 0370	U	0 0370	U
Lead	(Pb)	total			NA	
Antimony	(Sb)	total			NA	
Selenium	(Se)	total			0 005	U
Strontium	(Sr)	total	0 4488		0 2590	
Thallium	(Tl)	total			0 01	U
Vanadium	(V)	total	0 0240	U	0 0240	U
Zinc	(Zn)	total	0 0200	U	0 0320	

APPENDIX F 3

SURFACE WATER ANALYTICAL DATA

VOLATILE ORGANICS

WESTON ANALYTICS
GC/MS DATA SUMMARY
Volatile HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 001	0387 881 002	0387 881 003	0387 881 004
Customer ID	SW 27 07 22 87	SW 28 07 22 87	SW 50 07 21 87	SW 51 07 21 87
Matrix	Water	Water	Water	Water
Units	UG/L	MG/L	MG/L	MG/L
Dilution Factor	1	1	1	1

Surrogate Recovery

Toluene d8	%	%	%	%
Bromofluorobenzene	%	%	%	%
1 2 Dichloroethane d4	%	%	%	%

Analytes

Chloromethane	NR	NR	NR	NR
Bromomethane	NR	NR	NR	NR
Vinyl Chloride	NR	NR	NR	NR
Chloroethane	NR	NR	NR	NR
Methylene Chloride	NR	NR	NR	NR
Acetone	NR	NR	NR	NR
Carbon Disulfide	NR	NR	NR	NR
1 1 Dichloroethene	5 U	5 U	140	101
1 1 Dichloroethane	NR	NR	NR	NR
Trans 1 2 Dichloroethene	5 U	5 U	5 U	5 U
Chloroform	5 U	5 U	84	5 U
1 2 Dichloroethane	5 U	5 U	5 U	5 U
2 Butanone	NR	NR	NR	NR
1 1 1 Trichloroethane	5 U	5 U	5 U	5 U
Carbon Tetrachloride	5 U	5 U	1 005	282
Vinyl Acetate	NR	NR	NR	NR
Bromodichloromethane	NR	NR	NR	NR
1 2 Dichloropropane	NR	NR	NR	NR
Trans 1 3 Dichloropropene	NR	NR	NR	NR
Trichloroethene	5 U	5 U	40	17
Dibromochloromethane	NR	NR	NR	NR
1 1 2 Trichloroethane	5 U	5 U	5 U	5 U
Benzene	NR	NR	NR	NR
cis 1 3 Dichloropropene	NR	NR	NR	NR
2 Chloroethylvinylether	NR	NR	NR	NR
Bromoform	NR	NR	NR	NR
4 Methyl 2 pentanone	NR	NR	NR	NR
2 Hexanone	NR	NR	NR	NR
Tetrachloroethene	5 U	5 U	65	44
1 1 2 2 Tetrachloroethane	NR	NR	NR	NR
Toluene	NR	NR	NR	NR
Chlorobenzene	NR	NR	NR	NR
Ethylbenzene	NR	NR	NR	NR
Styrene	NR	NR	NR	NR
Total Xylenes	NR	NR	NR	NR

WESTON ANALYTICS
GC/MS DATA SUMMARY
Volatile HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

RFW Batch ID	0387 881 005	0387 881 006	0387 881 007	0387 881 008
Customer ID	SW 52 07 21 87	SW 53 07 21 87	SW 55 07 21 87	SW 56 07 21 87
Matrix	Water	Water	Water	Water
Units	MG/L	MG/L	MG/L	MG/L
Dilution Factor	1	1	1	1

Surrogate Recovery

Toluene d8	%	%	%	%
Bromofluorobenzene	%	%	%	%
1 2 Dichloroethane d4	%	%	%	%

Analytes

Chloromethane	NR	NR	NR	NR
Bromomethane	NR	NR	NR	NR
Vinyl Chloride	NR	NR	NR	NR
Chloroethane	NR	NR	NR	NR
Methylene Chloride	NR	NR	NR	NR
Acetone	NR	NR	NR	NR
Carbon Disulfide	NR	NR	NR	NR
1 1 Dichloroethene	73	5 U	50	143
1 1 Dichloroethane	NR	NR	NR	NR
Trans 1 2 Dichloroethene	5 U	5 U	5 U	5 U
Chloroform	5 U	5 U	5 U	5 U
1 2 Dichloroethane	5 U	5 U	5 U	5 U
2 Butanone	NR	NR	NR	NR
1 1 1 Trichloroethane	5 U	5 U	5 U	5 U
Carbon Tetrachloride	5 U	5 U	5 U	5 U
Vinyl Acetate	NR	NR	NR	NR
Bromodichloromethane	NR	NR	NR	NR
1 2 Dichloropropane	NR	NR	NR	NR
Trans 1 3 Dichloropropene	NR	NR	NR	NR
Trichloroethene	5 U	5 U	5 U	50
Dibromochloromethane	NR	NR	NR	NR
1 1 2 Trichloroethane	5 U	5 U	5 U	5 U
Benzene	NR	NR	NR	NR
cis 1 3 Dichloropropene	NR	NR	NR	NR
2 Chloroethylvinylether	NR	NR	NR	NR
Bromoform	NR	NR	NR	NR
4 Methyl 2 pentanone	NR	NR	NR	NR
2 Hexanone	NR	NR	NR	NR
Tetrachloroethene	5 U	5 U	5 U	72
1 1 2 2 Tetrachloroethane	NR	NR	NR	NR
Toluene	NR	NR	NR	NR
Chlorobenzene	NR	NR	NR	NR
Ethylbenzene	NR	NR	NR	NR
Styrene	NR	NR	NR	NR
Total Xylenes	NR	NR	NR	NR

WESTON ANALYTICS
GC/MS DATA SUMMARY
Volatile HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

RFW Batch ID	0387 881 009	0387 881 010	0387 881 011	0387 881 012
Customer ID	SW 57 07 21 87	SW 58 07 21 87	SW 59 07 21 87	SW 60 07 21 87
Matrix	Water	Water	Water	Water
Units	MG/L	MG/L	MG/L	MG/L
Dilution Factor	1	1	1	1

Surrogate Recovery

Toluene d8	%	%	%	%
Bromofluorobenzene	%	%	%	%
1 2 Dichloroethane d4	%	%	%	%

Analytes

Chloromethane	NR	NR	NR	NR
Bromomethane	NR	NR	NR	NR
Vinyl Chloride	NR	NR	NR	NR
Chloroethane	NR	NR	NR	NR
Methylene Chloride	NR	NR	NR	NR
Acetone	NR	NR	NR	NR
Carbon Disulfide	NR	NR	NR	NR
1 1 Dichloroethene	48	5 U	133	5 U
1 1 Dichloroethane	NR	NR	NR	NR
Trans 1 2 Dichloroethene	5 U	5 U	5 U	5 U
Chloroform	5 U	5 U	40	5 U
1 2 Dichloroethane	5 U	5 U	5 U	5 U
2 Butanone	NR	NR	NR	NR
1 1 1 Trichloroethane	5 U	5 U	5 U	5 U
Carbon Tetrachloride	5 U	5 U	605	173
Vinyl Acetate	NR	NR	NR	NR
Bromodichloromethane	NR	NR	NR	NR
1 2 Dichloropropane	NR	NR	NR	NR
Trans 1 3 Dichloropropene	NR	NR	NR	NR
Trichloroethene	5 U	5 U	62	5 U
Dibromochloromethane	NR	NR	NR	NR
1 1 2 Trichloroethane	5 U	5 U	5 U	5 U
Benzene	NR	NR	NR	NR
cis 1 3 Dichloropropene	NR	NR	NR	NR
2 Chloroethylvinylether	NR	NR	NR	NR
Bromoform	NR	NR	NR	NR
4 Methyl 2 pentanone	NR	NR	NR	NR
2 Hexanone	NR	NR	NR	NR
Tetrachloroethene	5 U	5 U	60	5 U
1 1 2 2 Tetrachloroethane	NR	NR	NR	NR
Toluene	NR	NR	NR	NR
Chlorobenzene	NR	NR	NR	NR
Ethylbenzene	NR	NR	NR	NR
Styrene	NR	NR	NR	NR
Total Xylenes	NR	NR	NR	NR

WESTON ANALYTICS
GC/MS DATA SUMMARY
Volatile HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 013	0387 881 014	0387 881 015	0387 881 016
Customer ID	SW 61 07 22 87	SW 62 07 22 87	SW 63 07 24 87	SW 64 07 22 87
Matrix	Water	Water	Water	Water
Units	MG/L	MG/L	MG/L	MG/L
Dilution Factor	1	1	1	1

Surrogate Recovery

Toluene d8	%	%	%	%
Bromofluorobenzene	%	%	%	%
1 2 Dichloroethane d4	%	%	%	%

Analytes

Chloromethane	NR	NR	NR	NR
Bromomethane	NR	NR	NR	NR
Vinyl Chloride	NR	NR	NR	NR
Chloroethane	NR	NR	NR	NR
Methylene Chloride	NR	NR	NR	NR
Acetone	NR	NR	NR	NR
Carbon Disulfide	NR	NR	NR	NR
1 1 Dichloroethene	5 U	5 U	5 U	5 U
1 1 Dichloroethane	NR	NR	NR	NR
Trans 1 2 Dichloroethene	5 U	5 U	5 U	5 U
Chloroform	5 U	5 U	5 U	5 U
1 2 Dichloroethane	5 U	5 U	5 U	5 U
2 Butanone	NR	NR	NR	NR
1 1 1 Trichloroethane	33	5 U	5 U	5 U
Carbon Tetrachloride	5 U	5 U	5 U	5 U
Vinyl Acetate	NR	NR	NR	NR
Bromodichloromethane	NR	NR	NR	NR
1 2 Dichloropropane	NR	NR	NR	NR
Trans 1 3 Dichloropropene	NR	NR	NR	NR
Trichloroethene	6	5 U	5 U	20
Dibromochloromethane	NR	NR	NR	NR
1 1 2 Trichloroethane	5 U	5 U	5 U	5 U
Benzene	NR	NR	NR	NR
cis 1 3 Dichloropropene	NR	NR	NR	NR
2 Chloroethylvinylether	NR	NR	NR	NR
Bromoform	NR	NR	NR	NR
4 Methyl 2 pentanone	NR	NR	NR	NR
2 Hexanone	NR	NR	NR	NR
Tetrachloroethene	5 U	5 U	5 U	5 U
1 1 2 2 Tetrachloroethane	NR	NR	NR	NR
Toluene	NR	NR	NR	NR
Chlorobenzene	NR	NR	NR	NR
Ethylbenzene	NR	NR	NR	NR
Styrene	NR	NR	NR	NR
Total Xylenes	NR	NR	NR	NR

WESTON ANALYTICS
GC/MS DATA SUMMARY
Volatile HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

RFW Batch ID	8608 033 0010	8608 033 0260	8608 033 0060	8608 033 0110
Customer ID	SW81088600	SW81088601	SW82088600	SW83088600
Matrix	Water	Water	Water	Water
Units	UG/L	UG/L	UG/L	UG/L
Dilution Factor	1	1	1	1

Surrogate Recovery

Toluene d8	99 %	98 %	99 %	98 %
Bromofluorobenzene	100 %	99 %	100 %	100 %
1 2 Dichloroethane d4	93 %	90 %	93 %	91 %

Analytes

Chloromethane	10 U	10 U	10 U	10 U
Bromomethane	10 U	10 U	10 U	10 U
Vinyl Chloride	10 U	10 U	10 U	10 U
Chloroethane	5 5	1 J	79	3 J
Methylene Chloride	5 U	25	5 U	5 U
Acetone	57 U	57 U	57 U	57 U
Carbon Disulfide	5 U	5 U	5 U	5 U
1 1 Dichloroethene	5 U	5 U	5 U	5 U
1 1 Dichloroethane	5 U	5 U	5 U	5 U
Trans 1 2 Dichloroethene	5 U	5 U	5 U	5 U
Chloroform	5 U	5 U	5 U	5 U
1 2 Dichloroethane	5 U	5 U	5 U	5 U
2 Butanone	10 U	10 U	10 U	10 U
1 1 1 Trichloroethane	5 U	5 U	5 U	5 U
Carbon Tetrachloride	5 U	5 U	5 U	5 U
Vinyl Acetate	10 U	10 U	10 U	10 U
Bromodichloromethane	5 U	5 U	5 U	5 U
1 2 Dichloropropane	5 U	5 U	5 U	5 U
Trans 1 3 Dichloropropene	5 U	5 U	5 U	5 U
Trichloroethene	5 U	5 U	5 U	5 U
Dibromochloromethane	5 U	5 U	5 U	5 U
1 1 2 Trichloroethane	5 U	5 U	5 U	5 U
Benzene	5 U	5 U	5 U	5 U
cis 1 3 Dichloropropene	5 U	5 U	5 U	5 U
2 Chloroethylvinylether	10 U	10 U	10 U	10 U
Bromoform	5 U	5 U	5 U	5 U
4 Methyl 2 pentanone	10 U	10 U	10 U	10 U
2 Hexanone	10 U	10 U	10 U	10 U
Tetrachloroethene	5 U	5 U	5 U	5 U
1 1 2 2 Tetrachloroethane	5 U	5 U	5 U	5 U
Toluene	5 U	5 U	5 U	5 U
Chlorobenzene	5 U	5 U	5 U	5 U
Ethylbenzene	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U
Total Xylenes	5 U	5 U	5 U	5 U

WESTON ANALYTICS
GC/MS DATA SUMMARY
Volatile HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	8608 033 0110MS	8608 033 0110MSD	8608 033 0160	8608 036 0370
Customer ID	SWB3088600MS	SWB3088600MSD	SWB4088600	SWB5088600
Matrix	Water	Water	Water	Water
Units	UG/L	UG/L	UG/L	UG/L
Dilution Factor	1	1	1	1

Surrogate Recovery

Toluene d8	99 %	99 %	98 %	101 %
Bromofluorobenzene	98 %	100 %	100 %	101 %
1 2 Dichloroethane d4	92 %	94 %	93 %	99 %

Analytes

Chloromethane	10 U	10 U	10 U	10 U
Bromomethane	10 U	10 U	10 U	10 U
Vinyl Chloride	10 U	10 U	10 U	10 U
Chloroethane	10 U	10 U	10 U	10 U
Methylene Chloride	3 J	3 J	340	5 U
Acetone	10 U	10 U	10 U	10 U
Carbon Disulfide	5 U	5 U	5 U	5 U
1 1 Dichloroethene	85 %	82 %	5 U	5 U
1 1 Dichloroethane	5 U	5 U	5 U	5 U
Trans 1 2 Dichloroethene	2 J	5 U	5 U	5 U
Chloroform	24	5 U	5 U	5 U
1 2 Dichloroethane	5 U	5 U	5 U	5 U
2 Butanone	10 U	10 U	10 U	10 U
1 1 1 Trichloroethane	5 U	5 U	5 U	5 U
Carbon Tetrachloride	14	5 U	5 U	5 U
Vinyl Acetate	10 U	10 U	10 U	10 U
Bromodichloromethane	5 U	5 U	5 U	5 U
1 2 Dichloropropane	5 U	5 U	5 U	5 U
Trans 1 3 Dichloropropene	5 U	5 U	5 U	5 U
Trichloroethene	81 %	80 %	7	5 U
Dibromochloromethane	5 U	5 U	5 U	5 U
1 1 2 Trichloroethane	5 U	5 U	5 U	5 U
Benzene	79 %	76 %	5 U	5 U
cis 1 3 Dichloropropene	5 U	5 U	5 U	5 U
2 Chloroethylvinylether	10 U	10 U	10 U	10 U
Bromoform	5 U	5 U	5 U	5 U
4 Methyl 2 pentanone	10 U	10 U	10 U	10 U
2 Hexanone	10 U	10 U	10 U	10 U
Tetrachloroethene	5 U	5 U	5 U	5 U
1 1 2 2 Tetrachloroethane	5 U	5 U	5 U	5 U
Toluene	81 %	79 %	5 U	5 U
Chlorobenzene	80 %	79 %	5 U	5 U
Ethylbenzene	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U
Total Xylenes	5 U	5 U	5 U	5 U

WESTON ANALYTICS
GC/MS DATA SUMMARY
Volatile HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	8608 036 0440
Customer ID	SW85088601
Matrix	Water
Units	UG/L
Dilution Factor	1

Surrogate Recovery

Toluene d8	99 %
Bromofluorobenzene	106 %
1 2 Dichloroethane d4	102 %

Analytes

Chloromethane	10	U
Bromomethane	10	U
Vinyl Chloride	10	U
Chloroethane	10	U
Methylene Chloride	5	U
Acetone	41	B
Carbon Disulfide	5	U
1 1 Dichloroethene	5	U
1 1 Dichloroethane	5	U
Trans 1 2 Dichloroethene	5	U
Chloroform	5	U
1 2 Dichloroethane	5	U
2 Butanone	10	U
1 1 1 Trichloroethane	5	U
Carbon Tetrachloride	5	U
Vinyl Acetate	10	U
Bromodichloromethane	5	U
1 2 Dichloropropane	5	U
Trans 1 3 Dichloropropene	5	U
Trichloroethene	1	J
Dibromochloromethane	5	U
1 1 2 Trichloroethane	5	U
Benzene	5	U
cis 1 3 Dichloropropene	5	U
2 Chloroethylvinylether	10	U
Bromoform	5	U
4-Methyl 2 pentanone	10	U
2-Hexanone	10	U
Tetrachloroethene	5	U
1 1 2 2 Tetrachloroethane	5	U
Toluene	5	U
Chlorobenzene	5	U
Ethylbenzene	5	U
Styrene	5	U
Total Xylenes	5	U

RADIONUCLIDES

WESTON ANALYTICS
RADIO CHEMISTRY
DATA SUMMARY

RFW Batch Number — Client ROCKWELL (ROCKY FLATS) — Page 1

Sample Information

RFW Batch ID	1000 000 396	1000 000 397	1000 000 398	1000 000 399
Customer ID	SWB1088600	SWB1088601	SWB2088600	SWB3088600
Matrix	Water	Water	Water	Water

Radio Chemistry

Gross Alpha	65 12	0 1	9 5	0 2
Gross Beta	26 5	0 2	6 4	11 3
Uranium 233 234	6 4 0 6	0 03 0 05	0 50 0 16	0 12 0 10
Uranium 234	NR	NR	NR	NR
Uranium 235	NR	NR	NR	NR
Uranium 238	9 6 0 8	0 03 0 05	0 65 0 18	0 07 0 07
Strontium 90	NR	NR	NR	NR
Plutonium 239	4 2 0 6	0 02 0 04	0 37 0 19	0 08 0 08
Americium 241	0 01 0 04	0 00 0 04	0 15 0 08	0 01 0 04
Cesium 137	NR	NR	NR	NR
Tritium	0 01 0 22	0 05 0 22	0 01 0 22	0 12 0 22

RFW Batch Number — Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	1000 000 400	1000 000 401	1000 000 402
Customer ID	SWB4088600	SWB5088600	SWB5088601
Matrix	Water	Water	Water

Radio Chemistry

Gross Alpha	7 5	1 3	0 1
Gross Beta	4 3	5 3	1 2
Uranium 233 234	1 5 0 3	2 6 0 4	0 00 0 01
Uranium 234	NR	NR	NR
Uranium 235	NR	NR	NR
Uranium 238	2 1 0 3	2 0 0 3	0 01 0 04
Strontium 90	NR	NR	NR
Plutonium 239	0 01 0 04	0 00 0 04	0 01 0 05
Americium 241	0 02 0 04	0 02 0 04	0 01 0 04
Cesium 137	NR	NR	NR
Tritium	0 21 0 22	0 19 0 22	0 09 0 22

Data reported as activity +/ propagated two sigma confidence interval
Units pCi/L Water
pCi/GM Soil
pCi/ml Soil Moisture (Tritium)

