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DEPARTMENT OF ENERGY
ALBUQUERQUE OPERATIONS OFFICE
CONTRACT NO. DE-AC04-83AL18796

Health Physics Monitoring Plan

AMBROSIA LAKE, NM

Remedial Actions
Contractor
for the
Uranium Mill Tailings
Remedial Actions
Project

MK-FERGUSON

CHEM-NUCLEAR SYSTEMS, INC

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UNITED STATES
DEPARTMENT OF ENERGY
ALBUQUERQUE OPERATIONS OFFICE

HEALTH PHYSICS MONITORING PLAN
AMBROSIA LAKE, NEW MEXICO SITE

Prepared by:

CHEM-NUCLEAR SYSTEMS, INC.
FOR MK-FERGUSON COMPANY
REMEDIAL ACTION CONTRACTOR

CONTRACT NO. DE-AC04-83AL18796

MK-FERGUSON COMPANY
A MORRISON KNUDSEN COMPANY

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Health Physics Monitoring Plan
Ambrosia Lake, New Mexico

Approval

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AMBROSIA LAKE HEALTH PHYSICS PLAN
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1.0 INTRODUCTION

This Appendix G to the UMTRA Remedial Action Contractor (RAC) Health Physics Monitoring Plan comprises the Ambrosia Lake, New Mexico site specific Health Physics Plan. Implementing methods and procedures are found in the RAC Health Physics Procedures manual.

The implementing procedures will be maintained by the Site Health Physics Manager or his designee, and will be available at the Ambrosia Lake field office.

All phases of this "Health Physics Monitoring Plan" are implemented by the Remedial Action Contractor (RAC) except for the non-operational water monitoring in Section 8.3. This portion is implemented by the Technical Assistant Contractor (TAC). A map of the Ambrosia Lake vicinity is shown in Figure 1.0.

2.0 TRAINING

2.1 Radiation Worker

All individuals who regularly enter a controlled area to perform work will receive radiation worker training as described in the RAC Health Physics Monitoring Plan. This training will be given on site by the Health Physics Manager or his designee. The Health Physics Manager will maintain the specific training procedure as well as individual training records. These records will be available at the Ambrosia Lake field office.

2.2 Industrial Safety

All individuals working on the Ambrosia Lake UMTRA Project shall periodically attend industrial safety indoctrination sessions. This training will be presented by the RAC Construction Safety and Health Manager or his designee. The RAC Site Manager will maintain documentation of these training sessions.

2.3 Health Physics Staff

The Health Physics Staff will meet the standards of the RAC Health and Safety Personnel Training Program. If not previously qualified, individuals will be trained and qualified by the site Health Physics Manager or Supervisor. The site Health Physics Manager will maintain training procedures and documentation regarding site Health Physics Staff. These records will be available for audit.

The anticipated organizational chart for Ambrosia Lake is included in Figure 2.0

3.0 ACCESS CONTROL

3.1 Boundary Establishment and Posting

Controlled areas shall be established for the mill site to protect the workers and the general public from unnecessary radiation exposure, and to prevent the spread of radioactive contamination. Controlled areas include, but are not limited to, any work areas which meet the following conditions:

Areas having significant quantities of surface soil contamination greater than 10 mCi Ra-226 total (approximately 40 cubic yards at 200 pCi/g).

The estimated external gamma dose to any individual in the work area may exceed 500 millirem/year (240 micro R/hr, 40 hours per week).

Airborne concentrations of radionuclides that may approach quantities provided in DOE Order 5480.1A, Attachment II.

Transferable surface contamination is likely to exceed 600 dpm per $100cm^2$ or total contamination (fixed and smearable) of 3300 dpm per $100cm^2$.

Initially, the site Health Physics Manager will establish access control areas as defined above. Periodic area exposure rate surveys will be required.

Access to these areas shall be controlled for people, vehicles, and equipment by barriers, ropes, signs or using other methods to prevent inadvertent exposure to contaminated material.

Smoking, drinking and eating are prohibited in controlled areas.

Controlled areas defined as above must be conspicuously marked at points of potential access with a sign or signs bearing the radiation caution symbol and the words:

CAUTION
RADIOACTIVE MATERIAL

All other applicable posting and labeling requirements set forth in 0 CFR 20 shall be followed.

3.2 Protective Clothing

Protective clothing requirements will be established by the site HP Manager on a case by case basis.

3.3 Respiratory Protection

Respiratory protection shall be required when airborne contamination projected exposure in an area may exceed 40 MPC hours per week. Training, and a determination of physical ability to wear a respirator is required, as defined in the RAC Respiratory Protection Procedure. The site HP manager shall make every effort to reduce personnel exposures to airborne radionuclides to levels as low as reasonably achievable.

3.4 Personnel Monitoring

All personnel shall thoroughly frisk for contamination each time they exit a controlled area. A rate meter with an audible alarm shall be utilized. Personnel shall be trained in self-monitoring by site HP staff during initial Health Physics Training.

3.5 Equipment Surveys

All equipment taken into a controlled area will be surveyed for contamination prior to release from the area. Any equipment having fixed or loose contamination levels exceeding free release limits as stated in RAC Contamination Control Procedure will be held for decontamination and resurvey. All trucks hauling contaminated material on public roads will be tarped and have a sealed tailgate to prevent spillage of contamination during transport. Surveys upon exit will be conducted as required by the health physics site manager.

3.6 Decontamination

Skin contamination will be removed by washing with luke warm water and mild soap. Contaminated equipment will be decontaminated by scraping, wire brushing, washing, etc. See RAC Decontamination of Personnel and Equipment Procedure for details.

4.0 DOSIMETRY AND BIOASSAY PROGRAMS

4.1 Thermoluminescent Dosimetry

Personnel requiring access to controlled areas for more than 120 hours in any three consecutive months shall be issued uniquely numbered thermoluminescent dosimeter badges (TLD's). Such personnel shall receive health physics indoctrination training as described in the RAC Health Physics Monitoring Plan. (Note: The Health Physics Manager may waive health physics indoctrination training for personnel with health physics backgrounds). Appropriate records shall be maintained by the Health Physics Manager. TLD's shall be issued daily and collected at the end of each shift by Health Physics. Appropriate control TLD's are required to determine contribution of background to accumulated dose.

An individual under age 18 shall neither be employed in, nor allowed to enter, controlled areas in such a manner that he or she will receive doses of radiation in amounts exceeding one-tenth of the standards in DOE 5480.1.

TLD's will be exchanged and read quarterly by a properly qualified vendor.

4.2 Self Reading Dosimeters (SRD's)

Visitors may be issued SRD's prior to entry into radiologically controlled areas. A visitor log shall be maintained stating date, visitors name, social security number, time into controlled area, time out of controlled area, SRD reading in, SRD reading out, and total exposure received.

4.3 Bioassay Requirements

Prior to commencement of work in controlled areas and again upon completion of work or termination, radiation workers issued TLDs may be required to furnish specimens for analysis, as directed by the site HP Manager or his designee. Quantities of specimens shall be as established in the RAC Dosimetry Program Procedure.

Samples will be analyzed by a vendor for Ra-226, Th-230 and U-nat concentrations, Additional bioassay samples may be required on a quarterly basis for certain radiation workers, or if weekly average radionuclide air concentrations exceed any radionuclide MPC_a. Bioassay data may also be required upon worker termination, or transfer off the UMTRA Project. The need for additional bioassay will be determined by the Ambrosia Lake Health Physics Manager. In general, additional urinalysis will be required as per the following guideline:

- TH-230:
  - resample - 0.05 pCi/l
  - investigate work conditions - 0.1 pCi/l
  - prohibit employee from working in controlled areas - 0.2 pCi/l

- Ra-226
  - resample - 0.5 pCi/l
  - investigate work conditions - 0.7 pCi/l
  - prohibit employee from working in controlled areas - 1.0 pCi/l

- U-Nat
  - resample - 10 ug/l
  - investigate work conditions - 15 ug/l
  - prohibit employee from working in controlled areas - 30 ug/l

Other bioassay specimens, including fecal specimens, may be required as determined by the Site HP Manager.

The site HP Manager is responsible for review and action regarding Bioassay data, upon receipt. The Albuquerque EDV Manager and Operations Manager shall be immediately informed in writing whenever MK, CNSI, Subcontractor or other radiation workers are hired or terminated, in order to track bioassay sampling status. A permanent record of bioassay results shall be maintained. Samples and records shall be marked with unique identifications as per the RAC Systematic Sample Numbering System. Copies of all Ambrosia Lake staff and subcontractor bioassay records shall be forwarded to the CNSI/ALB EDV Manager each quarter.

4.4 Personnel Radon Monitoring

Where the potential exists for exposure of workers to significant concentrations of Rn-222 and its daughters, provision shall be made to monitor such exposure. Depending upon the anticipated exposure, one of the following monitoring procedures may be employed at the discretion of the site HP Manager: 1) Routine grab sampling for radon in close proximity to exposed workers; 2) Continuous monitoring with an Eberline RGM-2 or equivalent located in the immediate vicinity of exposed workers; 3) Use of Track Etch radon dosimeters, routinely worn by workers with maximum potential for radon exposure, and read on a quarterly basis. It is anticipated that worker annual average exposures approaching the limit of 30 pCi/l may be encountered at Ambrosia Lake. In such cases, monitoring for radon daughter exposures is also required.

5.0 INITIAL SURVEYS

5.1 Gamma Radiation Surveys (Surface)

Prior to demolition or excavation of the mill site or surrounding areas, a survey will be conducted with a gamma detection instrument to locate limits of contamination, and to identify potential health physics problems. Correlation to exposure rate is required to determine potential worker exposures. Health Physics procedures shall be utilized to generate and routinely check this correlation. Portable instruments used for this purpose must be routinely compared against a Pressurized Ion Chamber over the gamma exposure rate range of interest. Calibration curves shall be maintained, as well as calibration data.

5.2 Gamma Radiation Surveys (Borehole)

In addition to area surveys, areas with elevated gamma readings may be augered and boreholes logged using a gamma detection instrument coupled to a portable rate meter. Gamma measurements will be taken at 15 cm increments to estimate the contamination depth. All measurements will be recorded and borehole locations tied to the established grid system. A summary of pre-remedial borehole data is presented in Table 2.0.

5.3 Gamma Radiation Surveys Haul (Roads)

Routes used for hauling excavated material from areas surrounding the mill yard to the uranium mill tailings pile, will be gamma surveyed initially, and then routinely during transfer of material.

6.0 SURVEILLANCE AND RESPONSE DURING STABILIZATION

6.1 Exposure Rates

Calibrated, portable gamma detection instruments will be used to routinely measure area radiation exposure rates. Initial readings will be taken in the areas occupied by workers to characterize the gamma radiation field to which they are exposed. These readings will be recorded and submitted to the site Health Physics Manager. During demolition or excavation, area gamma radiation exposure rate surveys will be conducted on a routine basis specified by the Health Physics Manager. The frequency of these area surveys should be commensurate with anticipated significant changes in gamma exposure levels. Present exposure rates for the site and mill area are shown in Figure 3.0. Measured exposure rate data by location is presented in Table 3.0.

6.2 Air Samples

Area air samples will be taken with calibrated hi-volume air samplers at least twice per shift during demolition of structures or excavation of large volumes of contaminated material as prescribed by the Health Physics Manager. Air samples will be counted with an alpha detection system capable of detecting gross alpha at 25% MPC_a for Th-230. Samples with at least 24-hour-decayed gross alpha activity in excess of the Th-230 MPC_a will be sent to an offsite laboratory for analysis for Th-230 and Ra-226.

Quarterly, all air sample filters from each sampling location shall be sent to an offsite laboratory as a group for composite analysis for Th-230, Ra-226, and gross alpha. The purpose of these analyses is to provide a record of potential airborne exposure for workers in specific areas.

