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U.S. DEPARTMENT OF ENERGY
NEVADA OPERATIONS OFFICE
ENVIRONMENTAL MONITORING PROGRAM
SUMMARY DATA REPORT
FIRST CALENDAR QUARTER
1996

NOVEMBER 1996

Work Performed Under
Contract No. DE-AC08-96NV11718

Prepared for the

U.S. Department of Energy
Nevada Operations Office

Prepared by:

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Editors: Stuart C. Black and Yvonne E. Townsend

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CX	Categorical Exclusion
DAF	Device Assembly Facility
DCG	Derived Concentration Guides
DOD	Department of Defense
DOE	Department of Energy
EA	Environmental Assessment
EDE	Effective Dose Equivalent
EIS	Environmental Impact Statement
LANL	Los Alamos National Laboratory
MDC	Minimum Detectable Concentration
NAC	Nevada Administrative Code
NRC	Nellis Range Complex
NEPA	National Environmental Policy Act
NTS	Nevada Test Site
RWMS-3	Radioactive Waste Management Site, Area 3
RWMS-5	Radioactive Waste Management Site, Area 5
SDWA	Safe Drinking Water Act
TTR	Tonopah Test Range

1.0 RADIOLOGICAL ENVIRONMENTAL SURVEILLANCE

1.1 INTRODUCTION

The continuing moratorium on the testing of nuclear explosive devices, possibility of alternate uses for the Nevada Test Site (NTS), and reduced budget have led to significant changes in the extent of environmental surveillance activities on and around the NTS. Not only have the number of monitored locations been reduced, but also the frequency and types of analyses have been changed. The preliminary onsite radiological surveillance program is shown in Table 1.0.

During the first calendar quarter of 1996, air samples were collected and analyzed from 45 air particulate/halogen sampling stations, 3 noble gas sampling stations, and 15 tritiated water vapor sampling stations. Surface water samples were collected and analyzed from one wastewater containment pond and nine sewage lagoons. Groundwater samples were obtained from 10 potable and 2 non-potable supply wells, and 7 drinking water consumption endpoints. Ambient radiation levels were measured at 168 locations. The sampling station locations are shown in Figures 1.0, 2.0, and 3.0. These activities were conducted in accordance with the schedule set forth in Table 1.0.

1.2 RADIOACTIVITY IN AIR

The 45 air particulate/halogen sampling stations were operated continuously. Samples were collected weekly on glass fiber filters (for particulates) and charcoal cartridges (for halogens). The filters were counted for gamma and gross beta activity, composited either monthly or quarterly, and then analyzed for ^{238}Pu and $^{239+240}Pu$. Unless indicated by radioactivity detected on the glass fiber filters, the charcoal cartridges were not analyzed.

Samples for the noble gas ^{85}Kr were collected weekly at three fixed locations. A cryogenic distillation process separated the krypton gas from the sample, dissolved it in a scintillation cocktail, and measured it using liquid scintillation counting.

Tritiated water vapor was monitored continuously at 15 locations. Samples were collected every two weeks on silica gel, the water extracted, distilled, and analyzed for ^{3}H using liquid-scintillation counting.

Measured quantities of radioactivity were compared to the Derived Concentration Guides (DCG) found in DOE Order 5400.5 for limiting radiation exposure to the general public. The values used are listed in Table 2.0. In making these comparisons, the following assumptions were made:

- The chemical species of the radionuclides were unknown so the most restrictive DCG values were used. These DCG values were adjusted to demonstrate compliance with requirements of 40 C.F.R. 61, National Emission Standards for Hazardous Air Pollutants, and 40 C.F.R. 141, Safe Drinking Water Act (SDWA).

- For air sampling results, all of the gross beta activity detected was assumed to be ^{90}Sr.