INORGANICS

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 001	0387 881 002	0387 881 003	0387 881 004
Customer ID	SW 27 07 22 87	SW 28 07 22 87	SW 50 07 21 87	SW 51 07 21 87
Matrix	Water	Water	Water	Water
Inorganics				
Chloride	34 0	35 0	59 0	16 9
Cyanide Total	1 0 U	1 0 U	1 0 U	1 0 U
Fluoride				
Nitrate Nitrite Nitrogen	3 2	0 20 U	4 15	4 90
Total Organic Carbon				
pH				
Sulfate	69 3	60 0	21 1	61 0
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease	5 0 U	5 0 U	5 0 U	5 0 U
Ignitability				
% Solids				
Total Dissolved Solids	426	402	510	332
HCO3	237	237	261	436
CO3				
Suspended Solids	1 0 U	8	7	3
Hexavalent Chromium (Cr+6)	1 0 U	1 0 U	1 0 U	1 0 U

Units			
pH	Standard Units	Ignitability	Degrees F
% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
All other analytes	MG/L (Water)		
	MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 005	0387 881 006	0387 881 007	0387 881 008
Customer ID	SW 52 07 21 87	SW 53 07 21 87	SW 55 07 21 87	SW 56 07 21 87
Matrix	Water	Water	Water	Water
Inorganics				
Chloride	25 5	71 5	34 0	54 0
Cyanide Total	1 0 U	1 0 U	1 0 U	1 0 U
Fluoride				
Nitrate Nitrite Nitrogen	0 20 U	0 20 U	0 24	4 10
Total Organic Carbon				
pH				
Sulfate	73 3	20 3	37 2	71 5
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease	5 0 U	5 0 U	5 0 U	5 0 U
Ignitability				
% Solids				
Total Dissolved Solids	461	666	452	577
HCO3	297	483	326	346
CO3				
Suspended Solids	2	2	2	4
Hexavalent Chromium (Cr+6)	1 0 U	1 0 U	1 0 U	1 0 U

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 009	0387 881 010	0387 881 011	0387 881 012
Customer ID	SW 57 07 21 87	SW 58 07 21 87	SW 59 07 21 87	SW 60 07 21 87
Matrix		Water	Water	Water
Inorganics				
Chloride	24 0	32 0	39 0	44 0
Cyanide Total	1 0 U	1 0 U	1 0 U	1 0 U
Fluoride				
Nitrate Nitrite Nitrogen	1 16	1 42	3 80	4 5
Total Organic Carbon				
pH				
Sulfate	1 0 U	22 0	24 5	45 0
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease	12 3		5 6 U	5 0 U
Ignitability				
% Solids				
Total Dissolved Solids	522	375	524	482
HCO3	436	270	335	290
CO3				
Suspended Solids	5	3	8	1 U
Hexavalent Chromium (Cr+6)	1 0 U	1 0 U	1 0 U	1 0 U

Units				
	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

WESTON ANALYTICS
GC/MS DATA SUMMARY
Inorganic HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 013	0387 881 014	0387 881 015	0387 881 016
Customer ID	SW 61 07 22 87	SW 62 07 22 87	SW 63 07 24 87	SW 64 07 22 87
Matrix	Water	Water	Water	Water

Inorganics

Chloride	12 0	44 0	50 5	46 5
Cyanide Total	1 0 U	1 0 U	1 0 U	1 0 U
Fluoride				
Nitrate Nitrite Nitrogen	0 25	0 20 U	0 20 U	0 20 U
Total Organic Carbon				
pH				
Sulfate	31 1	132	197	83 0
Specific Conductance				
Turbidity				
Sulfide				
Oil and Grease	5 0 U	5 0 U	5 0 U	5 0 U
Ignitability				
% Solids				
Total Dissolved Solids	156	625	675	716
HCO3-	83 3	346	361	404
CO3				
Suspended Solids	8	7	17	13
Hexavalent Chromium (Cr+6)	1 0 U	1 0 U	1 0 U	1 0 U

Units	pH	Standard Units	Ignitability	Degrees F
	% Solids	Percent Dry Weight	Conductance	umho/cm @25 C
	All other analytes	MG/L (Water)		
		MG/KG (Soils)		

METALS

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

RFW Batch ID	0387 881 109	0387 881 121	0387 881 001	0387 881 002
Customer ID	REABLK 08 28 87	REABLK 08 28 87	SW 27 07 22 87	SW 28 07 22 87
Matrix	Water	Water	Water	Water
Units	MG/L	MG/L	MG/L	MG/L

Metals

Silver	(Ag)	total	0 0076 U	0 0076 U	0 01 U	0 01 U
Aluminum	(Al)	total	0 0290 U	0 0290 U	0 2 U	0 2 U
Arsenic	(As)	total				
Barium	(Ba)	total	0 0100 U	0 0100 U	0 2 U	0 2 U
Beryllium	(Be)	total				
Calcium	(Ca)	total	0 7500 U	0 7500 U	78 6	66 3
Cadmium	(Cd)	total				
Cobalt	(Co)	total	0 0220 U	0 0220 U	0 05 U	0 05 U
Chromium	(Cr)	total	0 0100 U	0 0100 U	0 01 U	0 03
Cesium	(Cs)	total				
Copper	(Cu)	total	0 0063 U	0 0063 U	0 025 U	0 027
Iron	(Fe)	total	0 0098	0 0569	0 1 U	0 23
Mercury	(Hg)	total				
Potassium	(K)	total				
Lithium	(Li)	total				
Magnesium	(Mg)	total	0 0200 U	0 0200 U	16 1	15 7
Manganese	(Mn)	total	0 0051 U	0 0051 U	0 153	0 144
Molybdenum	(Mo)	total	0 0220 U	0 0220 U	0 04 U	0 04 U
Sodium	(Na)	total	2 1000 U	2 1000 U	49 8	55 0
Nickel	(Ni)	total	0 0370 U	0 0370 U	0 04 U	0 82
Lead	(Pb)	total				
Antimony	(Sb)	total				
Selenium	(Se)	total				
Strontium	(Sr)	total	0 0200 U	0 0200 U	0 52	0 43
Thallium	(Tl)	total				
Vanadium	(V)	total	0 0240 U	0 0240 U	0 05 U	0 05 U
Zinc	(Zn)	total	0 0200 U	0 0200 U	0 04	0 02 U

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

RFW Batch ID	0387 881 003
Customer ID	SW 50 07 21 87
Matrix	Water
Units	MG/L

Metals

Silver	(Ag)	total	0 01	U
Aluminum	(Al)	total	0 2	U
Arsenic	(As)	total		
Barium	(Ba)	total	0 26	
Beryllium	(Be)	total		
Calcium	(Ca)	total	147	
Cadmium	(Cd)	total		
Cobalt	(Co)	total	0 05	U
Chromium	(Cr)	total	0 01	U
Cesium	(Cs)	total		
Copper	(Cu)	total	0 025	U
Iron	(Fe)	total	0 1	U
Mercury	(Hg)	total		
Potassium	(K)	total		
Lithium	(Li)	total		
Magnesium	(Mg)	total	9 6	
Manganese	(Mn)	total	0 495	
Molybdenum	(Mo)	total	0 04	U
Sodium	(Na)	total	9 5	
Nickel	(Ni)	total	0 04	U
Lead	(Pb)	total		
Antimony	(Sb)	total		
Selenium	(Se)	total		
Strontium	(Sr)	total	0 43	
Thallium	(Tl)	total		
Vanadium	(V)	total	0 05	U
Zinc	(Zn)	total	0 02	U

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

	RFW Batch ID	0387 881 004	0387 881 005	0387 881 006	0387 881 007
	Customer ID	SW 51 07 21 87	SW 52 07 21 87	SW 53 07 21 87	SW 55 07 21 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L
Metals					
Silver (Ag) total		0 01 U	0 01 U	0 01 U	0 01 U
Aluminum (Al) total		0 2 U	0 2 U	0 2 U	0 2 U
Arsenic (As) total					
Barium (Ba) total		0 21	0 2 U	0 2 U	0 24
Beryllium (Be) total					
Calcium (Ca) total		103	110	80 0	126
Cadmium (Cd) total					
Cobalt (Co) total		0 05 U	0 05 U	0 05 U	0 05 U
Chromium (Cr) total		0 01 U	0 01 U	0 01 U	0 01 U
Cesium (Cs) total					
Copper (Cu) total		0 025 U	0 025 U	0 025 U	0 025 U
Iron (Fe) total		0 1 U	0 1 U	0 1 U	0 1 U
Mercury (Hg) total					
Potassium (K) total					
Lithium (Li) total					
Magnesuim (Mg) total		7 9	13 7	26 4	19 7
Manganese (Mn) total		0 015 U	0 296	0 087	0 022
Molybdenum(Mo) total		0 04 U	0 04 U	0 04 U	0 04 U
Sodium (Na) total		7 8	48 0	113	35 2
Nickel (Ni) total		0 04 U	0 04 U	0 04 U	0 04 U
Lead (Pb) total					
Antimony (Sb) total					
Selenium (Se) total					
Strontium (Sr) total		0 40	0 49	0 69	0 73
Thallium (Tl) total					
Vanadium (V) total		0 05 U	0 05 U	0 05 U	0 05 U
Zinc (Zn) total		0 02 U	0 02 U	0 02 U	0 14

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

RFW Batch ID	0387 881 008	0387 881 009	0387 881 010	0387 881 011
Customer ID	SW 56 07 21 87	SW 57 07 21 87	SW 58 07 21 87	SW 59 07 21 87
Matrix	Water	Water	Water	Water
Units	MG/L	MG/L	MG/L	MG/L

Metals

Silver	(Ag)	total	0 01 U	0 01 U	0 01 U	0 01 U
Aluminum	(Al)	total	0 2 U	0 2 U	0 2 U	0 2 U
Arsenic	(As)	total				
Barium	(Ba)	total	0 22	0 6	0 2 U	0 2 U
Beryllium	(Be)	total				
Calcium	(Ca)	total	137	156	113	122
Cadmium	(Cd)	total				
Cobalt	(Co)	total	0 05 U	0 05 U	0 05 U	0 05 U
Chromium	(Cr)	total	0 01 U	0 01 U	0 01 U	0 01 U
Cesium	(Cs)	total				
Copper	(Cu)	total	0 025 U	0 025 U	0 025 U	0 025 U
Iron	(Fe)	total	0 1 U	0 1 U	0 1 U	0 1 U
Mercury	(Hg)	total				
Potassium	(K)	total				
Lithium	(Li)	total				
Magnesium	(Mg)	total	21 1	21 9	13 8	24 4
Manganese	(Mn)	total	0 227	0 381	0 031	0 015 U
Molybdenum	(Mo)	total	0 04 U	0 04 U	0 04 U	0 04 U
Sodium	(Na)	total	60 5	20 7	11 6	38 2
Nickel	(Ni)	total	0 04 U	0 04 U	0 04 U	0 04 U
Lead	(Pb)	total				
Antimony	(Sb)	total				
Selenium	(Se)	total				
Strontium	(Sr)	total	0 67	0 79	0 59	0 73
Thallium	(Tl)	total				
Vanadium	(V)	total	0 05 U	0 05 U	0 05 U	0 05 U
Zinc	(Zn)	total	0 27	0 02 U	0 02 U	0 31

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

RFW Batch ID	0387 881 013	0387 881 014	0387 881 015	0387 881 016
Customer ID	SW 61 07 22 87	SW 62-07 22 87	SW 63 07 24 87	SW 64 07 22 87
Matrix	Water	Water	Water	Water
Units	MG/L	MG/L	MG/L	MG/L

Metals

Silver	(Ag)	total	0 01 U	0 01 U	0 01 U	0 01 U
Aluminum	(Al)	total	0 2 U	0 2 U	0 2 U	0 2 U
Arsenic	(As)	total				
Barium	(Ba)	total	0 2 U	0 2 U	0 2 U	0 2 U
Beryllium	(Be)	total				
Calcium	(Ca)	total	30 1	67 9	112	45 8
Cadmium	(Cd)	total				
Cobalt	(Co)	total	0 05 U	0 05 U	0 05 U	0 05 U
Chromium	(Cr)	total	0 01 U	0 01 U	0 01 U	0 01 U
Cesium	(Cs)	total				
Copper	(Cu)	total	0 025 U	0 025 U	0 025 U	0 025 U
Iron	(Fe)	total	0 18	0 1 U	0 1 U	0 1 U
Mercury	(Hg)	total				
Potassium	(K)	total				
Lithium	(Li)	total				
Magnesium	(Mg)	total	5 0 U	29 6	34 0	54 2
Manganese	(Mn)	total	0 047	0 016	0 393	0 015 U
Molybdenum	(Mo)	total	0 04 U	0 04 U	0 04 U	0 04 U
Sodium	(Na)	total	17 9	99 4	110	103
Nickel	(Ni)	total	0 04 U	0 04 U	0 04 U	0 04 U
Lead	(Pb)	total				
Antimony	(Sb)	total				
Selenium	(Se)	total				
Strontium	(Sr)	total	0 02 U	0 97	1 07	1 10
Thallium	(Tl)	total				
Vanadium	(V)	total	0 05 U	0 05 U	0 05 U	0 05 U
Zinc	(Zn)	total	0 05	0 02 U	0 03	0 02 U

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

RFW Batch ID	0187 881 003	0187 881 006	0187 881 009
Customer ID	TB 03 10 87	TB 03 11 87	TB 03 12 87
Matrix	Water	Water	Water
Units	MG/L	MG/L	MG/L

Metals

Silver	(Ag)	total	0 0076	U	0 0076	U	0 0076	U
Aluminum	(Al)	total	0 0290	U	0 0290	U	0 0290	U
Arsenic	(As)	total	0 01	U	0 0100	U	0 0100	U
Barium	(Ba)	total	0 0100	U	0 0100	U	0 0100	U
Beryllium	(Be)	total	0 005	U	0 0050	U	0 005	U
Calcium	(Ca)	total	0 7500	U	0 7500	U	0 7500	U
Cadmium	(Cd)	total	0 005	U	0 0050	U	0 0050	U
Cobalt	(Co)	total	0 0220	U	0 0220	U	0 0220	U
Chromium	(Cr)	total	0 0100	U	0 0100	U	0 0100	U
Cesium	(Cs)	total	0 2	U	0 2	U	0 2	U
Copper	(Cu)	total	0 0063	U	0 0063	U	0 0063	U
Iron	(Fe)	total	0 0069	U	0 0069	U	0 0069	U
Mercury	(Hg)	total	0 0002	U	0 0002	U	0 0002	U
Potassium	(K)	total	5 0	U	5 0000	U	5 0000	U
Lithium	(Li)	total	NR					
Magnesium	(Mg)	total	0 0200	U	0 0200	U	0 0200	U
Manganese	(Mn)	total	0 0051	U	0 0051	U	0 0051	U
Molybdenum	(Mo)	total	0 0220	U	0 0220	U	0 0220	U
Sodium	(Na)	total	2 1000	U	2 1000	U	2 1000	U
Nickel	(Ni)	total	0 0370	U	0 0370	U	0 0370	U
Lead	(Pb)	total	0 0050	U	0 0050	U	0 0050	U
Antimony	(Sb)	total	0 06	U	0 0600	U	0 0600	U
Selenium	(Se)	total	0 005	U	0 0050	U	0 0050	U
Strontium	(Sr)	total	0 0200	U	0 0200	U	0 0200	U
Thallium	(Tl)	total	0 01	U	0 0100	U	0 0100	U
Vanadium	(V)	total	0 0240	U	0 0240	U	0 0240	U
Zinc	(Zn)	total	0 03		0 0300		0 08	

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

			RFW Batch ID	0187 881 012			0187 881 015			0187 881 019			0187 881 023		
			Customer ID	TB 03 13 87			TB 03 17 87			TB 03 18 87			TB 03 19 87		
			Matrix	Water			Water			Water			Water		
			Units	MG/L			MG/L			MG/L			MG/L		
Metals															
Silver	(Ag)	total		0 0076	U		0 0076	U		0 0076	U		0 0076	U	
Aluminum	(Al)	total		0 0290	U		0 0290	U		0 0290	U		0 0290	U	
Arsenic	(As)	total		0 0100	U		0 0100	U		0 0100	U		0 01	U	
Barium	(Ba)	total		0 0100	U		0 0100	U		0 0100	U		0 0100	U	
Beryllium	(Be)	total		0 005	U		0 0050	U		0 005	U		0 005	U	
Calcium	(Ca)	total		0 7500	U		0 7500	U		0 7500	U		0 7500	U	
Cadmium	(Cd)	total		0 0050	U		0 0050	U		0 005	U		0 005	U	
Cobalt	(Co)	total		0 0220	U		0 0220	U		0 0220	U		0 0220	U	
Chromium	(Cr)	total		0 0100	U		0 0100	U		0 0100	U		0 0100	U	
Cesium	(Cs)	total		0 2	U		0 2	U		0 2	U		0 2	U	
Copper	(Cu)	total		0 0063	U		0 0063	U		0 0063	U		0 0063	U	
Iron	(Fe)	total		0 0069	U		0 0069	U		0 0069	U		0 0069	U	
Mercury	(Hg)	total		0 0002	U		0 0002	U		0 0002	U		0 0002	U	
Potassium	(K)	total		5 0000	U		5 0000	U		5 0	U		5 0	U	
Lithium	(Li)	total													
Magnesium	(Mg)	total		0 0200	U		0 0200	U		0 0200	U		0 0200	U	
Manganese	(Mn)	total		0 0051	U		0 0051	U		0 0051	U		0 0051	U	
Molybdenum	(Mo)	total		0 0220	U		0 0220	U		0 0220	U		0 0220	U	
Sodium	(Na)	total		2 1000	U		2 1000	U		2 1000	U		2 1000	U	
Nickel	(Ni)	total		0 0370	U		0 0370	U		0 0370	U		0 0370	U	
Lead	(Pb)	total		0 0050	U		0 0080			0 005	U		0 005	U	
Antimony	(Sb)	total		0 0600	U		0 0600	U		0 06	U		0 06	U	
Selenium	(Se)	total		0 0050	U		0 0050	U		0 005	U		0 005	U	
Strontium	(Sr)	total		0 0200	U		0 0200	U		0 0200	U		0 0200	U	
Thallium	(Tl)	total		0 0100	U		0 0100	U		0 01	U		0 01	U	
Vanadium	(V)	total		0 0240	U		0 0240	U		0 0240	U		0 0240	U	
Zinc	(Zn)	total		0 0200	U		0 0500			0 03			0 02	U	

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

	RFW Batch ID	0187 881 025		0187 881 029		0187 881 032		0187 881 034	
	Customer ID	TB 03 20 23 87		TB 03 24 87		TB 03 25 87		TB 03 26 87	
	Matrix	Water		Water		Water		Water	
	Units	MG/L		MG/L		MG/L		MG/L	
Metals									
Silver (Ag) total		0 0076	U	0 0076	U	0 0076	U	0 0076	U
Aluminum (Al) total		0 0290	U	0 0290	U	0 0290	U	0 0290	U
Arsenic (As) total				0 01	U	0 0100	U	0 0100	U
Barium (Ba) total		0 0100	U	0 0100	U	0 0100	U	0 0100	U
Beryllium (Be) total				0 005	U	0 005	U	0 005	U
Calcium (Ca) total		0 7500	U	0 7500	U	0 7500	U	0 7500	U
Cadmium (Cd) total				0 005	U	0 0050	U	0 0050	U
Cobalt (Co) total		0 0220	U	0 0220	U	0 0220	U	0 0220	U
Chromium (Cr) total		0 0100	U	0 0100	U	0 0100	U	0 0100	U
Cesium (Cs) total				0 2	U	0 2	U	0 2	U
Copper (Cu) total		0 0063	U	0 0063	U	0 0063	U	0 0063	U
Iron (Fe) total		0 0069	U	0 0069	U	0 0069	U	0 0069	U
Mercury (Hg) total				0 0002	U	0 0002	U	0 0002	U
Potassium (K) total				5 0	U	5 0	U	5 0	U
Lithium (Li) total									
Magnesium (Mg) total		0 0200	U	0 0200	U	0 0200	U	0 0200	U
Manganese (Mn) total		0 0051	U	0 0051	U	0 0051	U	0 0051	U
Molybdenum(Mo) total		0 0220	U	0 0220	U	0 0220	U	0 0220	U
Sodium (Na) total		2 1000	U	2 1000	U	2 1000	U	2 1000	U
Nickel (Ni) total		0 0370	U	0 0370	U	0 0370	U	0 0370	U
Lead (Pb) total				0 005	U	0 0050	U	0 0050	U
Antimony (Sb) total				0 06	U	0 06	U	0 06	U
Selenium (Se) total				0 005	U	0 005	U	0 005	U
Strontium (Sr) total		0 0200	U	0 0200	U	0 0200	U	0 0200	U
Thallium (Tl) total				0 01	U	0 0100	U	0 0100	U
Vanadium (V) total		0 0240	U	0 0240	U	0 0240	U	0 0240	U
Zinc (Zn) total				0 02	U	0 02	U	0 02	U

