Rocky Flats
Environmental Technology Site

Quarterly Environmental Monitoring Report

January - March 1997

Rocky Flats Environmental Technology Site
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Rocky Flats Environmental Technology Site Quarterly Environmental Monitoring Report

January - March Highlights

This report is produced and distributed quarterly as part of our ongoing Agreement in Principle and as a forum for the Rocky Flats Cleanup Agreement (RFCA) quarterly reporting requirement. Additional information about quarterly reporting will be formalized after completion of the Integrated Monitoring Plans (IMP) for the various media sampled.

Airborne Effluent

Isotopic analytical data for first quarter 1997 are incomplete. The addition of the annual effluent sample analyses to the routine quarterly samples overwhelmed the analytical laboratories and they were unable to complete the required analyses. Completed isotopic data will be presented next quarter. Airborne effluent data for calendar year 1996 are complete and included as errata in this report. All reported data are within typical and expected ranges.

The effluent data table for beryllium will no longer appear in this report. As has been noted in the past, no beryllium analyses will be performed unless activities at the Site indicate potential beryllium release. Samples will be archived for 2 years in the event analyses are deemed necessary at a later date.

Ambient Air

Isotopic analytical data for January and a portion of February are included in this report. The balance of February and March are incomplete. As stated above, the laboratories sample load for routine ambient and effluent air samples and annual effluent air samples exceeded their ability to complete the required analyses. Completed isotopic data will be presented next quarter. Location S107 recorded a slightly elevated Pu 239 concentration for fine particulate concentration in January 1997. Although somewhat elevated, the value fell within typical and expected ranges.

Reporting of monthly analysis of all perimeter ambient air sampling locations begins with this report. In addition to the twelve perimeter samplers analyzed, two samplers east of the 903 Pad (S107 and S007) will be analyzed monthly. Isotopic analysis now includes Americium-241, in addition to Plutonium-239, -240, Uranium-233, -234 and Uranium-238. All reported data are within typical and expected ranges.

Meteorology and Climatology

Meteorological data are routinely measured from instrumentation on a 61-meter (200-foot) tower located in the west buffer zone at an elevation of 1,870 meters (6,140 feet) above sea level. The Climatic summaries, compass points and Windroses displaying frequencies of wind direction and speed are included for January though March 1997. Implementation of a new database to process meteorological data is complete. Only a portion of the data has been validated to date and there are some data are missing for the quarter. When validation is complete, missing data will be reported.

Surface Water

Surface water analytical data for first quarter 1997 are included in this report. The Site reported an exceedance of the daily maximum of 25 mg/l for Carbonaceous Biochemical Oxygen Demand, 5 day test (CBOD5) at the Sewage Treatment Plant (STP) during the reporting period. The analytical result of 36.8 mg/l CBOD5 was measured from a composite sample collected February 11, 1997. Verbal and written notification were provided to EPA within 5 days of gaining knowledge of the exceedance as required by the permit. A follow-up investigation did not identify the cause of the exceedance and it was concluded that it was a one-time event. All subsequent analytical measurements from this location during the later half of February and all of March were within permit limitations, consistent with historical ranges and indicated that the STP was operating within normal conditions throughout the period.

Hydrologic Monitoring and Rocky Flats Clean-up Agreement (RFCA) Monitoring

Flow monitoring data collected in support of Hydrologic monitoring (formerly performed by the USGS) and RFCA monitoring for first quarter 1997 are included in this report. Water quality sampling required by RFCA as well as a new table presenting data from the Hydrologic monitoring program are included.

Section 1: Air Data

Table 1-1 Plutonium and Americium Airborne Effluent Data

Month	Plutonium-239 Release (µCi)	Plutonium-239 C Maximum (pCi/m³)	Americium-241 Release (µCi)	Americium-241 C Maximum (pCi/m³)
CY 1996				
Jan – Dec	1.0590 ± 0.0918	0.0036 ± 0.0004	0.3274 ± 0.0351	0.0007 ± 0.0001
CY 1997				
January	a	a	a	a
February	a	a	a	a
March	a	a	a	a
April				
May				
June				
July				
August				
September				
October				
November				
December				
Year to Date	a	a	a	a

[a] Incomplete laboratory analysis. Results will be reported when available.

Table 1-2 Uranium Airborne Effluent Data

Month	Uranium-233, -234 Release (µCi)	Uranium-233, -234 C Maximum (pCi/m³)	Uranium-238 Release (µCi)	Uranium-238 C Maximum (pCi/m³)
CY 1996				
Jan – Dec	-0.0391 ± 1.1258	0.0016 ± 0.0006	1.2560 ± 1.1556	0.0033 ± 0.0006
CY 1997				
January	a	a	a	a
February	a	a	a	a
March	a	a	a	a
April				
May				
June				
July				
August				
September				
October				
November				
December				
Year to Date	a	a	a	a

[a] Incomplete laboratory analysis. Results will be reported when available.

Table 1-3 Tritium Airborne Effluent Data

Month	Tritium Release (µCi)	C Maximum (pCi/m³)
CY 1996		
Jan – Dec	5.973	218 ± 19
CY 1997		
January	a	a
February	a	a
March	a	a
April		
May		
June		
July		
August		
September		
October		
November		
December		
Year to Date	a	a

[a] Incomplete laboratory analysis. Results will be reported when available.

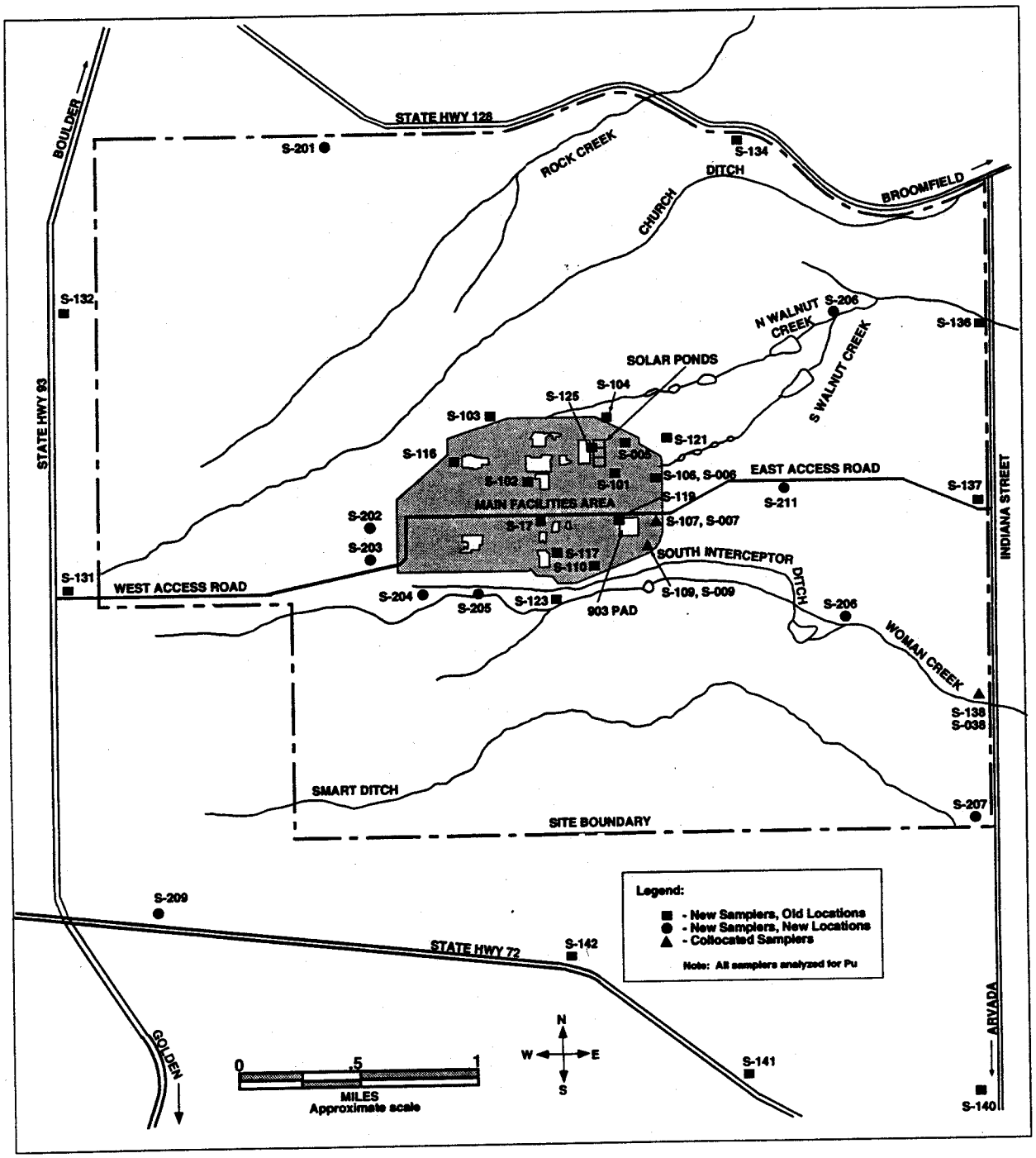

Figure 1-1 Location of Onsite and Perimeter Air Samplers

Table 1-4 Plutonium Concentrations in Ambient Air for Onsite Samplers[a]

Location	On Date	Off Date	Flow (m^3)	Fine Conc (pCi/m^3)	Fine Error (pCi/m^3)	Coarse Conc (pCi/m^3)	Coarse Error (pCi/m^3)	Total Conc (pCi/m^3)	Total Error (pCi/m^3)
S-107	1/6/97	2/4/97	37701	0.0005049	0.0000716	0.0000208	0.0000053	0.0005258	0.0000718
S-107	2/4/97	3/3/97	35650	0.0000049	0.0000018	[b]	[b]	[b]	[b]
S-107	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-007	1/6/97	2/5/97	32712	N/A	N/A	N/A	N/A	0.0000446	0.0000076
S-007	2/5/97	3/3/97	33883	N/A	N/A	N/A	N/A	0.0000255	0.0000046
S-007	[b]	[b]	[b]	N/A	N/A	N/A	N/A	[b]	[b]

[a] These data have not been corrected for temperature.
[b] Incomplete laboratory analysis. Results will be reported when available.

N/A = Not Applicable

Table 1-5 Plutonium -239 Concentrations in Ambient Air for Perimeter Samplers[a]

Location	On Date	Off Date	Flow (m^3)	Fine Conc (pCi/m^3)	Fine Error (pCi/m^3)	Coarse Conc (pCi/m^3)	Coarse Error (pCi/m^3)	Total Conc (pCi/m^3)	Total Error (pCi/m^3)
S-131	1/7/97	2/5/97	37821	-0.0000002	0.0000006	-0.0000003	0.0000006	-0.0000004	0.0000008
S-131	2/5/97	3/4/97	35284	0.0000000	0.0000009	[b]	[b]	[b]	[b]
S-131	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-132	1/7/97	2/5/97	37815	0.0000002	0.0000004	0.0000004	0.0000008	0.0000006	0.0000009
S-132	2/5/97	3/4/97	35290	-0.0000001	0.0000004	[b]	[b]	[b]	[b]
S-132	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-134	1/7/97	2/5/97	37881	-0.0000001	0.0000003	0.0000003	0.0000008	0.0000002	0.0000009
S-134	2/5/97	3/4/97	35148	0.0000000	0.0000004	[b]	[b]	[b]	[b]
S-134	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-136	1/7/97	2/5/97	37662	0.0000000	0.0000004	0.0000003	0.0000009	0.0000004	0.0000010
S-136	2/5/97	3/4/97	35295	0.0000004	0.0000006	[b]	[b]	[b]	[b]
S-136	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-137	1/8/97	2/5/97	36670	0.0000003	0.0000006	0.0000000	0.0000000	0.0000003	0.0000006
S-137	2/5/97	3/4/97	35295	-0.0000004	0.0000005	[b]	[b]	[b]	[b]
S-137	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-138	1/8/97	2/5/97	36670	0.0000002	0.0000006	0.0000000	0.0000000	0.0000002	0.0000006
S-138	2/5/97	3/4/97	35464	0.0000002	0.0000007	[b]	[b]	[b]	[b]
S-138	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]

Table 1-5 Plutonium -239 Concentrations in Ambient Air for Perimeter Samplers[a] (continued)

Location	On Date	Off Date	Flow (m³)	Fine Conc (pCi/m³)	Fine Error (pCi/m³)	Coarse Conc (pCi/m³)	Coarse Error (pCi/m³)	Total Conc (pCi/m³)	Total Error (pCi/m³)
S-140	1/8/97	2/5/97	36670	0.0000006	0.0000008	0.0000000	0.0000000	0.0000006	0.0000008
S-140	2/5/97	3/5/97	36822	-0.0000002	0.0000006	b	b	b	b
S-140	b	b	b	b	b	b	b	b	b
S-141	1/8/97	2/5/97	36670	0.0000000	0.0000000	0.0000006	0.0000008	0.0000006	0.0000008
S-141	2/5/97	3/5/97	36828	0.0000000	0.0000000	b	b	b	b
S-141	b	b	b	b	b	b	b	b	b
S-142	1/8/97	2/5/97	36675	0.0000002	0.0000004	0.0000000	0.0000000	0.0000002	0.0000004
S-142	2/5/97	3/5/97	36822	-0.0000003	0.0000007	b	b	b	b
S-142	b	b	b	b	b	b	b	b	b
S-201	1/7/97	2/5/97	37646	0.0000005	0.0000006	0.0000007	0.0000011	0.0000012	0.0000013
S-201	2/5/97	3/4/97	34788	0.0000003	b	b	b	b	b
S-201	b	b	b	b	b	b	b	b	b
S-207	1/8/97	2/5/97	36675	0.0000006	0.0000011	0.0000000	0.0000000	0.0000006	0.0000011
S-207	2/5/97	3/5/97	35246	0.0000001	b	b	b	b	b
S-207	b	b	b	b	b	b	b	b	b
S-209	1/8/97	2/5/97	36670	0.0000002	0.0000005	0.0000000	0.0000000	0.0000002	0.0000005
S-209	2/5/97	3/5/97	36828	0.0000000	b	b	b	b	b
S-209	b	b	b	b	b	b	b	b	b
S-038	1/8/97	2/5/97	30684	N/A	N/A	N/A	N/A	0.0000004	0.0000005
S-038	2/5/97	3/4/97	33640	N/A	N/A	N/A	N/A	0.0000004	0.0000006
S-038	b	b	b	N/A	N/A	N/A	N/A	b	b

[a] These data have not been corrected for temperature.
[b] Incomplete laboratory analysis. Results will be reported when available.