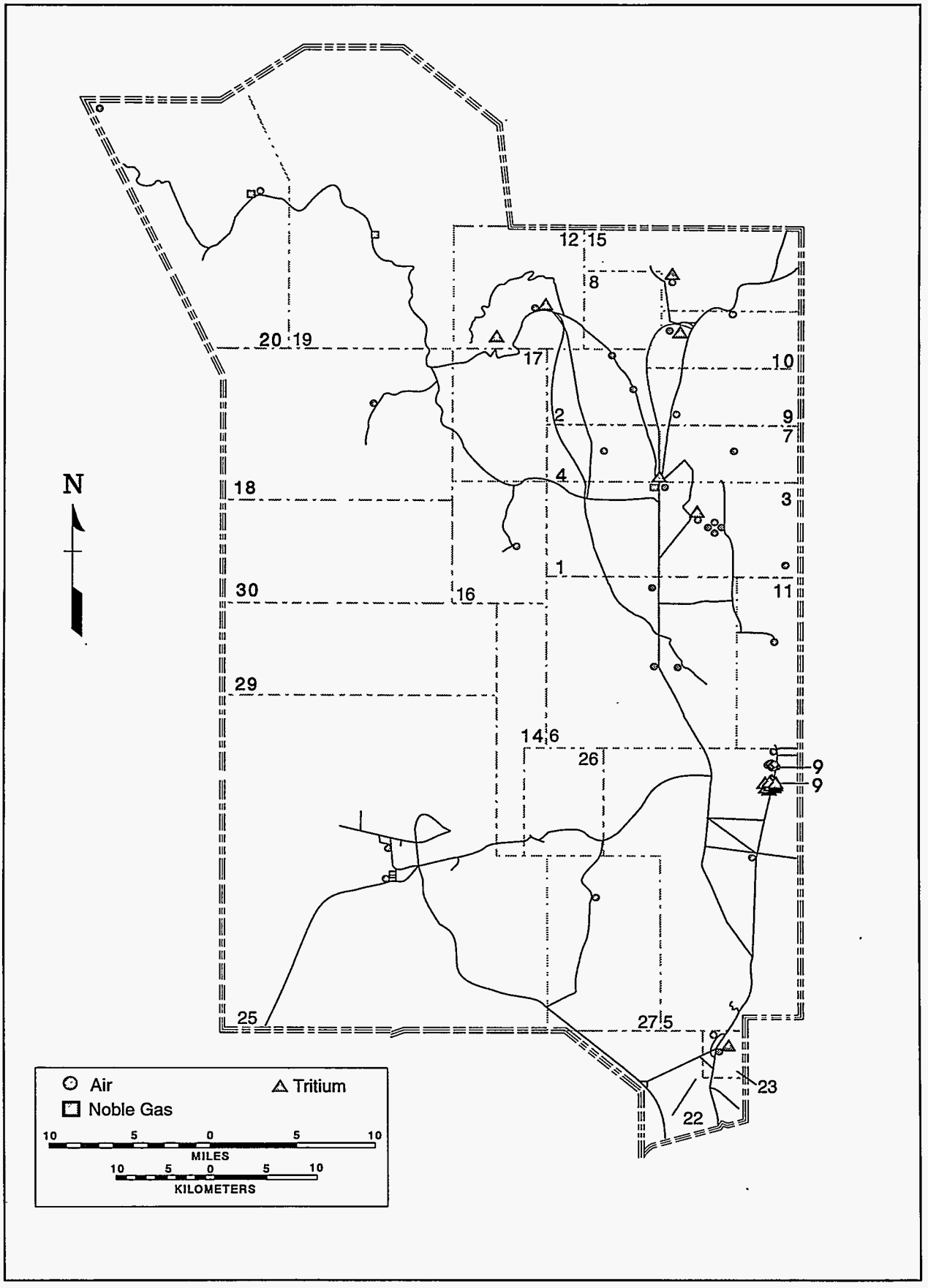

Figure 1.0 Location of NTS Air Sampling Stations - 1996

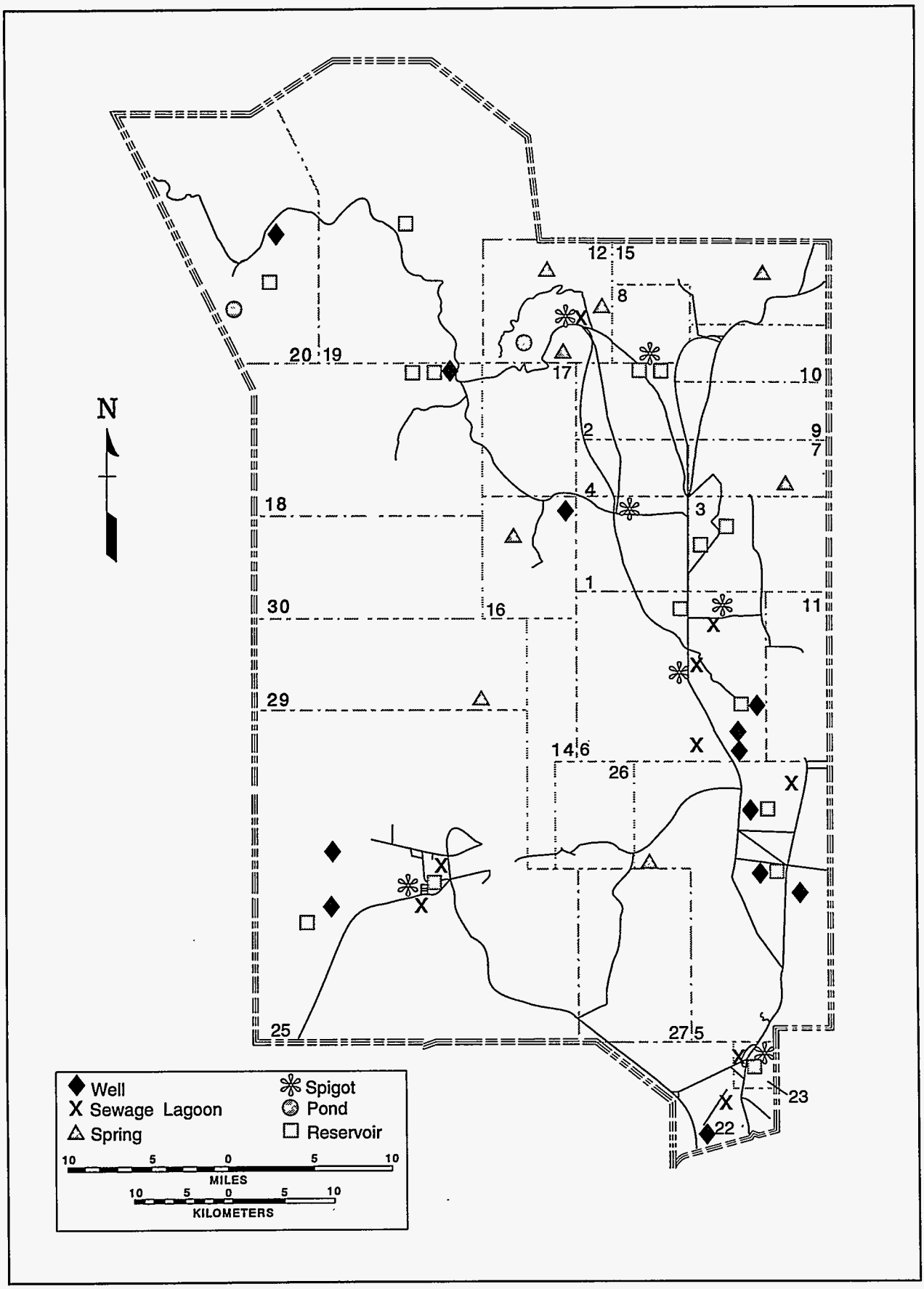

Figure 2.0 Location of NTS Water Sampling Stations - 1996

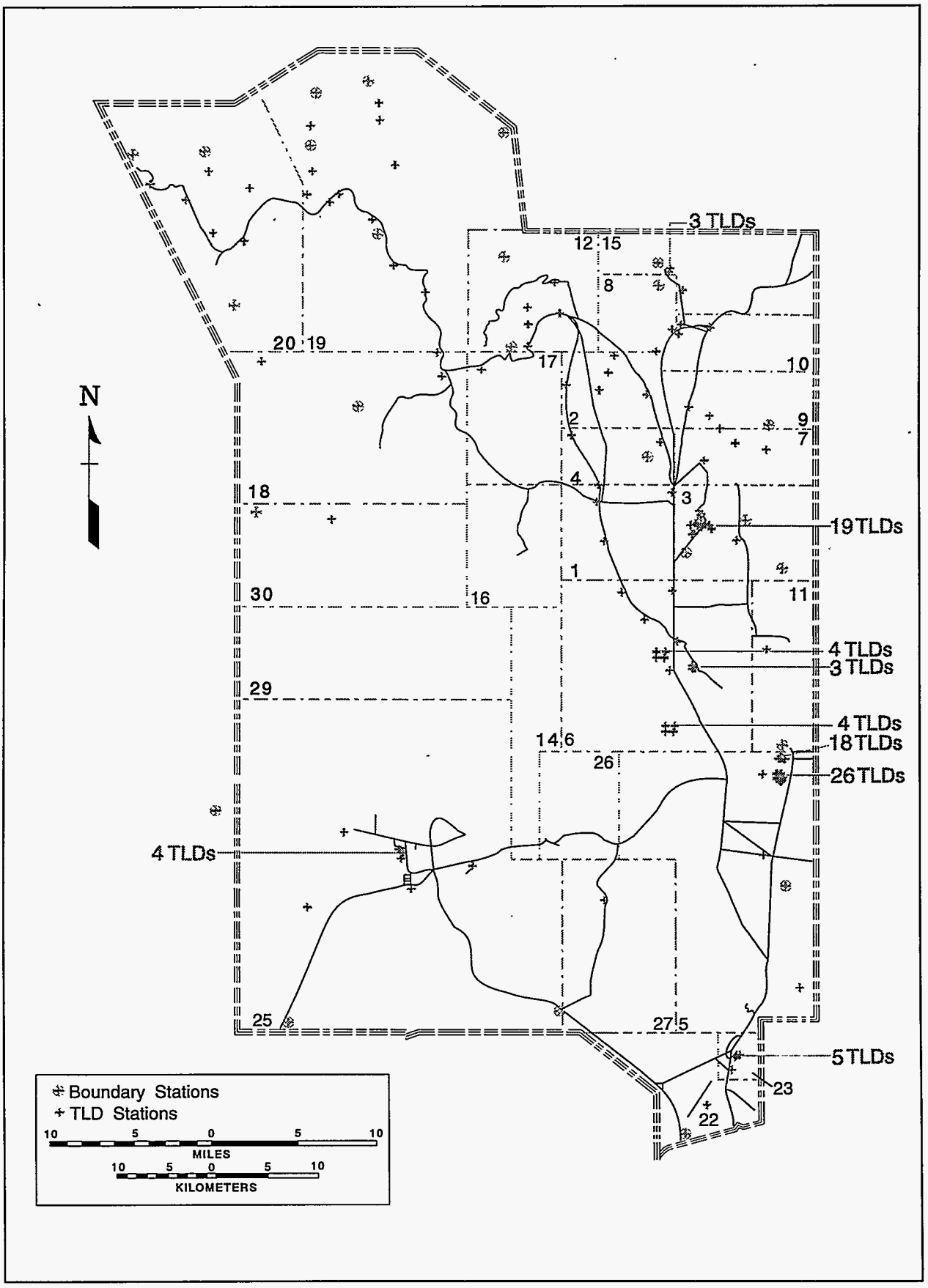

Fig 3.0 Location of Thermoluminescent Dosimeters on the NTS - 1996

1.2.1 AIR PARTICULATE/HALOGEN SAMPLING RESULTS

Some of the locations that were necessary for an effective monitoring design were in sites with no commercial electric power. Solar-powered stations have been installed at Well ER-3-1, Bunker T-4, SEDAN Crater, Well UE-18t, and the SCHOONER site. Solar powered stations have also been installed at offsite locations in the Nellis Range Complex (NRC), namely, Area 13, the DOUBLE TRACKS and CLEAN SLATE sites.

1.2.1.1 GROSS BETA AND GAMMA SPECTRAL ANALYSES

Air particulate samples were held for five to seven days prior to gross beta counting and gamma spectral analysis to allow for the decay of radon progeny. Summary data for gross beta results are shown in Table 3.0. All results exceeded their applicable minimum detectable concentration (MDC). Mean station concentrations ranged from 1.18 to 3.95 x 10^{-14} µCi/mL (0.44 to 1.5 mBq/m^3). The network mean gross beta concentration was 1.64 x 10^{-14} µCi/mL (0.61 mBq/m^3). This concentration is 1.8 percent of the DCG for ^{90}Sr in Department of Energy (DOE) Order 5400.5 adjusted to an annual Effective Dose Equivalent (EDE) of 10 mrem (0.1 mSv) in accordance with the requirements of 40 C.F.R. 61. The network mean is slightly lower than the values observed during the past six years (1990 - 1995).

All glass fiber filters used to collect particulates were analyzed by gamma spectroscopy. Charcoal cartridges were located at all sampling stations, but were only analyzed if the fiber filter analysis result indicated the potential for halogens. No such results were observed for the first quarter of 1996. All radionuclides detected were naturally occurring in the environment (^{40}K, ^{7}Be, and members of the uranium and thorium series), except for a low concentration of ^{137}Cs; i.e., 8.2 x 10^{-15} µCi/mL (0.3 mBq/m^3) detected at the Department of Defense (DOD) site in Area 5.

1.2.1.2 NELLIS RANGE COMPLEX SAMPLES

The samples collected and analyzed from Area 13, the DOUBLE TRACKS and CLEAN SLATE sites, were analyzed for gross beta and gamma activity. The average gross beta of 1.57 x 10^{-14} µCi/mL (0.58 mBq/m^3) is similar to the onsite average data. Also, the ^{7}Be results near 2.2 x 10^{-13} µCi/mL (8.1 mBq/m^3), from gamma spectrometric analysis of the filters, are consistent with onsite data (compare Tables 3.0 and 4.0).