WESTON ANALYTICS
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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

	RFW Batch ID	0187 881 036	0187 881 058	0187 881 071	0187 881 085
	Customer ID	TB 03 30 87	TB 04 16 87	TB 05 05 87	TB 05 12 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L
Metals					
Silver (Ag) total		0 0076 U	0 0076 U	0 0076 U	0 0076 U
Aluminum (Al) total		0 0290 U	0 0290 U	0 0290 U	0 0290 U
Arsenic (As) total		0 0100 U	0 0100 U	0 0100 U	0 0100 U
Barium (Ba) total		0 0100 U	0 0100 U	0 0100 U	0 0100 U
Beryllium (Be) total		0 005 U	0 005 U	0 005 U	0 005 U
Calcium (Ca) total		0 7500 U	0 7500 U	0 7500 U	2 4075
Cadmium (Cd) total		0 0050 U	0 0050 U	0 0050 U	0 0050 U
Cobalt (Co) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Chromium (Cr) total		0 0100 U	0 0100 U	0 0100 U	0 0100 U
Cesium (Cs) total		0 2 U	0 2 U	0 2 U	0 2 U
Copper (Cu) total		0 0063 U	0 0084	0 0063 U	0 0063 U
Iron (Fe) total		0 0069 U	0 0069 U	0 0069 U	0 0078
Mercury (Hg) total		0 0002 U	0 0002 U	0 0002 U	0 0002 U
Potassium (K) total		5 0 U	5 0 U	5 0 U	5 0 U
Lithium (Li) total					
Magnesium (Mg) total		0 0200 U	0 0200 U	0 0200 U	0 4463
Manganese (Mn) total		0 0051 U	0 0051 U	0 0051 U	0 0051 U
Molybdenum(Mo) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Sodium (Na) total		2 1000 U	2 1000 U	2 1000 U	2 1000 U
Nickel (Ni) total		0 0370 U	0 0370 U	0 0370 U	0 0370 U
Lead (Pb) total		0 0050 U	0 0050 U	0 0050 U	0 0050 U
Antimony (Sb) total		0 06 U	0 06 U	0 06 U	0 06 U
Selenium (Se) total		0 005 U	0 005 U	0 005 U	0 005 U
Strontium (Sr) total		0 0200 U	0 0200 U	0 0200 U	0 0200 U
Thallium (Tl) total		0 0100 U	0 0100 U	0 0100 U	0 0100 U
Vanadium (V) total		0 0240 U	0 0240 U	0 0240 U	0 0240 U
Zinc (Zn) total		0 02 U	0 02 U	0 02 U	0 02 U

WESTON ANALYTICS
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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

			RFW Batch ID	0187 881 106				0287 881 011				0287 881 031				0287 881 050			
			Customer ID	TB 05 19 87				TRPBLK 05 27 87				TRPBLK 06 04 87				TRPBLK 06 18 87			
			Matrix	Water				Water				Water				Water			
			Units	MG/L				MG/L				MG/L				MG/L			
Metals																			
Silver	(Ag)	total		0 0076	U			0 0076	U			0 0076	U			0 0076	U		
Aluminum	(Al)	total		0 0290	U			0 0290	U			0 0290	U			0 0290	U		
Arsenic	(As)	total		0 0100	U			0 01	U			0 01	U			0 01	U		
Barium	(Ba)	total		0 0100	U			0 0100	U			0 0100	U			0 0100	U		
Beryllium	(Be)	total		0 005	U			0 005	U			0 005	U			0 005	U		
Calcium	(Ca)	total		1 6417				2 9668				0 7500	U			0 7500	U		
Cadmium	(Cd)	total		0 0050	U			0 005	U			0 005	U			0 005	U		
Cobalt	(Co)	total		0 0220	U			0 0220	U			0 0220	U			0 0220	U		
Chromium	(Cr)	total		0 0100	U			0 0100	U			0 0100	U			0 0100	U		
Cesium	(Cs)	total		0 2	U			0 2	U			0 2	U			0 2	U		
Copper	(Cu)	total		0 0063	U			0 0063	U			0 0063	U			0 0063	U		
Iron	(Fe)	total		0 0119				0 0205				0 0069	U			0 0070			
Mercury	(Hg)	total		0 0002	U			0 0002	U			0 0002	U			0 0002	U		
Potassium	(K)	total		5 0	U			5 0	U			5 0	U			5 0	U		
Lithium	(Li)	total																	
Magnesium	(Mg)	total		0 2829				0 5595				0 0200	U			0 0200	U		
Manganese	(Mn)	total		0 0051	U			0 0051	U			0 0051	U			0 0051	U		
Molybdenum	(Mo)	total		0 0220	U			0 0220	U			0 0220	U			0 0220	U		
Sodium	(Na)	total		2 1000	U			2 1000	U			2 1000	U			2 1000	U		
Nickel	(Ni)	total		0 0370	U			0 0370	U			0 0370	U			0 0370	U		
Lead	(Pb)	total		0 0050	U			0 017				0 006				0 034			
Antimony	(Sb)	total		0 06	U			0 06	U			0 06	U			0 06	U		
Selenium	(Se)	total		0 005	U			0 005	U			0 005	U			0 005	U		
Strontium	(Sr)	total		0 0200	U			0 0200	U			0 0200	U			0 0200	U		
Thallium	(Tl)	total		0 0100	U			0 01	U			0 01	U			0 01	U		
Vanadium	(V)	total		0 0240	U			0 0240	U			0 0240	U			0 0240	U		
Zinc	(Zn)	total		0 02	U			0 0200	U			0 0200	U			0 0200	U		

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RFW Batch Number -- Client ROCKWELL (ROCKY FLATS)

Sample Information

	RFW Batch ID	0287 881 068		0387 881 021		0387 881 042		0387 881 056	
	Customer ID	TRPBLK 06 25 87		TRPBLK 07 02 87		TRPBLK 07 15 87		TRPBLK 07 24 87	
	Matrix	Water		Water		Water		Water	
	Units	MG/L		MG/L		MG/L		MG/L	
Metals									
Silver (Ag) total		0 0076	U	0 0076	U	0 0076	U	0 0076	U
Aluminum (Al) total		0 0290	U	0 0290		0 0290	U	0 0290	U
Arsenic (As) total		0 01	U	0 005	U	0 005	U	0 005	U
Barium (Ba) total		0 0100	U	0 0100	U	0 0100	U	0 0100	U
Beryllium (Be) total		0 005	U	0 005	U	0 005	U	0 005	U
Calcium (Ca) total		0 7500	U	0 7500	U	0 7500	U	0 7500	U
Cadmium (Cd) total		0 005	U	0 001	U	0 001	U	0 001	U
Cobalt (Co) total		0 0220	U	0 0220	U	0 0220	U	0 0220	U
Chromium (Cr) total		0 0100	U	0 0100	U	0 0100	U	0 0100	U
Cesium (Cs) total		0 2	U	0 02	U	0 02	U	0 02	U
Copper (Cu) total		0 0063	U	0 0071		0 0124		0 0063	U
Iron (Fe) total		0 0114		0 0247		0 0197		0 0248	
Mercury (Hg) total		0 0002	U	0 0002	U	0 0002	U	0 0002	U
Potassium (K) total		5 0	U	0 5	U	0 5	U	0 1	J
Lithium (Li) total									
Magnesium (Mg) total		0 0200	U	0 0525		0 0213		0 0200	U
Manganese (Mn) total		0 0051	U	0 0051	U	0 0051	U	0 0051	U
Molybdenum(Mo) total		0 0220	U	0 0220	U	0 0220	U	0 0220	U
Sodium (Na) total		2 1000	U	2 1000	U	2 1000	U	2 1000	U
Nickel (Ni) total		0 0370	U	0 0370	U	0 0370	U	0 0392	
Lead (Pb) total		0 030		0 005	U	0 005	U	0 005	U
Antimony (Sb) total		0 06	U	0 02	U	0 02	U	0 02	U
Selenium (Se) total		0 005	U	0 005	U	0 005	U	0 005	U
Strontium (Sr) total		0 0200	U	0 0200	U	0 0200	U	0 0200	U
Thallium (Tl) total		0 01	U	0 01	U	0 01	U	0 01	U
Vanadium (V) total		0 0240	U	0 0240	U	0 0415		0 0246	
Zinc (Zn) total		0 0200	U	0 0295		0 0200	U	0 0200	U

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RFW Batch Number Client ROCKWELL (ROCKY FLATS)

Sample Information

	RFW Batch ID	0387 881 066	0387 881 078	0387 881 087	0387 881 100
	Customer ID	TRPBLK 07 31 87	TRPBLK 08 06 87	TRPBLK 08 14 87	TRPBLK 08 21 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L
Metals					
Silver (Ag)	total	0 0076 U	0 0076 U	0 0076 U	0 0076 U
Aluminum (Al)	total	0 0290 U	0 0290 U	0 0290 U	0 0290 U
Arsenic (As)	total	0 005 U	0 005 U	0 005 U	0 02 U
Barium (Ba)	total	0 0100 U	0 0100 U	0 0100 U	0 0100 U
Beryllium (Be)	total	0 005 U	0 005 U	0 005 U	0 005 U
Calcium (Ca)	total	0 7500 U	0 7500 U	0 7500 U	0 7500 U
Cadmium (Cd)	total	0 001 U	0 001 U	0 001 U	0 001 U
Cobalt (Co)	total	0 0220 U	0 0220 U	0 0220 U	0 0220 U
Chromium (Cr)	total	0 0100 U	0 0100 U	0 0129	0 0147
Cesium (Cs)	total	0 02 U	0 02 U	0 02 U	0 02 U
Copper (Cu)	total	0 0063 U	0 0063 U	0 0063 U	0 0078
Iron (Fe)	total	0 0290	0 0143	0 0149	0 0182
Mercury (Hg)	total	0 0002 U	0 0002 U	0 0002 U	0 0002 U
Potassium (K)	total	0 5 U	0 5 U	0 5 U	0 02 J
Lithium (Li)	total				
Magnesuim (Mg)	total	0 0200 U	0 0207	0 0200 U	0 0200 U
Manganese (Mn)	total	0 0051 U	0 0051 U	0 0051 U	0 0051 U
Molybdenum (Mo)	total	0 0220 U	0 0220 U	0 0220 U	0 0220 U
Sodium (Na)	total	2 1000 U	2 1000 U	2 1000 U	2 1000 U
Nickel (Ni)	total	0 0370 U	0 0370 U	0 0370 U	0 0370 U
Lead (Pb)	total	0 005 U	0 005 U	0 005 U	0 005 U
Antimony (Sb)	total	0 02 U	0 02 U	0 02 U	0 02 U
Selenium (Se)	total	0 005 U	0 005 U	0 005 U	0 005 U
Strontium (Sr)	total	0 0200 U	0 0200 U	0 0200 U	0 0200 U
Thallium (Tl)	total	0 01 U	0 01 U	0 01 U	0 01 U
Vanadium (V)	total	0 0240 U	0 0240 U	0 0240 U	0 0240 U
Zinc (Zn)	total	0 0200 U	0 0200 U	0 0200 U	0 0200 U

WESTON ANALYTICS
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RFW Batch Number — Client ROCKWELL (ROCKY FLATS)

Sample Information

	RFW Batch ID	0387 881 110		0687 881 007		0387 881 125		0387 881 130	
	Customer ID	TRPBLK 08 28 87		TRPBLK 09 11 87		TRPBLK 09 18-87		TRPBLK 09 25 87	
	Matrix	Water		Water		Water		Water	
	Units	MG/L		MG/L		MG/L		MG/L	
Metals									
Silver (Ag) total		0 0076	U	0 0076	U	0 0076	U	0 0076	U
Aluminum (Al) total		0 0290	U	0 0290	U	0 0290	U	0 0290	U
Arsenic (As) total		0 005	U	0 005	U	0 005	U	0 005	U
Barium (Ba) total		0 0100	U	0 0100	U	0 0100	U	0 0100	U
Beryllium (Be) total		0 005	U	0 005	U	0 005	U	0 005	U
Calcium (Ca) total		0 7500	U	0 7500	U	0 7500	U	0 7500	U
Cadmium (Cd) total		0 001	U	0 001	U	0 001	U	0 001	U
Cobalt (Co) total		0 0220	U	0 0220	U	0 0220	U	0 0220	U
Chromium (Cr) total		0 0100	U	0 0100	U	0 0100	U	0 0100	U
Cesium (Cs) total		0 02	U	0 02	U	0 02	U	0 02	U
Copper (Cu) total		0 0063	U	0 0063	U	0 0063	U	0 0063	U
Iron (Fe) total		0 0094		0 0069	U	0 0069	U	0 0209	
Mercury (Hg) total		0 0002	U	0 0002	U	0 0002	U	0 0002	U
Potassium (K) total		0 03	J	0 02	J	0 02	J	0 05	J
Lithium (Li) total				0 14					
Magnesium (Mg) total		0 0200	U	0 0200	U	0 0200	U	0 0352	
Manganese (Mn) total		0 0051	U	0 0051	U	0 0051	U	0 0051	U
Molybdenum(Mo) total		0 0220	U	0 0220	U	0 0220	U	0 0220	U
Sodium (Na) total		2 1000	U	2 1000	U	2 1000	U	2 1000	U
Nickel (Ni) total		0 0370	U	0 0370	U	0 0370	U	0 0370	U
Lead (Pb) total		0 005	U	0 001	J	0 005	U	0 005	U
Antimony (Sb) total		0 02	U	0 02	U	0 02	U	0 02	U
Selenium (Se) total		0 005	U	0 005	U	0 005	U	0 004	J
Strontium (Sr) total		0 0200	U	0 0200	U	0 0200	U	0 0200	U
Thallium (Tl) total		0 01	U	0 01	U	0 01	U	0 01	U
Vanadium (V) total		0 0240	U	0 0240	U	0 0240	U	0 0240	U
Zinc (Zn) total		0 0200	U	0 0200	U	0 0200	U	0 0200	U

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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

	RFW Batch ID	8706 058 0001BL	8706 024 0001BL	8706 014 0001BL	8705 057 0001BL
	Customer ID	BLANK	BLANK	BLANK	BLANK
	Matrix		Water	Water	Water
	Units	UG/L	UG/L	UG/L	UG/L
Metals					
Silver (Ag) total		10 00 U	2 0 U	2 00 U	10 00 U
Aluminum (Al) total		200 00 U	31 U	31 00 U	200 00 U
Arsenic (As) total		10 00 U	2 0 U	2 00 U	10 00 U
Barium (Ba) total		200 00 U	9 4 U	9 4 U	200 00 U
Beryllium (Be) total		5 00 U	0 4 U	0 40 U	5 00 U
Calcium (Ca) total		5000 00 U	62 U	62 00 U	5000 00 U
Cadmium (Cd) total		5 00 U	0 8 U	0 60 U	5 00 U
Cobalt (Co) total		50 00 U	4 4 U	2 00 U	50 00 U
Chromium (Cr) total		10 00 U	2 0 U	2 00 U	10 00 U
Cesium (Cs) total		NR	NR	3000 00 U	NR
Copper (Cu) total		25 00 U	4 0 U	4 40 U	25 00 U
Iron (Fe) total		100 00 U	6 2 U	5 00 U	100 00 U
Mercury (Hg) total		0 20 U	0 02 U	0 02 U	0 20 U
Potassium (K) total		5000 00 U	200 U	200 00 U	5000 00 U
Lithium (Li) total					
Magnesium (Mg) total		5000 00 U	46 U	46 00 U	5000 00 U
Manganese (Mn) total		15 00 U	2 0 U	2 00 U	15 00 U
Molybdenum(Mo) total		NR	NR U	100 00 U	NR
Sodium (Na) total		5000 00 U	200 U	200 00 U	5000 00 U
Nickel (Ni) total		40 00 U	4 0 U	4 00 U	40 00 U
Lead (Pb) total		5 00 U	1 0 U	1 00 U	5 00 U
Antimony (Sb) total		60 00 U	12 U	12 00 U	60 00 U
Selenium (Se) total		5 00 U	1 0 U	1 00 U	5 00 U
Strontium (Sr) total		100 00 U	11 U	11 00 U	100 00 U
Thallium (Tl) total		10 00 U	2 0 U	2 00 U	10 00 U
Vanadium (V) total		50 00 U	4 0 U	4 00 U	50 00 U
Zinc (Zn) total		20 00 U	2 0 U	2 00 U	2 2 J

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

			RFW Batch ID	8710 016 0001BS			8709 038 0001BS			8709 052 0001BS			8709 058 0001BS		
			Customer ID	BLANK SPIKE			BLANK SPIKE			BLANK SPIKE			BLANK SPIKE		
			Matrix	Soil			Soil			Soil			Soil		
			Units	UG/L			UG/L			UG/L			UG/L		
Metals															
Silver	(Ag)	total		90	%		88	%		83	%		92	%	
Aluminum	(Al)	total		94	%		93	%		88	%		93	%	
Arsenic	(As)	total		92	%		83	%		96	%		103	%	
Barium	(Ba)	total		98	%		100	%		94	%		101	%	
Beryllium	(Be)	total		94	%		96	%		92	%		93	%	
Calcium	(Ca)	total		98	%		95	%		94	%		92	%	
Cadmium	(Cd)	total		91	%		93	%		103	%		99	%	
Cobalt	(Co)	total		97	%		96	%		102	%		101	%	
Chromium	(Cr)	total		92	%		97	%		80	%		93	%	
Cesium	(Cs)	total		NR			NR			NR			NR		
Copper	(Cu)	total		89	%		89	%		75	%		88	%	
Iron	(Fe)	total		96	%		95	%		92	%		94	%	
Mercury	(Hg)	total		106	%		116	%		103	%		117	%	
Potassium	(K)	total		108	%		92	%		82	%		85	%	
Lithium	(Li)	total													
Magnesium	(Mg)	total		97	%		94	%		88	%		88	%	
Manganese	(Mn)	total		97	%		96	%		92	%		90	%	
Molybdenum	(Mo)	total		NR			NR			NR			NR		
Sodium	(Na)	total		102	%		87	%		101	%		94	%	
Nickel	(Ni)	total		93	%		93	%		90	%		90	%	
Lead	(Pb)	total		75	%		98	%		94	%		92	%	
Antimony	(Sb)	total		94	%		113	%		75	%		75	%	
Selenium	(Se)	total		82	%		73	%		80	%		76	%	
Strontium	(Sr)	total		96	%		97	%		92	%		104	%	
Thallium	(Tl)	total		96	%		79	%		104	%		100	%	
Vanadium	(V)	total		96	%		95	%		92	%		92	%	
Zinc	(Zn)	total		93	%		83	%		100	%		104	%	