N/A = Not Applicable

Table 1-6 Uranium-233, -234 Concentrations in Ambient Air for Onsite Samplers[a]

Location	On Date	Off Date	Flow (m³)	Fine Conc (pCi/m³)	Fine Error (pCi/m³)	Coarse Conc (pCi/m³)	Coarse Error (pCi/m³)	Total Conc (pCi/m³)	Total Error (pCi/m³)
S-107	1/6/97	2/4/97	37701	-0.0000026	0.0000069	0.0000182	0.0000043	0.0000156	0.0000082
S-107	2/4/97	3/3/97	35650	-0.0000019	0.0000076	b	b	b	b
S-107	b	b	b	b	b	b	b	b	b
S-007	1/6/97	2/5/97	32712	N/A	N/A	N/A	N/A	0.0000338	0.0000108
S-007	2/5/97	3/3/97	33883	N/A	N/A	N/A	N/A	0.0000179	0.0000103
S-007	b	b	b	N/A	N/A	N/A	N/A	b	b

[a] These data have not been corrected for temperature.
[b] Incomplete laboratory analysis. Results will be reported when available.

N/A = Not Applicable

Table 1-7 Uranium-233, -234 Concentrations in Ambient Air for Perimeter Samplers[a]

Location	On Date	Off Date	Flow (m³)	Fine Conc (pCi/m³)	Fine Error (pCi/m³)	Coarse Conc (pCi/m³)	Coarse Error (pCi/m³)	Total Conc (pCi/m³)	Total Error (pCi/m³)
S-131	1/7/97	2/5/97	37821	-0.0000051	0.0000066	0.0000197	0.0000041	0.0000146	0.0000077
S-131	2/5/97	3/4/97	35284	0.0000026	0.0000079	b	b	b	b
S-131	b	b	b	b	b	b	b	b	b
S-132	1/7/97	2/5/97	37815	0.0000018	0.0000071	0.0000276	0.0000053	0.0000294	0.0000089
S-132	2/5/97	3/4/97	35290	-0.0000010	0.0000098	b	b	b	b
S-132	b	b	b	b	b	b	b	b	b
S-134	1/7/97	2/5/97	37881	-0.0000066	0.0000069	0.0000073	0.0000028	0.0000007	0.0000075
S-134	2/5/97	3/4/97	35148	-0.0000046	0.0000072	b	b	b	b
S-134	b	b	b	b	b	b	b	b	b
S-136	1/7/97	2/5/97	37662	-0.0000062	0.0000069	0.0000074	0.0000025	0.0000012	0.0000074
S-136	2/5/97	3/4/97	35295	-0.0000052	0.0000074	b	b	b	b
S-136	b	b	b	b	b	b	b	b	b
S-137	1/8/97	2/5/97	36670	-0.0000026	0.0000070	0.0000172	0.0000042	0.0000146	0.0000082
S-137	2/5/97	3/4/97	35295	-0.0000041	0.0000076	b	b	b	b
S-137	b	b	b	b	b	b	b	b	b
S-138	1/8/97	2/5/97	36670	-0.0000010	0.0000077	0.0000088	0.0000028	0.0000078	0.0000082
S-138	2/5/97	3/4/97	35464	-0.0000068	0.0000068	b	b	b	b
S-138	b	b	b	b	b	b	b	b	b
S-140	1/8/97	2/5/97	36670	0.0000026	0.0000088	0.0000377	0.0000063	0.0000403	0.0000108
S-140	2/5/97	3/5/97	36822	0.0000136	0.0000083	b	b	b	b
S-140	b	b	b	b	b	b	b	b	b

Table 1-7 Uranium-233, -234 Concentrations in Ambient Air for Perimeter Samplers[a] (continued)

Location	On Date	Off Date	Flow (m³)	Fine Conc (pCi/m³)	Fine Error (pCi/m³)	Coarse Conc (pCi/m³)	Coarse Error (pCi/m³)	Total Conc (pCi/m³)	Total Error (pCi/m³)
S-141	1/8/97	2/5/97	36670	0.0000113	0.0000033	0.0000026	0.0000088	0.0000138	0.0000094
S-141	2/5/97	3/5/97	36828	0.0000000	0.0000000	b	b	b	b
S-141	b	b	b	b	b	b	b	b	b
S-142	1/8/97	2/5/97	36675	-0.0000082	0.0000072	0.0000082	0.0000024	0.0000000	0.0000076
S-142	2/5/97	3/5/97	36822	-0.0000062	0.0000068	b	b	b	b
S-142	b	b	b	b	b	b	b	b	b
S-201	1/7/97	2/5/97	37646	0.0000021	0.0000091	0.0000103	0.0000032	0.0000124	0.0000096
S-201	2/5/97	3/4/97	34788	-0.0000022	0.0000076	b	b	b	b
S-201	b	b	b	b	b	b	b	b	b
S-207	1/8/97	2/5/97	36675	-0.0000011	0.0000069	0.0000181	0.0000038	0.0000171	0.0000079
S-207	2/5/97	3/5/97	35246	-0.0000065	0.0000070	b	b	b	b
S-207	b	b	b	b	b	b	b	b	b
S-209	1/8/97	2/5/97	36670	-0.0000050	0.0000075	0.0000153	0.0000041	0.0000103	0.0000085
S-209	2/5/97	3/5/97	36828	-0.0000035	0.0000069	b	b	b	b
S-209	b	b	b	b	b	b	b	b	b
S-038	1/8/97	2/5/97	30684	N/A	N/A	N/A	N/A	0.0000178	0.0000097
S-038	2/5/97	3/4/97	33640	N/A	N/A	N/A	N/A	0.0000171	0.0000107
S-038	b	b	b	N/A	N/A	N/A	N/A	b	b

[a] These data have not been corrected for temperature.
[b] Incomplete laboratory analysis. Results will be reported when available.

N/A = Not Applicable

Table 1-8 Uranium-238 Concentrations in Ambient Air for Onsite Samplers[a]

Location	On Date	Off Date	Flow (m^3)	Fine Conc (pCi/m^3)	Fine Error (pCi/m^3)	Coarse Conc (pCi/m^3)	Coarse Error (pCi/m^3)	Total Conc (pCi/m^3)	Total Error (pCi/m^3)
S-107	1/6/97	2/4/97	37701	-0.0000036	0.0000069	0.0000267	0.0000055	0.0000232	0.0000088
S-107	2/4/97	3/3/97	35650	-0.0000001	0.0000077	[b]	[b]	[b]	[b]
S-107	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-007	1/6/97	2/5/97	32712	N/A	N/A	N/A	N/A	0.0000370	0.0000111
S-007	2/5/97	3/3/97	33883	N/A	N/A	N/A	N/A	0.0000192	0.0000104
S-007	[b]	[b]	[b]	N/A	N/A	N/A	N/A	[b]	[b]

[a] These data have not been corrected for temperature.
[b] Incomplete laboratory analysis. Results will be reported when available.

N/A = Not Applicable

Table 1-9 Uranium-238 Concentrations in Ambient Air for Perimeter Samplers[a]

Location	On Date	Off Date	Flow (m^3)	Fine Conc (pCi/m^3)	Fine Error (pCi/m^3)	Coarse Conc (pCi/m^3)	Coarse Error (pCi/m^3)	Total Conc (pCi/m^3)	Total Error (pCi/m^3)
S-131	1/7/97	2/5/97	37821	-0.0000060	0.0000066	0.0000198	0.0000040	0.0000138	0.0000077
S-131	2/5/97	3/4/97	35284	0.0000022	0.0000078	[b]	[b]	[b]	[b]
S-131	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-132	1/7/97	2/5/97	37815	0.0000013	0.0000071	0.0000286	0.0000054	0.0000299	0.0000089
S-132	2/5/97	3/4/97	35290	-0.0000015	0.0000098	[b]	[b]	[b]	[b]
S-132	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-134	1/7/97	2/5/97	37881	-0.0000064	0.0000070	0.0000103	0.0000033	0.0000039	0.0000077
S-134	2/5/97	3/4/97	35148	-0.0000044	0.0000071	[b]	[b]	[b]	[b]
S-134	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-136	1/7/97	2/5/97	37662	-0.0000053	0.0000071	0.0000095	0.0000028	0.0000042	0.0000076
S-136	2/5/97	3/4/97	35295	-0.0000072	0.0000072	[b]	[b]	[b]	[b]
S-136	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-137	1/8/97	2/5/97	36670	-0.0000029	0.0000071	0.0000219	0.0000048	0.0000190	0.0000086
S-137	2/5/97	3/4/97	35295	-0.0000057	0.0000073	[b]	[b]	[b]	[b]
S-137	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-138	1/8/97	2/5/97	36670	0.0000016	0.0000081	0.0000121	0.0000032	0.0000137	0.0000087
S-138	2/5/97	3/4/97	35464	-0.0000061	0.0000067	[b]	[b]	[b]	[b]
S-138	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-140	1/8/97	2/5/97	36670	0.0000077	0.0000095	0.0000391	0.0000064	0.0000469	0.0000115
S-140	2/5/97	3/5/97	36822	0.0000090	0.0000079	[b]	[b]	[b]	[b]
S-140	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]

Table 1-9 Uranium-238 Concentrations in Ambient Air for Perimeter Samplers[a] (continued)

Location	On Date	Off Date	Flow (m^3)	Fine Conc (pCi/m^3)	Fine Error (pCi/m^3)	Coarse Conc (pCi/m^3)	Coarse Error (pCi/m^3)	Total Conc (pCi/m^3)	Total Error (pCi/m^3)
S-141	1/8/97	2/5/97	36670	0.0000128	0.0000034	0.0000077	0.0000095	0.0000205	0.0000101
S-141	2/5/97	3/5/97	36828	0.0000000	0.0000000	[b]	[b]	[b]	[b]
S-141	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-142	1/8/97	2/5/97	36675	-0.0000068	0.0000074	0.0000079	0.0000023	0.0000011	0.0000078
S-142	2/5/97	3/5/97	36822	-0.0000051	0.0000068	[b]	[b]	[b]	[b]
S-142	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-201	1/7/97	2/5/97	37646	-0.0000002	0.0000088	0.0000089	0.0000029	0.0000088	0.0000093
S-201	2/5/97	3/4/97	34788	-0.0000011	0.0000076	[b]	[b]	[b]	[b]
S-201	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-207	1/8/97	2/5/97	36675	-0.0000006	0.0000070	0.0000150	0.0000034	0.0000144	0.0000078
S-207	2/5/97	3/5/97	35246	-0.0000027	0.0000072	[b]	[b]	[b]	[b]
S-207	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-209	1/8/97	2/5/97	36670	-0.0000054	0.0000075	0.0000146	0.0000039	0.0000092	0.0000085
S-209	2/5/97	3/5/97	36828	-0.0000066	0.0000066	[b]	[b]	[b]	[b]
S-209	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-038	1/8/97	2/5/97	30684	N/A	N/A	N/A	N/A	0.0000208	0.0000100
S-038	2/5/97	3/4/97	33640	N/A	N/A	N/A	N/A	0.0000080	0.0000095
S-038	[b]	[b]	[b]	N/A	N/A	N/A	N/A	[b]	[b]

[a] These data have not been corrected for temperature.
[b] Incomplete laboratory analysis. Results will be reported when available.