1.2.1.3 PLUTONIUM ANALYSES

Filters from each particulate sampling station located on the boundary of the Area 5 Radioactive Waste Management Site (RWMS-5) (eight stations) and Area 3 RWMS (RWMS-3) (four stations), were composited monthly and analyzed for ^{238}Pu and $^{239+240}Pu$. Filters from all other stations were composited quarterly and analyzed for the same plutonium isotopes.

These analyses for the first quarter of 1996 have not been completed for all stations and the results have not been validated. However, air monitoring results for ^{238}Pu and $^{239+240}Pu$ for January for the RWMS-3 and -5 stations are available and appear similar to previous results from those locations. They will be reported in the second quarter report when all plutonium results for the first quarter should be available.

1.2.2 NOBLE GAS (^{85}Kr) SAMPLING RESULTS

Noble gas analyses for the first quarter of calendar year 1996 have been completed and the results validated. The network average for the three stations sampled this quarter is 24.4 pCi/m^3 (0.9 Bq/m^3) of ^{85}Kr, which is slightly less than the annual average for the past several years of about 26 pCi/m^3 (see Table 4.0). Xenon-133 analyses were discontinued because of the moratorium on nuclear tests.

1.2.3 TRITIATED WATER VAPOR

Summary data for tritiated water vapor sampling are shown in Table 5.0. Mean station concentrations ranged from 0.19 to 13 x 10^{-12} µCi/mL (7 to 480 mBq/m^3). The network mean concentration was 3.9 x 10^{-12} µCi/mL (140 mBq/m^3). This first quarter network mean was higher than some other quarterly means but this was not significantly different. The highest mean value was measured at the RWMS-5, #5 station, and was only 0.13 percent of the DCG for tritium adjusted for an annual EDE of 10 mrem.

1.3 RADIOACTIVITY IN SURFACE WATER

Annual samples are taken at all open reservoirs and natural springs. Quarterly samples are taken at the containment ponds sampled. All samples are analyzed for gross beta activity, tritium, ^{238}Pu, $^{239+240}Pu$, ^{90}Sr, and gamma-emitting nuclides.

Samples were not collected at any of the reservoirs or springs during this quarter. Sampling was limited to Area 12 E Tunnel effluent and Area 12 E Tunnel pond No. 1. Samples were collected from nine sewage lagoons, as indicated in Table 1.0.

1.3.1 CONTAINMENT PONDS

At the Area 12 E Tunnel complex, grab samples were taken from containment pond No. 1 and at the effluent discharge point. The results of analyses for these two samples are given in Table 6.0. These results for E Tunnel samples are generally consistent with the results observed in the first and second quarters of 1995.