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RFW Batch Number ---- Client ROCKWELL (ROCKY FLATS)

Sample Information

			RFW Batch ID	8709 064 0001BS				8709 075 0001BS				8709 011 0001BS				8709 002 0001BS	
			Customer ID	BLANK SPIKE				BLANK SPIKE				BLANK SPIKE				BLANK SPIKE	
			Matrix	Soil				Soil				Soil				Soil	
			Units	UG/L				UG/L				UG/L				UG/L	
Metals																	
Silver	(Ag)	total		62	%			84	%			82	%			80	%
Aluminum	(Al)	total		93	%			97	%			86	%			92	%
Arsenic	(As)	total		102	%			84	%			91	%			93	%
Barium	(Ba)	total		97	%			94	%			83	%			95	%
Beryllium	(Be)	total		90	%			97	%			101	%			108	%
Calcium	(Ca)	total		92	%			98	%			83	%			94	%
Cadmium	(Cd)	total		94	%			95	%			95	%			100	%
Cobalt	(Co)	total		96	%			92	%			96	%			101	%
Chromium	(Cr)	total		97	%			91	%			95	%			92	%
Cesium	(Cs)	total		NR				NR				NR				NR	
Copper	(Cu)	total		94	%			90	%			88	%			90	%
Iron	(Fe)	total		92	%			98	%			100	%			96	%
Mercury	(Hg)	total		106	%			108	%			108	%			102	%
Potassium	(K)	total		89	%			93	%			81	%			125	%
Lithium	(Li)	total															
Magnesium	(Mg)	total		91	%			97	%			82	%			94	%
Manganese	(Mn)	total		90	%			97	%			99	%			96	%
Molybdenum	(Mo)	total		NR				NR				NR				NR	
Sodium	(Na)	total		92	%			95	%			91	%			98	%
Nickel	(Ni)	total		87	%			95	%			98	%			94	%
Lead	(Pb)	total		89	%			85	%			92	%			114	%
Antimony	(Sb)	total		97	%			95	%			95	%			132	%
Selenium	(Se)	total		92	%			70	%			94	%			93	%
Strontium	(Sr)	total		90	%			92	%			72	%			95	%
Thallium	(Tl)	total		104	%			117	%			85	%			95	%
Vanadium	(V)	total		90	%			96	%			98	%			96	%
Zinc	(Zn)	total		94	%			90	%			85	%			101	%

WESTON ANALYTICS
METALS
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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

	RFW Batch ID	8708 044 0001BS	8708 030 0001BS	8708 010 0001BS	8707 103 0001BS
	Customer ID	BLANK SPIKE	BLANK SPIKE	BLANK SPIKE	BLANK SPIKE
	Matrix	Soil	Soil	Soil	Soil
	Units	UG/L	UG/L	UG/L	UG/L
Metals					
Silver (Ag)	total	80 %	84 %	94 %	90 %
Aluminum (Al)	total	97 %	92 %	98 %	95 %
Arsenic (As)	total	143 %	118 %	98 %	124 %
Barium (Ba)	total	94 %	95 %	93 %	95 %
Beryllium (Be)	total	110 %	96 %	106 %	106 %
Calcium (Ca)	total	98 %	92 %	95 %	96 %
Cadmium (Cd)	total	86 %	90 %	84 %	98 %
Cobalt (Co)	total	93 %	94 %	91 %	97 %
Chromium (Cr)	total	107 %	84 %	97 %	104 %
Cesium (Cs)	total	NR	NR	NR	NR
Copper (Cu)	total	102 %	87 %	93 %	95 %
Iron (Fe)	total	98 %	95 %	96 %	97 %
Mercury (Hg)	total	100 %	101 %	100 %	108 %
Potassium (K)	total	95 %	81 %	88 %	97 %
Lithium (Li)	total				
Magnesuim (Mg)	total	99 %	93 %	94 %	96 %
Manganese (Mn)	total	100 %	92 %	96 %	94 %
Molybdenum(Mo)	total	NR	NR	NR	NR
Sodium (Na)	total	90 %	93 %	99 %	105 %
Nickel (Ni)	total	99 %	87 %	92 %	96 %
Lead (Pb)	total	79 %	83 %	83 %	86 %
Antimony (Sb)	total	126 %	108 %	82 %	94 %
Selenium (Se)	total	77 %	103 %	88 %	84 %
Strontium (Sr)	total	93 %	91 %	93 %	95 %
Thallium (Tl)	total	214 %	96 %	88 %	93 %
Vanadium (V)	total	101 %	92 %	96 %	98 %
Zinc (Zn)	total	92 %	96 %	93 %	96 %

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number --- Client ROCKWELL (ROCKY FLATS)

Sample Information

	RFW Batch ID	8707 059 0001BS	8707 042 0001BS	8706 065 0001BS	8706 024 0001BS
	Customer ID	BLANK SPIKE	BLANK SPIKE	BLANK SPIKE	BLANK SPIKE
	Matrix	Soil	Soil	Soil	Water
	Units	UG/L	UG/L	UG/L	UG/L
Metals					
Silver (Ag) total			86 %	91 %	87 %
Aluminum (Al) total		96 %	101 %	94 %	96 %
Arsenic (As) total		99 %	65 %	68 %	106 %
Barium (Ba) total		94 %	95 %	94 %	96 %
Beryllium (Be) total		95 %	96 %	98 %	92 %
Calcium (Ca) total		96 %	99 %	95 %	94 %
Cadmium (Cd) total		85 %	90 %	88 %	86 %
Cobalt (Co) total		93 %	96 %	95 %	94 %
Chromium (Cr) total		95 %	96 %	108 %	85 %
Cesium (Cs) total		NR	NR	NR %	NR
Copper (Cu) total		94 %	96 %	90 %	92 %
Iron (Fe) total		99 %	98 %	98 %	92 %
Mercury (Hg) total		90 %	87 %	99 %	120 %
Potassium (K) total		95 %	88 %	91 %	60 %
Lithium (Li) total					
Magnesium (Mg) total		95 %	95 %	96 %	94 %
Manganese (Mn) total		97 %	96 %	98 %	93 %
Molybdenum(Mo) total		NR	NR	NR	NR
Sodium (Na) total		98 %	96 %	106 %	94 %
Nickel (Ni) total		91 %	96 %	95 %	93 %
Lead (Pb) total		90 %	83 %	106 %	99 %
Antimony (Sb) total		103 %	101 %	%	125 %
Selenium (Se) total		60 %	94 %	80 %	117 %
Strontium (Sr) total		93 %	96 %	94 %	93 %
Thallium (Tl) total		112 %	128 %	80 %	97 %
Vanadium (V) total		101 %	102 %	104 %	95 %
Zinc (Zn) total		102 %	100 %	96 %	96 %

WESTON ANALYTICS
METALS
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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

	RFW Batch ID	8706 014 0001BS	8705 057 0001BS	0187 881 057	0187 881 051
	Customer ID	BLANK SPIKE	BLANK SPIKE	EB#2 04 15 87	EB 04 13 87
	Matrix	Water	Water	Water	Water
	Units	UG/L	UG/L	MG/L	MG/L
Metals					
Silver (Ag)	total	90 %	21 %	0 0076 U	0 0076 U
Aluminum (Al)	total	96 %	94 %	0 0290 U	0 0290 U
Arsenic (As)	total	85 %	51 %		0 0100 U
Barium (Ba)	total	94 %	96 %	0 0100 U	0 0100 U
Beryllium (Be)	total	99 %	96 %		0 005 U
Calcium (Ca)	total	99 %	91 %	0 7500 U	0 7500 U
Cadmium (Cd)	total	92 %	85 %		0 0050 U
Cobalt (Co)	total	95 %	91 %	0 0220 U	0 0220 U
Chromium (Cr)	total	94 %	88 %	0 0100 U	0 0100 U
Cesium (Cs)	total	3000 00 U	NR		0 2 U
Copper (Cu)	total	96 %	94 %	0 0074	0 0076
Iron (Fe)	total	97 %	95 %	0 0069 U	0 0069 U
Mercury (Hg)	total	110 %	104 %		0 0002 U
Potassium (K)	total	84 %	91 %		5 0 U
Lithium (Li)	total				
Magnesium (Mg)	total	100 %	91 %	0 0200 U	0 0380
Manganese (Mn)	total	94 %	91 %	0 0051 U	0 0051 U
Molybdenum (Mo)	total	4 00 U	NR	0 0220 U	0 0220 U
Sodium (Na)	total	109 %	88 %	2 1000 U	2 1000 U
Nickel (Ni)	total	92 %	90 %	0 0370 U	0 0370 U
Lead (Pb)	total	92 %	88 %		0 0050 U
Antimony (Sb)	total	59 %	87 %		0 06 U
Selenium (Se)	total	89 %	27 %		0 005 U
Strontium (Sr)	total	95 %	98 %	0 0200 U	0 0200 U
Thallium (Tl)	total	100 %	63 %		0 0100 U
Vanadium (V)	total	96 %	94 %	0 0240 U	0 0240 U
Zinc (Zn)	total	95 %	89 %		0 02 U

WESTON ANALYTICS
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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

	RFW Batch ID	0187 881 052	0187 881 020	0187 881 040	0187 881 086
	Customer ID	FB#2 04 14 87	FB 03 18 87	FB 04 08 87	FB 05 12 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L
Metals					
Silver (Ag) total		0 0076 U	0 0076 U	0 0076 U	0 0076 U
Aluminum (Al) total		0 0290 U	0 0290 U	0 0290 U	0 0290 U
Arsenic (As) total			0 0100 U	0 0100 U	0 0100 U
Barium (Ba) total		0 0100 U	0 0100 U	0 0100 U	0 0100 U
Beryllium (Be) total			0 005 U	0 005 U	0 005 U
Calcium (Ca) total		0 7500 U	0 7500 U	0 7500 U	3 0173
Cadmium (Cd) total			0 005 U	0 0050 U	0 0050 U
Cobalt (Co) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Chromium (Cr) total		0 0100 U	0 0100 U	0 0100 U	0 0100 U
Cesium (Cs) total			0 2 U	0 2 U	0 2 U
Copper (Cu) total		0 0080	0 0063 U	0 0079	0 0063 U
Iron (Fe) total		0 0069 U	0 0069 U	0 0069 U	0 0184
Mercury (Hg) total			0 0002 U	0 0002 U	0 0002 U
Potassium (K) total			5 0 U	5 0 U	5 0 U
Lithium (Li) total					
Magnesium (Mg) total		0 0200 U	0 0200 U	0 0200 U	0 5236
Manganese (Mn) total		0 0051 U	0 0051 U	0 0051 U	0 0051 U
Molybdenum(Mo) total		0 0220 U	0 0220 U	0 0220 U	0 0220 U
Sodium (Na) total		2 1000 U	2 1000 U	2 1000 U	2 1000 U
Nickel (Ni) total		0 0370 U	0 0370 U	0 0370 U	0 0370 U
Lead (Pb) total			0 005 U	0 0050 U	0 0050 U
Antimony (Sb) total			0 06 U	0 06 U	0 06 U
Selenium (Se) total			0 005 U	0 005 U	0 005 U
Strontium (Sr) total		0 0200 U	0 0200 U	0 0200 U	0 0200 U
Thallium (Tl) total			0 01 U	0 0100 U	0 0100 U
Vanadium (V) total		0 0240 U	0 0240 U	0 0240 U	0 0240 U
Zinc (Zn) total			0 03	0 02 U	0 02 U

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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

	RFW Batch ID	0287 881 012	0287 881 032	0287 881 051	0287 881 069
	Customer ID	FLDBLK 05 27 87	FLDBLK 06 04 87	FLDBLK 06 18 87	FLDBLK 06 25 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L

Metals

Silver	(Ag)	total	0 0076	U	0 0076	U	0 0076	U	0 0076	U
Aluminum	(Al)	total	0 0290	U	0 0834		0 0290	U	0 0353	
Arsenic	(As)	total	0 01	U	0 01	U	0 01	U	0 01	U
Barium	(Ba)	total	0 0100	U	0 0100	U	0 0100	U	0 0100	U
Beryllium	(Be)	total	0 005	U	0 005	U	0 005	U	0 005	U
Calcium	(Ca)	total	2 5493		0 7500	U	0 7500	U	0 7500	U
Cadmium	(Cd)	total	0 005	U	0 005	U	0 005	U	0 005	U
Cobalt	(Co)	total	0 0220	U	0 0220	U	0 0220	U	0 0220	U
Chromium	(Cr)	total	0 0100	U	0 0100	U	0 0100	U	0 0100	U
Cesium	(Cs)	total	0 2	U	0 2	U	0 2	U	0 2	U
Copper	(Cu)	total	0 0063	U	0 0063	U	0 0063	U	0 0063	U
Iron	(Fe)	total	0 0218		0 0437		0 0069	U	0 0307	
Mercury	(Hg)	total	0 0002	U	0 0002	U	0 0002	U	0 0002	U
Potassium	(K)	total	5 0	U	5 0	U	5 0	U	5 0	U
Lithium	(Li)	total								
Magnesium	(Mg)	total	0 4767		0 0300		0 0200	U	0 0200	U
Manganese	(Mn)	total	0 0051	U	0 0051	U	0 0051	U	0 0051	U
Molybdenum	(Mo)	total	0 0220	U	0 0220	U	0 0220	U	0 0220	U
Sodium	(Na)	total	2 1000	U	2 1000	U	2 1000	U	2 1000	U
Nickel	(Ni)	total	0 0370	U	0 0370	U	0 0370	U	0 0370	U
Lead	(Pb)	total	0 018		0 005	U	0 034		0 024	
Antimony	(Sb)	total	0 06	U	0 06	U	0 06	U	0 06	U
Selenium	(Se)	total	0 005	U	0 005	U	0 005	U	0 005	U
Strontium	(Sr)	total	0 0200	U	0 0200	U	0 0200	U	0 0200	U
Thallium	(Tl)	total	0 01	U	0 01	U	0 01	U	0 01	U
Vanadium	(V)	total	0 0240	U	0 0240	U	0 0240	U	0 240	U
Zinc	(Zn)	total	0 0200	U	0 0200	U	0 0200	U	0 0200	U

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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

			RFW Batch ID	0387 881 022				0387 881 041				0387 881 057				0387 881 067			
			Customer ID	FLDBLK 07 02 87				FLDBLK 07 15 87				FLDBLK 07 24 87				FLDBLK 07 31 87			
			Matrix	Water				Water				Water				Water			
			Units	MG/L				MG/L				MG/L				MG/L			
Metals																			
Silver	(Ag)	total		0 0076	U			0 0076	U			0 0076	U			0 0076	U		
Aluminum	(Al)	total		0 0330				0 0290	U			0 0290	U			0 0290	U		
Arsenic	(As)	total		0 005	U			0 005	U			0 005	U			0 005	U		
Barium	(Ba)	total		0 0100	U			0 0100	U			0 0100	U			0 0100	U		
Beryllium	(Be)	total		0 005	U			0 005	U			0 005	U			0 005	U		
Calcium	(Ca)	total		0 9906				0 7500	U			0 7500	U			0 7500	U		
Cadmium	(Cd)	total		0 001	U			0 001	U			0 001	U			0 001	U		
Cobalt	(Co)	total		0 0220	U			0 0220	U			0 0220	U			0 0220	U		
Chromium	(Cr)	total		0 0100	U			0 0100	U			0 0100	U			0 0100	U		
Cesium	(Cs)	total		0 02	U			0 02	U			0 02	U			0 02	U		
Copper	(Cu)	total		0 0087				0 0070				0 0063	U			0 0063	U		
Iron	(Fe)	total		0 0775				0 0369				0 0236				0 0381			
Mercury	(Hg)	total		0 0002	U			0 0002	U			0 0002	U			0 0002			
Potassium	(K)	total		0 5	U			0 5	U			0 5	U			0 54			
Lithium	(Li)	total																	
Magnesium	(Mg)	total		0 2343				0 0329				0 0200	U			0 0200	U		
Manganese	(Mn)	total		0 0051	U			0 0051	U			0 0051	U			0 0051	U		
Molybdenum	(Mo)	total		0 0220	U			0 0220	U			0 0220	U			0 0220	U		
Sodium	(Na)	total		2 7642				2 2299				2 1000	U			2 1000	U		
Nickel	(Ni)	total		0 0370	U			0 0370	U			0 0370	U			0 0370	U		
Lead	(Pb)	total		0 005	U			0 005	U			0 005	U			0 005	U		
Antimony	(Sb)	total		0 02	U			0 02	U			0 02	U			0 02	U		
Selenium	(Se)	total		0 005	U			0 005	U			0 005	U			0 005	U		
Strontium	(Sr)	total		0 0200	U			0 0200	U			0 0200	U			0 0200	U		
Thallium	(Tl)	total		0 01	U			0 01	U			0 01	U			0 01	U		
Vanadium	(V)	total		0 0240	U			0 0337				0 0255				0 0240	U		
Zinc	(Zn)	total		0 0285				0 0200	U			0 0200	U			0 0200	U		

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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

	RFW Batch ID	0387 881 079	0387 881 088	0387 881 101	0387 881 111
	Customer ID	FLDBLK 08 06 87	FLDBLK 08 14 87	FLDBLK 08 21 87	FLDBLK 08 28 87
	Matrix	Water	Water	Water	Water
	Units	MG/L	MG/L	MG/L	MG/L
Metals					
Silver (Ag)	total	0 0076 U	0 0076 U	0 0076 U	0 0076 U
Aluminum (Al)	total	0 0290 U	0 0290 U	0 0290 U	0 0290 U
Arsenic (As)	total	0 005 U	0 005 U	0 005 U	0 005 U
Barium (Ba)	total	0 0100 U	0 0100 U	0 0100 U	0 0100 U
Beryllium (Be)	total	0 005 U	0 005 U	0 005 U	0 005 U
Calcium (Ca)	total	0 7500 U	0 7500 U	0 7500 U	0 7500 U
Cadmium (Cd)	total	0 001 U	0 001 U	0 001 U	0 001 U
Cobalt (Co)	total	0 0220 U	0 0220 U	0 0220 U	0 0220 U
Chromium (Cr)	total	0 0144	0 0131	0 0171	0 0100 U
Cesium (Cs)	total	0 02 U	0 02 U	0 02 U	0 02 U
Copper (Cu)	total	0 0076	0 0063 U	0 0067	0 0063 U
Iron (Fe)	total	0 0267	0 0347	0 0111	0 0124
Mercury (Hg)	total	0 0002 U	0 0002 U	0 0002 U	0 0002 U
Potassium (K)	total	0 5 U	0 5 U	0 1 J	0 02 J
Lithium (Li)	total				
Magnesium (Mg)	total	200 U	0 0200 U	0 0200 U	0 0200 U
Manganese (Mn)	total	0 0051 U	0 0051 U	0 0051 U	0 0051 U
Molybdenum(Mo)	total	0 0220 U	0 0220 U	0 0220 U	0 0220 U
Sodium (Na)	total	2 1000 U	2 1000 U	2 1000 U	2 1000 U
Nickel (Ni)	total	0 0370 U	0 0370 U	0 0370 U	0 0370 U
Lead (Pb)	total	0 005 U	0 005 U	0 005 U	0 005 U
Antimony (Sb)	total	0 02 U	0 02 U	0 02 U	0 02 U
Selenium (Se)	total	0 005 U	0 005 U	0 005 U	0 005 U
Strontium (Sr)	total	0 0200 U	0 0200 U	0 0200 U	0 0200 U
Thallium (Tl)	total	0 01 U	0 01 U	0 01 U	0 01 U
Vanadium (V)	total	0 0240 U	0 0240 U	0 0240 U	0 0240 U
Zinc (Zn)	total	0 0200 U	0 0200 U	0 0200 U	0 0200 U

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METALS
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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

