A4CM-ZR-0011
Revision A.

AREA IV RADIOLOGICAL CHARACTERIZATION SURVEY

FINAL REPORT

Volume I

Santa Susana Field Laboratory
Rocketdyne Division
Rockwell International

August 15, 1996

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August 30, 1996 In reply refer to ETEC-96DRF-0453

Mr. Michael Lopez
U.S. Department of Energy
Oakland Operations Office
1301 Clay Street, Suite 700N
Oakland, CA 94612

Subject: Area IV Radiological Characterization Survey Report

Dear Mr. Lopez,

Enclosed is document A4CM-ZR-0011, entitled "Area IV Radiological Characterization Survey ".

This report has been reviewed and approved for release by DOE and is being transmitted via this letter to members of the Santa Susana Working Group, agencies and local libraries.

A description of the survey, discussion and interpretation of results, and compilation of data in the form of tables, maps and graphs are included in Volume 1 which comprises Sections 1.0 to 6.0 and Appendices A to H. Laboratory data sheets for soil sample analyses have also been included as Volumes 2, 3 and 4.

The report describes the results of over 10,000 stationary ambient gamma radiation measurements, walk-about surface gamma radiation scans and 149 scheduled soil samples taken throughout the 290 acre Area IV portion of the SSFL site.

Quality control samples taken exhibited an excellent 90% pass rate. The California Department of Health Services took split samples and provided oversight as part of the AIP program.

Three small localized areas were identified during this study as exceeding cleanup levels and therefore requiring remediation. One area has been completely remediated, while the other two areas in the vicinity of Building 064 are currently undergoing remediation.

With the exception of the above, results indicated that, in general, most soil radioisotopes are typical of background. A small number of soil samples contained cesium-137 slightly above local background, but were consistent with the wider range observed in U.S. background and were well below risk-based regulatory cleanup standards.

In summary, the study was successful from two perspectives. It identified a few previously unidentified locations requiring remediation. Secondly, it demonstrated that Area IV does not pose a health threat to our neighbors.

Should you have any questions on the enclosed material, please do not hesitate to contact the undersigned at (818) 586-5283 or Phil Rutherford at (818) 586-6140 or email to pdruther@rdyne.rockwell.com.

Very Truly Yours,

Majelle Lee

Majelle Lee, Program Manager
Environmental Management,
Energy Technology Engineering Center

Attachments:

1. A4CM-ZR-0011, "Area IV Radiological Characterization Survey - Final Report", August 15, 1996

cc with attachments

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A	Page 2 - Revision to Acknowledgements. Pages 22, 65, 66, 67, Table 10 and Table H-1 - Revisions to soil release criteria to be consistent with EPA and NRC guidance. Page 77 - Revision to reference 25. Figure 1 - Correction of typo.	Phil Rutherford 7/12/96

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ACKNOWLEDGEMENTS

This survey project has taken almost three years to complete. The initial planning phase took well over a year and the field work took 18 months from March 1994 to September 1995. The success of the survey is due in no small part to the tireless work of a team of dedicated professionals. The following individuals contributed to this project.

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Subcontractors

TMA Richmond (Radiochemical Analysis)	Azimuth Boundary Specialists (Surveyors)

To all these people, thank you for a job well done. This report is a testament to your skill, creativity and sheer hard work. Special thanks go to Lou for preparing many of the plans, procedures, and reports, to Georgina for the success of the field work and to Farley for preparing many of the maps and graphs.

Phil Rutherford
Environmental Remediation

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1.0 INTRODUCTION

This report documents the radiological characterization study conducted from March 1994 through September 1995 in Area IV of the Santa Susana Field Laboratory (SSFL). The purpose of the study was to locate and characterize any previously unknown areas of elevated radioactivity in Area IV. The study provided a comprehensive investigation of the radiological status of regions in Area IV which had not previously been characterized. It focused on those regions of Area IV which were thought to be free of radioactive contamination (i.e., had not been identified previously as locations of activities involving radioactive materials), and thus had not previously been surveyed.

SSFL is located in eastern Ventura County, California near its border with Los Angeles County. It is in mountainous terrain separating the Simi Valley (north), San Fernando Valley (east) and Conejo Valley (southwest). It is divided into four areas on the basis of ownership and the operations conducted therein. Area IV consists of the westernmost 290 acres of SSFL.

Area IV was the location of nuclear power development activities from the 1950s until the late 1980s (Figure 1). Facilities utilizing radioactive materials comprized less than 5% of the total area of Area IV. There has been radiological contamination (generally confined to facilities) resulting from these activities. Monitoring and remediation programs have been addressing such contamination throughout the period of Area IV activities.

Further descriptions of SSFL and operations conducted in Area IV are contained in Reference 1.

2.0 SUMMARY AND CONCLUSIONS

The radiological status of Area IV was investigated by three complementary methods: ambient gamma survey, walk-about gamma survey, and soil sampling and analysis (Section 3.3). The results of each of the methods showed that the radioactivity in Area IV is predominantly from naturally occurring radioisotopes and radioactive fallout from weapons testing. Ambient radiation levels and soil concentrations of most radioisotopes were, in general, found to be statistically indistinguishable from local background levels (Section 4.2.3.2), and the result of factors not related to radiological operations performed in Area IV. There was no evidence of significant, widespread contamination of Area IV as a result of radiological operations at the Santa Susana Field Laboratory.

Statistical comparisons of tritium, strontium-90, uranium-238 (and its decay products uranium-234 and thorium-230) concluded that they were all statistically indistinguishable from local background. When analyzed by the same laboratory, thorium-232, thorium-228 and uranium-235 were also statistically indistinguishable from local background (Section 4.2.3.2).

Only cesium-137 appeared to be statistically distinguishable from local background. Area IV cesium-137 was 0.15 +/- 0.51 pCi/g compared to local background at 0.09 +/- 0.12 pCi/g. However, Area IV cesium-137 was well within the U.S. average background range of 0.8 +/- 1.0 pCi/g (Section 4.2.3.2 and Table 10).

A small number of individual soil samples did show elevated activity above local background but within the range of U.S. background and at levels well below the cleanup standard of 9.2 pCi/g (Sections 4.2.3.3. and 4.2.3.5).

Three small, localized areas were identified as requiring remediation (Section 4.2.3.4). One (which appeared to be a natural uranium mineral deposit) has been remediated and two (involving cesium-137 contamination from Rockwell activities) are in the process of being remediated.

One soil sample contained tritium, below the drinking water standard. This was an expected result as the sample had been taken to confirm that Building 010 was the likely source of soil and groundwater tritium observed in other studies (Section 4.2.3.5).

The average gamma radiation exposure rate measured in Area IV by the ambient gamma survey (1 meter above the surface) was 14.6 +/- 3.6 μR/h, with maximum and minimum values of 21.4 μR/h and 6.0 μR/h, respectively. The standard deviation of the measurements was 1.8 μR/h. The corresponding values measured at local background locations outside Area IV were 15.6 μR/h (average), 20.5 μR/h (maximum), 10.0 μR/h (minimum), and 1.8 μR/h (standard deviation). The gamma radiation distribution of Area IV was statistically indistiquishable from the local background gamma radiation distribution (Section 4.2.1.2).

The set of all ambient gamma survey measurements for Area IV is shown in Figure 2 as a cumulative probability plot. The data are fit reasonably well by a single straight line, thus indicating that they represent a single normal distribution. Even closer representations of normal distributions are provided by dividing the data into sets for the different Area IV geomorphological regions (Figures B-2 through B-7).

The walk-about gamma survey showed that throughout the survey area the gamma exposure rates were generally consistent with radiation levels from naturally occurring sources. There were 12 locations which were identified whose surface and/or 1-meter gamma radiation levels were more than 5 μR/hr above the ambient gamma survey average for the analysis region in which the measurement was made (Section 4.2.1.3). Soil samples were collected at these locations. The walk-about results are consistent with the ambient gamma survey measurements (Section 4.2.2).

A total of 149 scheduled soil samples were collected at 146 locations in Area IV, in addition to 6 soil samples collected at 6 locations at off-site background locations. All these samples were analyzed by the contracted radiochemistry laboratory. In addition 17 soil samples were collected at 5 locations and analyzed by the Rocketdyne radioanalysis laboratory.

The soil sample locations were selected to investigate specific areas surrounding facilities where radioactive materials were known to have been used; to investigate areas where potential contamination could exist (leachfields and drainage channels); to provide broad coverage of Area IV (randomly selected samples in each of the analysis regions); and to followup at locations where elevated gamma levels were measured. Water samples were collected at two locations in the SRE pond. In addition, analysis results for soil samples collected at background locations as part of the Off-site Multi-media Sampling Program (Ref. 2 and 3) were included in the background soil composition data set.

Additional soil and water samples were also collected for quality assurance evaluation. The quality assurance program achieved an excellent 90% aggregate pass rate (Section 5.0).

The survey provided comprehensive coverage of the land in Area IV. The survey did not include inside buildings, facilities in the process of being remediated, inaccessible areas (e.g. steep rocky slopes or thick brush areas), or areas previously characterized in earlier programs.

In summary, the study was successful from two perspectives. It identified several previously unidentified locations requiring remediation. Secondly it demonstrated that the balance of previously unsurveyed parts of Area IV is free of contamination that could pose a threat to our neighbors and/or any current or future users of the site.

3.0 SURVEY APPROACH

3.1 SUMMARY

Area IV radiological characterization was accomplished by a program which was based on three types of measurements. The measurement types (ambient gamma survey, the walk-about survey, and the soil sampling and analysis) were complementary. In addition, they were interrelated, in that measurement during the walk-about survey of elevated gamma activity would be followed by an ambient gamma survey measurement at the location, and ambient gamma survey readings above the specified limit would be followed by sampling the soil at the location.

Support activities consisted of definition of a grid in Area IV for location identification, identification of Area IV regions expected to have different levels of naturally occurring radioactivity (background), determination of the radiological background expected on the basis of measurements in areas outside Area IV, quality assurance activities, and evaluation of the data (statistical comparison of data sets) after it was collected and analyzed.

The scope of the Area IV radiological characterization study is described in Section 3.2. The Area IV grid and the measurement types are described in Section 3.3. Background determination, quality assurance activities, and data evaluation are described in Sections 3.4, 3.5, and 3.6, respectively.

3.2 SCOPE

The general scope of the program was to survey the entire surface of Area IV. There were, however, certain areas excluded because of inaccessibility, prior surveys or planned remediation (Ref. 1 and 4). They comprise approximately 25% of Area IV (see Figure 4) and include the following.

1. Dense vegetation. The areas of dense vegetation (principally the upper parts of the hill in the southern part of Area IV and in drainage areas), which frequently was poison oak, were inaccessible. Brush clearance was done in part of the hillside vegetation areas to provide paths through dense undergrowth to allow partial surveys.

2. Major rock outcroppings. Area IV contains many large rock outcroppings, which are neither potential sources of contamination nor amenable to safe manned access. These rock outcroppings were excluded from the survey.

3. Buildings. The interior of buildings and other structures (tanks, open-sided test stands, etc.) were not included in this program.

4. Areas characterized by other studies. Prior studies have been done to characterize areas of potential contamination and to confirm the effectiveness of D&D programs at once-contaminated facilities. These studies are described in Reference 1. Many of these facilities have been released for use without radiological restriction, as identified in Reference 1. In some other facilities, D&D programs are ongoing or planned for the future. Previous and planned studies, particularly those involving regulatory release of facilities, have not generally been repeated. A summary status of facilities previously decontaminated and surveyed is shown in Table 2.

The program included both systematic coverage of Area IV and survey of specific areas. The systematic survey provided broad coverage of previously unsurveyed portions of Area IV to detect any evidence of migration of radiological materials from active facilities into regions not suspected to be contaminated. This part of the survey included all three components of the program. Specific areas surveyed were those with the potential for radiological contamination on the basis of past activities either within the area itself or in associated areas. The areas were the surroundings of the former Sodium Disposal Facility, inactive sanitary leachfields, drainage channels, and buildings in which radioactive materials were used. Soil samples were collected at each of the specific areas and analyzed for radioisotope content. These areas were also covered by both types of gamma survey.

The 200 ft x 200 ft survey blocks covered by the ambient gamma survey and the walk-about survey are shown in Figure 3. The area covered by each is indicated by shading. In most of the survey blocks, both surveys were done, while in the central region only the walk-about survey was done. The ambient gamma survey was intended to provide gamma measurements at grid intersections to provide systematic sampling of the gamma levels for statistical analysis. In the central region this was not as useful because much of the surface was covered by buildings, and most of the remainder was paved. Buildings interfered with the regularly spaced grid measurements. Paving shielded the soil and reduced the gamma readings obtained. The walk-about survey was a more effective method to detect potential local concentrations of radioactivity. Its effectiveness was demonstrated in the detection of small areas of elevated radioactivity between ambient gamma measurement locations (Section 4.2.3.4).

The surveys in the survey blocks shown in Figure 3 did not always cover the entire block. Areas not surveyed were either building interiors or areas which were inaccessible because of dense vegetation, extensive poison oak, rock outcroppings or rugged, steep and unsafe terrain. In each block in which the ambient gamma survey was done, the coverage is shown by the matrix of exposure rates for the cell shown in Appendix B.

The locations at which soil samples were collected are shown in Figure 5. This includes sampling at the former Sodium Disposal Facility, inactive sanitary leachfields, drainage channels, buildings in which radioactive materials were used, randomly selected locations in analysis regions and at locations of elevated gamma radiation. The locations for the samples of each type are shown in Figures 5a to 5g.

3.3 METHODOLOGY

The Area IV characterization consisted of measurement of the ambient gamma exposure rate at each intersection of a 25 ft x 25 ft grid defined for Area IV (ambient gamma survey), a gamma radiation scan near the surface (walk-about gamma survey), and soil sampling at selected locations identified by their coordinates in the grid. The grid is described in Section 3.3.1. The three types of measurements are described in Sections 3.3.2 through 3.3.4.

3.3.1 Area IV Grid

The grid for field definition of measurement locations was established by a land survey which identified the locations of intersections of a 200 ft grid in Area IV, and installed markers at the intersections. The grid is shown in the figures based on the Area IV map (e.g., Figures 3 through 6). Where intersections were inaccessible, markers were placed at accessible offset locations. The markers defined 200 ft by 200 ft areas, referred to as survey blocks, which were the basic units for identification of locations and for performing gamma surveys. The survey blocks divided the surveys into manageable units for planning and performance.

The land survey and installation of the 200 ft interval markers was done by a contracted civil engineering firm, Azimuth Boundary Specialists. The coordinates of intersections on the 200 ft grid were derived from a global positioning satellite (GPS) survey based on the California State plane coordinates, Zone 6, North American datum of 1983. Each stake was identified by a letter indicating its relative north/south coordinate, and a number indicating its relative east/west coordinate. The coordinates of marker A8 in the southwest corner of Area IV was 1904800.0 ft north and 6345000.0 ft east. The coordinates of other markers can be obtained by adding or subtracting 200 ft for each letter or number change relative to marker A8.

Locations within the Area IV grid are identified by the survey block in which they reside and their position in the grid relative to the southwest corner. Survey blocks are defined by the identification of the marker in the southwest corner of the block. A location in the cell is specified as its distance from the southwest corner in the north and east directions. The coordinates in the California State plane coordinate system for any location could be determined by adding the coordinates of the southwest corner marker to the relative coordinates in the survey block.

3.3.2 Ambient Gamma Survey

The ambient gamma survey consisted of systematic measurements of gamma radiation exposure rates within the area surveyed (Figure 3). The gamma levels were sampled by measurements at the intersections of a grid with a spacing of 25 ft, based on the 200 ft grid described in Section 3.3.1. The measurements were made with pairs of NaI gamma radiation detectors. The detectors were mounted on a fixture to provide consistent positioning 1 m above the soil surface at each location. They were connected to scaler/ratemeters with which their counting rates were determined during timed intervals of 1 minute.

The 25 ft grid intersections were determined by laying 200 ft measuring tapes on the east and west boundaries of the survey block. A third 200 ft tape was laid between these tapes at the south boundary. The gamma detectors were positioned and measurements made at intervals of 25 ft along this tape (nine locations, including both boundaries). The tape was then moved north to position its ends at the 25-ft marks of the east/west boundary tapes. Measurements at 25-ft intervals were repeated as on the south boundary. This procedure was repeated as the third tape was moved north in 25-ft increments. This provided nine sets of nine measurements along the tape (including all boundaries).

The procedure above provided a total of 81 measurements in a survey block. This number of actual measurements in a survey block was sometimes reduced for two reasons. Locations which were inaccessible were not measured, potentially reducing the number of possible measurements in the survey block. These reductions are apparent in the results for each survey block shown in Appendix B. The other reduction was the result of generally not repeating measurements at the north and south boundaries shared by two survey blocks. (Measurements were repeated at shared east and west boundaries to provide duplicate measurements for evaluation as part of the quality assurance program, as described in Section 3.5.).

The ambient gamma field measurements provided gamma levels in terms of detector counting rates. These values were converted to exposure rates using conversion factors determined from the instrument performance tests (Section 3.5). The tests included simultaneous measurements of the background gamma level at a fixed location with the ambient gamma survey detectors and a Reuter-Stokes High Pressure Ionization Chamber which was permanently mounted at the location. The Reuter-Stokes measures ionization energy and reads directly in exposure rate (μR/hr). The ratio of the Reuter-Stokes reading to the detector counting rates were the conversion factors at the time of an instrument performance test. The factors varied from day-to-day and within a day with variations in the background, and with the statistical variability of the detector readings. The factors from the two or three instrument performance tests performed in a day were averaged to determine average daily conversion factors which were applied to the ambient gamma survey data for that day. The conversion to exposure rate normalized detectors with different sensitivities to a common basis and allow averaging of the measurements with the two detectors. These average values are reported in this document.

Ambient gamma survey measurements were statistically evaluated by comparison of data sets to the set of data from background locations (Section 3.6). During field operations however, individual measurements were compared with the average gamma background (Section 3.4) to identify areas where Area IV levels were more than 5 μR/hr above background. When a measurement exceeded background by more than 5 μR/hr, a soil sample was collected at that location to determine if the increased exposure rate could be the result of contamination or whether it was due to higher than normal naturally occurring radioisotopes.
The 5 μR/hr limit was selected as being both below the limit of 20 μR/hr above background specified by the Department of Energy (DOE) for Formerly Used Sites Remedial Action Programs (FUSRAP) and in compliance with the 5 μR/hr-above-background limit required by the

Nuclear Regulatory Commission (NRC) for decontamination of licensed facilities. (The NRC limit is not applicable directly to Area IV characterization, but is applicable to licensed Area IV facilities.)

3.3.3 Walk-About Gamma Survey

The walk-about gamma survey consisted of near-surface scans of the gamma levels to detect localized areas of elevated activity within the area surveyed (Figure 3). While the ambient gamma survey provided exposure rate measurements which systematically sampled gamma levels for statistical analysis, the walk-about survey results were more sensitive (near-surface rather than at 1 m above the surface) and complete (complete coverage rather than sampling at 25 ft intervals), but less quantitative (subjective monitoring of detector counting rates to detect relatively higher gamma levels). The walk-about survey identified areas where followup activities were needed to investigate possible "hot spots".

The walk-about survey used a single NaI gamma radiation detector such as used in the ambient gamma survey. For this survey the detector was mounted on balanced boom which allowed the surveyor to hold the detector near the ground surface while walking and sweeping the detector from side to side. The detector was connected to a counter/scaler (with a meter and audio speaker) carried by the surveyor. As the detector was swept over the surface the meter and audible click rate were monitored by the surveyor to detect increases above the general gamma level in the survey block. The maximum, average, and minimum counting rates observed on the meter during each traverse across the survey block were recorded on the data sheet.

The surface of each survey block was scanned systematically using measuring tapes as a guide as in the ambient gamma survey. Tapes were placed on the east and west boundaries. The third tape was placed between them to serve as a guide for keeping the walking path straight. The tape was moved across the survey block in 5-ft increments, the width of the detector sweep, to provide complete coverage of the available surface. The survey covered the full survey block surface except for inaccessible areas. Coverage was approximately the same as for the ambient gamma survey, for which the coverage is shown in the survey block maps in Appendix B.

The surveyor walked along the traverse line, centering the detector pivot point in the band being surveyed. During the traverse the detector was swept from side to side (180 degrees) while being held as close to the ground as possible consistent with not hitting either the ground or an above-ground obstacle (e.g., a rock or vegetation). The detector sweep rate was approximately one 180 degree arc in 4 sec. Walking speed along the traverse line was at a speed of 1/4 to 1/2 ft/sec. These sweep and walking rates placed the detector within 1 ft of each point on the surface.

The walk-about survey field measurements provided gamma levels in terms of detector counting rate meter readings. Since the purpose of the survey was to do a relative comparison of surface gamma levels, conversion to exposure rates was of interest only when an above-average level was identified. A counting rate of 4000 cpm, equivalent to 4-5 μR/hr above the estimated background, was used as the threshhold for further review. Counting rates above this value were converted to exposure rates using conversion factors determined from the instrument performance tests (Section 3.5), as described above for the ambient gamma survey counting rates.

The above-average walk-about readings converted to exposure rates were reviewed to identify those requiring followup action. Those were generally the surface exposure rates which were more than 5 μR/hr above background. The background at 1 m above the ground was used for this preliminary screening. There were two types of cases for which followup would not be done for above-limit exposure rates. In cases with several above-limit values in the same general area, the maximum value was selected to represent the area. Also, values representing rock rather than soil activity were eliminated, since the natural gamma activity for rock is higher than that for soil. (No exposure rates attributed to rock activity exceeded that expected from naturally occurring isotopes.) At locations selected for followup, gamma levels were measured at 1 m above the surface. When these measurements exceeded estimated background by more than 5 μR/hr, a soil sample was collected, as in the ambient gamma survey, to determine if the increased exposure rate could be the result of contamination due to Area IV operations.

3.3.4 Soil and Water Sampling

Soil and water samples were collected and analyzed as the third component of the Area IV radiological characterization. Most of the samples were soil, collected to investigate several types of areas. This is because groundwater is already sampled quarterly from 36 wells in Area IV and surface water runoff is sampled as required by the NPDES permit. Relatively little other water exists in Area IV. The only water samples collected were at two different locations in the SRE Pond. In the subsections below the types of areas sampled, the sampling equipment and procedure, sample analysis, and in-soil gamma level measurements associated with soil sampling are described.

The samples were collected and analyzed in eight batches of nominally 20 scheduled and 2 quality assurance samples (Section 3.5). For the final batch only 9 scheduled samples were needed to complete the program.

3.3.4.1 Types of Samples

Soil and water samples were collected for analysis by the contracted radiochemistry laboratory, TMA-Richmond. A total of 149 soil samples were collected at 146 locations. Six samples were also collected at six off-site background locations as described in Section 3.4.2. Additional samples collected for the quality assurance program are described in Section 3.5. The sampling locations are shown in Figures 5 to 5g. The locations are listed by type in Appendix C.

For a small number of locations, soil samples were also analyzed by the Rocketdyne radioanalysis laboratory. A total of 17 samples were analyzed from 5 locations. Analysis was done locally when rapid turnaround of results was required to evaluate potential future remediation requirements.

The types of locations are discussed below. The samples were collected at the surface except where a different depth is stated.

1. **Survey (22 locations; 22 samples).** These soil sampling locations were randomly selected within analysis regions (Section 3.5) to allow evaluation of radioisotopic composition differences among the regions. Five locations were sampled in each of the disturbed alluvium, undisturbed alluvium, Martinez-Chaparrel, and rock outcropping regions. Only two locations were sampled in the drainage region because three randomly selected locations were close (5 to 23 ft) to locations sampled as part of the drainage purposeful sampling (item 4 below). The heavy vegetation in the drainage areas made access difficult, so that closer access to randomly selected locations would not be likely. The previously collected samples were used to complete the drainage analysis region set.

   The sixth analysis region, the developed region, was not sampled separately. Samples collected as building samples (item 2 below) were in this region and provide a sufficient sampling of the available soil in the developed region.

   The random selection of sampling locations was made by defining the smallest rectangle which enclosed the region. Most regions were sufficiently compact for this method to be practical; however, the drainage region consisted of too many small and widely separated areas to comprise a large enough fraction of the circumscribing rectangle. The drainage region component coordinates were translated to form a smaller rectangle. The randomly selected points were then translated back to their proper coordinates to determine sampling locations.

Randomly selected coordinate sets within each circumscribing rectangle were selected by multiplying the rectangle dimensions by computer-generated random numbers. These locations were screened for being within the region, not on paving, and not on a rock outcropping. The first five locations passing these screens were specified for sampling. Additional locations were specified as potential alternates for use if field screening by the sampling crew found that a specified location was inappropriate (e.g., on a rock or in a poison oak patch).

2. Buildings (19 buildings; 37 locations; 38 samples). These soil sampling locations were randomly selected (two per building) from the area surrounding each of 18 buildings (Buildings 003, 005, 009, 011, 019, 020, 023, 024, 028, 029, 055, 059, 064, 093, 100, 143, 363, and 373. The remaining location was a single one for Building 012. The second sample selected for Building 012 was within 20 ft of a Building 010 drainage sample ID A4CM-95-0075, which was used as the second sample instead of collecting a new one.

The random selection of sampling locations was made by defining coordinates of the points on a 16-point wind rose and at radii extending outward in six 25 ft increments from the smallest building dimension. Each of the resulting 96 sets of coordinates were assigned a computer-generated random number. The sets were then sorted to order the random numbers numerically, thus randomizing the coordinate sets. The points were then screened in order for inaccessibility (buildings or paving). A second sample close to the first was also rejected. The first two passing the screen were sampled. The randomness of the location selection was significantly constrained by the extensive paving of the area; however, the locations selected provided reasonable coverage of the area surrounding the buildings.

3. Areas around the former Sodium Disposal Facility (28 locations; 28 samples). The former Sodium Disposal Facility (SDF) and the region immediately surrounding it were decontaminated, surveyed and sampled in a separate program. However, additional surrounding areas were sampled as part of this program to determine whether they contain radioactive contamination. Soil samples were collected across the access road south of the SDF and in the ravines east and west of the facility.

a. Eleven locations were sampled in the area across the road from, and south of the SDF. Sampling locations were selected randomly by the same method used for the analysis region sampling locations. The sampling depth for all except one sample was 3 ft. The other sample was sampled at a shallower 2-1/2 ft because of a smaller depth to bedrock. No evidence of pit debris was found.

b. Nine locations (in addition to those described in item a) were sampled along the access road south of the SDF. The locations are in 100 ft increments along the road (excluding the former earth pit area), both 5 ft and 50 ft south of the road.

c. Eight locations were sampled in the ravines and open areas east and west of the SDF. The locations were at the road, 50 ft from the road, and (in two cases) 100 ft from the road.

4. Drainage channels (35 locations; 37 samples). Natural drainage channels were sampled to check for accumulations of radioactive materials which might indicate a source in the watershed. The channels sampled in this program were those carrying flow to the southeast (to the R-2 Ponds), to the north (across the SSFL boundary), and to the northwest from the locations of the former Building 010 and the Building 056 landfill (across the SSFL boundary). Other channels leading across the SSFL boundary to the northwest were not included because they have been or will be investigated as part of the study of other areas (SDF and RMHF). The channels sampled are discussed below.

a. SRE Pond drainage channel (2 locations). There was an extensive area of dense poison oak covering most of the area just downstream of the pond. Samples were collected at the location closest to the pond which was accessible. The second sample location, also selected on the basis of accessibility, was near the Area IV boundary. It was about 10 ft upstream of the marker for Sample No. BB-19-008 collected during the Brandeis-Bardin Institute multi-media study (Ref. 3).

b. Old Conservation Yard (north) (4 locations). This area is at the beginning of flowpaths down the slope from Area IV. The channels have not yet consolidated into well-defined channels. Locations were selected which appeared to best represent runoff from the local watershed.

c. Old Conservation Yard (south) (8 locations). Drainage channels run south from both the east and west ends of the Old Conservation Yard. The longer western channel was sampled 5 times at intervals of about 150 ft, starting just south of G Street, for a total of 750 ft. The eastern channel was sampled 3 times at intervals of about 100 ft, also starting just south of G Street, for a total of 300 ft.

d. 17th Street (5 locations; 7 samples). Samples were collected at accessible locations in the generally dense vegetation in this channel. The upstream location was just east of G Street, at the beginning of the natural channel. Both a surface sample and a sample at 2-1/2 ft depth were collected. Two locations downstream about 250 ft and separated by 50 ft in the broad channel were sampled. One was sampled at the surface only, while the other was sampled at both the surface and 2-1/2 ft depth. The other two locations were a further 100 ft downstream and separated by 75 ft. Both were sampled at the surface only.

e. Southeast (12 locations). The southeast drainage channels include the natural channels beginning at 20th and G Streets, the outlet of the asphalt-coated drainage ditch along the south side of G Street, and the unlined drainage ditches on the north and south sides of J and L Streets. The first of these was sampled just east of G Street, at the beginning of the natural channels from the underground drainage channels on the north and south sides of 20th Street. The natural drainage downstream of the G Street ditch was sampled at its beginning and at an accessible location about 200 ft downstream. The J and L Street ditches were sampled on alternating sides of the streets at about 100 ft intervals.

f. Building 056 landfill (2 locations). The ravine at the base of the former Building 056 landfill was sampled in two locations. One was below the southwest portion of the western section of the landfill in an area in which old photographs show debris. The other was downstream 135 ft, below the northern part of the same section of the landfill where the ravine swings west from the landfill area. Poison oak prevented access further downstream, but the locations sampled were representative of the landfill drainage. The downstream sample was within 50 ft of the Area IV boundary.

g. Building 010 (2 locations). Two locations were sampled downstream of the location of the former (now demolished) Building 010 to determine if there is tritium present. Tritium was found in soil samples collected downstream in this drainage as part of the Brandeis-Bardin Institute multi-media study (Ref. 2 and 3). The most likely source of this tritium is the tritium produced as a byproduct of operation of the Building 010 nuclear reactor (Ref. 5). The reactor was about 12 ft below the surface at the building location. Most of this depth was bedrock.

The sampling location closest to Building 010 was at about the same elevation as the reactor because of a drop in the surface elevation of 15-20 ft at the edge of the paved area. The soil was shallow at this location. The other sampling location was about 150 ft downstream and at an elevation lower by about 15 ft.

5. Inactive sanitary leachfields (5 leachfields; 10 locations). All Area IV sanitary leachfields (inactive since installation of the sewage treatment system in 1960) which served facilities containing radioactive materials (during their period of use) were investigated by collection and analysis of soil samples. The leachfields sampled were those for Buildings 003/143, 009, 064, 093, and 373. Sampling at the leachfield for Building 030 had been planned; however, excavation at the leachfield location as indicated by records revealed no evidence of a leachfield. The Building 020 leachfield is included in the Building 020 D&D program, and was therefore not sampled in this program.

The sampling plan started with location of the leachfields by probing from the surface in their vicinity as indicated on an early 1960s drawing of the sanitary system. The leachfields for Buildings 064 and 373 were found by surface probing because excavation for contamination cleanup (Building 064) and erosion (Building 373) had left the leachfield distribution box, piping, and gravel near the surface. The gravel indicating the presence of the other leachfields (Buildings 003, 009 and 093) could not be located when drilling holes to a depth of 3-1/2 ft, the maximum capability of the powered auger used for collection of subsurface samples. By excavating these leachfield areas using a backhoe, their locations were pinpointed. The backhoe operator was able to uncover the leachfield piping with minimal disturbance of the area.

a. Building 003/SRE (2 locations; 2 samples). The location of the septic tank was indicated by a vent pipe which extended above ground level. A transverse trench was dug, using the backhoe, about 15 ft from the tube in the direction of the expected location of the leachfield. The clay pipe uncovered was unperforated and considered to be the supply pipe to the leachfield. A second transverse trench, dug about 15 ft further downstream, uncovered perforated clay pipe resting on a gravel bed at a depth of about 4 ft. This pipe was a continuation of that in the first trench and apparently extended from the center of the septic tank. No evidence of branch lines was found. A sampling crew member collected a soil sample from the gravel and wet soil mixture under the clay pipe in the second trench. A third transverse trench was dug about 6 ft further downstream. The perforated pipe and gravel extended across this trench as in the second trench. The second leachfield sample was collected in this trench in the same manner as the sample in the second trench.

b. Building 009 (2 locations; 2 samples). The estimated beginning of this leachfield, based on the early 1960s drawing, was under the paved area inside the facility fence behind Building 009, however, most of the leachfield was beyond the fence. For ease of access the excavation and sampling were done in the unpaved section. A transverse trench starting at about the fence was dug across the expected leachfield location. Clay pipe on a bed of gravel was uncovered at a depth of about 4-1/2 ft. The 6-in.-diameter pipe was not perforated, but consisted of 12-in.-long sections with butt-end joints which provided leakage paths into the leachfield. The trench walls were unstable, so gravel/soil mixture was lifted to the surface using the backhoe bucket. The leachfield soil sample was collected from the material in the bucket. A second transverse trench was dug about 15 ft downstream of the first trench. The second leachfield sample was collected in this trench in the same manner as the sample in the first trench.

c. Building 064 (2 locations; 2 samples). The top of the septic tank was found 4"- 6" below the surface by probing with a metal pole. Dirt was removed to expose the surface and define the downstream edge of the tank. Manual excavation continued past the tank to reveal clay pipe at the probable center of the tank. The pipe ran straight from the tank, with no apparent "Y". Probing downstream with the rod showed that the pipe ran straight and that gravel around it began a a short distance from the tank. The first sample was collected just downstream of the start of the gravel. The second sample was collected downstream by a further 10 ft.

d. Building 093 (2 locations; 2 samples). The second exploratory trench in the expected area of the leachfield uncovered, at a depth of about 4 ft, the 4-in.-diameter clay pipe supplying the leachfield. This pipe connected to a 90-degree clay pipe elbow angled down. The elbow connected to a tee pipe section which was positioned transverse to the supply pipe. The combination of the two fittings extended the depth of the piping by about 1 ft. One end of the tee was plugged. Extending horizontally from the other end of the tee across the top of the leachfield on a bed of gravel was a row of butt-end clay pipe sections about 8-in. long. The first leachfield sample was collected from the area under the joint between the tee fitting and the first pipe section. The second sample was collected about 5 ft downstream at the edge of the trench. Because of the depth of the trench, the soil and gravel mixtures were raised to the surface for sample collection from the backhoe bucket.

e. Building 373 (2 locations; 2 samples). The septic tank and a single clay pipe stub from the tank were exposed by erosion. Digging in the opposite bank of the eroded channel from the tank revealed no clay pipe, but the start of gravel was found. The first sample was collected just downstream of the start of the gravel. The second sample was collected about 10 ft further downstream.

6. SRE Pond (2 locations; 2 water and 2 sediment samples). Samples were collected at the SRE Pond at two locations, which were determined by accessibility to the edge of the pond. Most of the pond was surrounded by rugged terrain (steep rocks at the edge of the water) and thick vegetation, so the sample locations were the only reasonable points of access. The water level was relatively high at the season of sample collection. The location of survey marker V23 was probably dry when the marker was set, however, the bottom few feet of it were submerged during the sampling. One sample location was along the southern edge of the pond, nearest the inlet. The other location was along the eastern edge, toward the northern, outlet end of the pond.

The location coordinates were referenced to the partially submerged survey marker V23. The distance and angle from the marker were determined for each location (15 ft and 190 degrees clockwise from north, and 18 ft and 55 degrees clockwise from north for the two samples).

A water sample and a sediment sample were collected at each of the locations. The sediment samples were treated the same as other soil samples, except for having more water than usual with which to deal. The water samples were each collected in two bottles. Water for tritium analysis was collected in amber glass bottles, as is standard for tritium analysis samples. Water for other analyses was collected in plastic bottles. The separate treatment of water for tritium analysis was the same as practiced with quality assurance water samples (Section 3.5). The separate bottles of water were numbered as separate samples.

7. Followup to gamma survey measurements - Analysis by TMA (12 locations). Soil sampling as follow-up to the gamma surveys was done to provide additional characterization of locations of elevated gamma activity. The characterization plan (Ref. 1) specified soil sampling at locations where the gamma activity at one meter above the surface was more than 5 μR/hr above background. Ambient gamma survey measurements were made at this elevation and were compared to background to identify sampling locations. Measurements at one meter above the surface were made as follow-up to the walk-about gamma survey at the location of maximum activity in areas having a surface activity greater than 5 μR/hr above background. These measurements were compared to the 5 μR/hr-above-background threshhold to identify sampling locations.

Soil samples analyzed at TMA were collected at eight locations having a a gamma activity above the threshhold. (Additional locations with above-threshhold gamma activity which were sampled for analysis in Area IV are described below as Sample Type No. 8.) In addition, four samples were collected at locations having a below-threshhold gamma activity, but which were of interest. One was at the location of elevated activity in survey block M22 (Section 4.2.3.4) after removal of the material which was the source of the activity. (The material had been sampled and analyzed in Area IV before removal.) This sample was for confirmation that the radioisotopic composition of the remaining material was typical for Area IV. The other three below-threshhold locations were sampled because their gamma activity appeared to be higher than that of the surrounding area.

8. Followup to gamma survey measurements - Analysis by Rocketdyne (5 locations, 17 samples). Soil samples analyzed by Rocketdyne were collected at locations identified from gamma survey measurements as described above for Sample Type No. 7. Three samples were collected from the area of elevated activity in survey block M22 (Section 4.2.3.4). The area was identified before the start of soil sampling for TMA analysis, so Rocketdyne analysis was done to expedite evaluation of the source of the gamma activity. The elevated activity areas in survey blocks R24 (1 samples) and R25 (9 samples) were identified after completion of the TMA analysis program, and were sampled for Rocketdyne analysis to provide timely results for remedial actions. In addition, sampling was done after completion of the TMA analysis program in survey blocks C13 (3 samples) and K10 (1 sample) to investigate areas of slightly elevated gamma activity.

3.3.4.2 Sampling Method and Equipment

Detailed step by step procedures used in the soil sampling and water sampling are provided in References 8, 9 and 10. Specific instructions include,

- safety precautions

- training
- screening of locations and samples for radiation and VOCs
- crew responsibilities
- sample collection center procedures
- documentation and chain-of-custody
- QA/QC sampling
- sample packaging and labeling
- tool cleaning and decontamination
- sample shipment

3.3.4.3 Sample Analysis

Soil and water analysis was performed by TMA/Richmond laboratories. The protocols and procedures used are summarized in Table 7 and 8 for soil and water, respectively. Method detection limits are provided in Table 9. Soil analysis performed by the Rocketdyne radioanalysis laboratory was limited to gamma spectroscopy. Method detection limits for Cs-137 were comparable to the TMA/Richmond lab.

3.4 BACKGROUND RADIOACTIVITY

The radiological status of Area IV is determined by radiation from naturally occurring radioisotopes in the soil and rock, from radioisotopes originating outside Area IV (e.g., fallout from weapons tests), and potentially from radioisotopes resulting from Area IV activities. The first two of these radiation sources are the background to which survey measurements were compared to evaluate the significance and acceptability of gamma levels and soil radioactivity observed. This background was estimated from measurements made at off-site locations, both as part of the Off-Site Multi-Media study (Ref. 2 and 3) and as part of this program. These measurements are described in the first two subsections below.

3.4.1 Off-Site Multi-Media Study Background Measurements

Soil samples were collected in 11 areas selected as background locations for the study (References 2, 3). Seven of the areas are used as background areas for Area IV. At the other 4 locations (Wildwood Park, Widwood Park Ravine, Tapia Park and Tapia Park Ravine) the measured isotopic compositions of potassium, thorium, and uranium are not consistent with the results from the other 7 background areas (see Appendix E, Table E-3 for a comparison of results) or from typical U.S. background. Typically, the soil concentration of naturally occuring potassium-40 is ~20 pCi/g, whereas, in these for locations, the potassium-40 is ranged from 1 - 8 pCi/g. Also, typical concentrations of naturally occuring thorium-228, -230, -232 and uranium-234, -238 are ~1 pCi/g, whereas, at these locations, the range was 0.01 - 0.25 pCi/g. As a result the ambient radiation at these locations was as low as 7 μR/hr or 50% of typical backgroud. The locations of sampling used for Area IV background and tables of concentration data are given in Appendix E.

Gamma measurements were made at a distance of 30 in. above the ground (Ref. 3) at the background areas and within the areas adjacent to SSFL being studied (Brandeis-Bardin Institute and the Santa Monica Mountains Conservancy). As with the soil isotopic compositions, the Tapia Park and Tapia Park Ravine results were much lower than the others and are not used here. The Wildwood Park and Wildwood Park Ravine results are relatively low but do not differ from the others as much as those for Tapia Park and Tapia Park Ravine. They are excluded, however, for the same reason: nontypical isotopic compositions. The remaining gamma measurements, listed in Appendix E, are used as part of the set of background measurements for comparison with Area IV measurements.

3.4.2 Area IV Survey Background Measurements

Most soil analysis at background areas which is needed for this study was provided by the multi-media study; however, additional sampling was needed at three areas to analyze for isotopes of thorium and uranium. Soil sample analysis for the initial multi-media study (Ref. 2) did not include analysis for these isotopes. The follow-on study (Ref. 3) added analysis for these isotopes at only three of the background areas. The remaining three background areas (Bell Canyon, Santa Susana Park, and the Western Sampling Site) were used for the Area IV program and were sampled and analyzed for isotopes of thorium and uranium only. Two samples were collected in each area at the locations listed in Appendix E. The locations were the first two sampled during the prior study.

Ambient gamma survey measurements were made at the three background areas at which soil sampling was done for this study (Bell Canyon, Santa Susana Park, and the Western Sampling Site). The procedure was the same as described in Section 3.3.2 for the ambient gamma survey in Area IV. The only modification was that in the multi-media study 100 ft by 100 ft grids (Appendix E) were used as the survey blocks instead of the 200 ft by 200 ft blocks on Area IV. The same 25 ft spacing between measurements was used.

3.4.3 Area IV Analysis Regions

Background levels are site-specific in that they are determined by naturally occurring radioisotope compositions in local rocks and soil, and local factors (elevations, wind patterns, rainfall runoff, etc.) affecting deposition and retention of fallout. The compositions and local factors are determined by the local geology and topography. The background areas described above provide background radiation levels averaged over areas with characteristics similar to Area IV. It was expected that the variation of types of geology, vegetation, and land usage in Area IV would be reflected in variations in the background gamma levels in different areas.

Area IV has been reviewed for differences in geology, vegetation (as an indicator of soil mineral content and moisture availability), and usage. Six areas, termed analysis regions, have been identified in Area IV with similar characteristics within the region and differences relative to other regions (Figure 6). These regions would be expected to have isotopic compositions and thus background radiation levels which are similar within the region and differences relative to the other regions.

The characteristics and general locations of the six analysis regions are described below. In general, the regions consist of non-contiguous areas having similar characteristics.

1. **Disturbed alluvium (Ad).** This region has several feet of topsoil that has been turned by plow or earthmover. It is generally covered by invasive annual grasses. Fallout isotopes are mixed below the surface. The region consists of a band of Area IV extending between the eastern and western boundaries and south of the developed area.

2. **Undisturbed alluvium (Au).** This region has several feet of undisturbed topsoil above the Chatsworth formation bedrock. There are some remnant stands of native grassland. Fallout isotopes are expected to be at or near the surface. The parts of this region are located mostly in the undeveloped eastern section and near the southern boundary of Area IV.

3. **Developed area (Dv).** This region is dominated by buildings and structures, and includes the associated paved areas. There is a shallow cover of alluvium intermixed with imported construction dirt overlaying the Chatsworth formation bedrock. The region includes the areas with buildings shown in Figure 1.

4. **Drainage areas (Dr).** This region consists of natural flats and catch basins in the natural drainage channels where run-off soil can settle. Thick riparian vegetation grows in soil pockets in these areas. The natural channels and flats of this region are mostly in the

eastern part of Area IV. There are a few developed channels in the western section, but the developed section is generally too close to the Area IV boundary for channels to be consolidated in that direction. There are no developed channels on the hill in the southern section of Area IV.

5. **Martinez-Chaparral area (Mch).** This region is exposed Martinez formation soil dominated by thickly wooded chaparral. It consists of the undeveloped hill south of the disturbed alluvium.

6. **Rock outcroppings (Rc).** The areas comprising this region are dominated by outcroppings of the Chatsworth formation sandstone that underlies most of Area IV. It includes occasional oak woodland patches in seasonal drainage courses of shallow soil within areas of rock outcroppings. Parts of this region are distributed throughout Area IV, except for the hill in the southern section.

3.5 QUALITY ASSURANCE

Area IV characterization survey activities included quality assurance measurements and sampling to meet the data quality needs. The survey design addressed the five data quality objectives (DQO): precision, accuracy, representativeness, completeness, and comparability (PARCC). The approach for each of these parameters is defined below. The results are described in Section 5.0.

1. **Precision.** Repeated ambient gamma survey measurements were made at several locations in each survey block (east and west block boundaries) and duplicate soil samples (field duplicate and laboratory duplicate) in each sample batch were collected and analyzed to evaluate the precision of the data.

2. Accuracy. Gamma measurement accuracy was assessed by quarterly calibration of the detectors and thrice-daily performance checks of detector performance and exposure rate calibration factor. Evaluation of accuracy of soil analysis is based on the analysis of laboratory control samples in each sample batch and by review of laboratory performance in an interlaboratory performance evaluation sample analysis program.

3. Representativeness. The gamma surveys (ambient gamma survey measurements every 25 ft and walk-about gamma survey of the entire accessible surface) provided a good representation of the Area IV region included in the survey. Areas not covered because of their inaccessibility are remote and unlikely to have been locations for unauthorized disposal when easier locations would have been available. Soil sampling in drainage channels, in which upstream contamination could accumulate through runoff, provided a check that significant sources of contamination were not undetected in their drainage areas.

The total soil sampling program provided representative sampling of the analysis regions in Area IV. A randomly selected set of 5 sample locations in each analysis region (except the Developed region) provided broad coverage of the regions. The Developed analysis region was covered broadly by the random sampling at 37 locations near buildings in which nuclear materials had been used. Coverage of the region was not uniform because of not sampling paved and occupied locations; however, good coverage was provided.

4. Completeness. Completeness was provided by surveying all of Area IV except those parts excluded from the survey (Section 3.2). The walk-about survey was completed over all of the accessible surface, providing completeness greater than the 90% specified in the plan (Ref. 1).

5. Comparability. Data consistency was provided by using established procedures for gamma survey and sampling activities (Ref. 6 through 10) and laboratory methods

(Section 3.3.4.3), frequent checks of equipment functional performance (Ref. 6 and 7), and uniform methods for data analysis and reporting (Section 3.6).

Verification of the quality of soil sample analysis data was provided by collection and/or analysis of quality assurance samples. The types of quality assurance samples are described below. At least one of each type of analysis was performed for each batch of up to 20 regular soil samples. Quality assurance water samples (equipment decontamination rinseate samples) also accompanied each batch of 20 samples for analysis.

1. **Blind field duplicate sample.** A field duplicate (or split) sample is an aliquot of soil taken from the same container as the primary scheduled field sample and analyzed as a separate sample. Soil was collected, placed into a holding container, mixed to provide a homogeneous sample, and split into two separate samples. One sample was identified as the primary scheduled field sample and one as the blind duplicate sample. The two samples were thereafter separate samples, identified, handled, and analyzed separately. The field duplicate sample was included to provide a measure of the precision of the sampling and analysis process. Comparison of the two results is expressed in terms of relative percent difference (RPD). The two results are considered to be in agreement if the RPD is less than 3σ. Blind field duplicates were taken at a rate of 5%.

2. **Equipment rinseate sample.** An equipment rinse water sample was collected after decontamination for one sample in each batch of up to 20 soil samples. After sampling equipment decontamination, deionized water was poured over the equipment and collected for analysis. Rinseate samples are designed to detect potential cross contamination between different samples. Absence of detectable activity in the rinseate sample is indicative of good equipment decontamination procedures. Analyses were performed for the same constituents as for soil samples: gamma-emitting isotopes, Sr-90, tritium, and isotopes of thorium, uranium, and plutonium. Equipment rinseates were taken at a rate of 5%.

3. Laboratory control sample (LCS). A laboratory control sample is a laboratory-prepared sample. This is a sample of similar media to which a known amount of the subject radionuclide (or a surrogate) is added by the laboratory and a routine analysis performed on the aliquot. The results of the LCS analysis are expressed in terms of percent recovery (PR) of the radionuclide (or surrogate) added. The percent recovery is an indicator of the accuracy of the measured concentrations and is also a control against "false negatives". A PR of +/- 3σ of the known true value indicates accurate analysis. Laboratory control samples were analyzed at a rate of at least 5%.

4. Laboratory duplicate. Laboratory duplicate samples serve a similar function to blind field duplicates except that laboratory duplicates are not blind to the laboratory and they measure the precision (or variability) of the laboratory sample preparation and counting only. Comparison of the two results is expressed on terms of relative percent difference (RPD). The two results are considered to be in agreement if the RPD is less than 3σ. Laboratory duplicates were analyzed at a rate of at least 5%.

5. Laboratory Blank. Laboratory blanks are prepared by the laboratory (usually deionized water) and submitted to the same analysis regimen as scheduled samples. A finding of no detectable activity in these samples is used as a control against "false positives". Analysis was performed for the same constituents as for soil samples: gamma-emitting isotopes, Sr-90, tritium, and isotopes of thorium, uranium, and plutonium. Laboratory blanks were analysed at a rate of 5%.

6. Independent Field Duplicates. The California Department of Health Services (DHS) joined the sampling crew on three separate occaisions and took 14 DHS soil duplicates. The manner of taking field duplicates (splits) was the same as the Rocketdyne field duplicates. Table 4. shows the DHS sample locations and correlates the Rocketdyne sample serial numbers with the DHS sample serial numbers. DHS analyzed all soil samples for gamma emitting radionuclides and plutonium. DHS took one water sample for gross α/β, gamma and tritium. These samples were taken at a rate of 8% of Rocketdyne's scheduled samples

3.6 DATA EVALUATION

In cases of major contamination of an area, that contamination is easily recognized. However, minor contamination, barely above background levels, is often difficult to identify. The use of statistical tests can provide a closer scrutiny of sets of data from different but similar areas, and can indicate the presence or absence of "statistically significant" levels of contamination at much lower levels.

The phrase "statistically significant" refers to the comparison of similar data sets, relative to the probability that the different sets could represent different measurements of the same conditions, but show differences due to random chance in the sampling and analysis. That is, two compared areas could be identical, but variations introduced by the measurement process, sampling and analysis, could give the appearance that they are different. Statistical tests reduce the effect of random variability by establishing rules for identifying differences between similar data sets as "statistically significant" or not.

A common choice for these rules is that random variability between two sets should cause an incorrect decision that one set is different from the other no more than 5% of the time, or 1 error in 20 tries. That is, if two areas are identical in their radiological characteristics and 20 tests are compared, it is highly likely that 1 test, and only 1, will indicate that the two areas are different.

Even if a "statistically significant" difference is identified, that difference may not be significant from a regulatory or health viewpoint.

The statistical test used here is the Behrens-Fisher modified t-test, the same method as was used by McLaren/Hart in the Multi-Media Sampling survey, conducted in 1992 and 1994. As an additional test, the F-test of ratios of variances was done. This test indicates if one of the data sets has significantly more variation than the other.

An additional test was done by plotting the analytical results in a cumulative probability graph that clearly displays deviations from a normal (or Gaussian) distribution. For non-impacted areas, the data are expected to show a Gaussian distribution, or in some cases, a modified, log-normal distribution. Strong deviations from these expected distributions would indicate the presence of contamination at the individual sample locations. This comparison complements the statistical tests, which compare the areas as complete sets.

Since uranium and thorium are both naturally occurring elements in the local soil and potential contaminants from past operations in Area IV, the relation of the daughter activities for these elements, as presented by the data, was also considered. If uranium or thorium is naturally present, the daughter activities will also be present in approximately equal amounts. If the source of the uranium or thorium is refined material, as used in the Area IV operations, these daughter activities will be absent.

See sections 4.2.1.2, 4.2.3.2 and Appendix F for presentation of the statistical comparisons of Area IV to background.

4.0 SURVEY RESULTS

4.1 BACKGROUND DETERMINATION

4.1.1 Background Ambient Gamma Survey Results

Background gamma radiation levels were determined via two methods. The first involved use of EPA data taken during the 1992 and 1994 off-site multi-media study. Locations and data are shown in Appendix E. Grid locations are shown in Figures E-1 to E-12. Data are shown in Tables E-1 and E-2. EPA measurements were taken only at the locations of soil sampling. The EPA data was used as an independent set of data with which to compare Area IV levels. EPA data are shown graphically for background areas only in Figure E-13 (13.0 +/- 3.2 μR/hr) and for BBI/SMMC locations in Figure E-14 (14.0 +/- 3.4 μR/hr).

Three of the off-site multi-media study background areas (Bell Canyon, Santa Susana Park, and the Western Sampling Site) were subjected to gridded ambient gamma measurements during the Area IV characterization study. This complemented the EPA data with data using identical instruments and techniques used in Area IV survey. A total of 74 measurements were made at 25 ft intervals in a 100 ft x 100 ft block in each area. Data taken during this study are shown graphically in Figure E-15 (16.2 +/- 2.4 μR/hr).

The equivalence of the three background gamma data sets in Figures E-13 through E-15 is apparent. Figure E-16 shows the combined EPA and Rocketdyne measured background gamma distribution is 15.6 +/- 3.6 μR/hr which is used to compare against Area IV gamma levels

4.1.2 Background Soil Sampling Results

Local background soil radioisotope levels were determined using data from the same programs used for background gamma measurements. Soil sample results from the off-site multi-media study background locations were utilized. Tritium, gamma emitters, strontium and plutonium were analyzed during the 1992 phase. These same analytes were measured in the follow-up 1994 phase in addition to thorium and uranium.

Three background locations (Bell Canyon, Santa Susana Park, and the Western Sampling Site) did not undergo uranium and thorium analysis during 1994; therefore, two additional samples were taken at each of these locations during this study and analyzed for uranium and thorium.

Local background soil isotope concentrations are shown in Appendix E, Table E-3.

4.2 RESULTS WITHIN AREA IV

4.2.1 Ambient Gamma Survey Results

A tabular summary of ambient gamma statistics is shown in Table 1. Number of measurements, mean, standard deviation, minimum and maximum are provided. These statistics are provided for all Area IV and each of the analysis regions. All regions are statistically similar in that their +/- 2σ ranges overlap. Comparison of the means indicate that the Developed region (13.6 +/- 3.6 μR/h) and Martinez-Chaparral region (13.0 +/- 2.6 μR/h) tend to be lower than average. This could be accounted for by shielding of soil activity by tarmac,concrete and heavy undergrowth and shielding of cosmic rays by buildings and trees. In contrast the Rock Outcroppings region (16.3 +/- 2.6 μR/h) tends to be higher than average. This is accounted for by the higher thorium and uranium in rocks. These differences are slight and it should be noted that the highest and lowest region means each lie within the +/- 2σ range of the Area IV average (14.6 +/- 3.6 μR/h).

4.2.1.1 Cumulative Probability Plot Evaluation

Appendix B shows all ambient gamma measurements taken during the Area IV characterization survey in Figures B-1 to B-183 in the form of cumulative probability plots (see Appendix H for CUMPLOT methodology). Figure B-1 shows the distribution of all 10,479 gamma measurements in Area IV. Figures B-2 to B-7 show the gamma distributions for each of the six regions. Figures B-8 to B-10 show the gamma distribution at the three background locations (Bell Canyon, Santa Susana Park, and the Western Sampling Site). Figure 11 shows the gamma distribution along the south-western boundary of Area IV. Figures B-12 to B-183 show the gamma ditributions for each of the 172 200 ft x 200 ft survey blocks for which ambient gamma measurements were taken. Each figure in this set shows the 9 x 9 grid measurements overlayed onto a map in addition to a CUMPLOT of block measurements.

Perusal of these plots indicates a very strongly linear trend (indicative of a normal distribution). Occasionally one or more high readings may appear at the upper right portion of the plot, above the straight trend line and set apart from the majority of the points. These points were routinely investigated further.

- If the measurement was less than 5 μR/h above the local region background it was accepted as within limits (see section 4.2.1.3).
- If the location was in the proximity of rocks the measurement was accepted due the observed higher ambient radiation levels of rocky areas.
- If the measurement did not pass the above two criteria, then the location was recorded as an elevated gamma location requiring a soil sample to determine isotopic concentration (see section 3.3.4.1 (7)).

4.2.1.2 Statistical Comparison of Data to Background

The Area IV gamma distribution is compared to the background gamma distribution using the Behrens-Fisher modified t-test. This is the same statistical test used in the off-site multi-media study. It provides a statistical comparison of the means of two data sets, assuming that the data are approximately normally distributed. It is an appropriate test because it is known to be only slightly affected by departures from normality. A data set from Area IV is considered to be the same as background if the p-value calculated by the test is greater than 0.05. This value indicates that, assuming that the Area IV data set is within the range of background, the probability of seeing a difference as great as that observed is less than 5%. The results of the statistical test are shown in Appendix F. The results are summarized below and indicate that the mean gamma radiation in Area IV is less than background areas.

Gamma Radiation Background Data Set	Behrens-Fisher t-test
Background sites only (excluding Wildwood and Tapia locations)	Area IV < Background

< less than

4.2.1.3 Locations with Elevated Gamma

A total of 12 locations were detected with 1-meter or surface gamma levels which exceeded the local region average by greater than 5 μR/hr. In addition 4 locations were soil sampled because of other reasons (e.g. soil discoloration). These are listed in Table 5 together with corresponding results of soil samples taken at those locations. Six (6) of these locations showed no unusual soil isotope levels. Seven (7) locations exhibited slightly elevated soil radioisotopes concentrations above background, but nevertheless well below regulatory cleanup levels. Three (3) locations exibited radionuclide levels above background and above cleanup levels. One of these locations has been remediated and two are in the process of being remediated. The locations with elevated radioisotope concentrations are discussed further in section 4.2.3.3.

4.2.1.4 Statistical Comparison to Regulatory Limits

Figure 7 illustrates the aggregate of all Area IV ambient gamma measurements. It is similar to Figure 2 except that the "test statistic" is shown to be below the regulatory limit of 5μR/h above the average of the background data set (Figure F-10) for release of land for (radiologically) unrestricted use (see Appendix H). This limit (UL), is background (15.6 μR/h) plus 5 μR/h, or 20.6 μR/h. As explained in Appendix H, there is 90% confidence that 90% of Area IV is below the "test statistic" of 16.9 μR/h. Conversely, the intercept of the Area IV trend line with the limit line (UL) indicates that there is more than a 99.9% confidence that more than 99.9% of Area IV is below the "5 μR/h above background" limit of 20.6 μR/h.

4.2.2 Walk-about Gamma Survey Results

The objective of the walk-about surface gamma survey was to cover every square foot of accessible area in Area IV. It complemented the 25 ft x 25 ft 1-meter grid measurements. Many of the elevated gamma locations discussed in Section 4.2.1.4 were in fact detected with the walk-about survey. Because of the greater surface area coverage of the walk-about survey, it was very effective in discovering potential and actual areas of elevated gamma radiation, and functioned as a good complement to the more quantitative grid-wise ambient gamma survey.

Maximum, minimum and average gamma levels for each of the 40 x 200 ft traverses in each block were recorded and compared to the ambient grid measurements in each block to ensure comparability. This is another facet of the QA/QC program. The walk-about data is archived in the project files but is not reported here.

4.2.3 Soil Sampling Results

Soil radioisotope concentrations are summarized in Appendix D. Table D-1 gives the statistical summary of the scheduled soil samples in terms of maximum, minimum and average for each isotope. Table D-2 gives isotope concentrations for each isotope for all 149 scheduled soil samples in addition to field and lab duplicate QC soil samples.

- Data in the mean and error (2σ) columns indicate a detectable quantity if the mean is > MDA.
- A value in only the MDA column for an isotope indicates that the isotope was not detected to a 95% confidence level and was reported as < MDA.

- If the mean is < MDA this again indicates that the isotope was not detected to a 95% confidence level.
- A counting error (2σ) approximately equal to or greater than the mean, indicates that detection of the isotope is uncertain.
- A negative mean indicates that the measured concentration was less than the lab instrument background and therefore, the isotope was not detected.

4.2.3.1 Cumulative Probability Plot Evaluation

Cumulative probability plots of each isotope measured in the scheduled samples are shown in Figures D-1 to D-11.

Perusal of these plots indicates a very strongly linear trend (indicative of a normal distribution) for most of the isotopes. Occaisionally one or more high readings may appear at the upper right portion of the plot, above the straight trend line and set apart from the majority of the points. These points are indicative of potential contamination and were routinely investigated further (see Section 4.2.3.3).

4.2.3.2 Statistical Comparison of Data to Background

The Area IV soil sample radioisotope concentration distributions are compared to the background soil sample distributions using the Behrens-Fisher modified t-test. This is the same statistical test used in the off-site multimedia study (see Section 4.2.1.2). The results of the statistical tests are shown in Appendix F. Area IV soil samples were compared to the complete background data set and, for thorium and uranium, two subsets of this data. The results are summarized below and indicate that for tritium, strontium-90, uranium-238, uranium-234 and thorium-230 the Area IV means are less than or equal to background area means. With the exception of one soil sample (section 4.2.3.5) all tritium results were non-detects. The Area IV cesium-137 mean is slightly greater than the local background mean, but consistent with U.S. avaerage background (see Table 10).

Radioisotope	Behrens-Fisher modified t-test
Tritium	Area IV < Background
Cesium-137	Area IV > Background
Strontium-90	Area IV = Background
Uranium-238 Uranium-234 Thorium-230	Area IV = Background
Thorium-228 Thorium-232 Uranium-235	Area IV = Background (Bell Cyn, Santa Susana Park, Western site - TMA lab) Area IV > Background (Happy Camp, Rocky Peak, Rocky Peak Ravine - Teledyne lab)
Plutonium	Too many non-detects for statistical comparison

< less than
= statistically identical to
> greater than

Thorium-228 and -232 and uranium-235 isotope concentrations measured in Area IV were somewhat higher than the data set (analyzed by Teledyne Labs) from the 1994 off-site multi-media study (Happy Camp, Rocky Peak and Rocky Peak Ravine). However the Area IV thorium-228, -232 and uranium-235 concentrations were equivalent to those measured at the three background sites sampled during this current study (Bell Canyon, Santa Susana Park and the Western Site) using the TMA/Richmond Labs for analysis. This can perhaps be explained by differences in sample processing by the laboratories used for the prior multi-media study (Teledyne) and the current Area IV study (TMA/Richmond). The "wet chemistry" techniques used to separate the uranium and thorium from the soil matrix prior to alpha spectroscopy counting are designed to measure loosely-coupled, easily-separated contamination. Naturally occuring uranium and thorium minerals may, however, be expected to be more strongly bound to the soil matrix and harder to separate. Differences in different laboratories' separation techniques may therefore give different results for this specific isotopic analysis. Note that matrix spike analysis (and percent recoveries) would not be expected to uncover these deficiences since matrix spiking by its very nature introduces additional contamination in the form of a solution to a soil matrix. This contamination, well above environmental levels, is easily separated during analysis, as indicated by the percent recovery measure. Thorium and uranium analyses performed during the second phase of the prior multi-media study were done for the sole purpose of providing background data for this Area IV study. Samples were taken only in background areas and not in the sampled areas. Thorium and uranium isotope concentrations reported by Teledyne were universally low, sometimes as much as a factor of 10-100 times lower than typical background. The TMA/Richmond results for the three background locations sampled in this study were consistent with typical U.S. background and tend to confirm that the Teledyne thorium and uranium analyses under-reported the true concentrations for some uranium and thorium isotopes.

4.2.3.3 Locations with Elevated Soil Concentrations

Of 149 soil samples, 27 were identified as having possibly higher than local background radioisotope concentrations. Table 6 gives the sample locations (survey block and coordinates), sample type (region) and the specific isotopes which were identified as elevated. Figures 8 through 34 show the survey block maps in which these soil samples were taken. The concentrations at some of these locations may be attributed to contamination from SSFL operations. Three (3) locations have been remediated or are in the process of remediation. The remaining 24 have isotope concentrations well below regulatory cleanup levels, in most cases within the range of U. S. background and do not require any further remediation.

- Two (2) locations contaminated by SSFL operations. Remediation is ongoing. See Section 4.2.3.4.
- One (1) location with natural mineral deposit containing high uranium. Remediation has been completed. See Section 4.2.3.4.

- Twenty four (24) locations with isotope activities well below regulatory cleanup standards and mostly within the range of U. S. background. No remediation is required. See Section 4.2.3.5. One of these locations confirmed Building 010 as the source of tritium in the B/059-RMDF watersheds (see Reference 5).

4.2.3.4 Locations Requiring Remediation

The 3 locations requiring remediation are described in detail below.

M22 - Mineral Deposit

A localized area of elevated gamma, approximately 5 ft in radius, was discovered in the course of the walk-about gamma survey in survey block M22 (see Figure 32). This survey block is part of the region along the eastern boundary with Area III of SSFL. The region is undeveloped except for a network of infrequently maintained and little-used dirt roads. The elevated surface radiation in a 1 ft x 2 ft area was 140 μR/hr. The surface radiation in the surrounding 5 ft radius area ranged from 30 to 140 μR/hr. Outside this area the radiation level was the nominal background. This area was between the discrete 25 ft x 25 ft locations for ambient measurments, so was not detected by that survey. The detection of this small area demonstrated the effectiveness of the walk-about survey and the value of using the two complimentary gamma survey methods.

Three soil samples were taken and analyzed by gamma spectroscopy at Rocketdyne's radioanalysis laboratory. These samples, identified as ENV940077, ENV940078 and ENV940079, showed high levels of uranium up to 255 pCi/g of uranium-238 and its associated decay products. The ratio of U-235/U-238 was ~5%, consistent with natural or non-enriched uranium. Also, the presence of all U-238 and U-235 daughters in similar elevated concentrations indicted that the uranium was of natural origin and not man-made contamination (fabricated, processed uranium would not have any daughters downstream of U-234 or Pa-231). Although the levels of uranium are very high compared to expected levels in normal soil they are very similar to a soil sample taken from surface uranium ore deposits at Rosamond, California.

The area displayed a white crumbly mineral type material, visibly distinctive from the darker native soil. Visual inspection of the material by Rocketdyne geologists resulted in the following conclusions.

> "The elevated radioactivity is from floats (not insitu bedrock) rocks scattered on the ground. The floats (mostly rock chips and crushed rock matter) is platy in appearence, white or yellowish white in color and appear similar to Monterey Formation rock. Monterey Formation is of the Miocene age and is younger than the local Chatsworth Formation rock at SSFL.
>
> "Chert, shale, siltstone, sandstone and volcanic ash with diatomite (siliceous matter of single-cell organic origin) belonging to Monterey Formation, is very commonly exposed rock in the Transverse range (geologic province in which Ventura and Los Angeles counties are located). The nearest good exposures are near Calabasas, south of SSFL and north of Simi Valley.
>
> "Commonly, formations with the lithology described above, show higher than background radioactivity due to the presence of volcanic ash or tuffaceous matter. This characteristic is used in the oil industry in gamma-ray logging to identify key geologic horizons with shaly rocks with volcanic matter, bentonitic shales, carbonaceous shales and phosphatic shales."

It was concluded that the material was of natural origin though it cannot be explained why it was at this location at SSFL. Although it was not man-made contamination, the elevated soil activity was remediated by excavating the area until the surface gamma levels were reduced to background. Excavated material is to be disposed of as low level radioactive waste to the DOE disposal facility at Hanford, Washington. Following remediation, another soil sample (95-0120) was taken at the same location and sent to TMA for a complete suite of analyses. The soil activity was confirmed to be background with uranium levels at 1.3 pCi/g (U-234), 0.08 pCi/g (U-235), and 1.4 pCi/g (U-238).

R24 - Bldg 064 Sideyard

A localized area (2 ft x 2 ft) of elevated radiation within the R24 survey block was discovered during the walk-about survey (see Figure 33). The surface gamma level was approximately 46 μR/hr, though the 1-meter level was only 17 mR/hr. A soil sample (ENV95-0104) was taken and analyzed by gamma spectroscopy at Rocketdyne's radioanalysis laboratory. The soil acivity was due solely to Cs-137 at 271 pCi/g. The location is within an area known as the Bldg 064 sideyard which had undergone some remediation in the past. Based on the current finding, additional remediation has been initiated. Further soil sampling will then be performed to verify that the Cs-137 levels are within the regulatory cleanup levels. The remediation is scheduled to be completed before the end of FY1996.