N/A = Not Applicable

Table 1-10 Americium-241 Concentrations in Ambient Air for Onsite Samplers[a]

Location	On Date	Off Date	Flow (m³)	Fine Conc (pCi/m³)	Fine Error (pCi/m³)	Coarse Conc (pCi/m³)	Coarse Error (pCi/m³)	Total Conc (pCi/m³)	Total Error (pCi/m³)
S-107	1/6/97	2/4/97	37701	0.0000536	0.0000066	0.0000046	0.0000014	0.0000583	0.0000068
S-107	2/4/97	3/3/97	35650	0.0000017	0.0000012	[b]	[b]	[b]	[b]
S-107	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-007	1/6/97	2/5/97	32712	N/A	N/A	N/A	N/A	0.0000134	0.0000025
S-007	2/5/97	3/3/97	33883	N/A	N/A	N/A	N/A	0.0000038	0.0000017
S-007	[b]	[b]	[b]	N/A	N/A	N/A	N/A	[b]	[b]

[a] These data have not been corrected for temperature.
[b] Incomplete laboratory analysis. Results will be reported when available.

N/A = Not Applicable

Table 1-11 Americium-241 Concentrations in Ambient Air for Perimeter Samplers[a]

Location	On Date	Off Date	Flow (m³)	Fine Conc (pCi/m³)	Fine Error (pCi/m³)	Coarse Conc (pCi/m³)	Coarse Error (pCi/m³)	Total Conc (pCi/m³)	Total Error (pCi/m³)
S-131	1/7/97	2/5/97	37821	0.0000010	0.0000007	-0.0000003	0.0000005	0.0000007	0.0000009
S-131	2/5/97	3/4/97	35284	0.0000008	0.0000013	[b]	[b]	[b]	[b]
S-131	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-132	1/7/97	2/5/97	37815	0.0000016	0.0000008	-0.0000004	0.0000003	0.0000012	0.0000009
S-132	2/5/97	3/4/97	35290	-0.0000003	0.0000004	[b]	[b]	[b]	[b]
S-132	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-134	1/7/97	2/5/97	37881	0.0000008	0.0000006	-0.0000003	0.0000004	0.0000005	0.0000008
S-134	2/5/97	3/4/97	35148	0.0000007	0.0000014	[b]	[b]	[b]	[b]
S-134	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-136	1/7/97	2/5/97	37662	0.0000002	0.0000006	-0.0000002	0.0000004	0.0000000	0.0000007
S-136	2/5/97	3/4/97	35295	0.0000004	0.0000015	[b]	[b]	[b]	[b]
S-136	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-137	1/8/97	2/5/97	36670	0.0000021	0.0000010	0.0000000	0.0000005	0.0000021	0.0000011
S-137	2/5/97	3/4/97	35295	-0.0000003	0.0000007	[b]	[b]	[b]	[b]
S-137	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-138	1/8/97	2/5/97	36670	0.0000006	0.0000007	0.0000001	0.0000005	0.0000007	0.0000009
S-138	2/5/97	3/4/97	35464	-0.0000003	0.0000005	[b]	[b]	[b]	[b]
S-138	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-140	1/8/97	2/5/97	36670	-0.0000002	0.0000003	-0.0000001	0.0000004	-0.0000004	0.0000005
S-140	2/5/97	3/5/97	36822	0.0000004	0.0000007	[b]	[b]	[b]	[b]
S-140	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]

Table 1-11 Americium-241 Concentrations in Ambient Air for Perimeter Samplers[a] (continued)

Location	On Date	Off Date	Flow (m³)	Fine Conc (pCi/m³)	Fine Error (pCi/m³)	Coarse Conc (pCi/m³)	Coarse Error (pCi/m³)	Total Conc (pCi/m³)	Total Error (pCi/m³)
S-141	1/8/97	2/5/97	36670	0.0000000	0.0000005	-0.0000002	0.0000003	-0.0000002	0.0000006
S-141	2/5/97	3/5/97	36828	0.0000000	0.0000000	[b]	[b]	[b]	[b]
S-141	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-142	1/8/97	2/5/97	36675	0.0000000	0.0000005	0.0000005	0.0000007	0.0000005	0.0000008
S-142	2/5/97	3/5/97	36822	0.0000009	0.0000012	[b]	[b]	[b]	[b]
S-142	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-201	1/7/97	2/5/97	37646	0.0000044	0.0000016	0.0000001	0.0000006	0.0000045	0.0000017
S-201	2/5/97	3/4/97	34788	-0.0000003	0.0000012	[b]	[b]	[b]	[b]
S-201	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-207	1/8/97	2/5/97	36675	0.0000001	0.0000005	-0.0000003	0.0000004	-0.0000003	0.0000006
S-207	2/5/97	3/5/97	35246	0.0000000	0.0000007	[b]	[b]	[b]	[b]
S-207	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-209	1/8/97	2/5/97	36670	0.0000002	0.0000006	0.0000001	0.0000006	0.0000003	0.0000009
S-209	2/5/97	3/5/97	36828	0.0000015	0.0000011	[b]	[b]	[b]	[b]
S-209	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
S-038	1/8/97	2/5/97	30684	N/A	N/A	N/A	N/A	0.0000010	0.0000007
S-038	2/5/97	3/4/97	33640	N/A	N/A	N/A	N/A	0.0000004	0.0000008
S-038	[b]	[b]	[b]	N/A	N/A	N/A	N/A	[b]	[b]

[a] These data have not been corrected for temperature.
[b] Incomplete laboratory analysis. Results will be reported when available.

N/A = Not Applicable

Section 1: Effluent Air Data - Errata

Table 1-1 Plutonium and Americium Airborne Effluent Data

Month	Plutonium-239 Release (µCi)	Plutonium-239 C Maximum (pCi/m³)	Americium-241 Release (µCi)	Americium-241 C Maximum (pCi/m³)
CY 1995				
Jan – Dec	0.3395 ± 0.0186	0.0064 ± 0.006	0.1314 ± 0.0112	0.0004 ± 0.001
CY 1996				
January	0.0058 ± 0.0015[a]	0.0001 ± 0.0000[a]	0.0004 ± 0.0007[a]	0.0000 ± 0.0000[a]
February	0.0210 ± 0.0043	0.0001 ± 0.0000	0.0116 ± 0.0021	0.0000 ± 0.0000
March (2/12 - 3/11)[b]	0.0038 ± 0.0011	0.0000 ± 0.0000	0.0026 ± 0.0021[c]	0.0000 ± 0.0000[c]
March (3/11 - 3/28)[b]	0.0027 ± 0.0011	0.0000 ± 0.0000	0.0009 ± 0.0013	0.0000 ± 0.0000
April	0.6043 ± 0.0861	0.0036 ± 0.0004	0.1205 ± 0.0217	0.0007 ± 0.0001
May	0.0203 ± 0.0035	0.0001 ± 0.0000	0.0052 ± 0.0017	0.0000 ± 0.0000
June	0.0073 ± 0.0015	0.0000 ± 0.0000	0.0019 ± 0.0015	0.0000 ± 0.0000
July	0.0051 ± 0.0011	0.0001 ± 0.000	0.0017 ± 0.0004[d]	0.0000 ± 0.0000[d]
August	0.0124 ± 0.0079	0.0006 ± 0.0002	0.0129 ± 0.0112	0.0003 ± 0.0002
September	0.0206 ± 0.0126	0.0001 ± 0.0001	-0.0032 ± 0.0087[e]	0.0000 ± 0.0000[e]
October	0.0115 ± 0.0137	0.0001 ± 0.0001	-0.0055 ± 0.0081	0.0000 ± 0.0000
November	0.0122 ± 0.0017	0.0006 ± 0.0006	0.0000 ± 0.0000	0.0000 ± 0.0000
December	0.0034 ± 0.0021[f]	0.0000 ± 0.0006	0.0000 ± 0.0008	0.0000 ± 0.0000
Annual 1996[g]	0.3286 ± 0.0238	0.0006 ± 0.0007	0.1768 ± 0.0218	0.0003 ± 0.0000
Year to Date	**1.0590 ± 0.0918**	**0.0036 ± 0.0004**	**0.3274 ± 0.0351**	**0.0007 ± 0.0001**

[a] Results from six locations are missing. No sample remains for repeat analysis. Results are final.
[b] Effluent sampling for Pu, Am, and U was changed from a mid month composite schedule to an end of month composite schedule.
[c] Results from five locations are missing. No sample remains for repeat analysis. Results are final.
[d] Results from seven locations are missing. No sample remains for repeat analysis. Results are final.
[e] Results from eight locations are missing. No sample remains for repeat analysis. Results are final.
[f] Results from five locations are missing. No sample remains for repeat analysis. Results are final.
[g] These results are from the effluent locations which are analyzed annually.

Table 1-2 Uranium Airborne Effluent Data

Month	Uranium-233, -234 Release (µCi)	Uranium-233, -234 C Maximum (pCi/m³)	Uranium-238 Release (µCi)	Uranium-238 C Maximum (pCi/m³)
CY 1995				
Jan – Dec	1.2703 ± 0.0428	0.0005 ± 0.0001	0.5026 ± 0.0446	0.0007 ± 0.0001
CY 1996				
January	0.0013 ± 0.0050[a]	0.0000 ± 0.0000[a]	0.0048 ± 0.0052[a]	0.0000 ± 0.000[a]
February	0.0385 ± 0.0054	0.0001 ± 0.0000	0.0474 ± 0.0059	0.0001 ± 0.0000
March (2/12 - 3/11)[b]	-0.0160 ± 0.0032	0.0000 ± 0.0000	-0.0148 ± 0.0047	0.0001 ± 0.0000
March (3/11 - 3/28)[b]	0.0103 ± 0.0047	0.0001 ± 0.0000	0.0112 ± 0.0047	0.0001 ± 0.0000
April	0.0316 ± 0.0067	0.0004 ± 0.0001	0.0354 ± 0.0072	0.0004 ± 0.0001
May	0.0349 ± 0.0061	0.0001 ± 0.0000	0.0390 ± 0.0066	0.0001 ± 0.0000
June	0.0427 ± 0.0061	0.0001 ± 0.0000	0.0435 ± 0.0065	0.0001 ± 0.0000
July	0.0423 ± 0.0070	0.0001 ± 0.0000	0.0430 ± 0.0072	0.0001 ± 0.0000
August	-0.1291 ± 0.0583	0.0000 ± 0.0000	-0.1778 ± 0.0533	0.0000 ± 0.0001
September	0.0118 ± 0.0627	0.0001 ± 0.0003	0.0080 ± 0.0651	0.0002 ± 0.0003
October	0.0208 ± 0.0648	0.0004 ± 0.0006	0.0237 ± 0.0659	0.0000 ± 0.0000
November	-0.0001 ± 0.0000	0.0000 ± 0.0000	-0.0001 ± 0.0000	0.0000 ± 0.0000
December	-0.0531 ± 0.0072	0.0016 ± 0.0000	0.0009 ± 0.0080	0.0016 ± 0.0000
Annual 1996[c]	-0.0749 ± 1.1205	0.0005 ± 0.0001	-0.0009 ± 1.1505	0.0033 ± 0.0033
Year to Date	**-0.0391 ± 1.1285**	**0.0016 ± 0.0006**	**1.2560 ± 01.1556**	**0.0033 ± 0.0006**

[a] Results from six locations are missing. No sample remains for repeat analysis. Results are final.
[b] Effluent sampling for Pu, Am, and U was changed from a mid month composite schedule to an end of month composite schedule
[c] These results are from the effluent locations which are analyzed annually.

Table 1-3 Tritium and Beryllium Airborne Effluent Data

Month	Tritium Release (µCi)	Tritium C Maximum (pCi/m³)	Beryllium Release (g)	Beryllium C Maximum (µg/m³)
CY 1995				
Jan – Dec	6.269	227 ± 27	2.4761[a]	0.0004[a]
CY 1996				
January	1.352[b]	59 ± 9[b]	0.0152 ± 0.0013	0.0002 ± 0.0000
February	0.285[b]	74 ± 5[b]	0.0887 ± 0.0079	0.0003 ± 0.0000
March	0.767	218 ± 19	c	c
April	0.909	47 ± 13	c	c
May	0.489	51 ± 5	c	c
June	0.086[d]	44 ± 7[d]	c	c
July	0.399[d]	65 ± 14[d]	c	c
August	0.354	79[e]	c	c
September	0.086[f]	67 ± 5[f]	c	c
October	0.533[g, h]	70 ± 11[h]	c	c
November	0.505[i]	167 ±29[i]	c	c
December	0.208[j]	23 ± 10[j]	c	c
Annually 1996				
Year to Date	**5.973**	**218 ± 19**	**0.1040 ± 0.0080**	0.0003 ± 0.0000

[a] Error terms unavailable.
[b] One sample is missing. No sample remains for repeat analysis. Results are final.
[c] No beryllium analyses will be performed in the future unless activities at the Site indicate potential beryllium release. However, samples will be maintained for 2 years in the event analyses are deemed necessary at a later date.
[d] Eight samples are missing. No sample remains for repeat analysis. Results are final.
[e] Error terms unavailable. No uncertainty will be reported. Results are final.
[f] Ten samples are missing. No sample remains for repeat analysis. Results are final.
[g] One location discontinued for tritium sampling on October 3 because of source removal.
[h] Two samples are missing. No sample remains for repeat analysis. Results are final.
[i] Fifteen samples are missing. No sample remains for repeat analysis.
[j] Ten samples are missing. No sample remains for repeat analysis.