		RFW Batch ID	0687 881 008			0387 881 124			0387 881 131			8706 042 0001LCS
		Customer ID	FLDBLK 09 11 87			FLDBLK 09 18 87			FLDBLK 09 25 87			LCS
		Matrix	Water			Water			Water			Water
		Units	MG/L			MG/L			MG/L			UG/L
Metals												
Silver	(Ag)	total	0 0076	U		0 0076	U		0 0076	U		80 %
Aluminum	(Al)	total	0 0290	U		0 0290	U		0 0290	U		101 %
Arsenic	(As)	total	0 005	U		0 005	U		0 005	U		30 %
Barium	(Ba)	total	0 0100	U		0 0100	U		0 0100	U		92 %
Beryllium	(Be)	total	0 005	U		0 005	U		0 005	U		96 %
Calcium	(Ca)	total	0 7500	U		0 7500	U		0 7500	U		102 %
Cadmium	(Cd)	total	0 001	U		0 001	U		0 001	U		91 %
Cobalt	(Co)	total	0 0220	U		0 0220	U		0 0220	U		96 %
Chromium	(Cr)	total	0 0100	U		0 0100	U		0 0100	U		94 %
Cesium	(Cs)	total	0 1	U		0 02	U		0 02	U		NR
Copper	(Cu)	total	0 0063	U		0 0063	U		0 0067			99 %
Iron	(Fe)	total	0 0148			0 152			0 0124			95 %
Mercury	(Hg)	total	0 0002	U		0 0002	U		0 0002	U		
Potassium	(K)	total	0 02	J		0 03	J		0 04	J		81 %
Lithium	(Li)	total										
Magnesium	(Mg)	total	0 0200	U		0 0200	U		0 0200	U		99 %
Manganese	(Mn)	total	0 0051	U		0 0051	U		0 0051	U		96 %
Molybdenum	(Mo)	total	0 0220	U		0 0220	U		0 0220	U		NR
Sodium	(Na)	total	2 1000	U		2 1000	U		2 2560			92 %
Nickel	(Ni)	total	0 0370	U		0 0370	U		0 0370	U		97 %
Lead	(Pb)	total	0 005	U		0 005	U		0 005	U		93 %
Antimony	(Sb)	total	0 02	U		0 02	U		0 02	U		71 %
Selenium	(Se)	total	0 005	U		0 005	U		0 005	U		18 %
Strontium	(Sr)	total	0 0200	U		0 0200	U		0 0200	U		95 %
Thallium	(Tl)	total	0 01	U		0 01	U		0 01	U		77 %
Vanadium	(V)	total	0 0240	U		0 0240	U		0 0240	U		99 %
Zinc	(Zn)	total	0 0200	U		0 0200	U		0 0200	U		95 %

WESTON ANALYTICS
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RFW Batch Number | Client ROCKWELL (ROCKY FLATS) |

Sample Information

		RFW Batch ID	8706 058 0001LCS			8708 010 0001BL			0387 881 017			0387 881 052		
		Customer ID	LCS			PREP BLANK			REABLK 07 02 87			REABLK 07 23 87		
		Matrix				Soil			Water			Water		
		Units	UG/L			MG/KG			MG/L			MG/L		
Metals														
Silver	(Ag)	total	77	%		2 00	U		0 0076	U		0 0076	U	
Aluminum	(Al)	total	97	%		40 00	U		0 0650			0 0290	U	
Arsenic	(As)	total	68	%		2 00	U							
Barium	(Ba)	total	87	%		40 00	U		0 0100	U		0 0100	U	
Beryllium	(Be)	total	91	%		1 00	U							
Calcium	(Ca)	total	100	%		1000 00	U		2 8079			0 7500	U	
Cadmium	(Cd)	total	97	%		1 00	U							
Cobalt	(Co)	total	99	%		10 00	U		0 0220	U		0 0220	U	
Chromium	(Cr)	total	95	%		2 00	U		0 0100	U		0 0100	U	
Cesium	(Cs)	total	NR			NR								
Copper	(Cu)	total	90	%		5 00	U		0 0163			0 0063	U	
Iron	(Fe)	total	96	%		20 00	U		0 0106			0 0069	U	
Mercury	(Hg)	total				0 1	U							
Potassium	(K)	total	82	%		1000 00	U							
Lithium	(Li)	total												
Magnesuim	(Mg)	total	97	%		1000 00	U		0 6285			0 0200	U	
Manganese	(Mn)	total	94	%		3 00	U		0 0051	U		0 0051	U	
Molybdenum	(Mo)	total	NR			NR			0 0220	U		0 0220	U	
Sodium	(Na)	total	92	%		1000 00	U		4 2358			2 1000	U	
Nickel	(Ni)	total	98	%		8 00	U		0 0370	U		0 0370	U	
Lead	(Pb)	total	103	%		1 00	U							
Antimony	(Sb)	total	NOT ADDED			12 00	U							
Selenium	(Se)	total	91	%		1 00	U							
Strontium	(Sr)	total	87	%		20 00	U		0 0287			0 0200	U	
Thallium	(Tl)	total	96	%		2 00	U							
Vanadium	(V)	total	97	%		10 00	U		0 0240	U		0 0253		
Zinc	(Zn)	total	97	%		6 0			0 0200	U		0 0200	U	

WESTON ANALYTICS
METALS
INORGANICS DATA SUMMARY REPORT

RFW Batch Number ---- Client ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID	0387 881 058	0387 881 071	0387 881 081	0387 881 097
Customer ID	REABLK 07 28 87	REABLK 08 04 87	REABLK 08 11 87	REABLK 08 20 87
Matrix	Water	Water	Water	Water
Units	MG/L	MG/L	MG/L	MG/L

Metals

Silver	(Ag)	total	0 0076 U	0 0076 U	0 0076 U	0 0076 U
Aluminum	(Al)	total	0 0290 U	0 0290 U	0 0290 U	0 0290 U
Arsenic	(As)	total				
Barium	(Ba)	total	0 0100 U	0 0100 U	0 0100 U	0 0100 U
Beryllium	(Be)	total				
Calcium	(Ca)	total	0 7500 U	0 7500 U	0 7500 U	0 7500 U
Cadmium	(Cd)	total				
Cobalt	(Co)	total	0 0220 U	0 0220 U	0 0220 U	0 0220 U
Chromium	(Cr)	total	0 0100 U	0 0100 U	0 0100 U	0 0103
Cesium	(Cs)	total				
Copper	(Cu)	total	0 0063 U	0 0063 U	0 0063 U	0 0063 U
Iron	(Fe)	total	0 0089	0 0069 U	0 0147	0 0131
Mercury	(Hg)	total				
Potassium	(K)	total				
Lithium	(Li)	total				
Magnesium	(Mg)	total	0 0200 U	0 0204	0 0200 U	0 0200 U
Manganese	(Mn)	total	0 0051 U	0 0051 U	0 0051 U	0 0051 U
Molybdenum	(Mo)	total	0 0220 U	0 0220 U	0 0220 U	0 0220 U
Sodium	(Na)	total	2 1000 U	2 1000 U	2 1000 U	2 1000 U
Nickel	(Ni)	total	0 0370 U	0 0370 U	0 0370 U	0 0370 U
Lead	(Pb)	total				
Antimony	(Sb)	total				
Selenium	(Se)	total				
Strontium	(Sr)	total	0 0200 U	0 0200 U	0 0200 U	0 0200 U
Thallium	(Tl)	total				
Vanadium	(V)	total	0 0240 U	0 0240 U	0 0240 U	0 0240 U
Zinc	(Zn)	total	0 0200 U	0 0200 U	0 0200 U	0 0200 U

APPENDIX G

QUALITY ASSURANCE

APPENDIX G

1 0 INTRODUCTION

The Comprehensive Environmental Assessment and Response Program (CEARP) Quality Assurance/Quality Control (QA/QC) Plan consists of policies objec tives principles and general procedures to be followed in producing quality environ mental data The QA/QC Plan for remedial investigations at Rocky Flats Plant is contained in the CEARP Installation Generic Monitoring Plan (IGMP) The primary quality assurance objective for quantitative analysis is to obtain reproducible mea surements to a degree of accuracy consistent with their intended use and to document measurement procedures Quality assurance responsibilities are to monitor and review the procedures used in all aspects of the remedial investigation This includes but is not limited to drilling sampling well installation laboratory analysis data analysis and report preparation Required procedures for drilling sampling and related field activities are described in detail in Appendix A of the IGMP Sampling Plan A complete description of remedial investigation field activities that differ from the IGMP can be found in Appendix D of this report Required analytical procedures and programs are described in the IGMP QA/QC Plan This appendix discusses the field and laboratory QA/QC programs implemented during the RI and compares them to those outlined in the CEARP IGMP QA/QC Plan

2 0 FIELD QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance/quality control (QA/QC) documentation was maintained for field activities (drilling materials description sampling packer testing well installa

tion and decontamination procedures) QA/QC policies are designed to maintain uni formity to identify nonconformance with project procedures and to implement cor rective actions to remedy the identified nonconformances Audits were performed to document compliance with specified procedures

2 1 DRILLING AND WELL INSTALLATION

2 1 1 Documentation

QA/QC procedures involved close supervision of field personnel by the site ge ologists and Site Manager Activities were documented in field notebooks assigned to each individual by the Site Manager Entries in the notebooks included core descriptions well designs packer tests health and safety requirements and other direct field activities as well as conversations/interactions with other field personnel A summary of the day s activities was presented at daily health and safety meetings and two copies of the week s field notebooks were collected each Friday These notebooks were reviewed by the Site Manager and the Quality Assurance Officer This enabled ongoing QA to be performed on all field notebooks without actually taking possession of the documents and interfering with field activities

In addition to daily reviews and submission of weekly field notes site management approval of each well design was required prior to well installation Field personnel were also required to contact the site manager on noncompliance or difficulties before continuing field activities whenever questions arose These steps were all designed to minimize variation between areas and between personnel and to ensure coordination at the site manager level

Formal well designs and geologic logs included in Appendix E have been cross checked against the field notebook by a geologist other than the originator to document proper descriptions and footages Each log was dated and initialed by the reviewer prior to typing The typed logs were reviewed again before being signed by the Site Manager and the CEARP Manager

2 1 2 Audits

QA/QC was also maintained through the use of unannounced field audits and review of geologists field notebooks by the Quality Assurance Officer Four function related checklists have been developed for the different field tasks and were used for the audits

Drilling audits (Attachment 1) were performed on eleven of twenty seven wells (41%) three audits were based on field observation and eight on the field notebooks (Table G 1) In addition drilling audits were performed on four boreholes and one abandoned hole These audits document conformance with drilling procedures Specifically the audits confirm that alluvial wells were drilled one to three feet into bedrock surface casing was set into unweathered bedrock for bedrock wells and that augers and sampling devices were decontaminated and kept clean between holes

Borehole logging audits (Attachment 2) were performed on eleven of the twenty seven wells (41%) three audits were based on field observation and eight on the field notebooks (Table G 1) In addition borehole logging audits were performed on four boreholes and one abandoned hole These audits confirm proper material descriptions and documentation as required in DOE (1987a)

TABLE G 1
QA/QC AUDITS

WELL	DRILLING	BOREHOLE LOGGING	PACKER TEST	WELL INSTALLATION
903 PAD				
9 87BR	LB	LB		F
10 87	LB	LB		F
11 87BR				F
12 87BR				F
14 87BR				
15 87	LB	LB		F
16 87BR*	LB	F	F	F
MOUND AREA				
17 87	F	F		F LB
18 87BR*	F	F		
19 87				F
20 87BR*	LB	LB	F	F
21 87				
22 87BR				
23 87BR				LB
EAST TRENCHES				
24 87				LB
25 87BR	LB	LB		F
26 87				F
27 87	LB	LB		LB
28 87BR*			F	F
29 87				
30 87BR*			F	F
31 87BR*				F
32 87	F	F		F
33 87				
34 87BR*				LB
35 87				LB
36 87BR	LB	LB		

F Unannounced Field Audit
LB Log Book Audit
Bedrock Well Packer Tested

Packer test audits (Attachment 3) were performed on four of the eight bedrock wells packer tested (50%) all were field audits (Table G 1) These audits confirm compliance with the procedures presented in DOE (1987a)

Twenty of the twenty seven well installations were audited (74%) (Attachment 4) Fifteen audits were based on field observations and five audits were from field notebooks (Table G 1) These audits document adherence to well installation procedures including materials screened and blank depths decontamination procedures and careful well constructions (DOE 1987a)

2 2 WATER SAMPLING

Water samples were collected using the procedure presented in Attachment 1 of Appendix D This procedure is more detailed than and is generally consistent with procedures presented in the IGMP Minor modifications to the procedures were made at the end of each quarter For example the order in which bottles were filled was changed (Appendix D) and the time allowed for recharge before sampling was discontinued Another modification involved filtration of samples for radiometric analyses Ground water radiometric samples were not filtered during the first and second quarters but they were filtered during the third and fourth quarters Surface water radiometric samples were not filtered during the second and third quarters but were filtered during the fourth quarter Surface water samples were not collected in the first quarter of 1987 The revised sampling procedure is presented and discussed in Appendix D One audit of ground water sampling was performed during the fourth quarter The audit shows satisfactory adherence to the sampling plan

3 0 LABORATORY QA/QC

3 1 Radiochemistry

3 1 1 Rockwell International Laboratory

The Rocky Flats Plant Building 881 Laboratory analyzed water samples for gross alpha gross beta uranium 234 235 and 238 plutonium 239 cesium 137 americium 241 strontium 90 and tritium Field duplicates and field equipment and trip blanks were collected during sampling and submitted to the laboratory for analysis These samples constituted approximately 17% of the total samples analyzed

Samples analyzed prior to the start of the third quarter of 1987 were analyzed under a QA program that consisted of measurement control samples for gross alpha gross beta and tritium run monthly and control samples run with every ten samples for all other radionuclides of interest Also internal spikes were included in each sample to determine chemical recovery Samples analyzed after the start of the third quarter of 1987 were analyzed with a QA program of one method blank run with each batch of ten samples one control sample run with each batch of ten samples for all isotope specific analyses one control sample run weekly for gross alpha and beta and a laboratory duplicate run with every tenth sample for gross alpha gross beta and tritium Internal matrix spikes were included in each sample and all isotopic standards used for spiking of control and individual samples are either directly or indirectly National Bureau of Standards (NBS) traceable In addition internal QA/QC audits are routinely performed of the 881 Laboratory as part of a Plant wide QA/QC program

Radionuclide analyses differed slightly from the QA/QC Plan specified analytical procedures during the first three quarters of 1987 The QA/QC Plan specified a one liter sample volume however the laboratory had inadequate capacity to process the large number of one liter samples Smaller sample volumes were thus used for radiochemical analyses prior to fourth quarter 1987 Specifically gross alpha and gross beta results were based on a 25 milliliter (ml) sample tritium results were based on a 5 ml sample and all other isotopic analyses were based on a 100 ml sample All analyses starting in fourth quarter 1987 are based on one liter sample volumes

The detection limits for the various radiochemical analyses conform to the suggested limits in the QA/QC Plan Prior to the start of the third quarter of 1987 detection limits were determined as the minimum detectable activity (MDA) under optimum conditions The detection limits were uranium isotopes 0 23 pCi/l Am 241 0 36 pCi/l Pu 239 0 23 pCi/l Sr 90 8 pCi/l Cs 137 1 pCi/l and tritium 110 pCi/l After the start of the third quarter the detection limits were calculated on the basis of individual samples to reflect the variability in sample analysis Both methods of determining detection limits are acceptable and meet the detection requirements the latter method is considered to more accurately represent these limits

The small sample volume and method of determining detection limits used prior to the start of the fourth quarter of 1987 add to the difficulty of data interpre tation The majority of samples analyzed appear to contain either very low levels or background amounts of radioactive material The small volume of these low level samples has the effect of raising the detection limits and relative uncertainty due to the low sample count rate Because the detection limits were not sample specific it is difficult to distinguish between a sample with low levels of radioactive material and

one with background levels In fact the sample activity is indistinguishable from background if the error is about twice the concentration A one liter sample volume is now collected for radiochemical analyses in order to reduce detection limits (MDA) and error bars This also allows remedial investigation data to be compared to data collected as part of the Plant routine environmental monitoring program

All analytical data including QA data are entered into a technical data base This data base is designed to include all pertinent QA data in such a form as to be retrievable with the appropriate sample lots Detection limits are also retrievable with the data

3 1 2 Accu Labs Research Inc Laboratory

Accu Labs Research Inc (Arvada Colorado) analyzed soil samples for gross alpha and beta plutonium 239 americium 241 uranium 233+234 uranium 238 strontium 90 cesium 137 and tritium Field duplicates were collected during sampling and submitted to the laboratory for analysis Field QA samples constituted approximately 6% of the total soil samples analyzed

Field and trip blanks for soils were not collected because of the difficulty in obtaining blank samples of soils Special bottling and sample handling procedures were implemented to reduce the need for field and trip blanks Soil sample contain ers were obtained from I CHEM Research I CHEM sample containers are precleaned and quality control analyzed to exact EPA protocols and meet EPA standards for use of glass containers in sampling In addition primary and secondary container ship ping packages are labeled with chain of custody seals to indicate potential tampering of sample containers

Laboratory QA samples comprised 10% of the samples consisting of method blanks duplicate samples and method spikes On average every batch of ten samples is accompanied by one of each of these QA samples All isotopic standards used for the spiking of control and individual samples are either directly or indirectly NBS traceable In addition internal QA/QC checks have been performed at the laboratory on a routine basis since the start of the project

The soil analyses were done according to QA/QC Plan specified analytical procedures Sample mass requirements for sample analysis were met The detection limits for the soils radiochemistry conform to those suggested in the QA/QC Plan and are calculated on the individual sample basis to reflect the variability in individual sample analysis The detection limits under optimum conditions are approximately 1 pCi/g for Sr and Cs and approach 0 1 pCi/g for the remaining isotopic analysis

Data generated by the Accu Labs laboratory contain sample and duplicate re sults These values are accompanied by two sigma (95%) confidence intervals Accu Labs QA/QC program and QA data have been reviewed and were found to be ac ceptable The analytical program at the laboratory has remained unchanged through out the project Therefore no written notification of changes has been required

3 2 Non Radioactive Chemical Analysis

Ground water surface water and soil samples were analyzed for non radioac tive chemistry The water samples were analyzed for volatile organics metals and inorganic parameters by the Rockwell 881 Laboratory Field splits of ground water samples were also analyzed by WESTON Analytics Laboratory (Stockton California)

Soil samples were analyzed by WESTON Analytics for volatile organics semi volatile organics metals and inorganic parameters One batch of borehole samples was analyzed by Envirodyne Engineers Laboratory (St Louis Missouri)

3 2 1 Water Samples

Water samples were analyzed by the 881 Laboratory for the first and second quarter using gas chromatography Method spikes were not included in the routine analysis nor were lot control numbers assigned to samples Use of the GC/MS procedure began in the third quarter of 1987 Third and fourth quarter analytical reports do not contain information on QA samples Since no QA data are available to verify that calibrations remained valid throughout analyses volatile organic data from the 881 Laboratory are interpreted as qualitative (i e the precise value is unknown)

Ground water volatile organic analyses performed by WESTON Analytics followed the procedures outlined in the QA/QA Plan Analytical reports for ground water splits present required QA results (surrogate recoveries matrix spikes and lab blanks) and these results are within acceptable ranges No matrix interference is indicated by QA results These data are thus considered quantitative

3 2 2 Soil Samples

Analytical methods used for soils analyses by both WESTON Analytics and Envirodyne Engineers Laboratories are consistent with those specified in the QA/QC Plan Soil boring analytical reports from both laboratories show lab QA results (surrogate recoveries matrix spikes and lab blanks) as well as tentative identified

compounds in the semi volatile fractions Laboratory QA results are within acceptable ranges and do not indicate matrix interference Results reported by WESTON Analytics were reported on an as received basis and not corrected for moisture content

4 0 CONCLUSIONS

In general field and laboratory methods have followed the procedures specified in the QA/QC Plan In particular

1 The QA/QC of field activities document compliance with field procedures Twenty one of twenty seven (78%) wells installed during this phase of the remedial investigation have been audited to some degree and nine wells (33%) have undergone at least three different audits each During field activities minor modifications were made to procedures

2 Radiometric analyses have generally been performed according to procedures however 100 ml rather than one liter water sample volumes resulted in low counts and higher uncertainties Radiometric analysis of soil samples followed the project procedures

3 Analysis of non radiometric constituents also generally followed procedures However gas chromatography was used instead of GC/MS for the first two quarters of water samples In addition complete QA documentation is not available for water samples analyzed by the Rocky Flats Laboratory Therefore those analytical results are regarded as qualitative Ground water volatile organic analyses performed by WESTON Analytics Laboratory followed procedures set forth in the QA/QC Plan and are accompanied by appropriate QA documentation These data are thus considered quantitative Analysis of soil samples followed the project procedures

The overall QA/QC goals have been met of documenting project methodologies and of developing data of sufficient accuracy for their intended use

APPENDIX G

ATTACHMENT 1

DRILLING AUDITS

DRILLING AUDIT

Well Number 9-87BR

Date 7/15/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bergman (WESTON)

Date drilling started 6/9/87

Type of drill rig being used B-57

Proposed formation of completion Alluvium

Type of sampling device being used Split core barrel

What type of recovery is being obtained? 80-100%

Were augers and sampling devices decontaminated? Yes

Are they kept clean? Yes

If an alluvial well, did they drill one to three feet into bedrock? NA

Was any fluid used while drilling? No

If a bedrock well, was the surface casing set into unweathered bedrock? No
(See note below)

What type of grout was used to set the casing? NA

Was the mixture 6 to 9 gallons of water per 94 lbs of grout? NA

Was the grout allowed to set for 24 hours? NA

What size is the core? 2 inches

Were at least three feet of saturated sandstone found in a ten-foot interval of bedrock or was 100' of claystone encountered? Yes

Explain reasons for choosing the total depth if it is different? Used bentonite to seal off alluvium from bedrock formations No surface casing set as well Was initially planned to be alluvial well until subcropping sandstone was intercepted and decision was made to convert to bedrock well

Was a packer test conducted?