Initially, solubility tests will be conducted to determine airborne radionuclide concentration limits. Worker protection against radioactive dusts shall be based on the 24-hour decayed gross alpha results, conservatively assuming 100% of the count to be due to Th-230. After 10 or more hi-vol air samples have been analyzed by an independent laboratory, the Th-230/gross-alpha ratio established by these results may be used to control worker exposure to radioactive particulates. Records of the data and calculations used to establish this ratio shall be maintained by the site HP Manager. Samples shall be uniquely marked as per the RAC systematic sample numbering system. The Albuquerque Radiological Programs Manager shall be immediately notified when 24 hour decayed air samples determined to be in excess of MPC_a (by onsite gross alpha) are found.

Whenever dust is generated within a controlled area, or whenever significant concentrations of airborne particulate or gaseous radionuclides are measured at the mill site, measures must be implemented to reduce such concentrations. For control of particulates, water sprays should routinely be applied to all areas potentially releasing radioactive dusts. In severe cases, including windstorms, advance planning to control release of radioactive dusts must be performed by the Site Manager. Measures such as covering of recently exposed, highly contaminated areas may be necessary to reduce the potential for radioactive dust release.

6.3 Contamination Surveys

Surveys of uncontrolled areas for loose contamination will be made by taking smears from floor areas, desk tops, etc., on a routine basis established by the Health Physics Manager. Loose alpha contamination exceeding 20 dpm/100sq cm will require decontamination of the area. Smears of loose contamination will be counted with alpha, and/or beta-gamma detection systems capable of detecting gross alpha and beta-gamma below levels for unrestricted release. Routine smears will be taken in eating areas, lab areas, access control, office areas, and on permanent support equipment.

6.4 Working Level Surveys

Working level measurements will be required when significant worker exposure is possible, in the judgment of the HP Manager.

Working levels will be measured by taking air samples and analyzing for radon daughters using a modified Kusnetz method, or by using Eberline WLM-1's or equivalent. Working level measurements will also be taken prior to remedial action in any poorly ventilated building.

7.0 EXCAVATION CONTROL

7.1 Gamma Radiation Scans

During excavation at Ambrosia Lake, health physics personnel will employ portable detectors to locate residual tailings material by gamma-ray emissions. Where gamma radiation levels due to interfering tailings material are excessive, shielded detectors or other methods, such as OCS soil sampling, shall be employed to guide excavation. Background Ra-226 concentrations are presented in Figure 5.0.

7.2 Soil Sampling

Where analysis of the Ra-226 concentration of soil samples is required to demonstrate compliance with USEPA, USDOE or USNRC standards, either the Opposed Crystal System (OCS) gamma spectrometer or independent analysis by an approved vendor, is acceptable. If Th-230 or other soil analysis is required, it shall be performed using approved onsite equipment, or by an approved vendor. An approved fraction of all soil samples shall be sent offsite for laboratory analysis for quality control purposes and for more detailed chemical analyses as required.

Soil Sampling procedures for both vicinity property and mill site verification shall be as per RAC health physics procedures based on the "Remedial Action Plan and Site Conceptual Design for Stabilization of the Inactive Uranium Mill Tailings Site at Ambrosia Lake, New Mexico." The design excavation plan is shown in Figure 4.0.

7.3 Post-Excavation Gamma Radiation Scans

Hauling routes, entry paths, and access points will be routinely spot-surveyed as directed by the site HP Manager with a gamma detector to ensure that removal and transfer of contaminated material is being done in a controlled manner. This data will be compared to initial survey readings, at the completion of decontamination.

8.0 ENVIRONMENTAL MONITORING

8.1 Airborne Particulate Monitoring

Continuous air particulate sampling is required at points around the site boundary during periods of major activity. This requirement applies to piles being stabilized in place where large volumes of contaminated soils (10 mCi of Ra-226) or more are present and the potential exists for measurable increases in airborne radioactivity. Gross activity measurements shall be compared to the DOE Order 5480.1A, Attachment II, limit for Th-230. Continuous air particulate sampling will be required at six Ambrosia Lake locations; in the vicinities of; the New Mexico Environmental Improvement Divisions (NMEID) Meteorlogical Station located 0.25 miles north of the pile, near the southeast corner of the property perimeter fence, the Section 33 mine, the trailer park west of the pile on State Road 509, near the intersection of State Roads 509 and 53, and at the site trailer facilities near the southwest corner of the pile. Locations are identified on Figure 6 and shall be utilized as closely as practical. The site HP Manager in conjunction with the MK-F Site Manager will make arrangements with local residents and officials to locate the offsite monitors.

Sampling will commence at least 1 month prior to major onsite remedial action construction activities, will continue through major remedial action, and may be discontinued during winter shut down or completion of remedial action. Prior to any shut down, provision must be made to minimize windblown radioactive dust release. Table 1.0 lists the wind distribution frequencies for the Ambrosia Lake area.

Samples and records shall be marked with the RAC systematic sampling numbering system. At least 24 hours decay prior to counting shall be employed to exclude radon daughters when gross alpha analysis is performed. Samples exceeding applicable gross alpha activity after decay shall be sent to an offsite vendor for Th-230, Ra-226 isotopic analysis.

The RAC EDV Manager or designee shall be immediately notified when offsite or site boundary gross alpha analyses exceed applicable MPCa 10CFR20 Table 1 column II values. Air sampling and counting equipment shall be operated at an MDA (minimum detectable activity) averaging no higher that 25% of the most restrictive MPC_a (Th-230), unless specific approval to operate temporarily at a higher MDA is received from the RAC Radiological Programs Manager.

The set of air filters from each continuous monitor location shall be sent to an offsite vendor, for compositing and analysis for Th-230 and Ra-226 average air concentrations for each sampler location. Composite frequencies will be the same as those outlined in Section 6.2 of this plan.

8.2 Radon Monitoring

Mill site boundary radon monitoring is required. Real time (RGM or equivalent type) radon monitors will be placed in the vicinities of the southeast corner of the property perimeter fence, the trailer park west of the pile on State Road 509, and near the intersection of State Roads 509 and 53. In addition, Track-Etch cups (2 per location) will be placed at each of the RGM
locations and at the NMEID Meteorlogical Station, the Section 33 mine, the site trailer facility area, and at the north and west property perimeter fencelines. Locations are identified on Figure 6.0 and shall be utilized as closely as practical. Track-Etch cups will be changed out on a quarterly basis during the construction season and data made available within approximately six weeks after change-out.

Modification of remedial activities to reduce Rn levels is necessary if results near the property perimeter fence exceed an average of 3 pCi/l weekly. For areas meeting or exceeding the above criteria, an initial, downwind measurement for radon should be taken following initial exposure of large quantities of contaminated material. If no significant Rn activity above background is found, radon concentrations downwind should be occasionally measured by grab sampling. If significant Rn activity is determined to exist as a result of remedial action, more frequent monitoring will be necessary, at a frequency to be determined by the Ambrosia Lake HP Manager. Environmental air monitoring locations are shown in Figure 6.0.

8.3 Water Monitoring

8.3.1 Surface Water

If significant dewatering is required at the site or surrounding area potentially contaminated water produced as a result of remedial activities

will be analyzed for Th-230 and Ra-226 as necessary, prior to release off-site from work area. On a quarterly basis during operations, Ra-226 and Th-230 analyses shall be required on water from any natural drainages associated with the mill site. This sampling is performed by the RAC.

8.3.2 Groundwater

TAC REMEDIAL ACTION WATER SAMPLING PLAN

This plan outlines the recommended hydrologic sampling effort to be conducted at the Ambrosia Lake UMTRA processing site in New Mexico during remedial action at the site. Water samples from thirteen monitor wells will be analyzed to detect any changes in groundwater quality attributable to the tailings pile during remedial action.

Wells to be Sampled

Well ID	Location	Depth (ft MSL)	Screen (fr MSL)	Formation*
619	Cross-gradient	31	19-29	Qal
620	Cross-gradient	36	14-24	Qal
708	Down-gradient	40	30-40	TrC1?
710	Up-gradient	43	33-43	Qal-Kmc?
718	Background	60		Qal
778	Down-gradient	37	30-35	TrC1
779	Down-gradient	62	57-62	TrC2
780	Down-gradient	43	38-43	Qal-TrC2
785	Down-gradient	45	40-45	TrC2
786	Down-gradient	35	30-35	TrC1?
787	Down-gradient	80	75-80	TrC2
792	Up-gradient	20	15-20	Qal-Kmc
793	Up-gradient	28	23-28	Qal-Kmc

*Formation: Qal - Alluvium; Kmc - Weathered Mancos Shale; TrC1/TrC2 - Tres Hermanos Sandstones of the Lower Mancos Shale, -C1 and -C2 units (upper sandstones).

Frequency of Sampling

Monitor wells will be sampled quarterly (every 3 months), starting in Spring 1988, until remedial action is completed.

Constituents/Parameters to Determine

- Field parameters: pH, alkalinity, conductance, tempature, water level.

- Laboratory analyses: Cl, SO4, Na, K, Mg, Ca, B, F, CN, S, NH4, NO3+NO2, NO3, SiO2, PO4, Br, Al, Sb, As, Ba, Cd, Cr, Co, Gross Alpha, Gross Beta, Cu, Fe, Pb, Mn, Hg, Mo, Ni, Se, Ag, Sr, Sn, U, V, Zn, TDS, TOC, Pb-210, Po-210, Ra-226, Ra-228, Th-230.

REFERENCES

1. Engineering Assessment of Inactive Uranium Mill Tailings, Ambrosia Lake, New Mexico; October 1981, Ford, Bacon, and Davis, Utah Inc.

2. UMTRA Project Environmental Health and Safety Plan, August 1985, UMTRA-DOE/AL-150224.006 US DOE.

3. Title 10, Code of Federal Regulations, Part 20.

4. Draft Remedial Action Plan and Site Conceptual Design for Stabilization of the Inactive Uranium Mill Tailings site at Ambrosia Lake, New Mexico, December 1985.

5. Remedial Action Contractor Health Physics Monitoring Plan, April 1985 M-K/UMTRA-3.

6. Title 40, Code of Federal Regulations, Part 192.

7. Radiological Characterization of the Ambrosia Lake, New Mexico Uranium Mill Tailings Remedial Action Site, Bendix Field Engineering Corporation, Grand Junction, Colorado, July 1985, GJ-33.

8. US DOE 5480.1A Environmental Protection, Safety, and Health Protection Program for DOE operations.

TABLE 1.0

WIND INFORMATION FOR AMBROSIA LAKE*

Direction	Frequency (percent)	Direction	Frequency (percent)
N	2.3	SSW	2.0
NNE	0.6	SW	7.9
NE	1.3	WSW	9.1
ENE	1.3	W	19.6
E	5.2	WNW	11.3
ESE	5.2	NW	13.1
SE	5.6	NNW	4.7
SSE	2.4	Calm	6.6
S	2.0		
		Total	100.2

* Information obtained from Acomita - Grants, NM NWS Station (Ref. 4)

Table 2.0
Summary of Borehole Data

Three logging systems were used at the Ambrosia Lake, New Mexico site, two total-count tools (PRS-1 RASCAL) and a spectral tool (Compulogger). A summary of the borehole data are presented in Table 2.0. The columns headed 'Maximum Depth' indicate the maximum depth in feet at which the Ra-226 concentrations fell consistently below 6.2 pCi/g (5 pCi/g above background) and 16.2 pci/g (15 pci/g above background). A blank in these columns indicates that no contamination greater than 6.2 pCi/g or 16.2 pCi/was found in the borehole based on the radiometric logs (Ref. 1).

Uncertainties for the total-count systems were calculated at a 95% confidence level (2σ). Water was not encountered in any borehole.

An illustration of the grid coordinate system used for data in Tables 2.0 and 3.0 is shown below.