R25 - G Street

A localized area (20 ft x 20 ft) of elevated radiation within the R25 survey block was discovered during the walk-about survey (see Figure 34). The maximum surface gamma level was approximately 170 μR/hr. Several other lessor high radiation locations were detected within the same 20 ft x 20 ft area. Nine soil samples (ENV95-0105 through ENV-950113) were taken and analyzed by gamma spectroscopy at Rocketdyne's radioanalysis laboratory. The soil acivity was due solely to Cs-137 and ranged from 155 to 9 pCi/g. The G street location is close to the Bldg 064 sideyard and it is possible the contamination of both locations is related. Based on the current finding, remediation has been initiated. Further soil sampling will then be performed to verify that the Cs-137 levels are within the regulatory cleanup levels. The remediation is scheduled to be completed before the end of FY1996.

4.2.3.5 Comparison to Regulatory Limits

With the exception of the 3 locations undergoing remediation, all elevated activity in the remaining 24 locations was well below regulatory limits and in most cases was within the range of U. S. background as illustrated in Table 10.

Cesium-137. The most pervasive elevated isotope cited in Table 6 is cesium-137. Nineteen (19) locations had cesium-137 between 0.3 and 1.2 pCi/g. This is above local background yet within the U.S. range of background. One (1) location had cesium-137 at 2.4 pCi/g which is above U.S. background, however it is below the regulatory limits for release of land with cesium-137 contamination. The regulatory limit cited in Table 10 is 9.2 pCi/g (Rocketdyne-developed limit, based on uniform contamination, the DOE RESRAD code and an annual dose limit of 15 mrem/year). The EPA/NRC limit is 9 pCi/g (also based on uniform contamination and a 15 mrem/year annual dose limit).

Strontium-90. Strontium-90 was found in 2 locations at 0.21 and 0.22 pCi/g. This is above local background but well within the range of U.S. background. All samples were well below the lowest regulatory limits of 12 pCi/g (EPA/NRC limit based on uniform contamination and 15 mrem/year annual dose limit).

Plutonium-239. Four (4) locations exhibited Pu-239 between 0.023 and 0.029 pCi/g. This is above local and U.S. background but well below the lowest regulatory limit of 34 pCi/g (Rocketdyne-developed, based on the DOE RESRAD code, uniform contamination and 15 mrem/year annual dose limit).

Cobalt-60. Three (3) locations showed cobalt-60 in the range 0.039 to 0.13 pCi/g. Two (2) of these samples were barely above the detection limit of 0.03 pCi/g. These are all well below the EPA/NRC regulatory limits of 2.4 pCi/g (based on uniform contamination and 15 mrem/year annual dose limit) and the Rocketdyne-developed limit of 1.9 pCi/g (based on uniform contamination, the DOE RESRAD code and an annual dose limit of 15 mrem/year).

Tritium. Only 1 sample showed any detectable tritium in soil. The sampled location was upslope of the B/059 watershed soil contamination and toward the prior location of Building 010. This was an expected result and tends to confirm the source of the off-site tritium as being Building 010 (see Reference 5). The value of 8,500 pCi/L is similar to the maximum levels in the B/059 watershed soil of 12,700 pCi/L and the maximum values observed in the RD34A well of 7,000 pCi/L. Even though soil moisture is not drinking water, the level is still well below the federal and state drinking water supplier limit of 20,000 pCi/L.

4.2.3.6 Anomolous Soil Sample Activity

In addition to the soil samples discussed above and illustrated in Table 6, four (4) samples exhibited unusually high activity. These resulted in either resampling at the same location (field duplicate) or re-aliquoting or re-analysis of the original sample by the radiochemistry laboratory (laboratory duplicate). In each case the second analysis did not confirm the original analysis and produced results at or below MDA levels. For example, sample 95-0061 produced an initial result of 0.19 pCi/g for Pu-239, a recount of the original aliquot confirmed the original result with 0.18 pCi/g, however a realiquoting and reanalysis produced a result less than MDA. In addition, a later field duplicate (sample 95-0152) failed to detect Pu-239 although this was not a true split. Table 6a shows these comparison results.

4.2.4 Water Sampling Results

Only 4 scheduled water samples were taken, two for tritium analysis and two for all other isotopes. All four samples were taken from the SRE pond. Tritium, all gamma emitting isotopes, all plutonium isotopes, thorium-228, thorium-232, and Uranium-235 were all below detection limits (MDA). Thorium-230 was detected in one sample at 0.22 +/- 0.089 pCi/L (MDA = 0.07

pCi/L, no drinking water MCL). Strontium-90 was detected in one sample at 0.2 +/- 0.11 pCi/L (MDA = 0.1 pCi/L, drinking water MCL = 8 pCi/L). Uranium 234 was detected in two samples at 1.8 +/- 0.47 pCi/L and 1.2 +/- 0.24 pCi/L. Uranium-238 was detected in two samples at 1.4 +/-0.37 pCi/L and 0.93 +/- 0.27 pCi/L (MDA = 0.1 - 0.2 pCi/L). The drinking water MCL for combined uranium is 20 pCi/L. Uranium and Thorium concentrations are similar to observed historical groundwater concentrations at SSFL. In both groundwater and the SRE samples isotopic ratios indicated that the isotopes are of natural origin and not from processed or enriched material as would be the case from nuclear fuel.

All detected isotopes in the water samples are well below the federal and state drinking water supplier MCLs.

5.0 QUALITY ASSURANCE RESULTS

Area IV characterization survey quality assurance activities were described in Section 3.4. The results of these activities are presented in this section. Data quality objectives (DQO) include precision, accuracy, representativeness, completeness and comparability (PARCC). The section discusses quality assurance results for each of these indicator parameters of data quality, in the same format used in Section 3.4.

Table G-1 provides a concise summary of the soil QA results. Laboratory duplicates had a pass rate of 93%; field duplicates had a pass rate of 88%; DHS field duplicates had a pass rate of 69%; labaratory control samples had a pass rate of 99%; laboratory blanks had a pass rate of 97%; and equipment rinsate samples had a pass rate of 97%. Overall, the various QA samples had an aggregate pass rate of 90%.

5.1 PRECISION

5.1.1 Gamma Radiation Surveys

All ambient gamma measurements were taken with two redundant NaI detector/scaler combinations for cross comparison purposes.

The ambient gamma survey included measurements at the east and west boundaries of each survey block. This provided duplicate measurements for 18 of the 81 measurement locations in each full survey block (22%). The number of duplicate and total measurements were reduced in survey blocks with obstructions which prevented making measurements at some of the 25-ft grid locations. Also, survey blocks at the edges of the region in which the ambient gamma survey was done had duplicate measurement locations on only one side. The resulting number of duplicate locations was 895. The locations and gamma levels measured can be found by examining the results for adjacent survey blocks in Appendix B.

The precision of the measurements was estimated by comparing the two gamma activity measurements made at each of the repeated locations. The relative percent deviation of each pair was determined by dividing their difference by their average. The exposure rate measured in the survey of the western survey block was subtracted from that in the eastern survey block, giving the deviations a positive or negative sign, depending on the random variations of the measured values. The standard deviation of the relative percent deviations was 6.1%. Their average was -0.2%, which is near zero as it should be for random variation of two measurements at the same location.

The variation in the pairs of duplicate measurements reflects both counting statistics and more importantly, uncertainty in reproducing the same location for the two measurements. Most of the measurement pairs do not have much deviation, as shown by the 6.1% standard deviation of the set. In some cases, a fairly large deviation occurred. The deviations ranged from -32.4% to 23.2%. An example of dissimilar measusurements (bolded) can be seen from the set of measurements along the common boundary between survey blocks H12 and H13:

North coordinate:	0	25	50	75	100	125	150	175	200
Block:	Exposure rate (μR/hr):								
H12	12.6	8.1	**8.5**	9.7	**11.1**	16.6	15.8	15.6	14.8
H13	12.2	8.0	**6.8**	9.5	**15.4**	16.6	14.6	14.6	14.3

These deviations show the difficulty of repeating locations in the rugged terrain.

5.1.2 Soil Sampling

Soil sampling and analysis included samples in each batch to determine the precision of the soil isotopic composition values. Each batch included one field duplicate, or split, sample to provide a measure of the precision of the complete sampling and analysis process. Eight field duplicate samples were analyzed. Each batch also included one or two laboratory duplicate samples to provide a measure of the precision of the analysis process. (Two laboratory duplicate samples were prepared and analyzed when the field batch of 20 samples was analyzed in two batches of 10 samples.) A total of 11 laboratory duplicate samples were analyzed.

The lab duplicate results are presented in Table G-2. The "relative percent difference" (RPD) between the scheduled samples and the lab duplicates is an expression of the precision of analysis methods. The RPD was less than the 3σ acceptance limit, 93% of the time. Pass rates for individual isotopes ranged from 82% to 100%. This demonstrates the excellent precision of the laboratory analysis methods.

The field duplicate results are presented in Tables G-6 through G-14. The "relative percent difference" (RPD) between the scheduled samples and the field duplicates is an expression of the precision of both the sampling methods and analysis methods. The RPD was less than the 3σ acceptance limit, 88% of the time. Pass rates for individual isotopes ranged from 75% to 100%. This demonstrates the excellent precision of the sampling methods and laboratory analysis methods.

The California Department of Health Services (DHS) participated in the soil sampling and took 12 soil duplicates and 1 water duplicate. The DHS field duplicate results are presented in Tables G-15 through G-27. The RPD was less than the 3σ acceptance limit, 69% of the time. Pass rates for individual isotopes ranged from 100 % for cesium-137 to 25% for potassium-40. DHS potassium-40 results were all within 10% of Rocketyne results, but because of the relatively narrow 2σ analysis limits, the 3σ RPD acceptance limit proved difficult to attain. This does not pose a problem since potassium-40 is a naturally occuring isotope. The RPDs for the plutonium isotopes were 67% and 83% due to the proximity of many measurements to the MDA of the analysis.

The one water field duplicate taken by DHS indicated non-detects for tritium and gamma emitting isotopes, consistent with Rocketdyne results.

5.2 ACCURACY

5.2.1 Gamma Radiation Surveys

Every detector/scaler combination underwent calibration at least quarterly and after every equipment failure or malfunction. In addition, every detector/scaler combination in use on any one day underwent thrice daily performance checks where both background and source (10 μCi cesium-137) response were recorded. Over the eighteen month period of the survey this amounted to approximately 5,000 background and 5,000 source checks. Results were plotted on control charts to ensure that detector/scaler combinations variability remained within acceptable $+/-2\sigma$ bounds and to detect incipient detector drift or failure.

All ambient gamma measurements were made with two detector/scaler combinations. Results reported were the average of both. Excessive differences between each detector would result in the instrument being taken out of service and repaired/recalibrated.

For all 172 200 ft x 200 ft blocks surveyed by the walk-about method, a 10 μCi cesium-137 source was hidden in the underbrush. This was done to monitor the alertness of the field crew. The surveyors were able to detect and find the source 100 % of the time.

5.2.2 Soil Sampling

Each batch of 20 soil samples had an associated "laboratory control sample" (LCS) in which a known quantity of isotopes had been added. Between 11 and 17 such samples were analyzed depending on the isotope. The "percent recovery" (PR) was the ratio of the measured activity to the known activity and was an expression of the accuracy of the lab analysis. The PR was within the +/- 3σ acceptance limit, 99% of the time. Pass rates for all isotopes were 100% with the exception of tritium which had a pass rate of 92%. This demonstrates the outstanding accuracy of the laboratory analysis methods.

Each batch of 20 soil samples had one or more associated laboratory blanks (which were known to be free of radioisotopes) analyzed concurrently. Between 11 and 17 such blanks were analyzed depending on the isotope. A measured value less than the MDA of the analysis method was the expected result of blank analyses. Such a "zero" result was obtained 100% of the time for all isotopes with the exception of Thorium-230 which had a 56% pass rate. This demonstrates that the laboratory analysis methods are not subject to "false positive" results for most isotopes. The "false positive" Thorium-230 results were only slightly above the 0.03 pCi/g MDA and would not significantly affect results of environmental levels of Thorium-230 which average 1 pCi/g.

Each batch of 20 soil samples had 1 set of equipment rinsate samples analyzed. Seven rinsate samples were analyzed (the rinsate sample for batch one was broken during shipment). A measured value less than the MDA of the analysis method was the expected result of rinsate analyses and would indicate that sampling equipment had been adequately cleaned and decontaminated such that no cross contamination of samples was possible. The pass rate averaged 97% with 100% for most isotopes. Naturally occuring Thorium-230 (see above), Uranium-238 and Potassium-40 were detected at levels slightly above the MDA in several rinsates.

5.3. REPRESENTATIVENESS

5.3.1 Gamma Radiation Surveys

All types of topography and ground cover were represented in the ambient and walk-about gamma radiation surveys. These included disturbed and undisturbed alluvium, developed areas, drainage areas, martinez-chaparral areas and rock outcroppings.

5.3.2 Soil Sampling

All types of topography and ground cover were represented in the soil sampling. These included disturbed and undisturbed alluvium, developed areas, drainage areas, martinez-chaparral areas, leachfields and areas proximate to radiological facilities.

5.4 COMPLETENESS

5.4.1 Gamma Radiation Surveys

Approximately 54% of the 290 acres of Area IV were covered with ambient gamma and walk-about gamma measurements. Approximately 21% of the 290 acres of Area IV were covered with walk-about gamma measurements only. The remaining 25% were either ex-radiological facilities previously surveyed and/or released, radiological facilities undergoing remediation, insides of non-radiological facilities or inaccessible terrain.

5.4.2 Soil Sampling

All types of topography and ground cover were represented in the soil sampling. These included disturbed and undisturbed alluvium, developed areas, drainage areas, martinez-chaparral areas, leachfields and areas proximate to radiological facilities.

5.5 COMPARABILITY

5.5.1 Gamma Radiation Surveys

Consistent methods and procedures were used throughout the gamma radiation surveys to ensure comparability of data. To account for potential systemmatic differences in radiation detector response, every detector/scaler combination used in the survey was cross-calibrated against a single Reuter-Stokes ionization chamber, thrice daily. This provided a consistent baseline conversion from counts per minute (cpm) to microroentgen per hour (μR/hr). All ambient gamma measurements were taken with two redundant NaI detector/scaler combinations for cross comparison purposes.

5.5.2 Soil Sampling

For the majority of Area IV soil samples, one analysis laboratory was utilized. The decision to use previously derived background soil data from a different laboratory did not indicate any systematic differences in analysis methods other than the isotopic uranium and thorium analysis as discussed in Section 4.2.3.2.

6.0 REFERENCES

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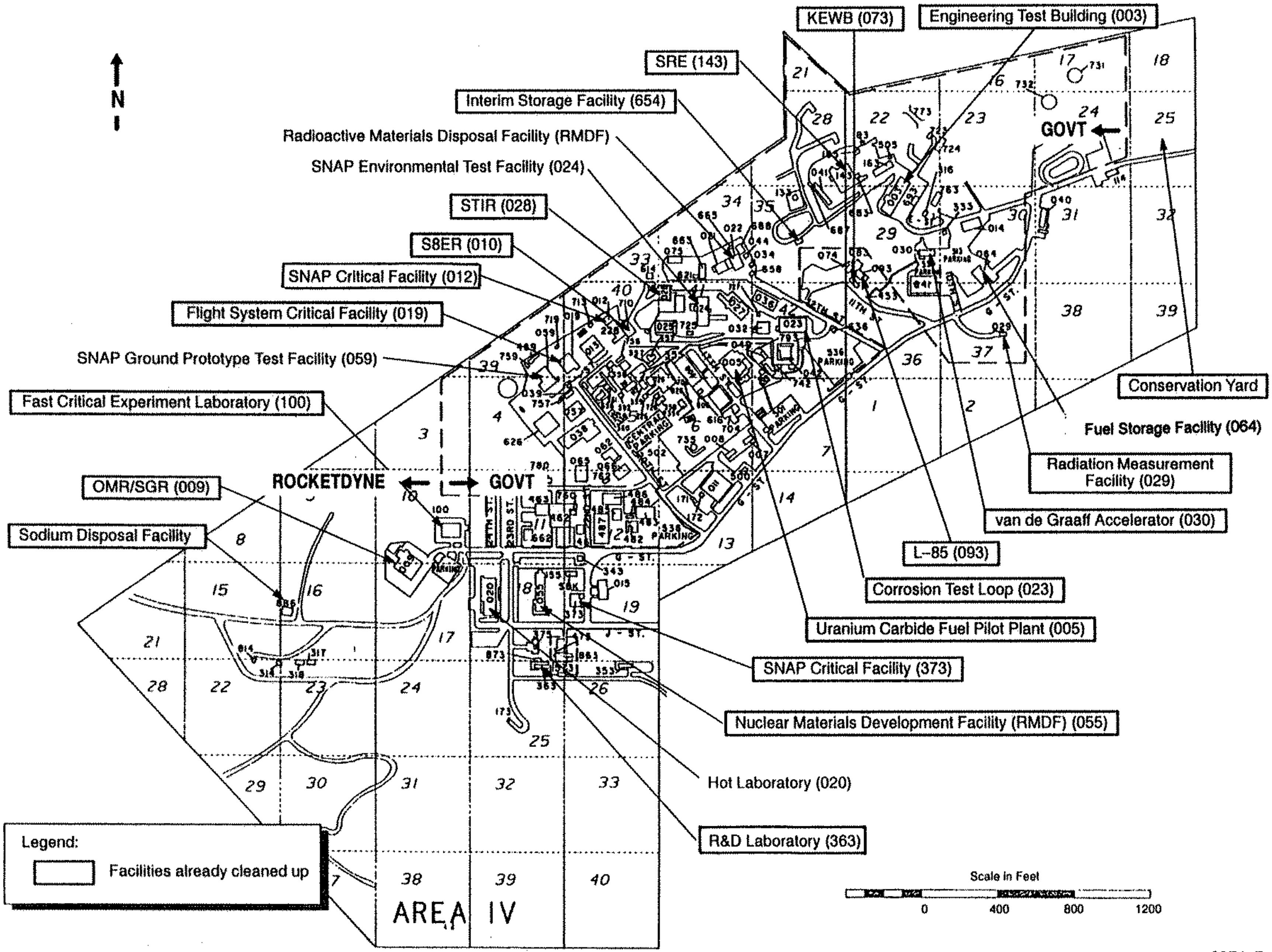


Figure 1. Santa Susana Field Laboratory Area IV Radiological Facility Status

Figure 2. Ambient Gamma Radiation Exposure for All Area IV

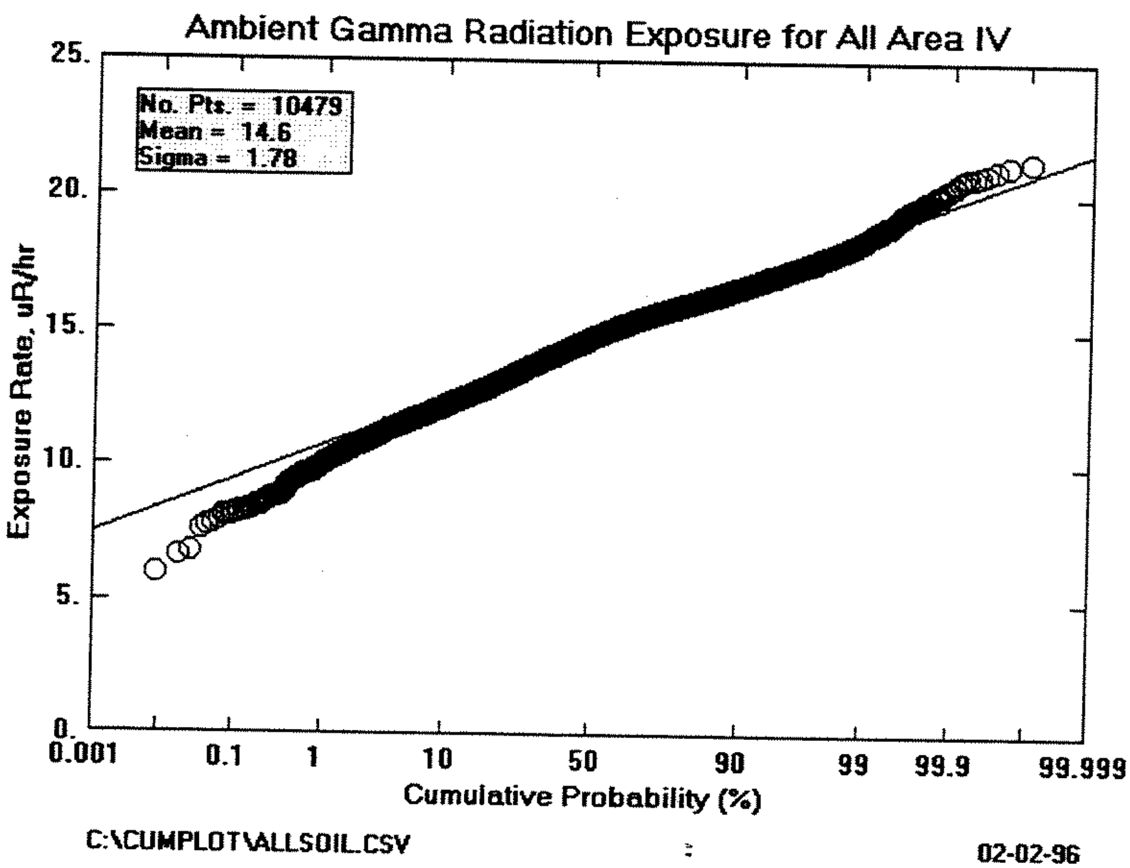
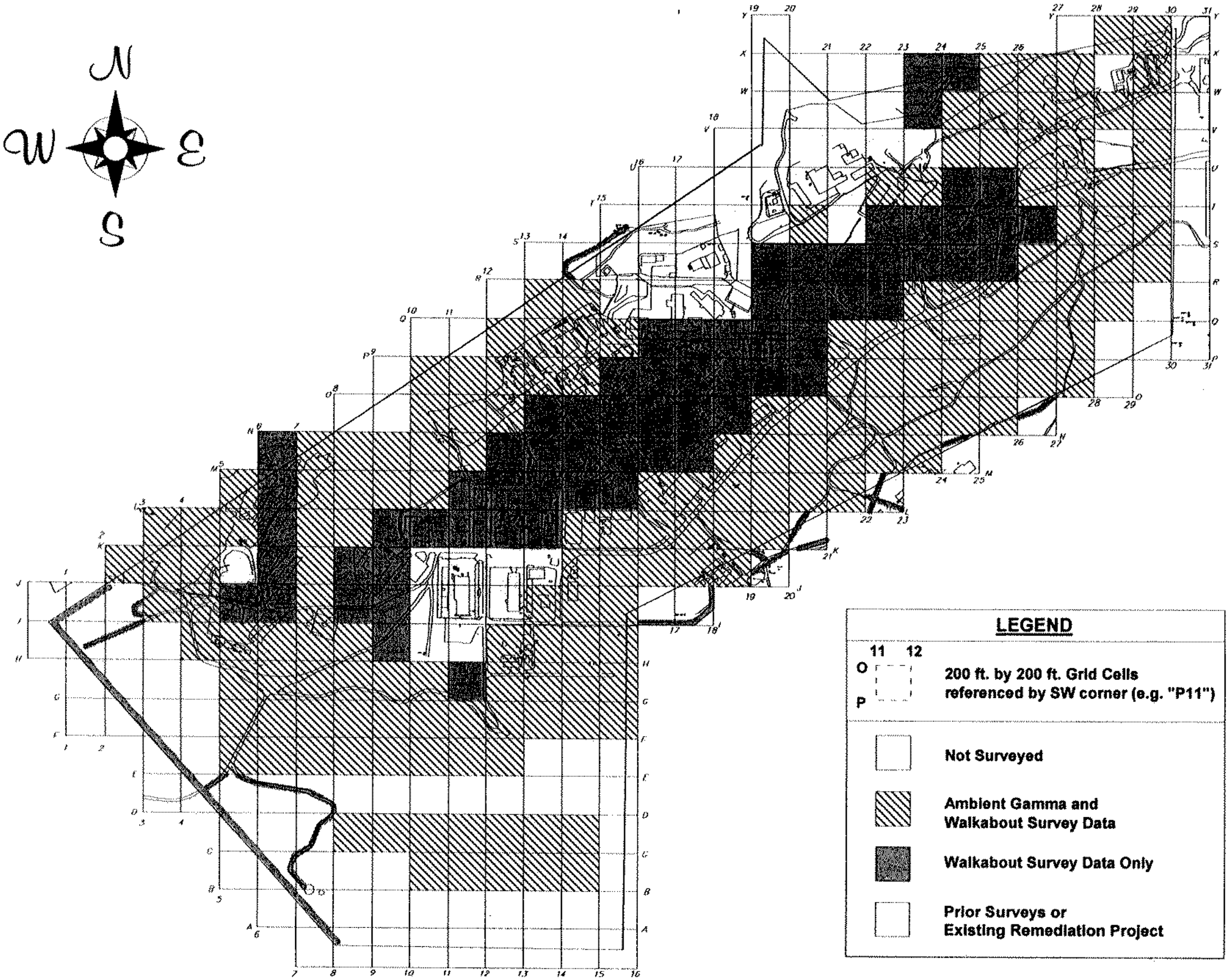


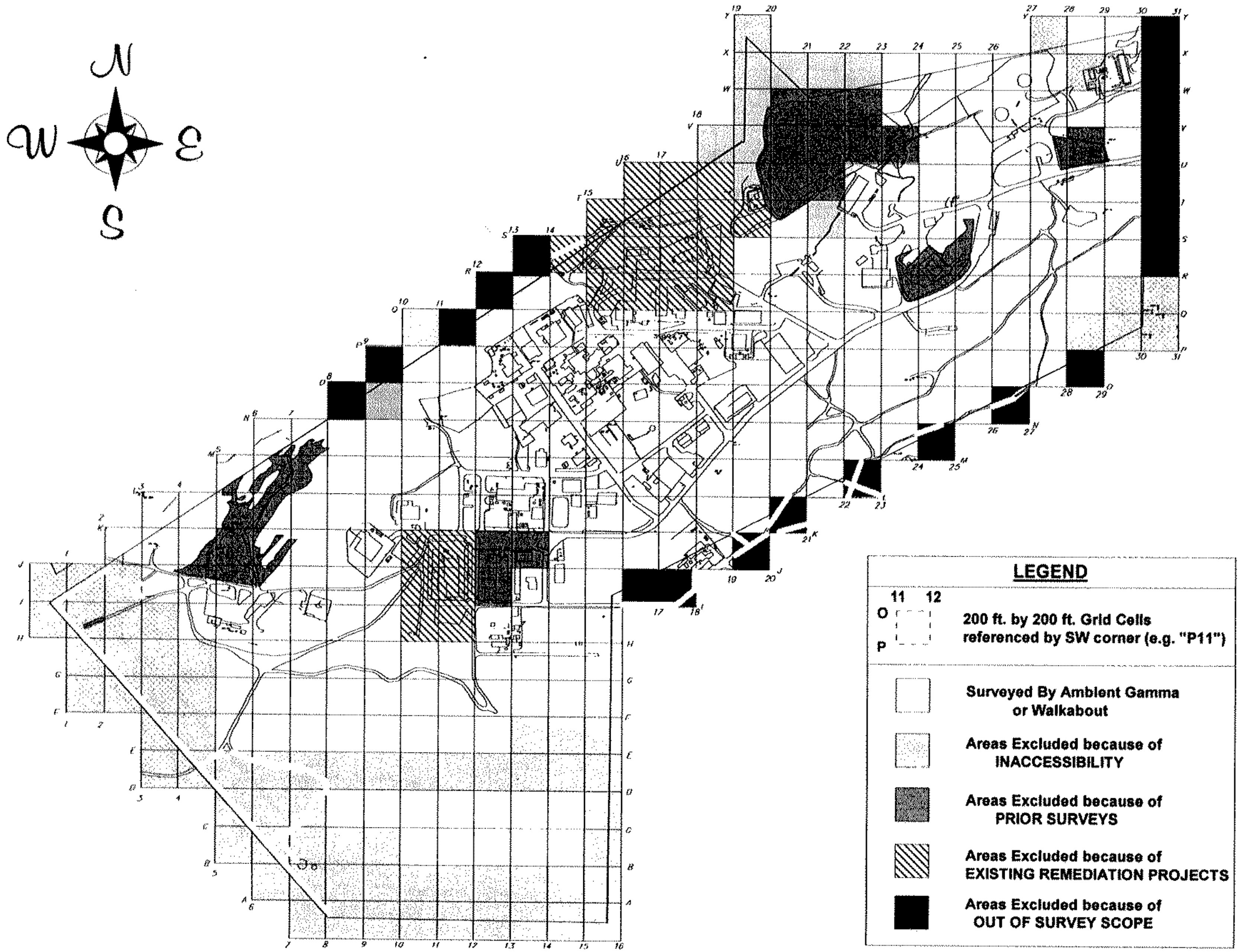
Figure 3. Areas Surveyed by Ambient Gamma and Walkabout Surveys



C:\DSG\A4FMAP3.DRW

A4CM-ZR-0011

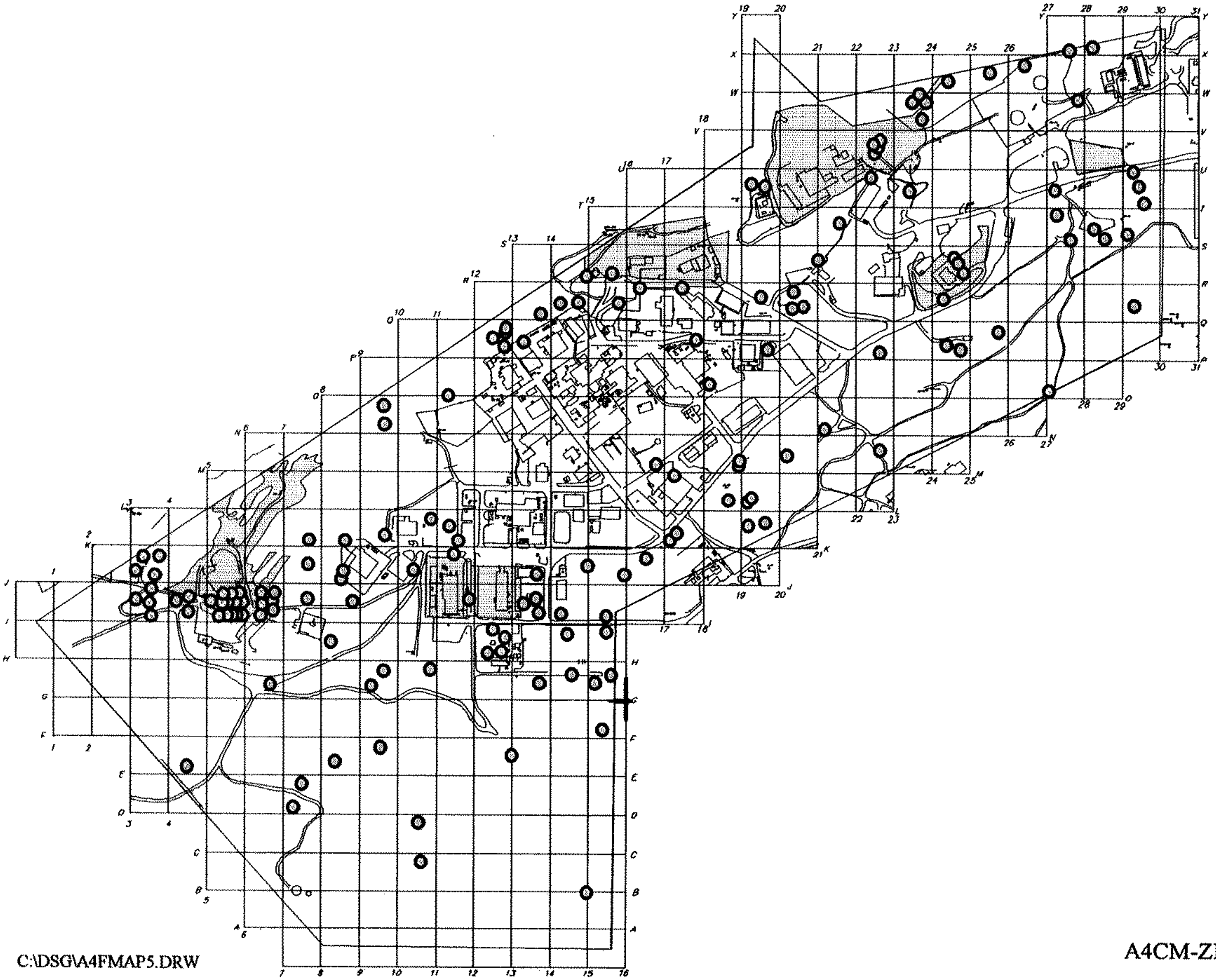
Figure 4. Areas Excluded from Gamma Surveys



C:\DSG\A4FMAP4.DRW

A4CM-ZR-0011

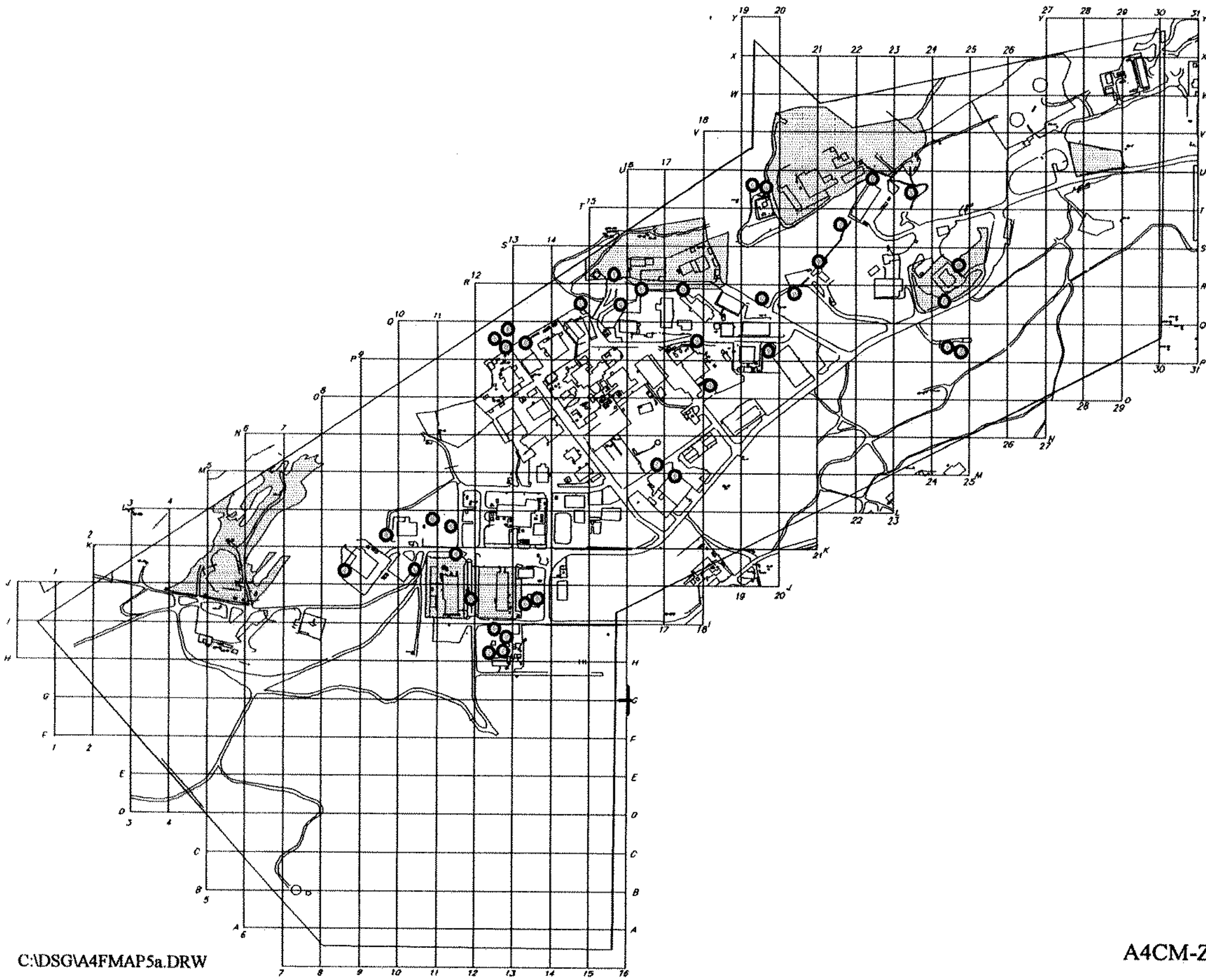
Figure 5. Soil Sampling Locations - All



C:\DSG\A4FMAP5.DRW

A4CM-ZR-0011

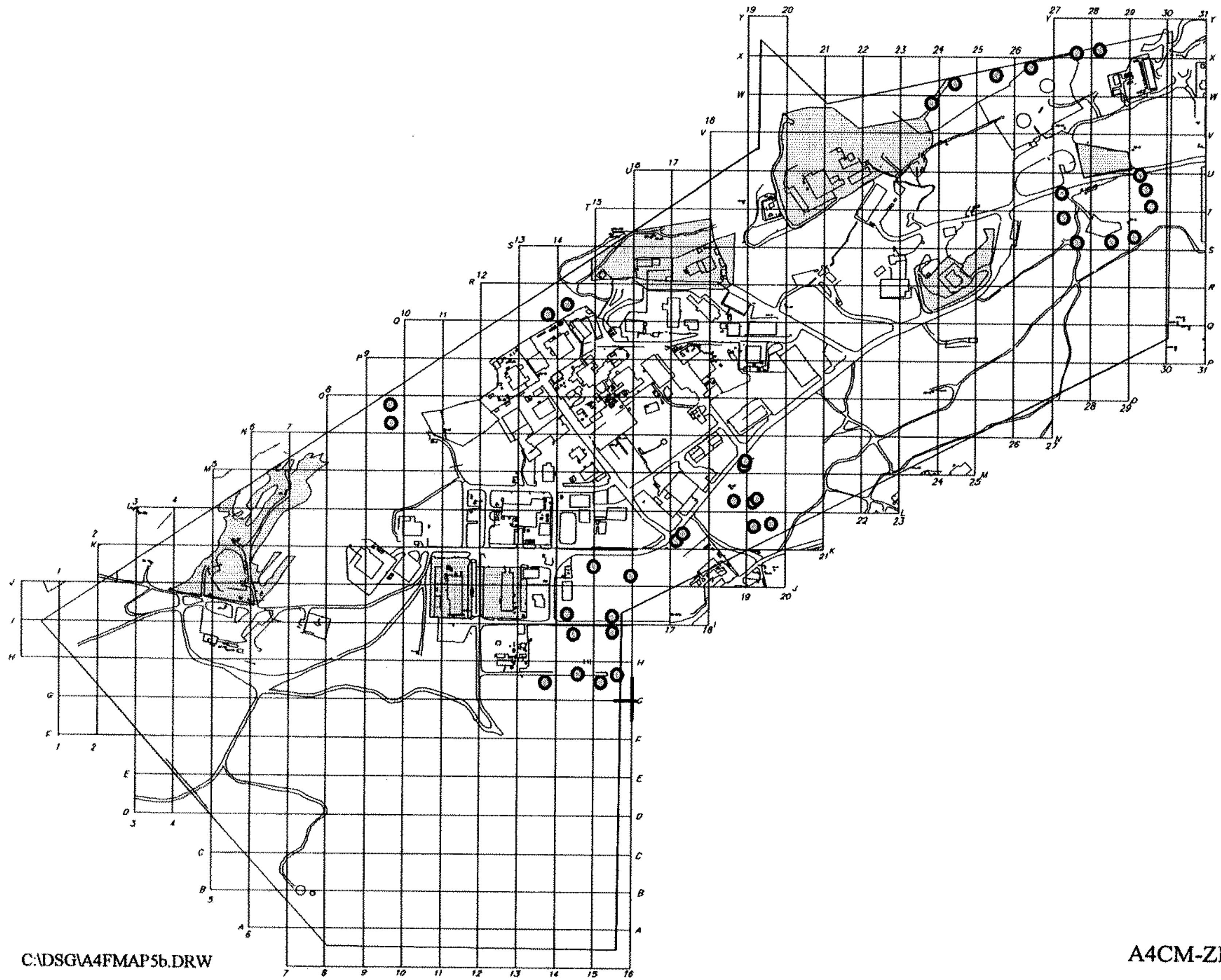
Figure 5a.   Soil Sampling Locations - Radiological Buildings



C:\DSG\A4FMAP5a.DRW

A4CM-ZR-0011

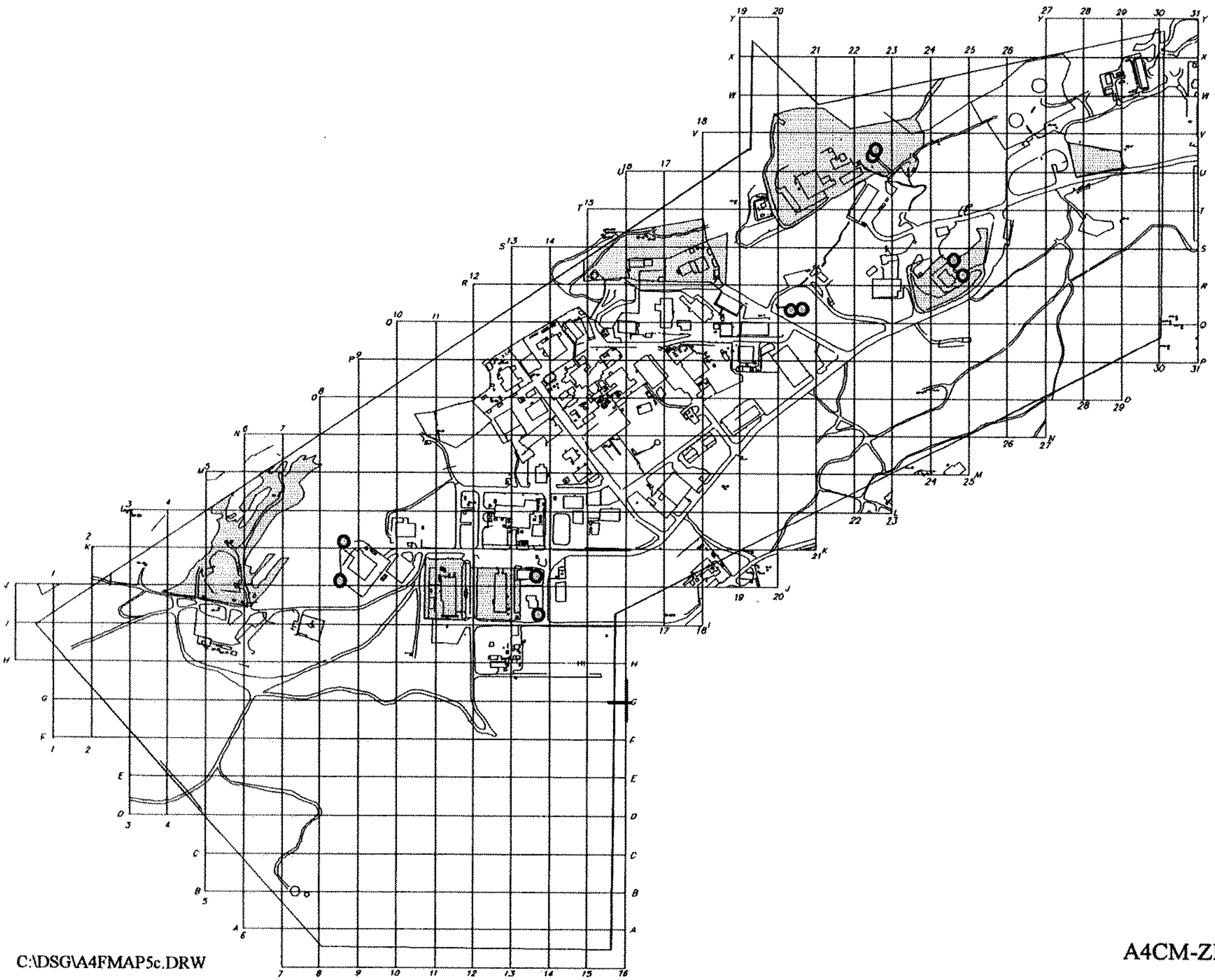
Figure 5b. Soil Sampling Locations - Drainage Areas



C:\DSG\A4FMAP5b.DRW

A4CM-ZR-0011

Figure 5c. Soil Sampling Locations - Leachfields



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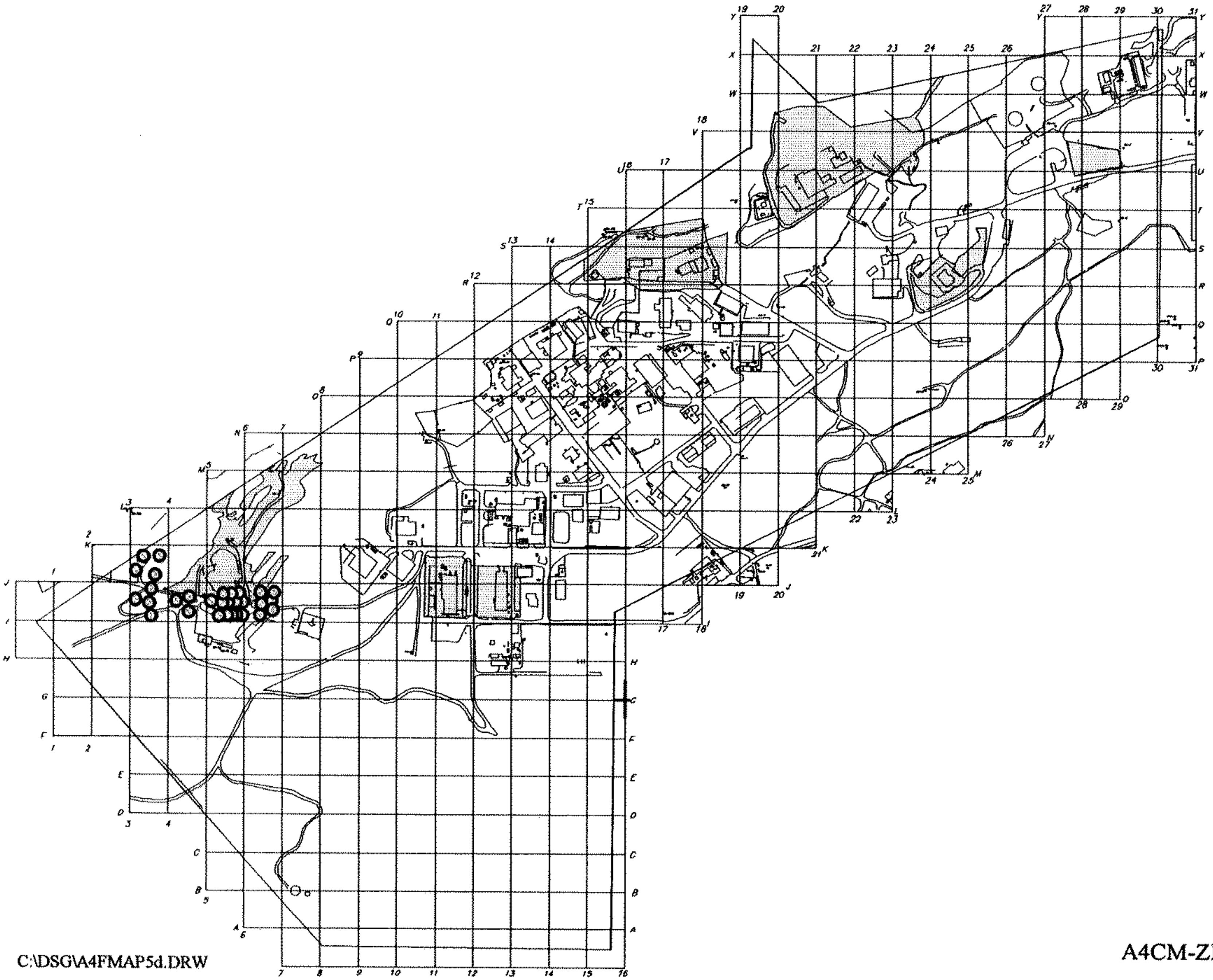
A4CM-ZR-0011

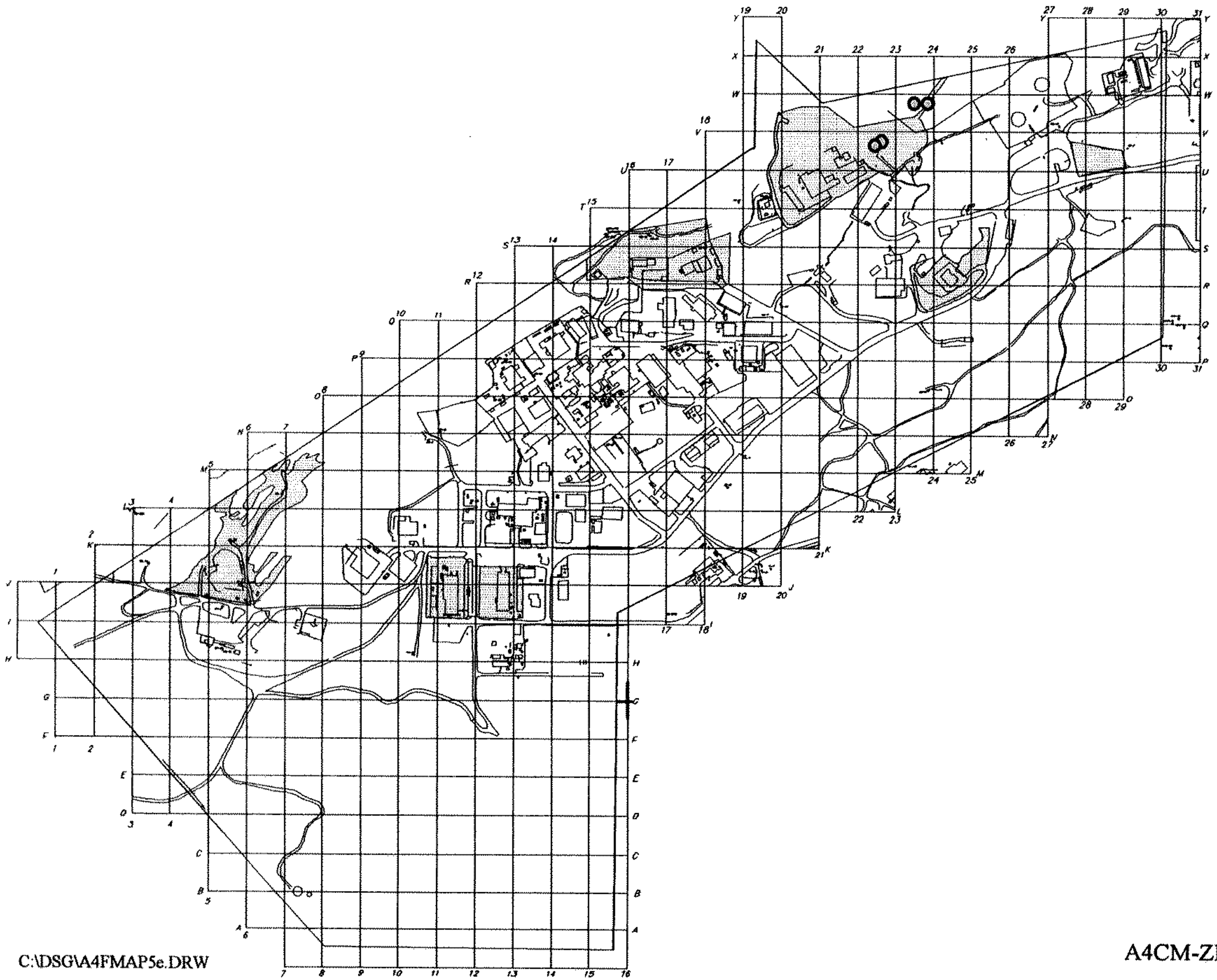
Figure 5d. Soil Sampling Locations - Sodium Disposal Facility



C:\DSG\A4FMAP5d.DRW

A4CM-ZR-0011

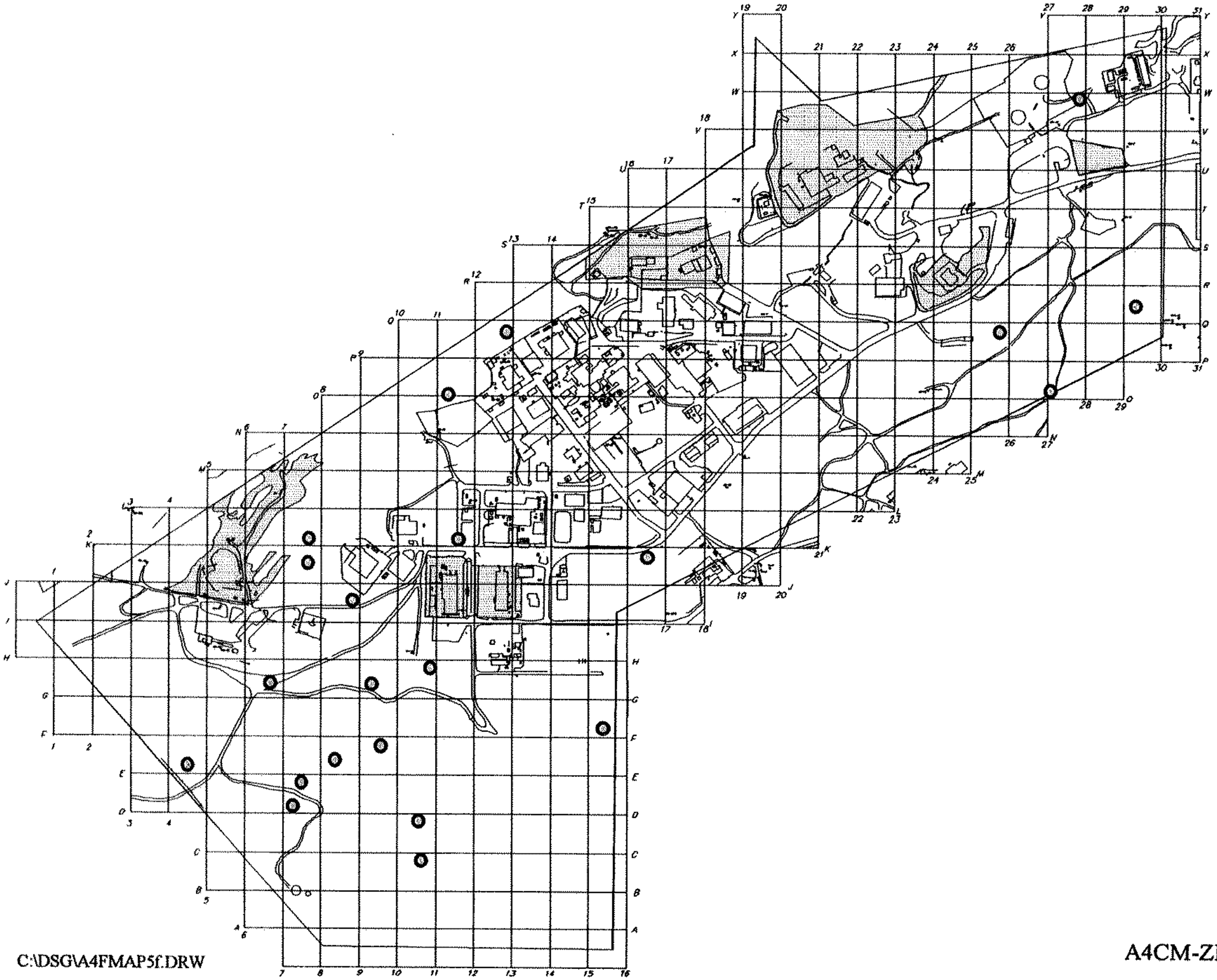
Figure 5e. Soil Sampling Locations - SRE Pond



C:\DSG\A4FMAP5e.DRW

A4CM-ZR-0011

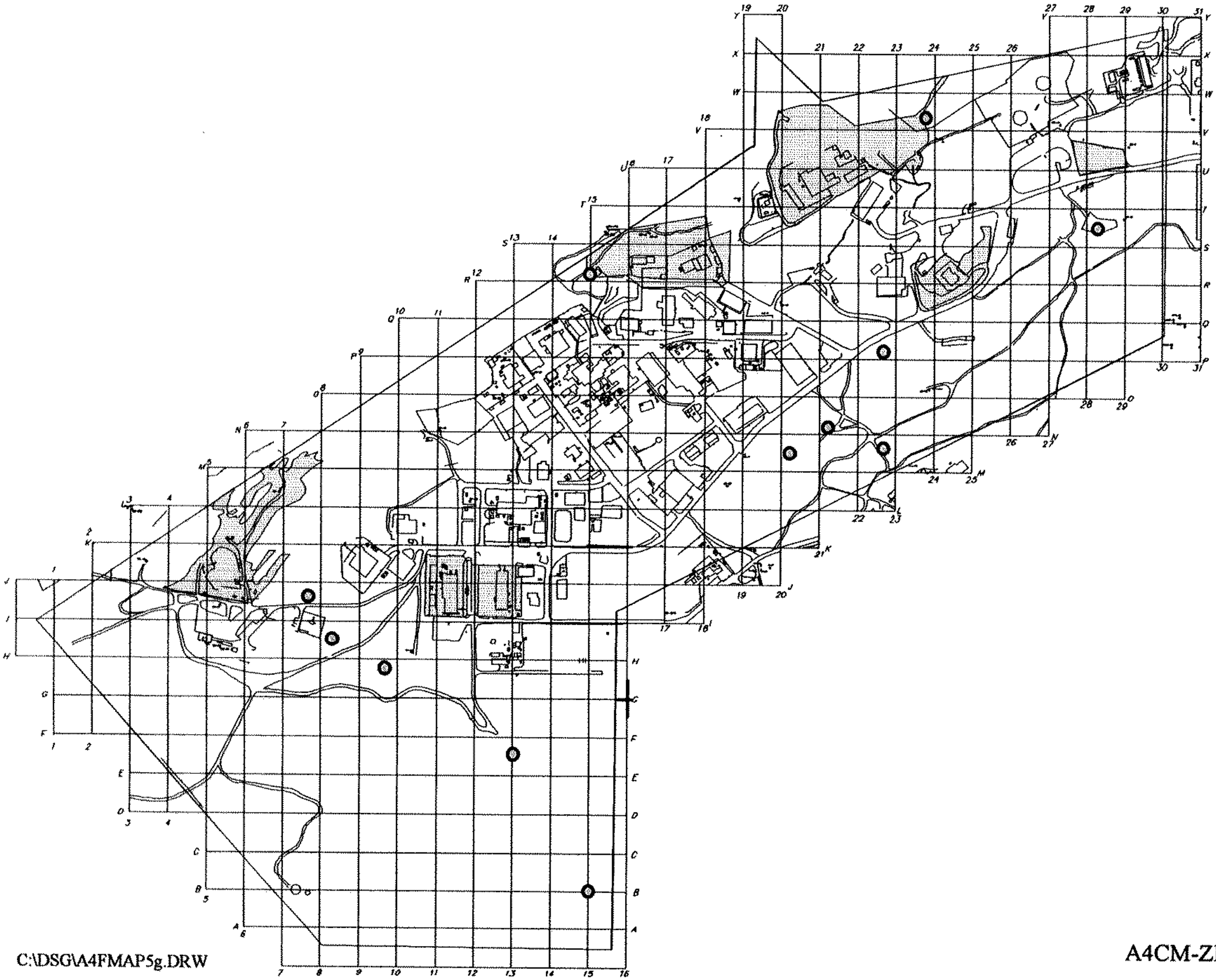
Figure 5f. Soil Sampling Locations - Random Topographic



C:\DSG\A4FMAP5f.DRW

A4CM-ZR-0011

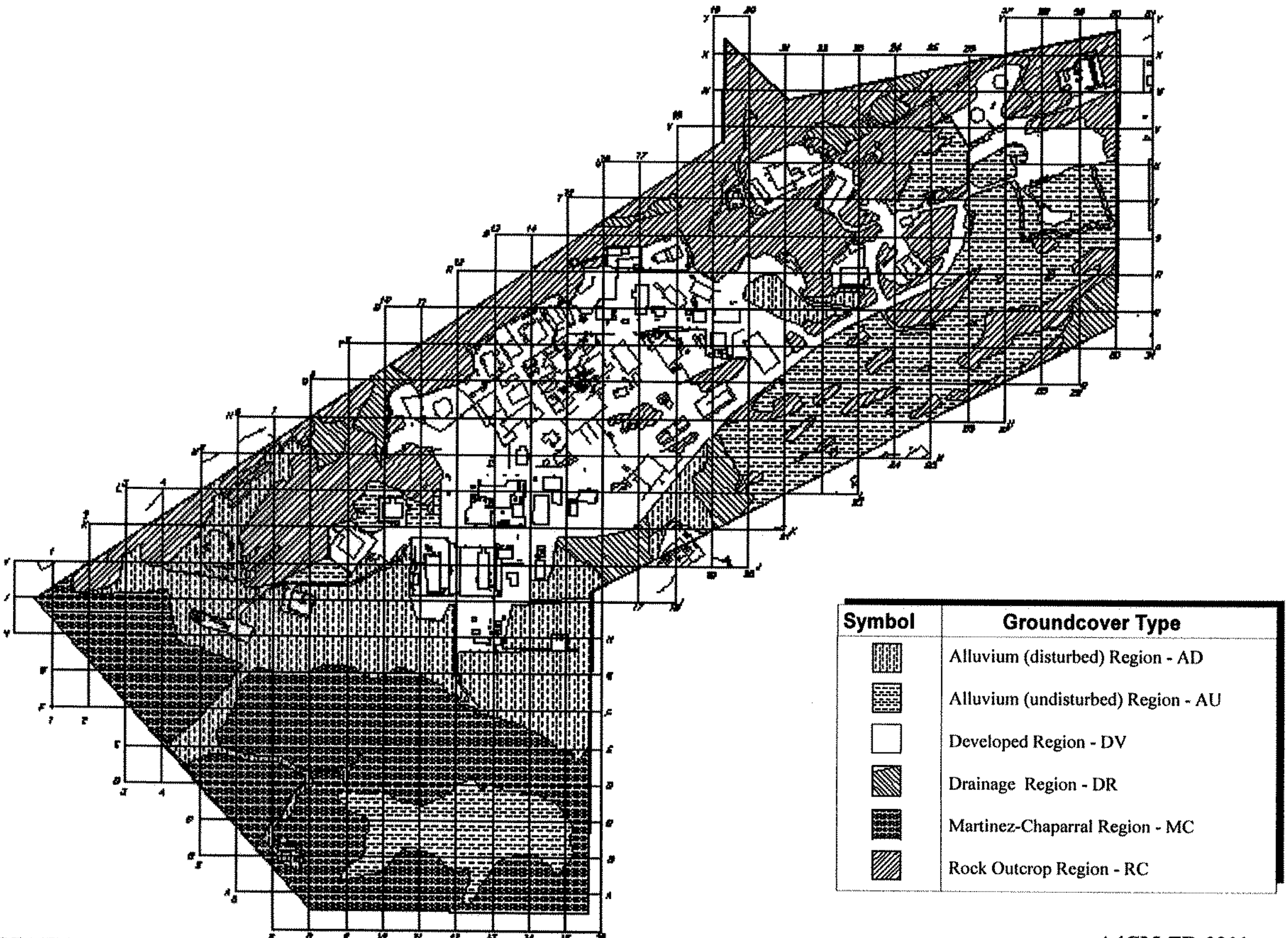
Figure 5g. Soil Sampling Locations - Elevated Gamma



C:\DSG\A4FMAP5g.DRW

A4CM-ZR-0011

Figure 6. Area IV Analysis Regions (Topography and Groundcover)



C:\DSG\A4FMAP6.DRW

A4CM-ZR-0011

Figure 7. Comparison of Area IV Gamma Radiation to the 5μR/hr Regulatory Limit

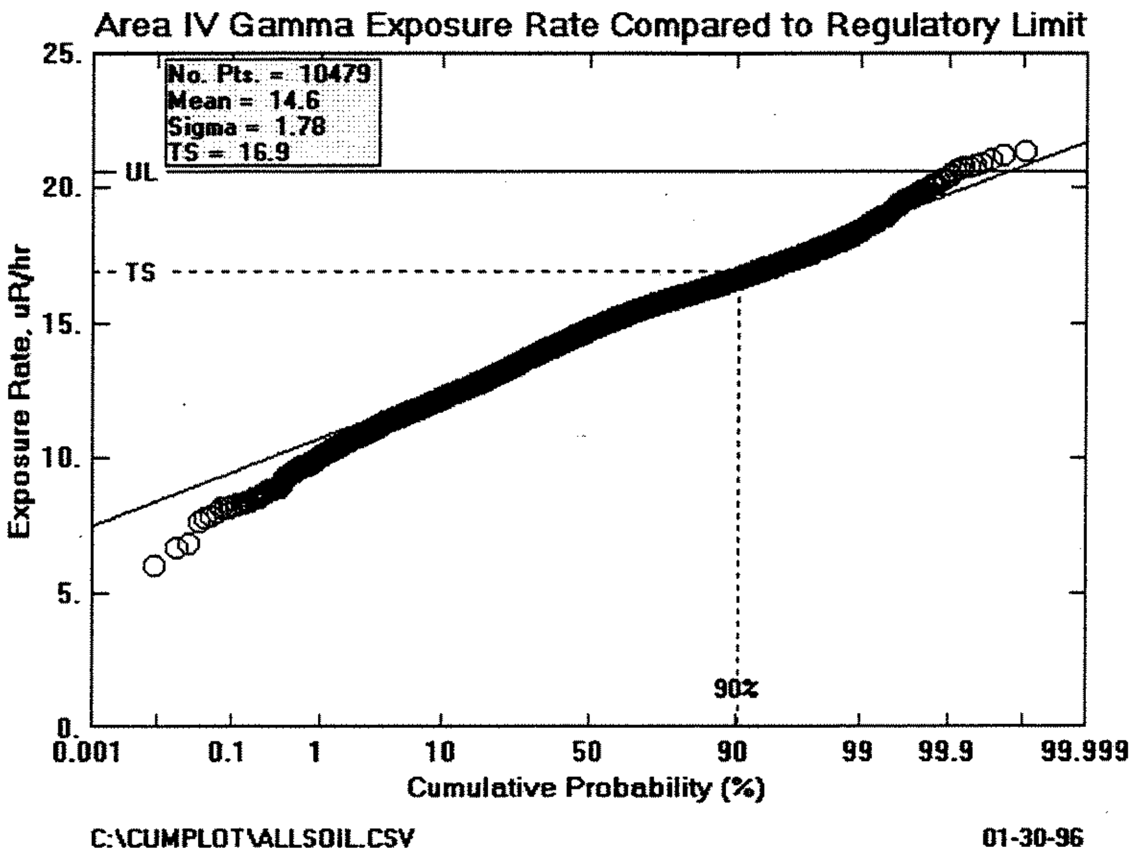


Figure 8. Locations of Elevated Soil Activity - Survey Block I3 - Sodium Disposal Facility Area