Note any drilling problems

DRILLING AUDIT

Well Number 10-87

Date 6/15/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name C. Wood (WESTON)

Date drilling started 6/15/87

Type of drill rig being used B-57

Proposed formation of completion Arapahoe sandstone

Type of sampling device being used Split core barrel

What type of recovery is being obtained? 80-100%

Were augers and sampling devices decontaminated? Yes

Are they kept clean? Yes

If an alluvial well, did they drill one to three feet into bedrock? Yes

Was any fluid used while drilling? No

If a bedrock well, was the surface casing set into unweathered bedrock? NA

What type of grout was used to set the casing? NA

Was the mixture 6 to 9 gallons of water per 94 lbs of grout? NA

Was the grout allowed to set for 24 hours? NA

What size is the core? 2 inches

Were at least three feet of saturated sandstone found in a ten-foot interval of bedrock or was 100' of claystone encountered? NA

Explain reasons for choosing the total depth if it is different?

Was a packer test conducted? No

Note any drilling problems

DRILLING AUDIT

Well Number 15-87

Date 7/27/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name K. Holliway (WESTON)

Date drilling started 6/16/87

Type of drill rig being used B-57

Proposed formation of completion Alluvium

Type of sampling device being used Split core barrel

What type of recovery is being obtained? 100%

Were augers and sampling devices decontaminated? Yes

Are they kept clean? Yes

If an alluvial well, did they drill one to three feet into bedrock? Yes

Was any fluid used while drilling? No

If a bedrock well, was the surface casing set into unweathered bedrock? NA

What type of grout was used to set the casing? NA

Was the mixture 6 to 9 gallons of water per 94 lbs of grout? NA

Was the grout allowed to set for 24 hours? NA

What size is the core? 2 inches

Were at least three feet of saturated sandstone found in a ten-foot interval of bedrock or was 100' of claystone encountered? NA

Explain reasons for choosing the total depth if it is different? NA

Was a packer test conducted? No

Note any drilling problems

DRILLING AUDIT

Well Number 16-87BR

Date 7/15/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name C. Wood, J Bergman (WESTON)

Date drilling started 6/17/87

Type of drill rig being used B-57

Proposed formation of completion Arapahoe sandstone

Type of sampling device being used Split core barrel

What type of recovery is being obtained? 90-100%

Were augers and sampling devices decontaminated? Yes

Are they kept clean? Yes

If an alluvial well, did they drill one to three feet into bedrock? NA

Was any fluid used while drilling? No, 0-49' yes, 50'-TD (water)

If a bedrock well, was the surface casing set into unweathered bedrock? Yes

What type of grout was used to set the casing? Portland Type I

Was the mixture 6 to 9 gallons of water per 94 lbs of grout? Yes

Was the grout allowed to set for 24 hours? Yes

What size is the core? 2 inches

Were at least three feet of saturated sandstone found in a ten-foot interval of bedrock or was 100' of claystone encountered? Yes

Explain reasons for choosing the total depth if it is different?

Was a packer test conducted? Yes

Note any drilling problems

DRILLING AUDIT

Well Number 17-87

Date 8/10/87, 9/9/87 (Field Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bergman (WESTON), D. Treat (Chen & Associates)

Date drilling started 8/6/87 (abandoned), new well 9/9/87

Type of drill rig being used B-57

Proposed formation of completion Rocky Flats Alluvium

Type of sampling device being used Split core barrel

What type of recovery is being obtained? 50%

Were augers and sampling devices decontaminated? Yes

Are they kept clean? Yes

If an alluvial well, did they drill one to three feet into bedrock? Yes

Was any fluid used while drilling? No

If a bedrock well, was the surface casing set into unweathered bedrock? NA

What type of grout was used to set the casing? NA

Was the mixture 6 to 9 gallons of water per 94 lbs of grout? NA

Was the grout allowed to set for 24 hours? NA

What size is the core? 2 inches

Were at least three feet of saturated sandstone found in a ten-foot interval of bedrock or was 100' of claystone encountered? NA

Explain reasons for choosing the total depth if it is different? NA

Was a packer test conducted?

Note any drilling problems First well drilled was abandoned with Moss sampling system stuck in hole Drilled new well 9/9/87 by Dick Treat

DRILLING AUDIT

Well Number 18-87BR

Date 8/10/87 (Field Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name L. Gregory-Frost, K. Holliway (WESTON)

Date drilling started 8/5/87, 8/20/87

Type of drill rig being used B-57

Proposed formation of completion Arapahoe sandstone

Type of sampling device being used Split core barrel

What type of recovery is being obtained? 50%

Were augers and sampling devices decontaminated? Yes

Are they kept clean? Yes

If an alluvial well, did they drill one to three feet into bedrock? NA

Was any fluid used while drilling? No

If a bedrock well, was the surface casing set into unweathered bedrock? Yes

What type of grout was used to set the casing? Portland Type I

Was the mixture 6 to 9 gallons of water per 94 lbs of grout? Yes

Was the grout allowed to set for 24 hours? Yes

What size is the core? 2 inches

Were at least three feet of saturated sandstone found in a ten-foot interval of bedrock or was 100' of claystone encountered? Clayey sandstone

Explain reasons for choosing the total depth if it is different?

Was a packer test conducted? Yes

Note any drilling problems

DRILLING AUDIT

Well Number 20-87BR

Date 8/25/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name. J Bergman, K. Holliway (WESTON)

Date drilling started 7/30/87

Type of drill rig being used. B-57

Proposed formation of completion Arapahoe sandstone

Type of sampling device being used Split core barrel

What type of recovery is being obtained? 85%

Were augers and sampling devices decontaminated? Yes

Are they kept clean? Yes

If an alluvial well, did they drill one to three feet into bedrock? NA

Was any fluid used while drilling? No

If a bedrock well, was the surface casing set into unweathered bedrock? Yes

What type of grout was used to set the casing? Portland Type I

Was the mixture 6 to 9 gallons of water per 94 lbs of grout? Yes

Was the grout allowed to set for 24 hours? Yes

What size is the core? 2 inches

Were at least three feet of saturated sandstone found in a ten-foot interval of bedrock or was 100' of claystone encountered? Yes

Explain reasons for choosing the total depth if it is different?

Was a packer test conducted? Yes

Note any drilling problems

DRILLING AUDIT

Well Number BH24-87

Date 8/4/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name K. Holliway (WESTON)

Date drilling started 7/8/87

Type of drill rig being used B-57

Proposed formation of completion 5' into bedrock and backfilled with cement

Type of sampling device being used Split core barrel

What type of recovery is being obtained? 85%

Were augers and sampling devices decontaminated? Yes

Are they kept clean? Yes

If an alluvial well, did they drill one to three feet into bedrock? Yes

Was any fluid used while drilling? No

If a bedrock well, was the surface casing set into unweathered bedrock? NA

What type of grout was used to set the casing? NA

Was the mixture 6 to 9 gallons of water per 94 lbs of grout? NA

Was the grout allowed to set for 24 hours? NA

What size is the core? 2 inches

Were at least three feet of saturated sandstone found in a ten-foot interval of bedrock or was 100' of claystone encountered? NA

Explain reasons for choosing the total depth if it is different? NA

Was a packer test conducted? No

Note any drilling problems

DRILLING AUDIT

Well Number BH25-87

Date 7/27/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name K. Holliway (WESTON)

Date drilling started 6/17/87

Type of drill rig being used B-57

Proposed formation of completion 5' into bedrock and backfilled with cement

Type of sampling device being used Split core barrel

What type of recovery is being obtained? 0-95%

Were augers and sampling devices decontaminated? Yes

Are they kept clean? Yes

If an alluvial well, did they drill one to three feet into bedrock? NA

Was any fluid used while drilling? No

If a bedrock well, was the surface casing set into unweathered bedrock? NA

What type of grout was used to set the casing? NA

Was the mixture 6 to 9 gallons of water per 94 lbs of grout? NA

Was the grout allowed to set for 24 hours? NA

What size is the core? 2 inches

Were at least three feet of saturated sandstone found in a ten-foot interval of bedrock or was 100' of claystone encountered? NA

Explain reasons for choosing the total depth if it is different? NA

Was a packer test conducted? No

Note any drilling problems Lost core 12'-14 5'

DRILLING AUDIT

Well Number 25-87BR

Date 8/14/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name R. Treat (Chen & Associates)

Date drilling started 8/11/87

Type of drill rig being used B-57

Proposed formation of completion Arapahoe sandstone

Type of sampling device being used Split core barrel

What type of recovery is being obtained? 100%, 0-40% (33-40')

Were augers and sampling devices decontaminated? Yes

Are they kept clean? Yes

If an alluvial well, did they drill one to three feet into bedrock? NA

Was any fluid used while drilling? No

If a bedrock well, was the surface casing set into unweathered bedrock? No (see note)*

What type of grout was used to set the casing? Portland Type I

Was the mixture 6 to 9 gallons of water per 94 lbs of grout? Yes

Was the grout allowed to set for 24 hours? Yes

What size is the core? 2 inches

Were at least three feet of saturated sandstone found in a ten-foot interval of bedrock or was 100' of claystone encountered? Yes

Explain reasons for choosing the total depth if it is different?

Was a packer test conducted? No

Note any drilling problems *Weathered sandstone below alluvium followed by flowing sands and consequent core loss and drilling problems It was decided to grout surface seal in lieu of casing grout surface seal

DRILLING AUDIT

Well Number BH27-87

Date 8/4/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name K. Holliway (WESTON)

Date drilling started 6/29/87

Type of drill rig being used B-57

Proposed formation of completion 5' into bedrock and backfilled with cement

Type of sampling device being used Split core barrel

What type of recovery is being obtained? 32-100%

Were augers and sampling devices decontaminated? Yes

Are they kept clean? Yes

If an alluvial well, did they drill one to three feet into bedrock? NA

Was any fluid used while drilling? No

If a bedrock well, was the surface casing set into unweathered bedrock? NA

What type of grout was used to set the casing? NA

Was the mixture 6 to 9 gallons of water per 94 lbs of grout? NA

Was the grout allowed to set for 24 hours? NA

What size is the core? 2 inches

Were at least three feet of saturated sandstone found in a ten-foot interval of bedrock or was 100' of claystone encountered? NA

Explain reasons for choosing the total depth if it is different?

Was a packer test conducted? NA

Note any drilling problems

DRILLING AUDIT

Well Number 27-87

Date 9/16/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bannon (WESTON)

Date drilling started 9/3/87 completed 9/10/87

Type of drill rig being used B-57

Proposed formation of completion Rocky Flats Alluvium

Type of sampling device being used Split core barrel

What type of recovery is being obtained? Center bit used frequently--poor recovery

Were augers and sampling devices decontaminated? Yes

Are they kept clean? Yes

If an alluvial well, did they drill one to three feet into bedrock? Yes

Was any fluid used while drilling? No

If a bedrock well, was the surface casing set into unweathered bedrock? NA

What type of grout was used to set the casing? NA

Was the mixture 6 to 9 gallons of water per 94 lbs of grout? NA

Was the grout allowed to set for 24 hours? NA

What size is the core? 2 inches

Were at least three feet of saturated sandstone found in a ten-foot interval of bedrock or was 100' of claystone encountered? NA

Explain reasons for choosing the total depth if it is different?

Was a packer test conducted? No

Note any drilling problems Numerous zones of cobbles required use of center bit, resulting in poor recovery auger and center bit retrieval problems wireline broke Numerous mechanical delays

DRILLING AUDIT

Well Number BH32-87

Date 8/3/87 (Field Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name L. Gregory-Frost (WESTON)

Date drilling started 8/3/87

Type of drill rig being used B-57

Proposed formation of completion 5' into bedrock and backfilled with cement

Type of sampling device being used Split core barrel

What type of recovery is being obtained? 80%

Were augers and sampling devices decontaminated? Yes

Are they kept clean? Yes

If an alluvial well, did they drill one to three feet into bedrock? NA

Was any fluid used while drilling? No

If a bedrock well, was the surface casing set into unweathered bedrock? NA

What type of grout was used to set the casing? NA

Was the mixture 6 to 9 gallons of water per 94 lbs of grout? NA

Was the grout allowed to set for 24 hours? NA

What size is the core? 2 inches

Were at least three feet of saturated sandstone found in a ten-foot interval of bedrock or was 100' of claystone encountered? NA

Explain reasons for choosing the total depth if it is different? NA

Was a packer test conducted? NA

Note any drilling problems

DRILLING AUDIT

Well Number 32-87

Date 9/21/87 (Field Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bannon (WESTON)

Date drilling started 9/21/87

Type of drill rig being used B-57

Proposed formation of completion Arapahoe sandstone

Type of sampling device being used Split core barrel

What type of recovery is being obtained?

Were augers and sampling devices decontaminated? Yes

Are they kept clean? Yes

If an alluvial well, did they drill one to three feet into bedrock? NA

Was any fluid used while drilling? No

If a bedrock well, was the surface casing set into unweathered bedrock?

What type of grout was used to set the casing?

Was the mixture 6 to 9 gallons of water per 94 lbs of grout?

Was the grout allowed to set for 24 hours?

What size is the core? 2 inches

Were at least three feet of saturated sandstone found in a ten-foot interval of bedrock or was 100' of claystone encountered?

Explain reasons for choosing the total depth if it is different?

Was a packer test conducted?

Note any drilling problems Numerous cobble layers in Rocky Flats Alluvium slowed drilling progress and recovery

DRILLING AUDIT

Well Number 36-87BR

Date 8/19/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name R. Treat (Chen & Associates)

Date drilling started 8/18/87

Type of drill rig being used B-57

Proposed formation of completion Arapahoe sandstone

Type of sampling device being used Split core barrel

What type of recovery is being obtained? 95%

Were augers and sampling devices decontaminated? Yes

Are they kept clean? Yes

If an alluvial well, did they drill one to three feet into bedrock? NA

Was any fluid used while drilling? No

If a bedrock well, was the surface casing set into unweathered bedrock? No

What type of grout was used to set the casing?

Was the mixture 6 to 9 gallons of water per 94 lbs of grout?

Was the grout allowed to set for 24 hours?

What size is the core?

Were at least three feet of saturated sandstone found in a ten-foot interval of bedrock or was 100' of claystone encountered?

Explain reasons for choosing the total depth if it is different? Bedrock field screening hits--nothing in Alluvium Not generating much water--cuttings dry at approximately 40 feet

Was a packer test conducted?

Note any drilling problems

APPENDIX G

ATTACHMENT 2

BOREHOLE LOGGING AUDITS

BOREHOLE LOGGING

Well Number 10-87

Date 6/15/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name C. Wood (WESTON)

The field notebook and log of borings form should be filled out in detail The following items should be found in both

Borehole number Yes

Time/date Yes

Footage Yes

Recent Recovery Yes

Material Type Yes

Color Yes

Structural Characteristics NA

Grain Sizes Yes

Degree of Sorting Yes

Grain Shapes Yes

Moisture Content Yes

Nature of Contacts Yes

Organic and radioactive field screening results Yes, core screening

Are the cores wrapped in plastic and placed in boxes? Yes

Are the intervals properly identified? Yes

Are the boxes properly identified? Yes

Is the driller keeping a daily log detailing footage drilled, material used, and stand-by time? Yes

Is the geologist (Field Team Leader) doing the same? Yes

BOREHOLE LOGGING

Well Number 15-87

Date 7/29/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name K. Holliway (WESTON)

The field notebook and log of borings form should be filled out in detail The following items should be found in both

Borehole number Yes

Time/date Yes

Footage Yes

Recent Recovery Yes

Material Type Yes

Color Yes

Structural Characteristics Yes, fractures

Grain Sizes Yes

Degree of Sorting Yes

Grain Shapes Yes

Moisture Content Yes

Nature of Contacts Yes

Organic and radioactive field screening results Yes

Are the cores wrapped in plastic and placed in boxes? Yes

Are the intervals properly identified? Yes

Are the boxes properly identified? Yes

Is the driller keeping a daily log detailing footage drilled, material used, and stand-by time? Yes

Is the geologist (Field Team Leader) doing the same? Yes

BOREHOLE LOGGING

Well Number 16-87BR

Date 7/15/87 (Field Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bergman (WESTON)

The field notebook and log of borings form should be filled out in detail The following items should be found in both

Borehole number Yes

Time/date Yes

Footage Yes

Recent Recovery Yes

Material Type Yes

Color Yes

Structural Characteristics Yes, fractures, dips on fractures

Grain Sizes Yes

Degree of Sorting Yes

Grain Shapes Yes

Moisture Content Yes

Nature of Contacts Yes

Organic and radioactive field screening results Yes, core screening

Are the cores wrapped in plastic and placed in boxes? Yes

Are the intervals properly identified? Yes

Are the boxes properly identified? Yes

Is the driller keeping a daily log detailing footage drilled, material used, and stand-by time? Yes

Is the geologist (Field Team Leader) doing the same? Yes

BOREHOLE LOGGING

Well Number 17-87

Date 8/10/87 (Field Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bergman (WESTON)

The field notebook and log of borings form should be filled out in detail The following items should be found in both

Borehole number Yes

Time/date Yes

Footage Yes

Recent Recovery Yes

Material Type Yes

Color Yes

Structural Characteristics NA

Grain Sizes Yes

Degree of Sorting Yes

Grain Shapes Yes

Moisture Content Yes

Nature of Contacts Yes

Organic and radioactive field screening results Yes, HNu and OVA

Are the cores wrapped in plastic and placed in boxes? Yes

Are the intervals properly identified? Yes

Are the boxes properly identified? Yes

Is the driller keeping a daily log detailing footage drilled material used, and stand-by time? Yes