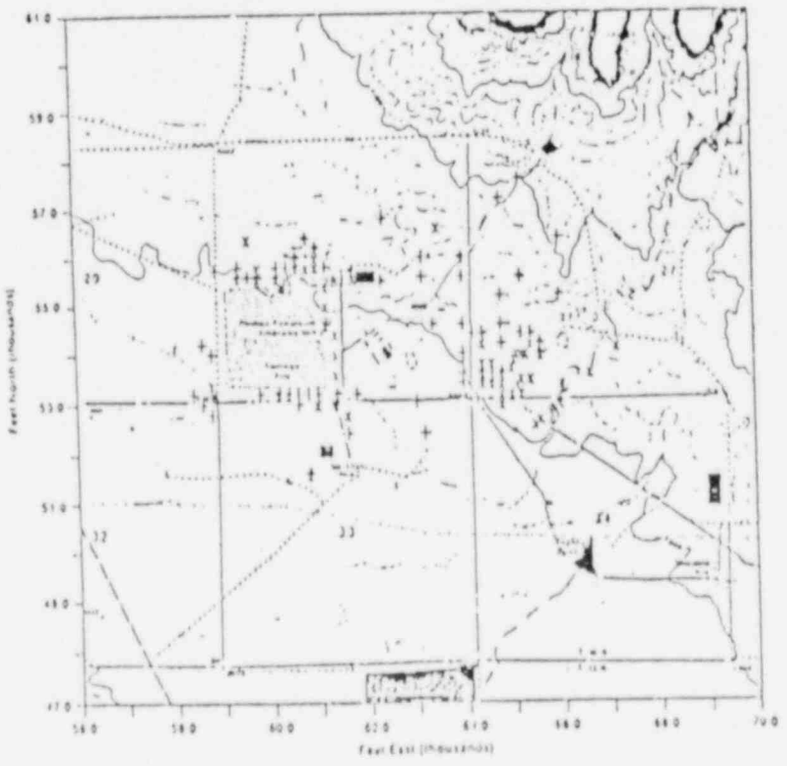


Table 2.0

Summary of Borehole Data

Borehole Number	Grid Coordinates North	Grid Coordinates East	Elevation (ft)	Log Depth (ft)	Maximum Depth (ft) >6.2 pCi/g	Maximum Depth (ft) >16.2 pCi/g
AMB-110	53135.0	57600.0	6958.2	6.5	1.5	1.5
AMB-110	53135.0	57600.0	6958.2	6.9	2.0	2.0
AMB-111	53080.0	58400.0	6961.3	6.5	1.5	1.0
AMB-112	55000.0	58800.0	6986.2	5.0	0.5	
AMB-113	54400.0	58800.0	6978.8	5.0		
AMB-114	53600.0	58800.0	6967.5	26.0	1.5	
AMB-115	53075.0	59000.0	6962.6	7.0	1.5	1.0
AMB-116	55600.0	59200.0	6995.0	5.0	1.0	0.5
AMB-117	53200.0	59200.0	6965.8	5.0		
AMB-118	53073.5	59600.0	6964.2	6.5	1.0	1.0
AMB-119	55600.0	60000.0	6998.9	5.0	2.0	1.0
AMB-120	53200.0	60000.0	6963.5	4.5	1.0	0.5
AMB-121	53075.0	60200.0	6964.0	6.5	1.5	
AMB-122	55400.0	60300.0	6991.0	9.5	2.5	1.5
AMB-123	56000.0	60800.0	7003.2	4.5	1.5	1.0
AMB-124	53077.0	60800.0	6965.4	6.5	1.5	
AMB-125	56800.0	61200.0	7023.7	5.0	1.0	
AMB-126	56400.0	61200.0	7014.4	4.8	0.5	
AMB-127	56000.0	61200.0	7010.8	4.5	2.0	1.5
AMB-128	55600.0	61200.0	7007.6	4.5	>4.5	4.0
AMB-129	55200.0	61200.0	7002.2	5.0	2.0	1.0
AMB-130	54800.0	61200.0	6985.8	5.0	2.0	1.5
AMB-131	54500.0	61200.0	6974.9	24.5	2.0	1.5
AMB-132	53200.0	61200.0	6968.6	5.0	1.5	1.0
AMB-133	55800.0	61400.0	7011.2	4.5	2.0	1.5
AMB-134	55400.0	61400.0	7011.1	4.8	1.0	0.5
AMB-135	55000.0	61400.0	6994.3	5.0	0.5	
AMB-136	54600.0	61400.0	6978.9	4.5	1.0	
AMB-137	54200.0	61400.0	6976.7	4.5	3.5	3.0
AMB-138	53800.0	61400.0	6974.8	4.8	3.0	2.0
AMB-139	53400.0	61400.0	6970.7	5.0		
AMB-140	53085.0	61400.0	6970.2	6.5	2.5	2.5
AMB-141	56800.0	61600.0	7030.5	4.8	1.0	1.0
AMB-142	56400.0	61600.0	7021.7	4.5	1.5	1.0
AMB-143	56000.0	61600.0	7015.7	5.0	2.5	2.5
AMB-144	55600.0	61600.0	7016.3	5.0	0.5	
AMB-145	55200.0	61600.0	7005.7	4.5	3.5	3.5
AMB-146	55000.0	61600.0	6992.2	4.0	0.5	
AMB-147	54800.0	61600.0	6985.3	4.5	1.0	
AMB-148	54400.0	61600.0	6979.1	6.0		
AMB-149	54200.0	61600.0	6977.7	6.5	4.0	3.0
AMB-150	54000.0	61600.0	6976.0	4.5	2.0	1.0
AMB-151	53600.0	61600.0	6974.5	4.5	0.5	
AMB-152	53200.0	61600.0	6971.4	5.0	2.5	2.0
AMB-153	56000.0	61800.0	7018.7	4.5	2.5	1.5
AMB-154	55800.0	61806.0	7033.2	19.5	13.5	13.5

Table 2.0 (continued)

Borehole Number	Grid Coordinates North	Grid Coordinates East	Elevation (ft)	Log Depth (ft)	Maximum Depth (ft) >6.2 pCi/g	Maximum Depth (ft) >16.2 pCi/g
AMB-155	55400.0	61800.0	7014.2	5.0	2.5	1.5
AMB-156	55200.0	61800.0	7003.3	4.5	1.0	1.0
AMB-157	55000.0	61800.0	6993.6	4.5	2.0	1.0
AMB-158	54800.0	61800.0	6986.8	4.0	1.0	0.5
AMB-159	54600.0	61800.0	6983.7	4.8	2.5	1.5
AMB-159	54600.0	61800.0	6983.7	4.0	2.0	1.0
AMB-160	54200.0	61800.0	6979.1	5.0		
AMB-161	53800.0	61800.0	6977.1	4.8	1.5	1.0
AMB-162	53400.0	61800.0	6975.3	4.5	1.0	
AMB-163	55700.0	61900.0	7024.6	10.0	1.5	1.0
AMB-164	56400.0	62000.0	7028.0	4.8	2.5	1.5
AMB-165	56000.0	62000.0	7023.4	4.5	3.5	2.5
AMB-166	55200.0	62000.0	7008.5	4.5	1.0	1.0
AMB-167	54800.0	62000.0	6989.6	4.5	1.5	
AMB-167	54800.0	62000.0	6989.6	4.9	1.5	
AMB-168	54573.5	62000.0	6984.6	4.9	1.5	
AMB-169	54400.0	62000.0	6983.1	4.5	1.0	
AMB-170	54000.0	62000.0	6980.8	4.5	0.5	
AMB-171	53800.0	62000.0	6979.3	5.0		
AMB-172	53600.0	62000.0	6980.1	5.0	0.5	
AMB-173	53200.0	62000.0	6974.9	4.5		
AMB-174	55696.0	62036.0	7025.7	10.2	2.5	1.5
AMB-175	56000.0	62200.0	7031.3	24.5	1.0	
AMB-176	55400.0	62200.0	7019.1	4.5		
AMB-177	55000.0	62200.0	6999.9	4.5	2	1.5
AMB-178	54500.0	62200.0	6986.7	5.0	1.0	1.0
AMB-179	54166.0	62207.5	6984.7	5.0	1.0	
AMB-181	53800.0	62200.0	6982.5	5.0	1.0	
AMB-182	53090.0	62200.0	6977.1	6.5	1.5	1.5
AMB-183	55800.0	62260.0	7036.2	19.5	2.5	2.0
AMB-184	54700.0	62300.0	6993.7	4.0	2.0	1.0
AMB-185	54500.0	62300.0	6989.7	5.0	2.5	1.5
AMB-186	53600.0	62300.0	5982.3	4.5		
AMB-187	53400.0	62300.0	6981.8	5.2	1.0	
AMB-188	53200.0	62300.0	6981.5	5.0		
AMB-189	56000.0	62400.0	7038.8	4.5		
AMB-190	55700.0	62400.0	7030.4	9.5		
AMB-191	55200.0	62400.0	7011.5	4.5		
AMB-191	55200.0	62400.0	7011.5	4.9		
AMB-192	54796.0	62375.0	6995.8	5.0	1.0	
AMB-193	54393.5	62408.0	6989.1	5.3	3.5	2.0
AMB-194	53500.0	62400.0	6983.2	5.0	2.0	1.5
AMB-195	53300.0	62400.0	6982.8	4.5		
AMB-196	54500.0	62500.0	6996.1	10.2	2.0	1.5
AMB-197	54300.0	62500.0	6989.7	4.5	2.0	2.0
AMB-198	53895.0	62500.0	6987.7	4.8	3.5	2.5
AMB-199	53800.0	62500.0	6985.3	4.5	0.5	
AMB-200	53600.0	62500.0	6985.4	4.8	1.5	1.5

Table 2.0 (continued)

Borehole Number	Grid Coordinates North	Grid Coordinates East	Elevation (ft)	Log Depth (ft)	Maximum Depth (ft) >6.2 pCi/g	Maximum Depth (ft) >16.2 pCi/g
AMB-201	53400.0	62500.0	6984.7	4.5	1.0	
AMB-202	53200.0	62500.0	6984.9	5.2		
AMB-203	55400.0	62600.0	7021.6	4.5		
AMB-203	55400.0	62600.0	7021.6	4.9		
AMB-204	55000.0	62600.0	7005.9	4.8		
AMB-205	54800.0	62600.0	6996.3	5.0	2.0	1.0
AMB-206	54600.0	62600.0	6996.7	5.2		
AMB-207	54406.0	62600.0	6997.0	4.5		
AMB-208	54200.0	62600.0	6989.7	4.0	1.0	1.0
AMB-209	54000.0	62600.0	6986.9	5.0	2.0	1.5
AMB-210	53700.0	62600.0	6986.5	5.0	2.0	1.5
AMB-211	53500.0	62600.0	6985.6	5.0	1.0	
AMB-212	53300.0	62600.0	6986.1	5.0		
AMB-213	54700.0	62700.0	6997.1	4.8	1.0	1.0
AMB-214	54300.0	62700.0	6992.4	4.3	2.0	1.5
AMB-215	54100.0	62700.0	6989.6	5.0	1.0	1.0
AMB-216	53900.0	62700.0	6988.6	5.0	1.0	1.0
AMB-217	53800.0	62700.0	6987.3	5.0		
AMB-218	53600.0	62700.0	6986.9	4.5	1.0	1.0
AMB-219	53400.0	62700.0	6986.3	5.0	1.0	
AMB-220	53200.0	62700.0	6986.8	5.0		
AMB-221	56000.0	62800.0	7045.9	4.5		
AMB-222	55600.0	62800.0	7029.9	4.5		
AMB-223	55200.0	62800.0	7015.2	4.8		
AMB-224	54991.5	62801.5	7011.2	5.1	2.0	2.0
AMB-225	54800.0	62800.0	6998.1	5.0	1.0	1.0
AMB-226	54599.0	62816.0	5997.4	4.5	3.0	2.5
AMB-227	54400.0	62800.0	6994.6	4.5	2.0	1.0
AMB-228	54200.0	62800.0	6991.2	4.5	0.5	
AMB-229	54011.0	62792.5	6990.5	5.0	1.0	1.0
AMB-230	53900.0	62800.0	6990.2	4.9	1.5	
AMB-231	53700.0	62800.0	6988.0	5.0	1.0	0.5
AMB-232	53500.0	62800.0	6986.8	5.0	1.0	
AMB-233	53300.0	62800.0	6987.7	5.0		
AMB-234	53090.0	62800.0	6985.1	6.5	1.5	
AMB-235	54700.0	62900.0	6997.4	4.5		
AMB-236	54500.0	62900.0	6996.7	5.0	2.0	1.0
AMB-237	54300.0	62900.0	6993.2	5.2	1.0	0.5
AMB-238	54100.0	62900.0	6991.9	4.5	1.0	
AMB-239	53400.0	62900.0	6988.2	5.0	0.5	
AMB-240	55400.0	63000.0	7019.5	4.5		
AMB-241	55024.5	62971.5	7012.0	9.5	5.0	4.5
AMB-242	54800.0	63000.0	7004.1	4.5	1.0	
AMB-243	54600.0	63000.0	6997.4	5.0	2.0	1.0
AMB-244	54395.0	63000.0	6995.6	4.5	2.0	2.0
AMB-245	54200.0	63000.0	6993.7	5.2	0.5	
AMB-246	54000.0	63000.0	6990.6	4.5		
AMB-247	53800.0	63000.0	6982.7	9.6	2.0	1.0