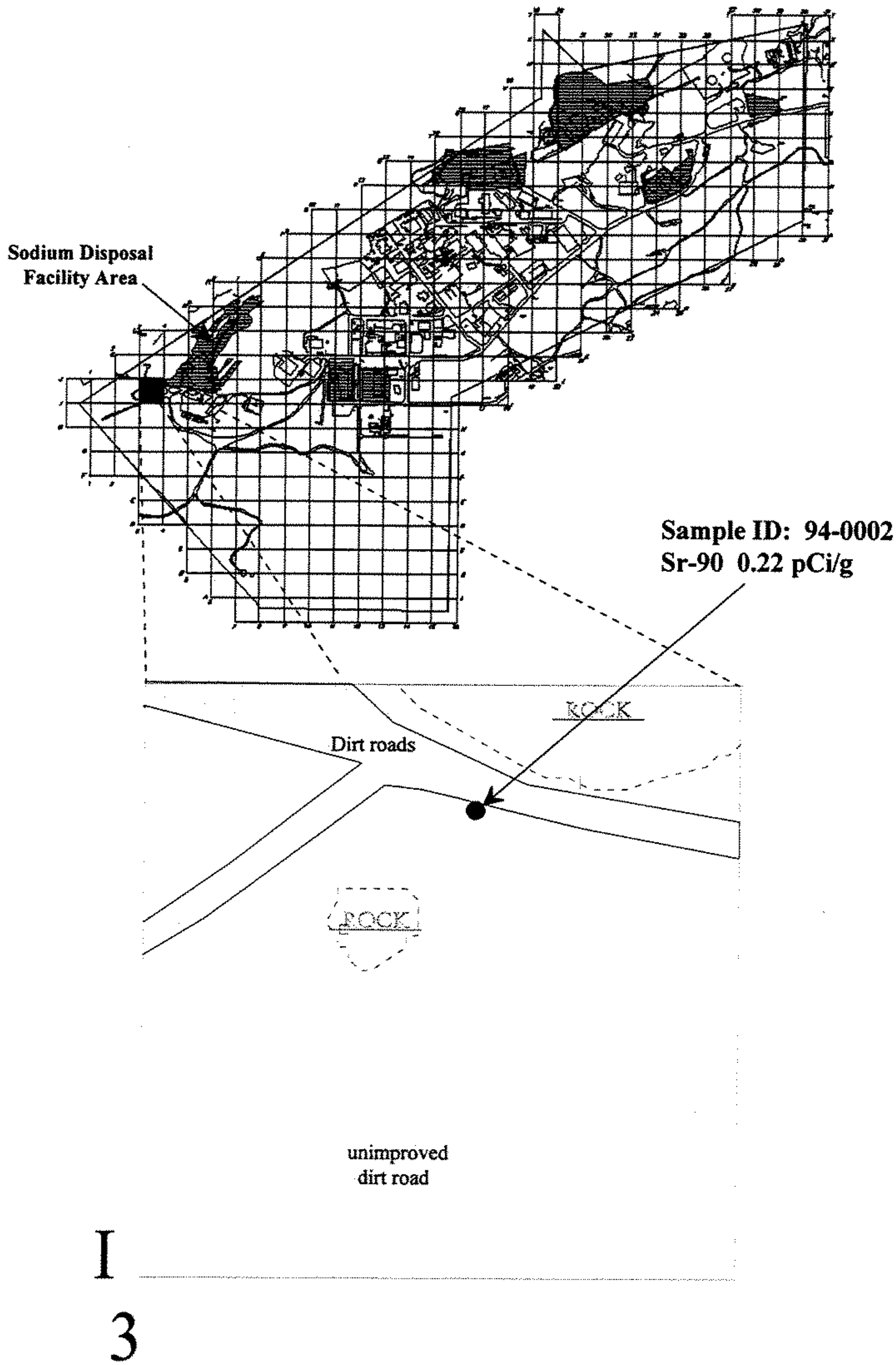


Figure 9. Locations of Elevated Soil Activity - Survey Block S27 - Drain Area for OCY (Old Conservation Yard)

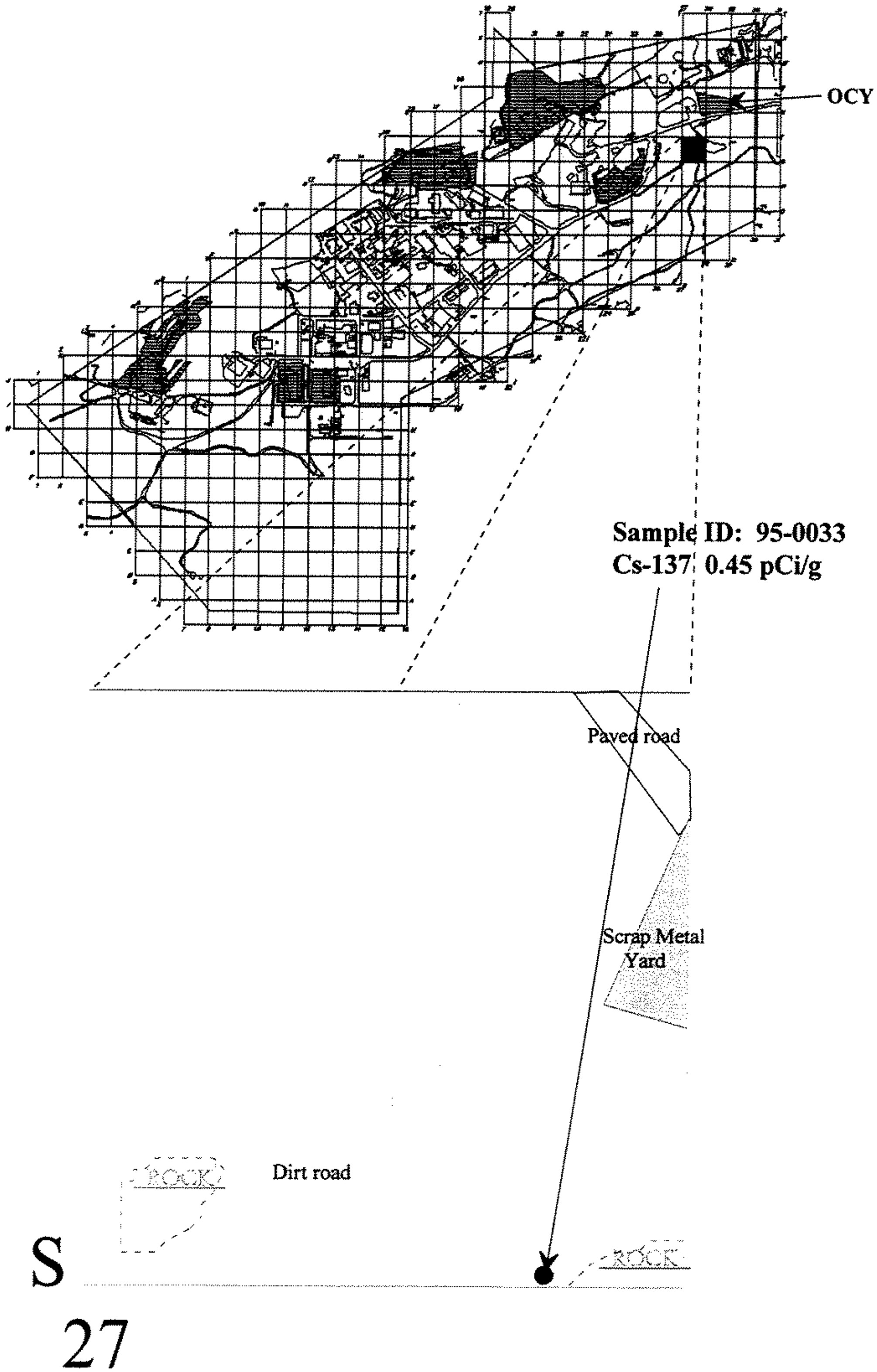


Figure 10. Locations of Elevated Soil Activity - Survey Block S28 - Drain Area for OCY (Old Conservation Yard)

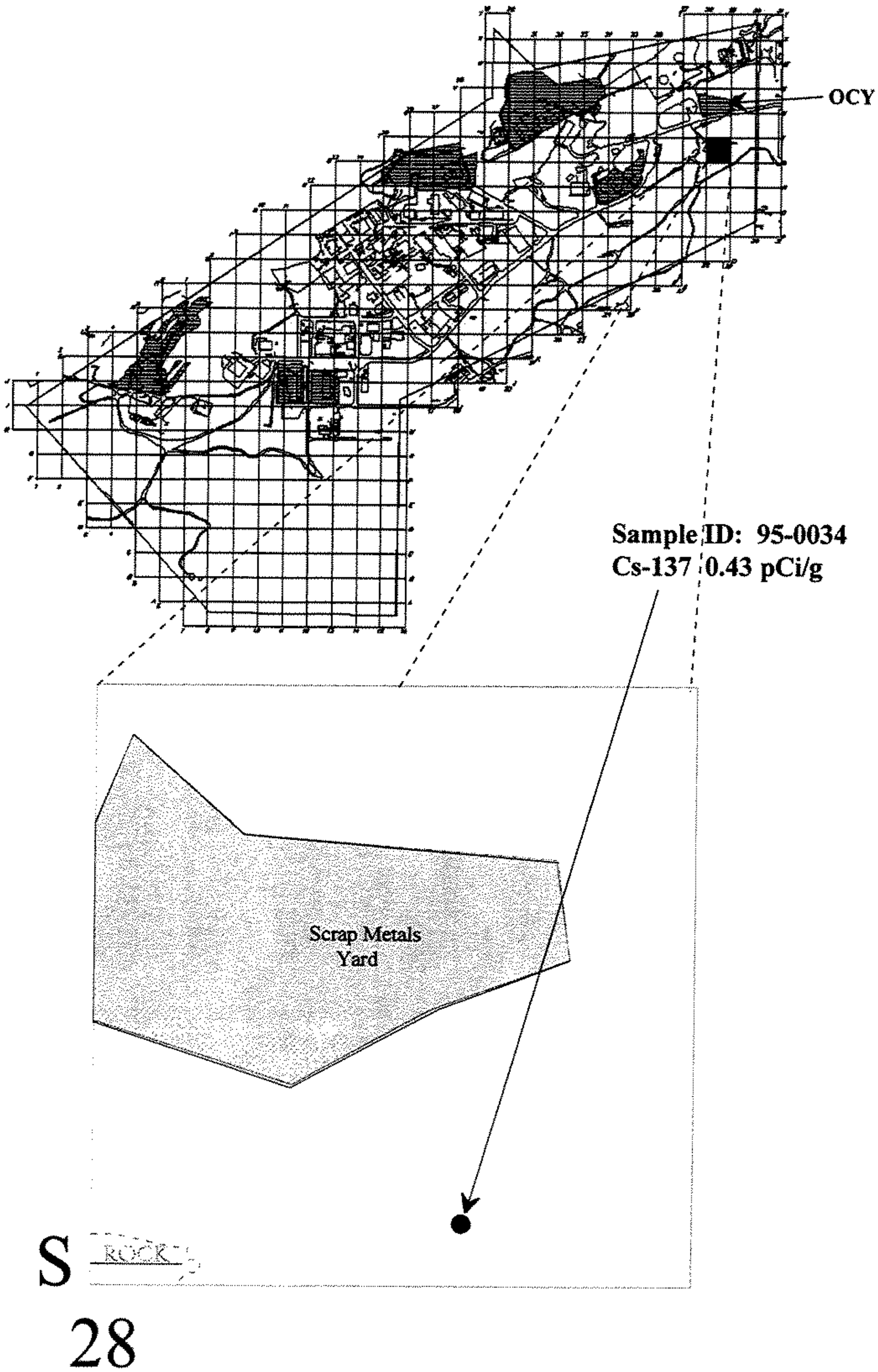


Figure 11. Locations of Elevated Soil Activity - Survey Block S29 - Drain Area for OCY (Old Conservation Yard)

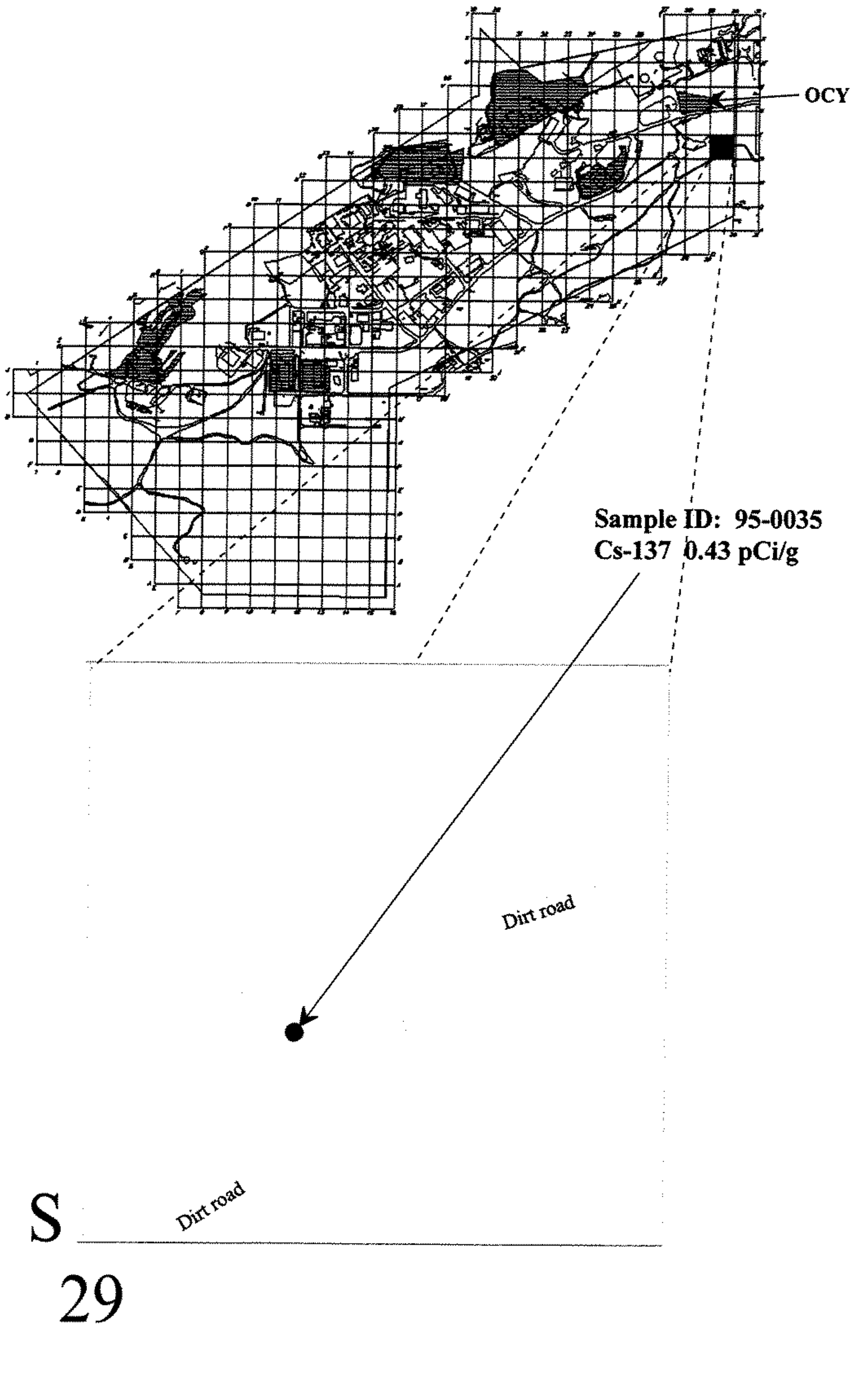


Figure 12. Locations of Elevated Soil Activity - Survey Block L19 - Drain - 17th St.

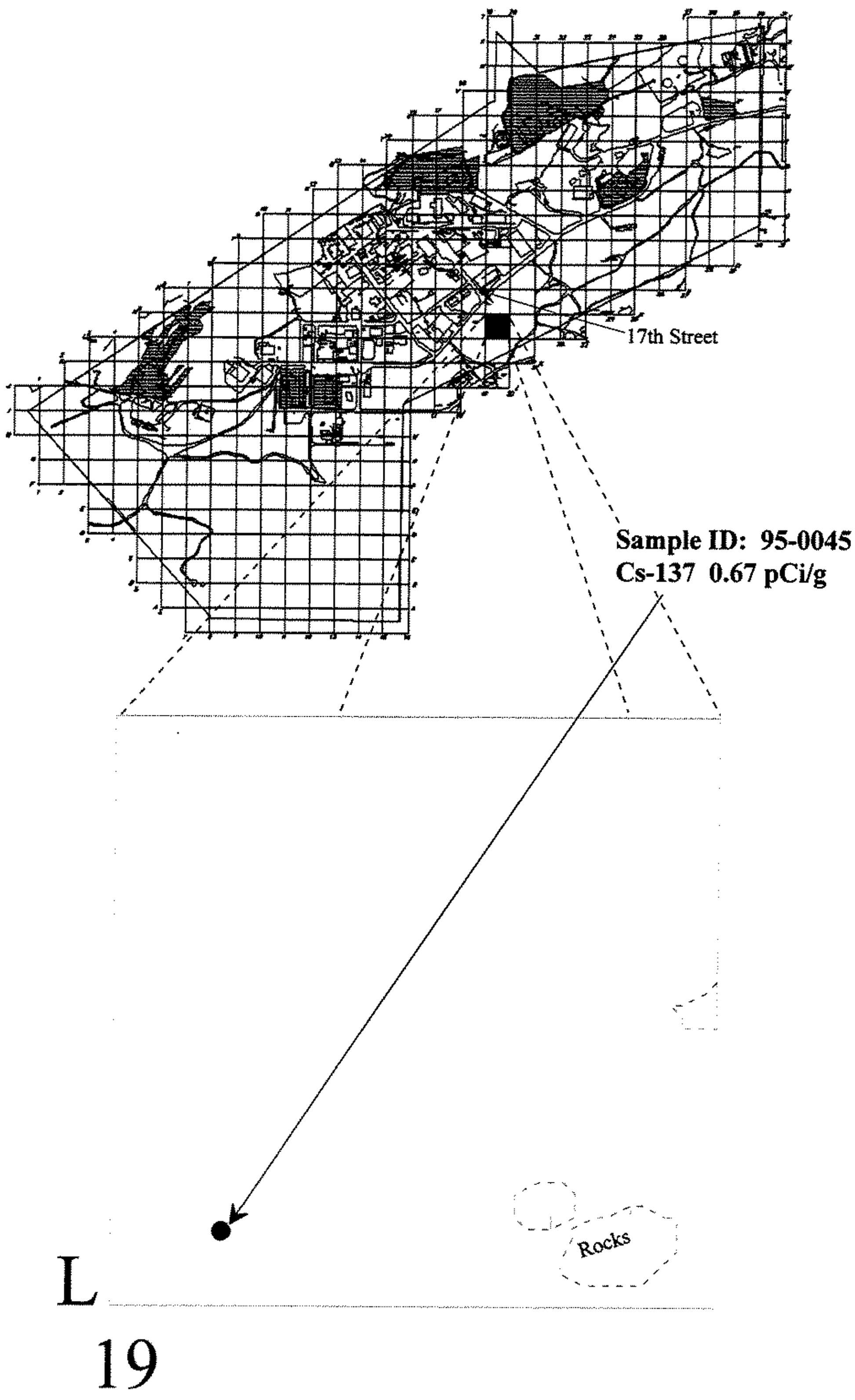


Figure 13. Locations of Elevated Soil Activity - Survey Block L17 - Bldg 011 Area

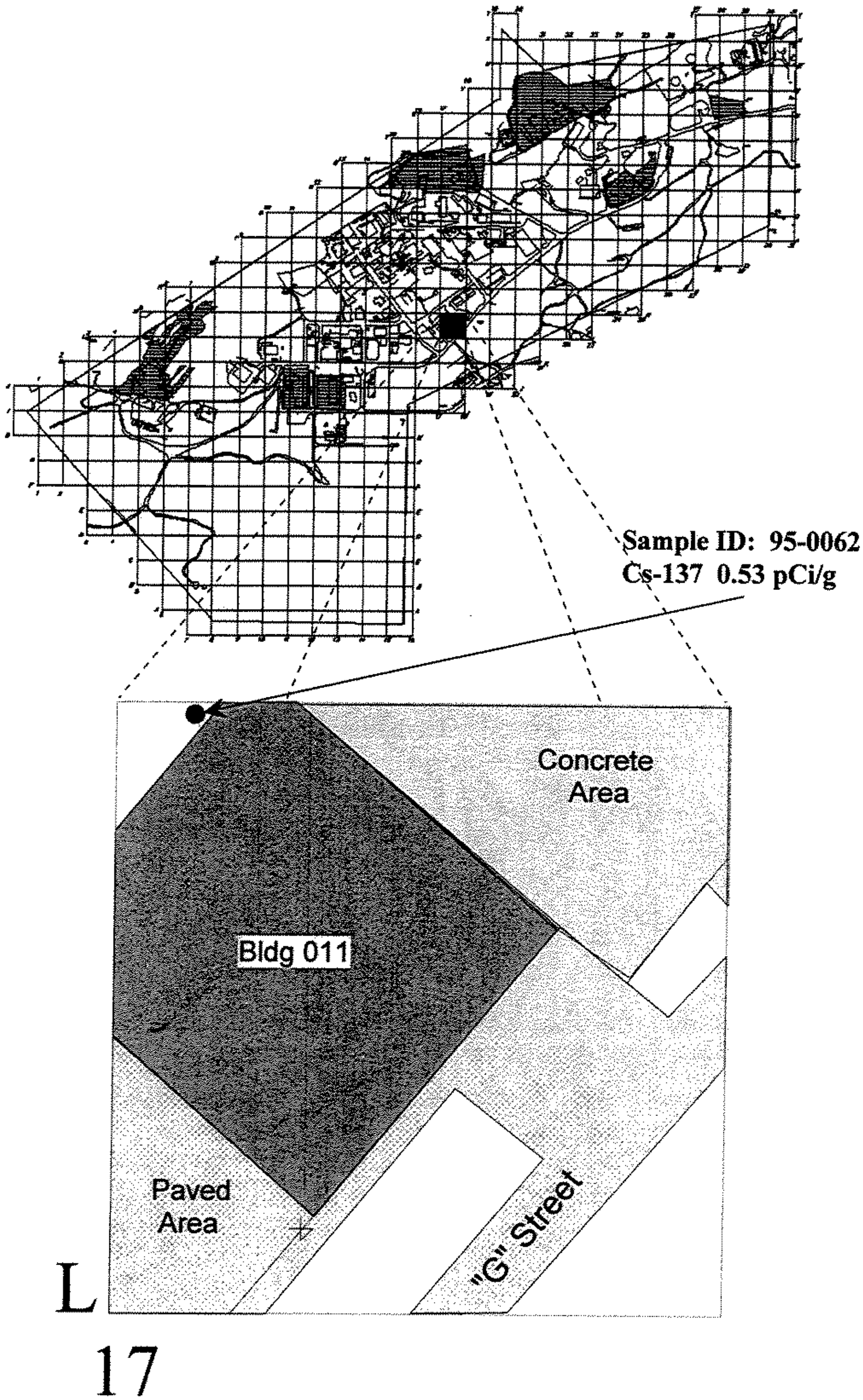


Figure 14. Locations of Elevated Soil Activity - Survey Block R24 - Bldg 064 Area

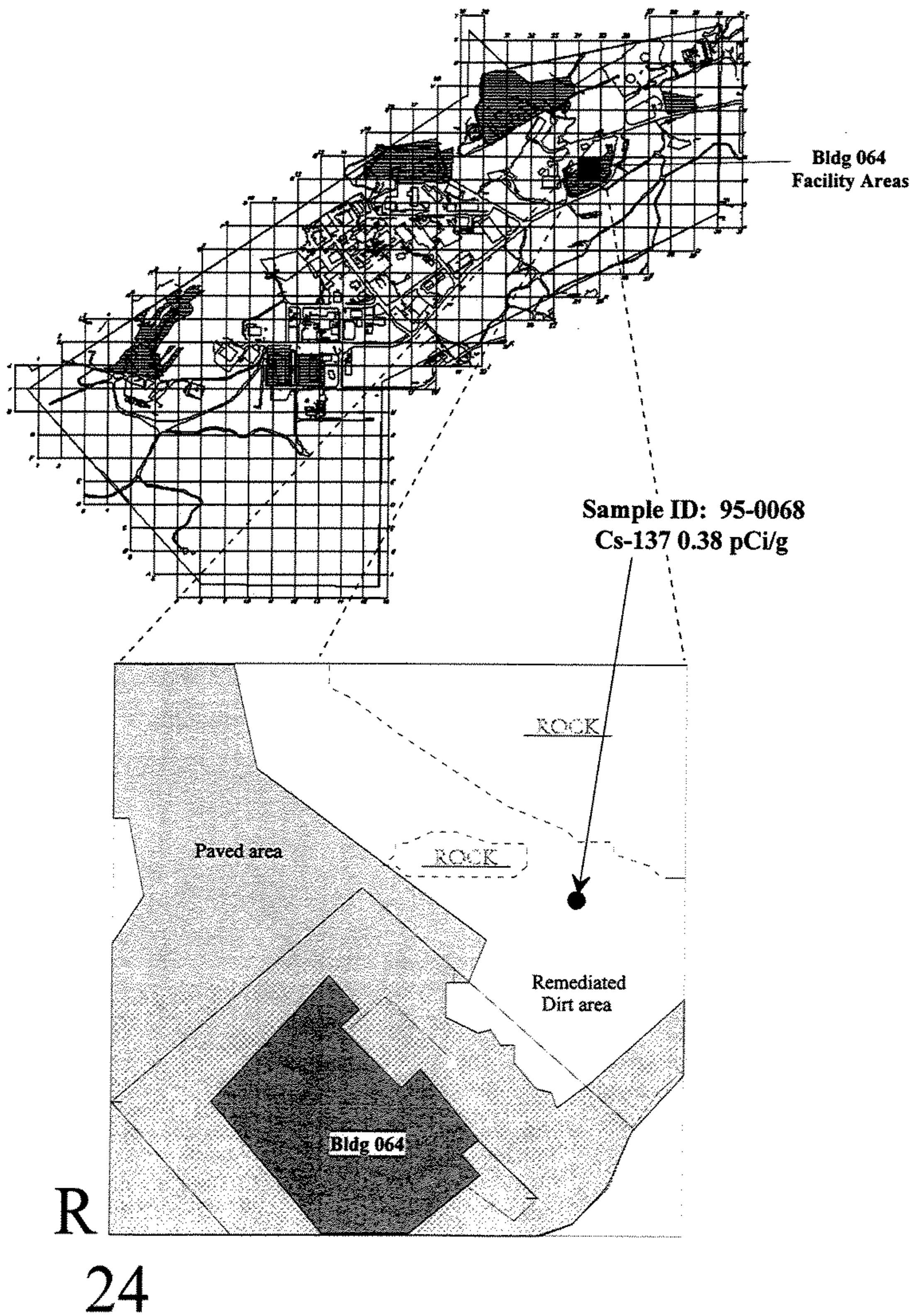


Figure 15. Locations of Elevated Soil Activity - Survey Block K17 - Drain Area of 20th St.

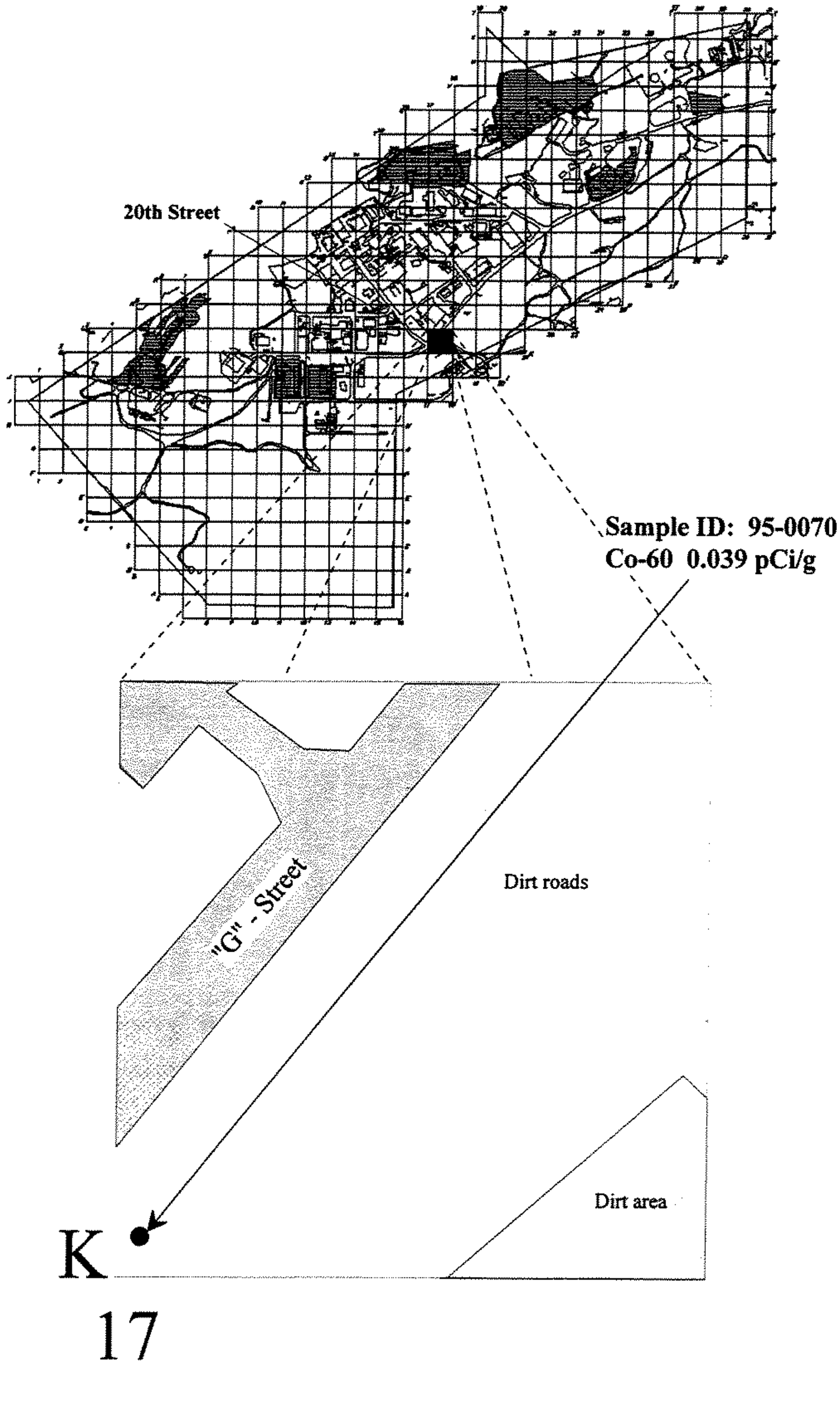


Figure 16. Locations of Elevated Soil Activity - Survey Block Q13 - Drain Area at Previous Site of Bldg 010

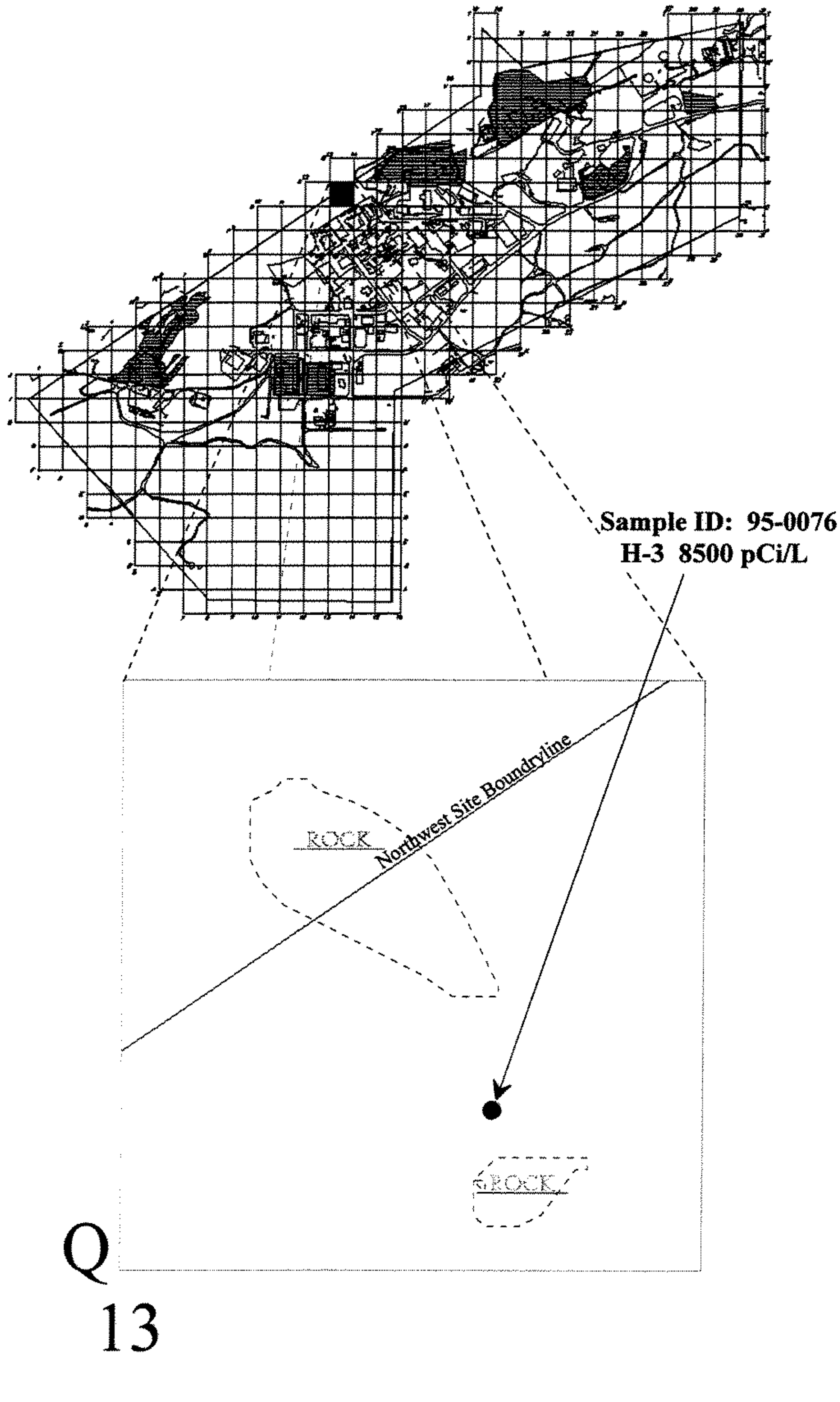


Figure 17. Locations of Elevated Soil Activity - Survey Block U22 - SRE Pond Sediment

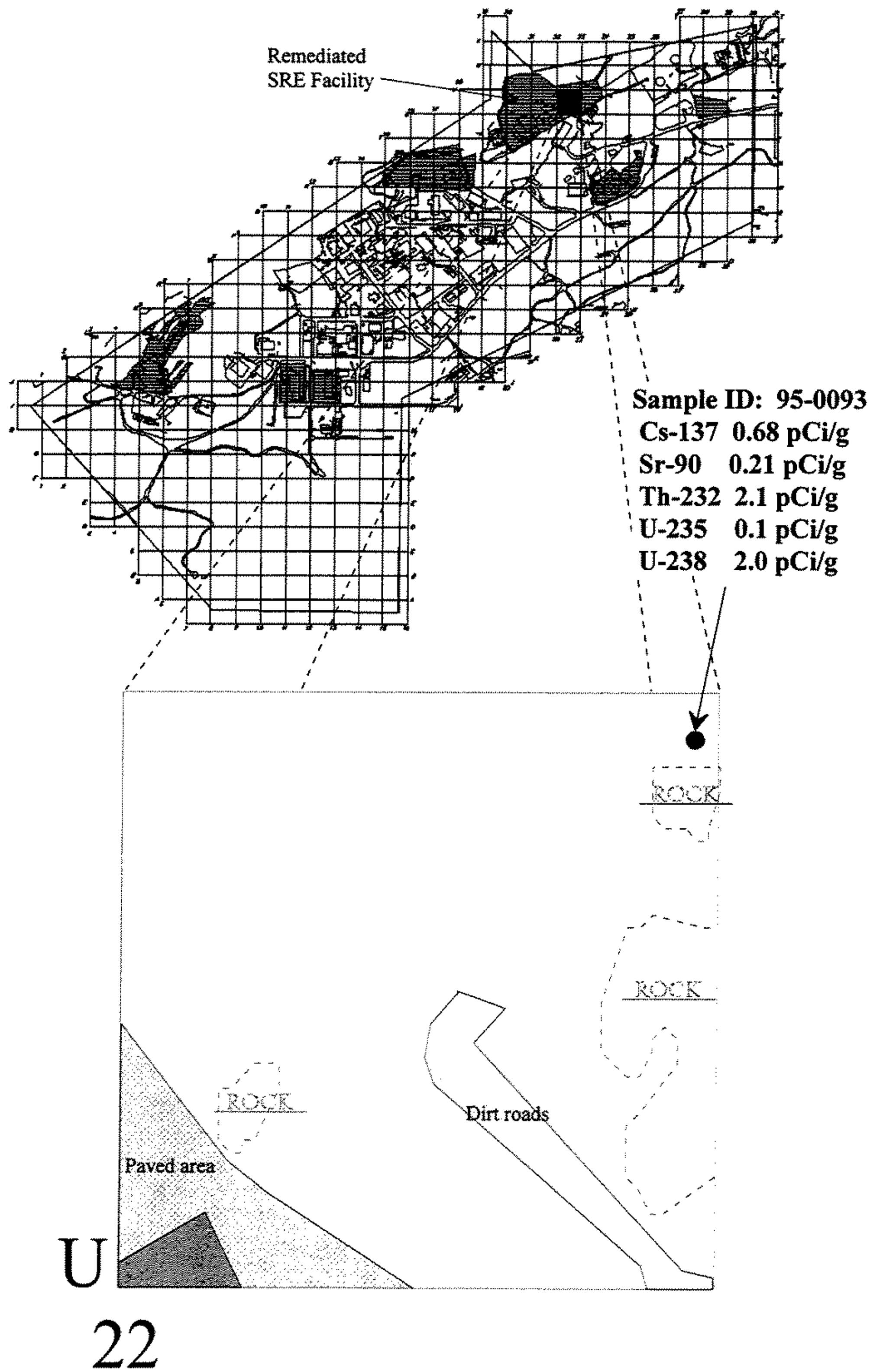


Figure 18. Locations of Elevated Soil Activity - Survey Block V23 - SRE Pond Sediment

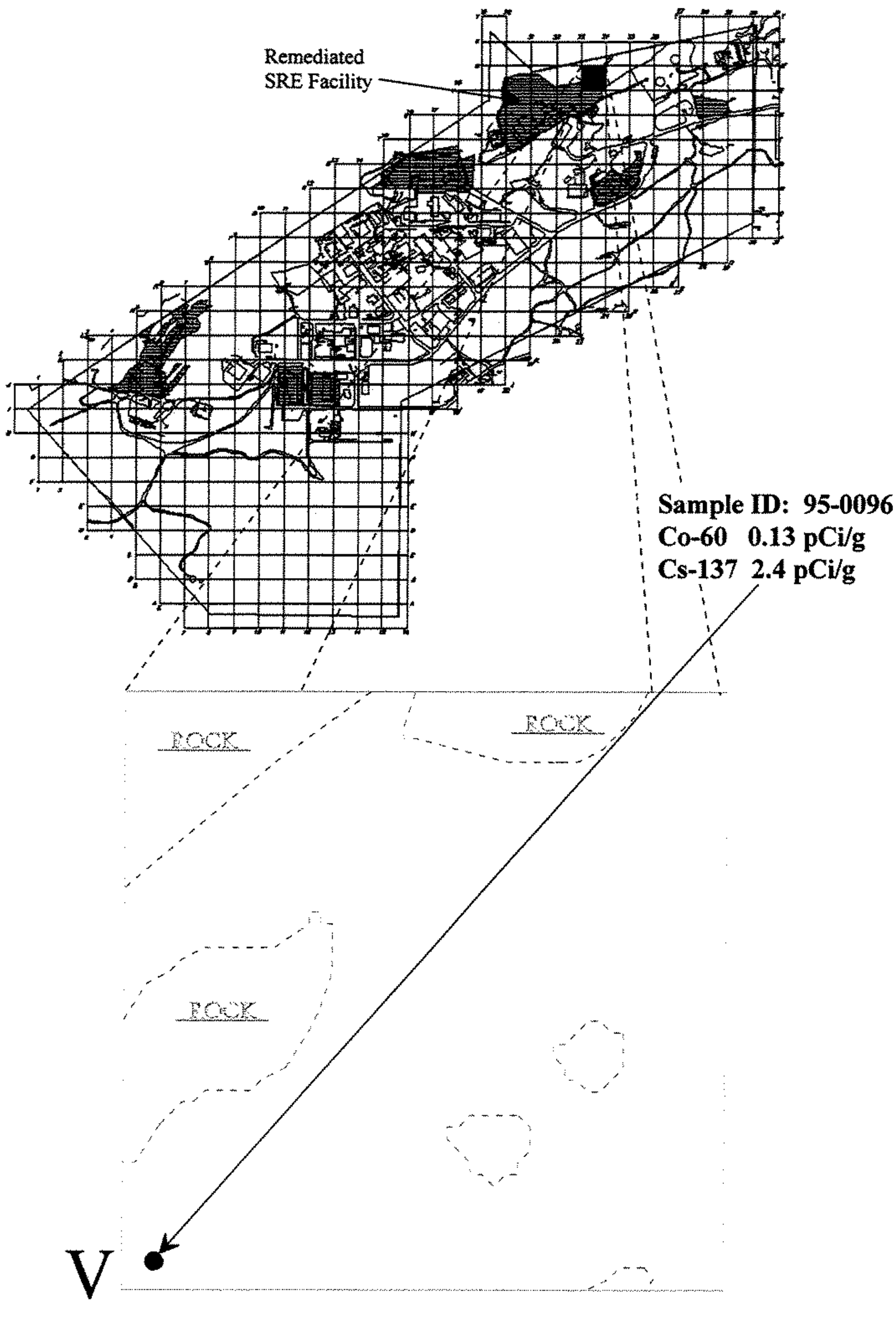


Figure 19. Locations of Elevated Soil Activity - Survey Block T22 - Bldg 003 Area

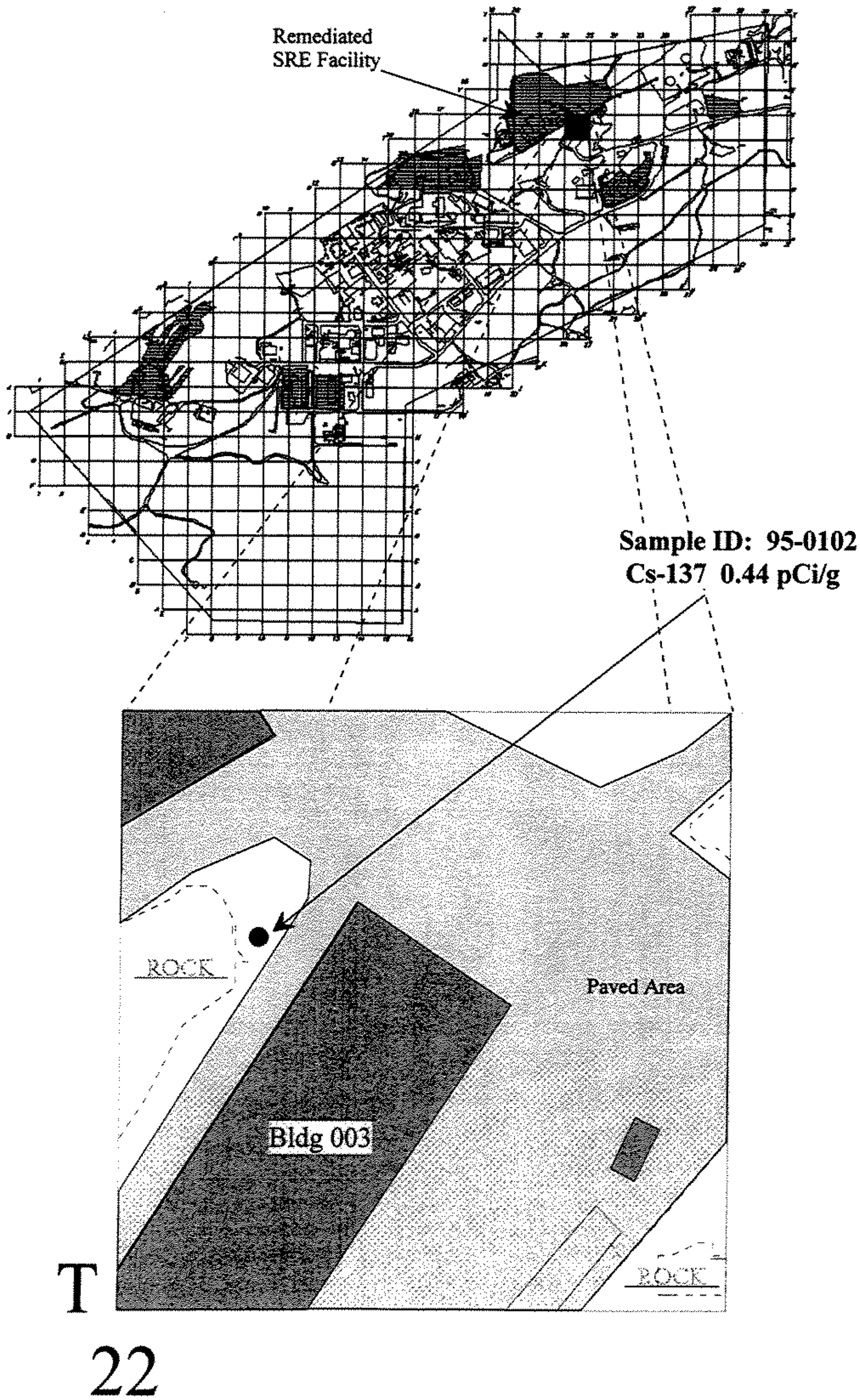


Figure 20. Locations of Elevated Soil Activity - Survey Block Q17 - Bldg 024 Area

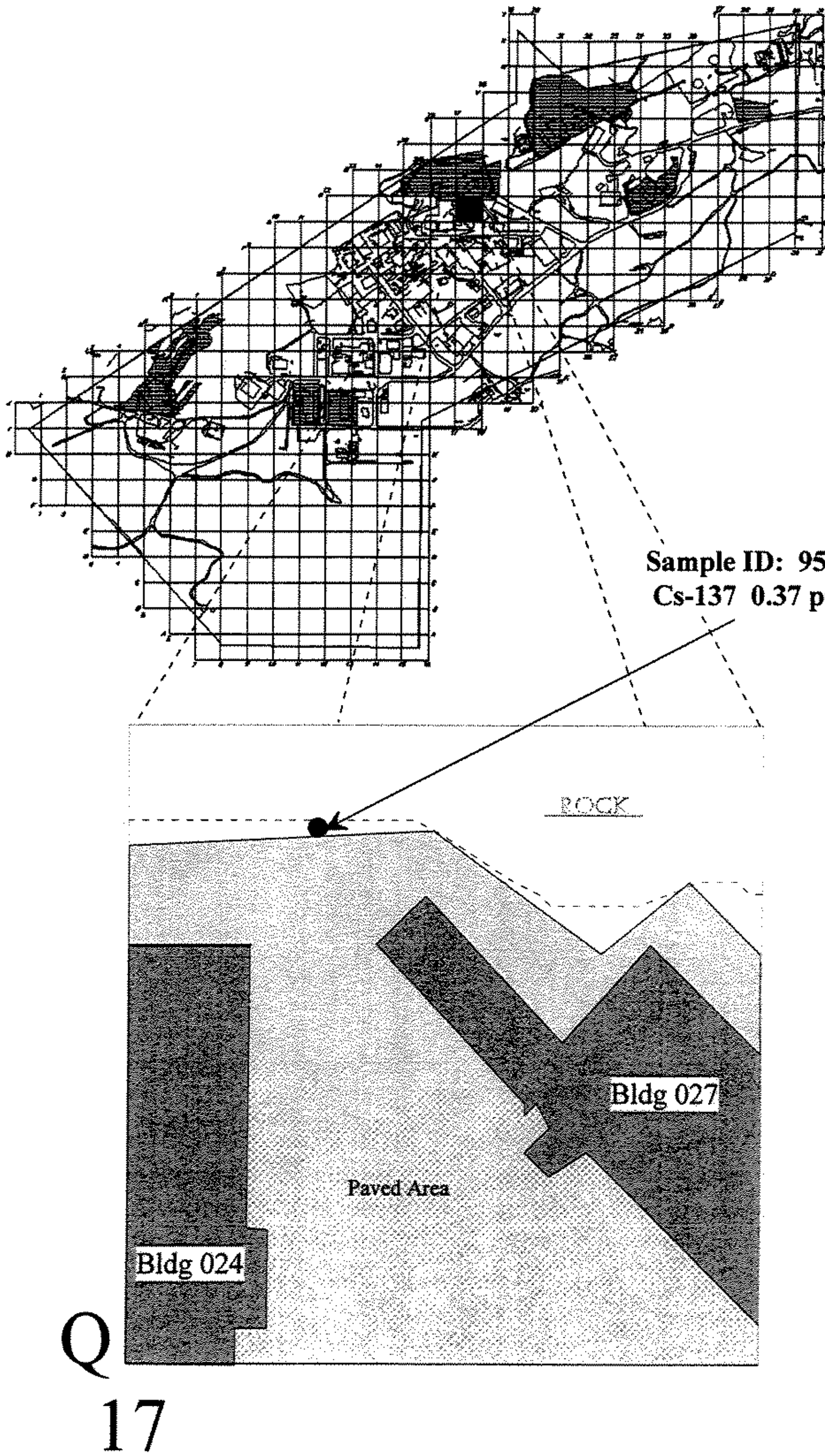


Figure 21. Locations of Elevated Soil Activity - Survey Block Q16 - Bldg 024 Area

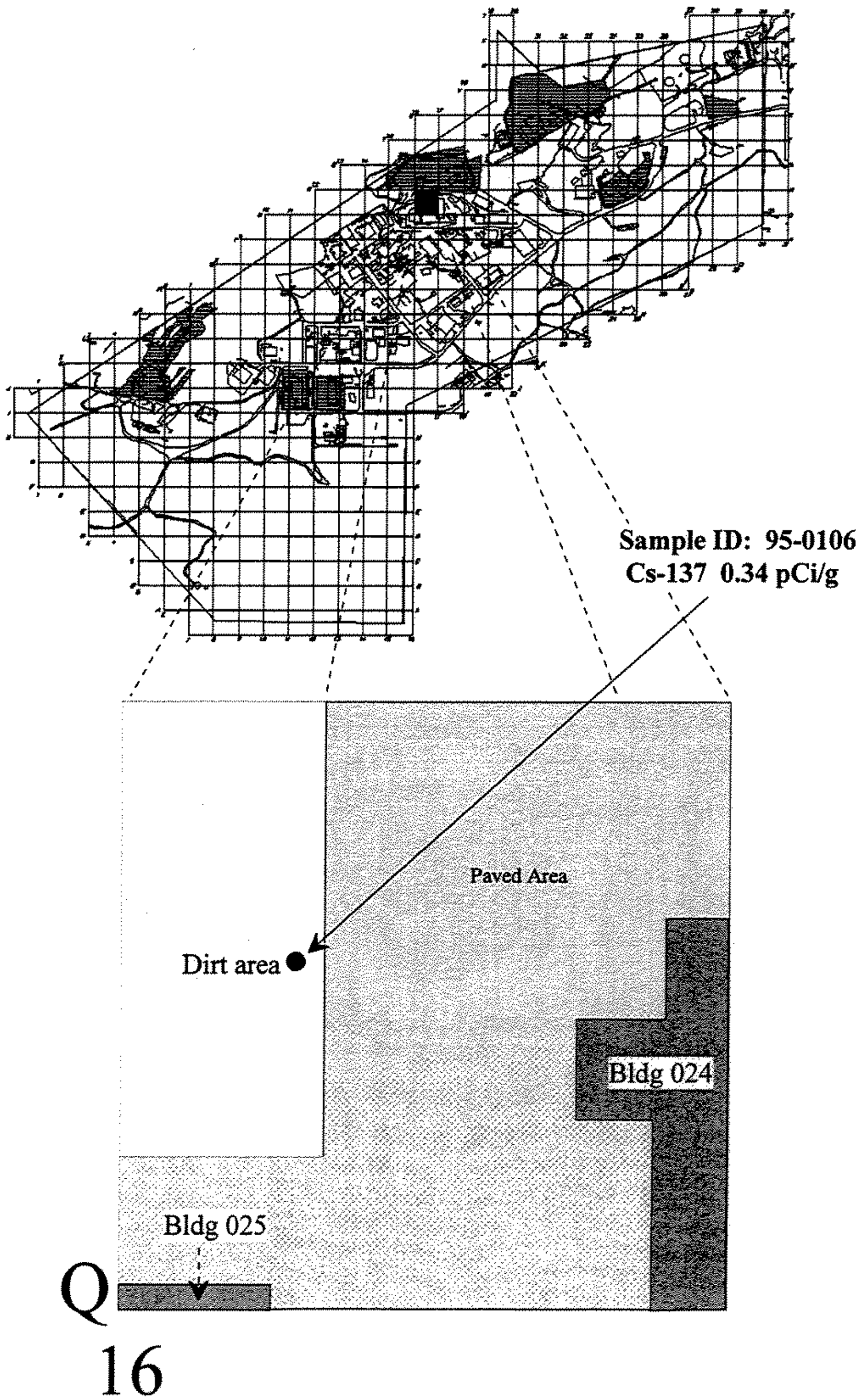


Figure 22. Locations of Elevated Soil Activity - Survey Block Q15 - Bldg 028 Area

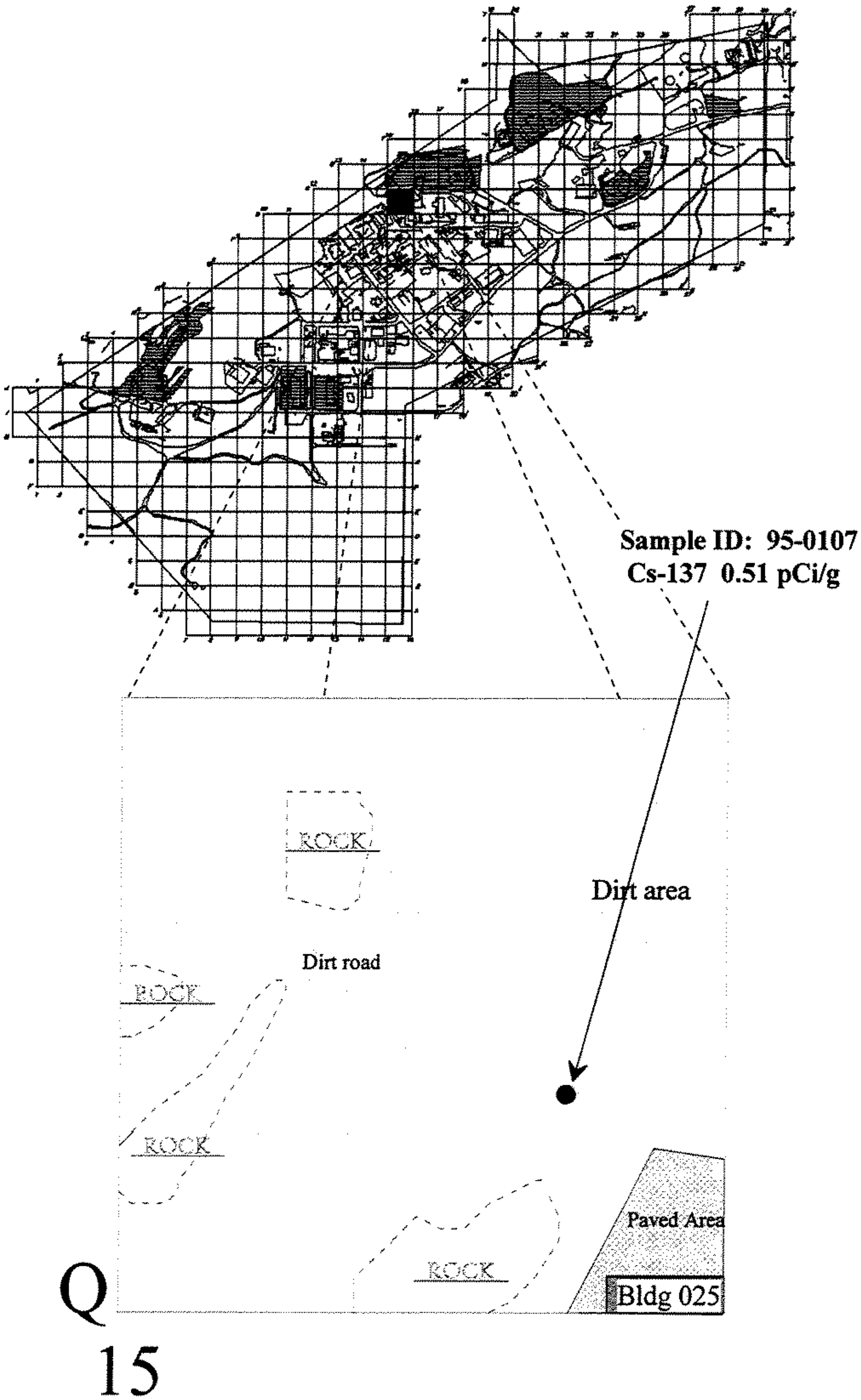


Figure 23. Locations of Elevated Soil Activity - Survey Block R15 - Bldg 028 Area

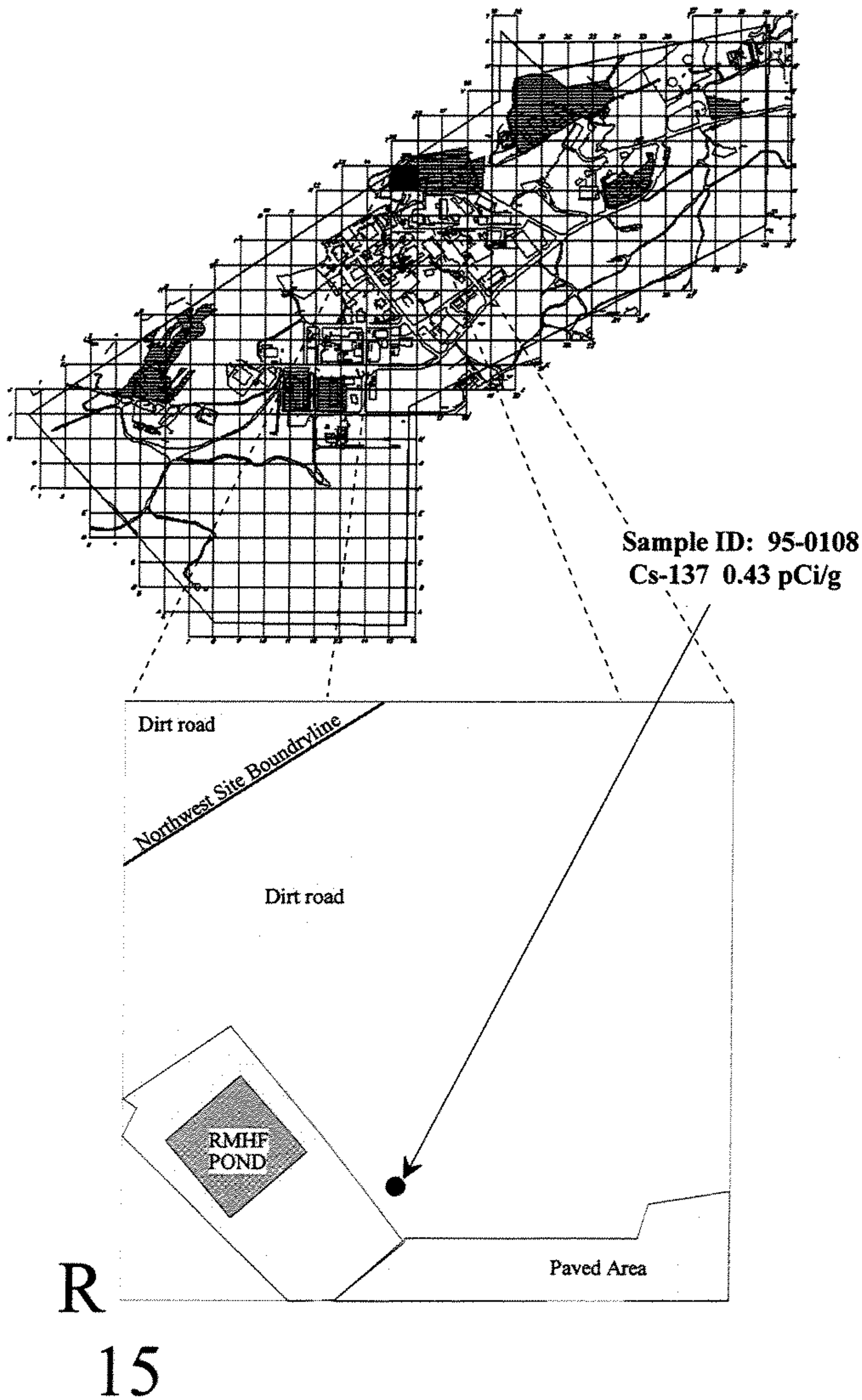


Figure 24. Locations of Elevated Soil Activity - Survey Block P22 - Hot Spot 006

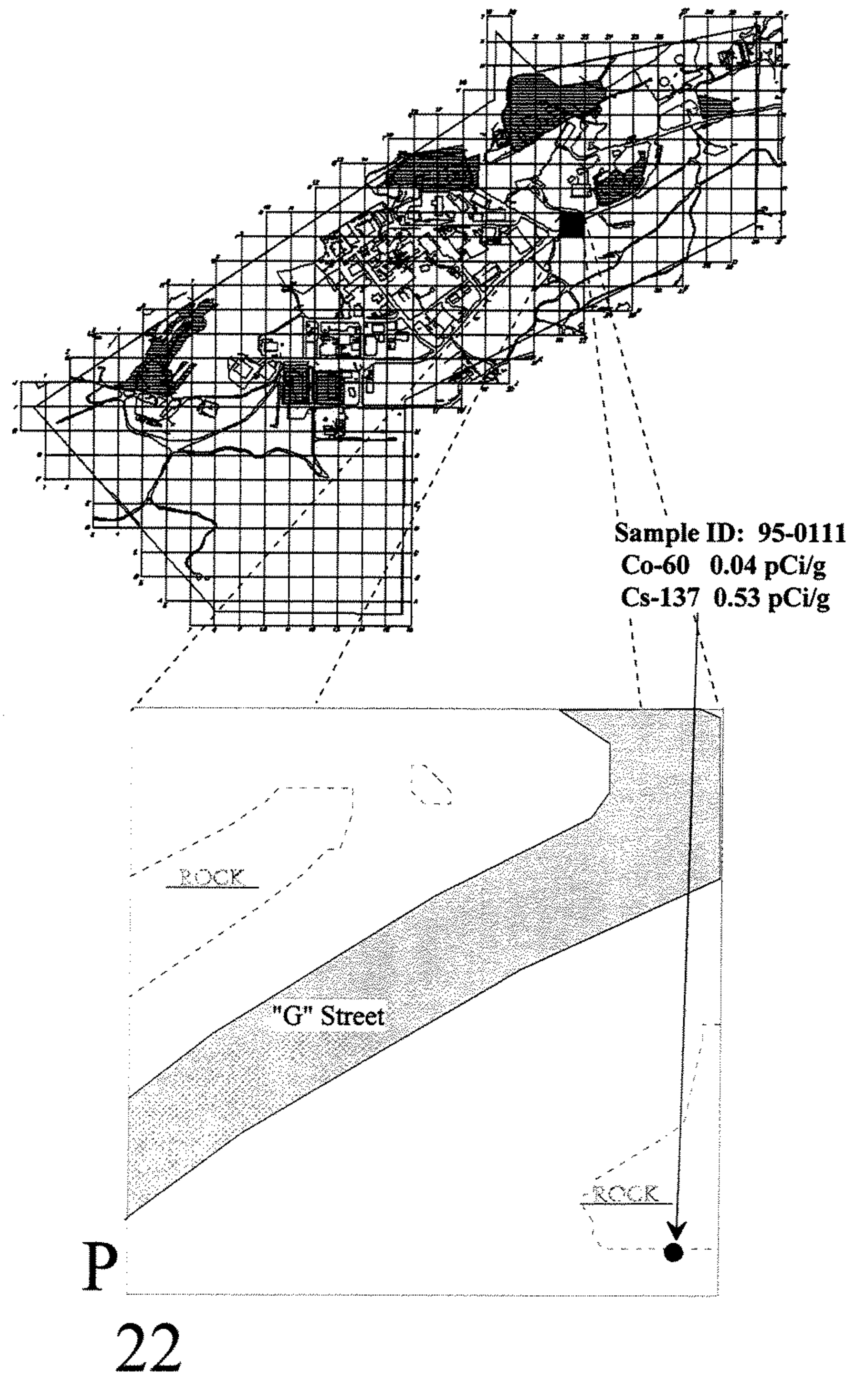


Figure 25. Locations of Elevated Soil Activity - Survey Block E12 - Hot Spot RSL20

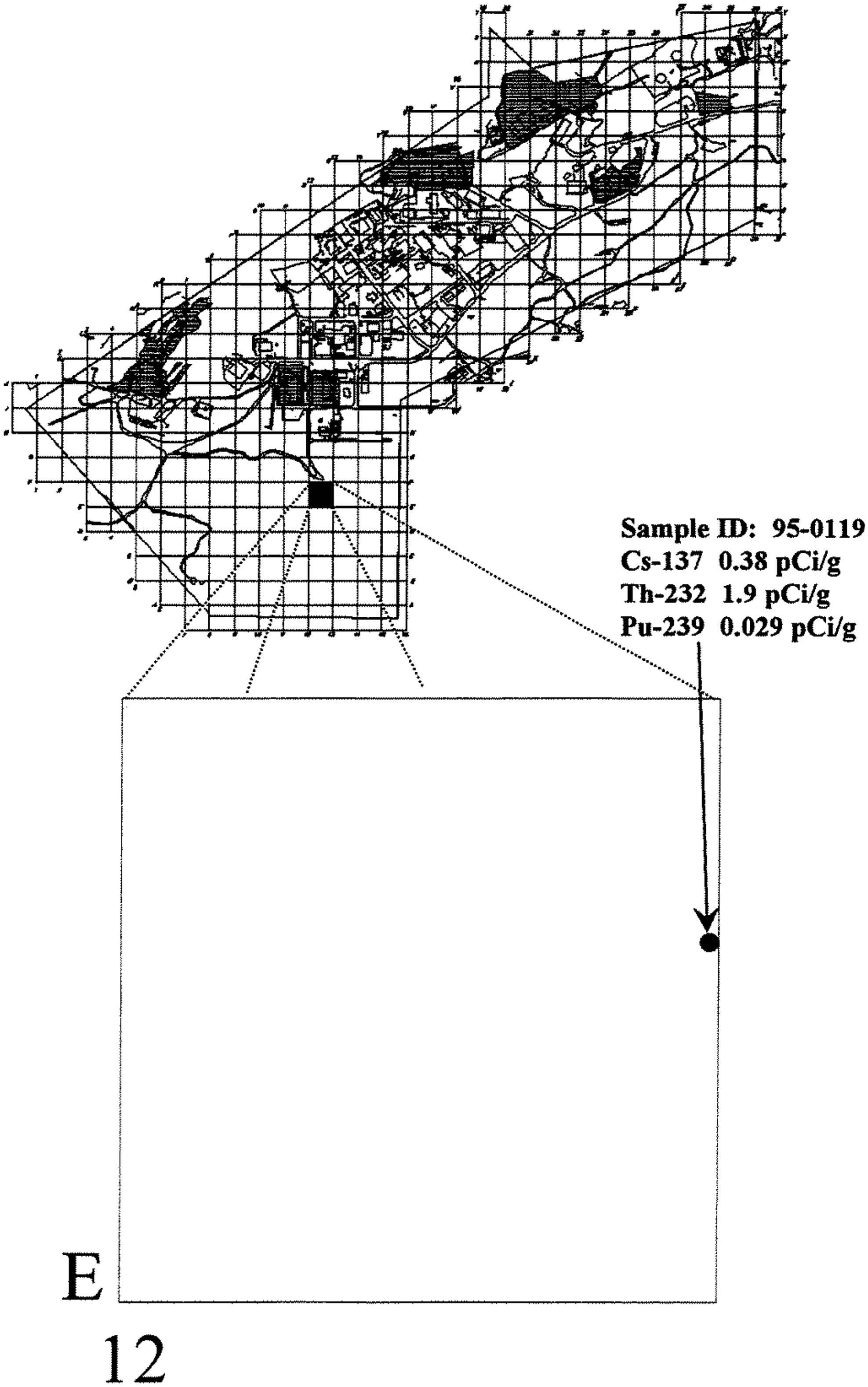


Figure 26. Locations of Elevated Soil Activity - Survey Block O11 -Rock Outcrop Region