Is the geologist (Field Team Leader) doing the same? Yes

BOREHOLE LOGGING

Well Number 18-87BR

Date 8/10/87 (Field Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name L. Gregory-Frost (WESTON)

The field notebook and log of borings form should be filled out in detail The following items should be found in both

Borehole number Yes

Time/date Yes

Footage Yes

Recent Recovery Yes

Material Type Yes

Color Yes

Structural Characteristics NA

Grain Sizes Yes

Degree of Sorting Yes

Grain Shapes Yes

Moisture Content Yes

Nature of Contacts Yes

Organic and radioactive field screening results Yes, HNu and OVA

Are the cores wrapped in plastic and placed in boxes? Yes

Are the intervals properly identified? Yes

Are the boxes properly identified? Yes

Is the driller keeping a daily log detailing footage drilled, material used, and stand-by time? Yes

Is the geologist (Field Team Leader) doing the same? Yes

BOREHOLE LOGGING

Well Number 20-87BR

Date 8/10/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name K. Holliway (WESTON)

The field notebook and log of borings form should be filled out in detail The following items should be found in both

Borehole number Yes

Time/date Yes

Footage Yes

Recent Recovery Yes

Material Type Yes

Color Yes

Structural Characteristics Yes

Grain Sizes Yes

Degree of Sorting Yes

Grain Shapes Yes

Moisture Content Yes

Nature of Contacts Yes

Organic and radioactive field screening results No

Are the cores wrapped in plastic and placed in boxes? Yes

Are the intervals properly identified? Yes

Are the boxes properly identified? Yes

Is the driller keeping a daily log detailing footage drilled, material used, and stand-by time? Yes

Is the geologist (Field Team Leader) doing the same? Yes

BOREHOLE LOGGING

Well Number BH24-87

Date 8/4/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name K. Holliway (WESTON)

The field notebook and log of borings form should be filled out in detail The following items should be found in both

Borehole number Yes

Time/date Yes

Footage Yes

Recent Recovery Yes

Material Type Yes

Color Yes

Structural Characteristics NA

Grain Sizes Yes

Degree of Sorting Yes

Grain Shapes Yes

Moisture Content Yes

Nature of Contacts Yes

Organic and radioactive field screening results Yes

Are the cores wrapped in plastic and placed in boxes? Yes

Are the intervals properly identified? Yes

Are the boxes properly identified? Yes

Is the driller keeping a daily log detailing footage drilled, material used, and stand-by time? Yes

Is the geologist (Field Team Leader) doing the same? Yes

BOREHOLE LOGGING

Well Number BH25-87

Date 7/27/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name K. Holliway (WESTON)

The field notebook and log of borings form should be filled out in detail The following items should be found in both

Borehole number Yes

Time/date Yes

Footage Yes

Recent Recovery Yes

Material Type Yes

Color Yes

Structural Characteristics Yes

Grain Sizes Yes

Degree of Sorting Not noted

Grain Shapes Not noted

Moisture Content Yes

Nature of Contacts Yes

Organic and radioactive field screening results Yes

Are the cores wrapped in plastic and placed in boxes? Yes

Are the intervals properly identified? Yes

Are the boxes properly identified? Yes

Is the driller keeping a daily log detailing footage drilled, material used, and stand-by time? Yes

Is the geologist (Field Team Leader) doing the same? Yes

BOREHOLE LOGGING

Well Number 25-87ER

Date 8/24/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name R. Treat (Chen & Associates)

The field notebook and log of borings form should be filled out in detail The following items should be found in both

Borehole number Yes

Time/date Yes

Footage Yes

Recent Recovery Yes

Material Type Yes

Color Yes

Structural Characteristics Yes

Grain Sizes Yes

Degree of Sorting Yes

Grain Shapes Yes

Moisture Content Yes

Nature of Contacts Yes

Organic and radioactive field screening results Yes, HNu and OVA

Are the cores wrapped in plastic and placed in boxes? Yes

Are the intervals properly identified? Yes

Are the boxes properly identified? Yes

Is the driller keeping a daily log detailing footage drilled, material used, and stand-by time? Yes

Is the geologist (Field Team Leader) doing the same? Yes

BOREHOLE LOGGING

Well Number BH27-87

Date 8/4/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name K. Holliway (WESTON)

The field notebook and log of borings form should be filled out in detail The following items should be found in both

Borehole number Yes

Time/date Yes

Footage Yes

Recent Recovery Yes

Material Type Yes

Color Yes

Structural Characteristics Yes, fractures noted below contact

Grain Sizes Yes

Degree of Sorting Yes

Grain Shapes Yes

Moisture Content Yes

Nature of Contacts Yes

Organic and radioactive field screening results Yes

Are the cores wrapped in plastic and placed in boxes? Yes

Are the intervals properly identified? Yes

Are the boxes properly identified? Yes

Is the driller keeping a daily log detailing footage drilled, material used, and stand-by time? Yes

Is the geologist (Field Team Leader) doing the same? Yes

BOREHOLE LOGGING

Well Number 27-87

Date 9/16/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bannon (WESTON)

The field notebook and log of borings form should be filled out in detail The following items should be found in both

Borehole number Yes

Time/date Yes

Footage Yes

Recent Recovery Yes

Material Type Yes

Color Yes

Structural Characteristics NA

Grain Sizes Yes

Degree of Sorting Yes

Grain Shapes Yes

Moisture Content Yes

Nature of Contacts Yes

Organic and radioactive field screening results Yes, HNu and OVA

Are the cores wrapped in plastic and placed in boxes? Yes

Are the intervals properly identified? Yes

Are the boxes properly identified? Yes

Is the driller keeping a daily log detailing footage drilled, material used and stand-by time? Yes

Is the geologist (Field Team Leader) doing the same? Yes

BOREHOLE LOGGING

Well Number BH32-87

Date 8/3/87 (Field Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name L. Gregory-Frost (WESTON)

The field notebook and log of borings form should be filled out in detail The following items should be found in both

Borehole number Yes

Time/date Yes

Footage Yes

Recent Recovery Yes

Material Type Yes

Color Yes

Structural Characteristics NA

Grain Sizes Yes

Degree of Sorting Yes

Grain Shapes Yes

Moisture Content Yes

Nature of Contacts Yes

Organic and radioactive field screening results Yes, HNu and OVA

Are the cores wrapped in plastic and placed in boxes? Yes

Are the intervals properly identified? Yes

Are the boxes properly identified? Yes

Is the driller keeping a daily log detailing footage drilled, material used, and stand-by time? Yes

Is the geologist (Field Team Leader) doing the same? Yes

BOREHOLE LOGGING

Well Number 32-87

Date 9/21/87 (Field Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bannon (WESTON)

The field notebook and log of borings form should be filled out in detail The following items should be found in both

Borehole number _____

Time/date _____

Footage _____

Recent Recovery _____

Material Type _____

Color _____

Structural Characteristics _____

Grain Sizes _____

Degree of Sorting _____

Grain Shapes _____

Moisture Content _____

Nature of Contacts _____

Organic and radioactive field screening results Yes, HNu and OVA

Are the cores wrapped in plastic and placed in boxes? Yes

Are the intervals properly identified? Yes

Are the boxes properly identified? Yes

Is the driller keeping a daily log detailing footage drilled, material used, and stand-by time? Yes

Is the geologist (Field Team Leader) doing the same? Yes

BOREHOLE LOGGING

Well Number 36-87BR

Date 8/19/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name R. Treat (Chen & Associates)

The field notebook and log of borings form should be filled out in detail The following items should be found in both

Borehole number Yes

Time/date Yes

Footage Yes

Recent Recovery Yes

Material Type Yes

Color Yes

Structural Characteristics Yes, bedding, joints if encountered

Grain Sizes Yes

Degree of Sorting Yes

Grain Shapes Yes

Moisture Content Yes

Nature of Contacts Yes

Organic and radioactive field screening results Yes, core screening

Are the cores wrapped in plastic and placed in boxes? Yes

Are the intervals properly identified? Yes

Are the boxes properly identified? Yes

Is the driller keeping a daily log detailing footage drilled material used and stand-by time? Yes

Is the geologist (Field Team Leader) doing the same? Yes

BOREHOLE LOGGING

Well Number 9-87BR

Date 7/15/87 (Log Book Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bergman (WESTON)

The field notebook and log of borings form should be filled out in detail The following items should be found in both

Borehole number Yes

Time/date Yes

Footage Yes

Recent Recovery Yes

Material Type Yes

Color Yes

Structural Characteristics

Grain Sizes Yes

Degree of Sorting Yes

Grain Shapes Yes

Moisture Content Yes

Nature of Contacts Yes

Organic and radioactive field screening results Yes, core screening

Are the cores wrapped in plastic and placed in boxes? Yes

Are the intervals properly identified? Yes

Are the boxes properly identified? Yes

Is the driller keeping a daily log detailing footage drilled material used, and stand-by time? Yes

Is the geologist (Field Team Leader) doing the same? Yes

APPENDIX G

ATTACHMENT 3

PACKER TEST AUDITS

PACKER TEST AUDIT

Well Number 16-87BR

Date 7/15/87 (Field Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bergman (WESTON)

Date drill was completed 7/8/87

Was packer test equipment decontaminated? Yes

When? Prior to first test

Was it kept clean? Yes

Any problems with caving? No

Were the packers inflated to at least 70 psi above hydrostatic pressure? Yes

psi reading? 80 psi Hydrostatic reading? 65 94 psi

Was the overburden pressure calculated? Yes Estimate was 51 12 psi

What was the water source? Plant site--raw water

Was the combined static plus gauge pressure approximately

one-third of the overburden pressure for the first test? Yes Reading 13 psi
two-thirds of the overburden pressure for the second test? Yes Reading 33 83
one-third of the overburden pressure for the third test? Yes Reading

Were any leaks observed? Yes, moved packers up when leaks observed

Was the flow rate record in gpm at equal time intervals? Yes

What were the time intervals? One minute

How long did each test last? 1 15 minutes
2 15 minutes
3 15 minutes

Was the borehole reamed to a minimum four-inch diameter for well installation? No, not necessary bit drills 4" hole

PACKER TEST AUDIT

Well Number 20-87BR

Date 8/10/87 (Field Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name K. Holliway (WESTON)

Date drill was completed 8/7/87

Was packer test equipment decontaminated? Yes

When? Prior to first test

Was it kept clean? Yes

Any problems with caving? No

Were the packers inflated to at least 70 psi above hydrostatic pressure? Yes

psi reading? 110 psi Hydrostatic reading? _____

Was the overburden pressure calculated? Yes Estimate was 119 25 psi

What was the water source? Plant site--raw source

Was the combined static plus gauge pressure approximately

one-third of the overburden pressure for the first test? Yes Reading 39 75 psi
two-thirds of the overburden pressure for the second test? Yes Reading 79 5 psi
one-third of the overburden pressure for the third test? Yes Reading _____

Were any leaks observed? No--not on first test

Was the flow rate record in gpm at equal time intervals? Yes

What were the time intervals? 1 minute

How long did each test last? 1 15 minutes
2 15 minutes
3 15 minutes

Was the borehole reamed to a minimum four-inch diameter for well installation? No, 7" diameter was drilled

PACKER TEST AUDIT

Well Number 28-87BR

Date 9/16/87 (Field Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name L. Gregory-Frost (WESTON)

Date drill was completed 9/14/87

Was packer test equipment decontaminated? Yes

When? Prior to first test

Was it kept clean? Yes

Any problems with caving? Yes--10' (9/15), 5' (9/16)

Were the packers inflated to at least 70 psi above hydrostatic pressure? Yes

psi reading? 120 Hydrostatic reading? No-after completion

Was the overburden pressure calculated? Yes Estimate was 61 18

What was the water source? Plant site--raw water

Was the combined static plus gauge pressure approximately

one-third of the overburden pressure for the first test? Yes Reading 0
two-thirds of the overburden pressure for the second test? Reading 42 5 psi
one-third of the overburden pressure for the third test? Reading

Were any leaks observed? Yes--second test aborted

Was the flow rate record in gpm at equal time intervals?

What were the time intervals? 1 minute

How long did each test last? 1 15 minutes
2 Less than 15 minutes--aborted
3

Was the borehole reamed to a minimum four-inch diameter for well installation? Yes

PACKER TEST AUDIT

Well Number 30-87BR

Date 10/7/87 (Field Audit)

Audit Performed by C Sundblad (Rockwell)

Geologist's Name L. Gregory-Frost (WESTON)

Date drill was completed 10/6/87

Was packer test equipment decontaminated? Yes

When? Prior to first packer test

Was it kept clean? Yes

Any problems with caving? No

Were the packers inflated to at least 70 psi above hydrostatic pressure? Yes

psi reading? 120 psi Hydrostatic reading? NA

Was the overburden pressure calculated? Yes Estimate was 66

What was the water source? Plant site--raw water

Was the combined static plus gauge pressure approximately

one-third of the overburden pressure for the first test? Yes Reading 22 13 psi
two-thirds of the overburden pressure for the second test? Yes Reading 44 92 psi
one-third of the overburden pressure for the third test? Yes Reading

Were any leaks observed? No

Was the flow rate record in gpm at equal time intervals? Yes

What were the time intervals? 1 minute

How long did each test last? 1 15 minutes
2 15 minutes
3 15 minutes

Was the borehole reamed to a minimum four-inch diameter for well installation?
No--7" borehole

APPENDIX G

ATTACHMENT 4

WELL INSTALLATION AUDITS

WELL INSTALLATION AUDIT

Well Number 9-87BR
Date June 15, 1987 (Field Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bergman (WESTON)

How far into the bedrock does the borehole extend? 24 8'

What was used to backfill any excess depth? 3/8" volclay bentonite pellets

How long was the bentonite allowed to swell? _____

Was water added? No How much? _____

How long was it allowed to swell or set? _____

What was the source of water? _____

If grout was used, how long was it allowed to set? _____

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? Yes

Does the screened interval extend 2 to 5 feet above the water table? Yes

Is the screened bedrock interval in a saturated sandstone? _____

Is it at least five feet long? _____

Does the sand pack design extend no more than 2 feet above the screen? Yes

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Prior to installation

How was it decontaminated? Alconox wash, steam rinse

Is care taken to keep this material clean? Yes

Once the casing is in the borehole, was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? Yes--2 feet

Was water added to the bentonite? No

How much? _____ How long was it allowed to swell? _____

What was the source of water? Formation

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out? _____

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes

Was the grout pumped or poured? Poured

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number? Yes

Is there a seven-inch clearance between the inner casing and the locking device? Yes

Note any problems encountered. 10-87BRA was plugged and abandoned with TD in claystone at 53' Clay/claystone from alluvial contact at 16' to 53' 9-87 was changed to 9-87BR because saturated sand at 13 8', sandstone at 15', wet sandstone at 17 5' to 31 9' Claystone at 31 9' to TD at 37 5'

WELL INSTALLATION AUDIT

Well Number 10-87
Date 6/15/87 (Field Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name C Wood (WESTON)

How far into the bedrock does the borehole extend? 5 5'

What was used to backfill any excess depth? 3/8" volclay bentonite pellets

How long was the bentonite allowed to swell? 20 minutes

Was water added? No How much?

How long was it allowed to swell or set? 20 minutes

What was the source of water? Formation

If grout was used, how long was it allowed to set? NA

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? No

Does the screened interval extend 2 to 5 feet above the water table? Yes

Is the screened bedrock interval in a saturated sandstone? No

Is it at least five feet long? No

Does the sand pack design extend no more than 2 feet above the screen? Yes

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Prior to installation

How was it decontaminated? Alconox wash, steam rinse

Is care taken to keep this material clean? Yes

Once the casing is in the borehole, was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? No--1 foot

Was water added to the bentonite? No

How much? _____ How long was it allowed to swell? _____

What was the source of water? Formation

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out? _____

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes

Was the grout pumped or poured? Poured

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number? Yes

Is there a seven-inch clearance between the inner casing and the locking device? Yes

Note any problems encountered 10-87BRA was plugged and abandoned with TD in claystone at 5 3' Sandy clay at base of alluvium to 16' Clay/claystone to 53' 9-87 was changed from alluvial to bedrock well, saturated sand at 13 8', sandstone at 15', wet sandstone at 17 5' to 31 9' Claystone to TD at 31 9' to 37 5'

WELL INSTALLATION AUDIT

Well Number 11-87BR
Date 7/29/87 (Field Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bergman (WESTON)

How far into the bedrock does the borehole extend? 25 5'

What was used to backfill any excess depth? 3/8" volclay bentonite pellets

How long was the bentonite allowed to swell? 10 minutes

Was water added? Yes How much? 1 gallon

How long was it allowed to swell or set? 10 minutes

What was the source of water? Plant site--raw water

If grout was used, how long was it allowed to set? No

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? Yes

Does the screened interval extend 2 to 5 feet above the water table? NA

Is the screened bedrock interval in a saturated sandstone? Yes

Is it at least five feet long? Yes

Does the sand pack design extend no more than 2 feet above the screen? Yes

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Prior to installation

How was it decontaminated? Alconox wash, steam rinse

Is care taken to keep this material clean? Yes

Once the casing is in the borehole, was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? Yes--2 feet

Was water added to the bentonite? Yes

How much? 1 gallon How long was it allowed to swell? 10 minutes

What was the source of water? Plant site--raw water

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out? Yes

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes--Type I

Was the grout pumped or poured? Poured

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number?

Is there a seven-inch clearance between the inner casing and the locking device? Yes

Note any problems encountered. Original 11-87BR/BH26-87 moved after 10-87BR and 11-87A indicated shallow bedrock at 3'-5' New location also shallow bedrock at 5 2'-7'

WELL INSTALLATION AUDIT

Well Number 12-87BR
Date 7/14/87 (Field Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name S L. Rogal (WESTON)

How far into the bedrock does the borehole extend? 12 feet

What was used to backfill any excess depth? 3/8" volclay bentonite pellets

How long was the bentonite allowed to swell? Not noted

Was water added? No How much?

How long was it allowed to swell or set? Not noted

What was the source of water? Plant site--raw water

If grout was used, how long was it allowed to set? No

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? Yes

Does the screened interval extend 2 to 5 feet above the water table? NA

Is the screened bedrock interval in a saturated sandstone? Yes

Is it at least five feet long? Yes

Does the sand pack design extend no more than 2 feet above the screen? Yes

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Prior to installation

How was it decontaminated? Alconox wash, steam rinse

Is care taken to keep this material clean? Yes

Once the casing is in the borehole, was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? Yes

Was water added to the bentonite? Yes

How much? 3 gallons How long was it allowed to swell? _____

What was the source of water? Plant site--raw water

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out? _____

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes

Was the grout pumped or poured? Poured

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number? Yes

Is there a seven-inch clearance between the inner casing and the locking device? Yes

Note any problems encountered Shallow bedrock encountered in this area

WELL INSTALLATION AUDIT

Well Number 15-87
Date 7/27/87 (Field Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name K Holliway (WESTON)

How far into the bedrock does the borehole extend? 5 feet

What was used to backfill any excess depth? 3/8" volclay bentonite pellets

How long was the bentonite allowed to swell? 2 hours

Was water added? No How much?

How long was it allowed to swell or set?