Table 2.0 (continued)

Borehole Number	Grid Coordinates North	Grid Coordinates East	Elevation (ft)	Log Depth (ft)	Maximum Depth (ft) >6.2 pCi/g	Maximum Depth (ft) >16.2 pCi/g
AMB-248	55600.0	63000.0	6990.0	5.0		
AMB-249	53200.0	63000.0	6990.4	4.5		
AMB-250	54500.0	63100.0	6997.5	4.5		
AMB-251	54300.0	63100.0	6995.1	4.5	1.0	0.5
AMB-252	55200.0	63200.0	7013.9	5.0		
AMB-253	55000.0	63193.0	7002.0	10.3	1.0	
AMB-254	54800.0	63200.0	7004.8	4.5		
AMB-255	54600.0	63200.0	7001.6	4.5		
AMB-256	54400.0	63200.0	6997.2	4.5	3.0	1.5
AMB-257	54200.0	63200.0	6997.1	4.5		
AMB-258	54000.0	63200.0	6993.8	5.2		
AMB-259	53800.0	63200.0	6993.0	5.2	1.0	
AMB-260	53600.0	63200.0	6992.3	5.0		
AMB-261	53400.0	63200.0	6992.2	4.6		
AMB-262	55400.0	63400.0	7018.9	4.5		
AMB-263	55000.0	63400.0	7011.4	9.5	1.5	
AMB-264	54800.0	63400.0	7008.1	4.5	3.0	2.0
AMB-265	54400.0	63400.0	7001.2	5.0		
AMB-266	54000.0	63400.0	6996.9	5.0		
AMB-267	53600.0	63400.0	6994.1	4.5		
AMB-268	53200.0	63400.0	6995.2	5.3		
AMB-269	55100.0	63500.0	7013.7	10.0		
AMB-270	55600.0	63600.0	7025.4	4.5		
AMB-271	55400.0	63600.0	7020.0	4.0		
AMB-272	55194.5	63394.5	7018.7	4.5		
AMB-273	54780.0	63600.0	7010.4	4.5		
AMB-274	54600.0	63600.0	7007.1	5.0		
AMB-275	54200.0	63600.0	7000.8	4.5		
AMB-276	53800.0	63600.0	6996.4	5.0		
AMB-277	53400.0	63600.0	6995.9	5.0		
AMB-278	53090.0	63600.0	6993.7	7.0	1.5	
AMB-279	54900.0	63700.0	7007.7	10.0		
AMB-280	55420.0	63800.5	7025.4	4.5		
AMB-281	55000.0	63800.0	7017.2	4.5		
AMB-282	54800.0	63800.0	7020.0	9.5		
AMB-283	54600.0	63800.0	7009.5	4.8		
AMB-284	54000.0	63800.0	7001.9	4.5		
AMB-285	53600.0	63800.0	6998.0	4.5	1.0	
AMB-286	53200.0	63800.0	6997.0	4.5		
AMB-287	54800.0	64000.0	7016.7	4.5		
AMB-288	54125.0	64000.0	7002.9	9.8	4.5	2.5
AMB-289	54085.0	64000.0	7007.4	9.5		
AMB-290	54000.0	64200.0	7006.1	4.8		
AMB-291	53800.0	64200.0	7006.7	5.0		
AMB-292	53400.0	64200.0	7002.7	5.2		
AMB-293	54100.0	64300.0	7008.2	5.1		
AMB-294	53095.0	64400.0	7001.8	6.5	1.5	1.5
AMB-295	54100.0	64465.0	7022.9	18.0	15.0	14.5

Table 2.0 (continued)

Borehole Number	Grid Coordinates North	Grid Coordinates East	Elevation (ft)	Log Depth (ft)	Maximum Depth (ft) >6.2 pCi/g	Maximum Depth (ft) >16.2 pCi/g
AMB-296	53900.0	64400.0	7006.9	4.5	2.5	2.0
AMB-297	54200.0	64600.0	7011.4	5.0		
AMB-298	54000.0	64600.0	7011.9	12.3	5.5	4.5
AMB-299	53363.0	64546.5	7002.8	9.8	5.5	5.0
AMB-300	54000.0	64800.0	7011.7	5.0	2.5	2.0
AMB-301	53793.0	64800.5	7010.8	4.8	1.5	
AMB-302	54000.0	65000.0	7015.1	4.5	>4.5	2.0
AMB-303	53800.0	65000.0	7015.1	4.5	4.5	2.0
AMB-304	53600.0	65000.0	7014.2	4.6	>4.6	1.5
AMB-305	53400.0	65000.0	7012.6	4.5	3.5	2.0
AMB-306	53070.0	65000.0	7010.0	6.0	2.5	2.0
AMB-307	53900.0	65100.0	7016.4	4.8	>4.8	2.0
AMB-308	53500.0	65100.0	7014.8	15.0	2.5	2.0
AMB-309	54200.0	65200.0	7017.3	5.2	2.0	2.0
AMB-310	53700.0	65200.0	7017.6	15.0	3.0	2.0
AMB-311	52460.0	65200.0	6999.4	10.0	5.0	5.0
AMB-312	53900.0	65300.0	7018.6	14.5	2.5	1.5
AMB-313	53500.0	65300.0	7017.5	5.0	2.5	1.5
AMB-314	54000.0	65400.0	7020.1	4.5	2.0	1.5
AMB-315	53800.0	65400.0	7019.3	5.1	2.5	1.5
AMB-316	51672.0	65729.0	6991.3	9.5	1.0	
AMB-318	51041.5	66057.5	6988.3	9.5		
AMB-319	50009.5	66428.5	6973.1	9.9	1.0	0.5
AMB-320	50166.0	66262.0	6977.3	9.8	2.0	
AMB-321	51023.5	65989.5	6994.0	9.8		
AMB-322	50720.0	67025.0	6981.9	9.8	2.0	1.0
AMB-323	56400.0	63345.0	7062.7	4.0		
AMB-324	55600.0	64800.0	7044.2	5.0		
AMB-325	53900.0	65200.0	7018.5	4.9	>4.9	3.0
AMB-326	53700.0	65100.0	7016.7	4.9	>4.9	2.0
AMB-327	53700.0	65300.0	7021.8	15.0	6.0	5.5
AMB-328	53600.0	65100.0	7015.2	4.5	2.0	1.5
AMB-329	53600.0	65200.0	7016.8	4.8	3.0	2.0
AMB-330	53600.0	65300.0	7017.8	5.0	2.5	2.0
AMB-331	53400.0	65200.0	7016.0	4.5	2.5	1.5
AMB-332	52800.0	61600.0	6992.2	5.3	5.3	2.5
AMB-334	53200.0	60400.0	6964.2	4.5	2.0	1.0
AMB-335	56400.0	60800.0	7011.9	4.5	3.0	3.0
AMB-337	53000.0	66000.0	7013.3	9.5	6.0	5.5
AMB-338	55601.5	61804.0	7032.1	19.0	11.0	

TABLE 3.0

EXPOSURE-RATE MEASUREMENT DATA

Table 2.0 presents results of the exposure-rate measurements taken with Mount Sopris SC-132 scintillometers. These data were generated by the computer program EXPOCALC, Version 2.1. Exposure rates greater than 25 μR/h (10 μR/h above background) are flagged with an asterisk (*). (Ref. 1)

Exposure-Rate Survey Data

Coordinates North	Coordinates East	Surface Readings (μR/h)	Waist-High Readings (μR/h)
47700	58000	17	17
47800	58000	18	18
47900	58000	18	18
48000	58000	19	18
48100	58000	19	19
48200	58000	19	19
48300	58000	19	20
48400	58000	18	18
48500	58000	18	18
48600	58000	20	20
48700	58000	20	20
48800	58000	20	20
48900	58000	19	19
49000	58000	21	20
49100	58000	21	20
49200	58000	20	19
49300	58000	20	20
49400	58000	22	21
49500	58000	20	20
49500	58800	18	17
49600	58000	20	20
49600	58800	18	18
49700	58000	20	20
49700	58800	19	18
49700	60800	17	17
49700	63600	17	17
49800	58000	19	20
49800	58800	18	18.
49800	60800	17	18
49800	63600	17	17
49900	58000	22	22
49900	58800	18	18
49900	60800	19	18
49900	63600	17	17
50000	58000	22	21
50000	58800	18	19
50000	60800	20	19
50000	63600	18	17
50010	66429	76 *	100 *
50100	58000	21	21
50100	58800	20	19
50100	60800	18	19
50100	63600	18	17
50166	66262	63 *	36 *
50200	58000	22	22
50200	58800	18	18
50200	60800	20	19
50200	63600	18	18
50300	58000	23	22
50300	58800	19	18
50300	60800	19	19
50300	63600	18	17
50400	58000	22	22
50400	58800	19	18
50400	60000	17	16
50400	60800	18	18

Table 3.0 (continued)

Coordinates North	Coordinates East	Surface Readings (μR/h)	Waist-High Readings (μR/h)
50400	62800	17	18
50400	63600	18	18
50500	58000	22	22
50500	58800	20	20
50500	60000	18	17
50500	60800	18	18
50500	62800	17	18
50500	63600	18	17
50600	58000	22	22
50600	58800	20	20
50600	60000	18	18
50600	60800	20	19
50600	62800	18	18
50600	63600	18	18
50700	58000	23	23
50700	58800	21	20
50700	60000	19	18
50700	60800	19	19
50700	62800	20	20
50700	63600	18	18
50720	67025	234 •	198 •
50800	58000	22	22
50800	58800	23	23
50800	60000	18	18
50800	60800	20	20
50800	62800	18	18
50800	63600	18	17
50900	58000	22	22
50900	58800	20	20
50900	60000	21	20
50900	60800	21	21
50900	62800	18	18
50900	63600	18	17
51000	58000	23	23
51000	58800	20	20
51000	60000	20	20
51000	60800	22	21
51000	62800	20	20
51000	62800	20	20
51000	63600	18	18
51023	65989	27 •	29 •
51024	65990	30 •	30 •
51042	66058	26 •	27 •
51100	58000	22	22
51100	58800	21	20
51100	60000	20	20
51100	60800	23	22
51100	62800	19	19
51100	62800	19	20
51100	63600	18	18
51200	58000	21	22
51200	58800	20	19
51200	60000	20	20
51200	60800	25	25 •
51200	62800	20	19
51200	62800	20	20
51200	63600	20	18
51300	58000	22	22
51300	58800	21	20
51300	60000	22	21
51300	60800	30 •	32 •
51300	62800	20	20
51300	62800	20	20
51300	63600	20	19
51400	58000	23	23
51400	58800	23	22
51400	60000	23	22
51400	60800	55 •	51 •
51400	62800	21	20
51400	62800	20	21
51400	63600	20	19
51500	58000	23	23
51500	58800	24	24
51500	60000	20	21
51500	60800	107 •	95 •
51500	62800	20	20
51500	62800	20	20
51500	63600	20	20
51600	58000	43 •	42 •
51600	58400	27 •	24
51600	58800	34 •	38 •
51600	59200	21	21
51600	60000	24	25
51600	60000	26 •	25 •
51600	60800	120 •	107 •
51600	60800	110 •	92 •
51600	62800	21	21
51600	62800	21	21
51600	63600	20	20
51672	65729	35 •	33 •
51700	58000	22	22
51700	58800	21	21
51700	60000	23	23
51700	60800	83 •	71 •
51700	62800	24	23
51700	62800	24	23