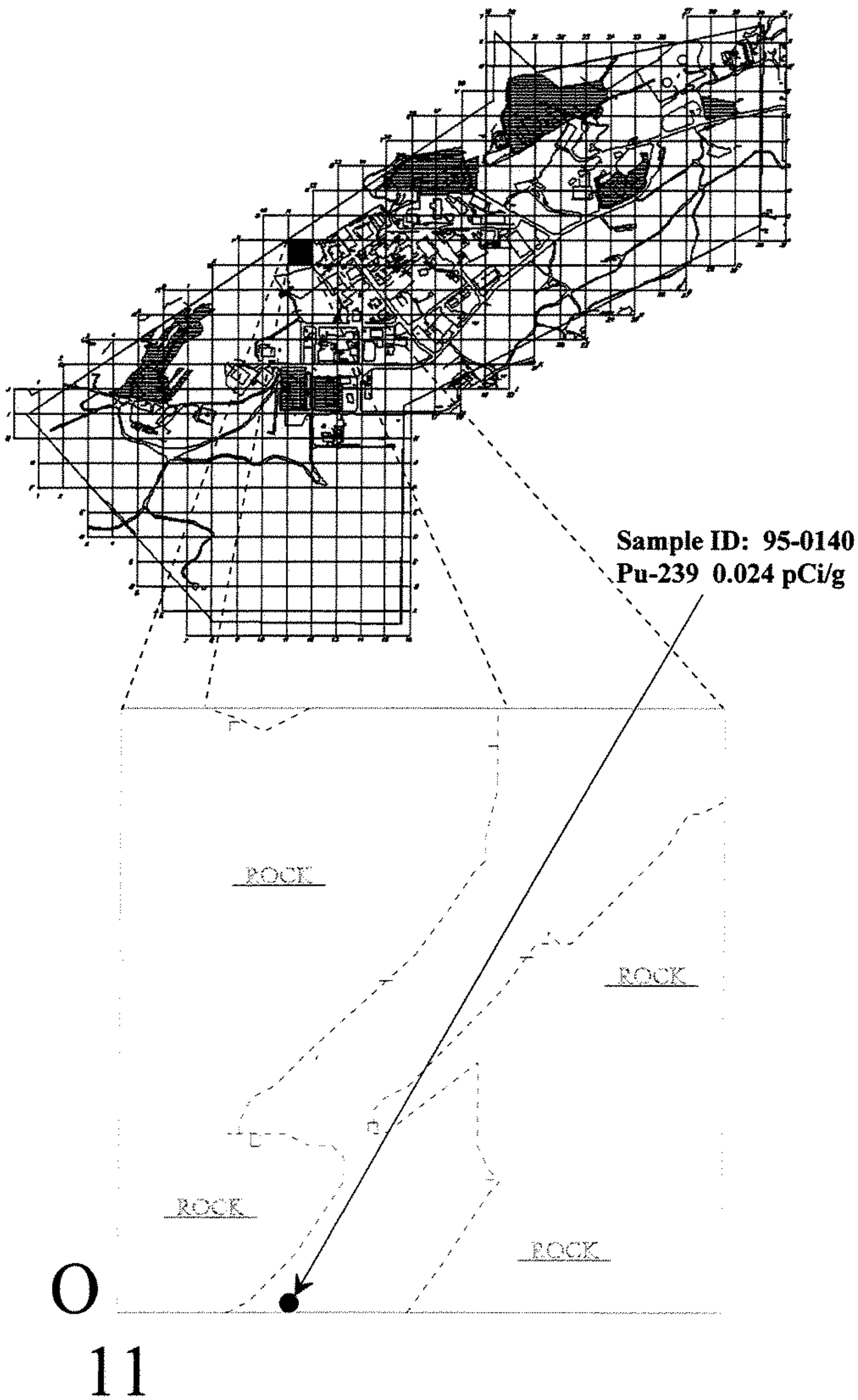


Figure 27. Locations of Elevated Soil Activity - Survey Block K07 - Rock Outcrop Region

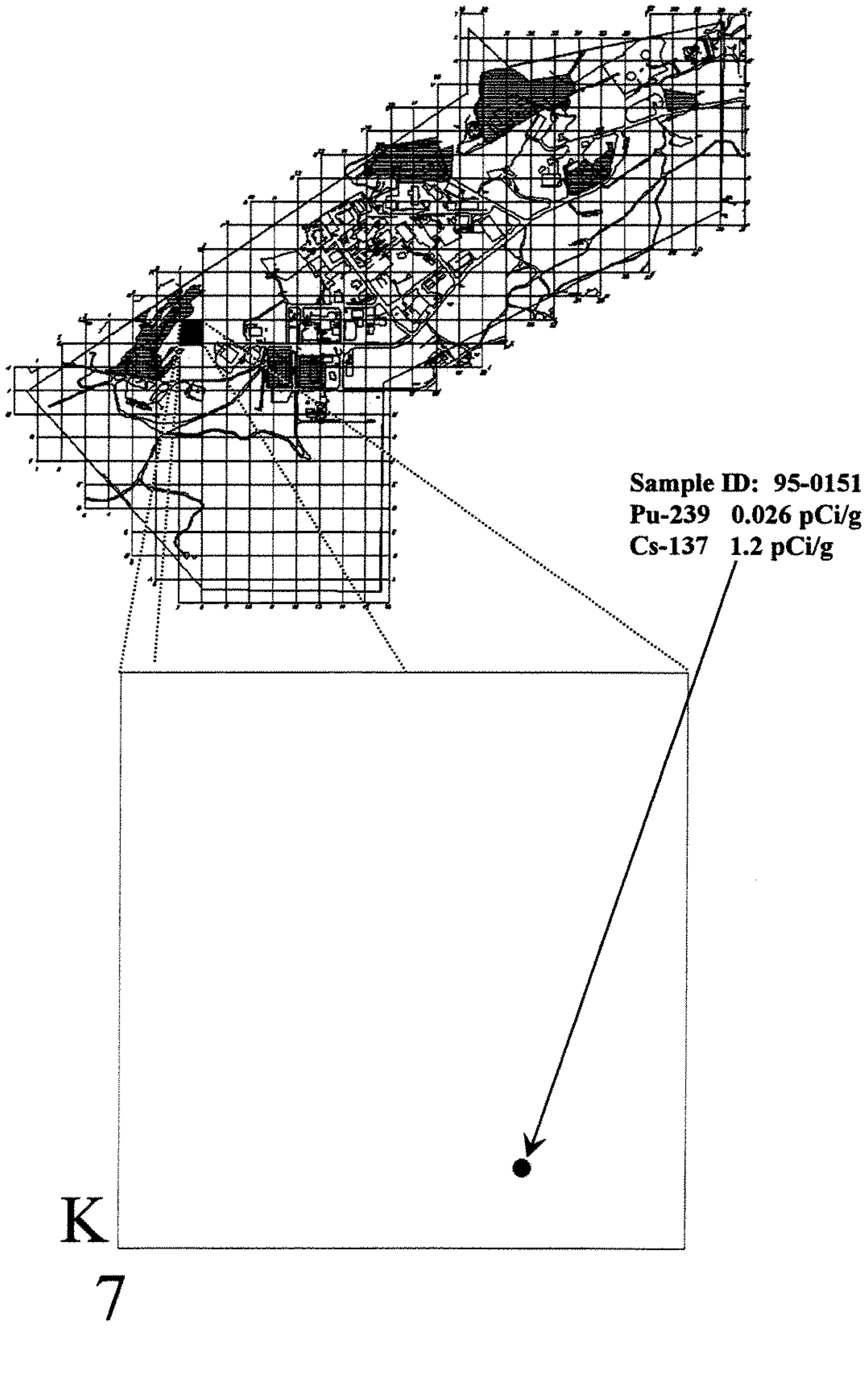


Figure 28. Locations of Elevated Soil Activity - Survey Block V23 - Hot Spot 011

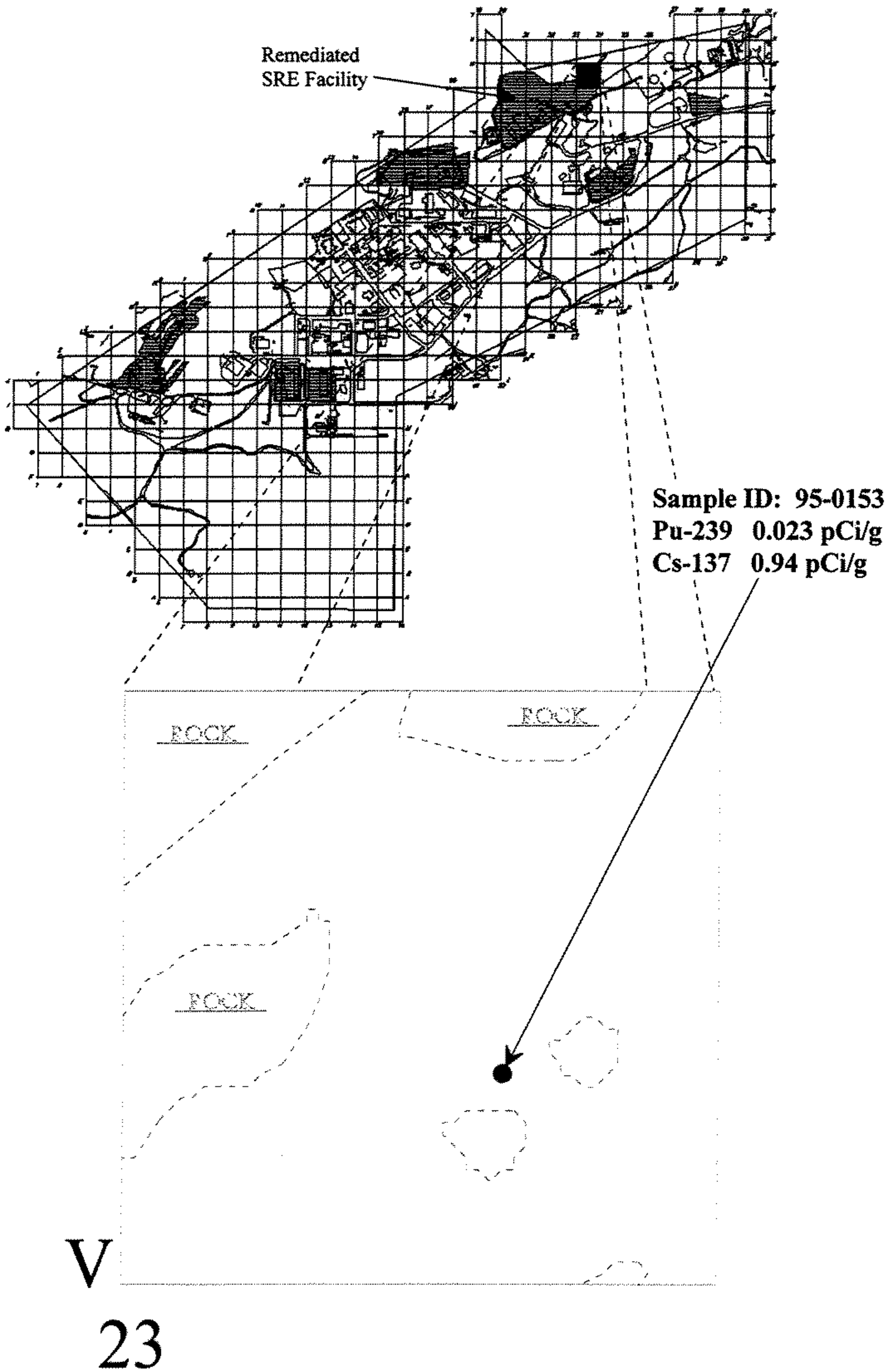


Figure 29. Locations of Elevated Soil Activity - Survey Block R14 - Hot Spot 010

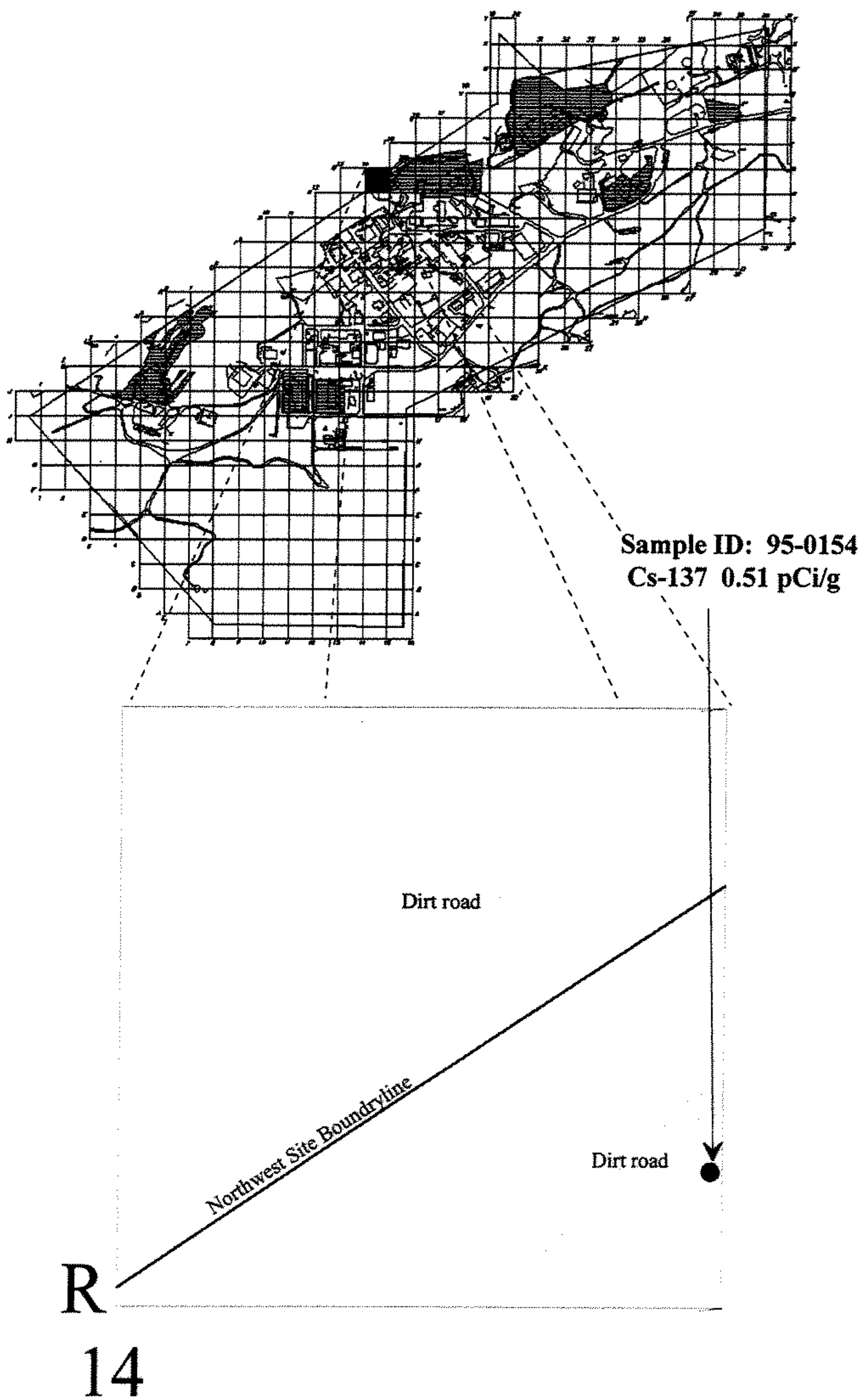


Figure 30. Locations of Elevated Soil Activity - Survey Block C13 - Hot Spot 0016

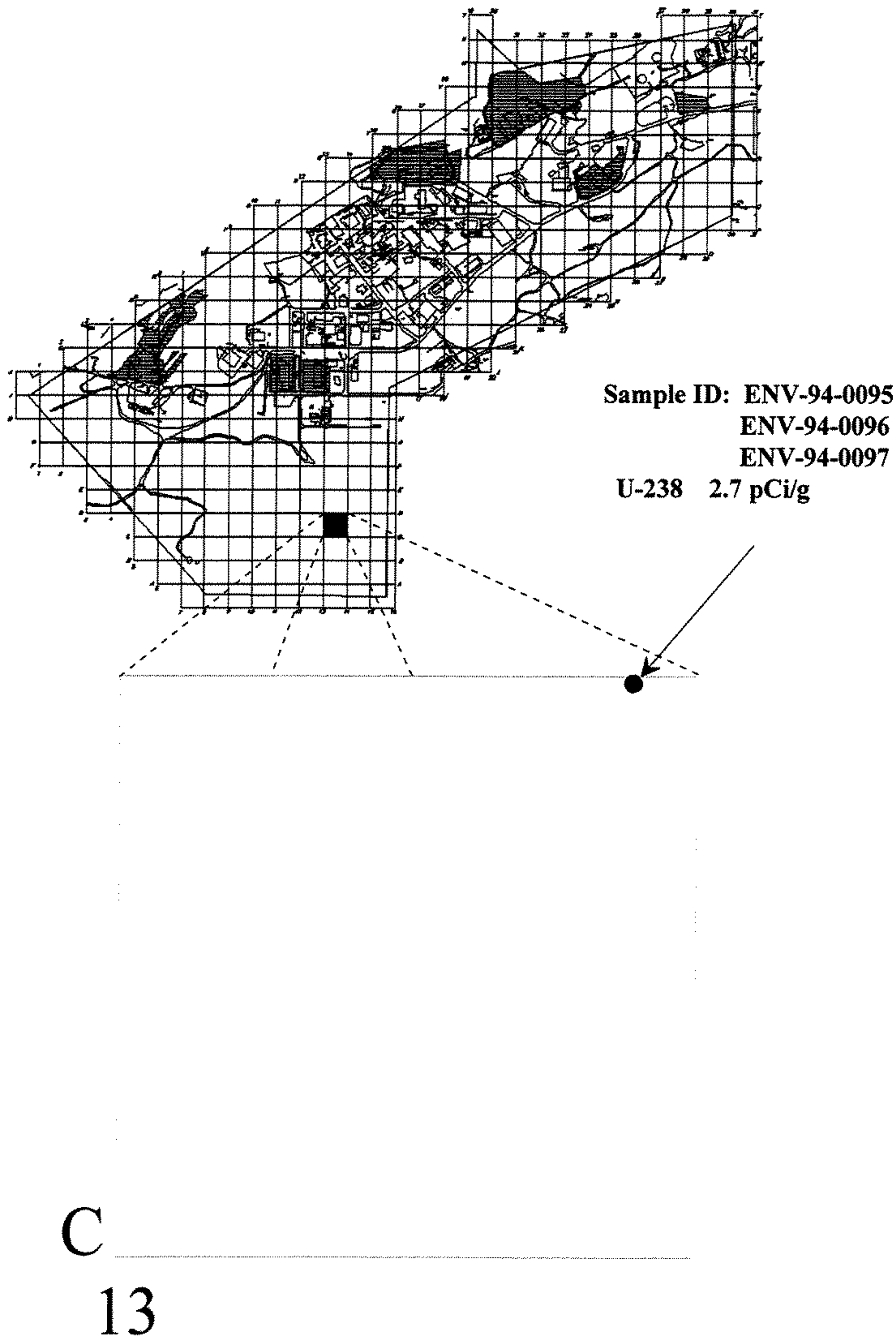


Figure 31. Locations of Elevated Soil Activity - Survey Block K10 - Hot Spot RSL52

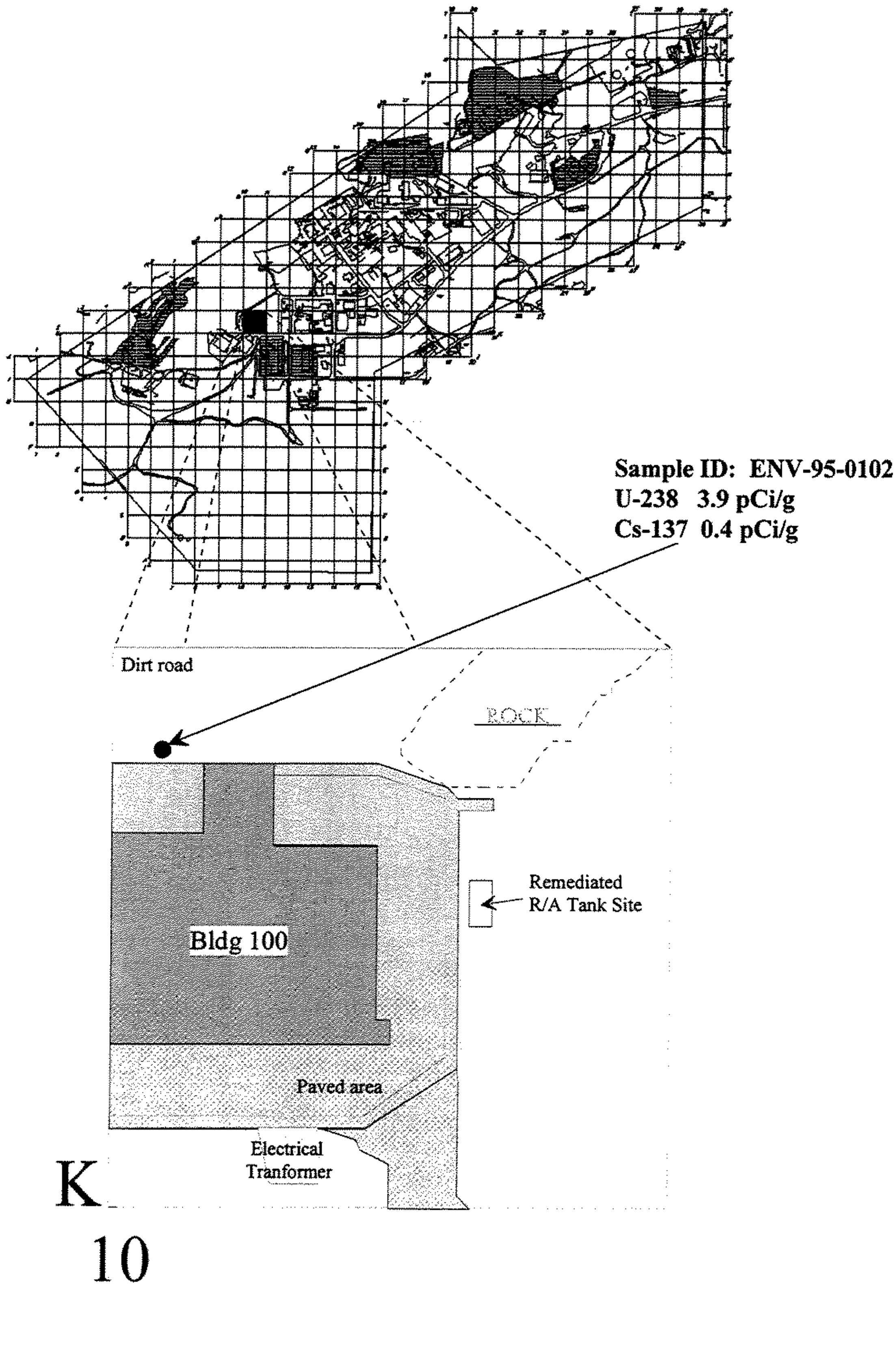


Figure 32. Locations of Elevated Soil Activity - Survey Block M22 - Hot Spot RSL100

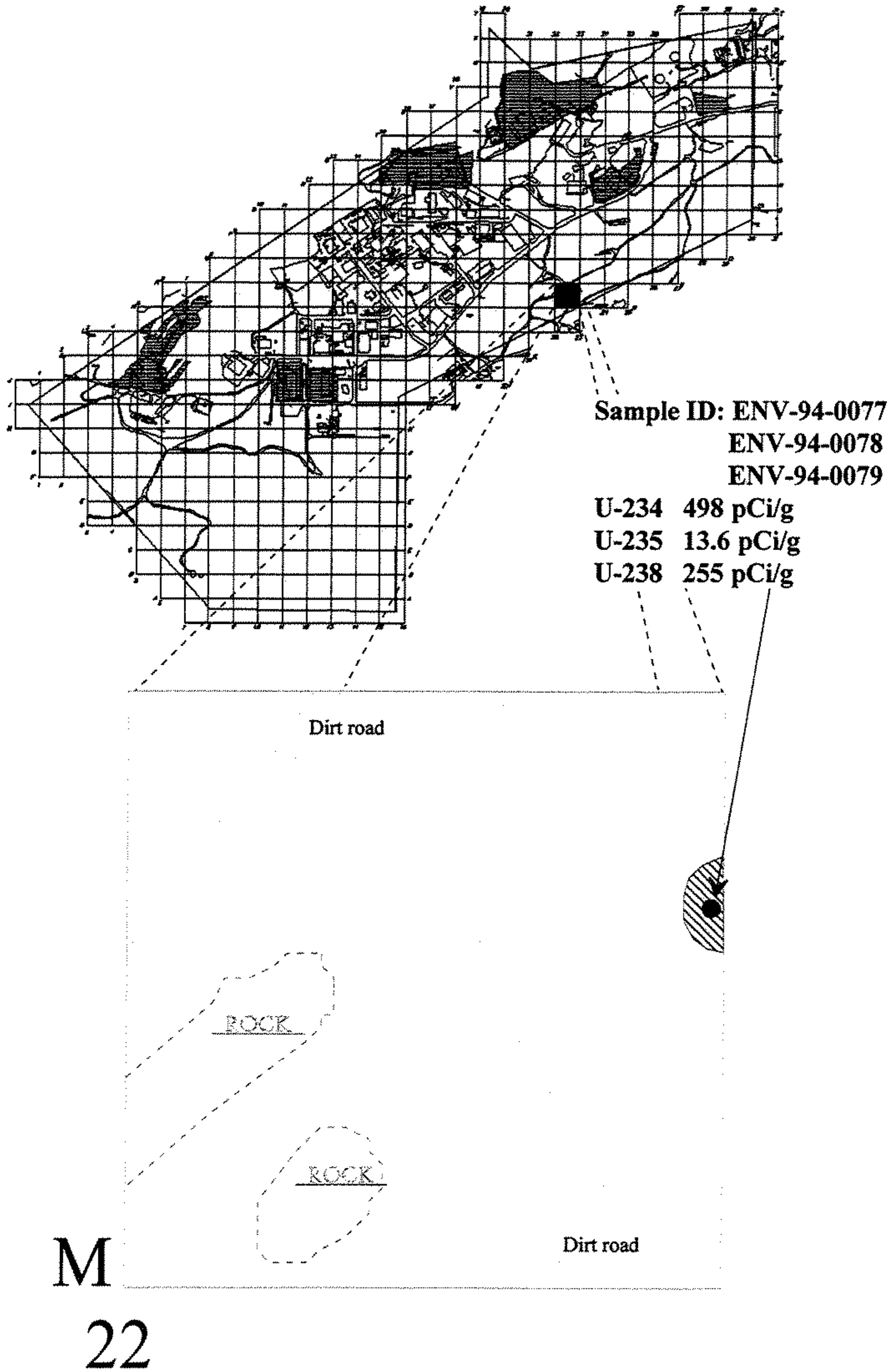


Figure 33. Locations of Elevated Soil Activity - Survey Block R24 - Bldg 064 Side Yard Hot Spot RSL54

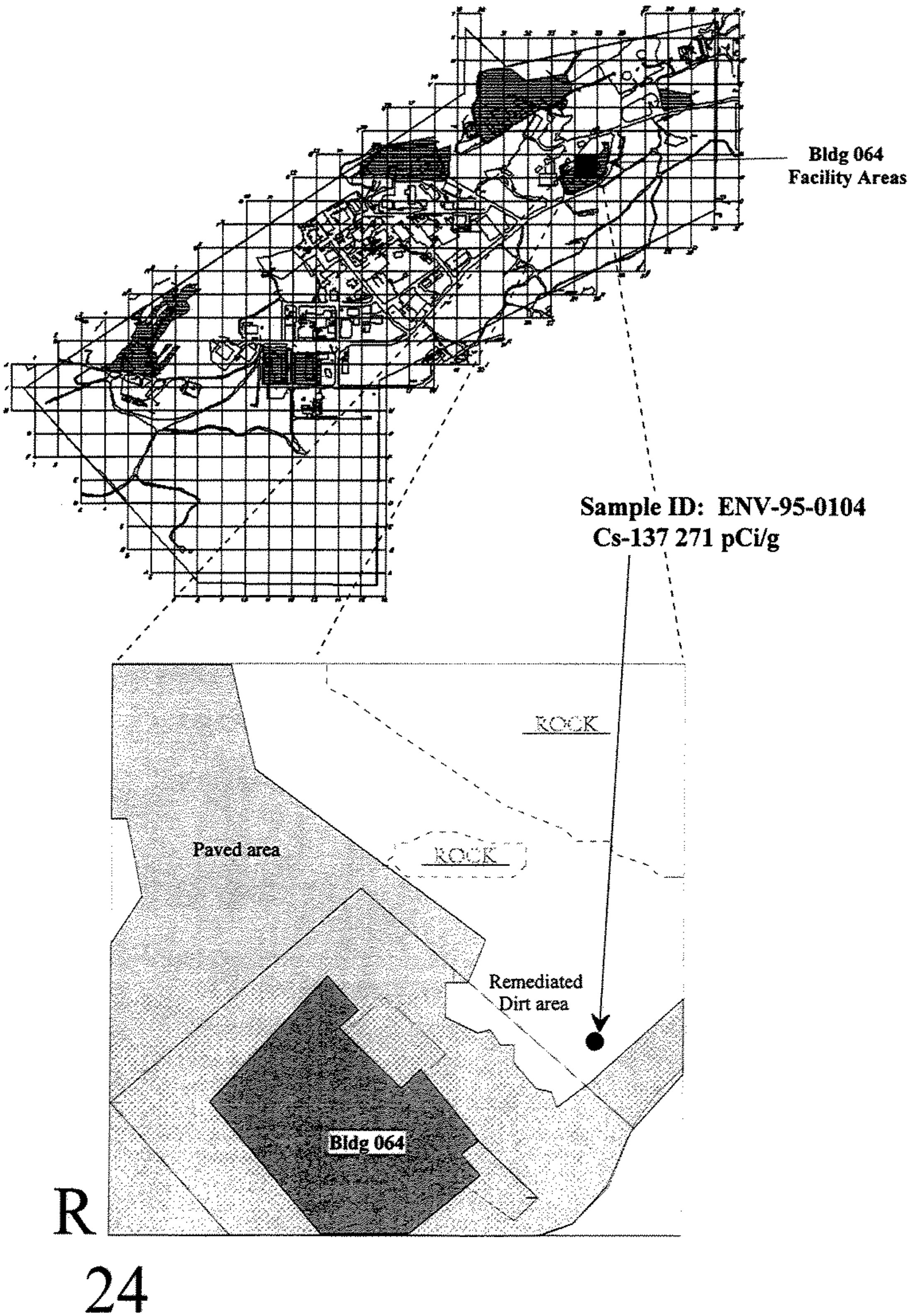


Figure 34. Locations of Elevated Soil Activity - Survey Block R25 - Hot Spot RSL61,62.63

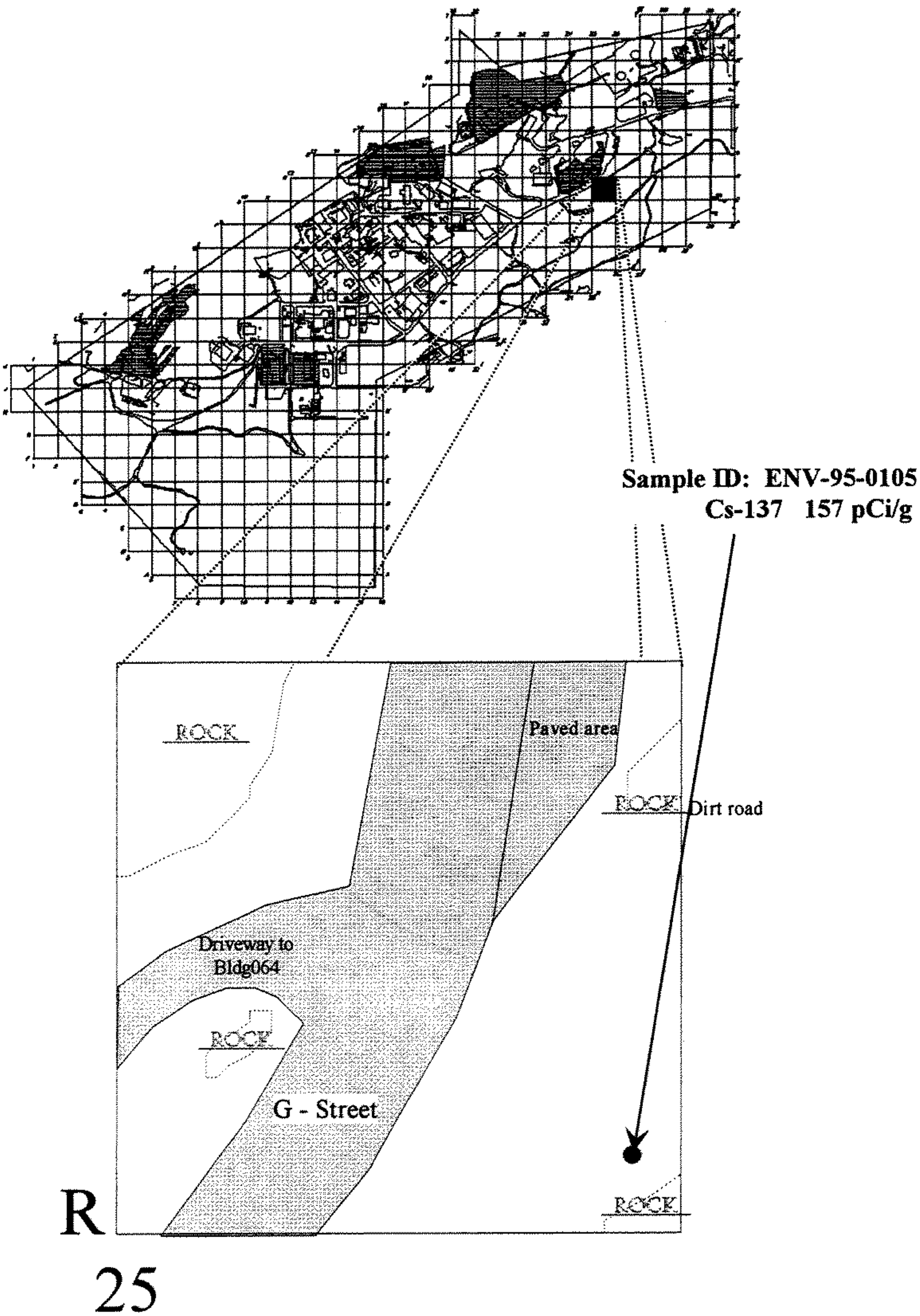


Table 1. Ambient Gamma Survey Results Summary

		Gamma Exposure Rate (μR/hr)			
Data Set	**No. Data Points**	**Mean**	**Std. Dev.**	**Minimum**	**Maximum**
Area IV Total	10,479	14.6	1.8	6.0	21.4
Alluvium, Disturbed	2,020	14.3	1.3	8.9	19.0
Alluvium, Undisturbed	2,849	15.3	1.3	10.3	18.5
Developed	2,283	13.6	1.8	6.0	19.4
Drainage	355	14.9	1.3	11.1	18.2
Martinez-Chaparral	1,330	13.0	1.3	8.9	17.0
Rock outcroppings	1,642	16.3	1.3	11.5	21.4

Table 2. Status of Radiological Building Cleanup

Building	Decontaminated	Surveyed
OCY	Yes	Yes
RMHF	Planned for FY2000	Planned for FY2000
003	Yes	Yes
005	Yes	Yes
009	Yes	Yes
010	Yes	Yes
011	Yes	Planned for FY1996
012	Yes	Yes
019	Yes	Yes
020	Ongoing	Planned for FY1997
023	Yes	Yes
024	Planned for FY1999	Planned for FY1999
028	Yes	Yes
029	Yes	Yes
030	Yes	Yes
055	Yes	Yes
059	Planned for FY1998	Planned for FY1998
064	Yes	Yes
073 (KEWB)	Yes	Yes
093 (L-85)	Yes	Yes
100	Yes	Yes
143 (SRE)	Yes	Yes
363	Yes	Yes
373	Yes	Yes
654 (ISF)	Yes	Yes
886	Yes	Yes

Table 3. Types of Soil and Water Samples*

Proximity to Radiological Buildings		**38**
Bldg. 003	2	
Bldg. 005	2	
Bldg. 009	2	
Bldg. 011	2	
Bldg. 012	1	
Bldg. 019	2	
Bldg. 020	2	
Bldg. 023	2	
Bldg. 024	2	
Bldg. 028	2	
Bldg. 029	2	
Bldg. 055	2	
Bldg. 059	2	
Bldg. 064	2	
Bldg. 093	2	
Bldg. 100	2	
Bldg. 363	2 + 1	
Bldg. 373	2	
Bldg. 143 (SRE)	2	
Leachfields		**10**
Bldg. 009	2	
Bldg. 064	2	
Bldg. 093	2	
Bldg. 373	2	
Bldg. 143 (SRE)	2	

Drainage Areas		**37**
Bldg. 010	2	
17th Street	7	
20th Street	2	
G Street - West	2	
J Street	4	
L Street	4	
OCY - North	4	
OCY - Southeast	3	
OCY - Southwest	5	
Bldg. 056 Landfill	2	
Bldg. 143 (SRE) Pond	2	
Sodium Disposal Facility Surrounds		**28**
Former Pit (south of road)	11	
SDF area (east and west)	17	
SRE Pond		**4**
Pond sediment	2	
Pond water	2	
Random Regions		**22**
Alluvium, disturbed	5	
Alluvium, undisturbed	5	
Martinez-Chaparrel	5	
Rock Outcropping	5	
Drainage Areas	2	

Locations of Elevated Gamma Radiation		**12**
Total Area IV Scheduled Samples		**151**
Additional Background Samples		**6**
Bell Canyon	2	
Santa Susana Park	2	
Western Site	2	
QA/QC Samples		**17**
Field Duplicates	8	
Equipment Rinsates (Water)	8	
Field Blank (Water)	1	
Department of Health Services Split Samples		**15**

* All samples are soil except where indicated

Table 4. Department of Health Services Split Sample Locations

Date	Rocketdyne Sample ID (A4CM-)	DHS Sample ID	Comments
4-19-95	95-0074	R70321, R70322	Pu, gamma
4-19-95	95-0075	R70323, R70324	Pu, gamma
4-19-95	95-0075	R70328, R71719	Pu, gamma DHS Duplicate
4-19-95	95-0076	R71723, R71722	Pu, gamma
4-19-95	95-0077	R71721, R71720	Pu, gamma
5-10-95	95-0109	R71729, R71730	Pu, gamma
5-10-95	95-0110	R71726, R71728	Pu, gamma
5-10-95	95-0110	R71727, R71725	Pu, gamma DHS Duplicate
5-10-95	95-0111	R71724, R70327	Pu, gamma
5-10-95	95-0112	R70326, R70325	Pu, gamma
6-15-95	95-0136	R71414, R71415	Pu, gamma
6-15-95	95-0137	R71416, R71417	Pu, gamma
6-15-95	95-0138	R71418, R71419	Pu, gamma
6-15-95	95-0139	R71420, R71421	Pu, gamma
6-15-95	N/A	R71422, R71423	gamma α/β, H-3

Table 5. Locations of Elevated Gamma Radiation[1]

ID	Block	Coords. N E	Region	Surface γ μR/h	1 meter γ μR/h	Bkgd. γ μR/h	Soil Isotopes pCi/g
HS 0005	B14	000-200	Au	20.6	21.1	15.3	None
HS 0006	P22	027-178	Rc	27.5	23.3	16.3	Cs-137 0.53
HS 0010	R14	050-200	Rc	22.6	24.6	16.3	Cs-137 0.51
HS 0011	V23	075-125	Rc	16.6	21.5	16.3	Cs-137 0.94 Pu-239 0.023
HS 0012	G09	092-065	Ad	15.4	14.8	14.3	None
HS 0013	M20	105-055	Au	16.8	15.0	15.3	Pu-239 .007
HS 0014	N21	010-010	Rc	15.9	15.0	16.3	None
HS 0015	S28	110-110	Dv	11.9	15.2	13.6	None
HS-M22	M22	144-188	Au	17.5[2]	-	15.3	None
RSL 06	I07	123-163	Au	22.4	13.9	15.3	None
RSL 20	E12	120-200	Mch	21.2	16.8	13.0	Cs-137 0.38
RSL 51	H08	110-028	Ad	19.3	19.0	14.3	None
RSL 54	R24	065-167	Rc	44.9[3]	17.0	16.3	Cs-137 271
RSL 61,2,3	R25	062-137	Au	167[3]	-	15.3	Cs-137 138
RSL 100	M22	144-188	Au	140[3]	37	15.3	U-234 498 U-235 13.6 U-238 255
HS 0016	C13	200-175	Mch	19.9	18.8	13.0	U-238 2.7
RSL 52	K10	160-020	Dv	31.5	23	13.6	Cs-137 0.40 U-238 3.9

1. Also includes 4 locations, subsequently soil sampled, because of other issues if interest
2. Post-remediation exposure rate
3. Pre-remedition exposure rate

Table 6. Locations of Elevated Soil Activity

Sample ID	Block	Coords. N E	Sample Type (Region)	Isotopes (pCi/g)	Comments
94-0002	I03	155-114	Sodium Disposal Facility Area	Sr-90 0.22	Near Prior Remediated Area
95-0033	S27	005-150	Drain-OCY	Cs-137 0.45	Prior Remediated Area
95-0034	S28	020-125	Drain-OCY	Cs-137 0.43	Prior Remediated Area
95-0035	S29	070-075	Drain-OCY	Cs-137 0.43	Prior Remediated Area
95-0045	L19	027-036	Drain-17th St.	Cs-137 0.67	
95-0062	L17	196-023	Bldg 011	Cs-137 0.53	
95-0068	R24	118-159	Bldg 064	Cs-137 0.38	Prior Remediated Facility
95-0070	K17	010-005	Drain-20 St	Co-60 0.039	Trace Detectable Activity
95-0076	Q13	035-120	Drain-010	H-3 8500pCi/L	Confirmed source of tritium
95-0093	U22	185-193	SRE Pond sediment	Cs-137 0.68 Sr-90 0.21 Th-232 2.1 U-238 2.0 U-235 0.1	Near Prior Remediated Area
95-0096	V23	010-015	SRE Pond sediment	Co-60 0.13 Cs-137 2.4	Near Prior Remediated Area
95-0102	T22	118-045	Bldg 003	Cs-137 0.44	Prior Remediated Facility
95-0105	Q17	171-085	Bldg 024	Cs-137 0.37	
95-0106	Q16	155-064	Bldg 024	Cs-137 0.34	
95-0107	Q15	075-140	Bldg 028	Cs-137 0.51	Prior Remediated Facility
95-0108	R15	034-094	Bldg 028	Cs-137 0.43	Prior Remediated Facility
95-0111	P22	027-178	Hot spot 006	Cs-137 0.53 Co-60 0.04	 Trace Detectable Activity

Table 6. Locations of Elevated Soil Activity (continued)

Sample ID	Block	Coords. N E	Sample Type (Region)	Isotopes (pCi/g)	Comments
95-0119	E12	120-200	Hot spot RSL20	Cs-137 0.38 Th-232 1.9 Pu-239 0.029	
95-0140	O11	001-060	Rc	Pu-239 0.024	
95-0151	K07	023-155	Rc	Cs-137 1.2 Pu-239 0.026	Near Prior Remediated Area
95-0153	V23	075-125	Hot spot 011	Cs-137 0.94 Pu-239 0.023	
95-0154	R14	050-200	Hot spot 010	Cs-137 0.51	
ENV94-0095, 0096, 0097	C13	200-175	Hot spot 0016	U-238 2.7	
ENV95-0102	K10	160-020	RSL52	Cs-137 0.40 U-238 3.9	Imported Gravel
ENV94-0077, 0078, 0079	M22	137-195	Hot spot RSL100	U-234 498 U-235 13.6 U-238 255	Mineral deposit high in nat U. ***Remediation Complete.***
ENV95-0104	R24	065-167	RSL54	Cs-137 271	***Remediation Ongoing.***
ENV95-0105 thru 0113	R25	062-137	Hot spot RSL61,2,3	Cs-137 138	***Remediation Ongoing.***

Table 6a. Anomalous Soil Sample Activity*

Sample ID	Block	Coords. N E	Sample Type (Region)	Isotopes (pCi/g)	Comments
94-0007	I04	060-130	Sodium Disposal Facility Area	Sr-90 1.9	Original Analysis
				Sr-90 0.016	Laboratory Reanalysis
95-0061	H12	000-070	Bldg 363	Pu-239 0.19	Original Sample
				Pu-239 0.18	Recount of same aliquot
				Pu-239 <MDA	Reanalysis of different aliquot
95-0152				Pu-239 <MDA	Field Duplicate
95-0074	L18	050-190	Drain-17 St.	Pu-239 0.15	Original Analysis
				Pu-239 <MDA	Laboratory Reanalysis
95-0157	M20	105-055	Hot spot 0013	Pu-239 0.007	Original Sample
95-0159				Pu-239 0.11	Field Duplicate

*Original high results were not confirmed by either laboratory or field duplicate analysis

Table 7. Soil Sample Analysis Protocols and Procedures

Analyte	Protocols	TMA Procedure
Gamma Spectroscopy		EP-060 Soil Preparation EP-100 Ge(Li) Preparation of Environmental Samples
Tritium	ASTM 2476-81 EPA 906.0	EP-060 Soil Preparation EP-070 Soil Dissolution EP-211 Tritium in Soil Samples by Azeotropic Distillation
Strontium	HASL 300/SR-01 HASL 300/SR-02	EP-060 Soil Preparation EP-070 Soil Dissolution EP-500 Strontium-89,90 - Purification
Uranium, alpha spectroscopy	HASL 300/U-04	EP-060 Soil Preparation EP-070 Soil Dissolution EP-910 Uranium Purification EP-008 Heavy Elements Electroplating
Thorium, alpha spectroscopy		EP-060 Soil Preparation EP-070 Soil Dissolution EP-900 Thorium Purification EP-008 Heavy Elements Electroplating
Plutonium, alpha spectroscopy	HASL 300/PU-02	EP-060 Soil Preparation EP-070 Soil Dissolution EP-940 Plutonium Purification EP-008 Heavy Elements Electroplating

Table 8. Water Sample Analysis Protocols and Procedures

Analyte	Protocols	TMA Procedure
Gamma Spectroscopy	ASTM 3649-85 EPA 901.1	EP-100 Ge(Li) Preparation of Environmental Samples
Tritium	ASTM 2476-81 EPA 906.0	EP-210 Tritium in Water by Distillation
Strontium	HASL 300/SR-01 HASL 300/SR-02	EP-040 Environmental Water Dissolution EP-500 Strontium-89,90 - Purification EP-519 Strontium-89,90 Planchet Demounting and Yttrium Purification
Uranium, alpha spectroscopy	ASTM 3972-90	EP-040 Environmental Water Dissolution EP-910 Uranium Purification EP-008 Heavy Elements Electroplating
Thorium, alpha spectroscopy		EP-040 Environmental Water Dissolution EP-900 Thorium Purification EP-008 Heavy Elements Electroplating
Plutonium, alpha spectroscopy	ASTM 3865-90	EP-040 Environmental Water Dissolution EP-940 Plutonium Purification EP-008 Heavy Elements Electroplating

Table 9. Analysis Detection Limits[1]

Analyte	Soil (pCi/g)	Water (pCi/L)
Cesium-137[2]	0.02	5
Strontium-90	0.04 - 0.1	0.1
Uranium Isotopic	0.004 - 0.01	0.05 - 0.1
Thorium Isotopic	0.03 - 0.1	0.05 - 0.1
Plutonium Isotopic	0.003 - 0.008	0.03
Tritium	600 - 2000 (pCi/L)[3]	300

1. Detection limits or minimum detectable activity (MDA) depends on sample size and count time.
2. Cesium-137 is the primary potential gamma emitting contaminant. Other gamma emitters have different detection limits.
3. Results for tritium in soil are reported in terms of pCi/L of water extracted from the soil. Detection limits depend on the moisture content of the soil.

Table 10. Comparison of Area IV Soil Radioisotopes (pCi/g) to Background and Cleanup Standards

Isotope	Local Background[3]					U. S. Background					Area IV				Cleanup Standards			
	Lab.[4]	Range	Mean	Std. Dev.	95th Percentile	Range	Mean	Std. Dev.	95th Percentile	Ref	Range	Mean	Std. Dev.	95th Percentile	DOE[5]	EPA[6]	NRC[7]	State
Tritium[1]	Tel'dyne	ND[2] - 750	193	166	ND - 525		100				ND - 8500	19	788	ND - 1595	20,000	20,000	-	-
Cesium-137	Tel'dyne	ND - 0.21	0.09	0.06	ND - 0.21	0.5 - 0.8 0.3 - 1.4	- 0.8	- 0.3	- 0.2 - 1.4	a b	ND - 2.4	0.15	0.26	ND - 0.67	9.2	9	9	-
Strontium-90	Tel'dyne	ND - 0.13	0.05	0.03	ND - 0.12	0.16 - 0.32 0.25 - 0.29	0.24 0.27	- 0.016	- 0.24 - 0.30	c d	ND - 0.22	0.045	0.045	ND - 0.14	36	12	12	-
Uranium-234	TMA Tel'dyne	0.74 - 1.9 0.14 - 0.74	1.2 0.41	0.48 0.19	0.24 - 2.2 ND - 0.79	0.12 - 3.8	1.0	0.41	0.17 - 1.83	f	0.4 - 2.1	0.78	0.21	0.36 - 1.2	30[8]	30	30	-
Uranium-235	TMA Tel'dyne	0.039 - 0.1 ND - 0.037	0.057 0.018	0.023 0.011	0.011 - 0.10 ND - 0.04	0.006 - 0.17	0.046	0.019	.0078 - .084	f	ND - 0.1	0.042	0.012	.018 - .066	30[8]	27	27	-
Uranium-238	TMA Tel'dyne	0.77 - 1.7 0.18 - 0.82	1.1 0.44	0.37 0.2	0.36 - 1.8 ND - 0.84	0.12 - 3.8	1.0	0.41	0.17 - 1.83	f	0.4 - 2.0	0.79	0.20	0.39 - 1.2	35[8]	18	18	-
Thorium-228	TMA Tel'dyne	0.93 - 1.6 0.11 - 0.82	1.2 0.44	0.27 0.23	0.66 - 1.7 ND - 0.9	0.10 - 3.4	0.98	0.23	0.52 - 1.44	f	0.4 - 2.5	1.0	0.32	0.36 - 1.6	5/15[9]	3.3	3.3	-
Thorium-230	TMA Tel'dyne	0.71 - 4.2 0.2 - 0.63	2.0 0.36	1.6 0.11	ND - 5.2 0.14 - 0.58	0.12 - 3.8	1.0	0.41	0.17 - 1.83	f	0.3 - 2.3	0.82	0.26	0.30 - 1.3	-	15	15	-
Thorium-232	TMA Tel'dyne	0.91 - 1.5 0.15 - 1.2	1.1 0.46	0.24 0.3	0.62 - 1.58 ND - 1.1	0.10 - 3.4	0.98	0.23	0.52 - 1.44	f	0.35 - 2.1	0.99	0.29	0.41 - 1.6	5/15[9]	2.7	2.7	-
Plutonium-238	Tel'dyne	ND - 0.13	0.02	0.03	ND - 0.07	-	-	-	-		ND	ND	-	-	37	423	423	-
Plutonium-239	Tel'dyne	ND	-	-	-	-	0.0055	-	-	e	ND - 0.026	0.0037	0.005	ND - 0.014	34	423	423	-

Footnotes for Table 10.

1 Tritium values given in pCi/L. Cleanup standards are the drinking water supplier limits. One sample at Bldg 010 drainage was 8500 pCi/L. All other Area IV tritium data were non-detects.

2 ND = non detect

3 Excludes Wildwood and Tapia Locations (see secton 3.4.1)

4 Teledyne anlayzed Uranium and Thorium samples from Rocky Peak Park and Ravine, and Happy Camp. TMA analyzed Uranium and Thorium samples from Bell Canyon, Santa Susana Park and the Western Area.

5 Rocketdyne derived limits based on 15 mrem annual dose limit and the DOE developed RESRAD code. These limits have been submitted to DOE for approval

6 USEPA limits based on 15 mrem/year and data from the following documents -
"Technical Summary Report Supporting the Development of Standards for the Cleanup of Radioactively Contaminated Sites", USEPA (Draft), April 1994
40CFR196, USEPA, "Radiation Site Cleanup Regulations (Draft)", May 11, 1994

7 NRC limits also based on 15 mrem/year and information from the following document -
Federal Register, page 43200, "Radiological Criteria for Decommissioning (Proposed Rule)", 10CFR20, Subpart E

8 "Disposal or Onsite Storage of Thorium or Uranium Wastes from Past Operations", Federal Register, Vol 46, No. 205
pp. 52061-52063, Friday, October 23, 1981. U. S. Nuclear Regulatory Commission. These limits are more conservative than the RESRAD derived limits.

9 DOE 5400.5 Limits (5pCi/g averaged over top 15 cm of soil depth and 15 pCi/g averaged over 15cm layers below the top 15 cm.)

a Gustafson P. J., Proceedings of Natl. Symp. of Radioecology, 2nd CONF-670503, pages 249-257, USAEC, 1969.
Gustafson et al, "Recent Trends in Radioactive Fallout", ANL-7760, Part III, page 246, 1970.
Eisenbud M. "Environmental Radioactivity", Academic Press, 1987, page 331.

b Ritchie & McHenry, "The Distribution of Cs-137 In Some Watersheds", Health Physics, Vol 32, page 102, 1977.
Ritchie & McHenry, IAEA Procs. on Environmental Migration of Radionuclides , "Redistribution of Fall-Out Cesium in Small Watersheds in the U.S.", 1982.

c Eisenbud M. "Environmental Radioactivity", Academic Press, 1987, page 323 and 331 and Figure 13-8.
United Nations Scientific Committee on the Effects of Atomic Radiation, UNSCEAR(1969), 24th Session, Suppl. 13 (A/7613).

d Ritchie & McHenry, "The Distribution of Cs-137 In Some Watersheds", Health Physics, Vol 32, page 102, 1977.

e Eisenbud M. "Environmental Radioactivity", Academic Press, 1987, page 335.

f Myrick T. E. et al,"Deterrmination of Concentrations of Selected Radionuclides in Surface soil in the U.S."' Health Physics Vol. 45, No. 3, pages 631-642.

APPENDIX A. GLOSSARY

A1 - X30	Coordinates of survey blocks, A-X north-south, 1-30 east-west
Ad	Disturbed Alluvium (tilled soil)
alpha-spec	Alpha Spectroscopy
Area IV	Western end of SSFL comprising 290 acres
Au	Undisturbed Alluvium (untilled native soil)
Batch	Group of nominally 20 soil samples plus 2 QA/QC samples
BBI	Brandeis-Bardin Institute
Behrens-Fisher	Statistical test to compare the means of two distributions
Bldg. 003	Engineering Test Building
Bldg. 005	Uranium Carbide Fuel Pilot Plant
Bldg. 009	Organic Moderated Reactor/ Sodium Graphite Reactor Facility
Bldg. 010	SNAP 8 Experimental Reactor (S8ER)
Bldg. 011	Radiation Instrumentation Lab
Bldg. 012	SNAP Critical Facility
Bldg. 019	Flight System Critical Facility
Bldg. 020	Rockwell International Hot Laboratory
Bldg. 023	Corrosion Test Loop
Bldg. 024	SNAP Environmental Test Facility
Bldg. 028	Sodium Test Irradiation Reactor (STIR)
Bldg. 029	Radiation Measurement Facility
Bldg. 055	Nuclear Materials Development Facility
Bldg. 059	SNAP Ground Prototype Test Facility (S8DR)
Bldg. 064	Fuel Storage Facility
Bldg. 093	L-85 reactor
Bldg. 100	Fast Critical Experiment Laboratory
Bldg. 363	R&D Laboratory

Bldg. 373	SNAP Critical Facility
Burn Pit	Colloquial term for the Sodium Disposal Facility
Co-60	Radioactive Isotope of Cobalt
cpm	counts per minute
Cs-137	Radioactive Isotope of Cesium
Cum.	Cumulative
CUMPLOT	Cumulative Probability Plotting Computer Program
curie	37 thousand million radioactive disintegrations per second. 3.7×10^{10} dps
D&D	decontamination and decommissioning
DHS	(California) Department of Health Services
DOE	Department of Energy
dof	Degrees of Freedom
dps	disintegrations per second
DQO	Data Quality Objectives
Dr	Drainage Areas
Dv	Developed Area (buildings, roads, parking lots, pavement)
ETEC	Energy Technology Engineering Center
Eu-152, -154	Radioactive Isotopes of Europium
ft	foot or feet
G1 - G8	Eight detector/counter combinations
gamma-spec	Gamma Spectroscopy
GPS	Global Positioning System
H-3	Tritium (Radioactive Isotope of Hydrogen)
hr	hour
ID	Identifier
in	inch
ISF	Interim Storage facility
K-40	Radioactive Isotope of Potassium

KEWB	Kinetic Energy Water Boiler
LCS	Laboratory Control Sample
m	meter
Max	Maximum
Mch	Martinez-Chaparrel Area (Martinez formation soil and thick wooded Chaparrel)
MDA	Minimum Detectable Activity (limit of detectability of lab. counting equipment)
mean	Average or Expectation Value
min	minute
Min	Minimum
Mn-54	Radioactive Isotope of Manganese
μR/hr	micro Roentgens per hour (exposure or dose rate)
NPDES	National Pollution Discharge Elimination System
NRC	Nuclear Regulatory Commission
OCY	Old Conservation Yard
PARCC	Precision, Accuracy, Representativeness, Completeness and Comparability
pCi/g	Picocurie per gram (activity in soil)
pCi/L	Picocurie per liter (activity in water)
pico	One millionth of one millionth part. 0.000000000001
PR	Percent Recovery
Pu-238, -239, -240	Radioactive Isotopes of Plutonium
QA	Quality Assurance
QC	Quality Control
R-2 Pond	Surface Retention Pond in Area II of SSFL
Ra-226	Radioactive Isotope of Radium
Rc	Rock Outcroppings
RHB	DHS Radiologic Health Branch

RIHL	Rockwell Interntional Hot Laboratory
RMDF (RMHF)	Radioactive Materials Disposal Facility (recently renamed Radioactive Materials Handling Facility)
RPD	Relative Percent Difference
SDEV	Standard Deviation
SDF	Sodium Disposal Facility
sec	second
sigma, σ	Standard Deviation
SMMC	Santa Monica Mountains Conservancy
SNAP	Space Nuclear Auxiliary Power
Sr-90	Radioactive Isotope of Strontium
SRE	Sodium Reactor Experiment
SSFL	Santa Susana Field Laboratory
Std. dev.	Standard Deviation
Survey Block	200 ft x 200 ft area of land
Survey Grid	Intersecting 25 ft x 25 ft north-south east-west lines
Th-228, -230, -232	Radioactive Isotope of Thorium
TMA/Richmond	Thermo Analytical Richmond Radiochemistry Laboratories
U-234, -235, -238	Radioactive Isotopes of Uranium

APPENDIX B   RADIATION DATA

Figure B-1. Ambient Gamma Survey Results - Area IV

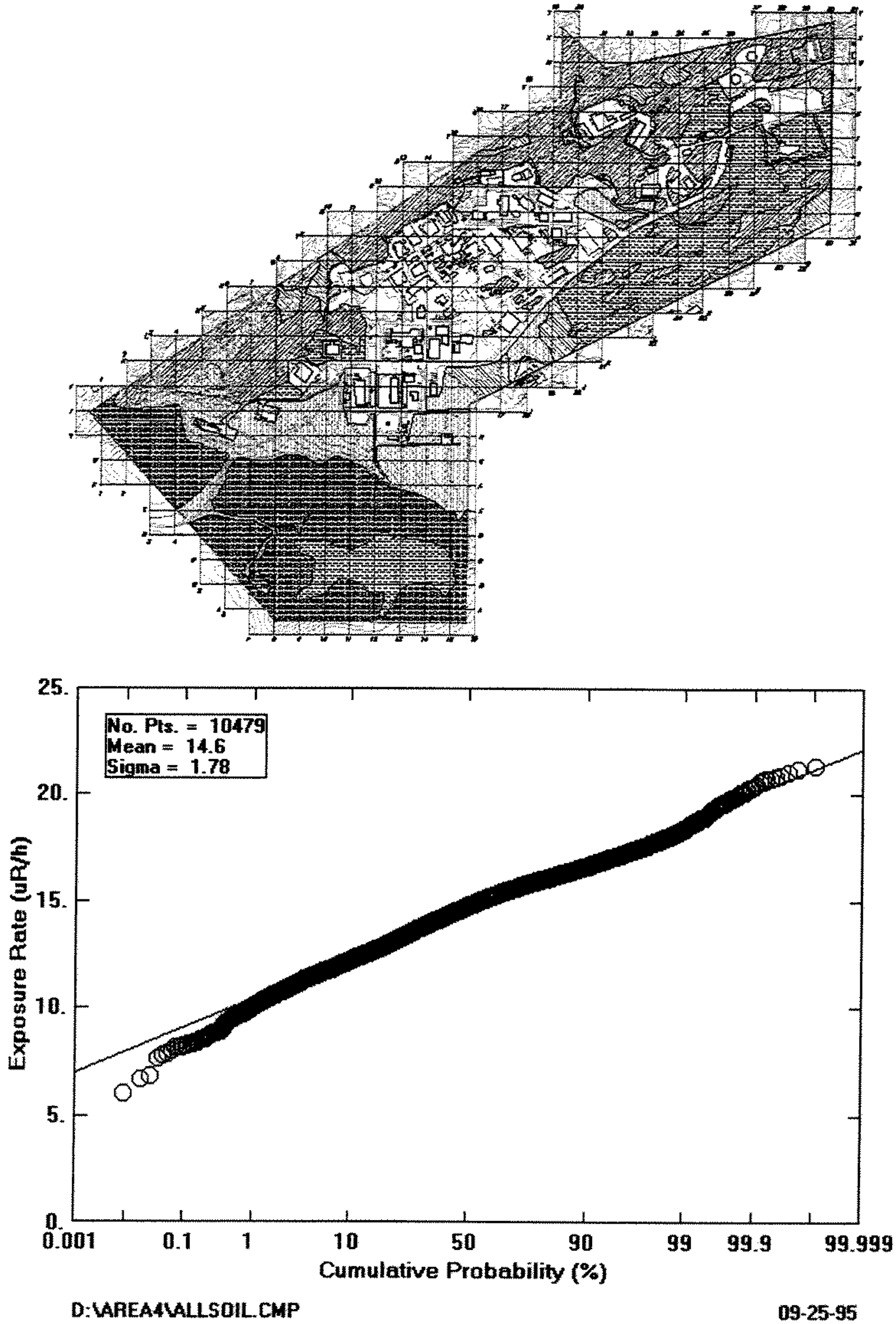
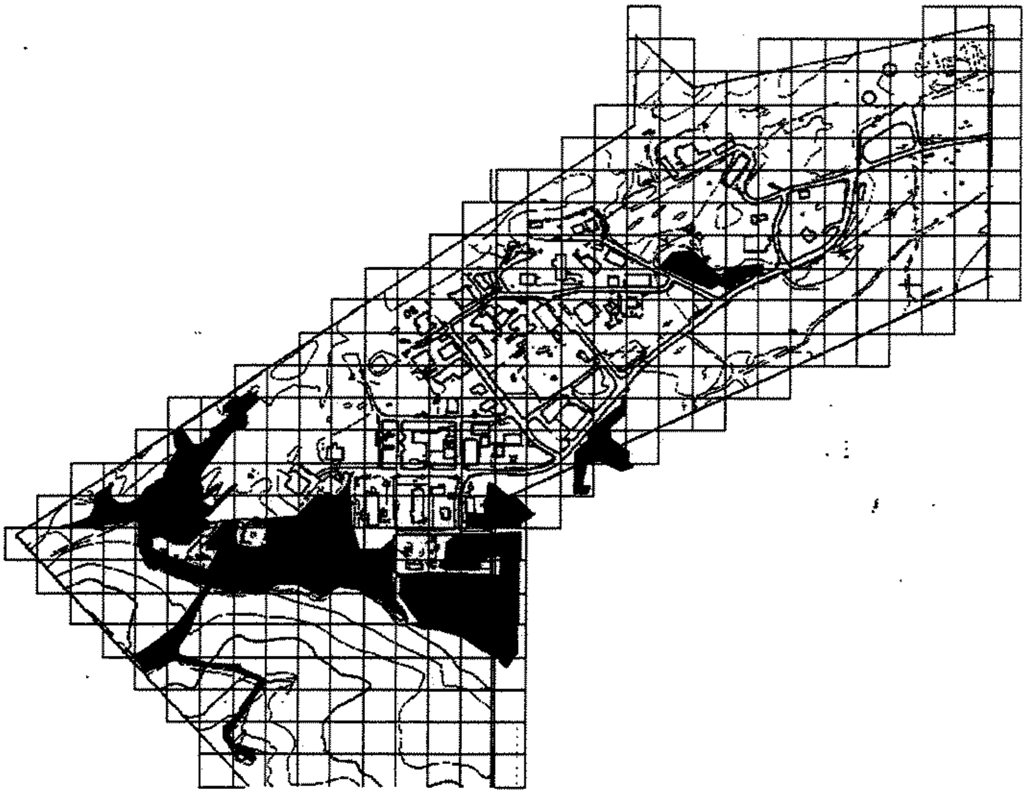


Figure B-2. Ambient Gamma Survey Results - Alluvium (disturbed) Region



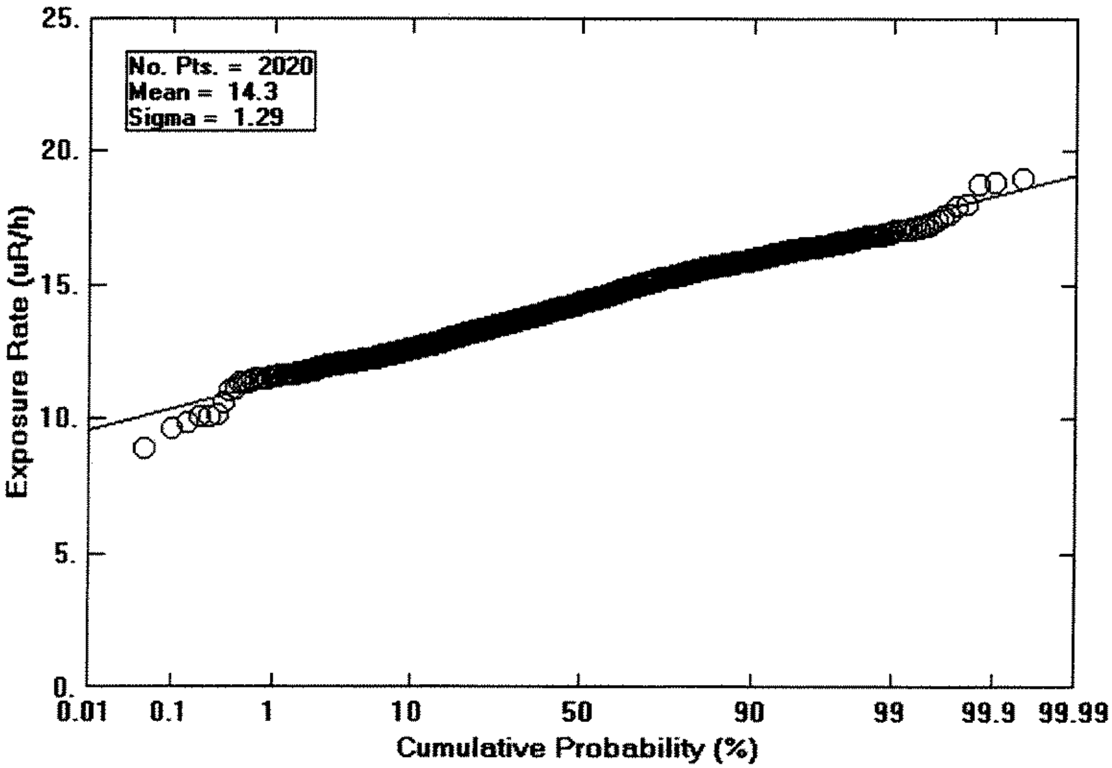


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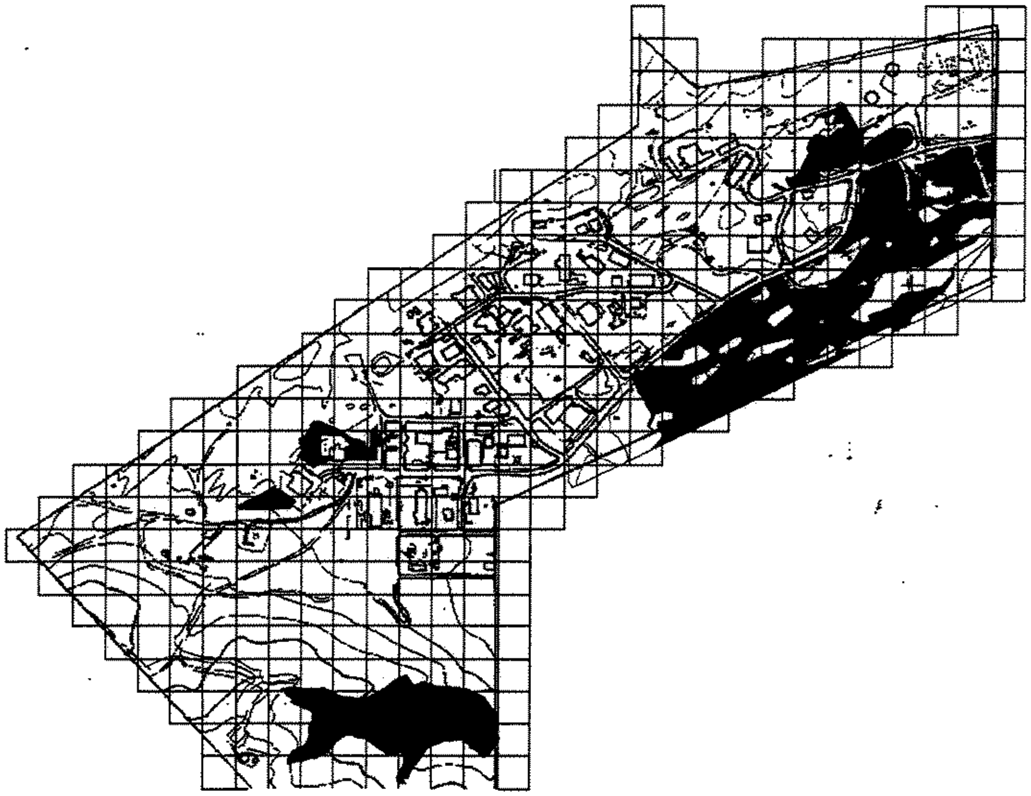
Figure B-3. Ambient Gamma Survey Results - Alluvium (undisturbed) Region