What was the source of water? NA

If grout was used, how long was it allowed to set? NA

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? No

Does the screened interval extend 2 to 5 feet above the water table? No

Is the screened bedrock interval in a saturated sandstone? No

Is it at least five feet long? NA

Does the sand pack design extend no more than 2 feet above the screen? Yes--1 foot

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Yes

How was it decontaminated? Alconox wash, steam rinse

Is care taken to keep this material clean? Yes

Once the casing is in the borehole, was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? Yes

Was water added to the bentonite? No

How much? NA How long was it allowed to swell? 15 minutes

What was the source of water? Plant site--raw water

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out? _____

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes

Was the grout pumped or poured? Poured

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number? Yes

Is there a seven-inch clearance between the inner casing and the locking device? Yes

Note any problems encountered _____

WELL INSTALLATION AUDIT

Well Number 16-87BR
Date 7/15/87 (Field Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bergman (WESTON)

How far into the bedrock does the borehole extend? 153'

What was used to backfill any excess depth? 3/8" volclay bentonite pellets

How long was the bentonite allowed to swell? _____

Was water added? _____ How much? _____

How long was it allowed to swell or set? _____

What was the source of water? _____

If grout was used, how long was it allowed to set? No

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? Yes

Does the screened interval extend 2 to 5 feet above the water table? No

Is the screened bedrock interval in a saturated sandstone? _____

Is it at least five feet long? _____

Does the sand pack design extend no more than 2 feet above the screen? Yes

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Prior to installation

How was it decontaminated? Alconox wash, steam rinse

Is care taken to keep this material clean? Yes

Once the casing is in the borehole, was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? Yes--3 feet

Was water added to the bentonite? No

How much? _____ How long was it allowed to swell? _____

What was the source of water? _____

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out? _____

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes

Was the grout pumped or poured? Poured through tremie and surface casing

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number? Yes

Is there a seven-inch clearance between the inner casing and the locking device? Yes

Note any problems encountered _____

WELL INSTALLATION AUDIT

Well Number 17-87
Date 9/23/87 (Field, Log Book Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name R Treat (Chen & Associates)

How far into the bedrock does the borehole extend? 6 3 feet

What was used to backfill any excess depth? 3/8" volclay bentonite pellets

How long was the bentonite allowed to swell? 15 minutes

Was water added? Yes How much? 5 gallons

How long was it allowed to swell or set?

What was the source of water? Plant site--raw water

If grout was used how long was it allowed to set? NA

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? No

Does the screened interval extend 2 to 5 feet above the water table? No water table encountered--screened 3 5 feet to 25 5 feet

Is the screened bedrock interval in a saturated sandstone? NA

Is it at least five feet long? NA

Does the sand pack design extend no more than 2 feet above the screen? Yes-- 5 feet

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Prior to installation

How was it decontaminated? Steam rinse

Is care taken to keep this material clean? Yes

Once the casing is in the borehole, was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? No--1 foot

Was water added to the bentonite? Yes

How much? 4 gallons How long was it allowed to swell? 10 minutes

What was the source of water? Plant site--raw water

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out?

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes

Was the grout pumped or poured? Poured

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number? Yes

Is there a seven-inch clearance between the inner casing and the locking device? Yes

Note any problems encountered No water encountered during drilling of second well First 17-87 was abandoned with Moss sampling system stuck in it Water at 21 5 feet

WELL INSTALLATION AUDIT

Well Number 19-87
Date 8/6/87 (Field Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bergman (WESTON)

How far into the bedrock does the borehole extend? 5 1 feet

What was used to backfill any excess depth? 3/8" volclay bentonite pellets

How long was the bentonite allowed to swell? 15 minutes

Was water added? Yes How much? 1 gallon

How long was it allowed to swell or set? _____

What was the source of water? Plant site--raw water

If grout was used, how long was it allowed to set? _____

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? No

Does the screened interval extend 2 to 5 feet above the water table? Dry hole
screened 3 5 feet to 11 65 feet

Is the screened bedrock interval in a saturated sandstone? NA

Is it at least five feet long? NA

Does the sand pack design extend no more than 2 feet above the screen? No

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Prior to installation

How was it decontaminated? Steam clean

Is care taken to keep this material clean? Yes

Once the casing is in the borehole, was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? No—1 foot

Was water added to the bentonite? Yes

How much? 1/2 gallon H long was it allowed to swell? 10 minutes

What was the source of water? Plant site—raw water

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out? _____

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes

Was the grout pumped or poured? Poured

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number? Yes

Is there a seven-inch clearance between the inner casing and the locking device? Yes

Note any problems encountered _____

WELL INSTALLATION AUDIT

Well Number 20-87BR
Date 8/10/87 (Field Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name K Holliway (WESTON)

How far into the bedrock does the borehole extend? TD=127 feet

What was used to backfill any excess depth? 3/8" volclay bentonite pellets

How long was the bentonite allowed to swell? 10 minutes

Was water added? No How much?

How long was it allowed to swell or set? NA as above

What was the source of water? Formation

If grout was used, how long was it allowed to set? NA

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? Yes

Does the screened interval extend 2 to 5 feet above the water table? NA

Is the screened bedrock interval in a saturated sandstone? Yes

Is it at least five feet long? Yes

Does the sand pack design extend no more than 2 feet above the screen? Yes--1 foot

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Prior to installation

How was it decontaminated? Alconox wash, steam rinse

Is care taken to keep this material clean? Yes

Once the casing is in the borehole, was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes (0 3 foot difference)

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? Yes

Was water added to the bentonite? No

How much? _____ How long was it allowed to swell? _____

What was the source of water? Formation

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out? Yes

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes

Was the grout pumped or poured? Poured

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number? Yes

Is there a seven-inch clearance between the inner casing and the locking device? Yes

Note any problems encountered _____

WELL INSTALLATION AUDIT

Well Number 23-87BR
Date 7/24/87 (Log Book Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name K Holliway (WESTON)

How far into the bedrock does the borehole extend? 30 05 feet

What was used to backfill any excess depth? 3/8" volclay bentonite pellets

How long was the bentonite allowed to swell? Over night

Was water added? No How much?

How long was it allowed to swell or set?

What was the source of water?

If grout was used, how long was it allowed to set? No

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? Yes

Does the screened interval extend 2 to 5 feet above the water table? Yes

Is the screened bedrock interval in a saturated sandstone? Yes

Is it at least five feet long? Yes--20 feet

Does the sand pack design extend no more than 2 feet above the screen? Yes

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Prior to installation

How was it decontaminated? Alconox wash, steam rinse

Is care taken to keep this material clean? Yes

Once the casing is in the borehole was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material?
Yes

Is the bentonite seal greater than one foot? Yes--2 feet

Was water added to the bentonite? Yes

How much? 1/2 gallon How long was it allowed to swell? 15 minutes

What was the source of water? Plant site--raw water

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out?

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes

Was the grout pumped or poured? Poured

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number? Yes

Is there a seven-inch clearance between the inner casing and the locking device?
Yes

Note any problems encountered Flowing sands very wet and unstable

WELL INSTALLATION AUDIT

Well Number 24-87
Date 9/16/87 (Log Book Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bergman (WESTON)

How far into the bedrock does the borehole extend? 18 6' Ct at approximately 14'

What was used to backfill any excess depth? 3/8" volclay bentonite pellets

How long was the bentonite allowed to swell?

Was water added? Yes How much? 2 gallons

How long was it allowed to swell or set? 15 minutes

What was the source of water? Plant site--raw water

If grout was used, how long was it allowed to set? NA

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? No

Does the screened interval extend 2 to 5 feet above the water table? No water noted in formation

Is the screened bedrock interval in a saturated sandstone? NA

Is it at least five feet long? NA

Does the sand pack design extend no more than 2 feet above the screen? Yes

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Yes

How was it decontaminated? Alconox wash, steam rinse

Is care taken to keep this material clean? Yes

Once the casing is in the borehole was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? No--1 foot

Was water added to the bentonite? Yes

How much? 2 5 gallons How long was it allowed to swell? 10 minutes

What was the source of water? Plant site--raw water

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out? _____

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes

Was the grout pumped or poured? Poured

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number? Yes

Is there a seven-inch clearance between the inner casing and the locking device? Yes

Note any problems encountered _____

WELL INSTALLATION AUDIT

Well Number 25-87BR
Date 8/24/87 (Field Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name R Treat (Chen & Associates)

How far into the bedrock does the borehole extend? 30 5'

What was used to backfill any excess depth? 3/8" volclay bentonite pellets

How long was the bentonite allowed to swell? 15 minutes

Was water added? No How much?

How long was it allowed to swell or set? NA

What was the source of water? Formation

If grout was used, how long was it allowed to set? NA

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? Yes

Does the screened interval extend 2 to 5 feet above the water table? NA

Is the screened bedrock interval in a saturated sandstone? Yes

Is it at least five feet long? Yes

Does the sand pack design extend no more than 2 feet above the screen? Yes

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Prior to installation

How was it decontaminated? Alconox wash, steam rinse

Is care taken to keep this material clean? Yes

Once the casing is in the borehole, was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? Yes--2 feet

Was water added to the bentonite? No

How much? _____ How long was it allowed to swell? 10 minutes

What was the source of water? Formation

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out? _____

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes

Was the grout pumped or poured? Tremie pipe and pumped

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number? Yes

Is there a seven-inch clearance between the inner casing and the locking device? Yes

Note any problems encountered _____

WELL INSTALLATION AUDIT

Well Number 26-87
Date 9/24/87 (Field Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name R Treat (Chen & Associates)

How far into the bedrock does the borehole extend? 4 8'

What was used to backfill any excess depth? 3/8" volclay bentonite pellets

How long was the bentonite allowed to swell? 15 minutes

Was water added? Yes How much? 3 gallons

How long was it allowed to swell or set?

What was the source of water? Plant site--raw water

If grout was used, how long was it allowed to set? NA

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? 1/2 foot

Does the screened interval extend 2 to 5 feet above the water table? 4'-13 7'-- dry well

Is the screened bedrock interval in a saturated sandstone? NA

Is it at least five feet long? NA

Does the sand pack design extend no more than 2 feet above the screen? Yes--1 foot

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Prior to installation

How was it decontaminated? Steam cleaned

Is care taken to keep this material clean? Yes

Once the casing is in the borehole was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? No--1 foot

Was water added to the bentonite? Yes

How much? Approx 1/2 gallon How long was it allowed to swell? 15 minutes

What was the source of water? Plant site--raw water

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out? _____

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes

Was the grout pumped or poured? Poured

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number? Yes

Is there a seven-inch clearance between the inner casing and the locking device? Yes

Note any problems encountered Dry well

WELL INSTALLATION AUDIT

Well Number 27-87
Date 9/16/87 (Log Book Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bannon (WESTON)

How far into the bedrock does the borehole extend? 4'

What was used to backfill any excess depth? 3/8" volclay bentonite pellets

How long was the bentonite allowed to swell? 1 hour

Was water added? No How much?

How long was it allowed to swell or set? NA

What was the source of water? Formation

If grout was used, how long was it allowed to set? No

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? No

Does the screened interval extend 2 to 5 feet above the water table? Yes

Is the screened bedrock interval in a saturated sandstone? NA

Is it at least five feet long? NA

Does the sand pack design extend no more than 2 feet above the screen? Yes

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Prior to installation

How was it decontaminated? Steam rinse

Is care taken to keep this material clean? Yes

Once the casing is in the borehole, was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes (see note below)

Is the filter pack evenly distributed by shaking the casing? Yes (see note)

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? No

Was water added to the bentonite? Yes

How much? 1 gallon How long was it allowed to swell? 10 minutes

What was the source of water? Plant site--raw water

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out?

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes

Was the grout pumped or poured? Poured

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number? Yes

Is there a seven-inch clearance between the inner casing and the locking device? Yes

Note any problems encountered Formation apparently sloughed 6' after well screen was installed T D measurement with plopper was 36 5', which is the flow zone or water table Sand pack was added on top of the slough (okayed by S Paschke) Total sand used was 7 3 cu ft calculated volume needed was 11.5 cu ft Will need to carefully observe well development procedures on this well

WELL INSTALLATION AUDIT

Well Number 28-87BR
Date 9/21/87 (Field Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name K Holliway (WESTON)

How far into the bedrock does the borehole extend? 163 5'

What was used to backfill any excess depth? 3/8" volclay bentonite slough to 200', pellets to 197 95'

How long was the bentonite allowed to swell?

Was water added? No How much?

How long was it allowed to swell or set?

What was the source of water? Formation/drilling

If grout was used, how long was it allowed to set? NA

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? Yes

Does the screened interval extend 2 to 5 feet above the water table? NA

Is the screened bedrock interval in a saturated sandstone? Yes

Is it at least five feet long? Yes--10 feet

Does the sand pack design extend no more than 2 feet above the screen? 1 foot

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Prior to installation

How was it decontaminated? Steam cleaned

Is care taken to keep this material clean? Yes (recleaned when splashed with mud)

Once the casing is in the borehole, was the amount of stick-up determined? Yes (see note in problems)

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? Yes--3 feet

Was water added to the bentonite? _____

How much? _____ How long was it allowed to swell? _____

What was the source of water? _____

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out? _____

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? _____

Was the grout pumped or poured? Pumped through tremie

Was stick-up remeasured once well was completed? _____

Does the protective casing have an identification number? _____

Is there a seven-inch clearance between the inner casing and the locking device? _____

Note any problems encountered Casing and screen settled approximately 1 foot below design depth Slough of 7' plus 3' of bentonite was not stable enough for casing string For 9/21/87 P M they will try to add bentonite to design depth and let set over night 9/22/87 A M bentonite set up and well casing is stable-sand pack OK

WELL INSTALLATION AUDIT

Well Number 30-87BR
Date 10/9/87 (Field Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name L Gregory-Frost (WESTON)

How far into the bedrock does the borehole extend? 94'

What was used to backfill any excess depth? 3/8" volclay bentonite pellets

How long was the bentonite allowed to swell? Over night

Was water added? No How much?

How long was it allowed to swell or set?

What was the source of water? Formation

If grout was used, how long was it allowed to set? NA

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? NA

Does the screened interval extend 2 to 5 feet above the water table? NA

Is the screened bedrock interval in a saturated sandstone? Yes

Is it at least five feet long? Yes--8 32 feet

Does the sand pack design extend no more than 2 feet above the screen? Yes--85 28'

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Prior to installation

How was it decontaminated? Steam rinse

Is care taken to keep this material clean? Yes

Once the casing is in the borehole, was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? Yes--3 feet

Was water added to the bentonite? No

How much? _____ How long was it allowed to swell? 10-15 minutes

What was the source of water? Formation

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out? _____

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes

Was the grout pumped or poured? Pumped through tremie

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number? Yes

Is there a seven-inch clearance between the inner casing and the locking device? Yes

Note any problems encountered Water level at 46' on 10/9/87, A M

WELL INSTALLATION AUDIT

Well Number 31-87BR
Date 9/29/87 (Field Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bergman (WESTON)

How far into the bedrock does the borehole extend? 95'

What was used to backfill any excess depth? 3/8" volclay bentonite pellets

How long was the bentonite allowed to swell? 15 minutes

Was water added? No How much?

How long was it allowed to swell or set?

What was the source of water? Formation

If grout was used, how long was it allowed to set? NA

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? Yes

Does the screened interval extend 2 to 5 feet above the water table? NA

Is the screened bedrock interval in a saturated sandstone? Yes

Is it at least five feet long? Yes--sandpack filter--109 7'-129'

Does the sand pack design extend no more than 2 feet above the screen? Yes

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Prior to installation

How was it decontaminated? Steam cleaned

Is care taken to keep this material clean? Yes

Once the casing is in the borehole, was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? Yes--3 feet

Was water added to the bentonite? No

How much? _____ How long was it allowed to swell? 15 minutes

What was the source of water? Formation

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out? _____

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes

Was the grout pumped or poured? Pumped-tremied

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number? Yes

Is there a seven-inch clearance between the inner casing and the locking device? Yes

Note any problems encountered _____

WELL INSTALLATION AUDIT

Well Number 32-87
Date 9/24/87 (Field Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bannon (WESTON)

How far into the bedrock does the borehole extend? 5'

What was used to backfill any excess depth? 3/8" volclay bentonite pellets

How long was the bentonite allowed to swell? Over night

Was water added? No How much?

How long was it allowed to swell or set?

What was the source of water? Formation

If grout was used, how long was it allowed to set? NA

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? No

Does the screened interval extend 2 to 5 feet above the water table? Yes

Is the screened bedrock interval in a saturated sandstone? NA

Is it at least five feet long? NA

Does the sand pack design extend no more than 2 feet above the screen? Yes

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Prior to installation

How was it decontaminated? Steam rinse

Is care taken to keep this material clean? Yes

Once the casing is in the borehole, was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? Yes--3 feet

Was water added to the bentonite? Yes

How much? _____ How long was it allowed to swell? _____

What was the source of water? Plant site--raw water

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out? _____

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes

Was the grout pumped or poured? Poured

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number? Yes

Is there a seven-inch clearance between the inner casing and the locking device? Yes

Note any problems encountered Sand pack settling appears OK

WELL INSTALLATION AUDIT

Well Number 34-87BR
Date 9/23/87 (Log Book Audit)
Audit Performed by C Sandoval (Rockwell)

Geologist's Name K Holliway (WESTON)

How far into the bedrock does the borehole extend? 55 5-124'

What was used to backfill any excess depth? 3/8" volclay bentonite pellets 104'-121' 3' slough

How long was the bentonite allowed to swell? 15 minutes

Was water added? No How much?

How long was it allowed to swell or set?

What was the source of water? Formation

If grout was used, how long was it allowed to set? NA

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? Yes

Does the screened interval extend 2 to 5 feet above the water table? NA

Is the screened bedrock interval in a saturated sandstone? Yes

Is it at least five feet long? Yes

Does the sand pack design extend no more than 2 feet above the screen? Yes

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Prior to installation

How was it decontaminated? Steam rinsed

Is care taken to keep this material clean? Yes

Once the casing is in the borehole, was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? Yes--6 feet

Was water added to the bentonite? Not recorded

How much? _____ How long was it allowed to swell? _____

What was the source of water? Water in hole above filter pack

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out? _____

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes

Was the grout pumped or poured? Pumped--tremied

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number? Yes

Is there a seven-inch clearance between the inner casing and the locking device? Yes

Note any problems encountered Possible cave-in above sand filter when set over night One-third bucket of bentonite added, then concrete to surface

WELL INSTALLATION AUDIT

Well Number 35-87
Date 9/23/87 (Log Book Audit)
Audit Performed by C Sundblad (Rockwell)

Geologist's Name J Bergman (WESTON)

How far into the bedrock does the borehole extend? 5 3'

What was used to backfill any excess depth? 3/8" volclay bentonite pellets

How long was the bentonite allowed to swell? 15 minutes

Was water added? No How much?

How long was it allowed to swell or set?

What was the source of water? Formation

If grout was used, how long was it allowed to set? NA

Was the borehole remeasured to determine the new depth? Yes

Was the well design approved by the site manager? Yes

Is the completion depth greater than one foot into bedrock? No

Does the screened interval extend 2 to 5 feet above the water table? Appears to have been dry when drilled

Is the screened bedrock interval in a saturated sandstone? NA

Is it at least five feet long? NA

Does the sand pack design extend no more than 2 feet above the screen? Yes--0 5'

Is 10-slot screen being used? Yes

Is 32-42 sand being used? Yes

Was the casing strip (cap included) measured to the nearest 1/100th ft before being placed into the borehole? Yes

When was the well construction material decontaminated? Prior to installation

How was it decontaminated? Steam rinse

Is care taken to keep this material clean? Yes

Once the casing is in the borehole was the amount of stick-up determined? Yes

Does the casing's position agree with the well design? Yes

Were total volumes of construction material calculated? Yes

Is care taken to prevent materials from bridging? Yes

Is the filter pack evenly distributed by shaking the casing? Yes

Are frequent depth measurements taken to assure the location of pack material? Yes

Is the bentonite seal greater than one foot? No—1 foot

Was water added to the bentonite? Yes

How much? 1 gallon How long was it allowed to swell? 20 minutes

What was the source of water? Plant site—raw water

Were the total volume of construction material used recorded? Yes

Were the internal depths recorded? Yes

Was the well construction summary sheet adequately filled out? _____

Is the grout mixture 6 to 9 gallons of water per 94-lb bag of Type I or II Portland cement? Yes

Was the grout pumped or poured? Poured

Was stick-up remeasured once well was completed? Yes

Does the protective casing have an identification number? Yes

Is there a seven-inch clearance between the inner casing and the locking device? Yes

Note any problems encountered _____