Table 3.0 (continued)

Coordinates North	Coordinates East	Surface Readings (μR/h)	Waist-High Readings (μR/h)
51700	63600	24	22
51800	58000	22	22
51800	58800	21	20
51800	60000	27 •	27 •
51800	60800	67 •	67 •
51800	62800	22	23
51800	62800	22	22
51800	63600	21	20
51900	58000	23	22
51900	58800	22	21
51900	60000	25	25
51900	60800	53 •	52 •
51900	62800	25 •	23
51900	62800	26 •	24
51900	63600	20	20
52000	58000	23	22
52000	58800	22	21
52000	58800	21	20
52000	58800	22	21
52000	59600	27 •	31 •
52000	60000	25 •	25
52000	60400	28 •	28 •
52000	60800	48 •	44 •
52000	62800	24	22
52000	62800	23	22
52000	62800	21	22
52000	63600	20	20
52000	63600	20	20
52100	60800	48 •	47 •
52100	62800	23	22
52100	62800	23	24
52100	63600	19	20
52200	60800	33 •	33 •
52200	62800	23	23
52200	62800	23	24
52200	63600	20	20
52300	60800	35 •	34 •
52300	62800	26 •	24
52300	62800	27 •	25 •
52300	63600	22	20
52400	57600	23	24
52400	58400	24	24
52400	59200	25	24
52400	60000	29 •	30 •
52400	60800	37 •	38 •
52400	60800	33 •	35 •
52400	61600	85 •	85 •
52400	62400	33 •	33 •
52400	62800	23	23
52400	62800	23	23
52400	63200	24	23
52400	63600	24	21
52400	64000	19	[illegible]
52460	65200	84 •	67 •
52500	63600	20	21
52600	63600	22	23
52700	63600	24	23
52800	58000	26 •	26 •
52800	58400	33 •	31 •
52800	58800	35 •	35 •
52800	59200	35 •	37 •
52800	59600	48 •	51 •
52800	60000	52 •	52 •
52800	60400	55 •	56 •
52800	60800	45 •	48 •
52800	61200	45 •	49 •
52800	61600	116 •	107 •
52800	62000	67 •	60 •
52800	62400	37 •	35 •
52800	62800	31 •	30 •
52800	63200	43 •	41 •
52800	63600	26 •	26 •
52800	63600	25 •	25
52800	64000	25	25 •
53000	58600	52 •	48 •
53000	59000	55 •	57 •
53000	59400	63 •	64 •
53000	59800	83 •	80 •
53000	60200	79 •	82 •
53000	60600	74 •	79 •
53000	61000	79 •	86 •
53000	61400	113 •	107 •
53000	62000	51 •	55 •
53000	62600	41 •	40 •
53000	63000	33 •	33 •
53000	63400	50 •	48 •
53000	63800	30 •	30 •
53000	64400	42 •	39 •
53000	64800	184 •	154 •
53000	66000	27 •	26 •
53070	65000	109 •	110 •
53074	59600	116 •	98 •
53075	59000	90 •	93 •
53075	60200	109 •	115 •
53077	60800	99 •	98 •
53080	58400	77 •	66 •

Table 3.C (continued)

Coordinates North	Coordinates East	Surface Readings (μR/h)	Waist-High Readings (μR/h)	Coordinates North	Coordinates East	Surface Readings (μR/h)	Waist-High Readings (μR/h)
53085	61400	116 •	113 •	53400	62900	74 •	63 •
53090	62200	80 •	79 •	53400	63200	34 •	35 •
53090	62800	67 •	66 •	53400	63600	36 •	33 •
53090	63600	57 •	54 •	53400	64000	38 •	36 •
53095	64400	87 •	84 •	53400	64200	48 •	50 •
53135	57600	79 •	78 •	53400	64400	232 •	229 •
53200	57600	37 •	35 •	53400	64600	157 •	113 •
53200	58400	44 •	44 •	53400	64800	166 •	138 •
53200	58600	52 •	53 •	53400	65000	181 •	178 •
53200	58800	74 •	74 •	53400	65100	174 •	175 •
53200	59000	69 •	71 •	53400	65200	210 •	192 •
53200	59200	99 •	99 •	53400	65600	464 •	461 •
53200	59400	116 •	113 •	53500	62400	166 •	157 •
53200	59600	101 •	104 •	53500	62600	86 •	101 •
53200	59800	148 •	142 •	53500	62800	116 •	116 •
53200	60000	166 •	163 •	53500	65100	163 •	163 •
53200	60200	157 •	151 •	53500	65200	192 •	175 •
53200	60400	154 •	151 •	53500	65300	169 •	154 •
53200	60600	110 •	113 •	53500	65400	136 •	136 •
53200	60800	136 •	133 •	53600	58000	29 •	30 •
53200	61000	116 •	119 •	53600	58400	39 •	39 •
53200	61200	136 •	116 •	53600	58800	154 •	142 •
53200	61400	86 •	86 •	53600	61400	260 •	246 •
53200	61600	115 •	99 •	53600	61600	116 •	122 •
53200	61800	69 •	71 •	53600	62000	80 •	85 •
53200	62000	50 •	52 •	53600	62300	48 •	51 •
53200	62300	45 •	44 •	53600	62500	57 •	60 •
53200	62500	43 •	42 •	53600	62700	69 •	68 •
53200	62700	43 •	42 •	53600	63000	43 •	39 •
53200	63000	47 •	46 •	53600	63200	37 •	38 •
53200	63400	35 •	33 •	53600	63400	35 •	35 •
53200	63800	44 •	41 •	53600	63800	51 •	49 •
53200	64800	188 •	187 •	53600	64000	33 •	33 •
53200	65000	188 •	187 •	53600	64400	86 •	93 •
53200	65200	94 •	98 •	53600	64600	105 •	103 •
53200	65400	55 •	51 •	53600	64800	126 •	122 •
53295	64600	125 •	126 •	53600	65000	231 •	222 •
53300	62400	57 •	56 •	53600	65100	145 •	145 •
53300	62600	51 •	51 •	53600	65200	216 •	204 •
53300	62800	48 •	39 •	53600	65300	187 •	163 •
53363	64547	90 •	81 •	53700	62600	110 •	110 •
53400	58600	54 •	51 •	53700	62800	104 •	86 •
53400	58800	212 •	170 •	53700	65100	222 •	207 •
53400	61400	126 •	116 •	53700	65200	251 •	216 •
53400	61800	142 •	84 •	53700	65300	213 •	169 •
53400	62300	85 •	81 •	53720	65000	216 •	216 •
53400	62500	128 •	133 •	53793	64801	119 •	125 •
53400	62700	117 •	118 •	53800	58600	47 •	49 •

Table 3.0 (continued)

Coordinates North	Coordinates East	Surface Readings (μR/h)	Waist-High Readings (μR/h)
53800	58800	116 •	123 •
53800	61400	284 •	275 •
53800	61800	169 •	169 •
53800	62000	160 •	163 •
53800	62200	81 •	72 •
53800	62500	74 •	73 •
53800	62700	64 •	67 •
53800	63000	57 •	56 •
53800	63200	51 •	47 •
53800	63600	41 •	38 •
53800	64000	34 •	35 •
53800	64200	51 •	63 •
53800	64400	86 •	80 •
53800	64600	275 •	246 •
53800	65000	222 •	204 •
53800	65400	154 •	151 •
53895	62500	181 •	163 •
53900	62700	74 •	74 •
53900	62800	67 •	67 •
53900	64400	92 •	113 •
53900	65050	207 •	192 •
53900	65100	195 •	213 •
53900	65200	222 •	234 •
53900	65300	213 •	157 •
54000	57600	23	23
54000	58400	40 •	36 •
54000	58800	167 •	163 •
54000	61400	299 •	293 •
54000	61600	216 •	201 •
54000	62000	99 •	98 •
54000	62600	201 •	189 •
54000	63000	44 •	47 •
54000	63200	48 •	48 •
54000	63400	41 •	43 •
54000	63800	30 •	31 •
54000	64000	35 •	37 •
54000	64200	47 •	51 •
54000	64400	70 •	69 •
54000	64600	130 •	133 •
54000	64800	160 •	142 •
54000	65000	222 •	222 •
54000	65400	175 •	172 •
54000	65600	86 •	84 •
54000	65100	216 •	207 •
54000	65200	187 •	184 •
54000	65300	198 •	175 •
54011	62793	189 •	163 •
54019	62200	63 •	63 •
54085	64000	54 •	53 •
54100	62700	128 •	116 •
54100	62900	222 •	240 •
54100	64300	30 •	30 •
54100	64465	72 •	58 •
54125	64000	54 •	52 •
54166	62208	81 •	80 •
54200	58600	69 •	73 •
54200	58800	119 •	117 •
54200	61400	302 •	275 •
54200	61600	240 •	201 •
54200	61800	92 •	85 •
54200	62600	163 •	151 •
54200	62800	117 •	122 •
54200	63000	136 •	169 •
54200	63200	48 •	48 •
54200	63600	40 •	38 •
54200	64200	32 •	33 •
54200	64400	86 •	79 •
54200	64600	40 •	43 •
54200	64800	58 •	53 •
54200	65000	56 •	58 •
54200	65200	74 •	74 •
54200	65400	92 •	91 •
54200	65600	71 •	69 •
54300	62500	307 •	260 •
54300	62700	163 •	178 •
54300	62900	133 •	169 •
54300	63100	151 •	163 •
54394	62408	237 •	178 •
54395	63000	411 •	372 •
54400	58000	26 •	25 •
54400	58400	41 •	41 •
54400	58800	142 •	133 •
54400	61400	275 •	260 •
54400	61600	95 •	111 •
54400	62000	142 •	104 •
54400	62800	399 •	369 •
54400	63200	136 •	133 •
54400	63400	74 •	51 •
54400	63600	39 •	38 •
54400	64000	30 •	30 •
54400	64200	28 •	28 •
54400	64400	30 •	30 •
54400	65200	45 •	51 •
54400	65400	40 •	43 •
54406	62600	74 •	86 •
54500	61200	334 •	293 •

Table 3.0 (continued)