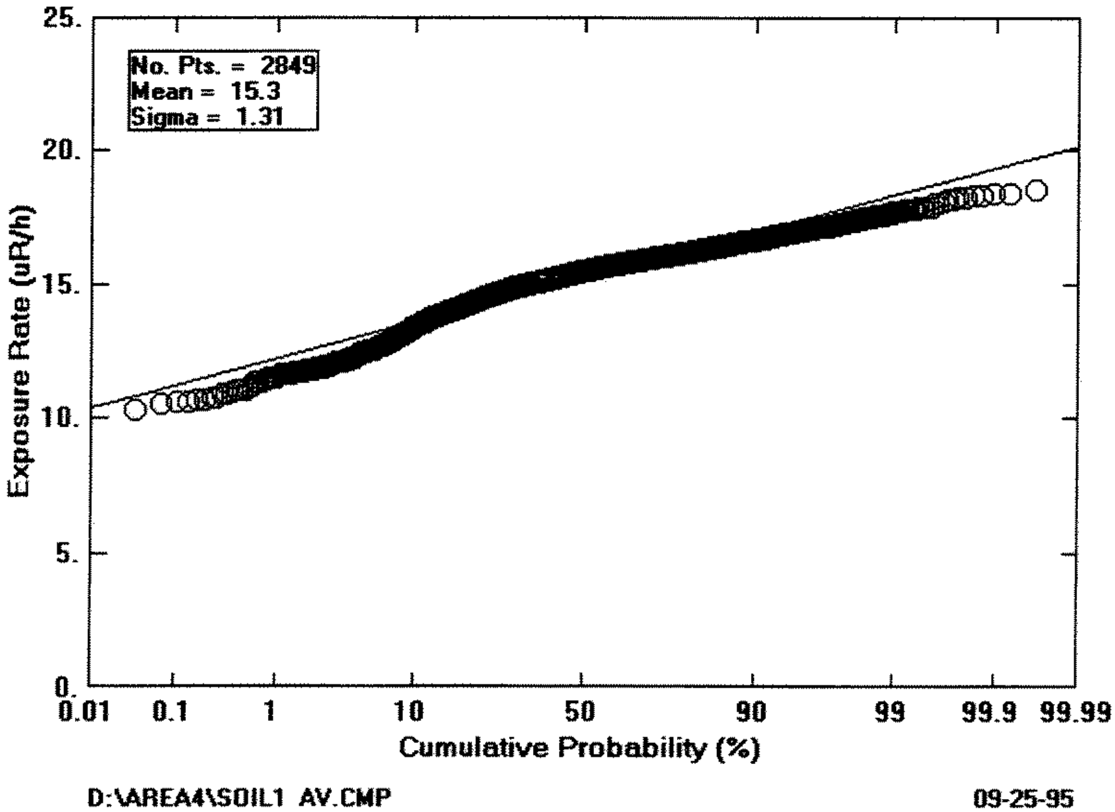
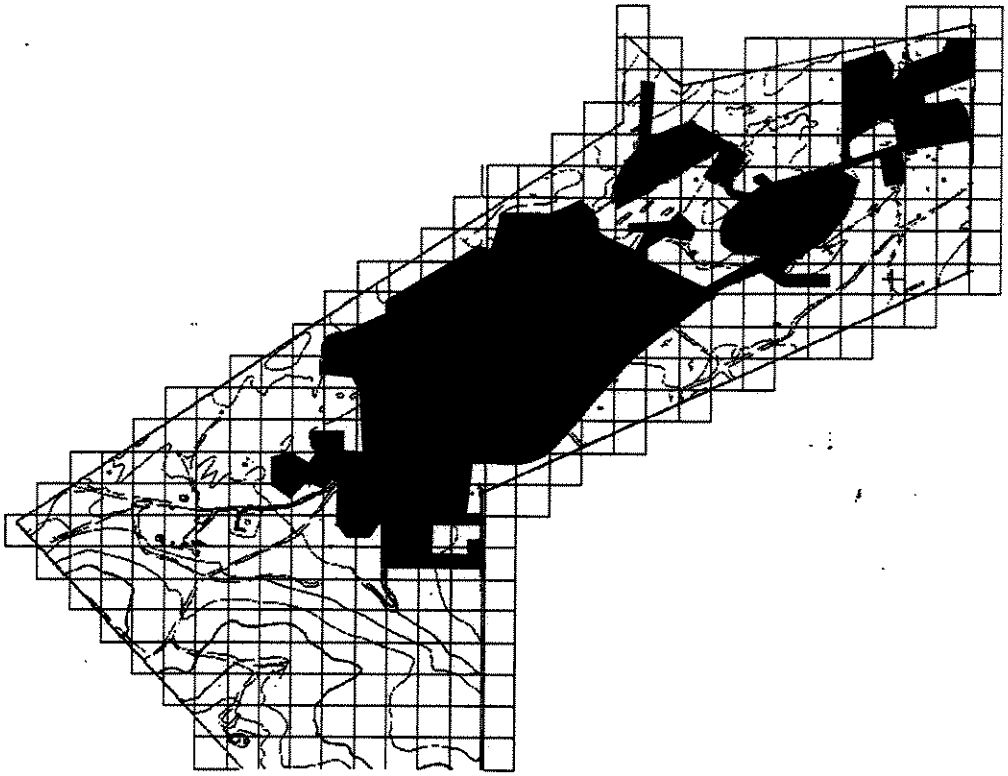


Figure B-4. Ambient Gamma Survey Results - Developed Region



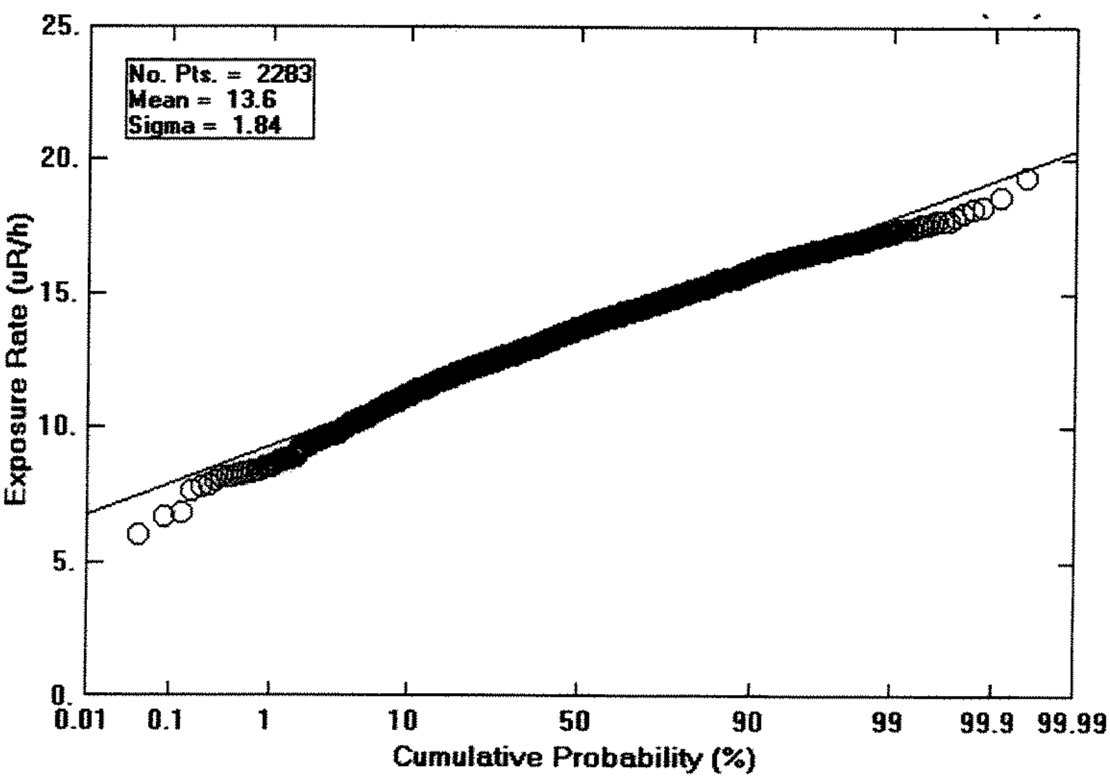


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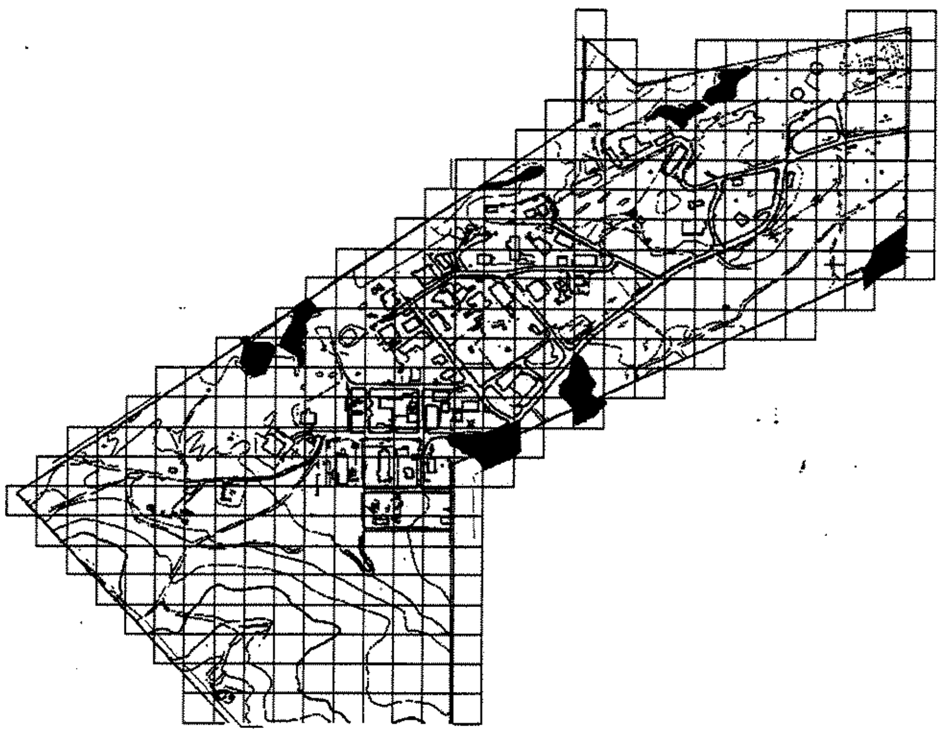
Figure B-5. Ambient Gamma Survey Results - Drainage Region



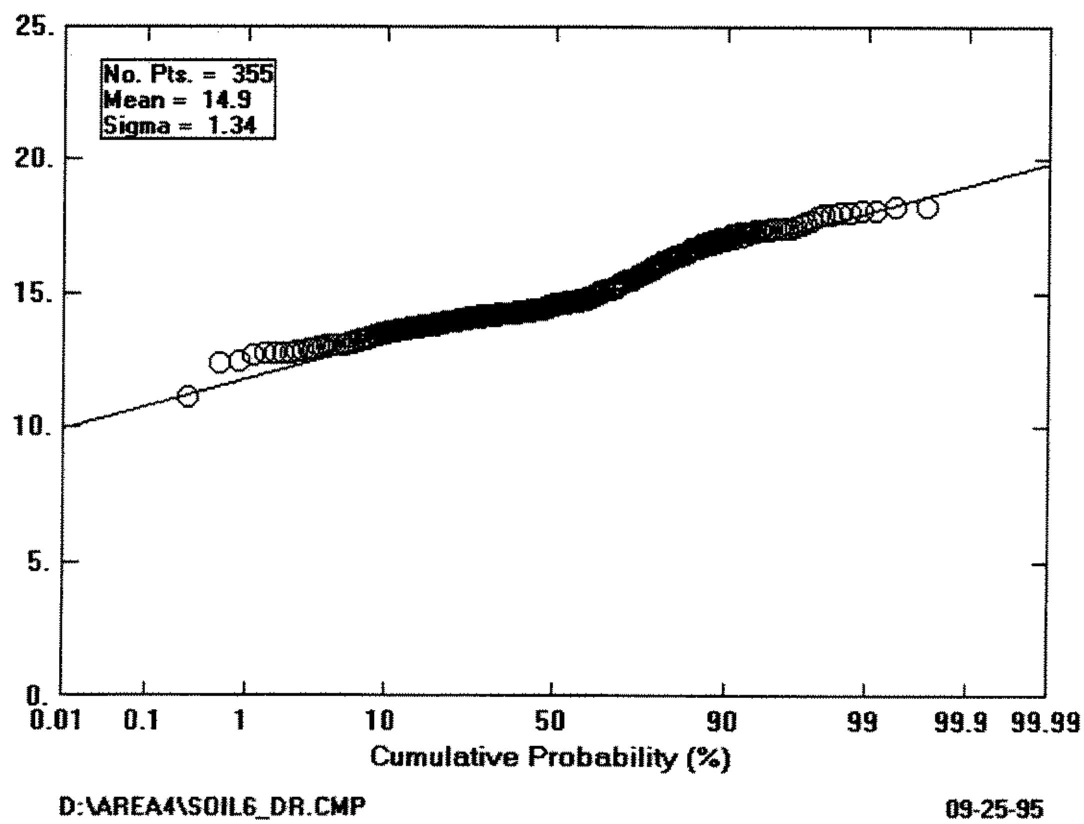
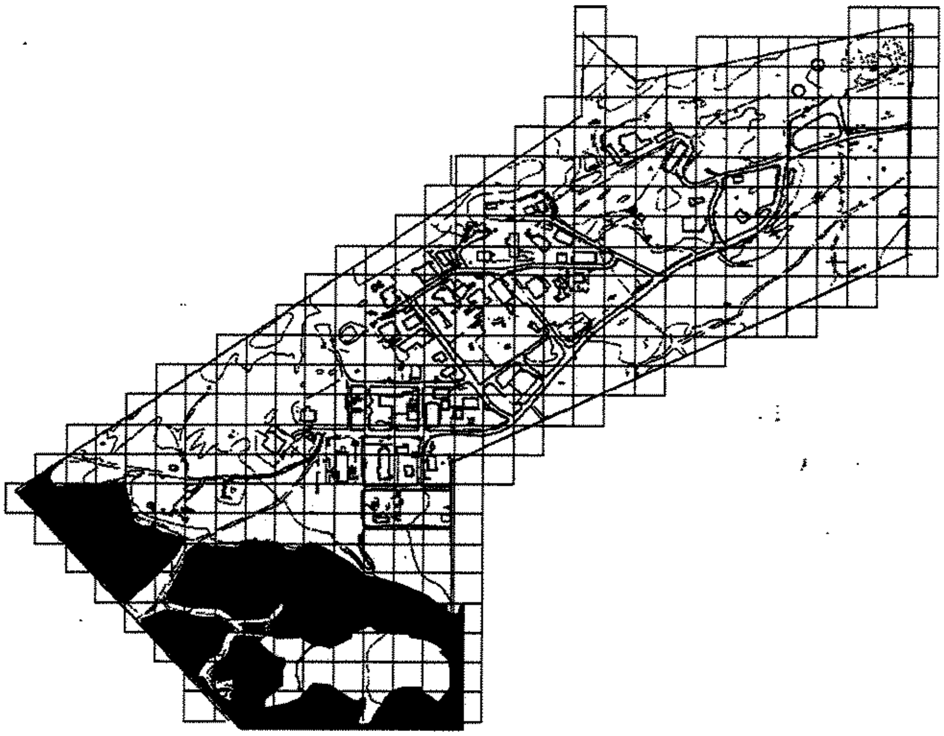


Figure B-6. Ambient Gamma Survey Results - Martinez-Chaparral Region



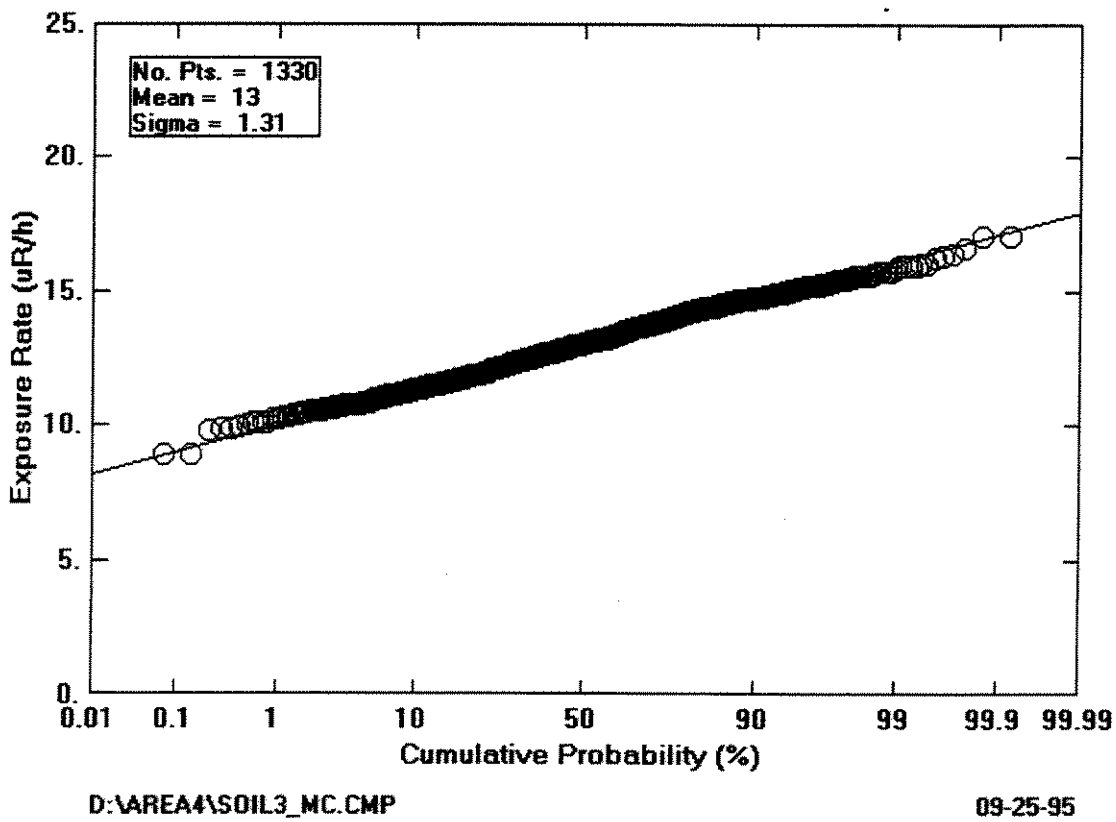
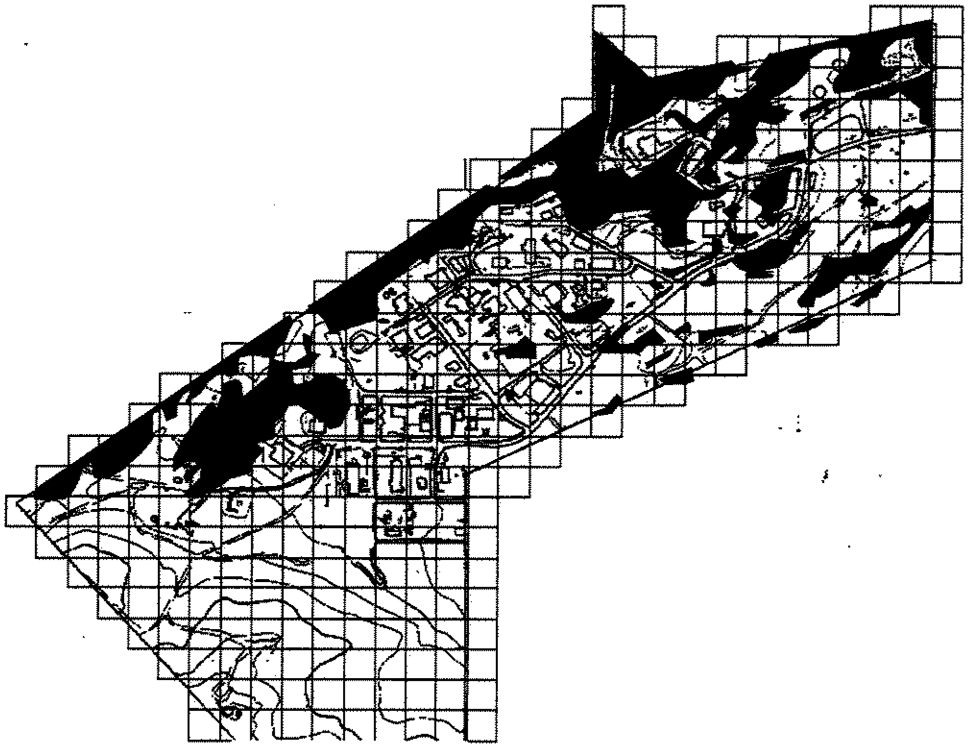


Figure B-7. Ambient Gamma Survey Results - Rock Outcrop Region



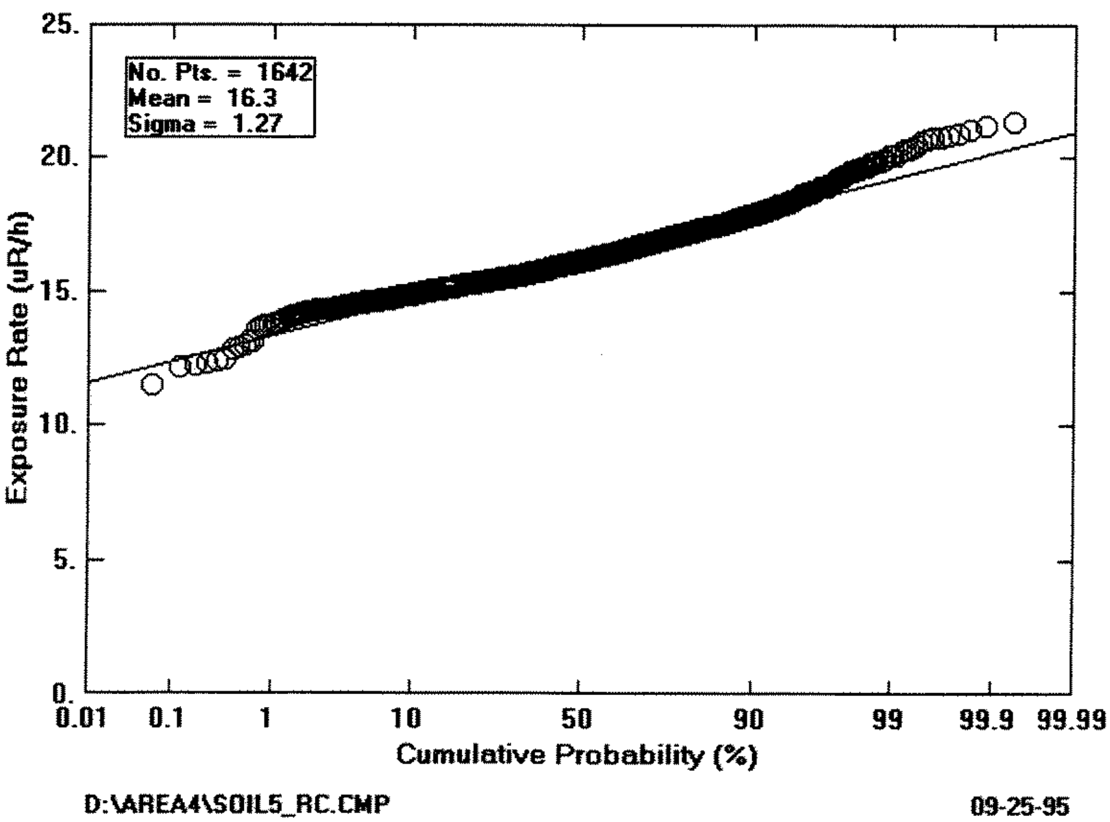


Figure B-8. Ambient Gamma Survey Results - Bell Canyon Background Location

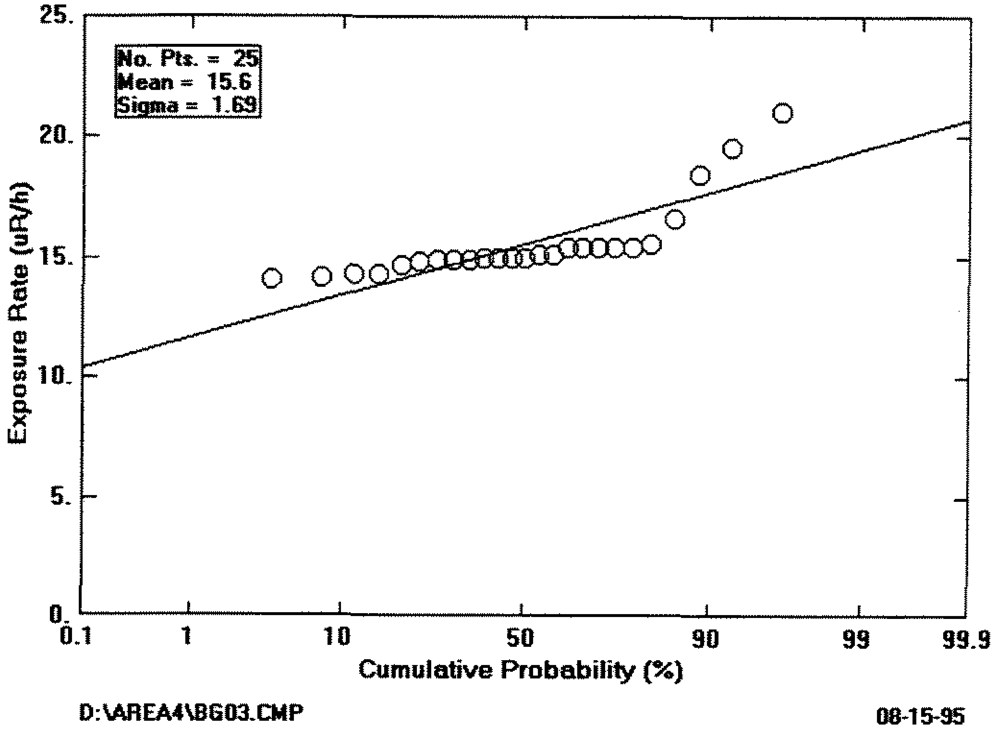


Figure B-9. Ambient Gamma Survey Results - Western Site Background Location

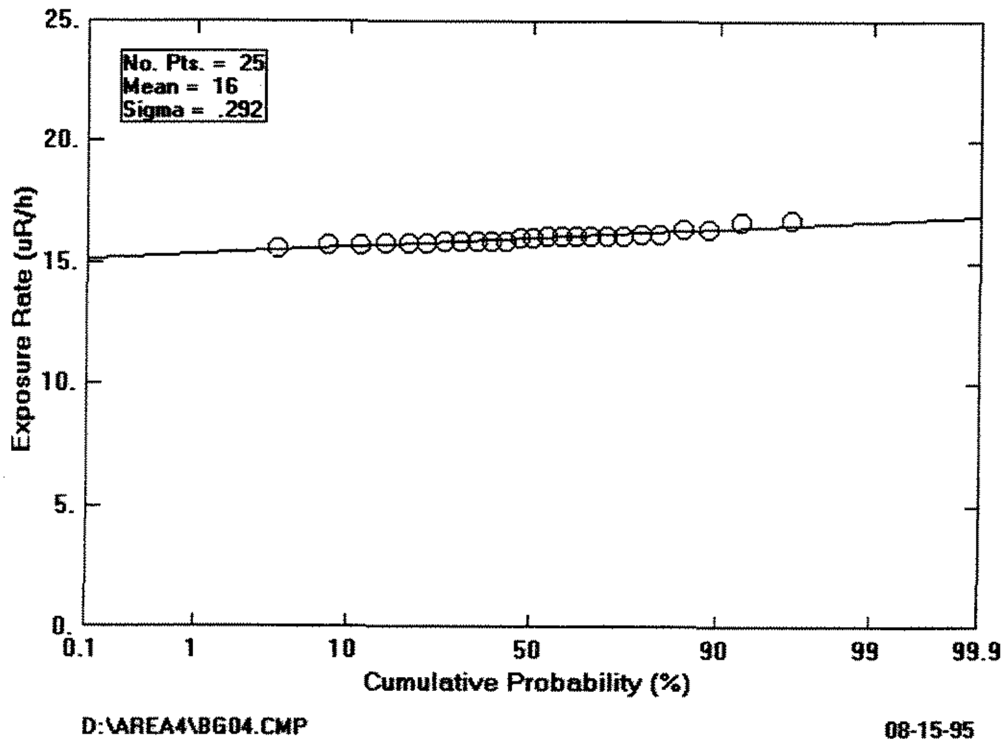


Figure B-10. Ambient Gamma Survey Results - Santa Susana Park Background Area

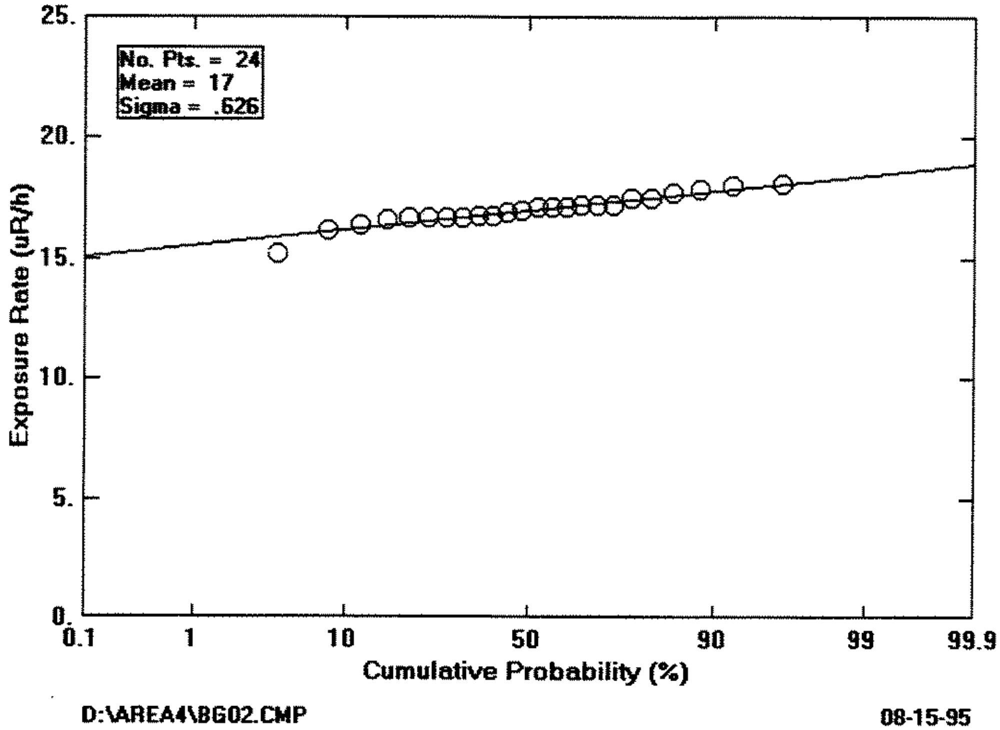


Figure B-11. Ambient Gamma Survey Results - Southwest Boundry

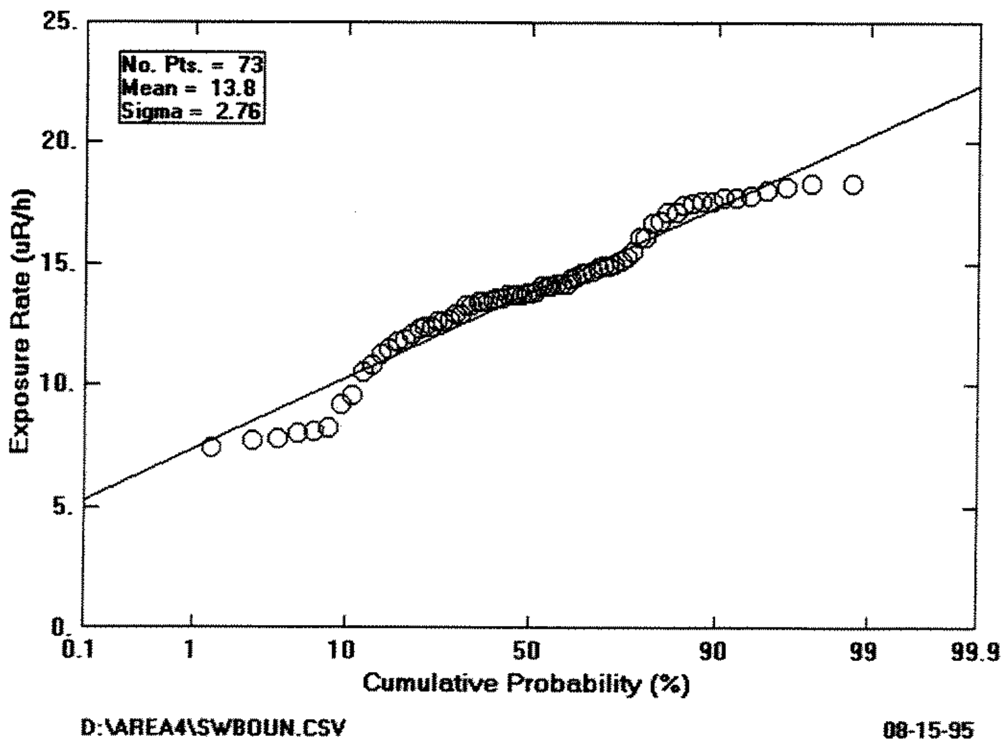
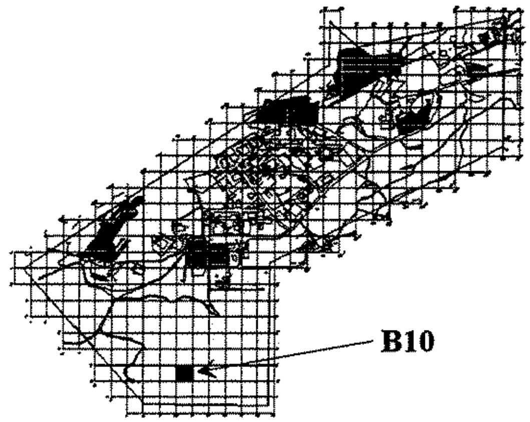


Figure B-12. Ambient Gamma Survey Results - Survey Block B10

13.8	12.8	12.9	12.5	12.1	11.8	11.8	11.5	11.8
13.5	13.8	13.1	13.4	12.3	12.5	12.7	12.3	11.8
14.0	14.0	13.6	13.2	13.4	13.8	13.1	13.1	12.5
14.4	14.0	13.8	14.0	14.0	14.2	13.6	14.4	14.0
14.8	14.4	14.2	14.6	14.7	14.5	14.0	14.7	14.5
14.3	15.0	15.0	14.9	14.8	14.2	14.9	15.0	14.7
15.2	14.7	14.4	14.8	14.8	14.8	15.2	15.1	15.0
15.0	15.3	15.1	14.8	14.7	14.7	14.7	14.4	14.5
15.2	15.1	15.1	14.8	14.9	15.2	14.8	13.8	14.4



B

10

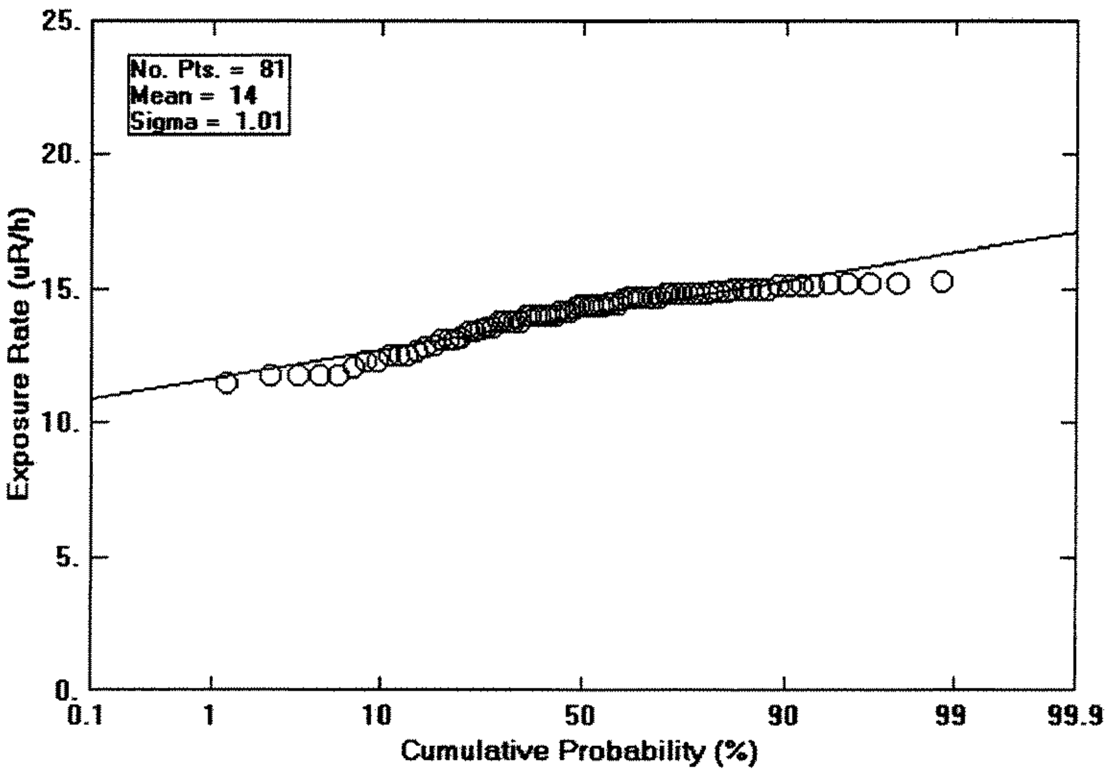


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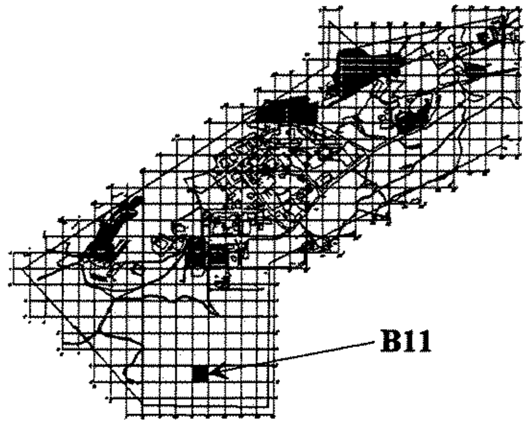
Figure B-13. Ambient Gamma Survey Results - Survey Block B11

11.1	11.6	11.5	12.2	11.7	11.7	11.6	11.8	11.9
12.1	11.9	12.1	12.4	12.1	12.1	11.9	12.1	12.6
12.5	12.7	13.4	13.3	13.5	13.0	13.5	13.0	12.8
13.7	14.1	13.9	13.8	13.6	14.0	13.8	14.3	14.0
14.3	14.0	14.0	13.9	14.0	14.2	14.2	14.2	13.6
14.3	14.6	13.8	14.3	14.3	14.1	14.0	14.5	14.4
14.3	14.0	14.0	14.2	14.2	14.4	14.3	14.2	14.7
14.0	14.3	14.3	14.0	14.3	13.8	14.3	14.4	14.3
13.6	14.1	14.2	13.9	14.5	15.0	15.1	14.8	14.9



B
11

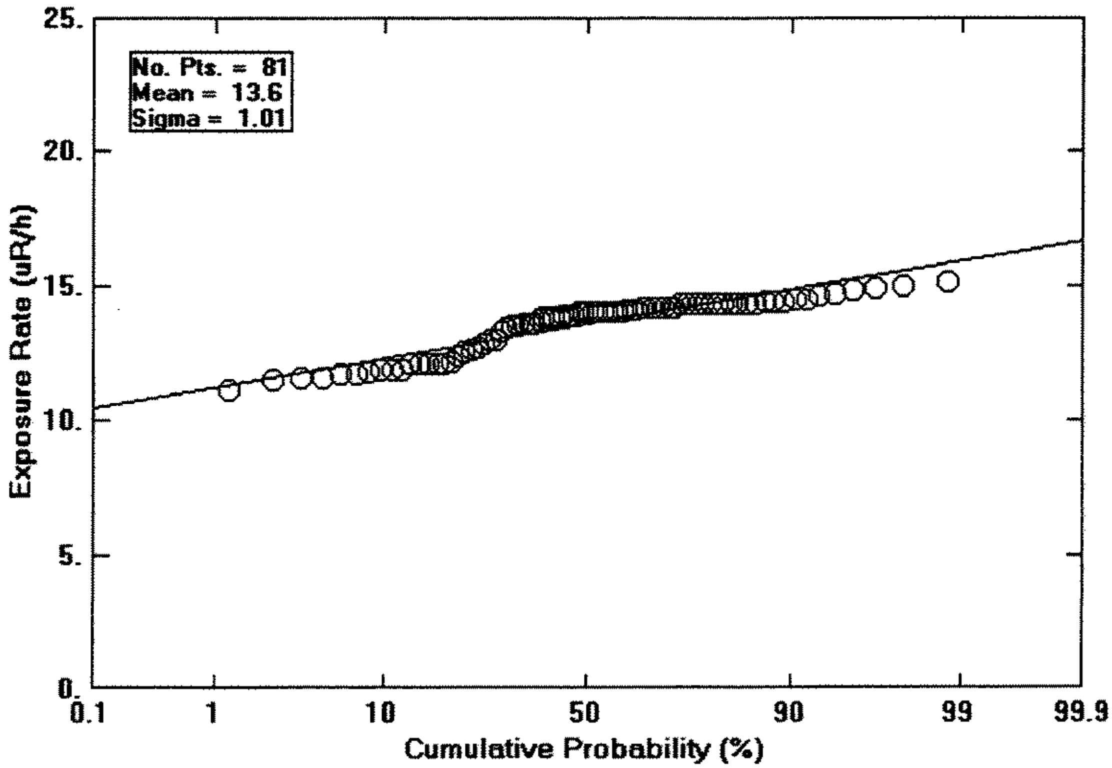


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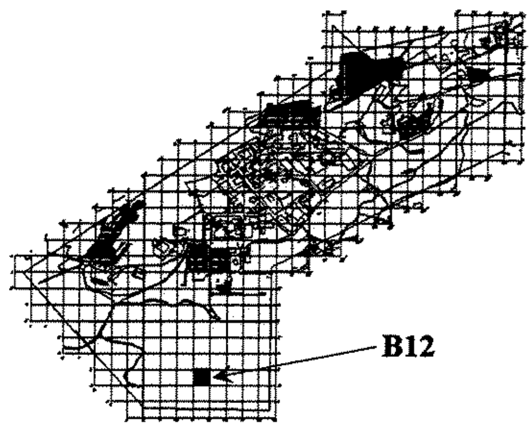
Figure B-14. Ambient Gamma Survey Results - Survey Block B12

13.1	12.9	13.0	13.3	13.2	13.4	13.3	12.7	13.2
12.7	13.1	13.5	13.5	13.7	14.1	13.9	13.6	13.9
13.1	13.8	14.1	13.7	14.1	13.8	14.1	14.0	14.1
14.5	13.9	14.3	14.8	14.4	14.6	14.9	14.6	14.8
14.8	14.8	14.7	14.6	14.9	14.6	14.3	15.2	14.9
15.0	15.3	14.8	15.1	15.1	14.8	15.1	15.5	14.9
15.0	15.1	14.9	14.9	15.2	15.5	15.4	15.8	15.7
15.2	15.7	15.2	15.6	15.7	16.2	16.0	15.6	16.6
15.8	15.8	16.0	16.0	16.2	16.2	17.1	17.4	17.6



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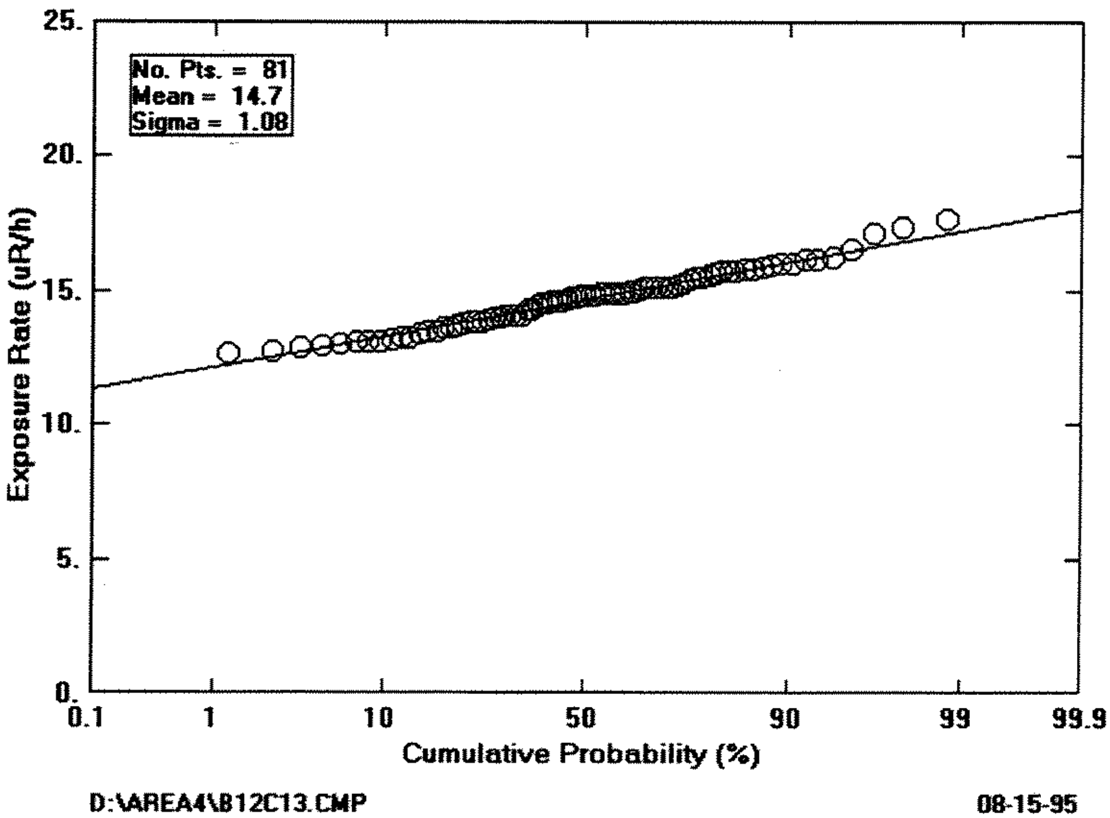
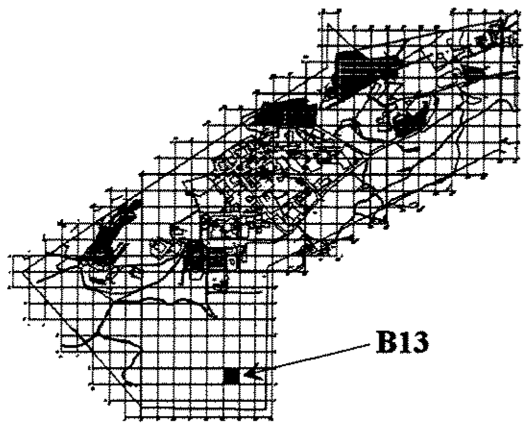


Figure B-15. Ambient Gamma Survey Results - Survey Block B13

13.2	13.1	13.2	13.1	13.5	13.7	13.4	13.5	13.7
13.7	13.8	13.6	13.7	14.3	13.8	13.9	13.9	14.0
14.2	14.6	13.9	13.9	14.5	14.2	14.5	13.9	14.7
14.5	14.4	14.8	14.0	14.2	14.4	14.3	13.7	14.0
13.6	14.2	14.4	13.9	14.6	14.9	15.0	14.9	15.3
14.7	15.2	15.0	15.3	15.1	15.5	15.2	15.5	15.2
14.9	15.4	15.6	15.8	16.5	16.3	16.6	16.6	17.4
16.1	16.4	16.4	16.6	16.9	16.7	17.0	18.0	18.0
16.7	16.8	16.9	17.4	16.7	17.0	17.1	17.8	17.6



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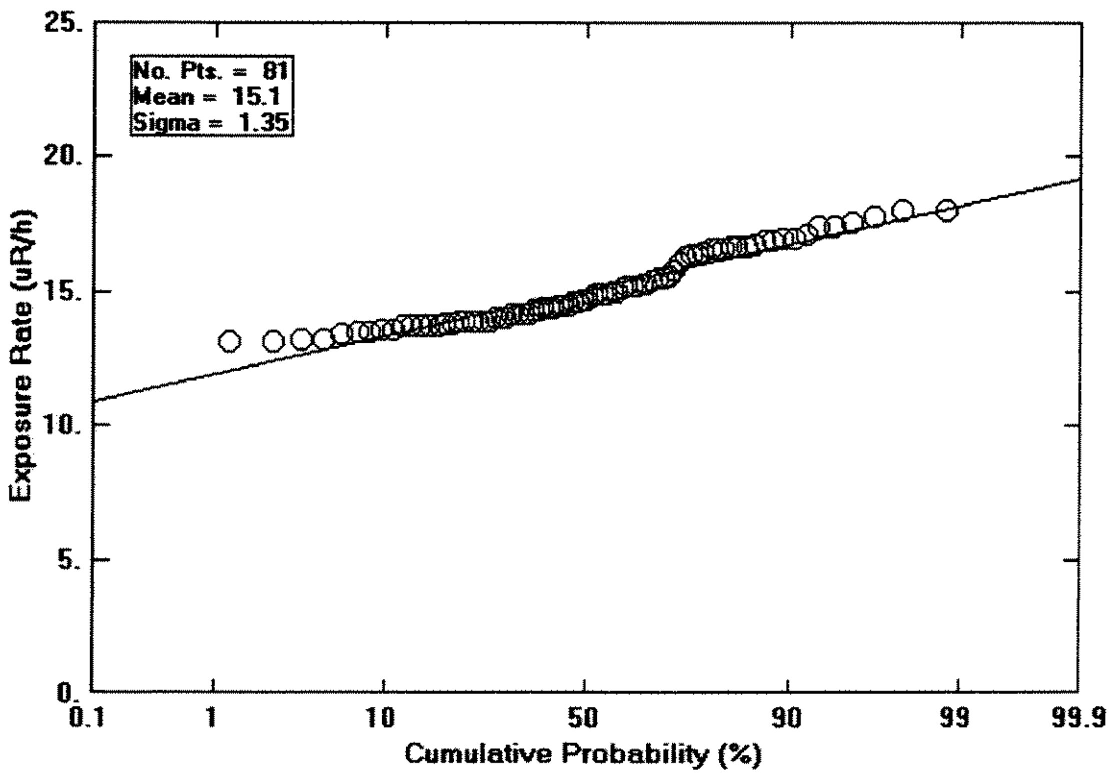

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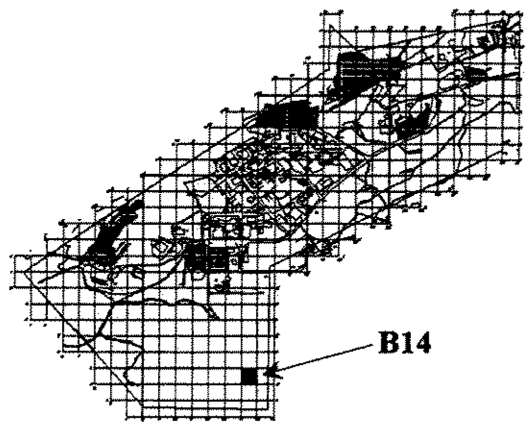
Figure B-16. Ambient Gamma Survey Results - Survey Block B14

13.6	13.1	13.0	13.8	14.4	14.4	14.9	15.0	16.0
14.0	14.1	13.9	14.1	14.4	14.9	15.7	16.1	16.4
14.7	14.3	14.2	14.4	14.9	15.5	15.4	16.7	17.6
14.7	14.9	14.9	14.8	15.2	15.6	16.6	17.2	18.5
15.0	14.9	15.5	15.9	16.2	16.8	16.8	17.1	18.4
15.8	16.1	16.8	16.6	16.7	16.9	17.5	18.4	19.7
16.6	17.3	17.2	17.6	18.0	17.6	17.8	19.6	19.7
18.7	18.9	19.0	19.0	19.5	19.6	18.8	20.7	21.1
18.4	18.9	19.8	19.5	19.8	19.2	19.7	19.9	21.1



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14

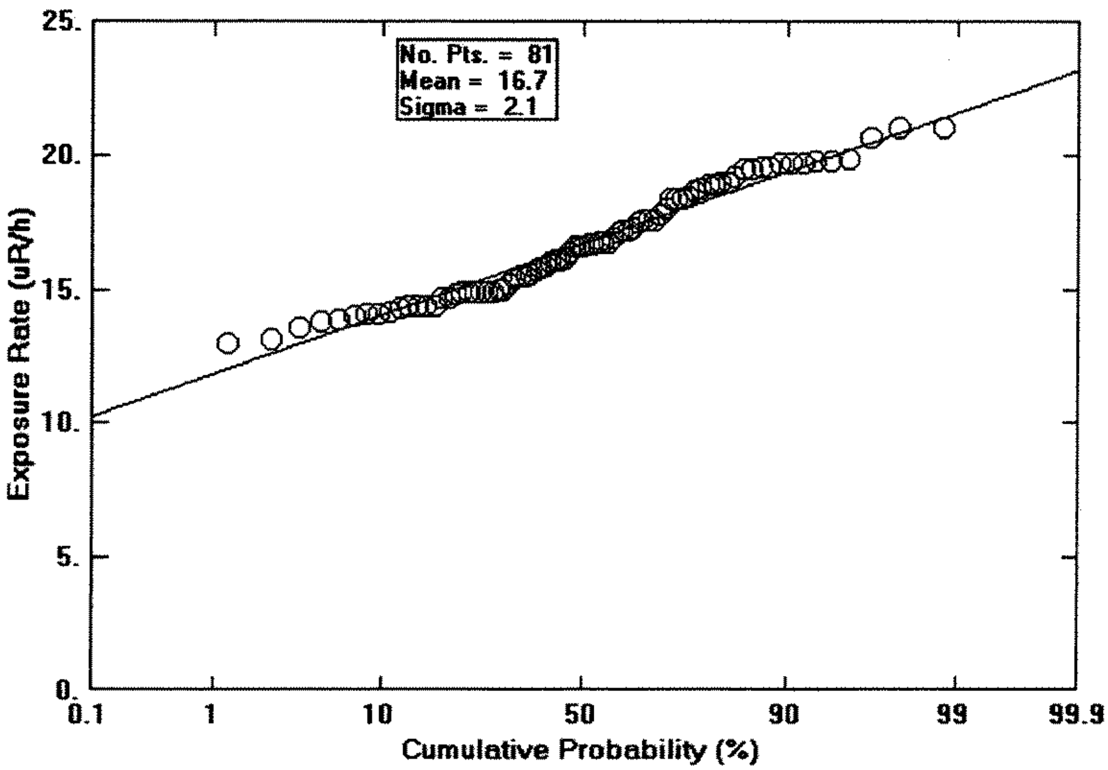

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Figure B-17. Ambient Gamma Survey Results - Survey Block C8

8.9	9.9	10.1	10.0	9.8	10.5	10.3	9.9	10.4
10.1	10.5	10.9	10.3	10.5	10.8	10.7	10.5	11.2
10.6	10.5	10.7	11.3	10.8	11.2	11.4	11.5	11.3
11.6	11.2	11.6	11.5	11.5	12.8	12.4	12.6	12.1
11.3	10.7	11.4	11.7	12.2	12.1	12.7	12.7	13.2
10.7	10.6	12.1	12.2	13.1	13.8	13.3	13.2	13.3
12.4	13.0	13.1	13.0	13.5	13.5	13.6	13.7	13.7
12.8	12.5	13.3	13.0	13.1	14.0	14.1	13.6	13.2
12.8	13.2	13.7	12.7	14.0	14.2	14.3	13.5	13.5

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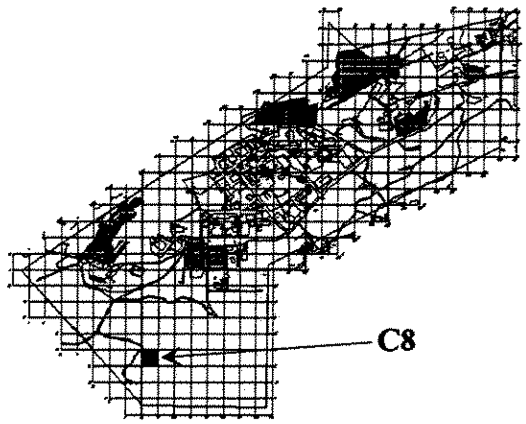
8



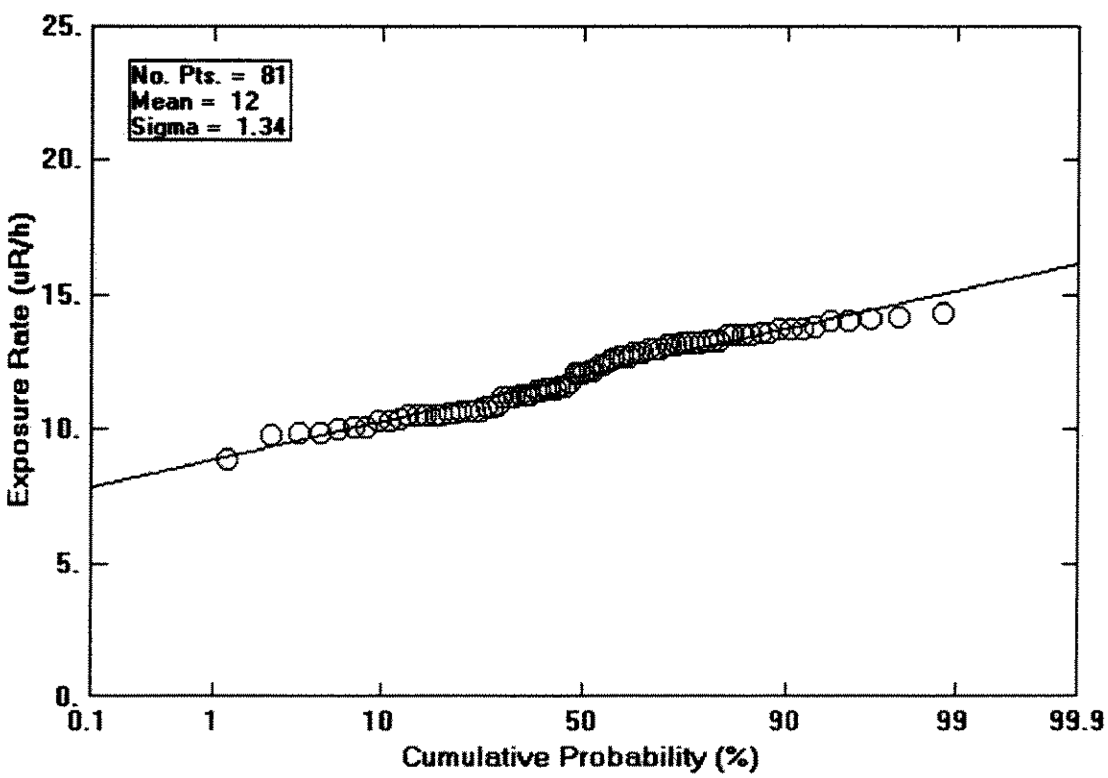


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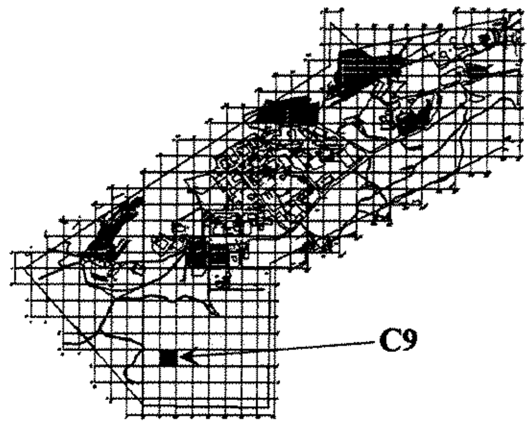
Figure B-18. Ambient Gamma Survey Results - Survey Block C9

10.3	10.4	10.4	10.5	10.6	10.2	10.7	10.5	10.3
11.0	10.9	10.8	10.8	10.6	10.9	11.0	11.1	10.8
11.4	11.2	10.6	10.3	10.6	10.7	10.5	10.7	10.8
12.1	12.1	11.0	11.0	10.9	10.7	11.0	10.9	12.2
13.0	12.7	11.9	11.9	11.3	11.5	11.0	11.4	11.5
13.4	13.0	12.6	12.1	12.1	11.7	11.7	11.4	11.1
13.2	13.1	13.5	13.1	12.8	12.8	12.4	11.8	11.8
13.5	13.4	14.2	14.1	14.2	13.4	13.5	13.0	12.4
13.5	13.0	13.6	13.6	14.0	13.5	13.9	13.2	13.3



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9

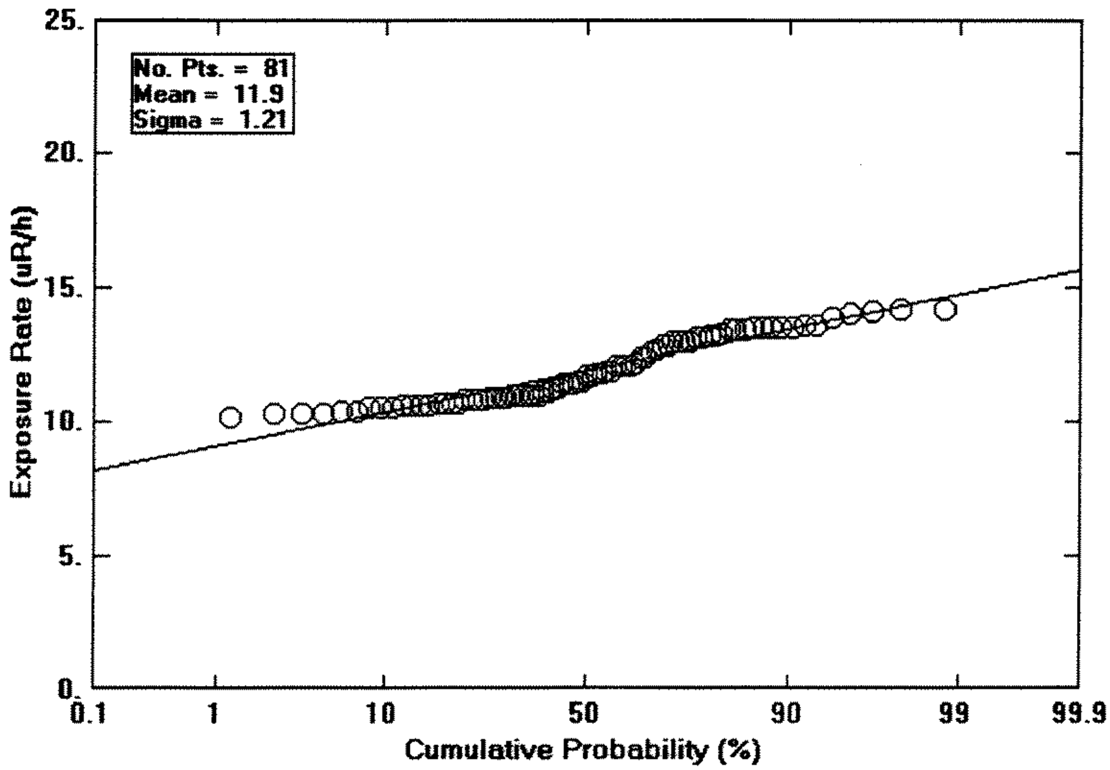

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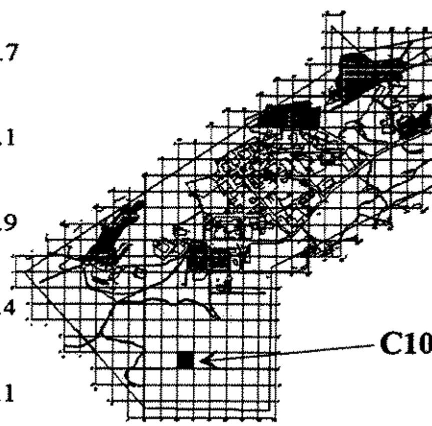
Figure B-19. Ambient Gamma Survey Results - Survey Block C10

10.8	9.9	11.4	11.7	10.8	10.8	10.6	10.7	10.7
11.3	11.6	11.9	11.3	10.7	10.8	11.1	11.4	11.7
11.7	11.7	11.7	11.5	11.5	12.0	11.7	12.1	12.1
12.5	12.5	11.9	11.8	11.9	12.3	12.2	11.7	11.9
11.8	11.4	12.1	11.7	12.2	12.0	12.1	12.1	12.4
12.4	11.7	11.7	11.7	11.9	11.9	12.7	12.0	12.1
12.1	11.8	11.8	12.0	11.6	11.5	11.8	11.9	12.6
13.1	12.5	11.7	12.2	12.0	11.8	11.9	11.9	11.7
14.1	13.6	13.3	12.4	12.7	12.6	11.8	12.1	12.1



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10

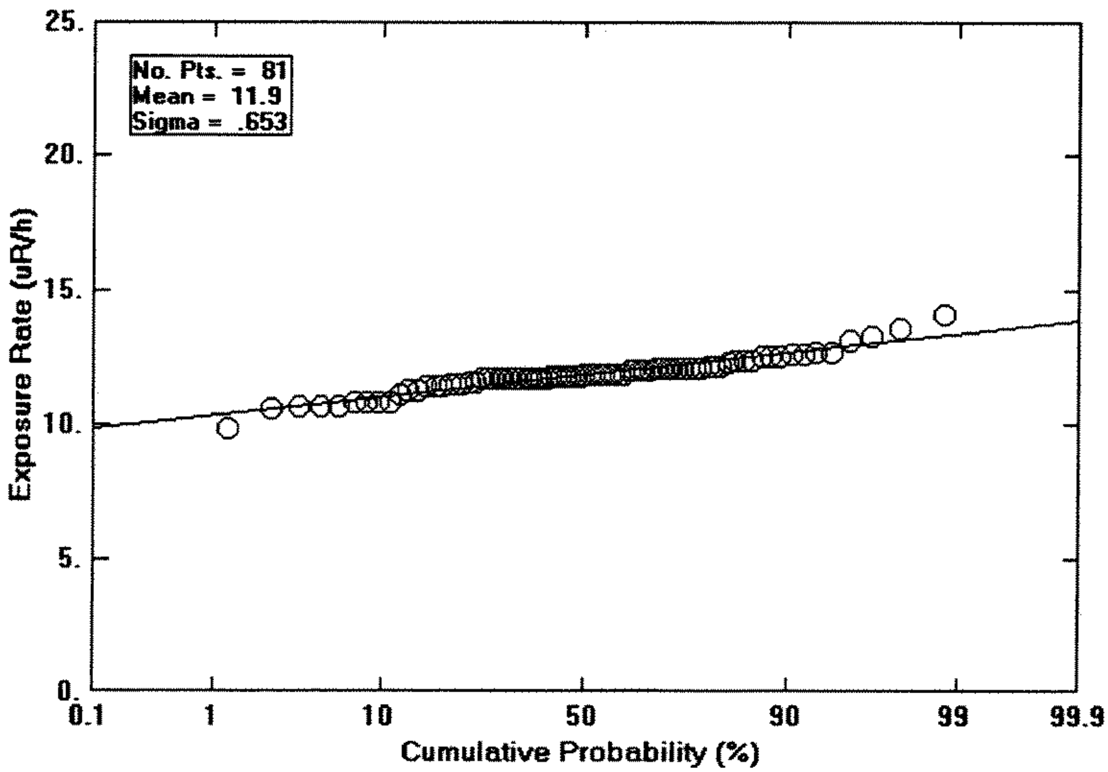

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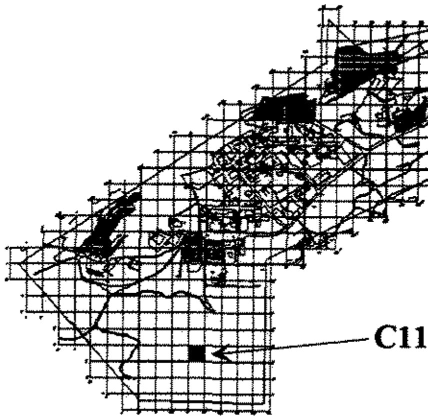
Figure B-20. Ambient Gamma Survey Results - Survey Block C11