1.3.2 SEWAGE LAGOONS

Each of the lagoons is part of a closed system used for evaporative treatment of sanitary waste. The lagoons are located in Areas 6, 11, 12, 22, 23, and 25. There was no known contact by the working population during the first quarter of 1996. Quarterly samples were taken and analyzed for gross beta activity, tritium, ^{238}Pu, $^{239+240}Pu$, and gamma-emitting nuclides. Summary data for sewage lagoons are shown in Table 6.0.

Station gross beta concentrations ranged from 5.7 to 32 x 10^{-9} µCi/mL (0.21 to 1.2 Bq/L) with a network mean of 19 x 10^{-9} µCi/mL (0.7 Bq/L). All results were above their detection limits. The maximum station mean was at Area 6 Device Assembly Facility (DAF) Pond. These results are consistent with previous data.

Station tritium concentrations ranged from -300 to 150 x 10^{-9} µCi/mL (-11 to 5.5 Bq/L) with a network mean of -160 x 10^{-9} µCi/mL (-5.9 Bq/L). All results were less than their detection limits.

Station ^{238}Pu and $^{239+240}Pu$ maximum concentrations were 0.004 x 10^{-9} µCi/mL and 0.007 x 10^{-9} µCi/mL (0.15 mBq/L and 0.26 mBq/L), respectively. The network means for ^{238}Pu and $^{239+240}Pu$ were 0.00025 and 0.00013 x 10^{-9} µCi/mL (9.2 and 4.8 µBq/L), respectively. All ^{238}Pu and $^{239+240}Pu$ values were less than their applicable detection limits, and these results were slightly low compared to previous data.

Analyses are performed annually for ^{90}Sr in sewage lagoons. These analyses were not performed in this quarter of 1996.

All water samples were analyzed by gamma spectroscopy. The only radionuclides detected were naturally occurring in the environment (^{40}K, ^{7}Be, and members of the uranium and thorium series). No nuclear event related radioactivity was detected by the gamma spectroscopy analyses.

The results for sewage lagoons discussed above are comparable with past results, and the network means are within the ranges measured during the past six years.

1.4 RADIOACTIVITY IN SUPPLY WELL WATER

The NTS water system currently consists of 12 supply wells, 10 of which supply potable water to onsite distribution systems. Two supply wells, Area 5 Well UE-5c and Area 20 Well U-20, supply water for industrial purposes.

The potable wells are sampled quarterly and analyzed for gross alpha activity, gross beta activity, tritium (using enrichment procedure), ^{238}Pu, $^{239+240}Pu$, ^{90}Sr, $^{226, 228}Ra$, and gamma-emitting nuclides. The pump for Area 6 Well C, was broken last year and this potable supply well has not been sampled since then. The non-potable wells are also sampled quarterly and receive the same analyses, except for tritium (standard liquid scintillation used) and $^{226, 228}Ra$ (none).

Summary data for these supply wells are given in Table 6.0. Results greater than their detection limits for potable wells are compared to the DCG's in DOE 5400.5 as adjusted to meet federal SDWA regulations, or SDWA screening levels.

1.4.1 GROSS BETA

The station values for gross beta for potable supply wells ranged from 2.4 to 12 x 10^{-9} µCi/mL (0.09 to 0.44 Bq/L) with a network mean of 5.6 x 10^{-9} µCi/mL (0.21 Bq/L). The station values for gross beta for non-potable supply wells were 2.7 and 8.7 x 10^{-9} µCi/mL (0.10 and 0.32 Bq/L). All results were above their detection limits. The maximum potable station value was at Area 6 Well 4A and was 37 percent of the SDWA compliance limit, using the DCG for ^{40}K.

1.4.2 TRITIUM

The station values for tritium for potable supply wells ranged from 0.16 to 15 x 10^{-9} µCi/mL (0.006 to 0.55 Bq/L) with a network mean of 4.3 x 10^{-9} µCi/mL (0.16 Bq/L). The station values for tritium for non-potable supply wells were 12 and 15 x 10^{-9} µCi/mL (0.44 and 0.55 Bq/L). All results were less than their detection limits, except for Area 20 Well U-20. The maximum tritium value was at this location and was 0.02 percent of the SDWA compliance limit.

1.4.3 PLUTONIUM

The station values for ^{238}Pu for potable supply wells ranged from -0.0022 to 0.0006 x 10^{-9} µCi/mL (-81 to 22 µBq/L) with a network mean of -0.0025 x 10^{-9} µCi/mL (-0.009 mBq/L). The station values for $^{239+240}Pu$ for potable supply wells ranged from -0.0028 to 0.00016 x 10^{-9} µCi/mL (-100 to 5.9 µBq/L) with a network mean of -0.0018 x 10^{-9} µCi/mL (-67 µBq/L). The station values for ^{238}Pu for non-potable supply wells were 0.0025 and 0.0064 x 10^{-9} µCi/mL (92 and 240 µBq/L). The station values for $^{239+240}Pu$ for non-potable supply wells were 0.15 and 0.24 x 10^{-9} µCi/mL (5.6 and 8.9 mBq/L). All station values for both ^{238}Pu and $^{239+240}Pu$ were below their detection limits.

1.4.4 GROSS ALPHA AND RADIUM

The station values for gross alpha for potable supply wells ranged from 0.69 to 11 x 10^{-9} µCi/mL (26 to 410 mBq/L) with a network mean of 5.6 x 10^{-9} µCi/mL (210 mBq/L). The gross alpha values for the non-potable supply wells were 8.4 and 10 x 10^{-9} µCi/mL (0.31 and 0.37 Bq/L). All results were above their detection limits, except for Area 25 Well J-12. Several potable supply well results exceeded the SDWA screening level for gross alpha of 5 pCi/L.

The potable station values for ^{226}Ra ranged from 0 to 2.6 x 10^{-9} µCi/mL (0 to 0.96 Bq/L) with a network mean of 1.3 x 10^{-9} µCi/mL (48 mBq/L). The potable station means for ^{228}Ra ranged from -0.2 to 0.48 x 10^{-9} µCi/mL (-7.4 to 18 mBq/L) with a network mean of 0.12 x 10^{-9} µCi/mL (2.6 mBq/L). Most ^{226}Ra results were less than their detection limits. The highest result was at Well UE-16d and was 52 percent of the applicable adjusted DCG. All ^{228}Ra results were below their detection limits.

1.4.5 STRONTIUM

The maximum station value for potable supply wells for ^{90}Sr was 0.17 x 10^{-9} µCi/mL (6.3 mBq/L) with a network mean of 0.076 x 10^{-9} µCi/mL (2.8 mBq/L). The station values for non-potable supply wells for ^{90}Sr were 0.15 and 0.24 x 10^{-9} µCi/mL (5.5 and 8.9 mBq/L). All station values were below their detection limits.

1.4.6 GAMMA SPECTROSCOPY

All water samples were analyzed by gamma spectroscopy. All radionuclides detected were naturally occurring in the environment (^{40}K, ^{7}Be, and members of the uranium and thorium series). No nuclear event related radioactivity was detected by the gamma spectroscopy analyses.