Coordinates North	Coordinates East	Surface Readings (μR/h)	Waist-High Readings (μR/h)
54500	62.00	110 •	139 •
54500	62300	184 •	175 •
54500	62500	228 •	175 •
54500	62900	290 •	275 •
54500	63100	74 •	94 •
54574	62000	98 •	104 •
54599	62816	198 •	251 •
54600	58600	73 •	69 •
54600	58800	110 •	114 •
54600	61200	275 •	263 •
54600	61400	148 •	181 •
54600	61800	151 •	151 •
54600	62600	246 •	231 •
54600	62800	172 •	142 •
54600	63000	169 •	169 •
54600	63200	72 •	80 •
54600	63400	48 •	50 •
54600	63600	51 •	57 •
54600	63800	32 •	32 •
54600	64000	30 •	29 •
54600	64800	29 •	28 •
54700	62300	130 •	117 •
54700	62700	181 •	175 •
54700	62900	152 •	151 •
54780	63600	33 •	31 •
54796	62375	93 •	85 •
54800	57600	20	21
54800	58400	39 •	36 •
54800	58800	117 •	115 •
54800	61200	275 •	240 •
54800	61600	157 •	157 •
54800	61800	231 •	228 •
54800	62000	151 •	157 •
54800	62600	222 •	216 •
54800	62800	142 •	126 •
54800	63000	119 •	120 •
54800	63200	56 •	58 •
54800	63400	272 •	269 •
54800	63800	25	26 •
54800	64000	30 •	29 •
54800	64400	24	23
54800	65600	32 •	31 •
54900	63700	33 •	26 •
54992	62802	107 •	104 •
55000	58600	64 •	63 •
55000	58800	113 •	116 •
55000	61200	281 •	263 •
55000	61400	128 •	157 •
55000	61600	163 •	178 •
55000	61800	263 •	275 •
55000	62200	86 •	98 •
55000	62600	57 •	61 •
55000	63193	46 •	45 •
55000	63400	69 •	69 •
55000	63800	24	25
55025	62972	83 •	70 •
55100	63500	27 •	28 •
55195	63595	28 •	28 •
55200	58000	28 •	27 •
55200	58400	39 •	39 •
55200	58800	98 •	97 •
55200	61200	269 •	275 •
55200	61600	110 •	148 •
55200	61800	305 •	251 •
55200	62000	219 •	198 •
55200	62400	73 •	76 •
55200	62800	49 •	46 •
55200	63200	40 •	37 •
55200	64000	23	23
55200	64400	27 •	27 •
55200	64800	24	25
55200	66000	27 •	27 •
55400	58600	24	24
55400	58800	69 •	64 •
55400	60300	369 •	364 •
55400	61200	281 •	275 •
55400	61400	122 •	163 •
55400	61800	234 •	201 •
55400	62200	98 •	98 •
55400	62600	46 •	51 •
55400	63000	37 •	38 •
55400	63400	34 •	33 •
55400	63600	34 •	33 •
55420	63801	26 •	25 •
55515	62342	133 •	116 •
55571	61778	243 •	234 •
55600	57600	21	20
55600	58400	33 •	31 •
55600	58600	45 •	43 •
55600	58800	57 •	56 •
55600	59000	98 •	101 •
55600	59200	172 •	187 •
55600	59400	98 •	92 •
55600	59600	225 •	225 •
55600	59800	293	275 •
55600	60000	284 •	257 •

Table 3.0 (continued)

Coordinates North	Coordinates East	Surface Readings (μR/h)	Waist-High Readings (μR/h)
55600	60200	251 •	228 •
55600	61200	281 •	254 •
55600	61600	142 •	154 •
55600	62800	37 •	40 •
55600	63200	29 •	28 •
55600	63600	25	25 •
55600	64000	26 •	25
55600	64400	22	22
55600	64800	23	21
55600	65200	24	23
55602	61804	104 •	133 •
55696	62036	275 •	246 •
55700	61900	192 •	207 •
55700	62400	87 •	97 •
55723	61764	169 •	166 •
55800	58600	34 •	34 •
55800	58800	45 •	44 •
55800	59000	58 •	55 •
55800	59400	94 •	87 •
55800	59800	151 •	145 •
55800	60200	157 •	142 •
55800	60400	172 •	157 •
55800	60600	166 •	169 •
55800	60800	246 •	201 •
55800	61000	266 •	246 •
55800	61200	107 •	122 •
55800	61400	172 •	175 •
55800	61806	89 •	98 •
55800	62260	257 •	228 •
56000	58000	20	20
56000	58000	21	20
56000	58400	22	22
56000	58800	34 •	34 •
56000	59200	54 •	50 •
56000	59600	59 •	58 •
56000	60000	78 •	87 •
56000	60400	63 •	74 •
56000	60600	139 •	128 •
56000	60800	139 •	136 •
56000	61000	142 •	128 •
56000	61200	148 •	145 •
56000	61600	437 •	375 •
56000	61800	204 •	187 •
56000	62000	157 •	154 •
56000	62200	128 •	116 •
56000	62400	63 •	69 •
56000	62800	51 •	45 •
56000	63200	41 •	38 •
56000	63600	23	24
56000	64000	22	22
56000	64400	21	22
56000	65600	21	21
56100	58000	20	20
56200	58000	19	19
56200	59000	28 •	30 •
56200	59400	48 •	43 •
56200	59800	58 •	56 •
56200	60200	76 •	66 •
56200	60600	92 •	80 •
56200	61000	92 •	89 •
56300	58000	20	19
56400	58000	18	18
56400	58400	20	20
56400	58400	18	20
56400	59200	30 •	31 •
56400	59600	44 •	42 •
56400	60000	43 •	43 •
56400	60400	39 •	40 •
56400	60800	72 •	77 •
56400	61000	69 •	69 •
56400	61200	73 •	74 •
56400	61600	187 •	157 •
56400	62000	234 •	216 •
56400	62400	55 •	53 •
56400	62800	43 •	40 •
56400	63200	28 •	28 •
56400	63345	23	24
56400	63600	28 •	26 •
56400	64000	22	21
56400	64800	20	20
56400	64800	20	21
56400	66000	29 •	28 •
56500	58000	18	18
56500	58400	20	20
56500	64800	20	21
56600	58000	18	18
56600	58400	19	19
56600	64800	21	21
56700	58400	18	18
56700	64000	21	23
56700	64800	21	21
56800	58400	16	16
56800	58800	21	21
56800	59200	27 •	25
56800	59600	27 •	27 •
56800	60000	26 •	26 •

Table 3.0 (continued)

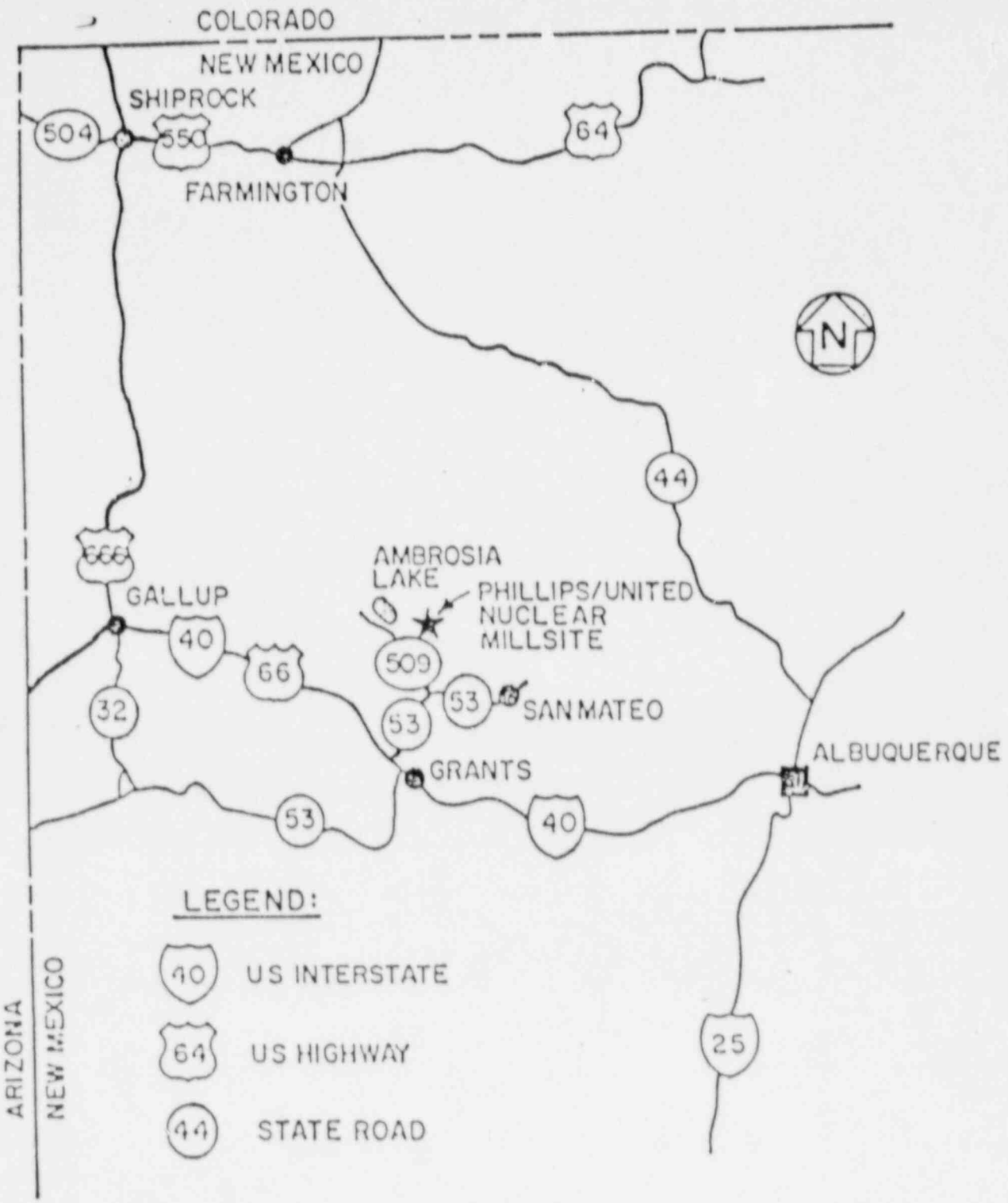
Coordinates North	Coordinates East	Surface Readings (μR/h)	Waist-High Readings (μR/h)
56800	60400	34 •	33 •
56800	60800	42 •	44 •
56800	61200	48 •	54 •
56800	61600	54 •	63 •
56800	61600	57 •	69 •
56800	62000	56 •	53 •
56800	62400	92 •	84 •
56800	62400	91 •	74 •
56800	62800	37 •	36 •
56800	63200	23	24
56800	63200	25	25 •
56800	63600	24	24
56800	64000	22	22
56800	64400	20	20
56800	64800	22	21
56800	65200	19	19
56900	58400	18	17
56900	59200	25 •	22
56900	61600	139 •	116 •
56900	62400	45 •	48 •
56900	63200	30 •	28 •
56900	64000	24	22
56900	64800	21	22
57000	58400	17	17
57000	59200	20	22
57000	61600	133 •	110 •
57000	62400	53 •	48 •
57000	63200	30 •	27 •
57000	64000	24	23
57000	64800	23	22
57100	59200	22	21
57100	61600	33 •	37 •
57100	62400	51 •	48 •
57100	63200	27 •	27 •
57100	64000	21	22
57100	64800	19	18
57200	59200	20	20
57200	59200	21	20
57200	60000	28 •	27 •
57200	60000	27 •	27 •
57200	60800	30 •	29 •
57200	60800	37 •	32 •
57200	61600	38 •	35 •
57200	61600	40 •	39 •
57200	62400	33 •	35 •
57200	62400	31 •	38 •
57200	63200	27 •	26 •
57200	63200	27 •	25 •
57200	64000	21	20
57200	64000	21	21
57200	64800	20	19
57200	64800	21	22
57200	65600	22	21
57300	59200	22	21
57300	60000	25 •	25 •
57300	60800	30 •	30 •
57300	61600	39 •	38 •
57300	62400	39 •	38 •
57300	63200	28 •	27 •
57300	64000	20	22
57300	64800	21	20
57400	59200	20	20
57400	60000	26 •	25 •
57400	60800	30 •	28 •
57400	61600	25	29 •
57400	62400	31 •	33 •
57400	63200	26 •	25
57400	64000	22	22
57400	64800	21	22
57500	59200	20	19
57500	60000	24	24
57500	60800	28 •	27 •
57500	61600	30 •	29 •
57500	62400	33 •	30 •
57500	63200	23	24
57500	64000	22	21
57500	64800	20	19
57600	59200	20	19
57600	59600	20	20
57600	60000	25	25
57600	60400	22	22
57600	60800	26 •	25 •
57600	61200	21	21
57600	61600	24	24
57600	62000	27 •	26 •
57600	62400	28 •	30 •
57600	62800	25 •	24
57600	63200	25 •	24
57600	63600	21	20
57600	64000	20	20
57600	64800	19	19
57600	65200	30 •	28 •
57700	59200	19	19
57700	60000	24	24
57700	60800	24	25
57700	61600	22	22