Note: Be data are not blank corrected.

Section 2: Meteorology and Climatology

Table 2-1 Climatic Summary for January 1997

	Temperature (°F)			Dew-Point (°F)	Rel. Hum. (%)	Wind Speed (mph)		Press (mb)	Solar (kW-h/m²)	Water-Equiv Precip (in.)	
Date	High	Low	Mean	Mean	Mean	Mean	Peak Gust (1 sec)	Mean	Total	Total	Peak (15 min)
1/1	69.08	37.52	53.96	18.72	27.54	8.90	36.09	809.82	1.55	0.00	0.000
1/2	73.54	43.98	59.33	28.47	31.65	10.78	39.24	806.29	2.50	0.00	0.000
1/3	58.77	32.92	42.09	32.04	69.08	10.59	35.44	800.73	1.41	0.01	0.010
1/4	40.71	10.02	30.15	7.64	41.47	15.74	57.23	806.71	2.95	0.00	0.000
1/5	27.65	8.10	18.56	9.46	69.20	9.55	22.09	809.86	2.39	0.00	0.000
1/6	23.00	4.10	13.82	8.33	79.25	7.34	18.61	813.01	2.84	0.00	0.000
1/7	38.42	4.26	24.00	4.51	44.37	4.79	13.87	809.51	2.91	0.03	0.010
1/8	35.62	13.33	26.90	13.49	60.55	7.90	33.76	809.39	2.98	0.01	0.010
1/9	39.49	9.07	28.22	13.85	59.09	15.30	48.81	804.89	2.79	0.00	0.000
1/10	14.99	-7.40	5.26	2.50	88.05	5.37	13.76	805.21	1.52	0.00	0.000
1/11	5.76	-13.34	-1.85	-5.65	83.46	6.23	16.60	806.19	2.11	0.00	0.000
1/12	-4.95	-19.44	-10.67	-15.41	78.93	4.83	8.92	808.32	2.38	0.00	0.000
1/13	0.46	-15.65	-7.41	-11.62	81.27	3.62	9.45	806.34	1.99	0.00	0.000
1/14	37.03	-10.25	12.89	7.01	78.32	7.04	36.60	801.62	2.37	0.52	0.170
1/15	39.20	13.28	28.78	12.92	53.70	18.90	54.07	807.58	2.82	0.00	0.000
1/16	20.97	-3.33	8.43	4.48	84.04	5.98	21.66	812.87	2.82	0.01	0.010
1/17	50.32	3.65	24.74	8.14	53.25	7.00	36.83	814.25	3.25	0.00	0.000
1/18	55.08	31.37	45.90	25.22	45.53	14.84	51.77	815.36	1.42	0.00	0.000
1/19	62.44	29.61	45.33	24.32	45.96	7.71	15.55	815.00	3.26	0.00	0.000
1/20	60.30	29.72	47.35	21.18	37.07	9.75	41.87	807.18	2.06	0.00	0.000
1/21	45.45	27.88	36.90	12.50	36.61	23.20	71.43	803.02	1.76	0.00	0.000
1/22	48.88	25.14	34.80	8.42	33.86	16.60	75.87	806.81	2.71	0.00	0.000
1/23	52.27	17.19	34.79	17.89	56.31	10.67	42.92	803.40	2.83	0.01	0.010
1/24	38.90	15.35	30.07	5.71	39.08	15.77	57.23	807.81	3.51	0.00	0.000
1/25	46.60	11.77	25.88	9.02	52.16	6.72	29.66	805.16	2.80	0.00	0.000
1/26	56.32	36.26	46.95	21.14	36.35	19.68	62.50	802.35	2.44	0.00	0.000
1/27	45.41	10.09	20.87	17.31	87.14	6.58	29.86	814.47	2.04	0.01	0.010
1/28	52.54	14.79	35.21	13.30	44.09	9.62	36.18	814.38	1.72	0.00	0.000
1/29	45.30	22.59	33.88	25.68	74.05	7.73	29.46	817.00	3.35	0.03	0.010
1/30	61.38	32.79	51.31	11.15	20.21	17.37	65.77	812.65	3.14	0.00	0.000
1/31	64.51	46.99	56.79	22.16	26.16	23.81	70.60	808.38	2.65	0.00	0.000

Temperature (°F)			Humidity		Wind Speed		Press	Solar	Precipitation	
Mean High	Mean Low	Mean	Dew Point	Rel. Hum.	Mean (mph)	Monthly Max	Monthly Avg	Monthly Total	Total	Monthly Max
42.1	14.9	29.1	12.1	55.4	11.0	75.9	808.6	77.3	0.6	0.2

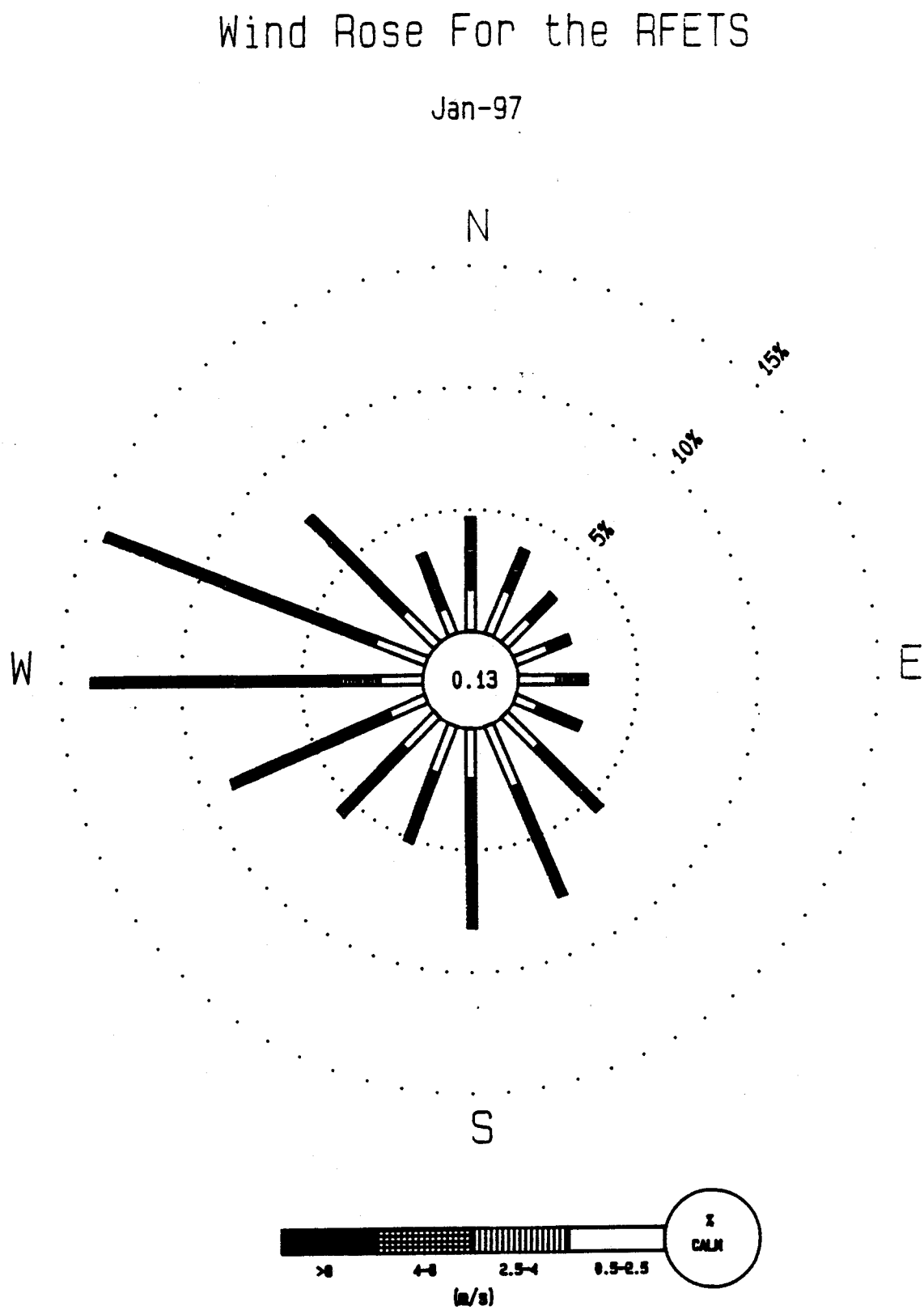

Figure 2-1 Windrose for the Rocky Flats Environmental Technology Site (January 1997)

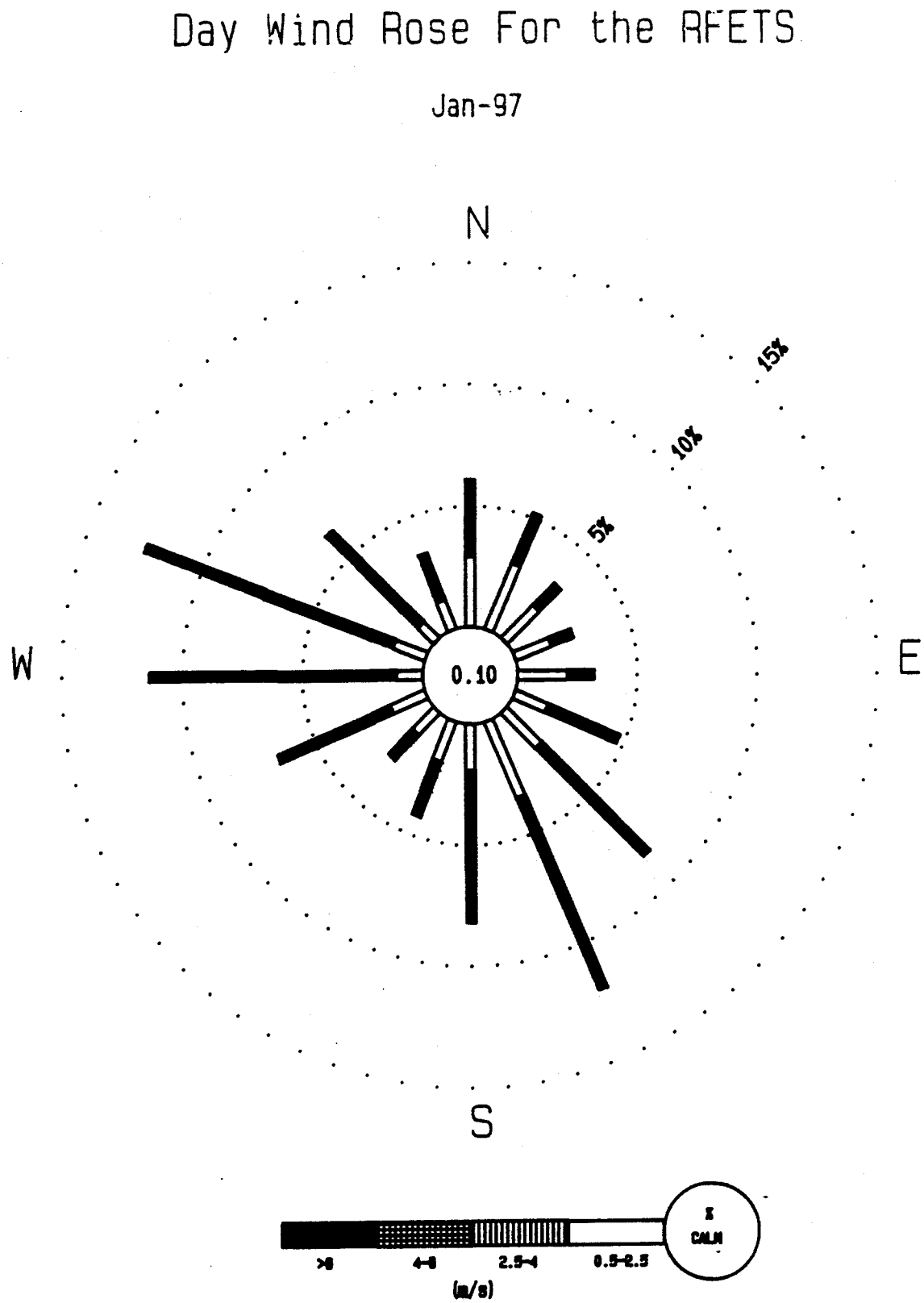

Figure 2-2 Day Windrose for the Rocky Flats Environmental Technology Site (January 1997)