The results for supply wells, summarized above, are generally comparable with past results with network means within the range of means measured during the past six years, except for the ^{90}Sr concentrations which are generally lower than have been observed previously.

1.5 RADIOACTIVITY IN DRINKING WATER

As a check on any effect the water distribution system might have on water quality, seven drinking water consumption endpoints were sampled.

These endpoints are sampled quarterly and analyzed for gross alpha activity, gross beta activity, tritium, ^{238}Pu, $^{239+240}Pu$, and gamma-emitting nuclides. Summary data for endpoints are given in Table 7.0. Results greater than their detection limits are compared to the DCG's in DOE 5400.5 as adjusted to meet federal SDWA regulations or SDWA compliance or screening levels.

1.5.1 GROSS BETA

The station values for gross beta ranged from 2.8 to 9.3 x 10^{-9} µCi/mL (0.1 to 0.34 Bq/L) with a network mean of 5.6 x 10^{-9} µCi/mL (0.21 Bq/L). All station values were above their detection limits. The maximum station value, at the Area 23 Cafeteria, was 20 percent of the SDWA compliance limit.

1.5.2 TRITIUM

The station values for tritium ranged from -220 to 260 x 10^{-9} µCi/mL (-8.1 to 9.6 Bq/L) with a network mean of 9 x 10^{-9} µCi/mL (0.3 Bq/L). All station values were less than their detection limits.

1.5.3 PLUTONIUM

The station values for ^{238}Pu ranged up to 0.003 x 10^{-9} µCi/mL (0.11 mBq/L) with a network mean of 0.00091 x 10^{-9} µCi/mL (0.34 mBq/L). The station values for $^{239+240}Pu$ ranged up to 0.00016 x 10^{-9} µCi/mL (5.9 µBq/L) with a network mean of -0.0013 x 10^{-9} µCi/mL (-0.048 mBq/L). All station values for both ^{238}Pu and $^{239+240}Pu$ were below their detection limits.

1.5.4 GROSS ALPHA

The station values for gross alpha ranged from 0.7 to 11 x 10^{-9} µCi/mL (0.026 to 0.41 Bq/L) with a network mean of 5.2 x 10^{-9} µCi/mL (0.19 Bq/L). All results were above their detection limits, except for Building 12-23. Only one result exceeded the SDWA screening level for gross alpha.

1.5.5 STRONTIUM

Analyses are performed annually for ^{90}Sr in consumption endpoints and were not done this quarter.

1.5.6 GAMMA SPECTROSCOPY

All water samples were analyzed by gamma spectroscopy. All radionuclides detected were naturally occurring in the environment (^{40}K, ^{7}Be, and members of the uranium and thorium series). No nuclear event related radioactivity was detected by the gamma spectroscopy analyses.

The results for consumption endpoints discussed above are generally comparable with past results. All network means are within the range of means measured during the past few years.

2.0 NON-RADIOLOGICAL EFFLUENT MONITORING

2.1 DRINKING WATER SYSTEMS

These systems are sampled only for analysis of bacteria in the water as required by the federal SDWA and state of Nevada regulations. Samples were taken at various locations throughout all drinking water distribution systems on the NTS. Common sampling points were restroom and cafeteria sinks. Analyses were performed in accordance with Nevada Administrative Code (NAC) 445 and 40 C.F.R. Part 141.

2.1.1 BACTERIOLOGICAL SAMPLING

All water systems were tested once a month, with the number of people being served determining the number of samples collected. All samples were analyzed for the presence of coliform bacteria. Residual chlorine analyses are no longer required by the state.

No coliform bacteria were detected in any sample collected during the first quarter of 1996.

2.2 SEWAGE LAGOONS

During the first quarter of 1996, sampling was conducted for sewage lagoon systems at the NTS in accordance with state of Nevada General Permit, GNEV93001. Water parameters monitored included water depth in infiltration basins, monitoring of influent quality, and organic loading rates in sewage lagoons. The results for water depth measurements are shown in Table 8.0, influent quality data are shown in Table 9.0, and the results of organic loading rates are shown in Table 10.0. The results and data in these three tables are all within permit limits.

A composite sample was taken from the Yucca Lake primary lagoon on January 22, 1996, and analyzed for arsenic. This analysis was required by the state after a June 1995 sample result exceeded the action level (0.5 mg/L) for arsenic. Analysis of this sample yielded a result of 0.0099 mg/L of arsenic which suggests that the June 1995 result was a false positive.

The permit also requires sampling and analysis of infiltration basins which contain 30 cm or more of liquid in January and June of any year. The Area 6 Yucca Lake facility level exceeded the 30 cm limit during January of this year. The analytic results from collected samples are shown in Table 11.0.

2.3 NON-HAZARDOUS SOLID WASTE DISPOSAL

Monitoring of the three sanitary landfills was limited to recording daily refuse amounts by weight. All waste disposed of in the Area 23 landfill was weighed at the Gate 100 weighing station. Waste disposed of in the Area 9 crater 10c landfill was weighed at the landfill site. Approximately 1160 tons of waste were disposed of in the Areas 6, 9, and 23 sanitary landfills during the first quarter of 1996 as shown in Table 12.0.

3.0 NATIONAL ENVIRONMENTAL POLICY ACT

The National Environmental Policy Act (NEPA) of 1969 requires all federal facilities, including the NTS, to account for environmental impacts and potential alternatives in conducting and planning their operations. In accordance with NEPA, DOE/NV activities are evaluated for their potential environmental impacts and to ensure the proper level of NEPA documentation is initiated. During the first quarter of 1996, NTS-related NEPA activities included actions on 10 Environmental Impact Statements (EISs), 7 Environmental Assessments (EAs), and 6 Categorical Exclusions (CXs). Of these, 1 EA and 6 CXs were initiated in the first quarter of 1996. These NEPA documents are listed in chronological order in Table 13.0, with their assigned number and present status.

4.0 OCCURRENCE REPORTING

Occurrences are environmental, health, and/or safety-related events which are reported in several categories in accordance with the requirements of DOE Order 5000.3B, "Occurrence Reporting and Processing of Operations Information." One Environmental Occurrence was reported for NTS facilities during the first quarter of 1996. Details for this occurrence, including report number, description, and status, appear in Table 14.0.