Table 3.0 (continued)

Coordinates North	Coordinates East	Surface Readings (μR/h)	Waist-High Readings (μR/h)
57700	62400	25	25
57700	63200	22	23
57700	64000	20	20
57700	64800	19	19
57800	59200	19	19
57800	60000	24	23
57800	60800	25	24
57800	61600	18	18
57800	62400	23	24
57800	63200	25	24
57800	64000	21	20
57800	64800	20	20
57900	59200	18	18
57900	60000	20	21
57900	60800	24	23
57900	61600	22	21
57900	62400	21	21
57900	63200	24	24
57900	64000	23	21
57900	64800	19	19
58000	59200	19	19
58000	60000	20	20
58000	60000	21	21
58000	60800	20	20
58000	60800	21	23
58000	61600	22	21
58000	61600	23	24
58000	62400	20	19
58000	62400	21	21
58000	63200	23	22
58000	63200	24	21
58000	64000	19	18
58000	64800	20	20
58100	59200	20	20
58100	60000	21	21
58100	60800	22	22
58100	61600	21	21
58100	62400	22	22
58100	63200	20	21
58100	64000	19	19
58100	64800	20	19
58200	59200	19	20
58200	60000	22	22
58200	60800	23	21
58200	61600	23	22
58200	62400	20	21
58200	63200	19	19
58200	64000	19	19
58200	64800	19	19
58300	59200	19	19
58300	60000	20	20
58300	60800	21	21
58300	61600	21	21
58300	62400	21	21
58300	63200	23	22
58300	64000	19	18
58300	64800	17	17
58400	59200	19	19
58400	60000	20	20
58400	60800	19	20
58400	61600	19	19
58400	62400	20	20
58400	63200	22	22
58400	64000	19	19
58400	64800	18	18
58500	59200	18	18
58500	60000	19	19
58500	60800	19	19
58500	61600	19	18
58500	62400	20	19
58500	63200	19	19
58500	64000	19	19
58600	59200	18	18
58600	60000	19	19
58600	60800	21	20
58600	61600	19	19
58600	62400	19	18
58600	63200	18	19
58600	64000	19	19
58700	60000	19	19
58700	60800	19	18
58700	61600	19	20
58700	62400	19	18
58700	63200	19	19
58700	64000	20	19
58800	60000	20	19
58800	60800	19	19
58800	61600	18	18
58800	62400	19	18
58800	63200	19	18
58800	64000	17	18
58900	60000	20	19
58900	60800	19	19
58900	61600	21	19
58900	62400	18	18
58900	63200	18	18

Table 3.0 (continued)

Coordinates North	Coordinates East	Surface Readings (μR/h)	Waist-High Readings (μR/h)	Coordinates North	Coordinates East	Surface Readings (μR/h)	Waist-High Readings (μR/h)
58900	64000	20	20	59400	60000	17	17
59000	60000	20	19	59400	60800	20	19
59000	60800	20	20	59400	61600	18	18
59000	61600	20	19	59400	64000	18	17
59000	62400	18	18	59500	60800	18	18
59000	63200	17	17	59500	64000	17	17
59000	64000	19	19	59600	60800	20	19
59100	60000	18	19	59700	60800	20	19
59100	60800	21	20	59800	60800	19	19
59100	61600	20	19	59900	60800	19	18
59100	63200	17	17	60000	60800	17	17
59100	64000	18	18	60100	60800	19	18
59200	60000	18	18	60200	60800	18	18
59200	60800	20	20	60300	60800	17	17
59200	61600	20	19	60400	60800	18	18
59200	64000	18	18	60500	60800	19	18
59300	60000	18	18	60600	60800	18	18
59300	60800	20	20	60700	60800	17	17
59300	61600	18	18	60800	60800	17	16
59300	64000	19	18	60900	60800	17	17