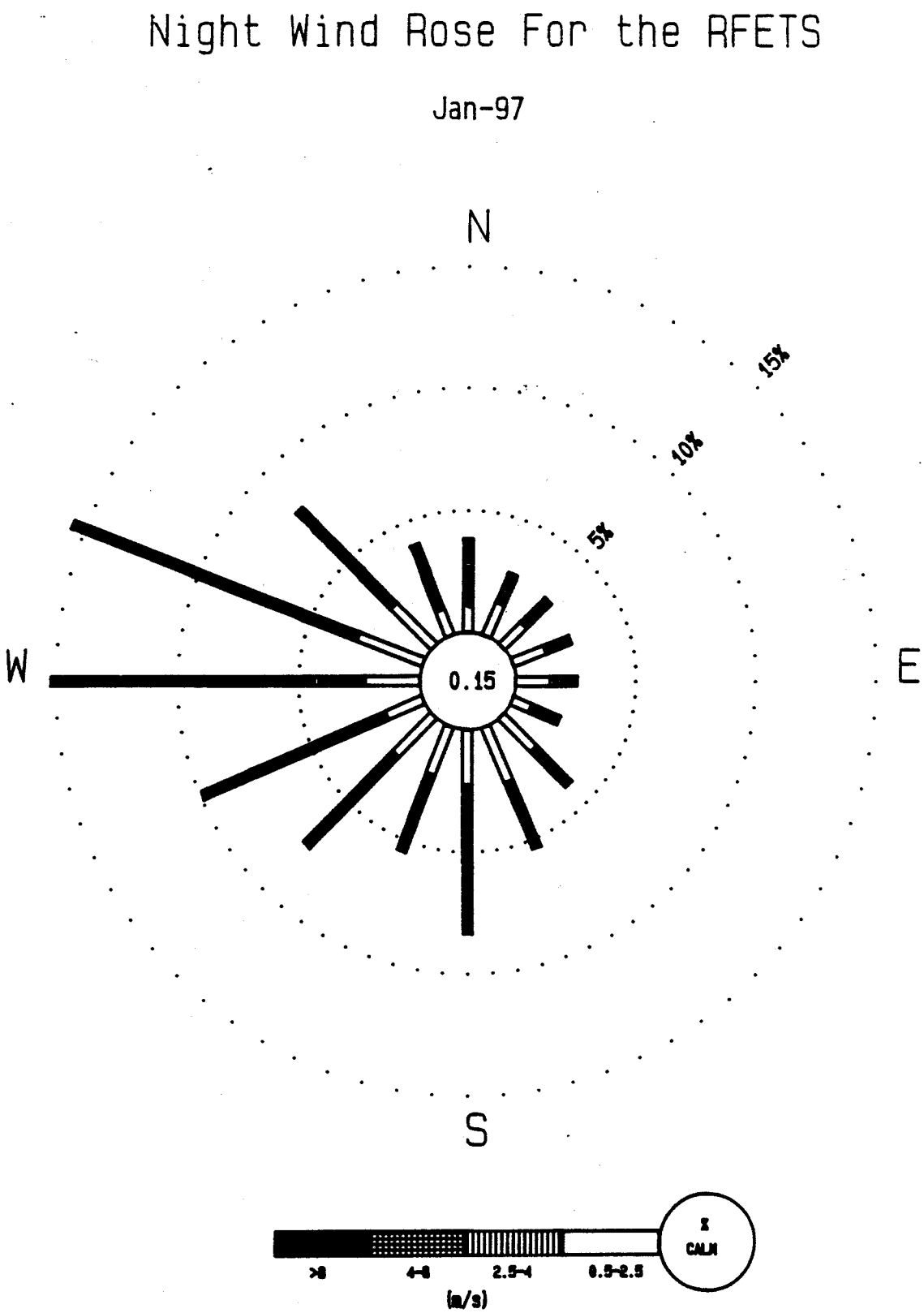

Figure 2-3 Night Windrose for the Rocky Flats Environmental Technology Site (January 1997)

Table 2-2 Climatic Summary for February 1997

	Temperature (°F)			Dew-Point (°F)	Rel. Hum. (%)	Wind Speed (mph)		Press (mb)	Solar (kW-h/m²)	Water-Equiv Precip (in.)	
Date	High	Low	Mean	Mean	Mean	Mean	Peak Gust (1 sec)	Mean	Total	Total	Peak (15 min)
2/1	79.86	27.79	48.74	19.84	35.85	13.04	47.13	809.67	2.92	0.00	a
2/2	72.5	0.81	37.73	23.88	66.36	5.87	18.5	810.11	2.16	0.00	a
2/3	47.08	1.85	31.94	11.09	47.15	19.9	62.07	810.37	4.04	0.00	a
2/4	45	0.79	24.26	11.33	59.48	8.38	21.12	814.26	2.28	0.00	a
2/5	35.62	7.43	20.97	16.2	83.19	7.53	18.39	812.48	2.64	0.00	a
2/6	23.29	10.81	19.09	18.82	97.2	5.78	12.71	811.29	1.51	0.10	a
2/7	21.51	a	a	a	a	a	a	a	a	a	a
2/8	a	a	a	a	a	a	a	a	a	a	a
2/9	a	a	a	a	a	a	a	a	a	a	a
2/10	44.92	8.17	26.99	15.38	65.88	5.04	17.14	813.39	3.94	0.00	a
2/11	77.36	11.35	29	20.56	74.87	9.33	43.46	811.26	2.41	0.03	a
2/12	30.16	14.79	23.97	23.98	97.34	5.72	17.45	806.75	2.12	0.00	a
2/13	35.98	11.64	27.87	19.27	73.6	5.28	19.13	811.15	4.15	0.06	a
2/14	41.59	21.85	34.77	11.81	38.64	20.81	49.86	813.88	4.43	0.00	a
2/15	56.43	20.84	41.61	19.07	41.52	20.39	68.07	814.65	4.38	0.00	a
2/16	67.19	19.92	45.57	21.94	47.52	7.56	44.6	816.37	4.49	0.00	a
2/17	69.15	35.82	51.4	15.53	28.35	10.57	34.29	808.76	4.16	0.00	a
2/18	55.85	21.38	40.96	25.89	66.14	8.08	33.13	810.63	1.95	0.25	a
2/19	53.13	18.61	37.54	24.37	68.04	7.25	43.66	811.16	4.98	0.00	a
2/20	52.41	17.71	34.65	22.76	68.29	9.43	28.81	809.25	a	0.24	a
2/21	49.86	6.33	25.1	11.17	60.37	8.09	20.18	813.35	a	0.00	a
2/22	55.31	3.38	26.19	6.66	47.31	7.63	23.77	813.49	a	0.00	a
2/23	39.38	1.36	14.46	12.53	89.61	6.2	16.71	814.32	a	0.05	a
2/24	47.66	-3.62	16.91	10.33	80.25	6.22	14.82	817.59	a	0.00	a
2/25	48.97	3.67	28.22	12.75	61.16	6.69	21.24	807.58	a	0.00	a
2/26	44.08	10.6	24.04	20.57	86.41	7.21	24.82	803.77	a	0.11	a
2/27	45.05	11.82	28.32	20.08	78.51	4.68	13.24	794.57	a	0.00	a
2/28	35.62	8.47	23.58	19.59	88.82	7.31	19.02	797.15	a	0.15	a
2/29	47.35	4.5	24.95	12.18	65.1	7.07	28.49	807.23	a	0.00	a

Temperature (°F)			Humidity		Wind Speed		Press	Solar	Precipitation	
Mean High	Mean Low	Mean	Dew Point	Rel. Hum.	Mean (mph)	Monthly Max	Monthly Avg	Monthly Total	Total	Monthly Max
42.1	14.9	29.1	12.1	55.4	11.0	75.9	808.6	77.3	0.6	0.2

[a] Data is incomplete because of processing problems and will be reported when avaliable.

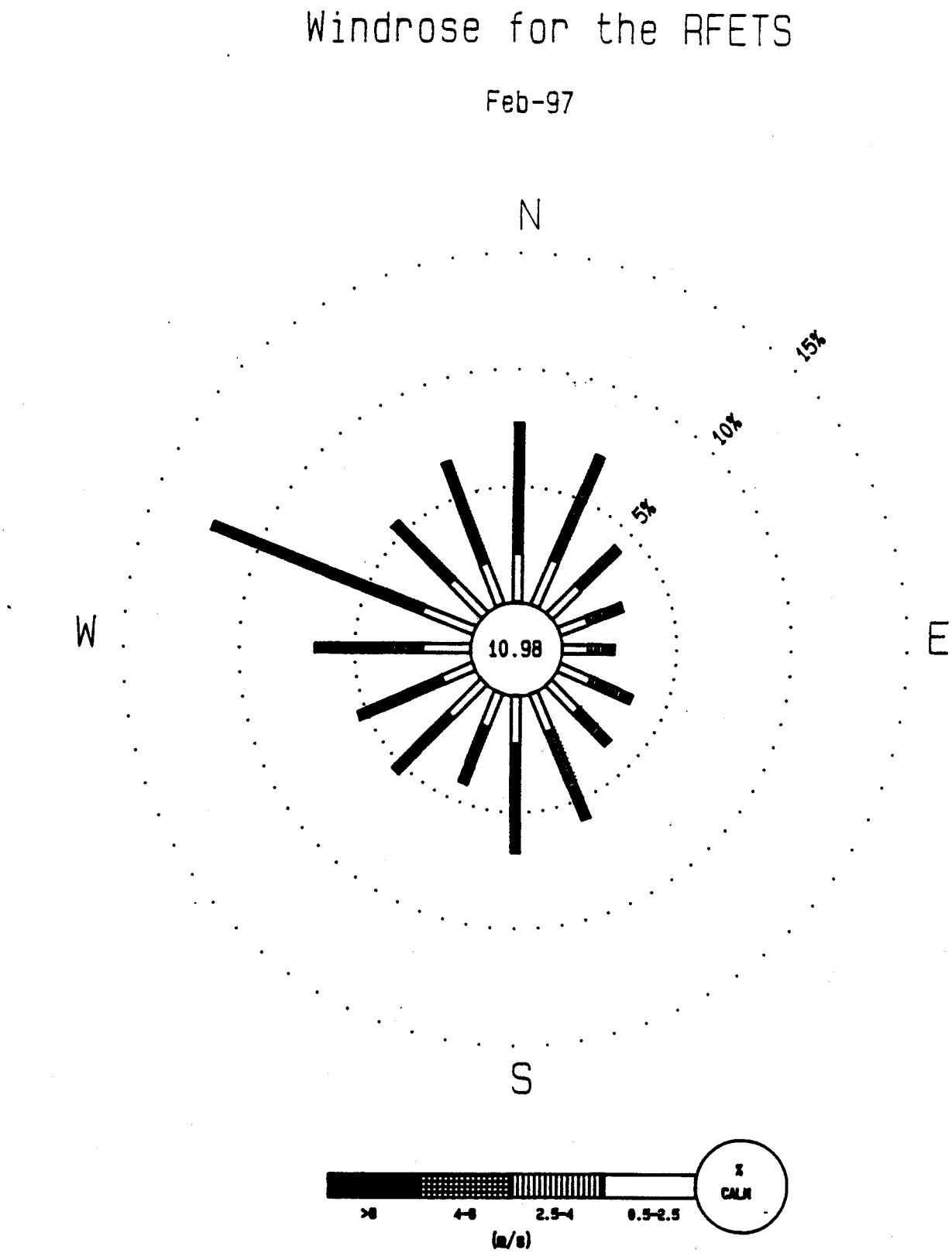

Figure 2-4 Windrose for the Rocky Flats Environmental Technology Site (February 1997)