10.9	10.9	11.0	11.5	12.2	11.7	12.1	12.5	12.5
10.6	11.0	11.0	11.7	11.6	11.9	12.1	12.5	12.0
13.4	11.3	11.9	12.3	11.9	12.2	12.0	12.4	12.8
14.0	11.9	12.5	12.7	13.3	13.1	13.5	13.5	13.8
11.7	11.9	11.9	11.9	12.3	12.7	13.5	14.0	13.4
11.7	12.2	12.4	12.1	12.1	12.5	12.7	13.2	13.4
11.7	11.9	12.0	12.0	12.2	12.5	12.3	12.6	12.7
11.8	11.8	12.1	12.5	12.6	12.4	12.6	12.8	12.7
12.2	11.9	12.5	12.2	12.2	12.5	12.2	12.8	12.7



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11

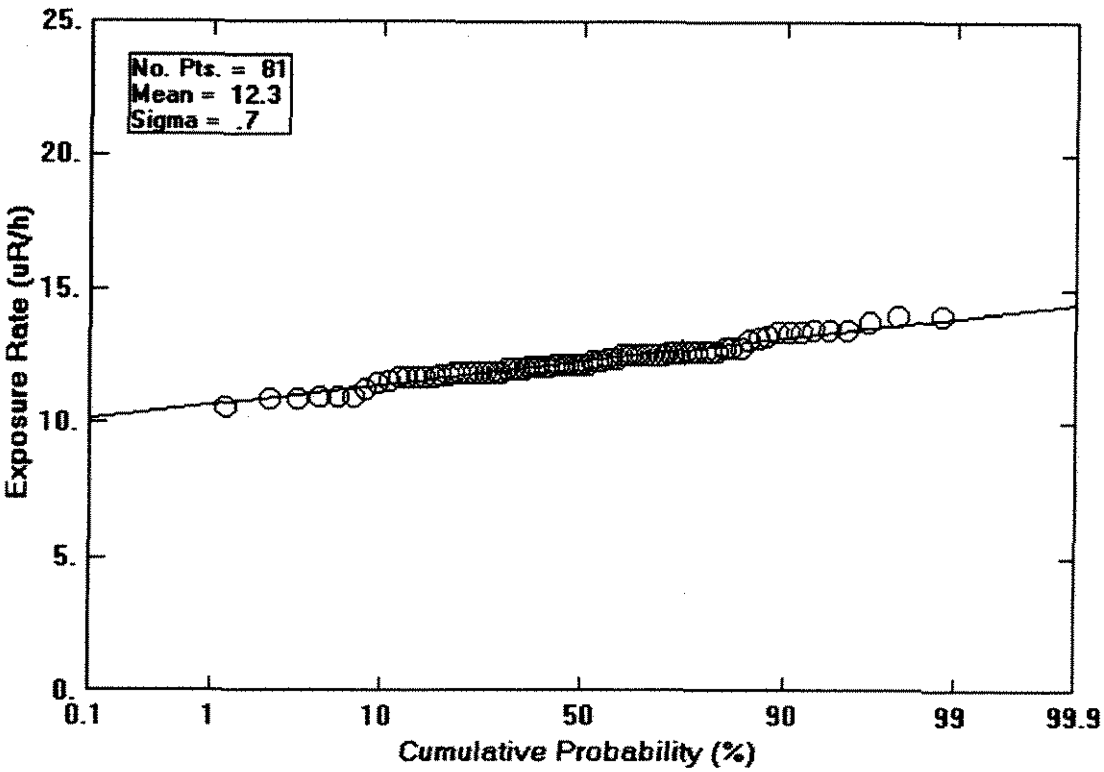

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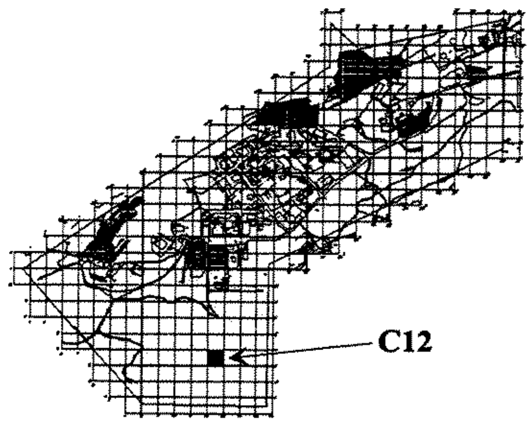
Figure B-21. Ambient Gamma Survey Results - Survey Block C12

12.5	12.4	12.6	13.2	12.9	13.4	13.2	13.1	12.7
12.4	12.4	12.8	12.9	13.1	13.0	13.0	12.9	13.0
12.8	13.1	13.3	12.9	13.4	12.8	12.8	13.2	13.1
12.5	12.9	12.5	13.4	12.9	13.2	12.9	13.7	13.6
12.9	12.9	12.9	13.6	12.9	13.1	13.3	13.4	13.7
13.2	12.9	13.3	12.9	13.4	13.2	13.2	13.4	12.5
12.2	12.3	12.8	12.5	12.9	12.6	12.6	12.5	12.6
12.5	12.2	12.1	12.5	12.5	12.7	12.5	12.8	12.3
12.1	12.6	12.7	12.3	12.7	12.5	12.7	13.0	13.1



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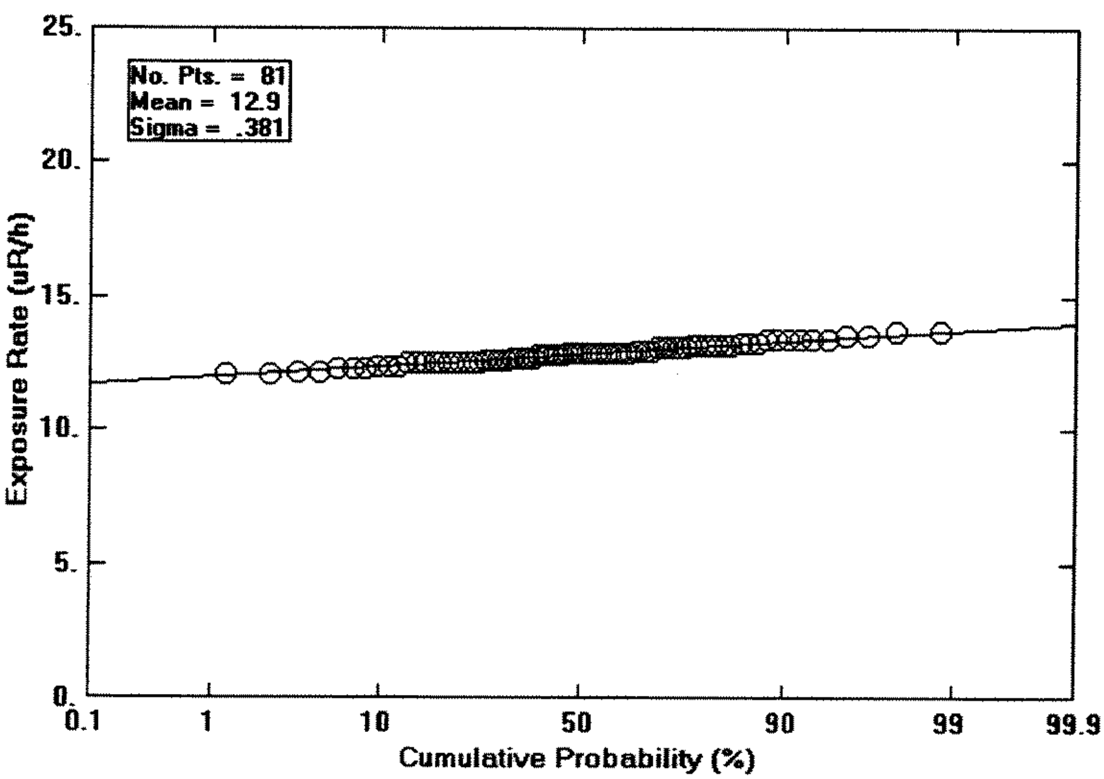

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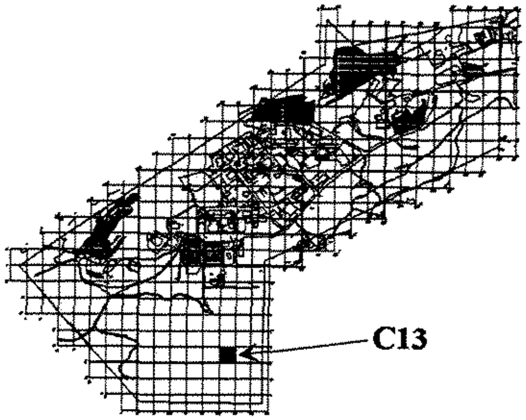
Figure B-22. Ambient Gamma Survey Results - Survey Block C13

13.9	13.8	13.6	14.2	13.5	14.1	14.5	15.4	15.3
13.7	13.8	13.7	13.6	14.0	14.9	14.9	15.2	15.5
13.9	13.6	13.9	14.3	14.3	14.8	15.0	15.0	15.2
14.5	14.4	14.3	15.2	15.3	14.8	14.9	15.2	15.0
14.3	14.4	14.5	14.4	14.3	14.6	14.1	14.4	14.4
13.9	14.1	14.4	14.4	14.4	14.4	14.1	14.3	14.2
13.5	13.3	13.6	13.4	13.4	13.8	13.6	13.5	14.2
13.4	13.6	13.9	13.8	13.6	13.7	14.0	14.0	14.5
13.4	13.6	13.9	14.0	14.0	14.0	14.2	14.4	14.4



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13

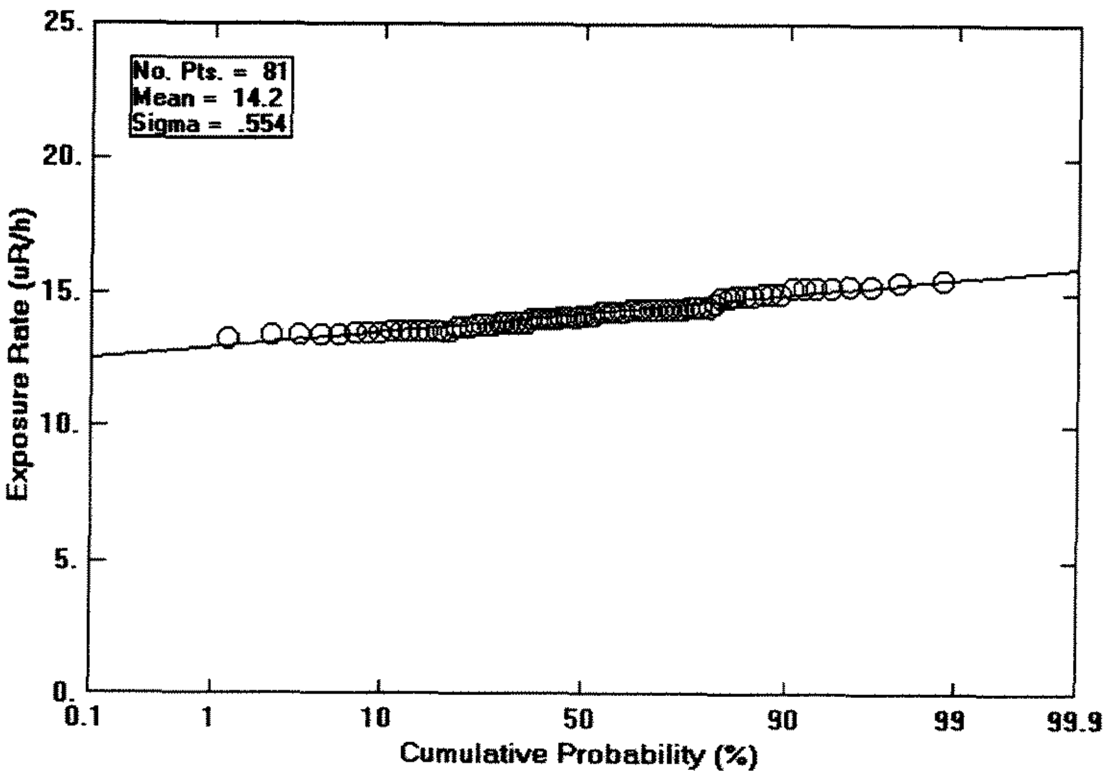

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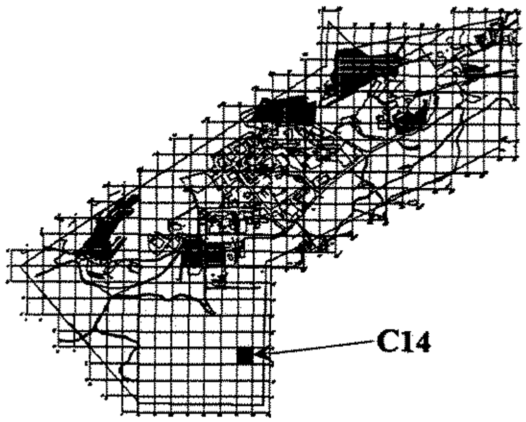
Figure B-23. Ambient Gamma Survey Results - Survey Block C14

15.7	17.0							
15.9	15.7	14.6	15.5					
15.3	15.5	15.0	14.6	14.7	14.4	14.0		
14.9	15.3	14.5	14.8	14.7	14.7	14.5	15.2	
14.4	14.4	14.1	14.3	14.2	14.5	15.2	15.6	15.8
13.7	13.8	14.0	14.0	14.3	14.6	14.3	15.0	16.0
14.3	14.6	14.5	14.3	14.7	15.1	14.9	15.1	15.9
14.5	15.5	14.8	14.7	14.9	15.7	15.6	16.3	16.6
14.2	15.0	15.0	15.2	15.4	15.6	15.8	16.4	17.0

C
14



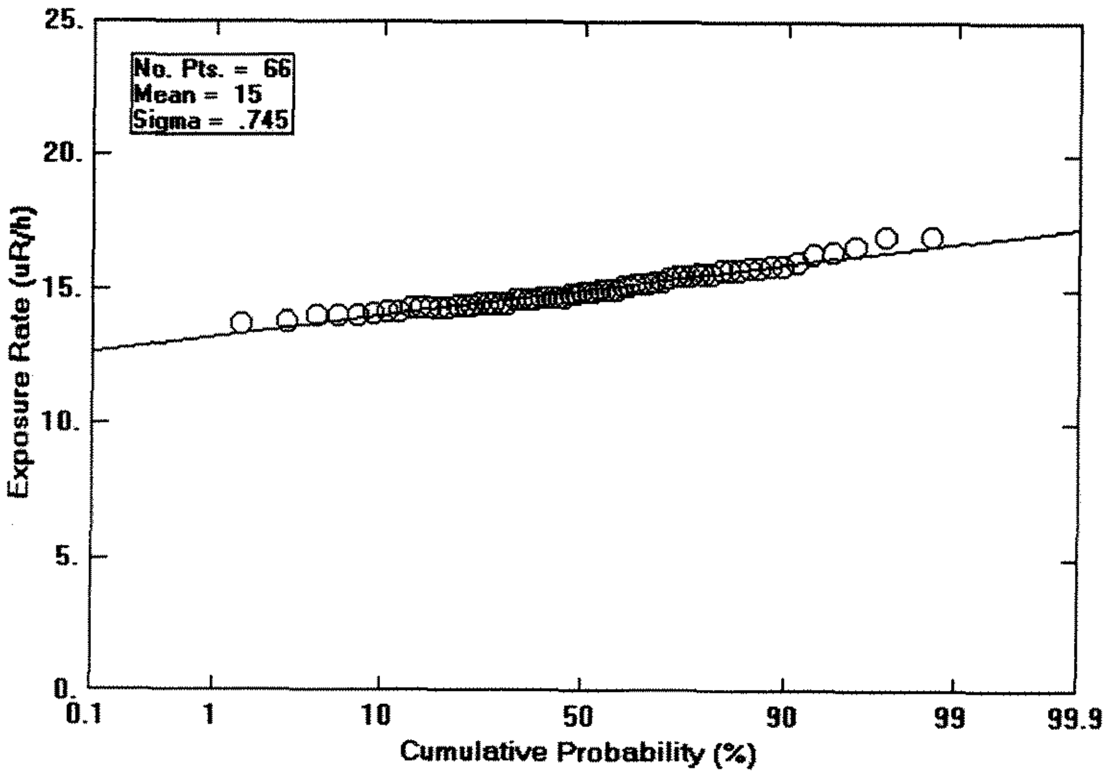


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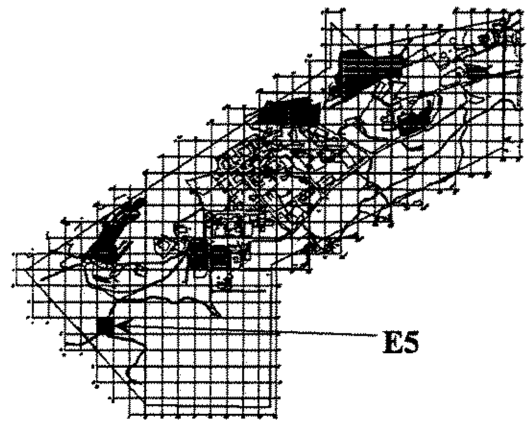
Figure B-24. Ambient Gamma Survey Results - Survey Block E5

11.7	12.0	11.6	11.7	12.2	11.8	12.1	12.2	12.4
11.4	11.4	11.4	11.8	12.0	11.6	11.8	11.8	11.8
11.5	11.6	11.8	11.4	11.6	11.7	12.1	12.2	12.4
11.0	11.4	11.5	12.0	11.7	11.8	11.8	11.8	11.8
11.1	12.0	12.1	12.0	11.8	11.8	12.1	11.7	11.5
11.9	12.0	12.3	12.0	11.5	11.8	11.6	11.5	11.1
12.4	12.7	12.8	12.5	11.5	11.5	11.5	11.7	12.1
12.2	12.4	12.9	12.6	11.5	11.1	11.2	11.4	11.1
12.8	13.1	12.7	12.8	12.3	11.5	11.5	11.5	11.3

Dirt road

E5



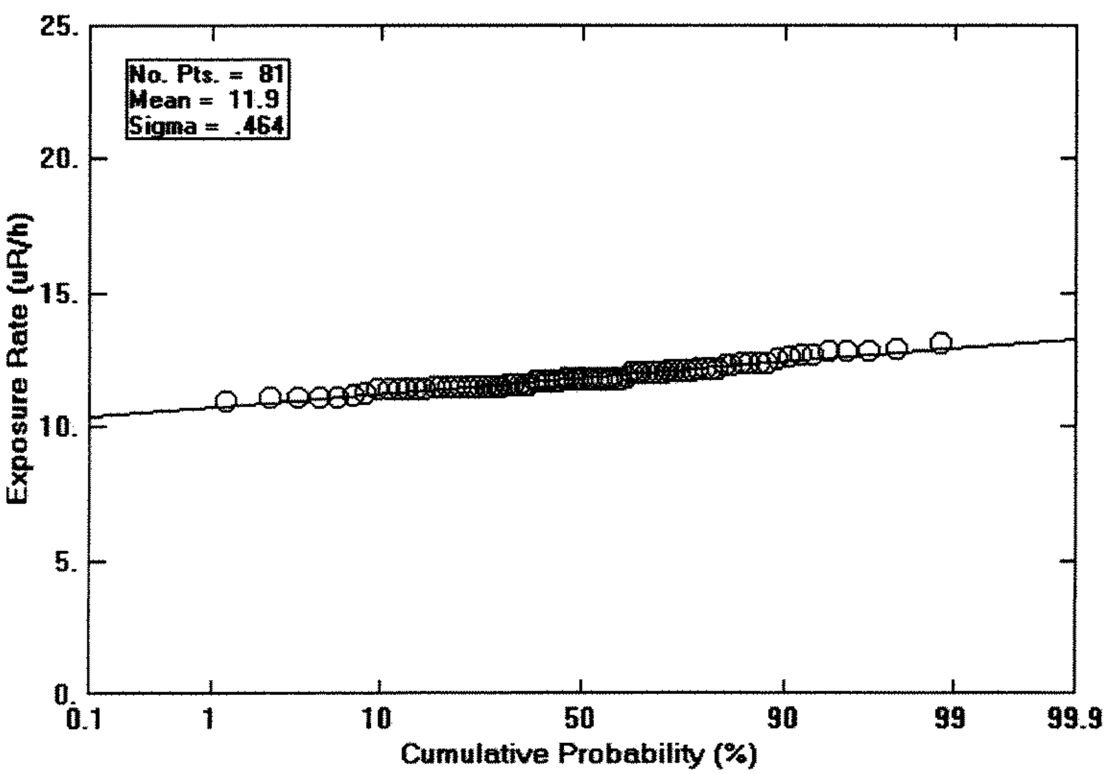


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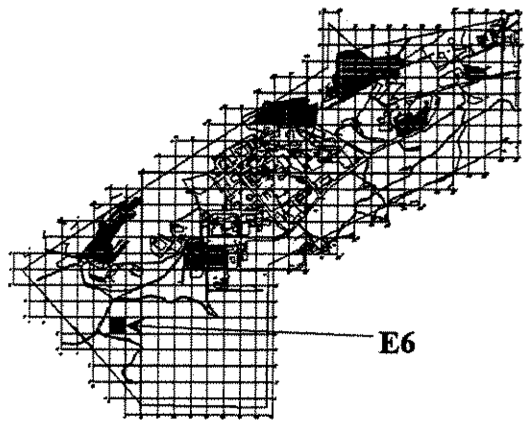
Figure B-25. Ambient Gamma Survey Results - Survey Block E6

13.0	13.2	13.0	13.1	13.0	12.6	12.3	12.5	12.2
12.7	12.1	12.4	12.6	12.7	11.6	11.9	11.1	11.5
12.9	12.8	12.3	13.1	12.6	12.5	11.9	11.7	11.2
11.9	12.4	12.3	12.0	11.8	11.3	11.0	11.3	10.7
12.3	12.1	12.7	13.2	12.8	12.2	11.7	11.1	11.9
11.9	12.1	12.4	12.7	11.8	11.6	11.4	11.5	11.9
13.1	12.5	12.2	12.7	11.9	11.9	12.1	11.8	12.1
11.4	11.4	11.3	12.2	10.8	10.7	11.0	10.3	10.7
10.8	11.2	11.6	11.2	11.2	11.1	11.2	10.6	10.9



E
6

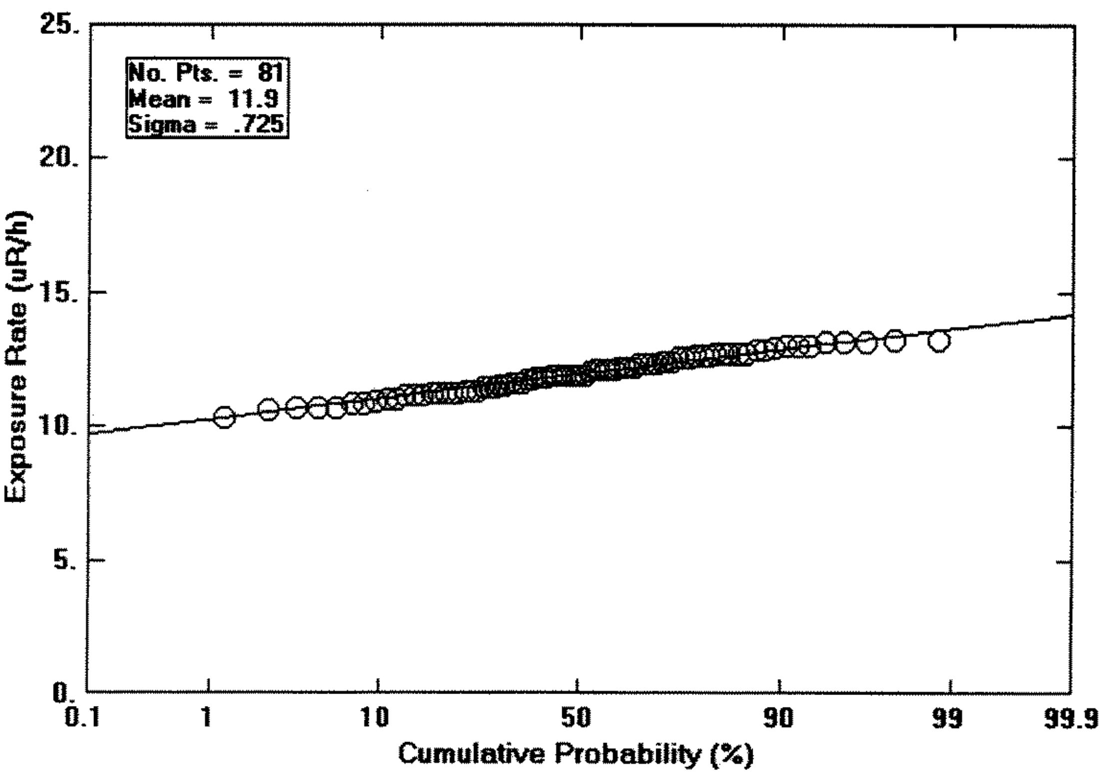


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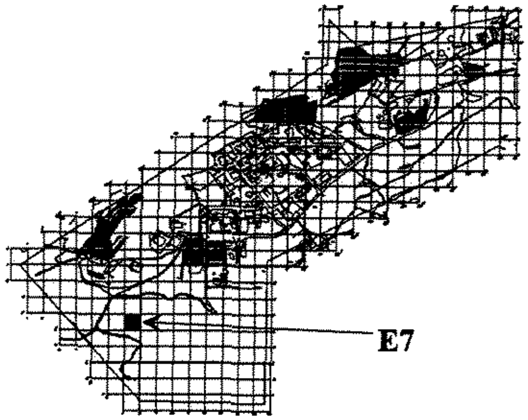
Figure B-26. Ambient Gamma Survey Results - Survey Block E7

11.4	11.9	11.7	11.6	11.6	12.4	12.9	12.7	12.7
11.9	12.6	11.8	12.4	12.6	13.3	14.0	13.9	13.5
11.1	12.2	12.0	12.1	12.8	12.8	12.7	13.5	13.0
11.7	12.1	12.1	12.0	12.6	13.0	13.7	13.7	13.6
11.2	11.2	10.5	11.2	11.7	13.0	13.3	12.7	12.6
11.9	11.2	11.5	11.2	12.1	13.5	13.2	12.6	13.1
11.3	10.7	10.6	11.4	12.5	12.4	12.4	12.6	12.4
10.7	10.1	11.1	11.5	12.4	12.2	12.6	12.8	12.9
11.0	8.9	10.7	10.1	11.2	11.7	11.9	11.3	12.1

E
7



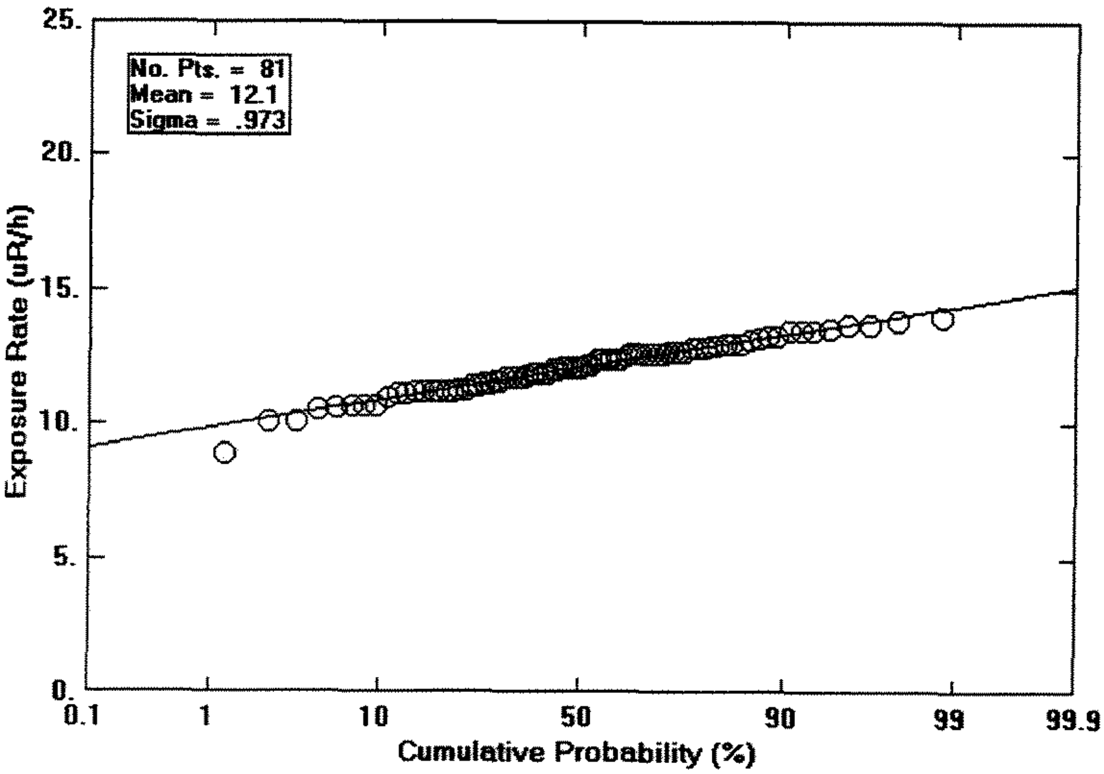


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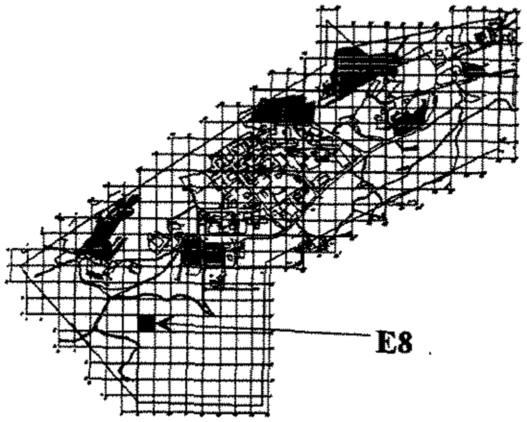
Figure B-27. Ambient Gamma Survey Results - Survey Block E8

14.4	14.4	13.4	13.9	13.5	13.5	12.9	13.0	13.9
13.0	12.8	13.4	13.7	13.6	13.8	12.6	13.0	12.8
13.3	12.9	13.7	14.0	13.3	13.9	12.3	12.4	13.2
13.1	13.2	13.2	13.0	13.0	12.9	11.8	11.8	11.9
13.4	13.0	13.5	13.6	13.4	13.5	13.2	12.6	11.5
12.4	12.9	13.3	12.9	13.0	13.1	12.5	12.2	11.2
13.2	12.9	13.6	13.2	13.4	12.5	12.5	11.6	11.6
12.3	12.4	12.2	12.5	12.3	12.1	11.7	11.2	11.6
11.6	12.2	12.4	12.6	12.2	12.4	11.9	11.5	11.4

E
8



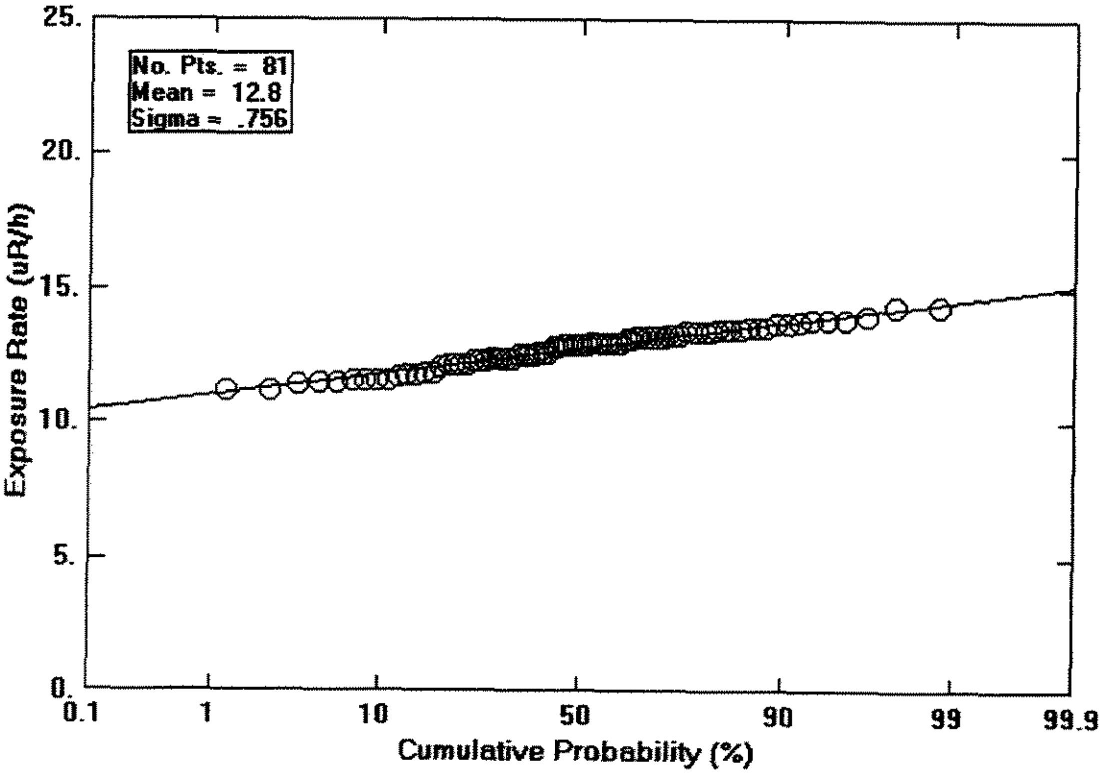


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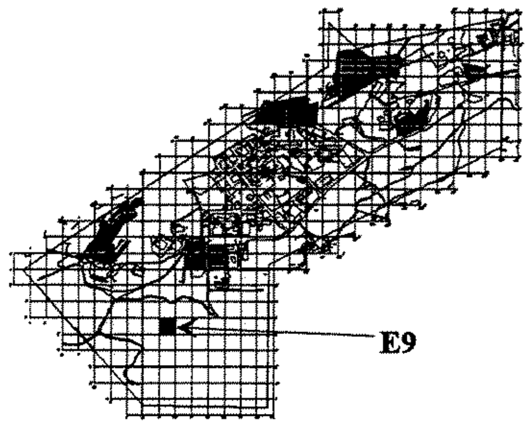
Figure B-28. Ambient Gamma Survey Results - Survey Block E9

14.0	13.2	13.2	12.7	13.1	13.2	13.0	13.2	12.7
13.0	12.9	12.7	12.9	13.2	13.1	12.9	12.9	12.2
13.2	12.8	12.0	12.8	12.7	12.7	12.6	13.0	11.4
12.1	12.0	12.8	11.3	11.2	12.4	11.9	10.8	11.7
11.8	12.7	12.6	12.3	11.8	11.9	12.0	11.2	11.9
11.6	12.0	12.3	12.0	11.3	11.0	11.4	11.6	11.9
11.5	12.1	12.4	11.2	11.7	11.4	12.1	11.3	12.0
12.3	11.8	12.0	11.7	11.2	11.1	11.5	12.3	11.8
11.5	12.2	11.3	12.2	11.4	11.4	12.6	11.9	11.5

E
9



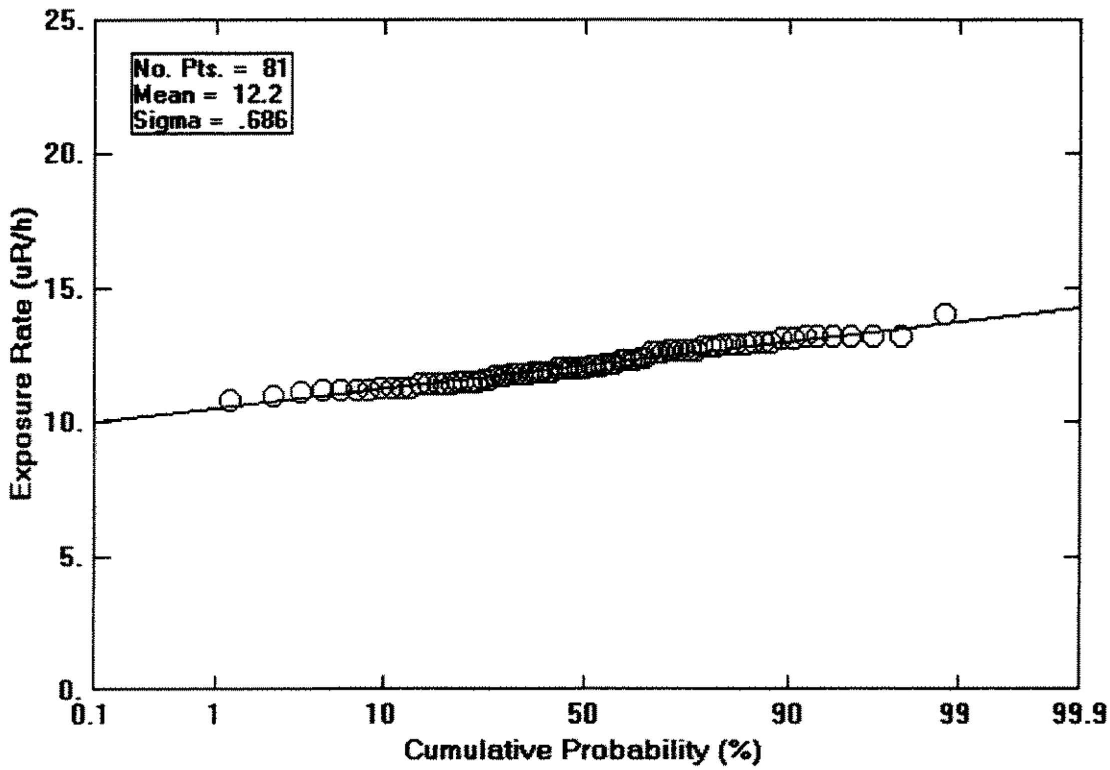


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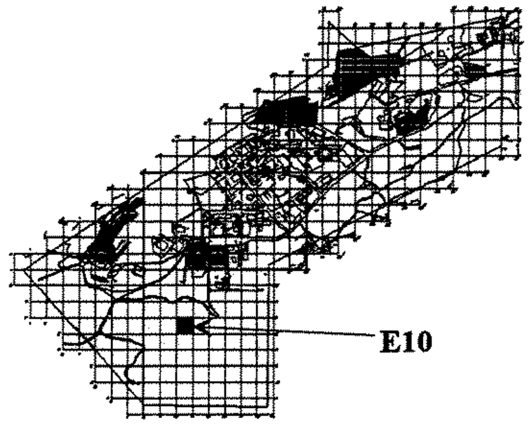
Figure B-29. Ambient Gamma Survey Results - Survey Block E10

12.8	13.4	12.1	13.1	12.3	13.8	14.3	14.7	15.5
11.4	12.1	12.3	12.3	13.2	13.8	13.9	14.2	14.1
10.8	12.0	12.4	12.1	13.0	13.9	14.4	14.4	14.4
11.0	12.1	11.8	11.9	11.9	12.1	13.3	14.3	13.8
11.8	12.1	12.2	11.7	12.2	12.1	12.3	13.7	13.7
11.9	11.8	11.7	11.8	11.9	11.9	12.4	12.9	12.8
11.6	11.6	11.8	11.6	11.5	11.8	12.5	12.4	13.3
11.6	11.7	11.0	10.9	11.4	12.5	12.4	12.7	13.0
11.1	10.4	10.8	11.3	11.8	12.7	12.5	12.9	12.6



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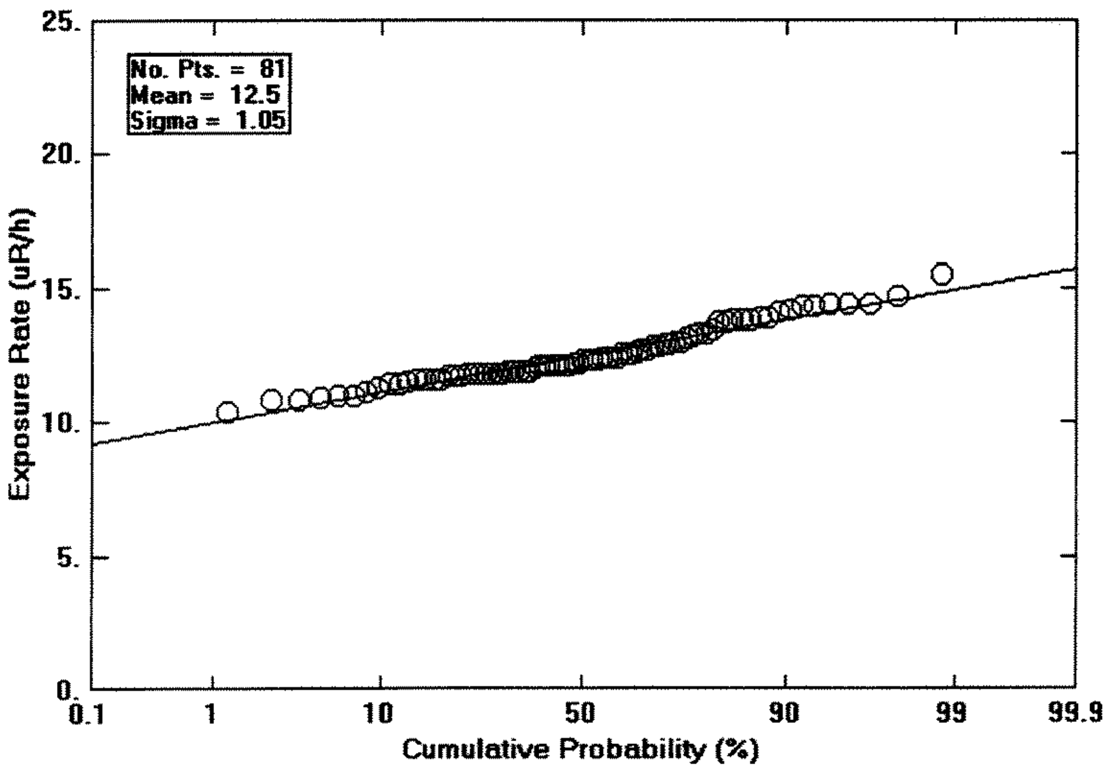

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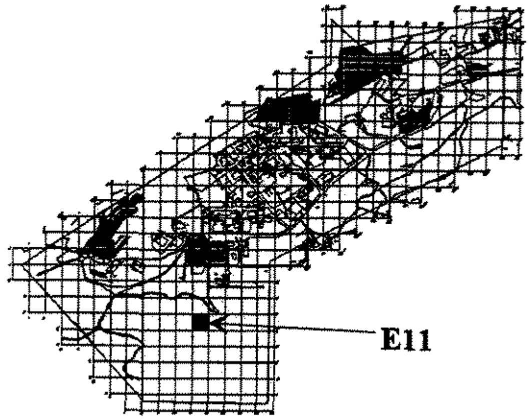
Figure B-30. Ambient Gamma Survey Results - Survey Block E11

13.7	14.8	15.0	14.7	14.6	14.8	14.3	15.0	14.8
14.0	15.4	14.7	14.4	14.6	14.5	14.8	14.9	15.0
15.2	14.9	14.5	14.7	14.5	14.3	14.6	15.0	15.2
14.7	15.2	14.6	14.5	14.8	14.0	14.3	14.4	14.7
13.9	14.5	14.4	14.4	14.4	14.4	14.3	14.1	14.9
13.4	14.3	14.3	14.1	13.9	13.8	14.9	15.3	14.7
13.4	14.0	13.8	13.7	13.8	13.7	14.1	14.4	15.1
13.0	13.4	13.6	12.8	13.2	13.5	13.9	14.5	14.2
13.1	12.8	13.0	13.0	12.9	12.9	13.6	13.8	13.6



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11

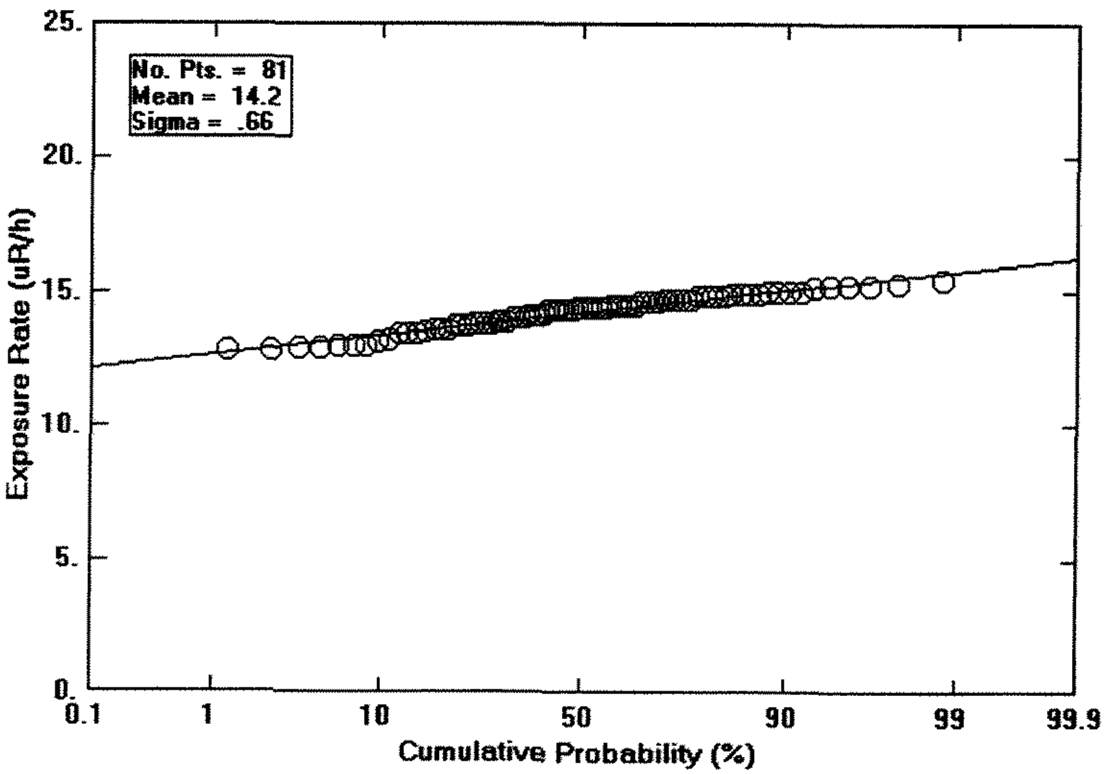

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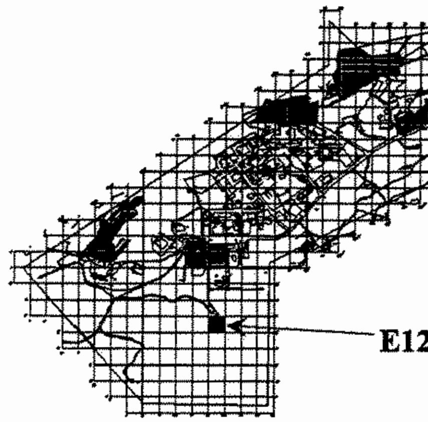
Figure B-31. Ambient Gamma Survey Results - Survey Block E12

14.6	14.7	14.7	14.5	14.6	14.6	14.5	14.7	15.2
14.5	14.6	14.4	14.2	14.9	14.6	14.6	14.6	15.6
14.4	15.1	14.3	14.4	15.6	15.0	15.1	15.5	15.6
14.4	14.4	14.1	14.4	14.0	14.4	15.0	15.2	16.4
14.4	13.9	14.6	13.9	14.6	14.8	15.6	15.4	15.3
14.0	14.5	14.1	14.3	14.3	14.7	14.8	14.4	15.1
14.3	14.1	14.7	14.1	14.4	15.2	14.6	14.9	15.7
13.7	13.9	14.4	15.0	13.8	14.2	14.5	14.9	15.0
13.3	13.2	13.5	13.2	13.6	14.5	14.3	14.3	14.4

E
12



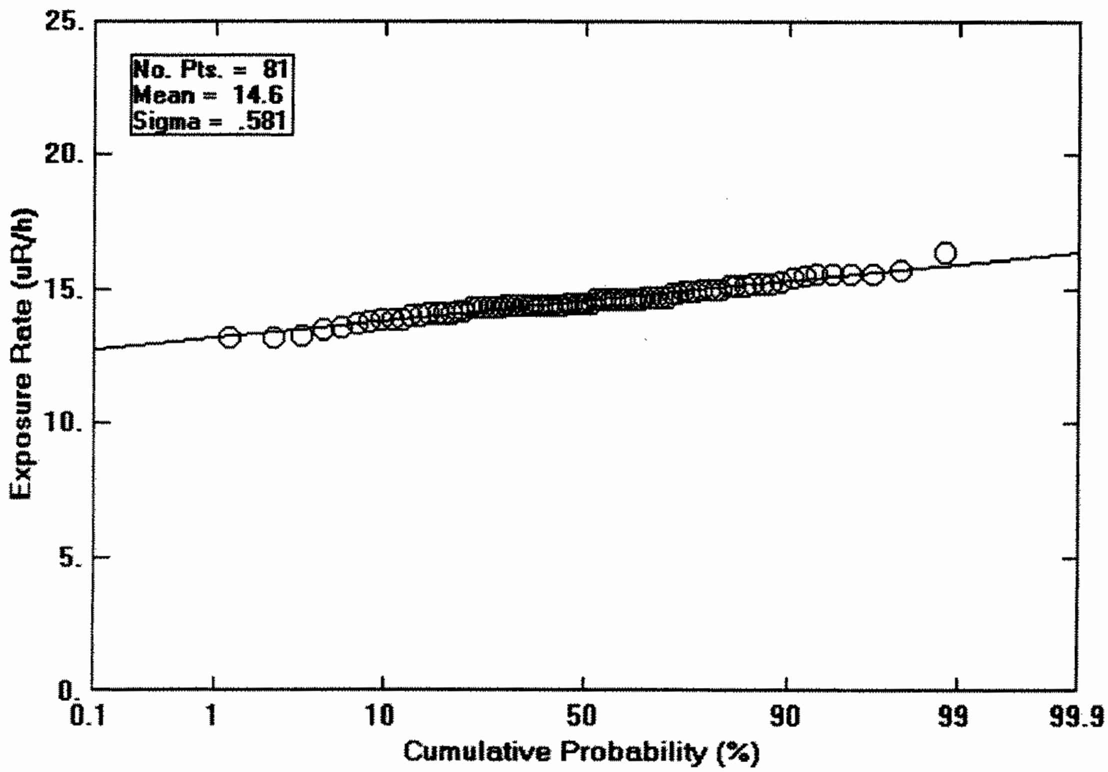


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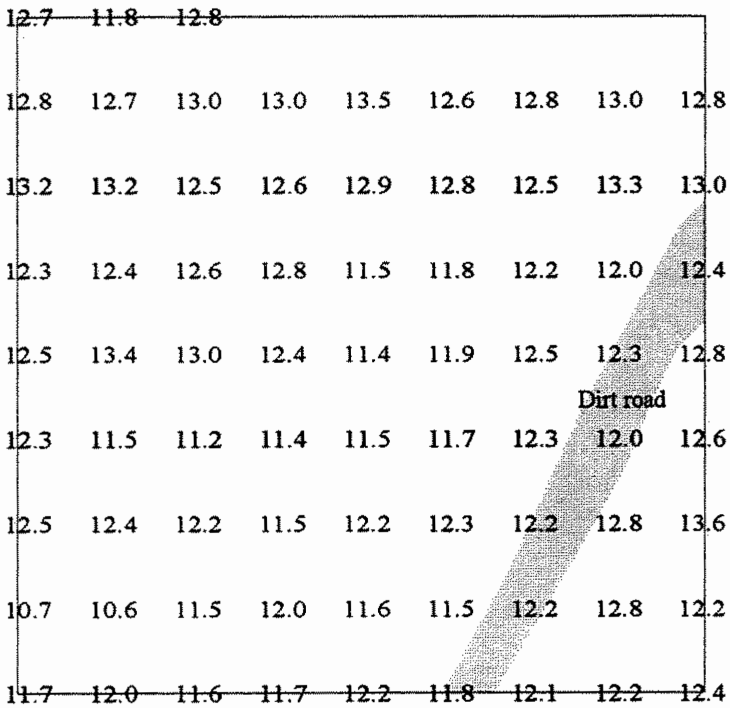
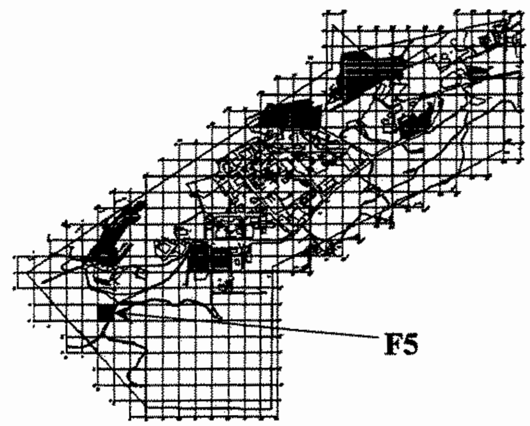
Figure B-32. Ambient Gamma Survey Results - Survey Block F5





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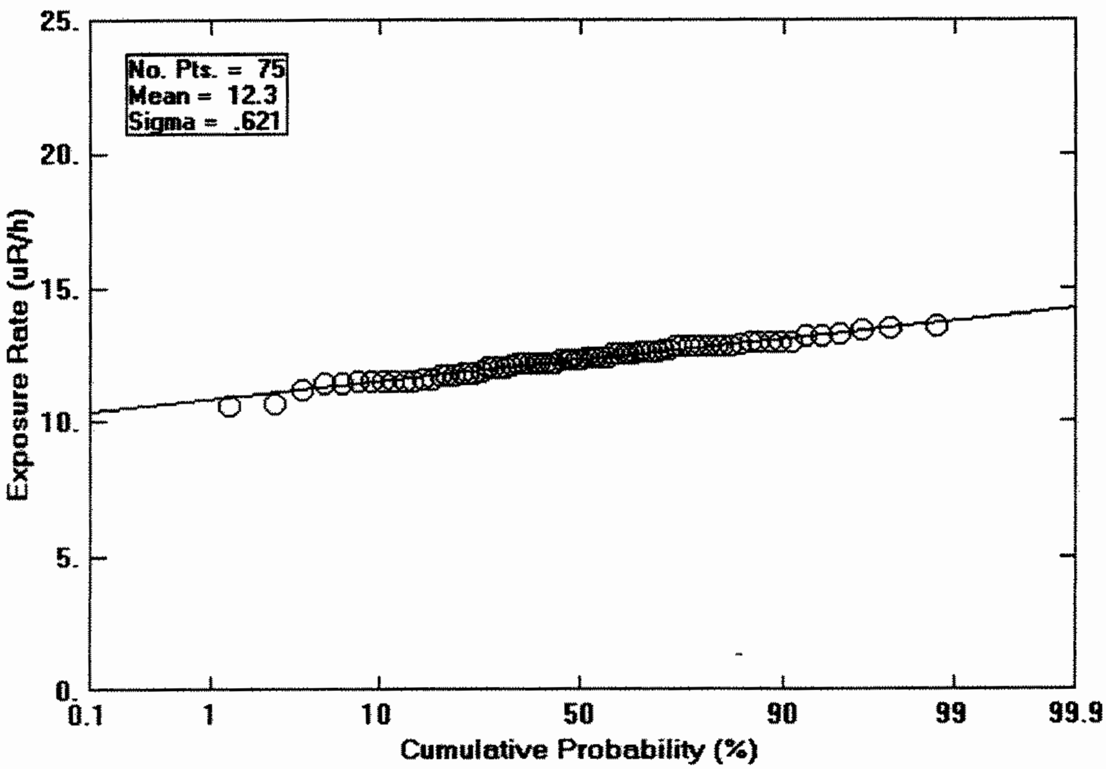

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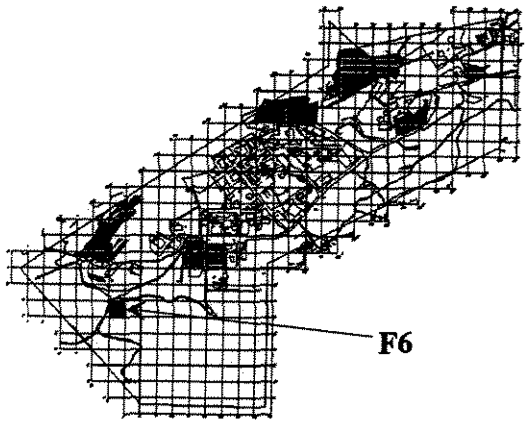
Figure B-33. Ambient Gamma Survey Results - Survey Block F6

12.5	12.4	12.1	12.2	12.7	13.0	12.7	13.8	13.4
12.6	12.4	12.8	12.5	12.6	12.8	13.1	13.2	13.3
13.5	12.9	13.6	13.5	13.1	13.3	13.2	13.3	13.5
12.4	12.6	12.5	12.6	12.8	12.7	13.0	13.2	13.3
13.2	13.1	13.4	13.4	13.5	13.7	13.6	13.7	13.9
13.5	12.3	12.4	12.6	12.6	12.9	12.1	12.4	12.9
13.9	13.7	13.0	12.9	12.9	13.1	13.0	12.9	13.5
12.7	12.8	12.7	12.4	12.4	12.7	11.9	11.9	12.3
13.0	13.2	13.0	13.1	13.0	12.6	12.3	12.5	12.2

Dirt road



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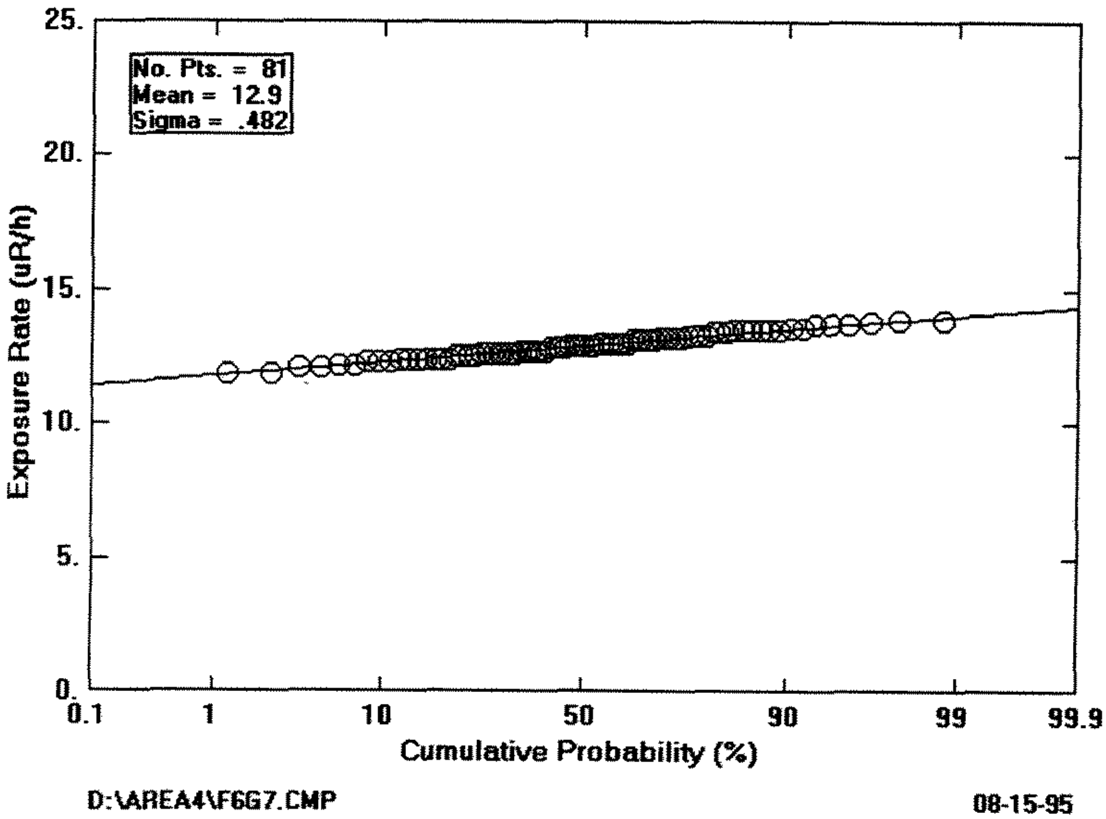
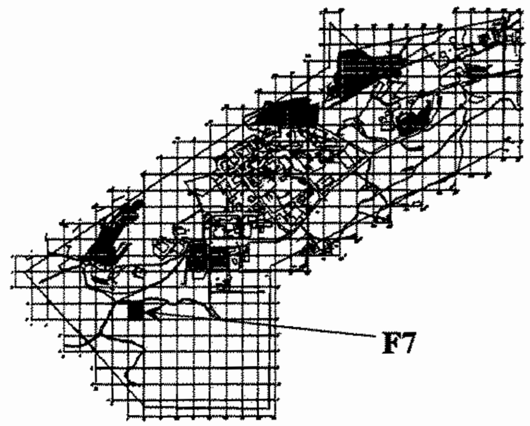


Figure B-34. Ambient Gamma Survey Results - Survey Block F7

13.5	14.2	14.3	14.2	13.9	13.7	14.1	14.3	13.8
13.2	13.9	13.7	13.9	13.8	13.5	13.8	13.9	13.2
13.3	13.3	13.8	14.2	13.5	13.1	13.3	13.5	13.1
13.5	13.2	13.2	13.0	13.0	12.8	12.7	12.7	12.7
13.7	13.7	13.2	13.2	13.4	13.2	13.3	12.5	12.5
12.9	13.1	13.3	12.9	12.8	12.6	12.5	11.8	12.0
13.0	12.5	13.6	13.3	12.6	12.3	12.8	11.9	12.8
12.2	12.0	12.6	12.5	12.1	11.7	11.4	12.4	12.8
11.4	11.9	11.7	11.6	11.6	12.4	12.9	12.7	12.7



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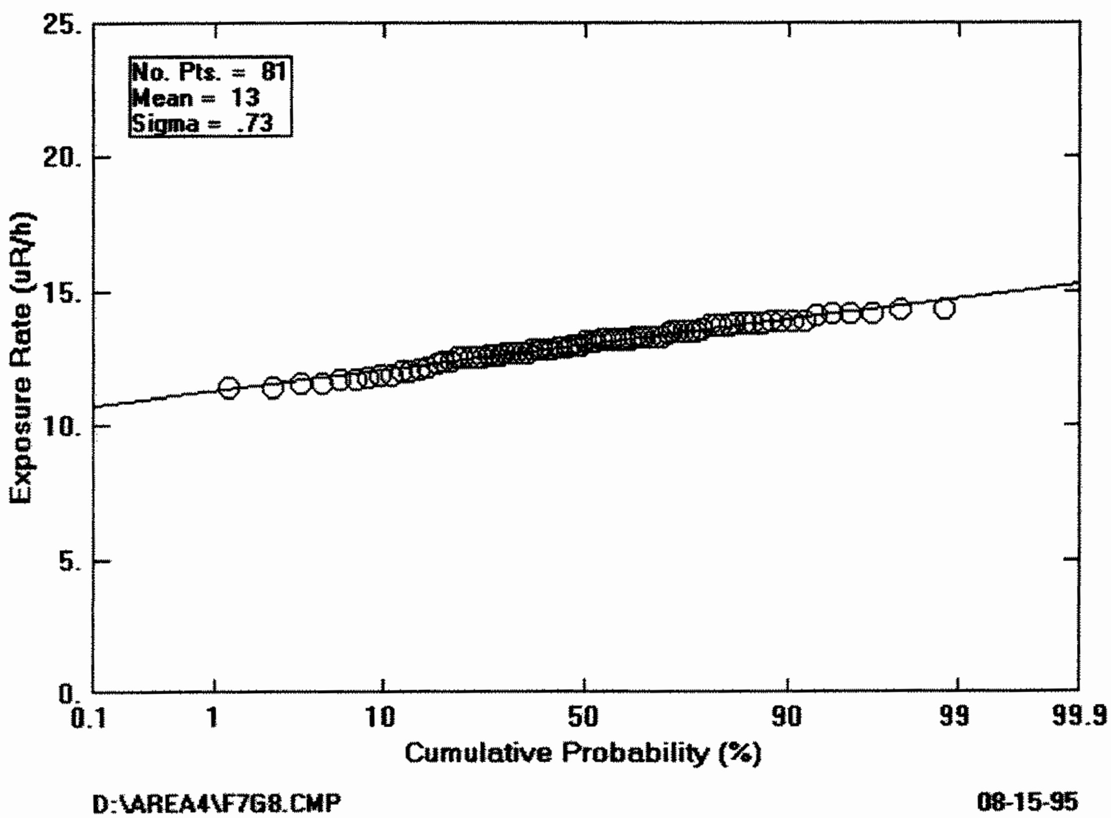
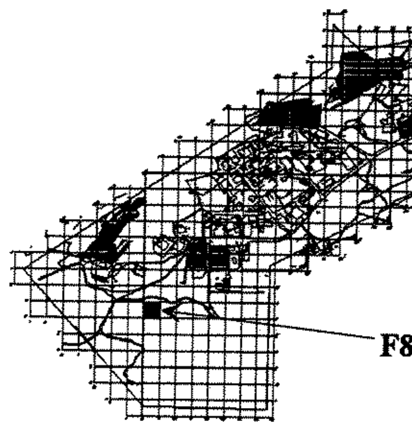


Figure B-35. Ambient Gamma Survey Results - Survey Block F8

14.0	13.9	13.9	13.9	14.2	14.8	14.9	15.3	14.7
12.6	13.2	13.0	13.0	13.7	14.1	14.6	14.7	13.2
13.0	13.7	13.3	13.6	13.7	14.3	14.7	14.3	14.2
12.6	13.7	13.8	13.8	14.0	13.9	13.6	13.5	13.8
12.7	14.0	14.3	13.8	14.4	13.9	13.6	13.9	14.5
12.7	13.9	13.8	13.9	13.9	13.7	11.1	13.0	13.9
13.2	14.4	14.0	13.9	14.6	13.6	13.1	12.7	13.8
13.7	13.1	13.8	14.3	13.6	13.1	12.3	13.2	13.4
14.4	14.4	13.4	13.9	13.5	13.5	12.9	13.0	13.9