AMBROSIA LAKE

LOCATION MAP

10 0 10 20 30 40

SCALE MILES

Figure 1.0

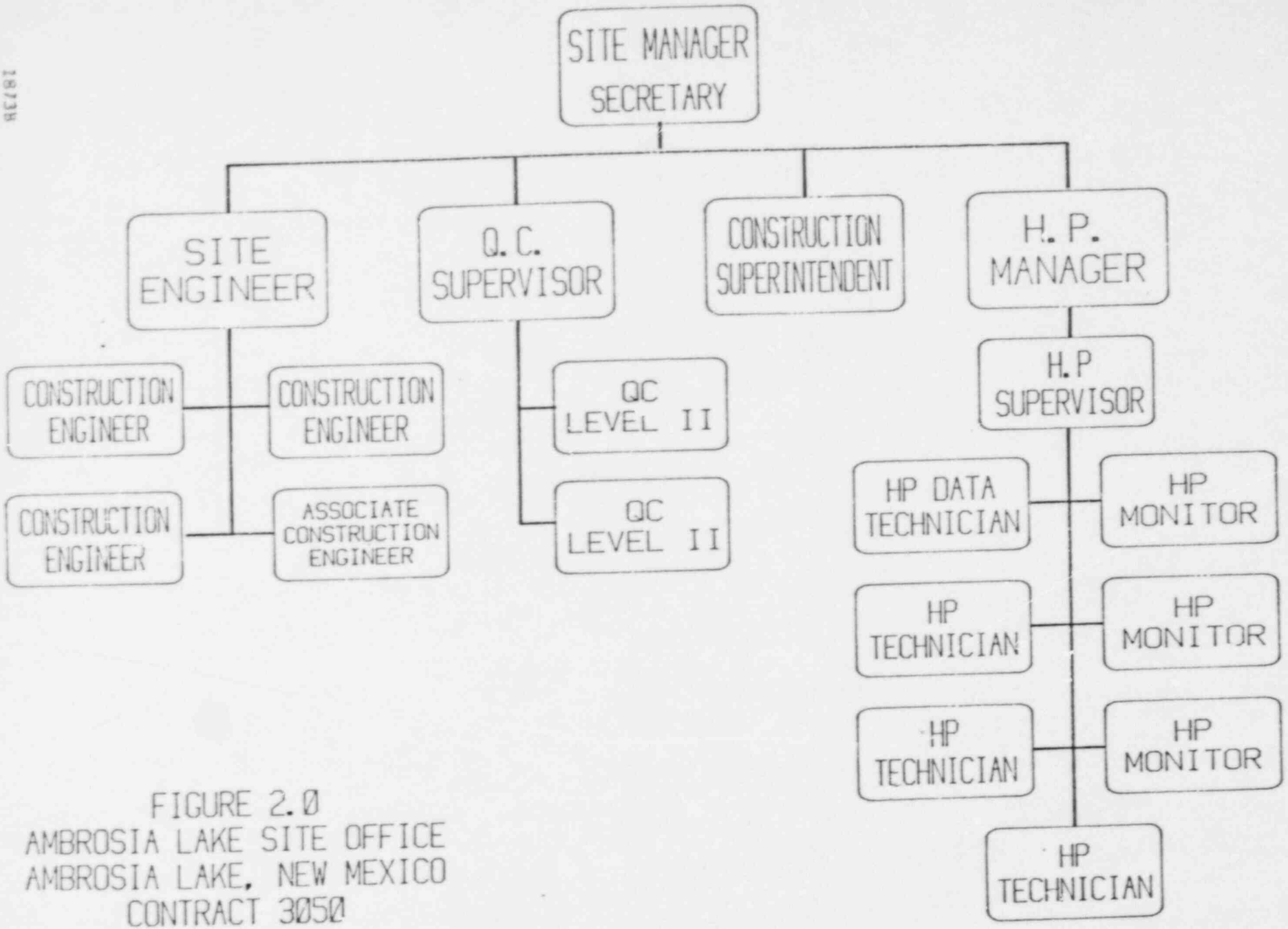


FIGURE 2.0
AMBROSIA LAKE SITE OFFICE
AMBROSIA LAKE, NEW MEXICO
CONTRACT 3050

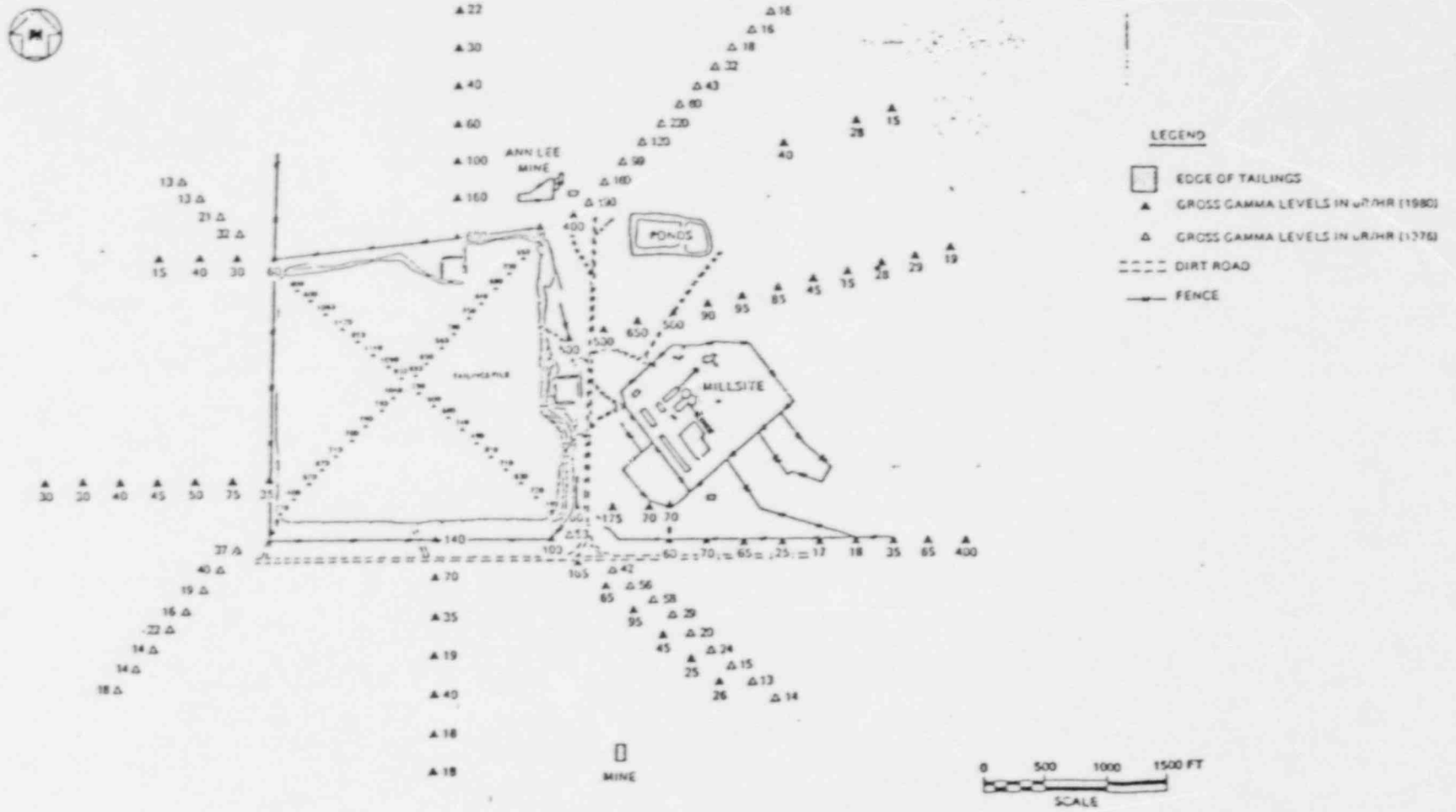


Figure 3.0 GAMMA LEVELS 3 FT ABOVE GROUND

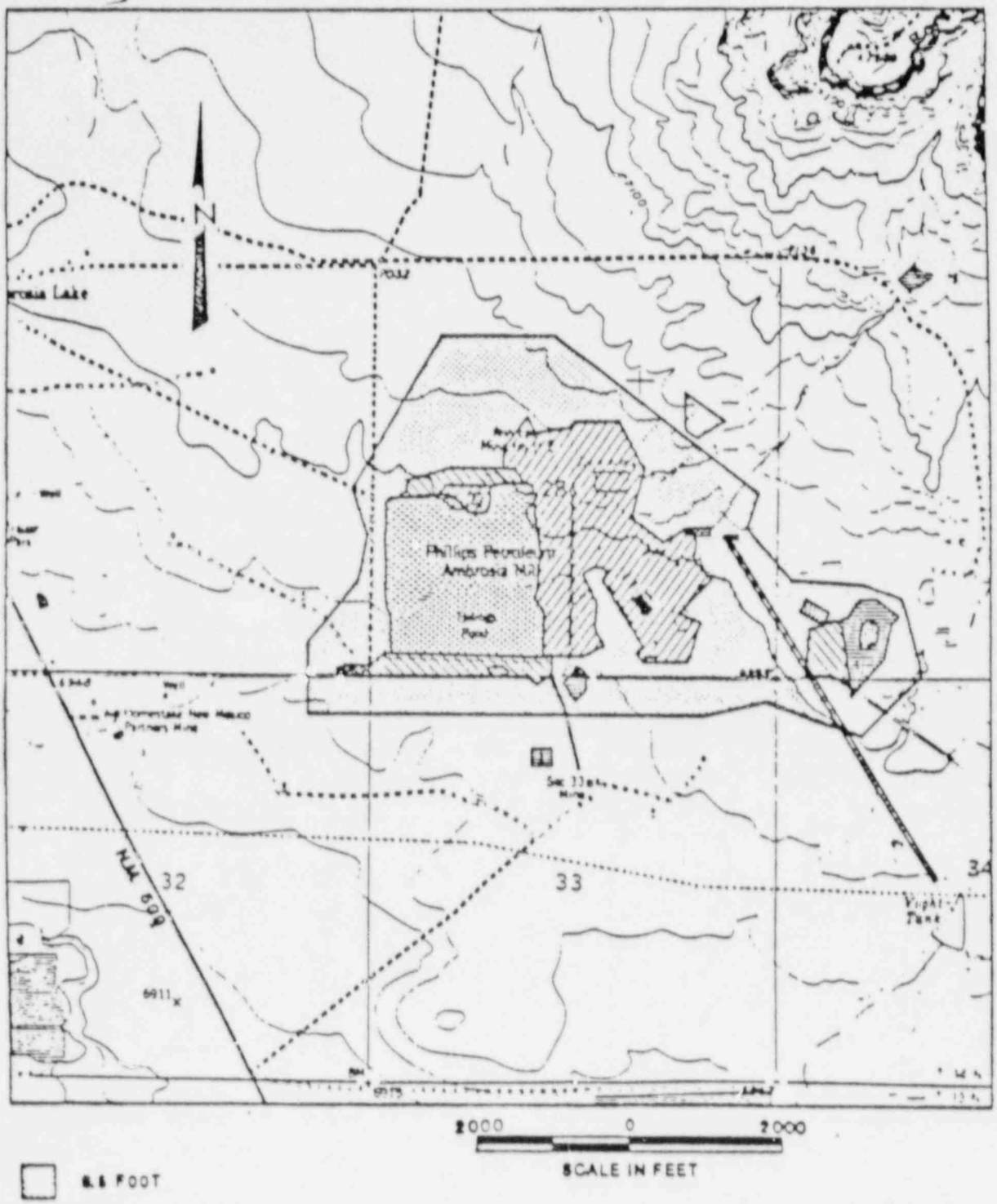


Figure 4.0

LIMITS AND DEPTHS OF CONTAMINATION (Ref. 4)

RA-226 BACKGROUND SAMPLE LOCATIONS

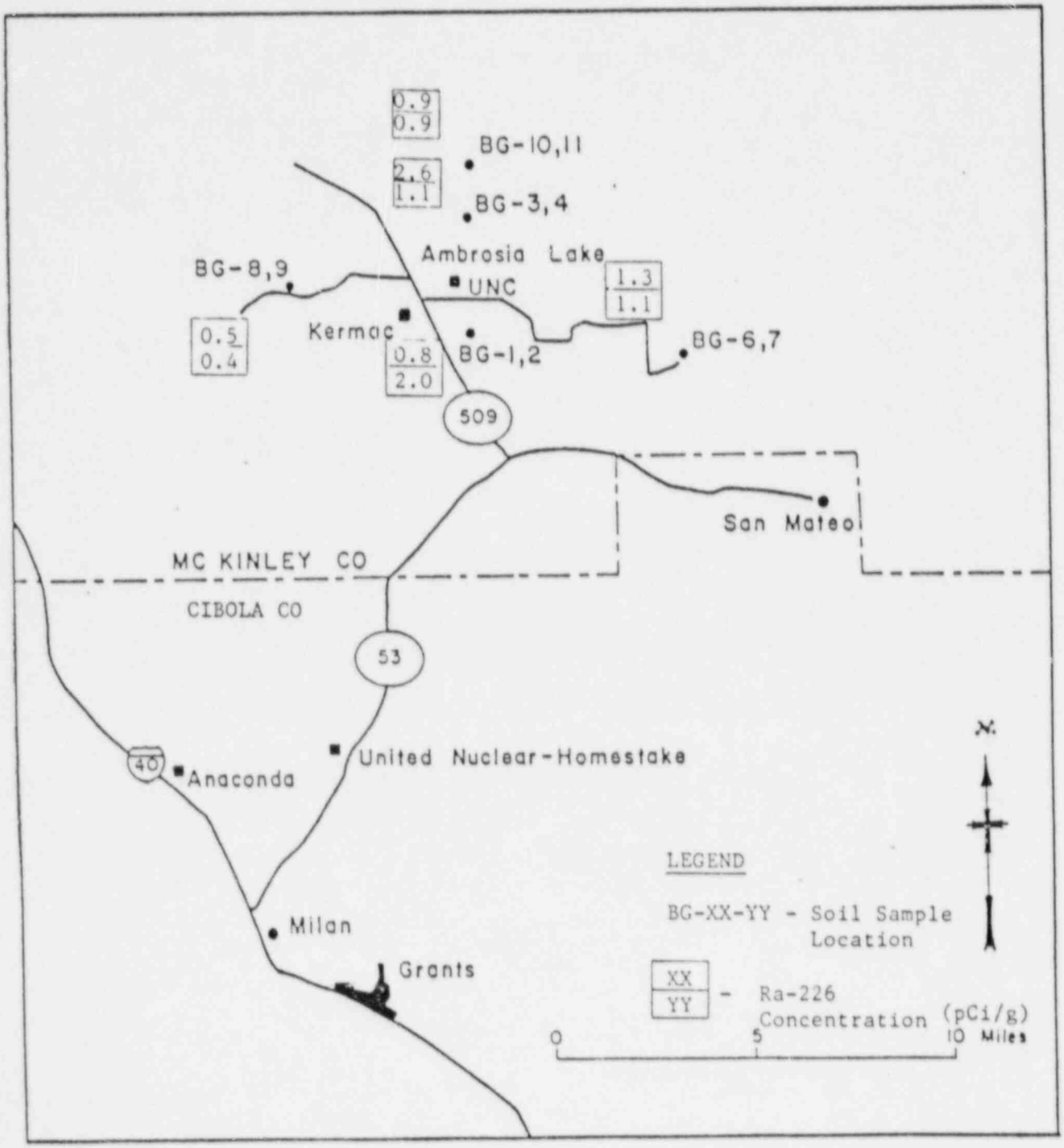
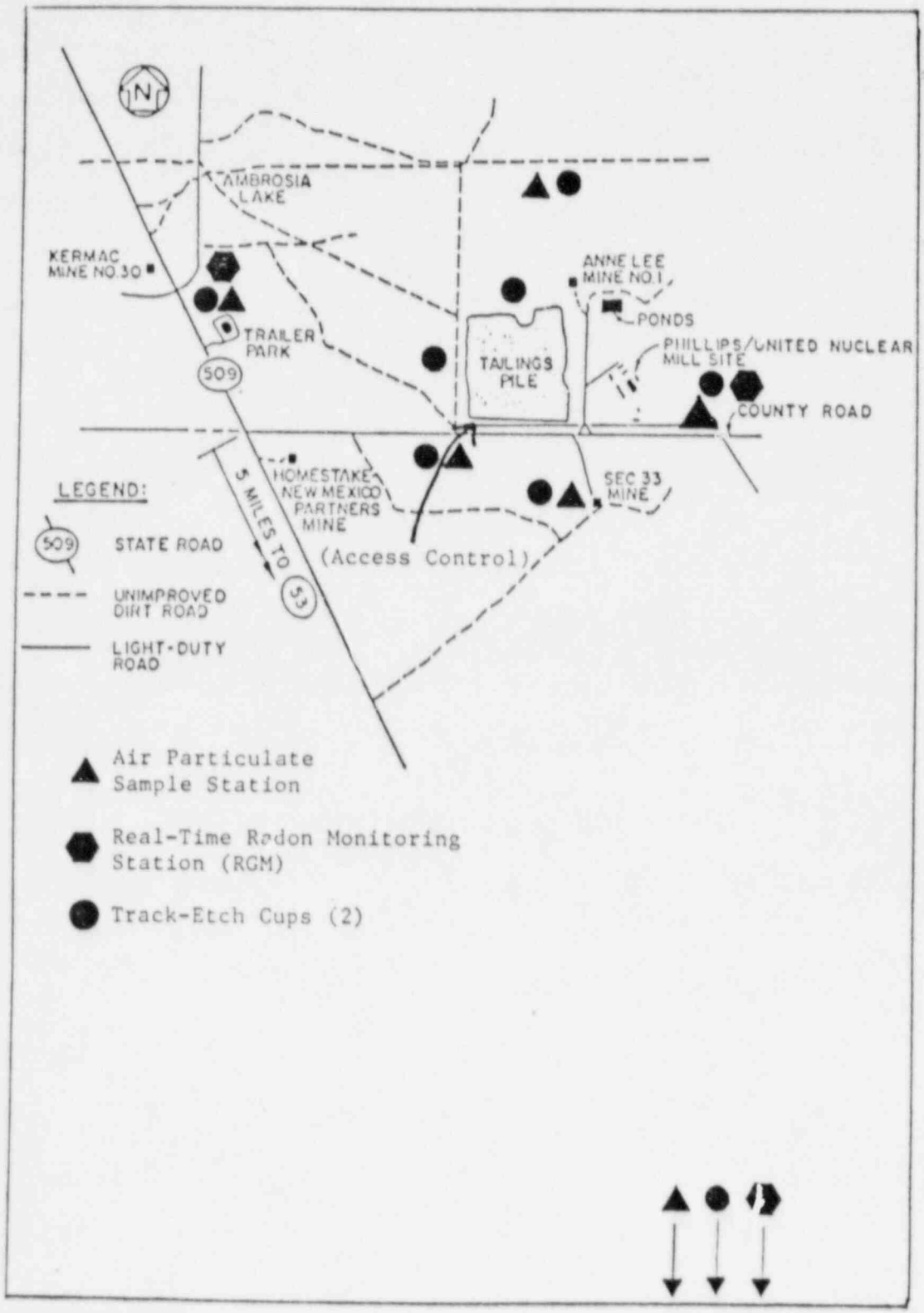


Figure 5.0

ENVIRONMENTAL AIR MONITORING LOCATIONS



(Ref. 4)

Figure 6.0

HEALTH PHYSICS MONITORING PLAN
AMBROSIA LAKE, NEW MEXICO

Name	Copy #
K. Greenwell	1
L. Patrick	2
J. Roesch	3
J. Turner	4
J. Oldham	5
B. Meyer	6
P. Cate	7
S. Law	8
J. Graff	9
T. Wathen	10
D. Sollenberger	11
E. Hawkins	12
C. Soden	13
R. Richey	14
P. Saxman	15
M. Brown	16
M. Brown	17
M. Brown	18

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