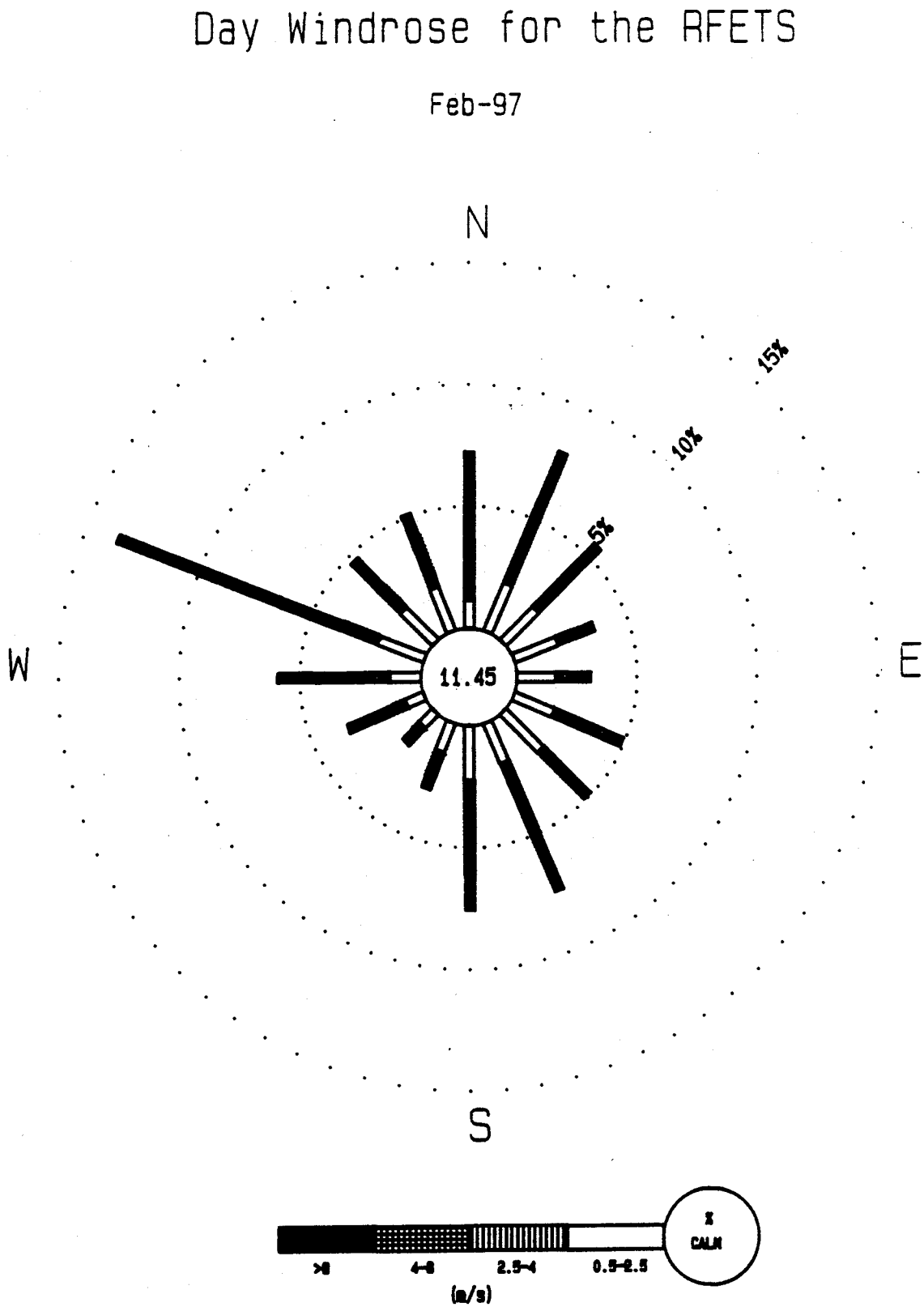

Figure 2-5 Day Windrose for the Rocky Flats Environmental Technology Site (February 1997)

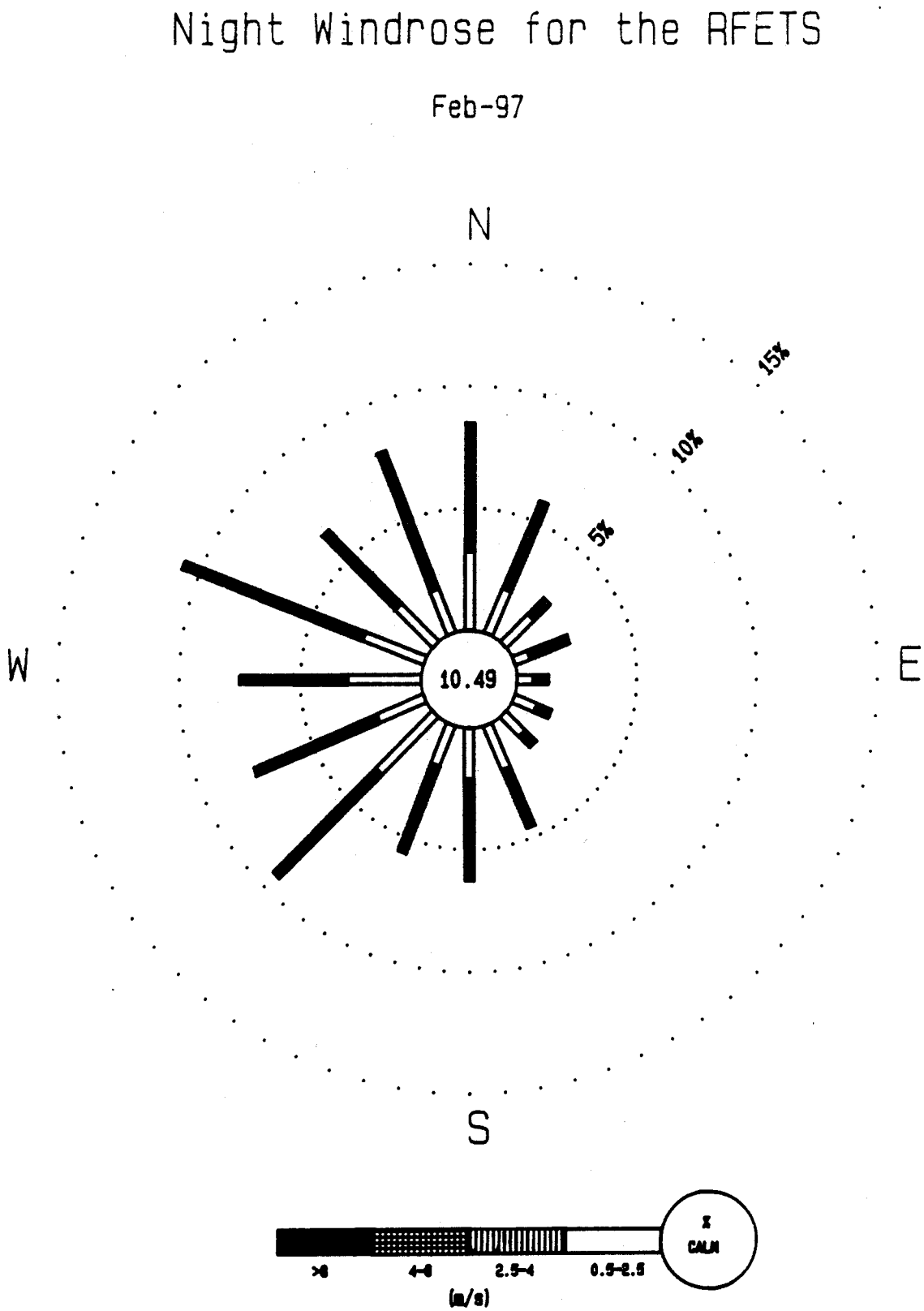

Figure 2-6 Night Windrose for the Rocky Flats Environmental Technology Site (February 1997)

Table 2-3 Climatic Summary for March 1997

	Temperature (°F)			Dew-Point (°F)	Rel. Hum. (%)	Wind Speed (mph)		Press (mb)	Solar (kW-h/m²)	Water-Equiv Precip (in.)	
Date	High	Low	Mean	Mean	Mean	Mean	Peak Gust (1 sec)	Mean	Total	Total	Peak (15 min)
3/1	62.76	19.65	37.93	21.44	56.87	6.63	25.56	805.16	a	0.00	a
3/2	67.24	15.89	34.76	13.63	44.33	13.74	44.6	804.27	a	0.00	a
3/3	27.88	11.34	22.73	17.99	82.64	10.2	46.61	809.6	a	0.01	a
3/4	55.29	14.13	33.48	6.36	32.85	15.43	55.55	814.58	a	0.00	a
3/5	59.04	30	46.84	5.28	20.01	14.48	42.29	813.44	a	0.00	a
3/6	58.06	35.04	46.64	8.85	24.1	13.86	59.14	812.2	a	0.00	a
3/7	63.37	30.09	48.45	12.07	27.2	14.34	52.51	810.69	a	0.00	a
3/8	61.66	21.42	41.23	16.47	47.17	11.51	52.28	816.16	a	0.00	a
3/9	a	a	a	a	a	a	a	a	a	a	a
3/10	70.16	37.26	55.75	10.89	21.04	6.87	18.7	812.96	a	0.00	a
3/11	70.54	38.1	56.85	11.65	20.8	9.09	27.75	809.4	a	0.00	a
3/12	58.51	5.22	26.39	22.26	88.89	7.8	22.92	810.44	a	0.07	a
3/13	37.08	-1.32	13.37	11.57	90.63	4.69	11.03	811.7	a	0.00	a
3/14	47.3	-4.63	23.77	17.84	79.03	7.88	21.24	810.81	a	0.00	a
3/15	67.1	27.48	55.99	18.2	29.86	12.92	41.98	808.01	a	0.00	a
3/16	66.88	37.92	53.18	20.06	30.76	16.14	55.66	811.67	a	0.00	a
3/17	67.37	24.8	46.09	22.05	43.14	9.19	38.6	820.82	a	0.00	a
3/18	83.52	35.73	59.22	18.02	21.41	9.36	29.77	820.55	a	0.00	a
3/19	79.32	40.15	63.51	12.96	17.39	8.35	33.13	815.3	a	0.00	a
3/20	76.1	30.15	52.36	23.35	37.92	7.73	33.33	814.68	a	0.00	a
3/21	68.9	27.34	48.34	23.04	46.31	7.47	20.38	813.96	a	0.00	a
3/22	63.63	28.72	47.14	21.64	42.8	6.62	17.88	808.49	a	0.00	a
3/23	54.81	15.71	33.7	25.39	75.56	11.38	46.93	809.12	a	0.12	a
3/24	53.6	14.72	35.55	17.28	56.14	8.63	21.24	814.87	a	0.00	a
3/25	a	40.33	a	21.84	37.16	7.99	18.7	812.39	a	0.00	a
3/26	a	a	a	a	a	a	a	a	a	a	a
3/27	a	a	a	a	a	a	a	a	a	a	a
3/28	72.64	12.36	37.43	19.4	53.66	10.91	28.81	812.85	a	0.01	a
3/29	90.01	8.01	46.3	11.9	29.13	6.93	21.03	813.96	a	0.00	a
3/30	84.13	21.79	50.5	7.7	22.5	6.59	17.56	811.29	a	0.00	a
3/31	a	a	a	a	a	a	a	a	a	a	a

Temperature (°F)			Humidity		Wind Speed		Press	Solar	Precipitation	
Mean High	Mean Low	Mean	Dew Point	Rel. Hum.	Mean (mph)	Monthly Max	Monthly Avg	Monthly Total	Total	Monthly Max
64.11	22.87	42.98	16.26	43.68	9.88	59.14	812.20	a	0.21	a

[a] Data is incomplete because of processing problems and will be reported when avaliable.

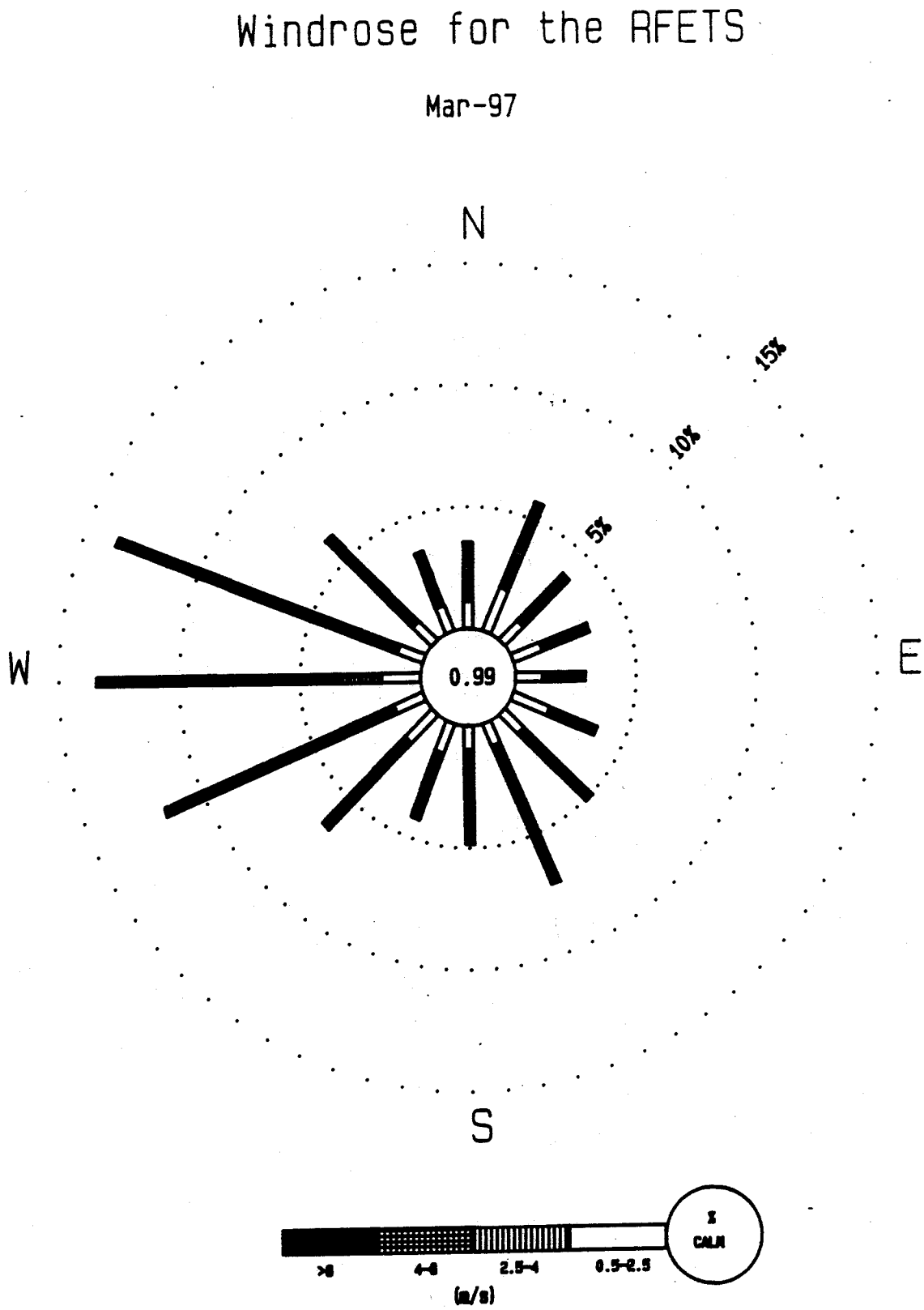

Figure 2-7 Windrose for the Rocky Flats Environmental Technology Site (March 1997)