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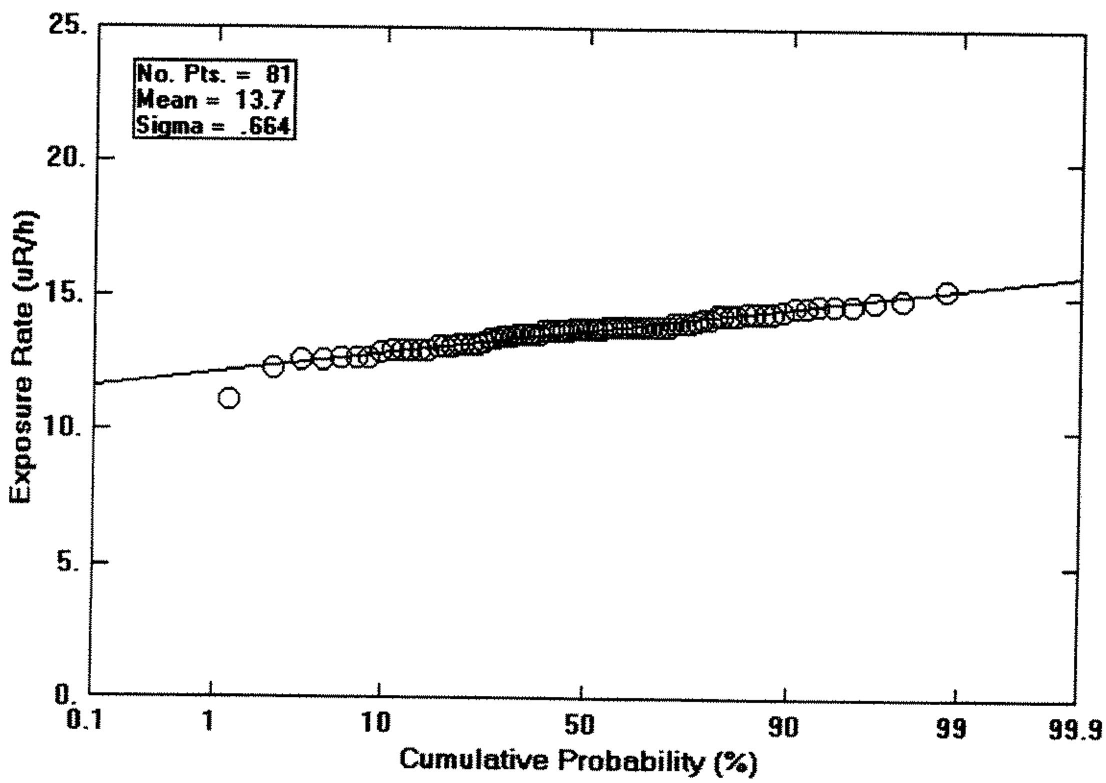

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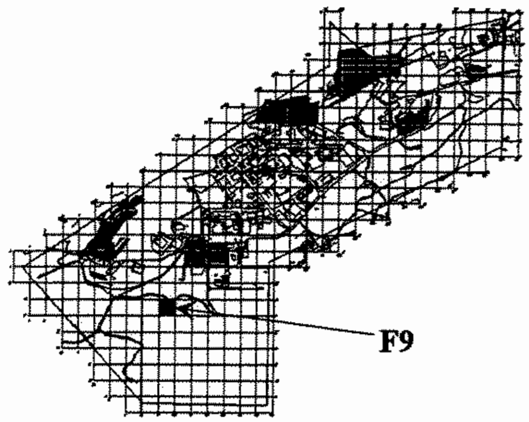
Figure B-36. Ambient Gamma Survey Results - Survey Block F9

14.6	14.8	14.8	15.6	15.5		Dirt road		
13.7	14.2	14.6	14.7	14.8	14.7	15.4	14.8	14.9
14.9	14.1	15.2	15.3	15.4	15.7	15.7	15.9	15.8
13.7	13.9	14.1	14.4	14.7	14.2	14.5	14.5	14.5
14.6	15.2	14.9	14.8	15.4	15.3	15.0	15.2	15.0
13.3	13.6	13.7	13.9	13.9	13.9	13.8	13.2	13.7
14.0	14.1	14.7	13.8	14.1	14.3	13.7	14.1	13.8
12.4	12.9	13.0	13.3	13.2	13.2	12.3	13.1	12.7
14.0	13.2	13.2	12.7	13.1	13.2	13.0	13.2	12.7



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9

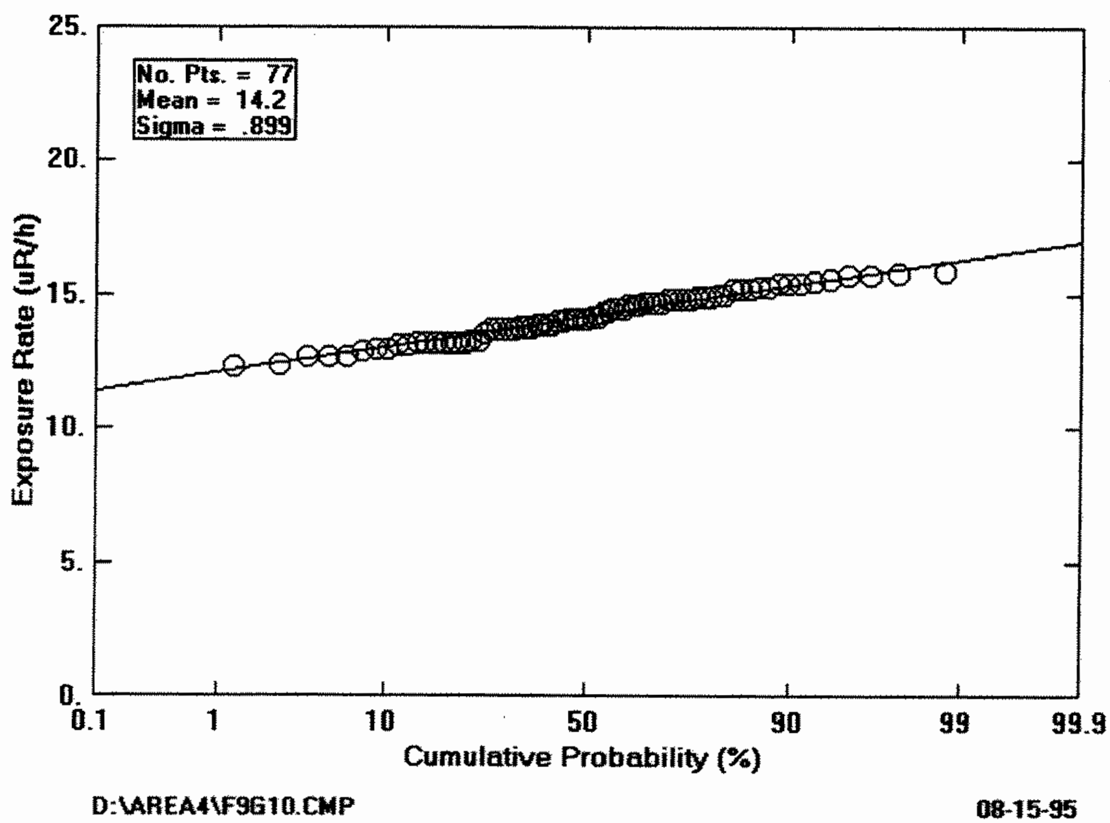
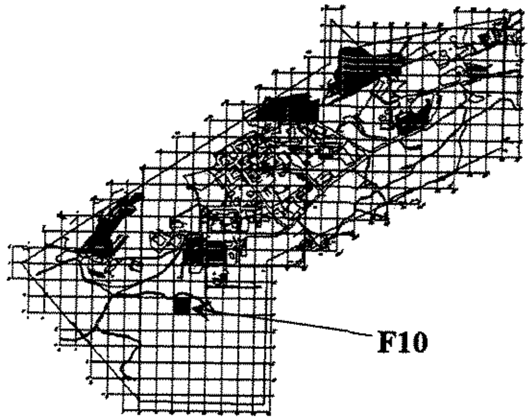


Figure B-37. Ambient Gamma Survey Results - Survey Block F10

15.3	14.5	15.3	14.7	14.6	14.3	13.8	14.9	14.6
16.3	15.3	14.6	14.3	14.4	14.2	14.3	14.8	14.3
15.2	14.8	14.3	14.2	13.3	13.1	13.8	13.1	13.7
14.5	13.9	13.7	12.4	12.6	12.8	13.6	13.3	13.6
13.2	14.5	14.1	13.2	12.3	13.5	14.1	14.6	15.0
13.4	13.8	13.2	13.1	12.0	13.2	13.0	13.7	14.8
14.2	13.8	13.5	12.7	12.5	13.5	13.8	13.2	16.0
13.1	12.1	11.9	12.7	12.4	13.1	14.2	14.4	14.1
12.8	13.4	12.1	13.1	12.3	13.8	14.3	14.7	15.5



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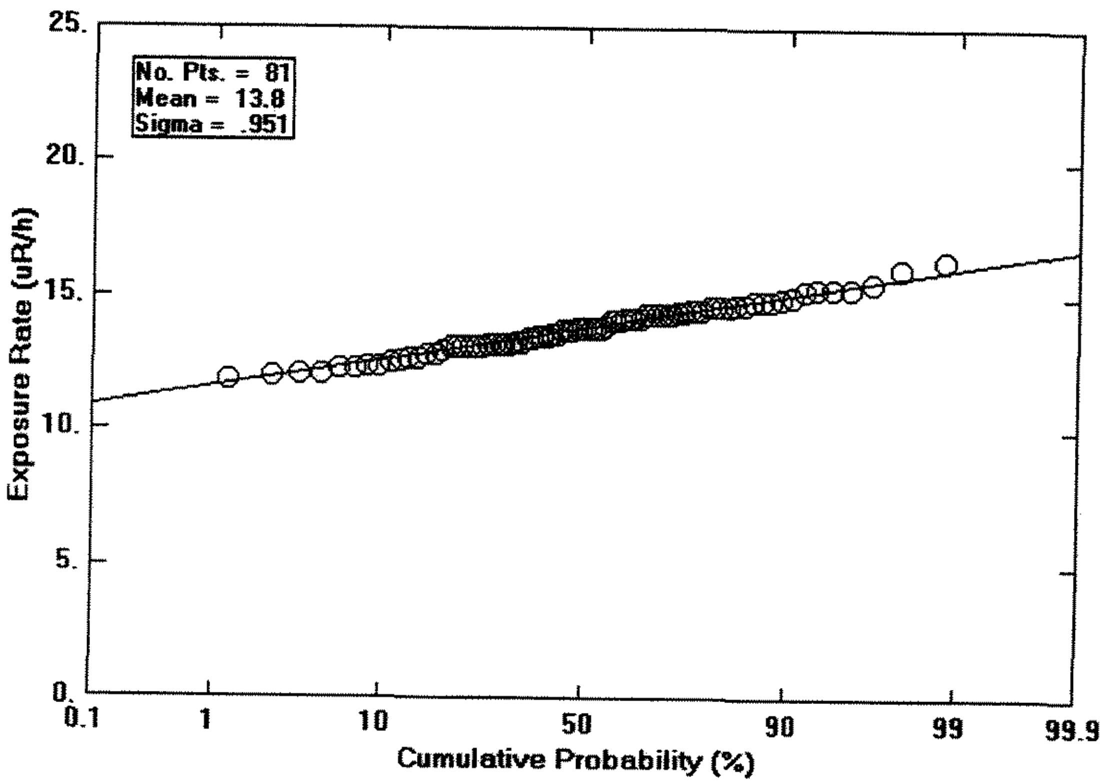

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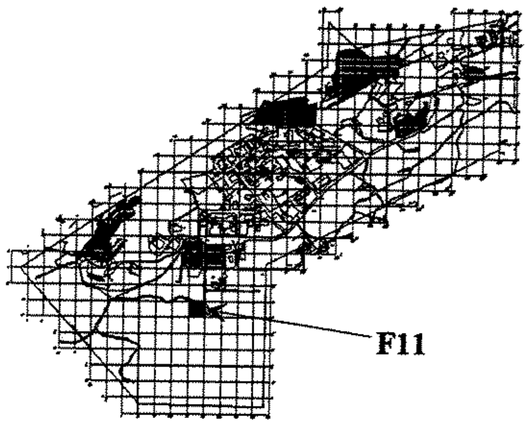
Figure B-38. Ambient Gamma Survey Results - Survey Block F11

14.9	15.3	15.5	14.8	15.4	15.2	15.0	15.0	14.8
14.4	14.7	15.1	15.9	15.3	15.5	14.6	14.8	15.6
14.6	14.9	15.1	15.5	14.8	15.4	15.3	14.5	15.5
13.3	14.8	14.8	14.7	15.1	14.7	15.1	14.5	14.7
15.0	14.7	14.9	14.8	14.7	14.7	14.4	15.4	13.5
15.2	14.6	14.3	14.9	14.9	15.0	14.7	15.5	14.7
14.7	14.2	14.8	14.6	14.6	15.1	15.5	14.8	14.8
14.9	15.6	15.6	15.3	15.3	15.0	15.2	15.9	15.4
13.7	14.8	15.0	14.7	14.6	14.8	14.3	15.0	14.8

Dirt road

Dirt road



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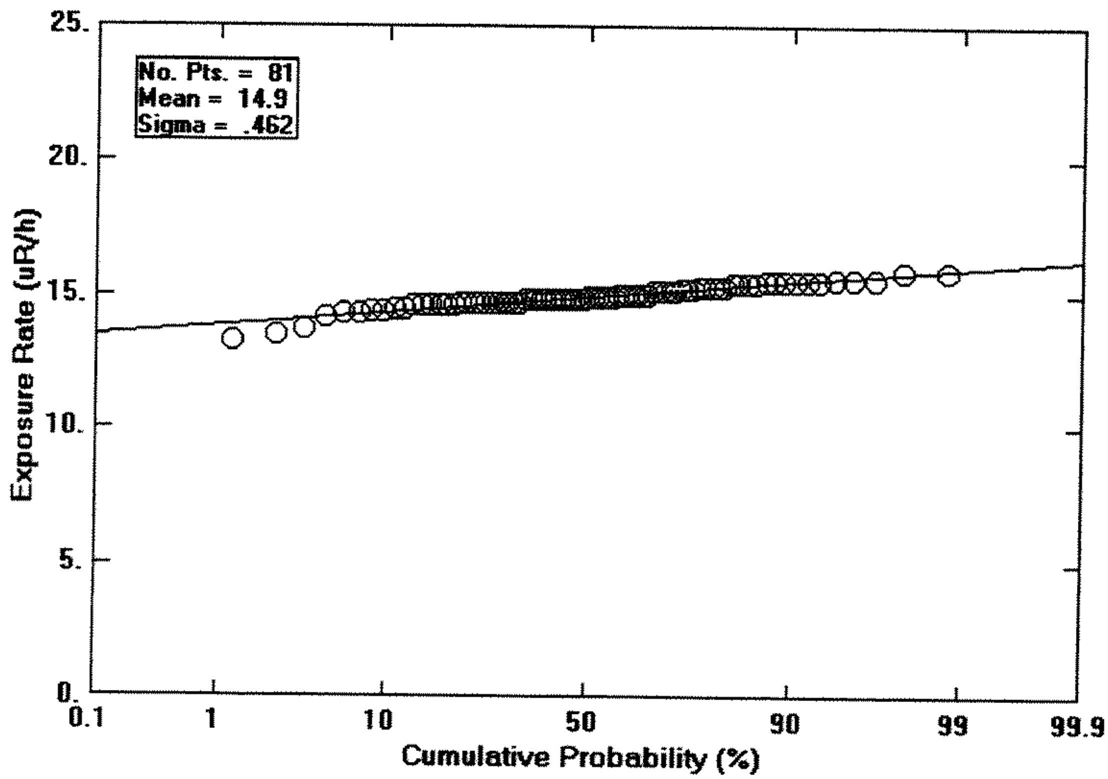

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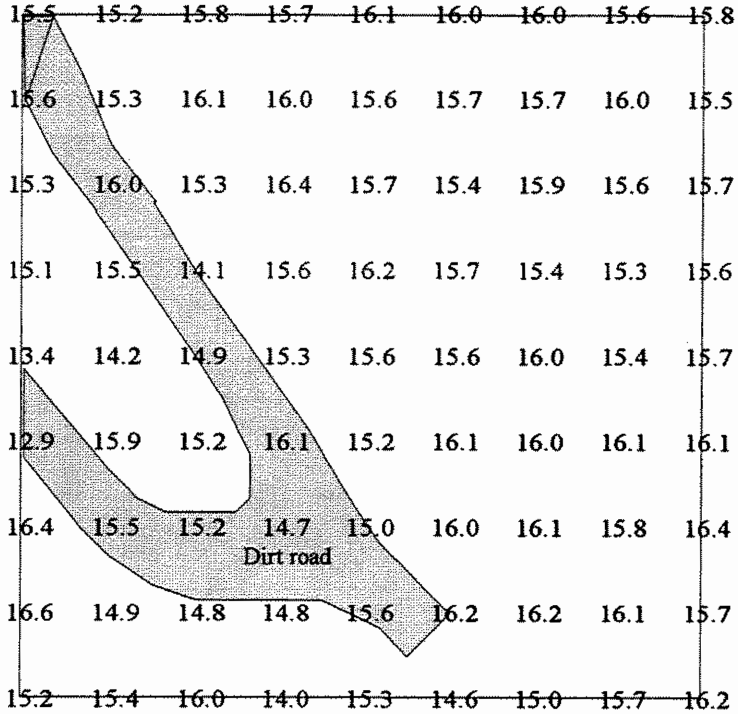
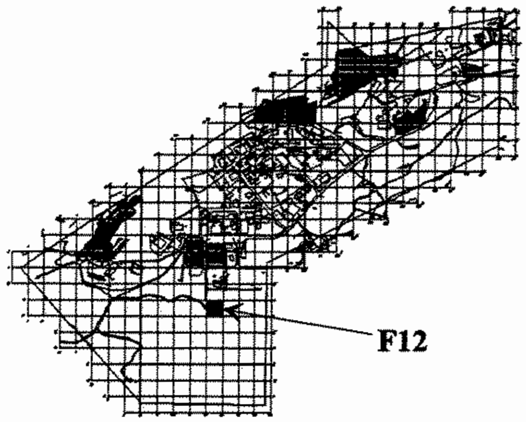
Figure B-39. Ambient Gamma Survey Results - Survey Block F12





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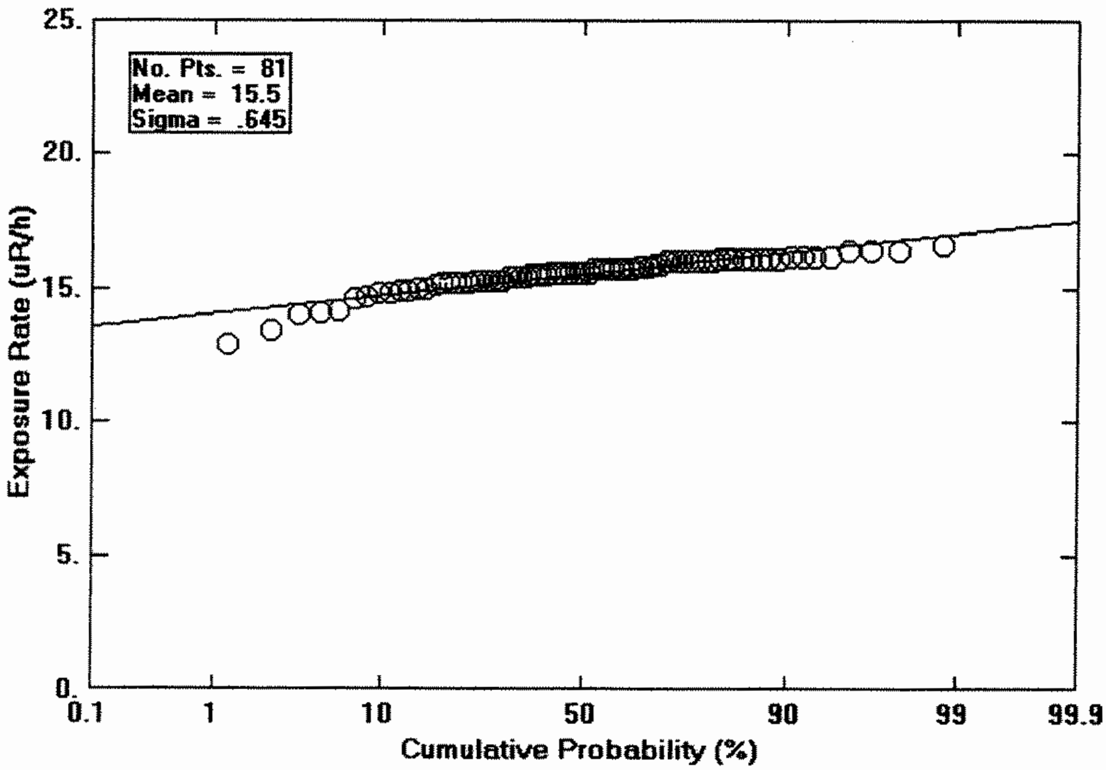

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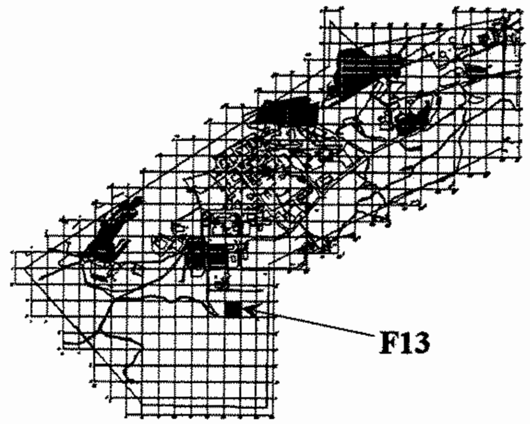
Figure B-40. Ambient Gamma Survey Results - Survey Block F13

15.9	15.7	15.8	15.8	16.0	15.5	15.7	15.9	15.9
15.5	15.7	16.1	16.0	15.9	16.2	16.4	15.9	16.2
15.8	15.8	16.2	16.3	15.7	16.0	16.4	16.0	16.4
15.0	15.3	14.8	15.0	15.3	15.4	15.4	15.6	15.9
15.6	15.6	15.4	15.5	15.7	16.1	16.2	15.7	15.9
15.3	15.2	15.7	15.3	15.7	15.9	15.8	15.9	15.9
15.1	15.4	15.5	15.6	15.8	15.8	15.9	15.7	15.8
16.3	16.3	16.3	16.5	16.5	16.8	16.9	17.1	16.8
16.4	16.6	16.4	16.9	16.5	16.2	17.0	16.6	16.6



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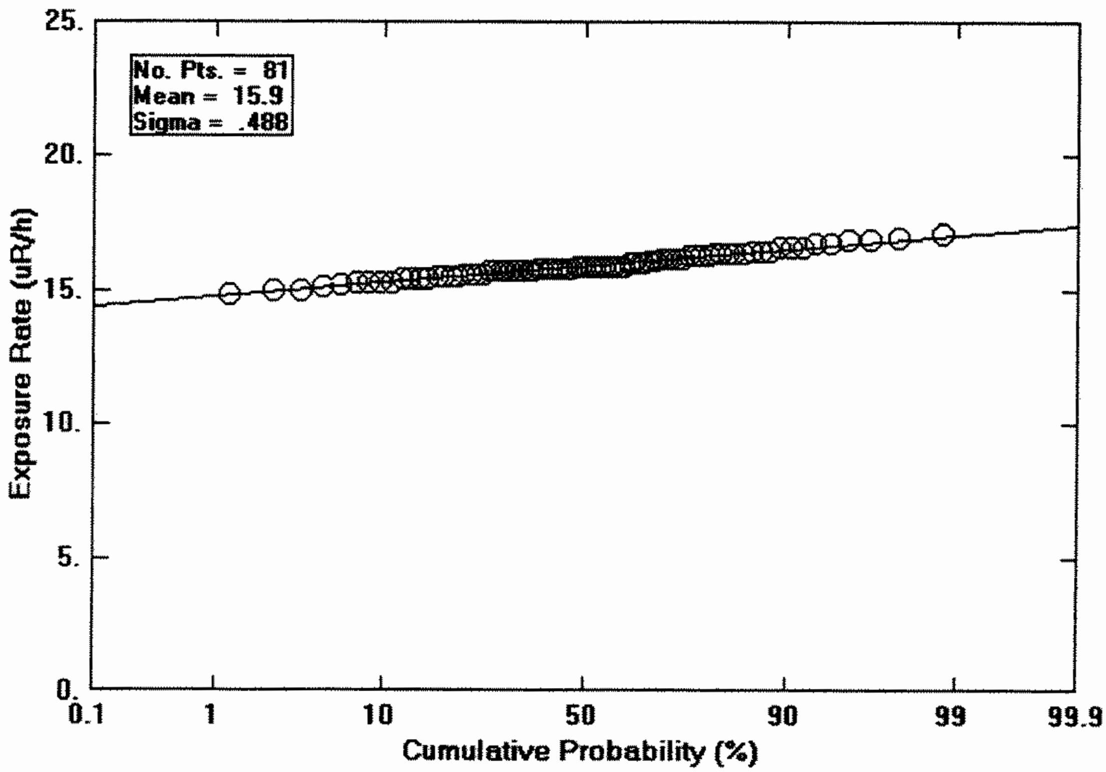

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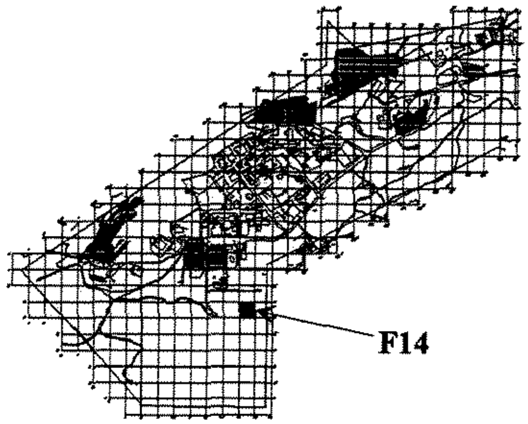
Figure B-41. Ambient Gamma Survey Results - Survey Block F14

15.2	15.1	15.2	15.5	15.4	15.1	15.3	15.1	15.1
15.6	15.3	15.9	15.6	15.9	15.7	15.5	15.8	15.8
15.9	15.9	16.0	15.5	15.9	15.8	15.8	16.1	15.7
15.9	16.2	15.8	15.9	15.9	16.3	15.7	15.7	15.5
16.5	16.4	16.5	16.3	16.1	16.4	16.0	15.6	16.2
16.6	16.6	16.9	16.3	16.4	16.5	16.2	16.2	16.2
16.4	17.3	16.8	16.6	16.5	16.6	16.2	16.4	16.5
17.2	16.7	16.1	16.6	16.2	16.8	16.7	16.4	16.4
17.0	17.1	16.8	17.1	16.5	16.4	16.6	16.4	16.4



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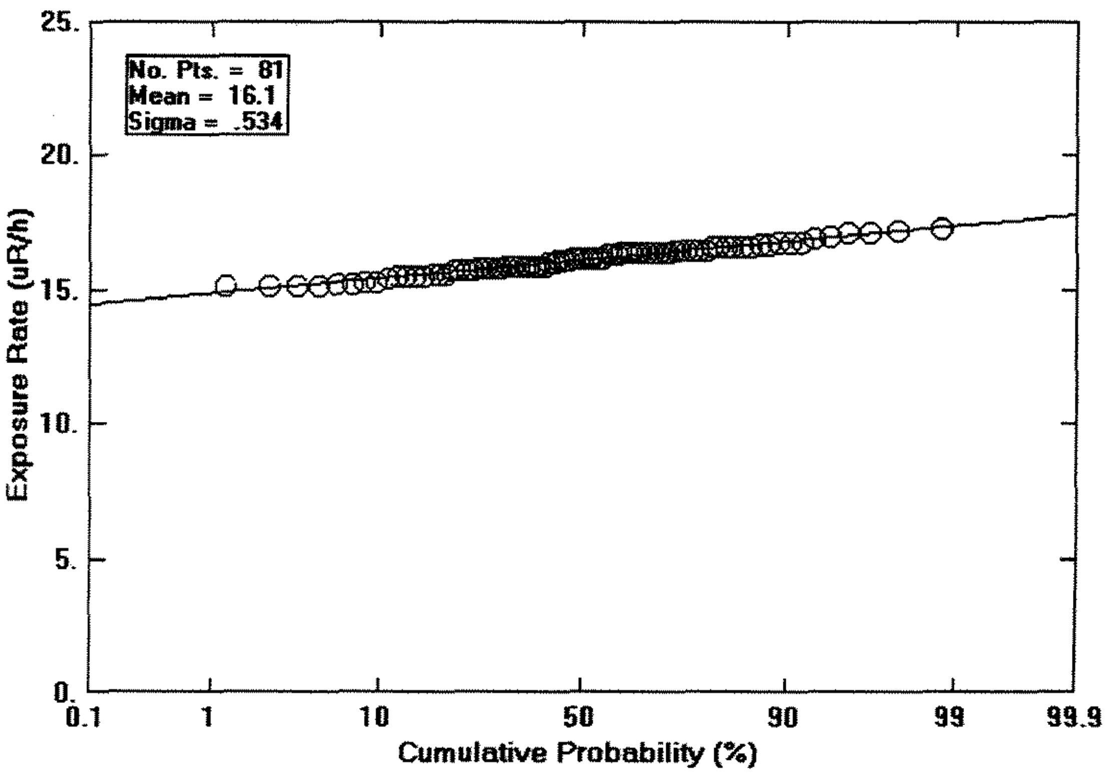

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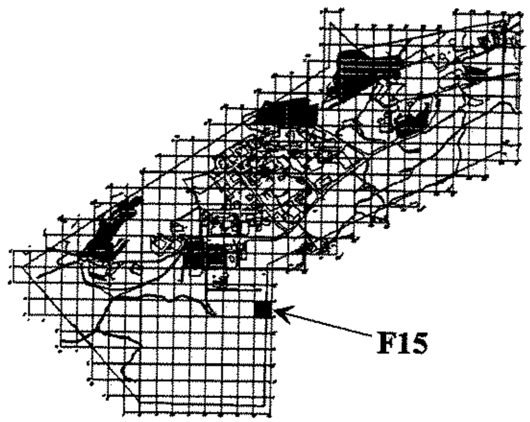
Figure B-42. Ambient Gamma Survey Results - Survey Block F15

15.1	15.5	15.3	14.2	14.8	16.4	15.3	15.1	15.6
15.8	15.3	15.4	15.6	15.2	15.3	15.4	15.3	15.1
15.3	15.4	15.2	15.7	15.6	15.8	15.4	15.5	15.4
15.7	15.7	15.7	15.9	16.0	15.7	15.5	15.2	15.6
					Area IV Site	Area III		
16.0	15.8	15.5	15.6	15.9	15.4	15.6	15.5	15.7
15.6	15.7	15.8	15.9	15.5	15.8	15.3	15.8	15.8
15.7	15.8	15.9	16.3	16.0	15.7	16.1	15.9	16.2
16.4	16.3	16.3	16.0	16.2	15.7	15.5	15.7	15.5
16.9	16.4	16.7	16.4	16.2	16.5	16.1	16.2	15.9



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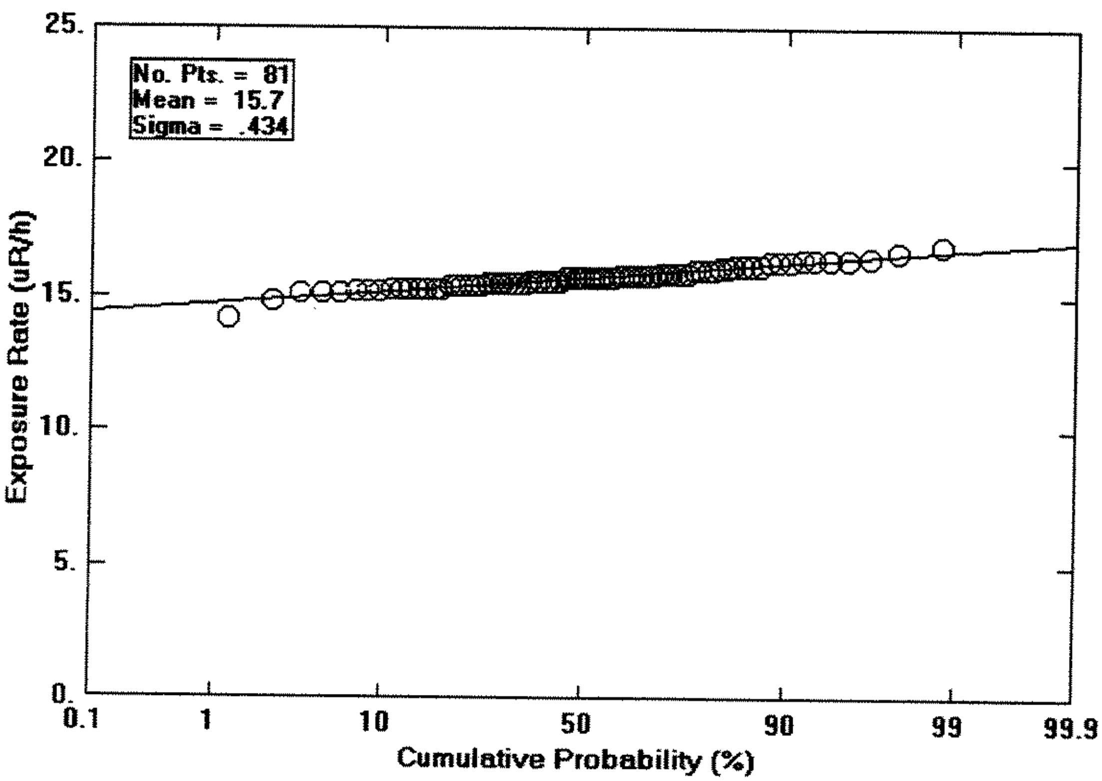

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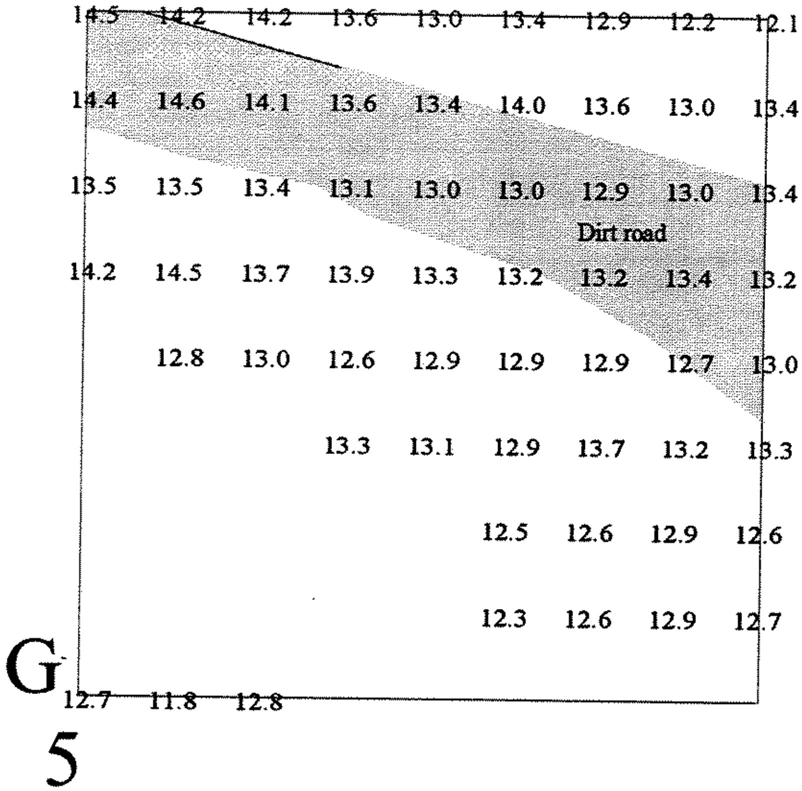
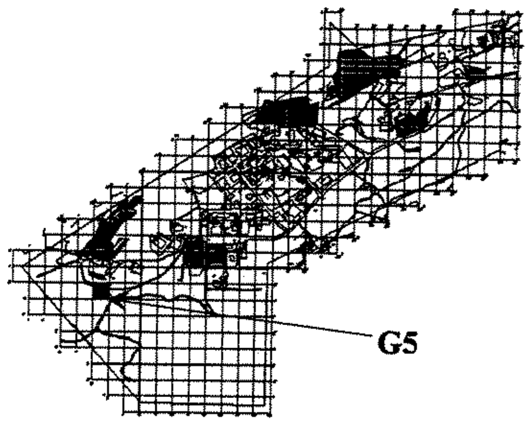
Figure B-43. Ambient Gamma Survey Results - Survey Block G5





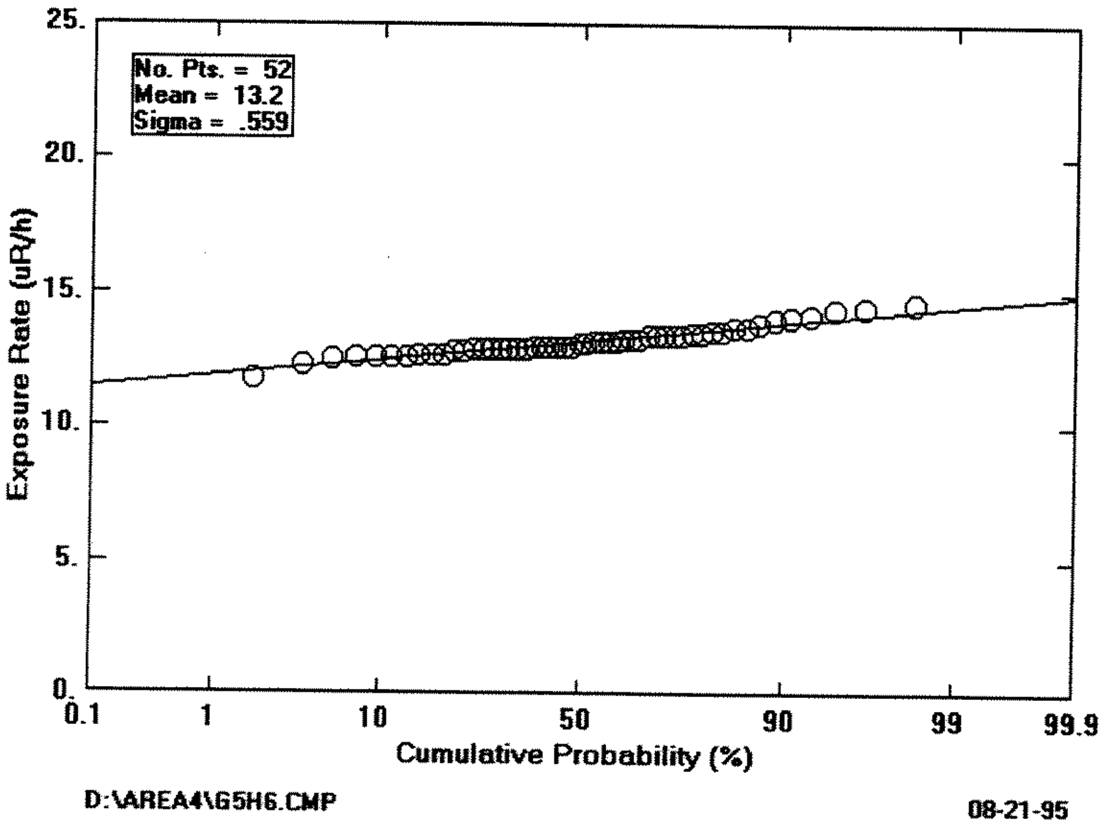


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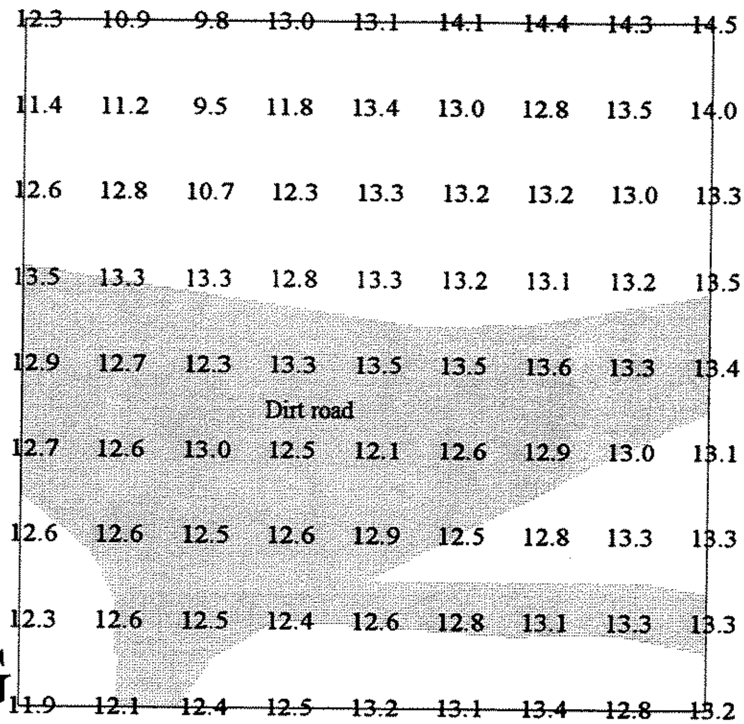
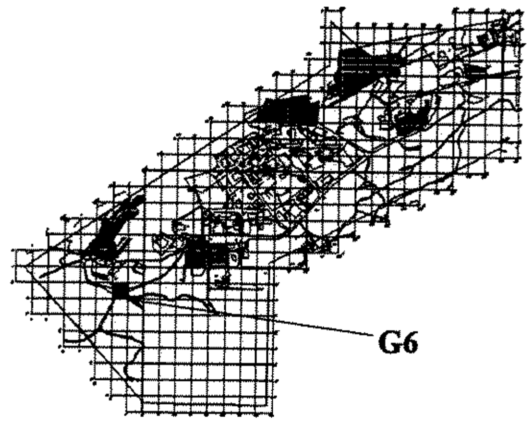
Figure B-44. Ambient Gamma Survey Results - Survey Block G6





G
6

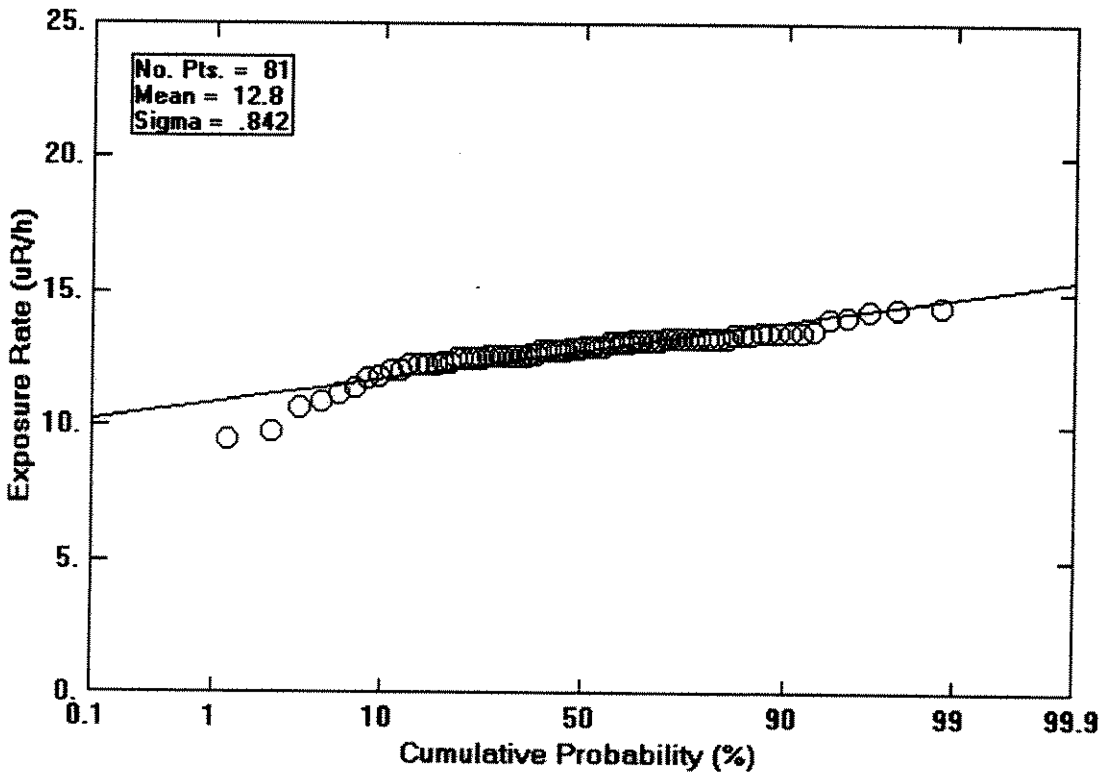


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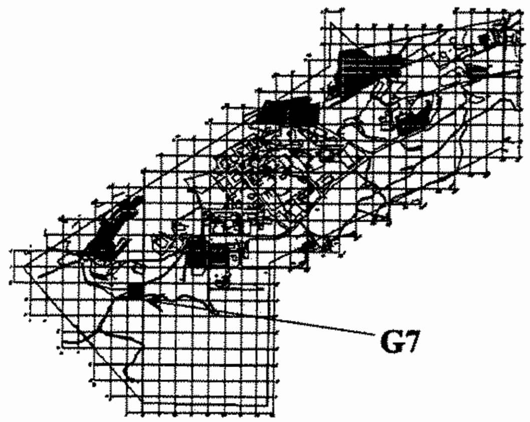
Figure B-45. Ambient Gamma Survey Results - Survey Block G7

13.5	13.3	12.7	12.4	12.0	12.1	12.2	12.1	12.1
12.5	13.0	12.1	12.1	12.0	12.1	12.6	12.4	12.6
11.8	11.8	11.8	11.5	11.9	12.1	12.5	12.5	12.7
11.7	11.7	12.2	12.1	12.3	12.6	12.3	11.8	12.4
12.2	12.2	12.1	12.3	12.4	12.0	12.2	12.7	12.7
12.1	12.4	12.3	12.1	12.4	12.2	12.4	12.7	12.5
12.0	12.0	12.2	12.2	12.7	12.6	12.4	12.1	12.4
12.1	12.4	12.2	12.3	12.3	12.2	12.4	12.3	12.1
12.4	12.1	12.0	12.4	12.3	12.0	12.4	12.9	12.1

Dirt road

G7



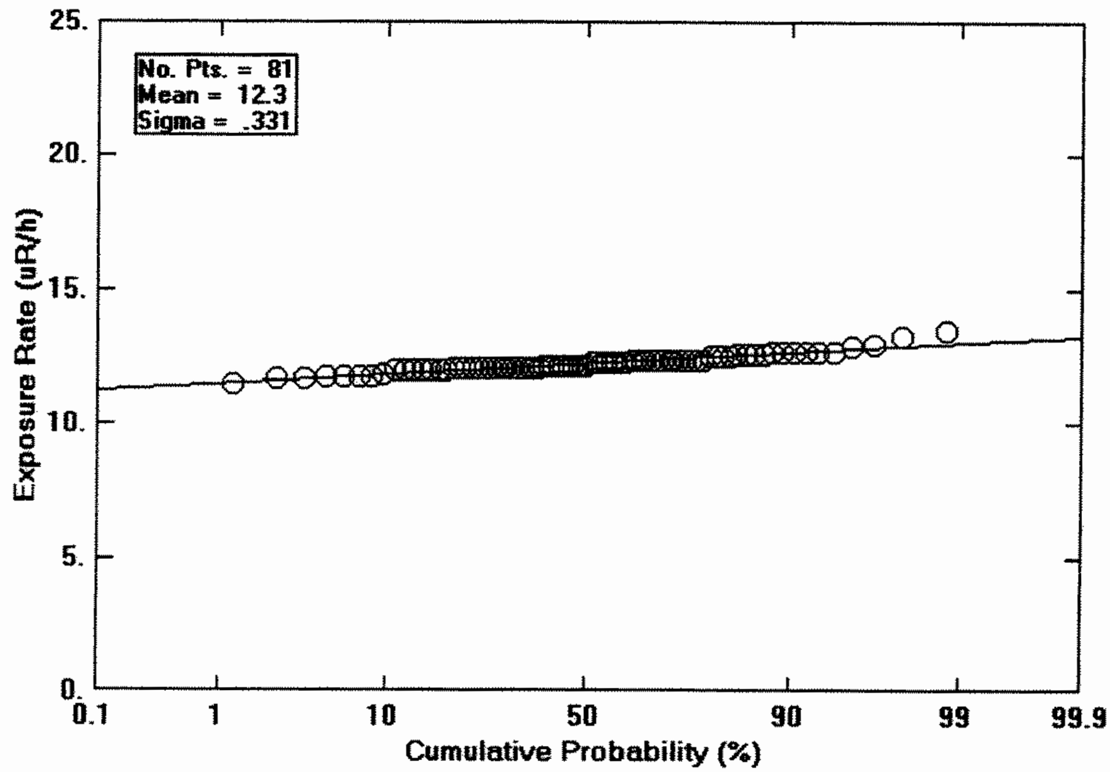


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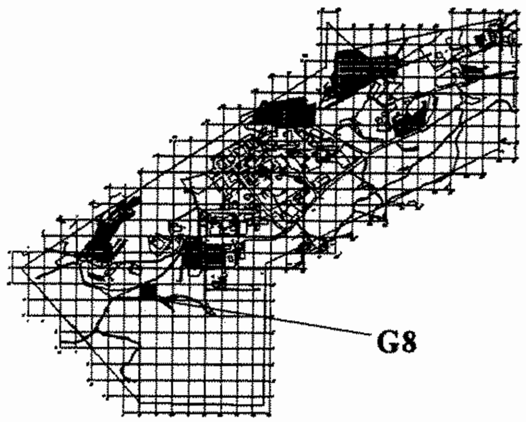
Figure B-46. Ambient Gamma Survey Results - Survey Block G8

14.0	14.3	14.5	14.2	14.7	15.0	14.5	15.6	15.3
13.7	13.9	13.8	13.8	13.6	13.6	13.8	13.7	13.6
13.8	13.9	13.8	14.1	13.8	13.9	14.1	14.0	14.2
13.5	13.6	13.5	13.7	14.0	13.7	13.7	13.7	13.7
13.5	13.4	13.5	13.6	13.3	13.3	13.1	13.1	13.4
12.7	12.8	12.5	12.8	12.8	12.7	12.7	12.6	12.8
12.4	12.6	12.6	12.7	12.6	12.3	12.3	13.0	12.7
12.6	12.2	12.5	12.8	13.0	12.7	12.6	12.8	12.9
14.6	14.1	15.3	14.3	13.9	15.7	17.0	15.2	16.3

Dirt road



G

8

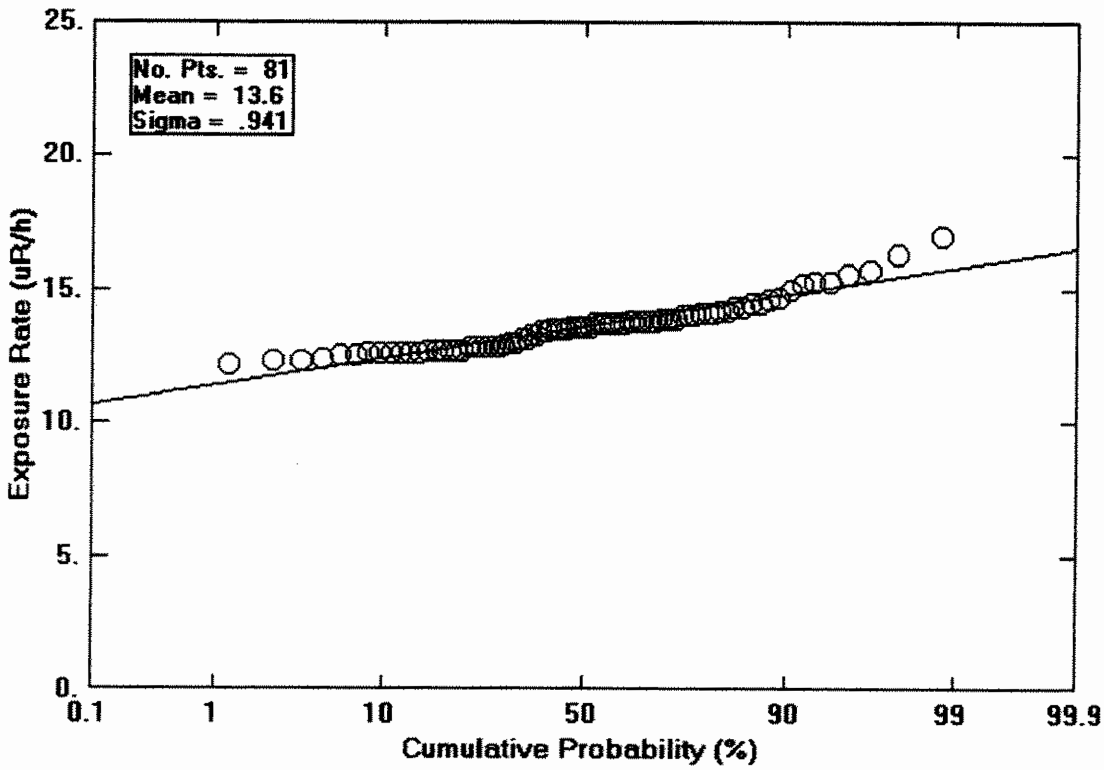


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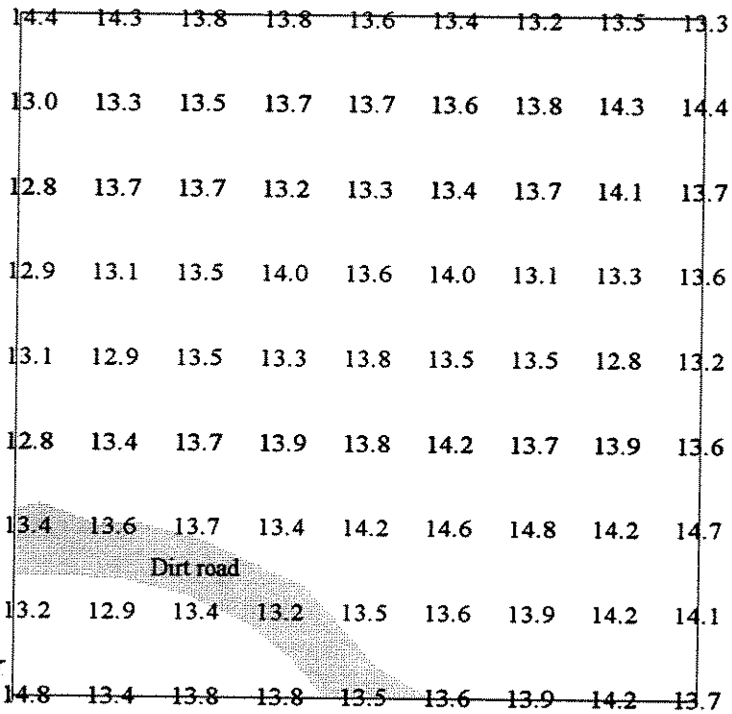
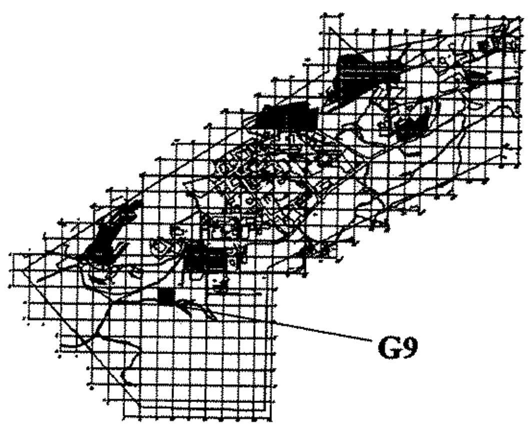
Figure B-47. Ambient Gamma Survey Results - Survey Block G9





G9

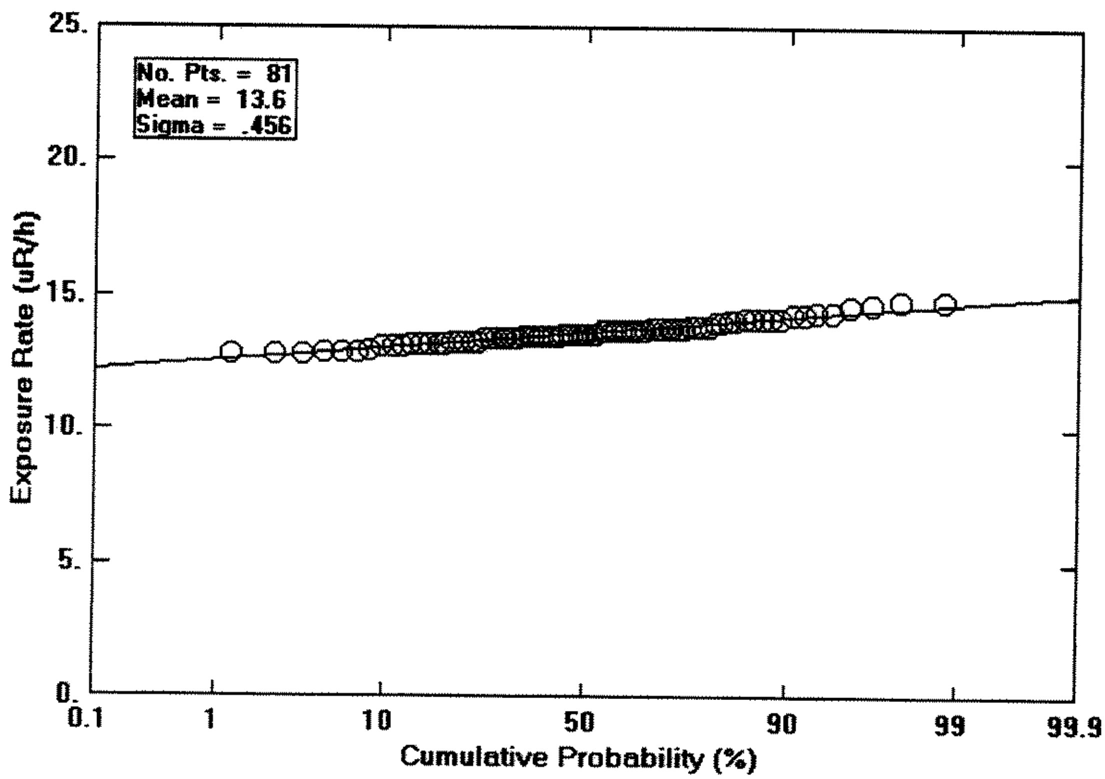


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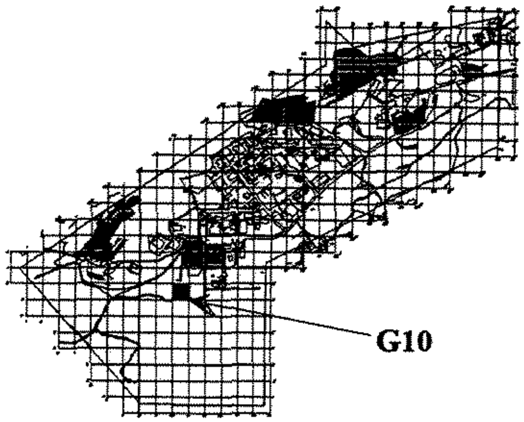
Figure B-48. Ambient Gamma Survey Results - Survey Block G10

14.8	15.4	15.6	14.9	14.5	14.2	15.1	15.7	15.8
15.0	15.2	14.5	14.8	14.6	15.2	15.3	15.1	15.3
14.7	14.5	14.3	14.4	14.4	14.5	14.6	14.0	15.0
14.2	14.0	14.0	14.0	14.7	15.0	15.3	15.1	15.1
14.5	14.0	13.7	14.8	14.6	14.1	15.0	14.5	14.6
13.7	13.5	13.8	14.2	13.9	13.8	14.6	13.6	14.0
14.1	14.1	14.0	13.9	14.1	13.9	14.8	13.6	14.2
14.2	13.9	14.2	14.0	14.5	14.3	14.3	13.9	14.1
14.0	13.8	14.2	14.1	12.5	13.4	13.4	13.1	13.9

Dirt road

G10



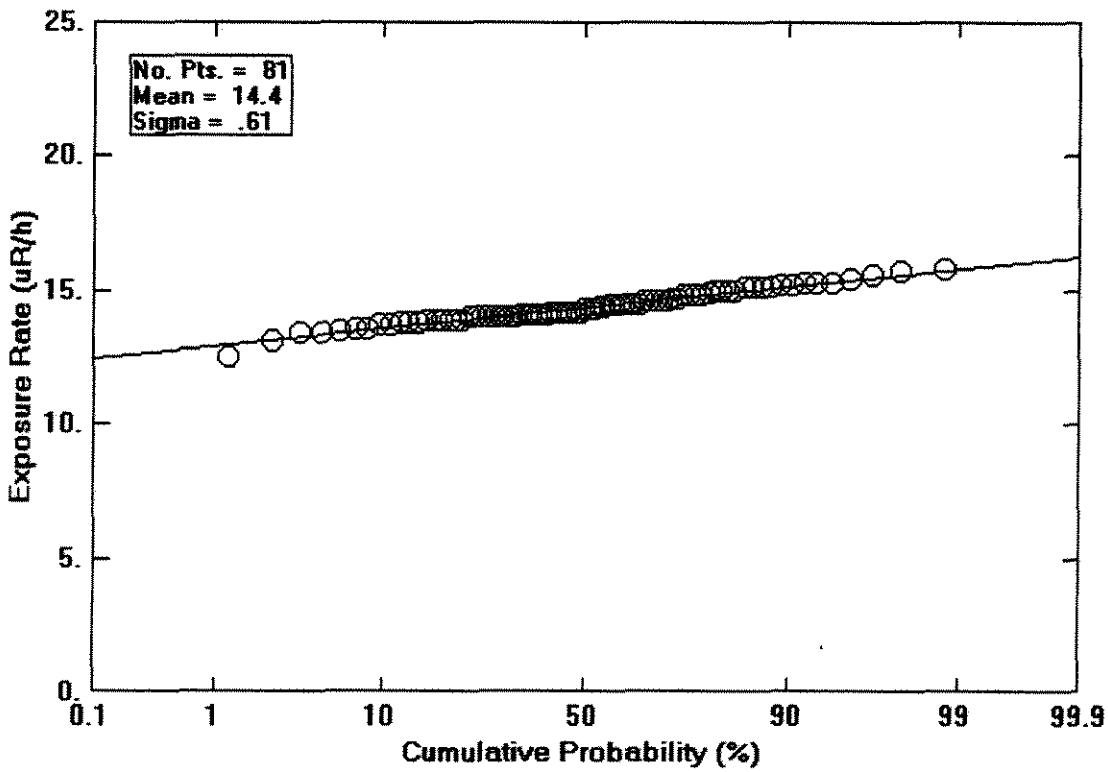


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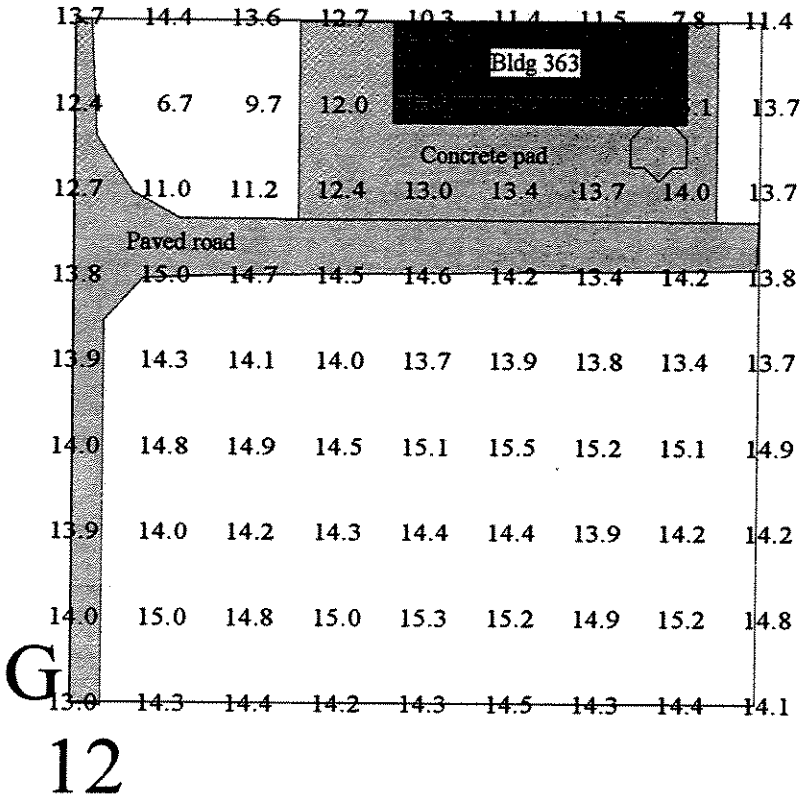
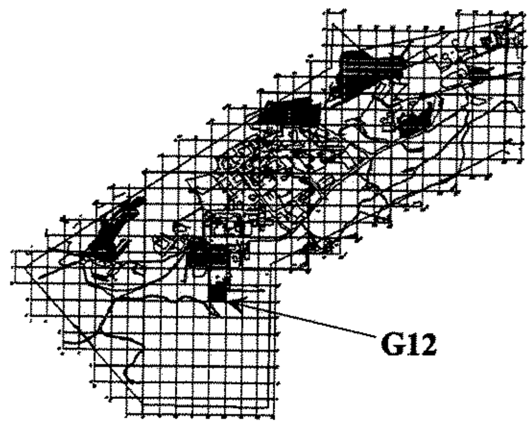
Figure B-49. Ambient Gamma Survey Results - Survey Block G12





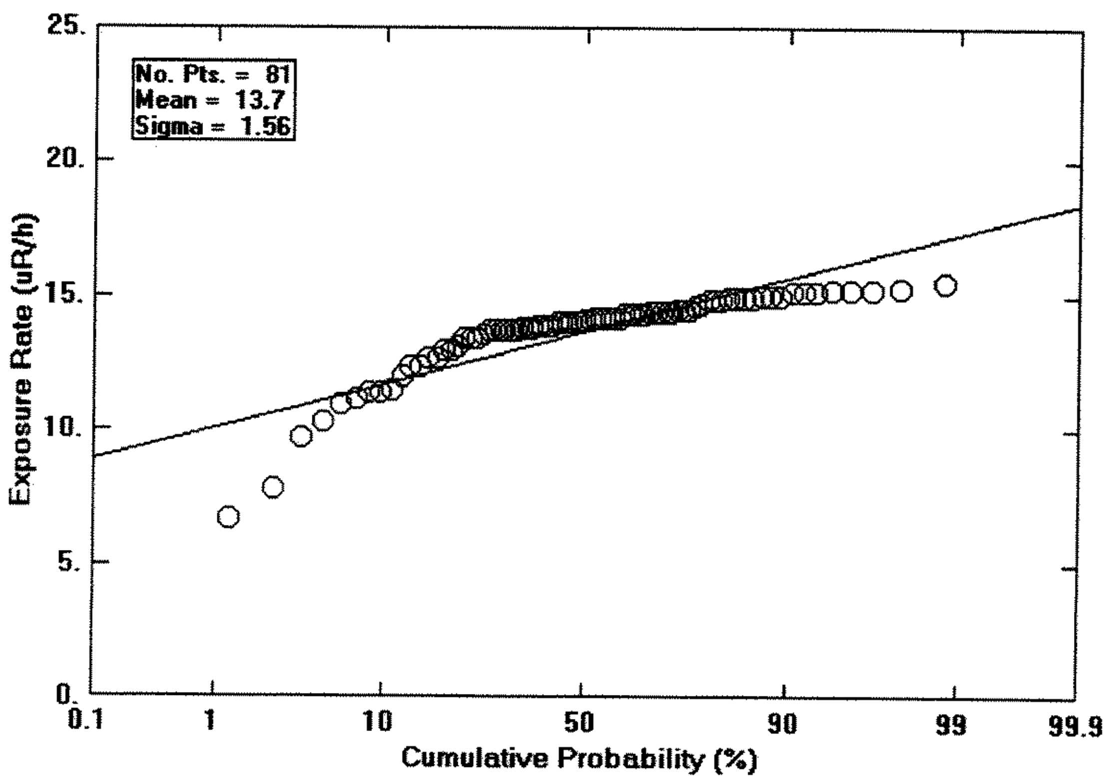


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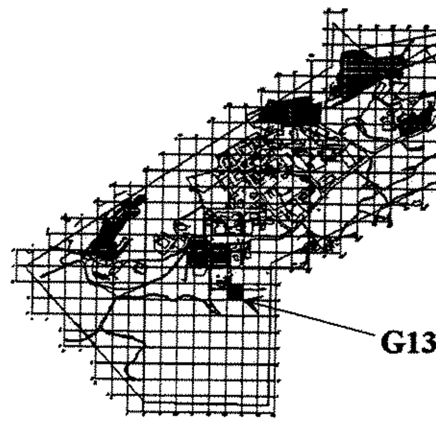
Figure B-50. Ambient Gamma Survey Results - Survey Block G13