TABLES

Table 1.0 Network Collection and Analysis Schedule

			Frequency of Analyses			
Network	Media	No.	Weekly	Monthly	Quarterly	Annually
Air	Particulate	30	β, γ		Pu	
	RWMS	15	β, γ	Pu		
	Tritium	15		Bi-weekly		
	Noble Gas	3	^{85}Kr			
Water	Reservoir	15				β,γ,^{3}H,Sr,Pu
	Springs	8				β,γ,^{3}H,Sr,Pu
	Wells	12			β,γ,α,^{3}H,Sr Pu,^{226,228}Ra	
	Spigot	7			β,γ,α,^{3}H,Pu	Sr
	Sewage	9			β,γ,^{3}H,Pu	Sr
	Pond	2			β,γ,^{3}H,Pu	Sr
TLD	Environment	168			γ	

Table 2.0 Derived Limits for Radionuclides in Air and Water (DOE Order 5400.5)

	μCi/mL	
Radionuclide	DCG (air)[a]	DCG (water)[b]
^{3}H	1×10^{-08}	8×10^{-05}
^{40}K	9×10^{-11}	3×10^{-07}
^{85}Kr	3×10^{-07} [c]	--
^{90}Sr	9×10^{-13}	4×10^{-08}
^{226,228}Ra	1×10^{-13}	4×10^{-09}
^{238}Pu	4×10^{-15}	2×10^{-09}
$^{239+240}$Pu	4×10^{-15}	1×10^{-09}

(a) DCGs are reference values for conducting radiological protection programs at operational DOE facilities and sites. The DCG values for air are for an effective dose equivalent of 10 mrem (0.1 mSv) (inhalation) for a year as required by 40 C.F.R. 61.92 and DOE Order 5400.5.

(b) The values listed for beta and photon emitters in the table are based on a 4 mrem committed effective dose equivalent for the radionuclide taken into the body by ingestion of water during one year (730 L). Gross beta levels less than or equal to 50 pCi/L are in compliance with 40 C.F.R. 141, SDWA.

(c) Nonstochastic value.

Table 3.0 Summary Data for Gross Beta and ^{7}Be in Air, First Quarter - 1996

	Gross Beta Data (10^{-14} µCi/mL)			Beryllium-7 Data (10^{-14} µCi/mL)		
Location	Average	Maximum	Minimum	Average	Maximum	Minimum
Area 1 BJY	1.80	2.56	0.83	24.9	37.9	15.9
Area 2	1.55	2.18	0.87	22	38.7	16
Area 2 2-1 Substation	1.18	1.79	0.71	18.5	27.2	11.6
Area 2 Mud Plant	1.93	4.31	0.85	24.2	38.2	13.5
Area 3 U-3ah/at S	1.74	3.66	0.82	18.7	28	11.7
Area 3 U-3ah/at E	1.51	2.32	0.75	21.4	29.7	12.3
Area 3 U-3ah/at N	1.43	2.10	0.81	19.7	24	13.7
Area 3 U-3ah/at W	1.44	2.11	0.86	21.8	35	13.1
Area 3 Well ER-3-1	1.74	3.66	0.82	25.8	35.4	16.1
Area 4 Bunker T-4	1.54	2.18	0.86	23.2	36.2	15.2
Area 5 RWMS No. 1	2.01	2.74	0.89	23.8	35.5	15.1
Area 5 RWMS No. 3	2.06	2.85	0.76	27	43.1	18.9
Area 5 RWMS No. 4	1.96	2.79	1.10	25.2	40.4	18.6
Area 5 RWMS No. 5	1.97	2.68	1.16	22.5	38.1	11.3
Area 5 RWMS No. 6	1.86	2.65	1.06	25.6	56.2	13.3
Area 5 RWMS No. 7	1.47	2.30	0.83	19.3	29.4	11.2
Area 5 RWMS No. 8	1.72	2.78	1.02	23.1	31.7	12.4
Area 5 RWMS No. 9	1.69	2.40	0.88	19.1	33.1	12.2
Area 5 RWMS Pit-5	1.43	2.06	0.93	18.8	34.6	9.69
Area 5 RWMS TP Building N	1.98	3.33	0.69	19.1	30.2	13.2
Area 5 RWMS TP Building S	1.96	3.95	0.80	20.1	29.6	12.9
Area 5 DOD	1.73	2.63	0.952	25.5	44.1	16.2
Area 5 Well 5B	1.89	2.84	0.939	24.1	34.8	16.8
Area 6 YUCCA	1.69	2.51	0.973	23.2	38.2	13.9
Area 6 CP-6	1.57	2.29	0.782	23.1	29.4	14.8
Area 6 Well 3	1.46	2.1	0.824	22.7	42.9	11.8
Area 7 UE-7ns	1.56	2.23	0.887	23.9	35.8	16.2
Area 9-300	1.34	2.05	0.828	20.4	27.3	15.2
Area 10 Gate 700 S	1.5	2.17	0.867	23.3	45.1	15.2
Area 10 SEDAN Crater	1.52	2.28	0.773	23.4	34.4	15.9
Area 11 Gate 293	1.88	2.7	1.02	26.8	48.9	16
Area 12	1.33	2.05	0.814	21.5	29.2	14.5
Area 15 EPA Farm	1.45	2.06	0.89	24.7	47.4	17.4
Area 16 3545 Substation	1.27	1.73	0.77	19.5	26.6	12.8
Area 18 Well UE-18t	1.45	2.22	0.86	24.2	32.1	17.1
Area 20 SCHOONER	1.61	2.47	0.92	22.1	31.1	13.9
Area 20	1.14	1.71	0.59	22.1	31.1	13.9
Area 23 Building 790 No. 2	1.52	2.62	0.12	20.8	38.1	2.31
Area 23 H&S Building	1.87	2.97	0.89	27.4	50.4	17.2
Area 25 E-MAD N	1.54	2.35	0.69	23.6	46.1	12.8
Area 25 NRDS	1.44	2.17	0.68	22.7	45.3	14.2
Area 27	1.46	2.79	0.72	21.4	28.5	14.1
Network Average	1.6×10^{-14}			2.1×10^{-13}		

Table 4.0 NRC Particulate and Onsite ^{85}Kr in Air Summary Data, First Quarter - 1996

Offsite Particulate Results (µCi/mL)[a]

Location	Gross Beta Average	Gross Beta Maximum	Gross Beta Minimum	^{7}Be Average	^{7}Be Maximum	^{7}Be Minimum
DOUBLE TRACKS	1.55×10^{-14}	2.57×10^{-14}	8.67×10^{-15}	2.17×10^{-13}	3.75×10^{-13}	1.17×10^{-13}
CLEAN SLATE	1.62×10^{-14}	2.92×10^{-14}	9.44×10^{-15}	2.18×10^{-13}	3.51×10^{-13}	1.36×10^{-13}
Area 13	1.54×10^{-14}	2.38×10^{-14}	8.35×10^{-15}	2.36×10^{-13}	4.02×10^{-13}	1.68×10^{-13}

(a) Particulate samples collected with solar-powered air sampler.