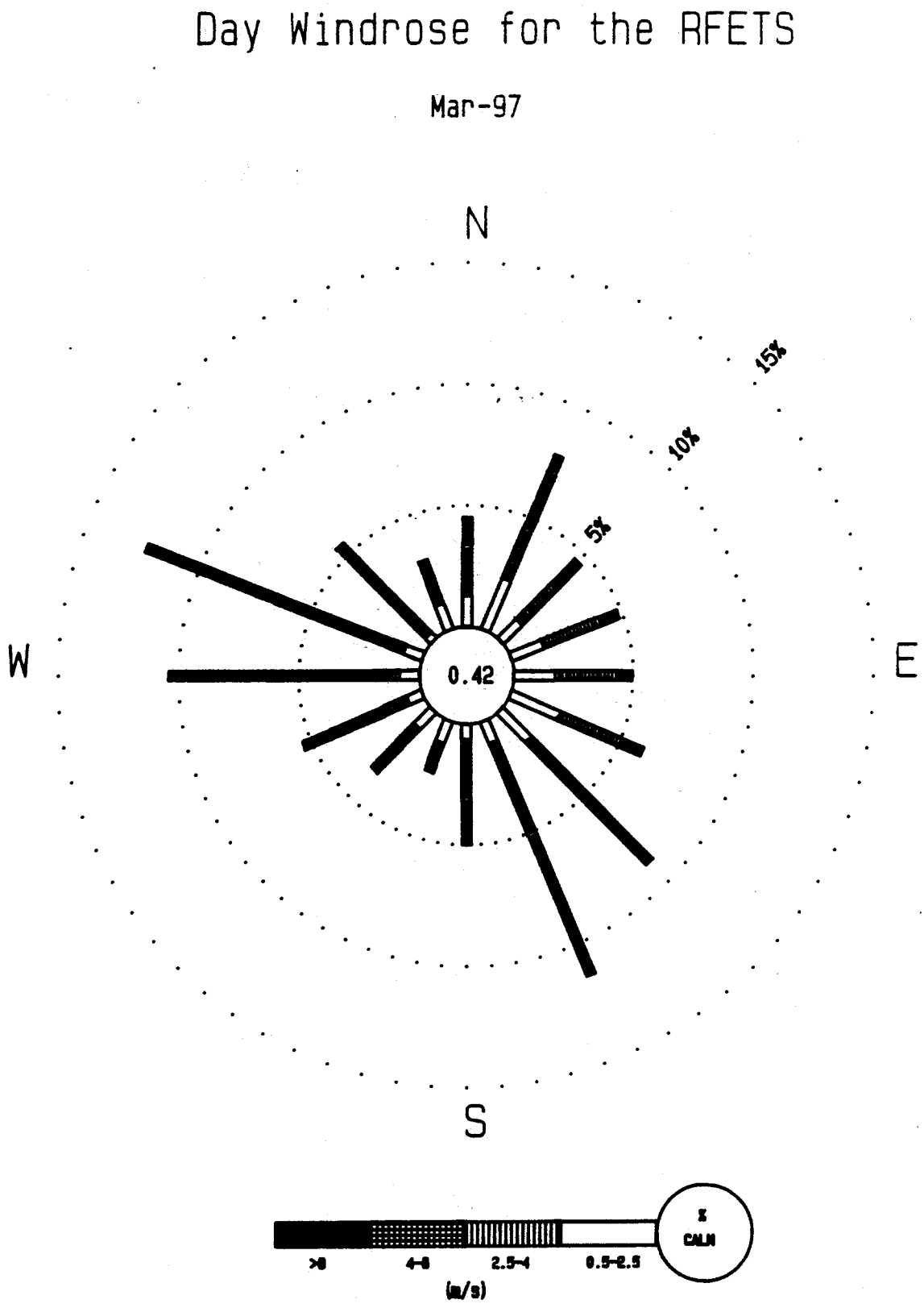

Figure 2-8 Day Windrose for the Rocky Flats Environmental Technology Site (March 1997)

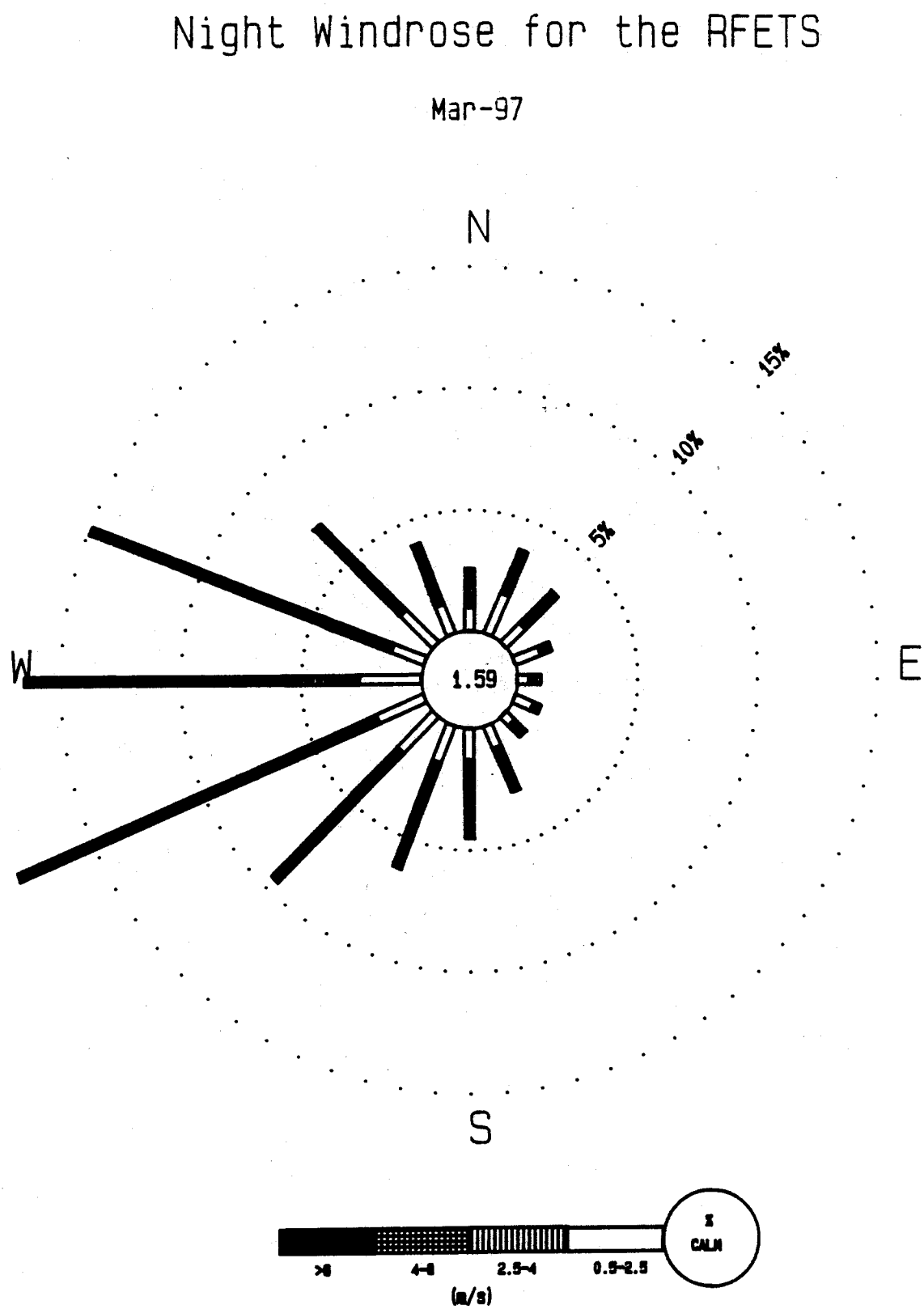

Figure 2-9 Night Windrose for the Rocky Flats Environmental Technology Site (March 1997)

Section 3: Surface Water Data

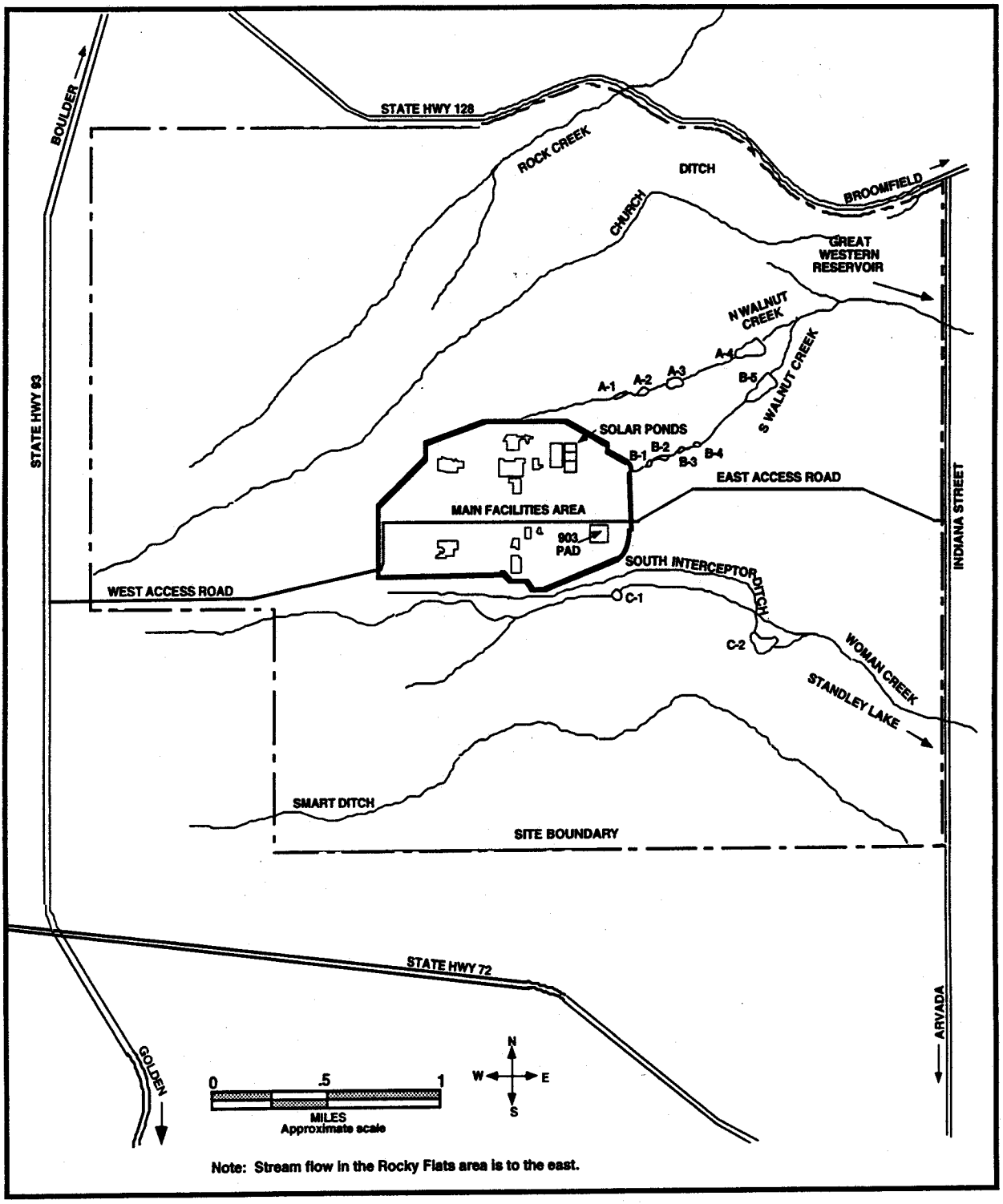

Figure 3-1 Holding Ponds and Liquid Effluent Water Courses

Table 3-1 Pond B-3 (Outfall 001A)

Dates of Discharge: 01/01/97 – 03/31/97

Parameter & Units	Measured 30-Day Average	Limit 30-Day Average	Measured 7-Day Average	Limit 7-Day Average	Measured Daily Maximum	Limit Daily Maximum
NO_3/NO_2 mg/l	2.9 - 3.6	10	4.4 - 5.2	20	N/A	N/A
TRC mg/l	N/A	N/A	N/A	N/A	0.04 - 0.13	0.5
BOD_5 mg/l	8.5 - 20.9	[a]	N/A	N/A	14.1 - 33.7	[a]
$CBOD_5$ mg/l	7.7 - 15.0	[a]	N/A	N/A	13.7 - 33.2	[a]
TSS mg/l	<5 - <7	[a]	N/A	N/A	<5 - 9	[a]

[a] Report only

N/A = Not Applicable
TRC = Total Residual Chlorine
TSS = Total Suspended Solids
BOD_5 = Biochemical Oxygen Demand, 5-Day Test
$CBOD_5$ = Carbonaceous Biochemical Oxygen Demand, 5-Day Test

Note: Results are the range of values measured during the reporting period.