Onsite $^{85}Krypton$ Results (µCi/mL)

Location	Average	Maximum	Minimum
BJY	2.47×10^{-11}	3.37×10^{-11}	1.68×10^{-11}
Pahute Substation	2.39×10^{-11}	3.81×10^{-11}	2.82×10^{-12}
Area 20	2.47×10^{-11}	4.12×10^{-11}	2.82×10^{-12}

Table 5.0 Tritium in Atmospheric Moisture Summary Data (µCi/mL), First Quarter - 1996

Location	Average	Maximum	Minimum
BJY	6.1×10^{-12}	1.1×10^{-12}	-2.0×10^{-12}
Area 3 Mud Plant	6.7×10^{-13}	1.3×10^{-12}	-4.2×10^{-14}
RWMS 1	2.4×10^{-12}	3.7×10^{-12}	1.1×10^{-12}
RWMS 3	2.5×10^{-12}	4.2×10^{-12}	9.8×10^{-13}
RWMS 4	3.8×10^{-12}	7.8×10^{-12}	1.8×10^{-12}
RWMS 5	1.3×10^{-11}	6.5×10^{-11}	1.1×10^{-12}
RWMS 6	4.1×10^{-12}	6.8×10^{-12}	1.9×10^{-12}
RWMS 7	3.0×10^{-12}	4.4×10^{-12}	1.6×10^{-12}
RWMS 8	3.3×10^{-12}	7.3×10^{-12}	1.5×10^{-12}
RWMS 9	4.3×10^{-12}	6.4×10^{-12}	2.6×10^{-12}
SEDAN Crater	3.9×10^{-12}	5.8×10^{-12}	2.2×10^{-12}
Area 12	5.8×10^{-13}	1.2×10^{-12}	8.0×10^{-14}
E Tunnel Pond	5.1×10^{-12}	8.6×10^{-12}	1.3×10^{-12}
EPA Farm	4.9×10^{-12}	9.9×10^{-12}	2.0×10^{-12}
H&S Building	1.9×10^{-13}	6.8×10^{-13}	-2.4×10^{-13}
Average	3.9×10^{-12}		

Table 6.0 Summary Data for Well and Surface Water Samples, First Quarter - 1996

Ground Water (µCi/mL)

Name	Gross Alpha	Gross Beta	Enrich. Tritium	^{226}Ra[(a)]	^{238}Pu	$^{239+240}Pu$	^{90}Sr
			Potable Wells				
Well 5B	7.0×10^{-09}	1.2×10^{-08}	2.6×10^{-09}	1.1×10^{-09}	6.0×10^{-13}	1.4×10^{-13}	3.8×10^{-11}
Well 5C	8.4×10^{-09}	6.6×10^{-09}	2.5×10^{-09}	0.4×10^{-09}	-2.2×10^{-12}	1.6×10^{-13}	9.5×10^{-12}
Well 4A	1.1×10^{-08}	6.1×10^{-09}	4.3×10^{-09}	1.7×10^{-09}	5.3×10^{-13}	1.2×10^{-13}	1.2×10^{-10}
Well 4	9.4×10^{-09}	6.8×10^{-09}	2.5×10^{-09}	1.3×10^{-09}	-2.1×10^{-12}	-2.6×10^{-12}	2.7×10^{-11}
Well C-1	2.5×10^{-09}	1.4×10^{-08}	4.9×10^{-09}	2.3×10^{-09}	3.3×10^{-12}	-2.6×10^{-12}	1.3×10^{-11}
Well UE-16d	2.2×10^{-09}	2.4×10^{-09}	1.8×10^{-09}	2.6×10^{-09}	-1.6×10^{-12}	-2.0×10^{-12}	7.4×10^{-11}
Well HTH 8	1.1×10^{-09}	3.2×10^{-09}	8.9×10^{-10}	0.6×10^{-09}	-2.2×10^{-12}	-2.8×10^{-12}	1.9×10^{-11}
Well Army #1	4.1×10^{-09}	5.7×10^{-09}	3.2×10^{-09}	0.4×10^{-09}	-2.0×10^{-12}	-2.5×10^{-12}	1.7×10^{-10}
Well J-12	6.9×10^{-10}	4.7×10^{-09}	1.6×10^{-09}	1.2×10^{-09}	-1.9×10^{-12}	1.4×10^{-13}	2.1×10^{-11}
Well J-13	2.2×10^{-09}	4.3×10^{-09}	1.6×10^{-10}	0	-2.2×10^{-12}	1.6×10^{-13}	3.4×10^{-11}

(a) All ^{228}Ra values were <MDC. Ra analyses not done on industrial wells.

			Industrial Wells				
Well UE-5c	1.0×10^{-08}	8.7×10^{-09}	1.2×10^{-08}	NA	2.8×10^{-12}	2.5×10^{-12}	1.5×10^{-10}
Well U-20	8.4×10^{-09}	2.7×10^{-09}	1.5×10^{-08}	NA	8.4×10^{-12}	6.4×10^{-12}	2.4×10^{-10}

Sewage Lagoons (µCi/mL)

Name	Gross Beta	Tritium	^{238}Pu	$^{239+240}Pu$
RWMS Pond	1.5×10^{-08}	-1.4×10^{-07}	-2.2×10^{-12}	2.5×10^{-13}
Yucca Pond	1.7×10^{-08}	-1.3×10^{-07}	-2.7×10^{-12}	6.9×10^{-12}
DAF Pond	3.2×10^{-08}	-1.7×10^{-07}	6.5×10^{-13}	-3.0×10^{-12}
LANL Pond	2.8×10^{-08}	-2.0×10^{-07}	2.9×10^{-12}	2.3×10^{-13}
A-12 Pond	5.7×10^{-09}	1.5×10^{-07}	-2.3×10^{-12}	2.7×10^{-13}
A-22 Pond	2.9×10^{-08}	-3.2×10^{-07}	5.2×10^{-13}	-2.4×10^{-12}
A-23 Pond	1.7×10^{-08}	-1.9×10^{-07}	4.2×10^{-12}	7.2×10^{-10}
Reactor Control	1.4×10^{-08}	-2.6×10^{-07}	-3.0×10^{-12}	4.1×10^{-12}
Central Support	1.3×10^{-08}	-1.9×10^{-07}	4.2×10^{-12}	3.8×10^{-12}

Containment Pond (µCi/mL)

Name	Gross Beta	Tritium	^{137}Cs	^{238}Pu	$^{239+240}Pu$
E Tunnel No. 1	1.4×10^{-07}	8.8×10^{-04}		2.0×10^{-10}	1.6×10^{-09}
E Tunnel Effluent	2.2×10^{-07}	8.5×10^{-04}	1.7×10^{-07}	3.2×10^{-10}	2.5×10^{-09}