Table 3-2 Sewage Treatment Plant (Outfall STP A)

Dates of Discharge: 01/01/97 – 03/31/97

Parameter and Units	Measured 30-Day Avg	Limit 30-Day Avg	Measured 7-Day Avg	Limit 7-Day Avg	Measured Daily Min	Limit Daily Min	Measured Daily Max	Limit Daily Max	Observed Sheen	Measured Result
pH, SU	N/A	N/A	N/A	N/A	6.2 - 6.7	6.0	7.2– 7.3	9.0	N/A	N/A
TSS, mg/l	<1.5 - <5	30	<1.6 -<5	45	N/A	N/A	N/A	N/A	N/A	N/A
Total Phosphorous, mg/l	1.6 – 3.5	8	N/A	N/A	N/A	N/A	2.6 - 8.6	12	N/A	N/A
TRC, mg/l	<0.01	[a]	<0.01 - 0.02	[a]	N/A	N/A	N/A	N/A	N/A	N/A
Total Chromium, mg/l	<4.3 - <4.8	50	N/A	N/A	N/A	N/A	<4.3 - <4.8	100	N/A	N/A
Fecal Coliform #/100 ml	<2 - <11	200[b]	<3 - 45	400[b]	N/A	N/A	N/A	N/A	N/A	N/A
$CBOD_5$ mg/l	5.2 - 9.9	10	N/A	N/A	N/A	N/A	7.8 - 36.8[e]	25	N/A	N/A
Oil & Grease	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	[c]	N/A
WET										
Ceriodaphnia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	>100
Fathead Minnows	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	>100

Samples Collected: 01/06/97, 02/04/97, and 03/04/97

Antimony, µg/l	<15.4 - <21.7	[a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arsenic, µg/l	<2.0 - <5.0	[a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Beryllium, µg/l	<1.3 - <1.5	[a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cadmium, µg/l	<0.1 - <0.5	[a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Copper, µg/l	<2.2 - <3.2	[a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iron, µg/l	60 - 79.8	[a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lead, µg/l	<2.0 - <5.0	[a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Manganese, µg/l	20.1 - 27.8	[a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mercury, µg/l	<0.2	[a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nickel, µg/ll	<13.2 - <16.2	[a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silver, µg/l	<0.1 - <1.0	[a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zinc, µg/l	11.2 - 22.1	[a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
VOCs, µg/l	[d]	[a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

[a] Report Only
[b] Geometric
[c] No Sheen Observed
[d] None detected above PQL
[e] See Highlights

N/A = Not Applicable
SU = Standard Units
TSS = Total Suspended Solids
TRC = Total Residual Chlorine
$CBOD_5$ = Carbonaceous Biochemical Oxygen Demand, 5-Day Test
PQL = Practical quantitation limit is equal to 10 times the method detection limit and represents the quantity at which 70% of laboratories can be reported in the 95% upper confidence limit.
WET = (Whole Effluent Toxicity) Results for WET are given in percentage of effluent sample that will cause mortality to half the test result organisms within the time frame of the test. For example, >100% indicates that 100% pure effluent did not cause acute toxicity to at least half of the organisms. A lower percentage LC_{50} (lethal concentration to 50% of test organisms) indicates a greater toxic effect because less of the sample is required to observe a sufficiently extensive adverse effect.

Note: Results are the range of values measured during the reporting period.

Table 3-3 Ponds – Interior and Terminal

Location, Parameter, and Units	Measured 30-Day Avg	Limit 30-Day Avg	Measured 7-Day Avg	Limit 7-Day Avg	Measured Daily Min	Limit Daily Min	Measured Daily Max	Limit Daily Max	Measured Result
Discharged: 01/27/97 - 01/31/97, 03/10/97 - 03/14/97									
Pond A-3 (Outfall 002) pH, SU	N/A	N/A	N/A	N/A	6.0	7.9 - 8.0	9.0	8.1 - 8.2	N/A
NO_3/NO_2, mg/l	2.1 - 2.3	10	N/A	N/A	N/A	N/A	2.4 - 2.7	20	N/A
Discharged: 02/20/97 - 03/02/97									
Pond A-4 (Outfall 005A) Total Chromium, mg/l	N/A	N/A	N/A	N/A	N/A	N/A	<4.8	50	N/A
WET									
Ceriodaphnia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	>100
Fathead Minnows	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	>100
No Dischage									
Pond B-5 (Outfall 006A) Total Chromium, mg/l	N/A	N/A	N/A	N/A	N/A	N/A	N/A	50	N/A
WET									
Ceriodaphnia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	>100
Fathead Minnows	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	>100
NO_3/NO_2, mg/l*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TRC, mg/l*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Discharged: 01/23/97 - 01/28/97									
Pond C-2 (Outfall 007A) Total Chromium, mg/l	N/A	N/A	N/A	N/A	N/A	N/A	<4.8	50	N/A
WET									
Ceriodaphnia	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	>100
Fathead Minnows	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	>100

*Sample and analysis required only if Pond B-3 is bypassed.

N/A = Not Applicable

SU = Standard Units

TRC = Total Residual Chlorine

WET = (Whole Effluent Toxicity) Results for WET are given in percentage of effluent sample that will cause mortality to half the test result organisms within the time frame of the test. For example, >100% indicates that 100% pure effluent did not cause acute toxicity to at least half of the organisms. A lower percentage LC_{50} (lethal concentration to 50% of test organisms) indicates a greater toxic effect because less of the sample is required to observe a sufficiently extensive adverse effect.

Note: Results are the range of values measured during the reporting period.

Table 3-4 Daily Transfer Flow Data Recorded for Pond B-5 to Pond A-4

Date	Pond C-1 (gal)
1/1/97	No Transfer
1/2/97	No Transfer
1/3/97	No Transfer
1/4/97	No Transfer
1/5/97	No Transfer
1/6/97	No Transfer
1/7/97	No Transfer
1/8/97	No Transfer
1/9/97	No Transfer
1/10/97	No Transfer
1/11/97	No Transfer
1/12/97	No Transfer
1/13/97	No Transfer
1/14/97	No Transfer
1/15/97	360,000
1/16/97	908,000
1/17/97	1,027,000
1/18/97	1,001,000
1/19/97	946,000
1/20/97	941,000
1/21/97	898,000
1/22/97	967,000
1/23/97	941,000
1/24/97	918,000
1/25/97	864,000
1/26/97	835,000
1/27/97	812,000
1/28/97	734,000
1/29/97	408,000
1/30/97	No Transfer
1/31/97	No Transfer
Total	**12,560,000**

Date	Pond C-1 (gal)
2/1/97	No Transfer
2/2/97	No Transfer
2/3/97	No Transfer
2/4/97	No Transfer
2/5/97	No Transfer
2/6/97	No Transfer
2/7/97	No Transfer
2/8/97	No Transfer
2/9/97	No Transfer
2/10/97	No Transfer
2/11/97	No Transfer
2/12/97	No Transfer
2/13/97	No Transfer
2/14/97	No Transfer
2/15/97	No Transfer
2/16/97	No Transfer
2/17/97	No Transfer
2/18/97	No Transfer
2/19/97	No Transfer
2/20/97	No Transfer
2/21/97	No Transfer
2/22/97	No Transfer
2/23/97	No Transfer
2/24/97	No Transfer
2/25/97	No Transfer
2/26/97	No Transfer
2/27/97	No Transfer
2/28/97	No Transfer
Total	**No Transfer**

Date	Pond C-1 (gal)
3/1/97	No Transfer
3/2/97	No Transfer
3/3/97	1,040,000
3/4/97	1,417,000
3/5/97	1,294,000
3/6/97	1,132,000
3/7/97	1,292,000
3/8/97	1,191,000
3/9/97	1,113,000
3/10/97	1,042,000
3/11/97	987,000
3/12/97	931,000
3/13/97	695,000
3/14/97	No Transfer
3/15/97	No Transfer
3/16/97	No Transfer
3/17/97	No Transfer
3/18/97	No Transfer
3/19/97	No Transfer
3/20/97	No Transfer
3/21/97	No Transfer
3/22/97	No Transfer
3/23/97	No Transfer
3/24/97	No Transfer
3/25/97	No Transfer
3/26/97	No Transfer
3/27/97	No Transfer
3/28/97	No Transfer
3/29/97	No Transfer
3/30/97	No Transfer
3/31/97	No Transfer
Total	**12,134,000**

Section 4: Hydrologic - Rocky Flats Clean-up Agreement

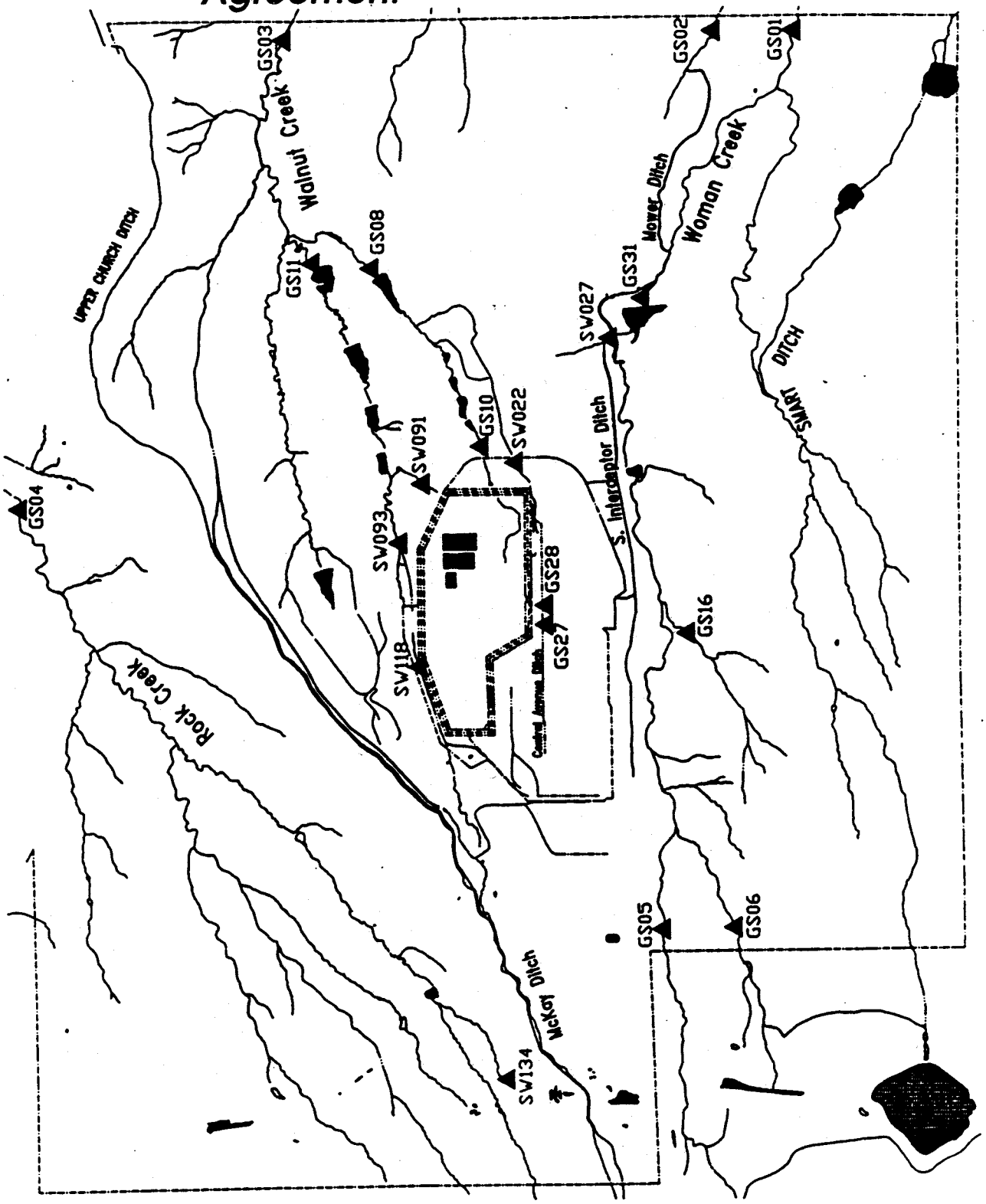

Figure 4-0 Gaging Station Locations

Key: Δ Gaging Station Location