Table 7.0 Endpoint Water Sample Summary Results (µCi/mL), First Quarter - 1996

Location	Tritium	Gross Beta	Gross Alpha	^{238}Pu	^{239}Pu
Area 1 Building 101	-2.17×10^{-07}	4.80×10^{-09}	6.96×10^{-09}	6.08×10^{-13}	-2.02×10^{-12}
Area 2 Restroom	-2.28×10^{-08}	2.84×10^{-09}	1.10×10^{-09}	5.11×10^{-13}	-1.70×10^{-12}
Area 6 Cafeteria	2.47×10^{-06}	7.20×10^{-09}	1.07×10^{-08}	2.95×10^{-12}	-2.11×10^{-12}
Area 6 Building 6-900	5.14×10^{-08}	7.12×10^{-09}	8.25×10^{-09}	6.30×10^{-13}	1.45×10^{-13}
Area 12 Building 12-23	2.63×10^{-07}	3.12×10^{-09}	7.12×10^{-10}	2.74×10^{-12}	-1.96×10^{-12}
Area 23 Cafeteria	1.31×10^{-07}	9.31×10^{-09}	7.21×10^{-09}	-1.54×10^{-12}	-1.94×10^{-12}
Area 25 Building 422-1	5.14×10^{-08}	4.81×10^{-09}	1.38×10^{-09}	4.89×10^{-13}	1.55×10^{-13}

Table 8.0 Pond Water Depths in Infiltration Basins, First Quarter - 1996

Impound	Maximum Operating Depth, cm	Average Depth, cm (1st Quarter)
Gate 100, Basin	90	0
Mercury, Basin	180	0
Yucca Lake		
North Basin	140	42
South Basin	140	52
Tweezer		
East Basin	244	0
West Basin	244	0
CP-6		
East Basin	90	0
West Basin	90	0
CP-72	90	0
DAF		
Basin 1	150	0
Basin 2	150	0
Reactor Control, Basin	130	0
Test Stand 1, Basin	90	0
Test Cell C, Basin	90	0
Base Camp 25, Basin	100	0
Base Camp 12, Basin 1	120	0
Base Camp 12, Basin 2	120	0
Base Camp 12, Basin 3	120	0
Base Camp 12, Basin 4	120	0
Base Camp 12, Basin 5	120	0
RWMS-5, Basin 1	150	0
RWMS-5, Basin 2	150	0

Table 9.0 Influent Quality, First Quarter - 1996

Facility	BOD5[a] (mg/L)	S.C.[b] (µmhos/cm)
Gate 100	294	1.58
Mercury	173	0.80
Yucca Lake	392	0.73
Tweezer	199	1.16
CP-6	0	0
CP-72	0	0
DAF	120	1.50
Reactor Control	350	0.94
Test Stand 1	0	0
Base Camp 25	264	0.80
Base Camp 12	20	0.29
Test Cell C	0	0
RWMS-5	1236	1.21

(a) Biochemical Oxygen Demand.
(b) Specific Conductivity.

Table 10.0 Organic Loading Rates, First Quarter - 1996

Facility	Limit (Kg/day)	Mean Daily Load Metered Rates
Mercury	172	51.24
Yucca Lake	8.6	9.62
Base Camp 12	54	0.21
LANL on Tweezer	5.0	3.06
RWMS-5	0.955	1.88
	Calculated Rates	
CP-6	8.7	0[a]
CP-72	1.1	0[a]
DAF	7.6	0.51
Reactor Control	4.2	2.08
Eng Test Stand	2.3	0[a]
Test Cell C	1.3	0[a]
Base Camp 25	7.4	2.41
Gate 100	2.4	0.60

(a) Samples not taken due to inadequate or nonexistent flow.

Table 11.0 Monitoring Results for Area 6 Yucca Lake Facility, First Quarter - 1996[a]

Parameter	Action Level (mg/L)	Measurement (mg/L)[b]
Arsenic	0.5	0.0099
Cadmium	0.1	<0.001
Chromium	0.5	0.0424
Lead	0.5	0.0079
Selenium	0.1	<0.003
Silver	0.5	0.0065
Nitrate Nitrogen	100	<0.02
Sulfate	5000	100
Chloride	1000	160
Fluoride	40	1.7
Tritium	monitor only	ND

(a) Had at least 30 cm of liquid.
(b) Limit of quantitation is 1/20 the action level, ND = not detected.

Table 12.0 Quantity of Waste Disposed of in Landfills, First Quarter - 1996

	Quantity (in pounds)		
Month	Area 9	Area 23	Area 6
January	0	402,890	0
February	278,597	267,540	15,320
March	1,191,835	164,070	1,100
Total	1,470,432	834,500	16,420

Table 13.0 NEPA Documentation Open, First Quarter - 1996

File Number	Description	Category	Review Status[a]
NV-93-025	Fire Training Facility, Area 23	EA	Pending
NV-94-019	INEL SNF/ERWM EIS	EIS	Pending
NV-94-020	Pantex Sitewide EIS	EIS	Pending
NV-94-023	Transportation of BOMARC Missile Site Contaminated Material Area 5	EA	Pending
NV-94-026	Liquid Waste Treatment Facility, Area 6	EA	Pending

Table 13.0 (NEPA Documentation Open, First Quarter - 1996, cont.)

File Number	Description	Category	Review Status[a]
NV-94-033	Storage and Disposition of Fissile Nuclear Materials, DOE	EIS	Pending
NV-94-050	Foreign Research Reactor Spent Nuclear Fuel	EIS	Pending
NV-94-056	National Ignition Facility	EIS	Pending
NV-94-076	Dual Axis Radiographic Hydrodynamic Test, Los Alamos National Laboratory (LANL)	EIS	Pending
NV-95-010	Tritium Supply and Recycling	PEIS	Pending
NV-95-011	Stockpile Stewardship and Management	PEIS	Pending
NV-95-032	Sitewide EIS for LANL, NTS/LANL	EIS	Pending
NV-95-046	SNL Offsite Transportation of Low Level Waste, Areas 3 & 5	EA	Pending
NV-95-047	Yucca Mountain EIS, Area 25	EIS	Pending
NV-95-055	Navy Thermal Treatment Unit Test, Area 5	EA	Pending
NV-95-062	RF Characterization Capability, Tweezer Facility, Area 11	CX	Pending
NV-95-066	Area 5 LLW Management Site Improvement Project	EA	Pending
NV-95-067	CMRM Demilitarization System Demonstration Project, NTS	CX	01/09/96
NV-96-001	Controlled Area Access Building, Area 5	CX	02/15/96
NV-96-002	Cotter Concentrate Treatment Facility, Area 5	EA	02/20/96
NV-96-003	Tritium Field Project (Air stripping)	CX	02/09/96
NV-96-004	Investigation and Characterization of Three Tonopah Test Range (TTR) Sites	CX	02/28/96
NV-96-006[b]	High Explosives Research and Development (Weapons Effects Testing), Area 12	CX	Pending
NV-96-007	Develop, and Test Pulsed Neutron Generator Concepts, North Las Vegas	CX	Pending
NV-96-008	SNT-96-001 Radio Frequency Electromagnetic Testing, TTR	CX	Pending

(a) Date entry is date approved.
(b) NV-96-005 is not for NTS related activity.

Table 14.0 Environmental Occurrences at NTS Facilities, First Quarter - 1996

Date	Report Number	Description	Status
09/25/96	NVOO-REEC-OMDO 1996-0004	Used oil spill (100 gal), pumper truck hose came loose	Pending

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