12.5	9.6	11.5	14.2	14.5	14.6	14.1	14.3	14.4
15.4	15.4	15.2	15.3	15.4	14.8	13.4	12.7	12.6
15.3	15.4	15.5	15.3	15.1	14.8	14.1	13.7	12.8
Paved road								
14.0	10.2	14.4	14.5	15.4	15.0	15.6	15.5	15.6
15.0	14.7	14.5	14.8	15.0	15.3	14.9	15.3	15.4
15.8	15.2	15.6	15.0	15.2	14.9	15.2	15.2	15.0
15.1	15.0	15.3	15.3	15.0	16.1	15.1	14.5	14.6
15.1	15.1	15.4	15.0	14.7	14.8	15.1	14.9	15.2
15.4	15.6	15.6	15.3	15.5	15.4	15.6	15.8	15.2



G 13

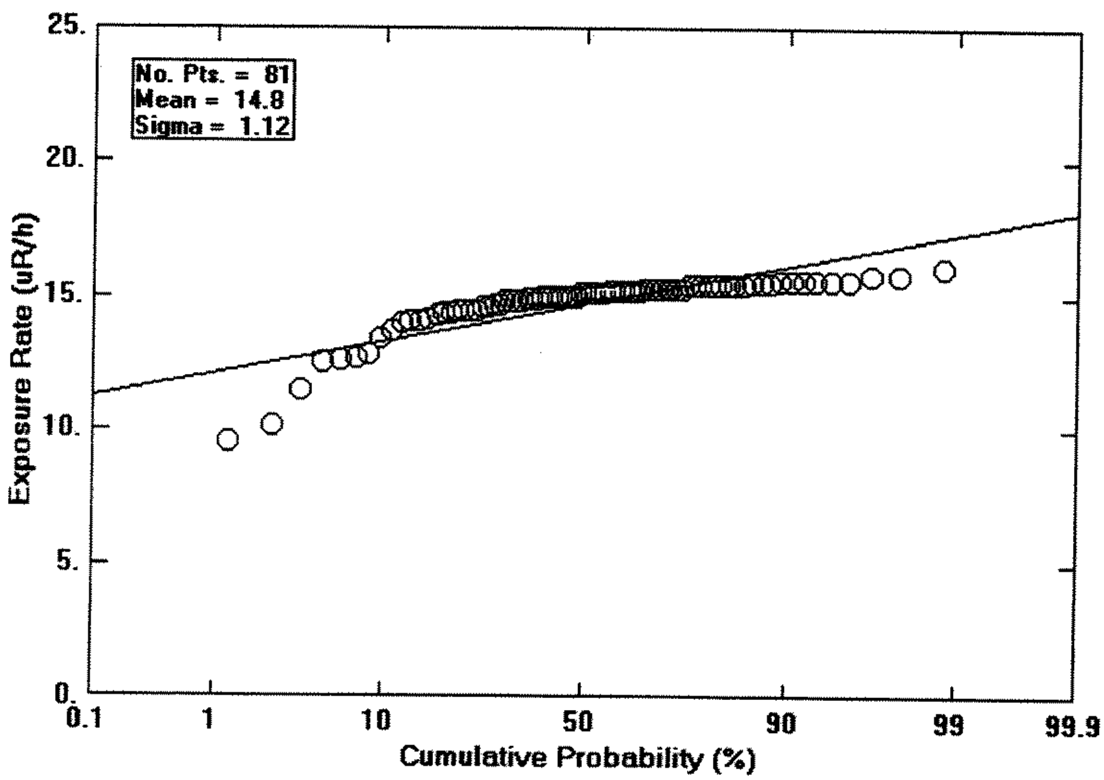


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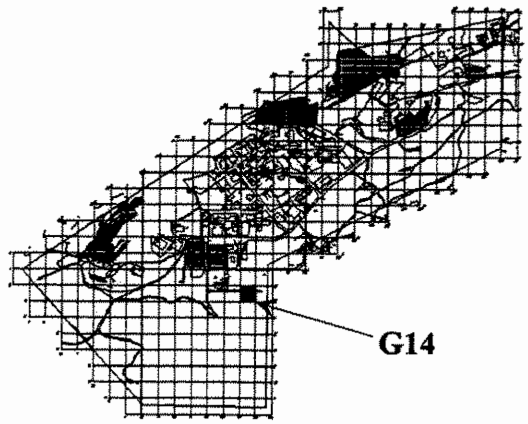
Figure B-51. Ambient Gamma Survey Results - Survey Block G14

15.9	16.3	17.0	16.6	14.8	13.0	11.3	12.2	13.3
16.1	16.3	15.9	16.1	15.9	14.8	14.1	14.3	14.0
15.9	14.2	15.9	15.6	15.4	14.0	14.1	14.5	14.1
				Paved road				
15.9	15.9	15.7	15.8	15.3	15.5	15.3	15.1	14.2
16.0	15.9	15.8	15.7	15.8	16.0	15.4	15.1	12.6
16.1	16.2	16.8	16.2	16.3	15.9	14.9	15.8	15.3
16.0	15.5	15.6	15.3	15.6	15.3	15.0	15.6	15.4
15.7	15.9	15.9	15.7	16.1	15.9	15.3	15.6	15.6
16.5	15.8	15.7	15.5	15.3	15.7	15.1	15.7	15.5



G
14

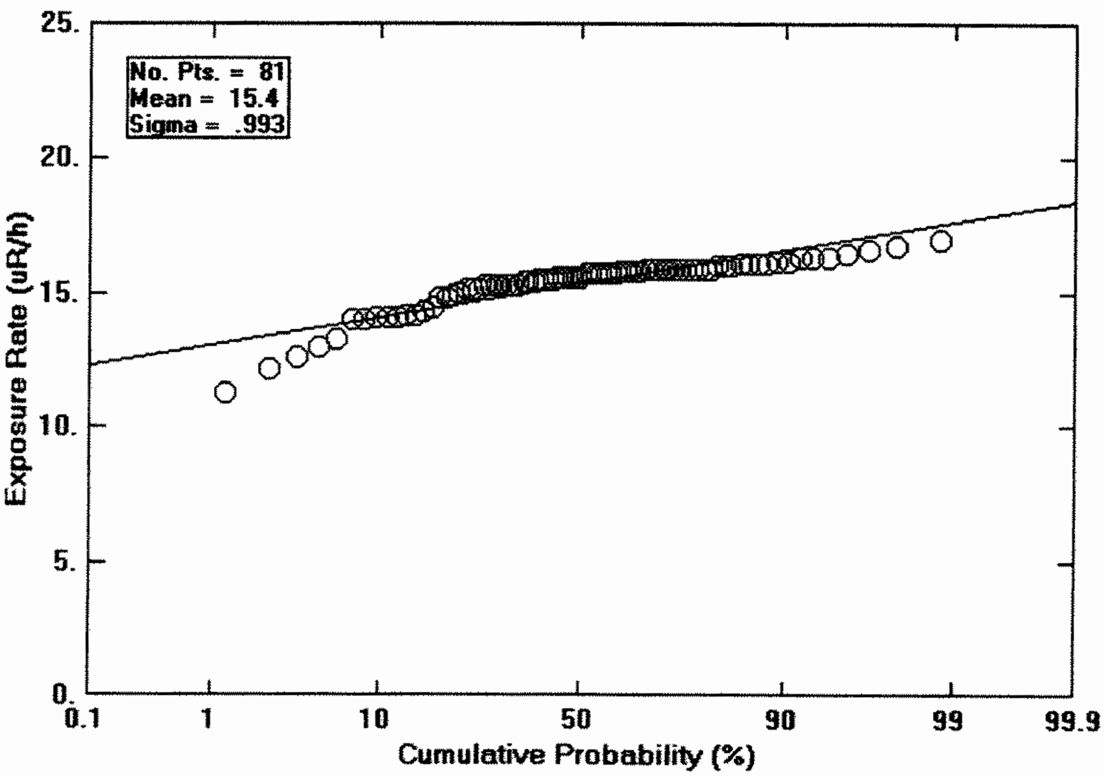


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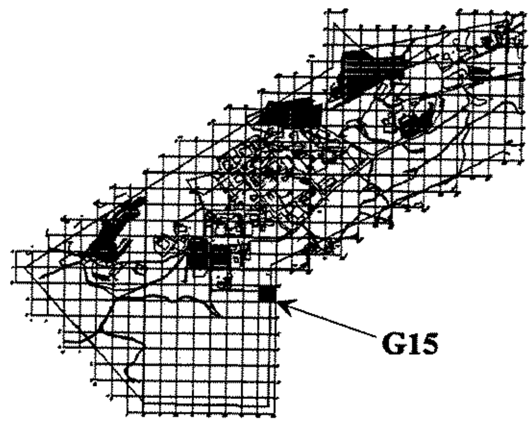
Figure B-52. Ambient Gamma Survey Results - Survey Block G15

12.1	13.5	14.0	13.6	13.2	13.8	14.1	14.4	14.6
13.1	13.7	13.9	13.9	14.2	14.2	14.5	15.3	15.0
13.1	13.6	13.4	14.1	14.2	14.1	14.7	15.0	15.1
13.6	8.9	9.6	13.8	14.4	14.2	15.6	15.2	14.6
12.3	10.6	11.7	13.2	14.9	15.4	14.8	15.1	14.9
14.3	13.5	12.4	14.1	14.9	15.3	15.6	15.1	15.3
14.6	12.1	11.7	15.1	15.1	15.9	15.7	15.4	15.2
14.9	15.1	15.0	14.3	14.2	15.9	16.4	15.4	15.8
15.1	15.3	14.9	14.3	13.5	15.8	15.3	15.2	15.6

Paved area

Area IV Site | Area III



G 15

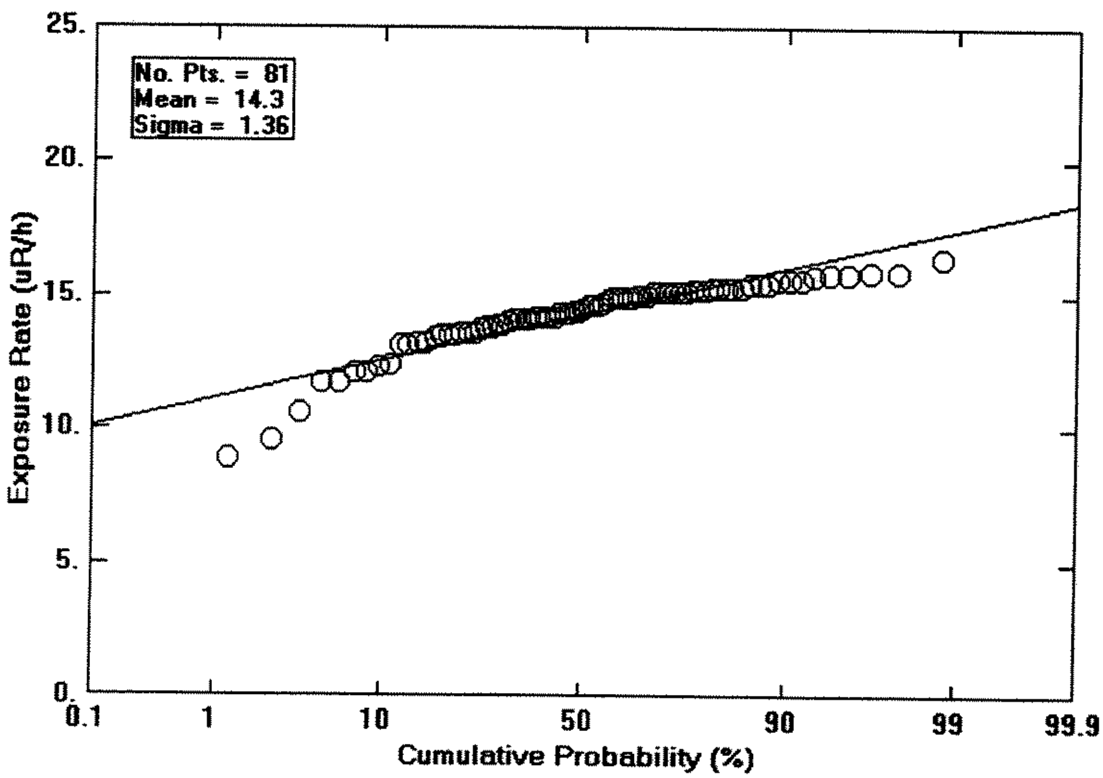


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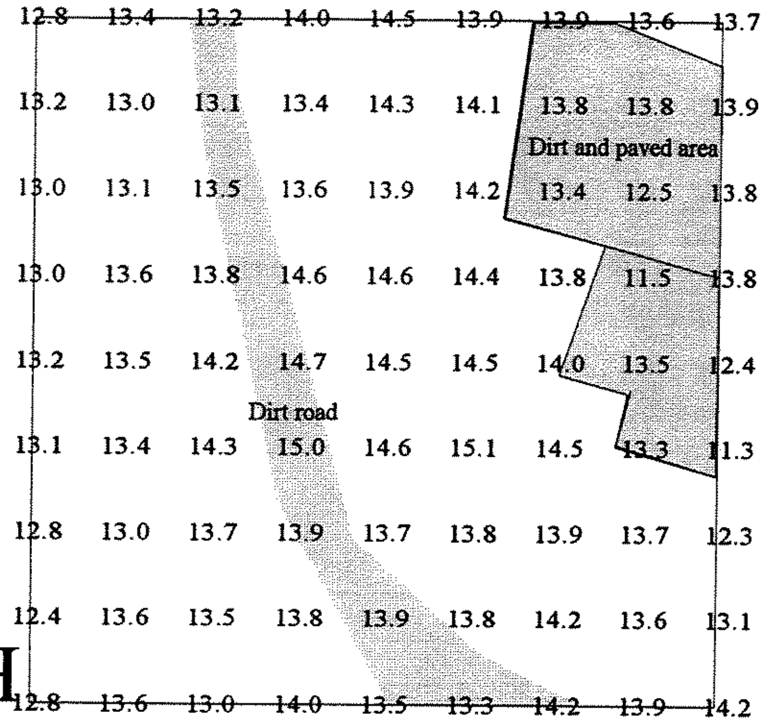
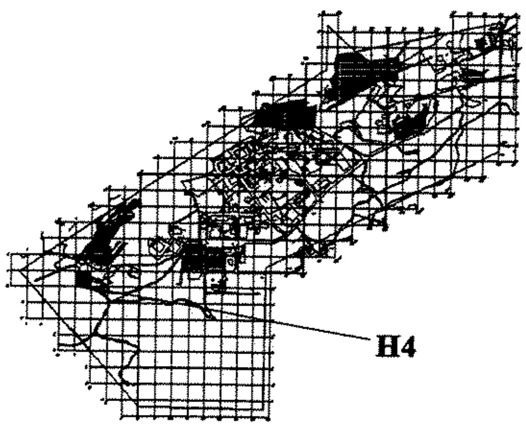
Figure B-53. Ambient Gamma Survey Results - Survey Block H4





H

4

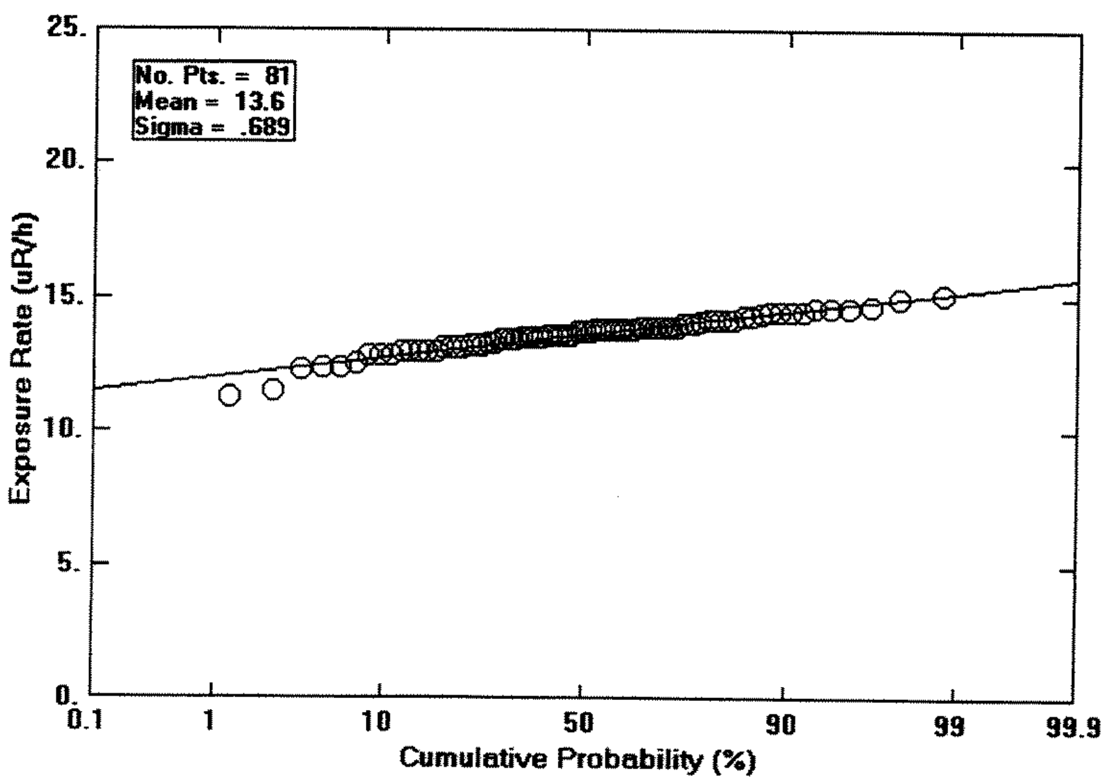


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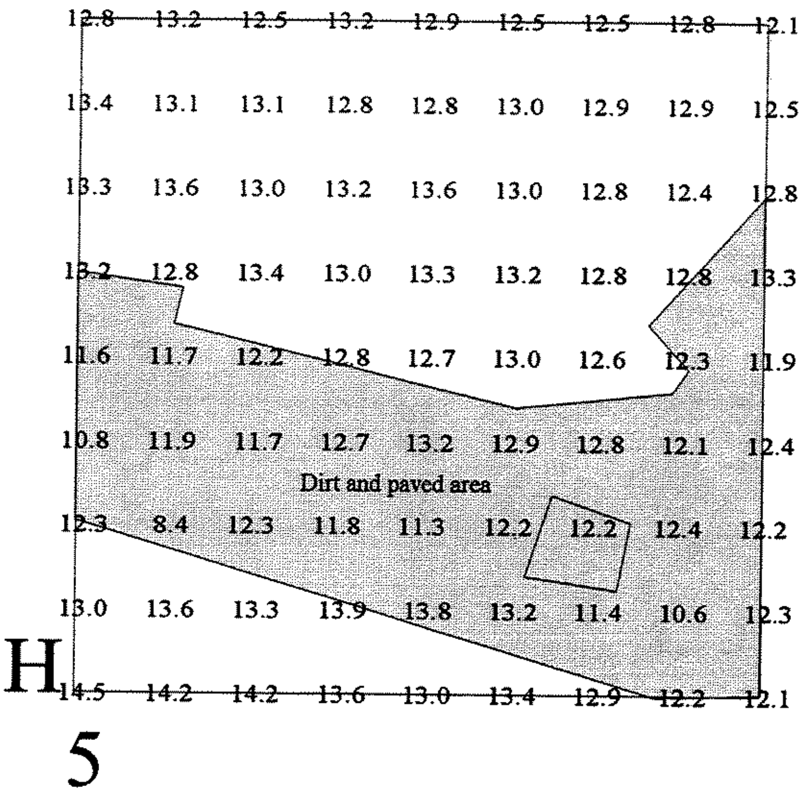
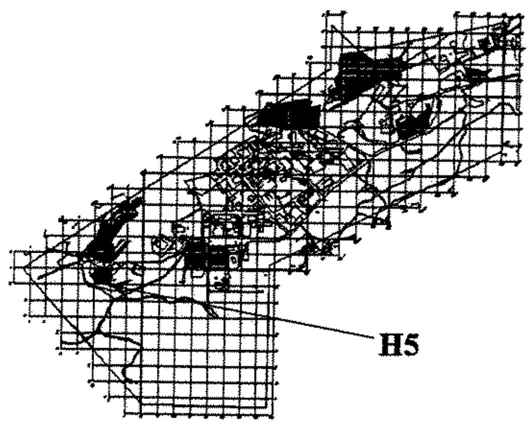
Figure B-54. Ambient Gamma Survey Results - Survey Block H5





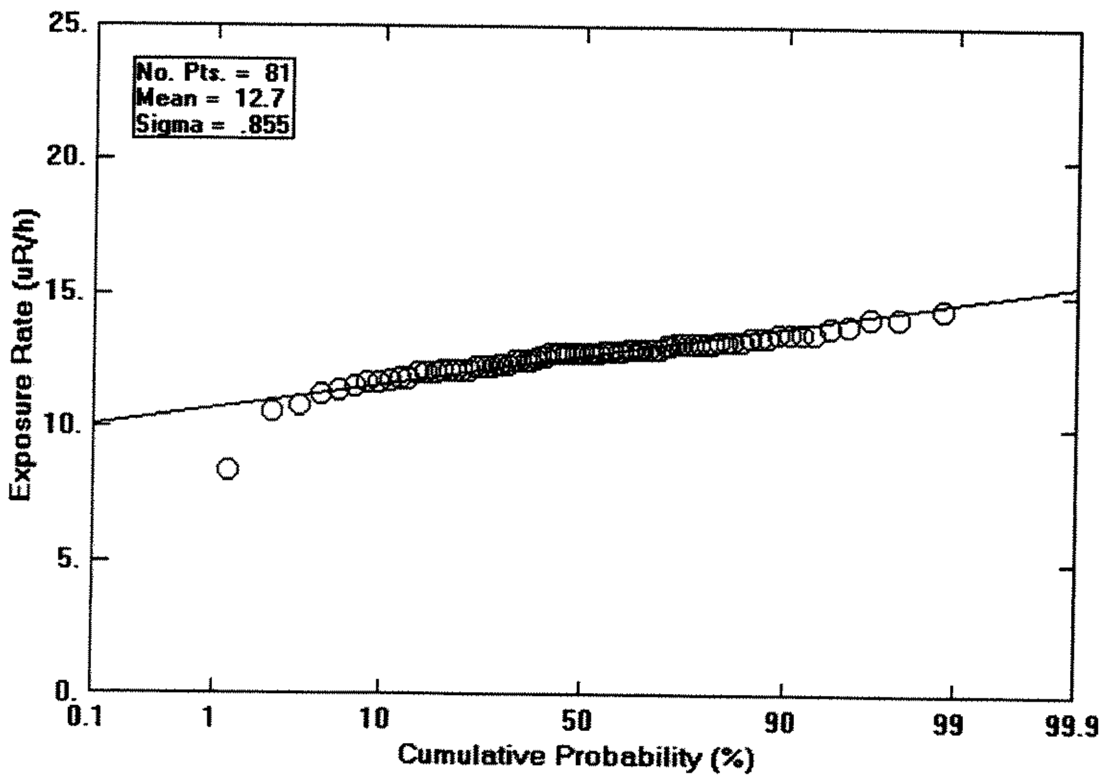


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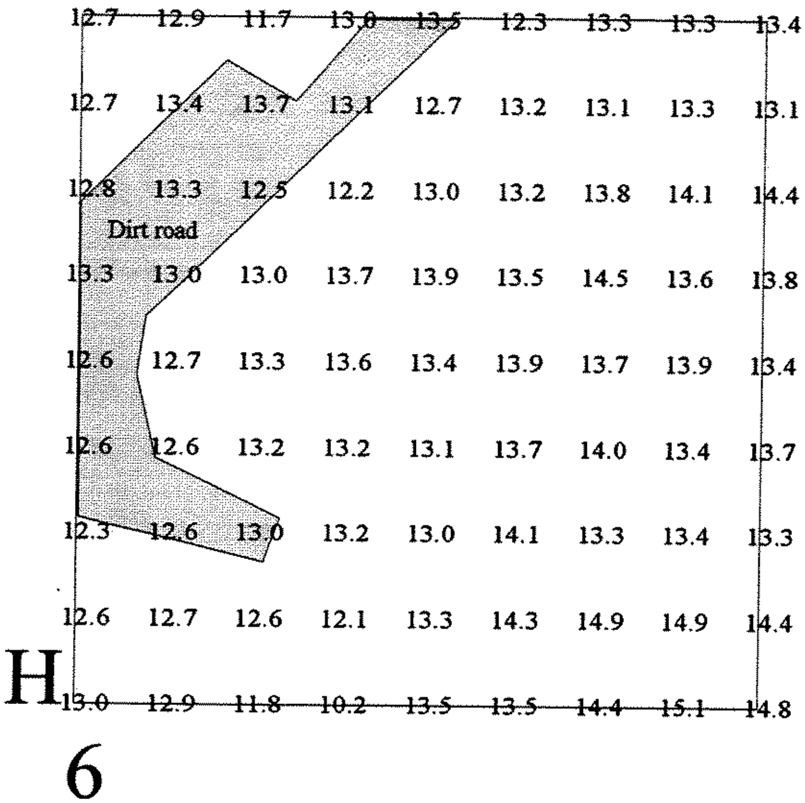
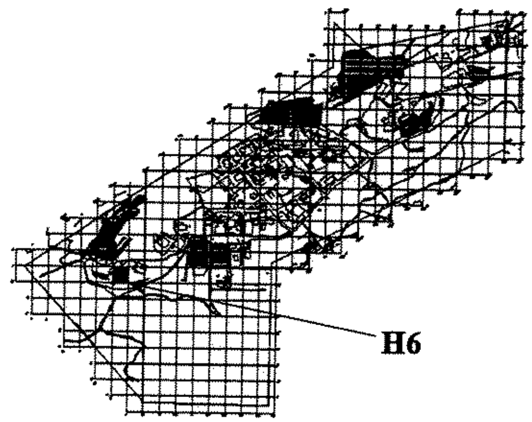
Figure B-55. Ambient Gamma Survey Results - Survey Block H6





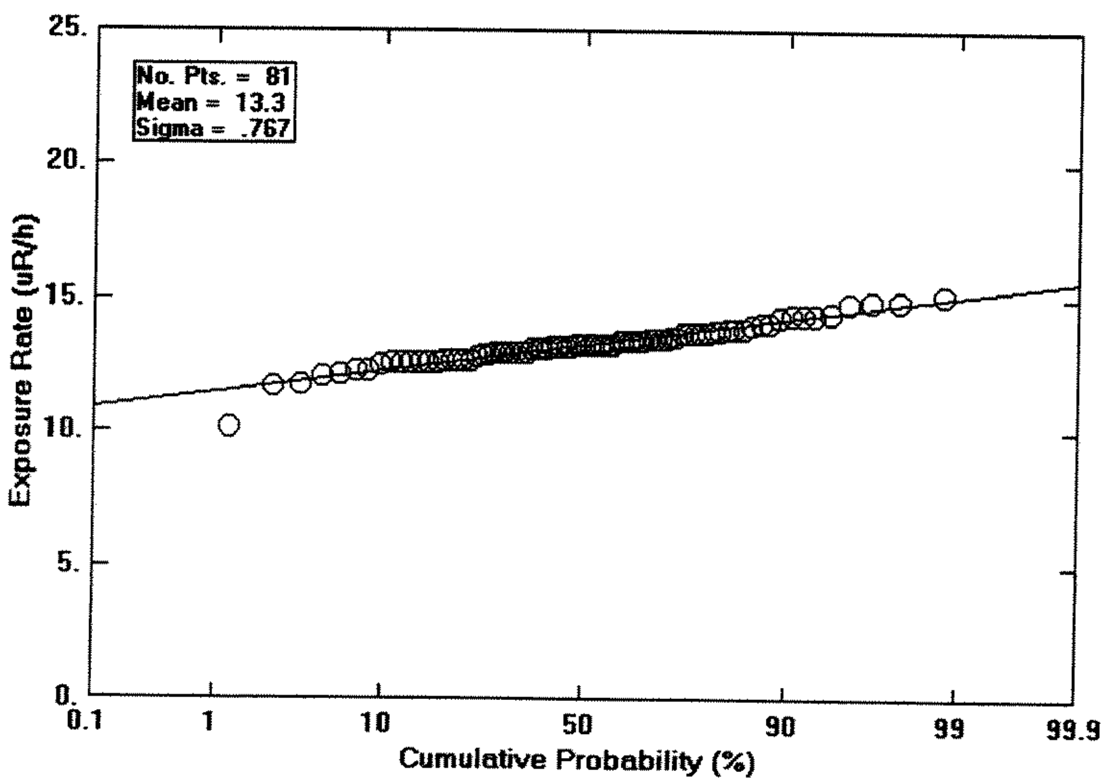


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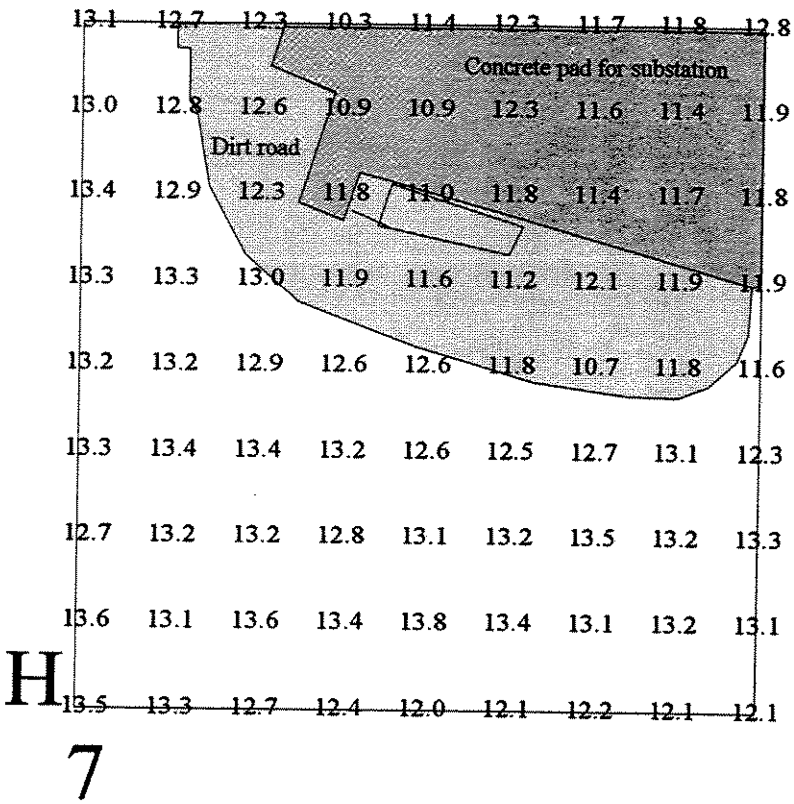
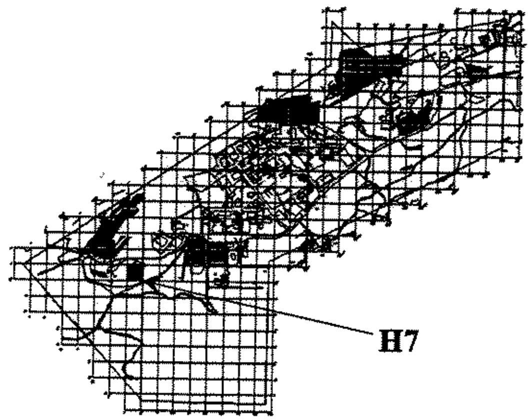
Figure B-56. Ambient Gamma Survey Results - Survey Block H7





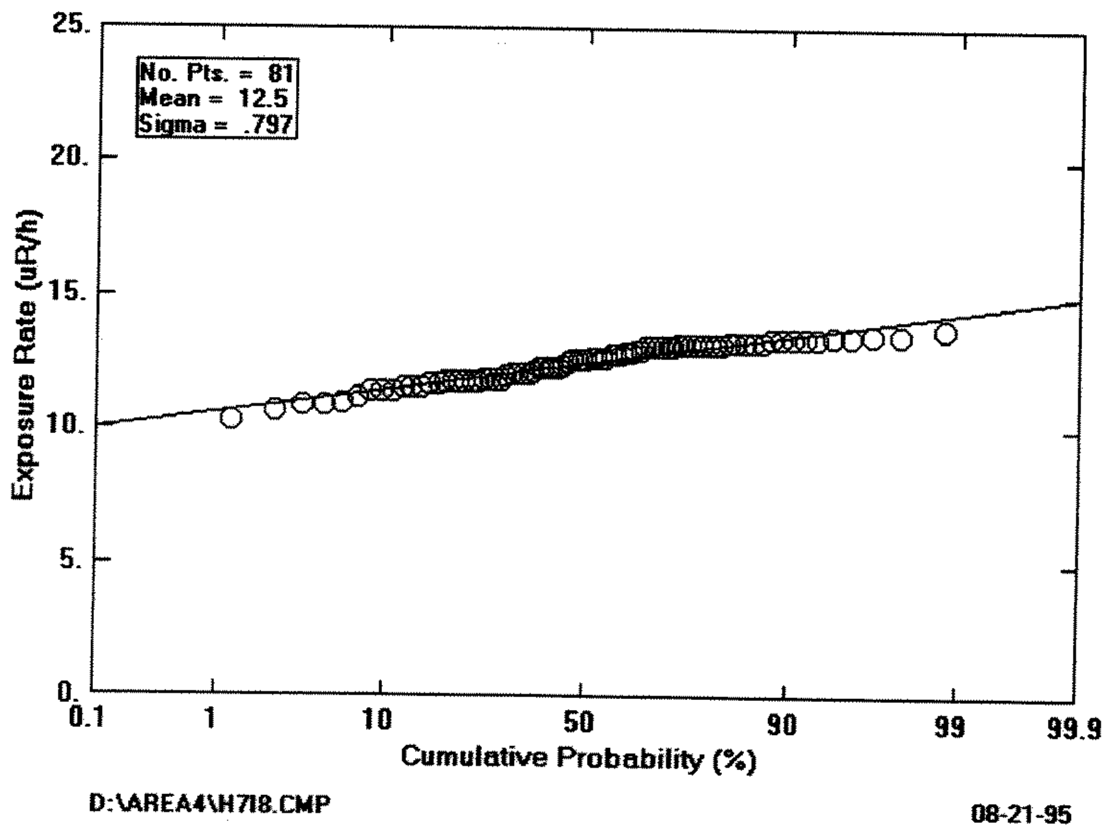
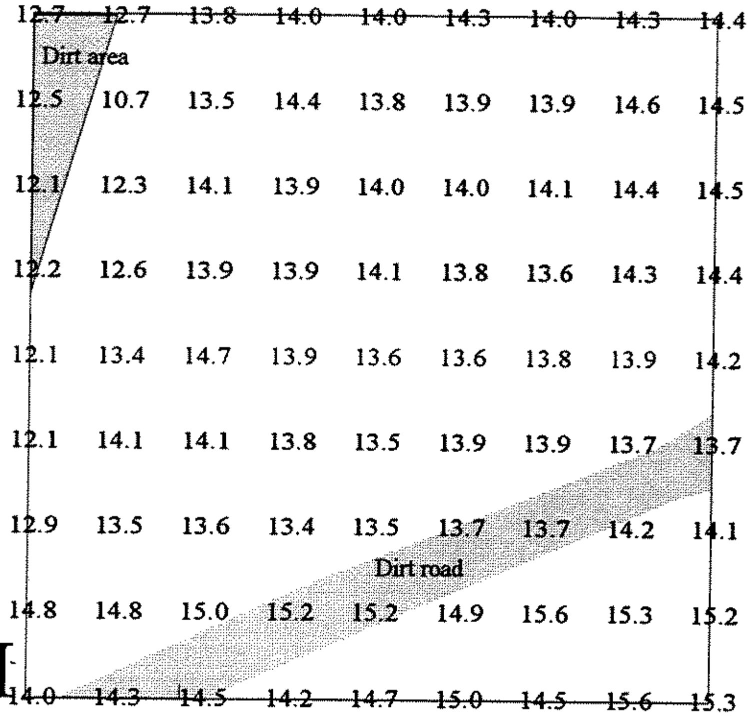
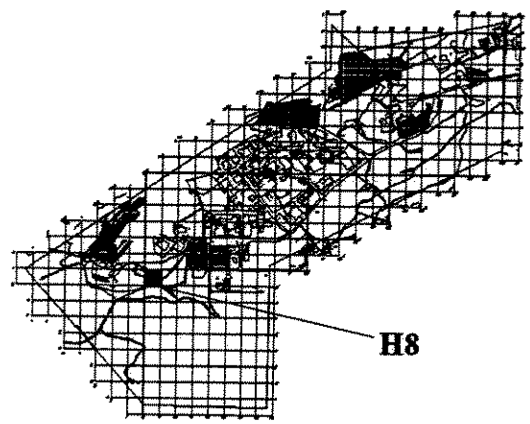


Figure B-57. Ambient Gamma Survey Results - Survey Block H8





H8

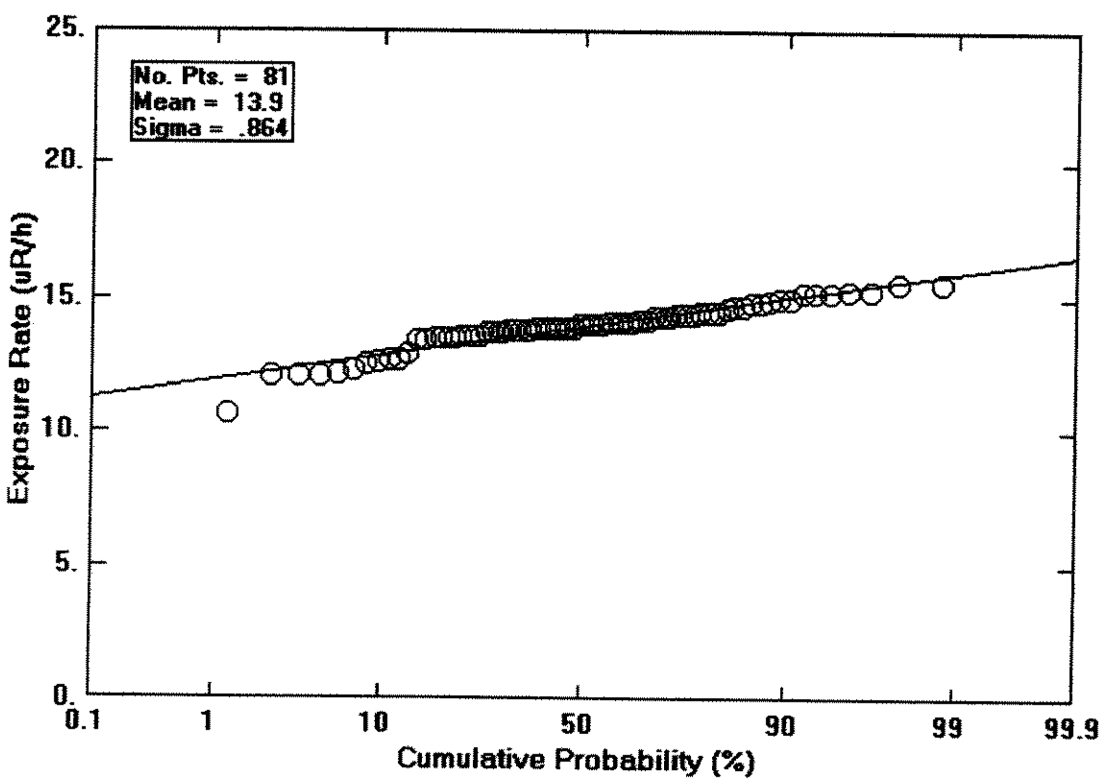


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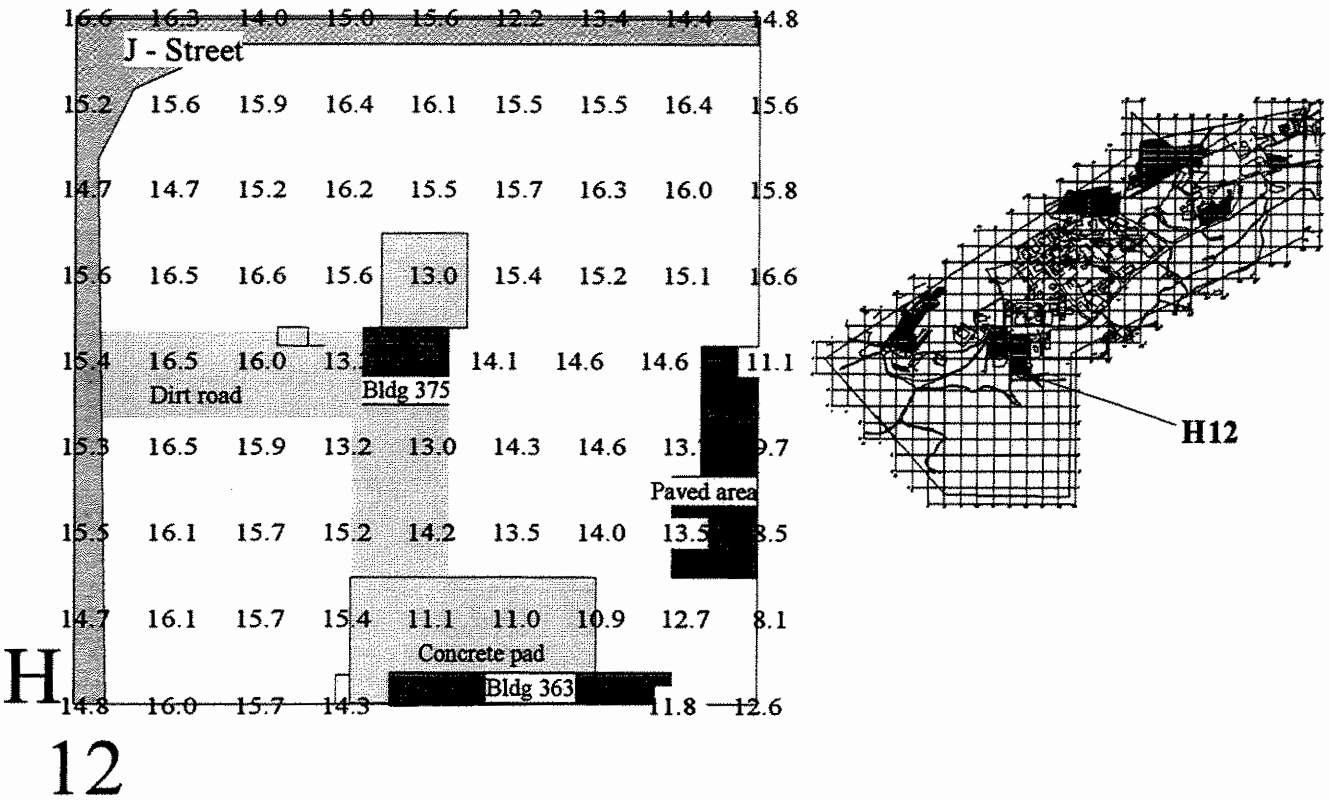
Figure B-58. Ambient Gamma Survey Results - Survey Block H12



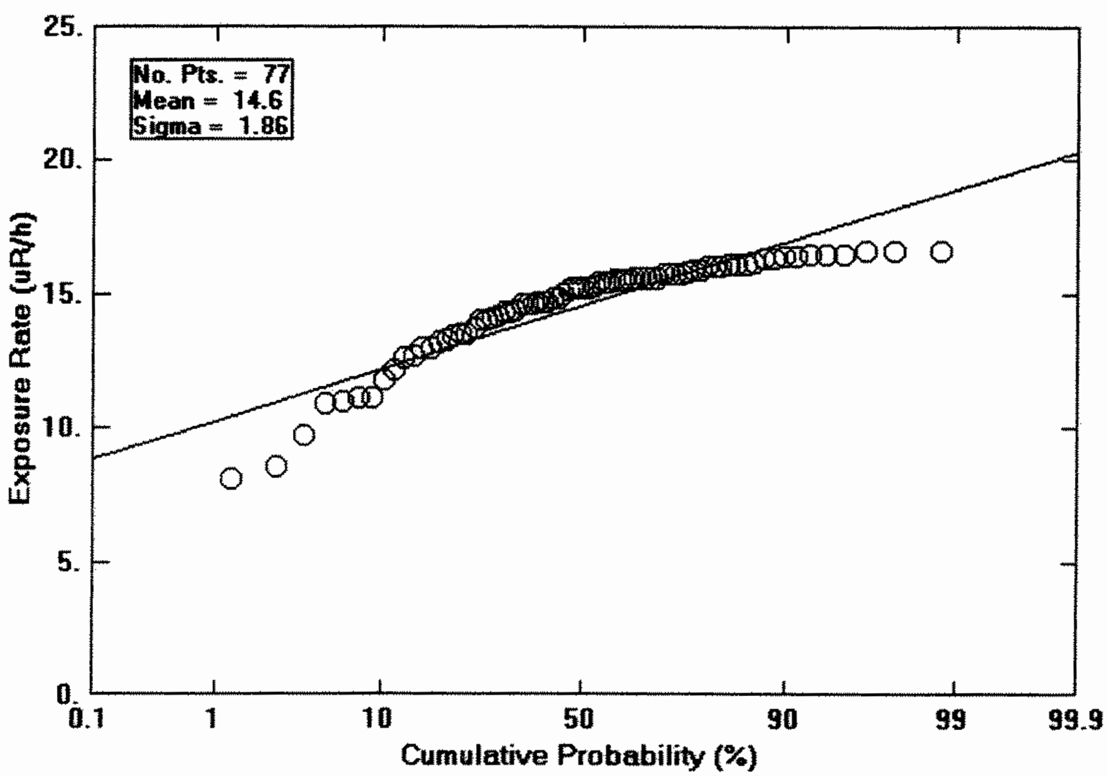


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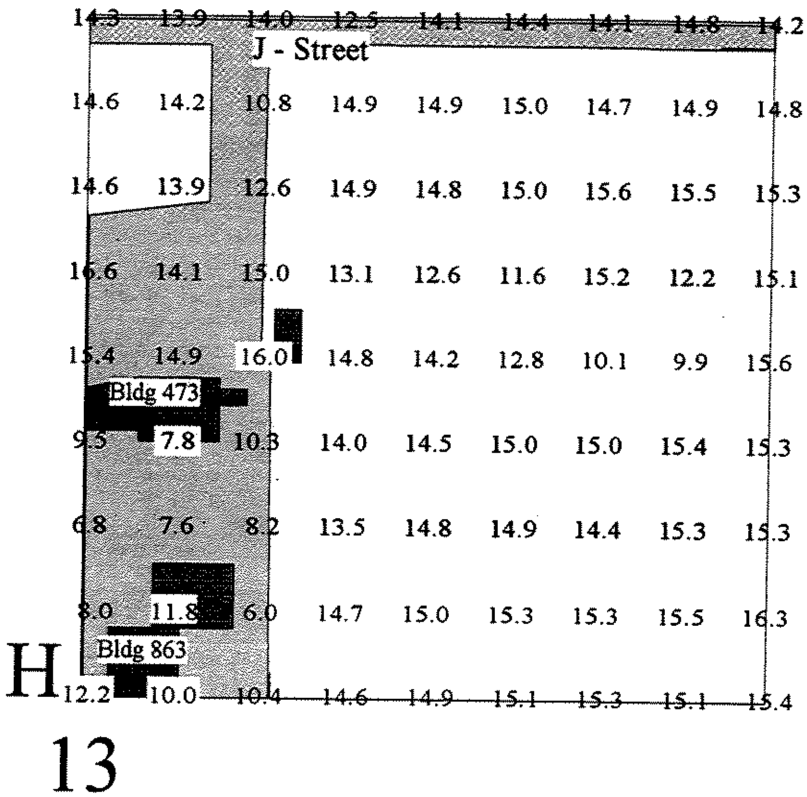
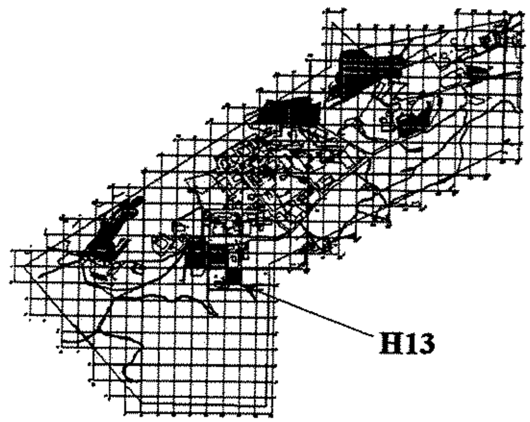
Figure B-59. Ambient Gamma Survey Results - Survey Block H13





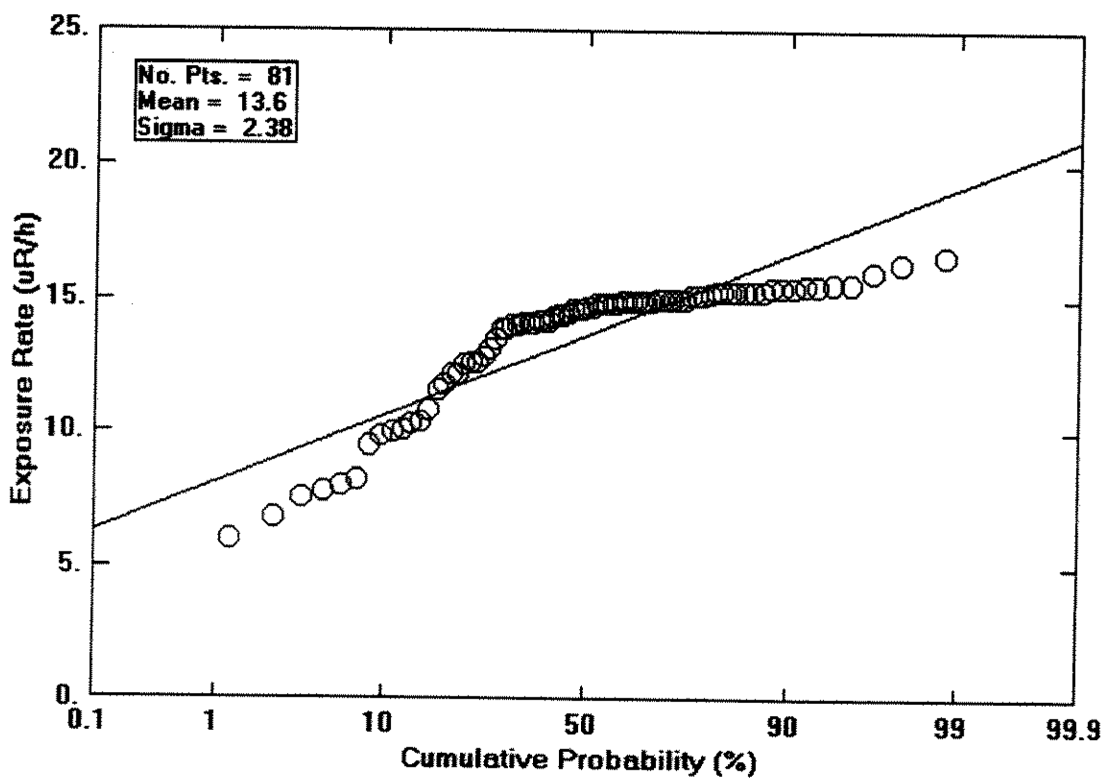


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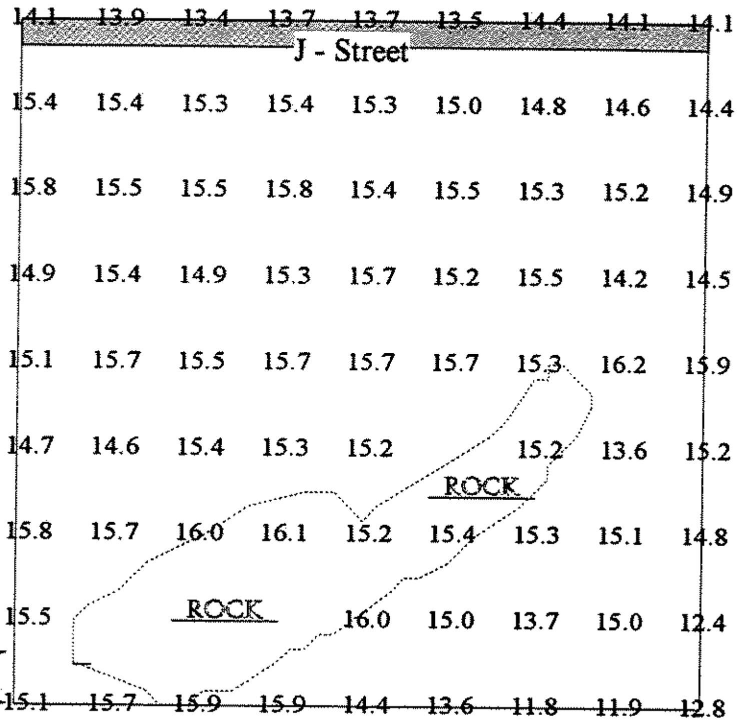
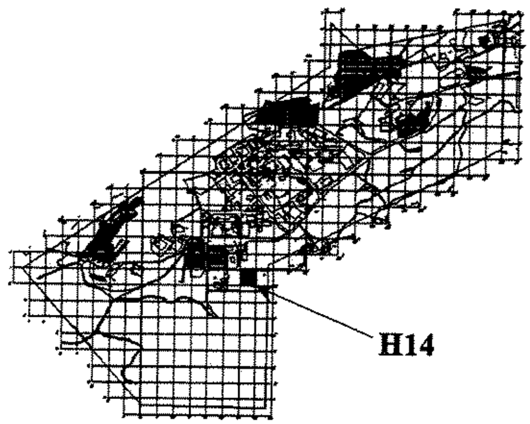
Figure B-60. Ambient Gamma Survey Results - Survey Block H14





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14

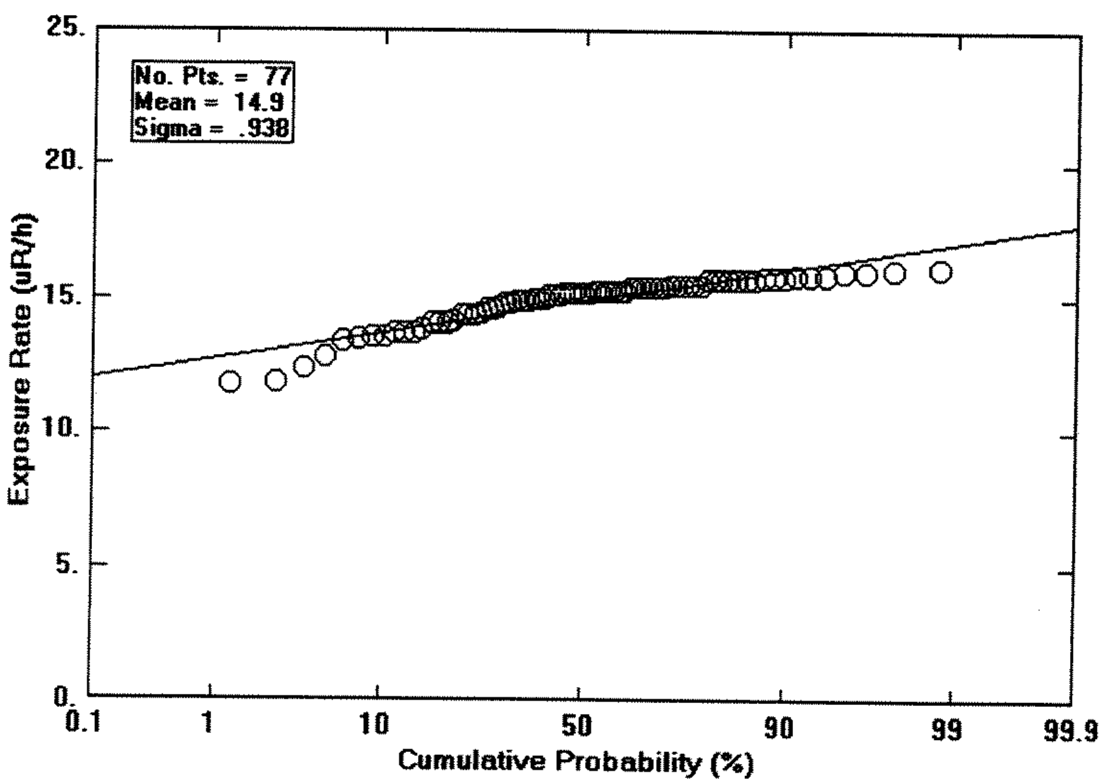

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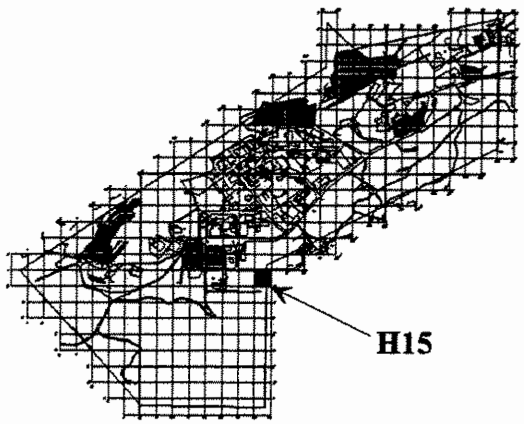
Figure B-61. Ambient Gamma Survey Results - Survey Block H15

J - Street

14.7	14.6	14.3	14.1	14.4	14.0	14.6	14.6	14.2
15.3	14.1	14.9	15.1	13.7	14.1	14.9	14.4	14.6
15.6	15.6	15.6	15.5	15.8	15.6	15.7	15.3	15.0
15.8	15.5	15.8	15.9	15.7	15.5	15.8	15.3	14.5
15.8	16.2	16.0	15.8	16.0	15.8	15.5	15.0	16.1
14.8	14.8	15.0	14.7	14.6	15.2	15.5	15.6	15.2
16.5	16.6	15.5	16.0	16.3	15.7	15.8	15.9	16.0
12.8	14.9	14.7	14.3	14.3	15.3	15.7	15.7	15.2
13.6	15.8	15.3	14.2	15.4	15.6	15.9	16.0	16.0

Area IV Site | Area III



H
15

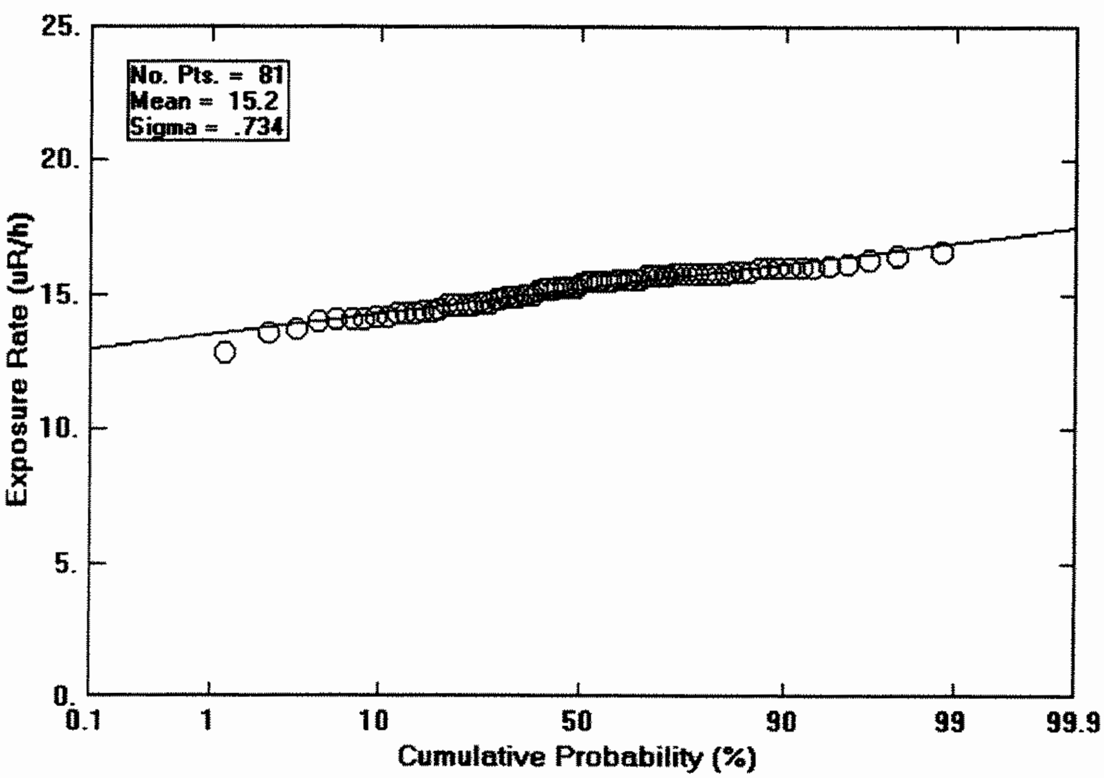


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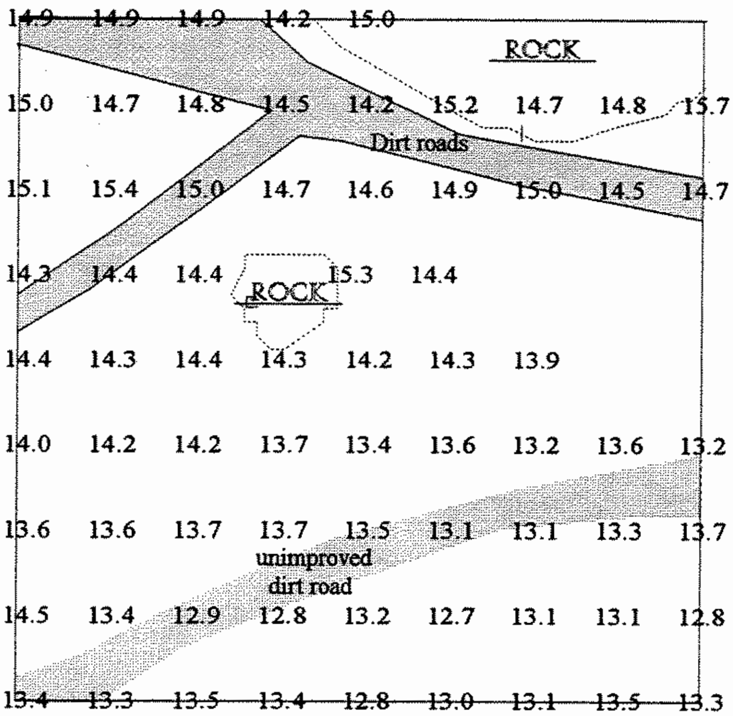
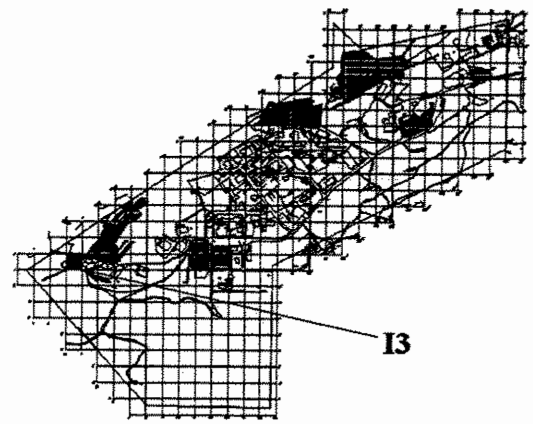
Figure B-62. Ambient Gamma Survey Results - Survey Block I3





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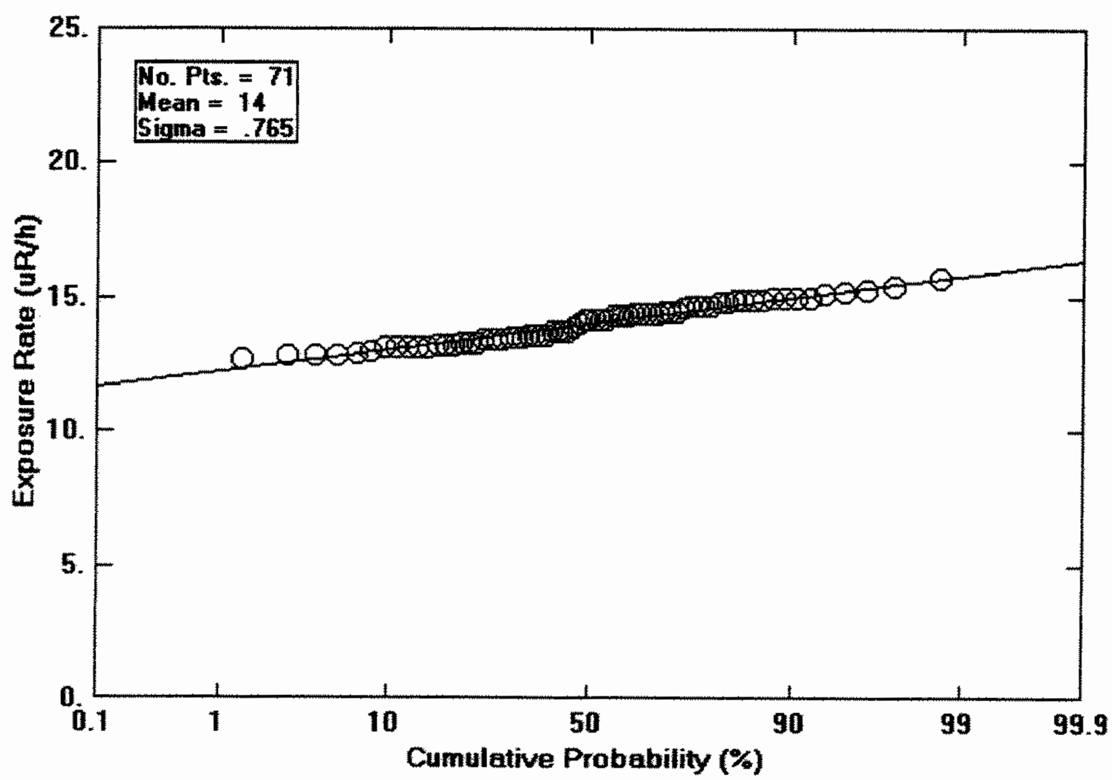

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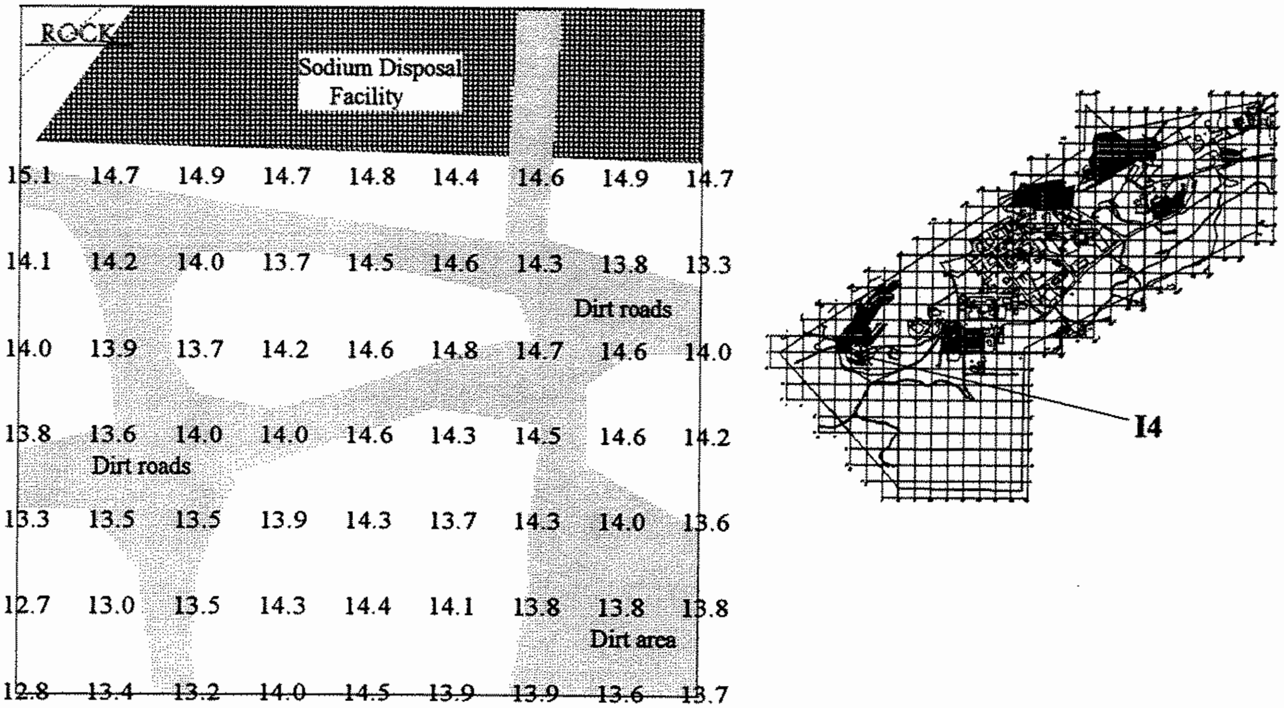
Figure B-63. Ambient Gamma Survey Results - Survey Block I4



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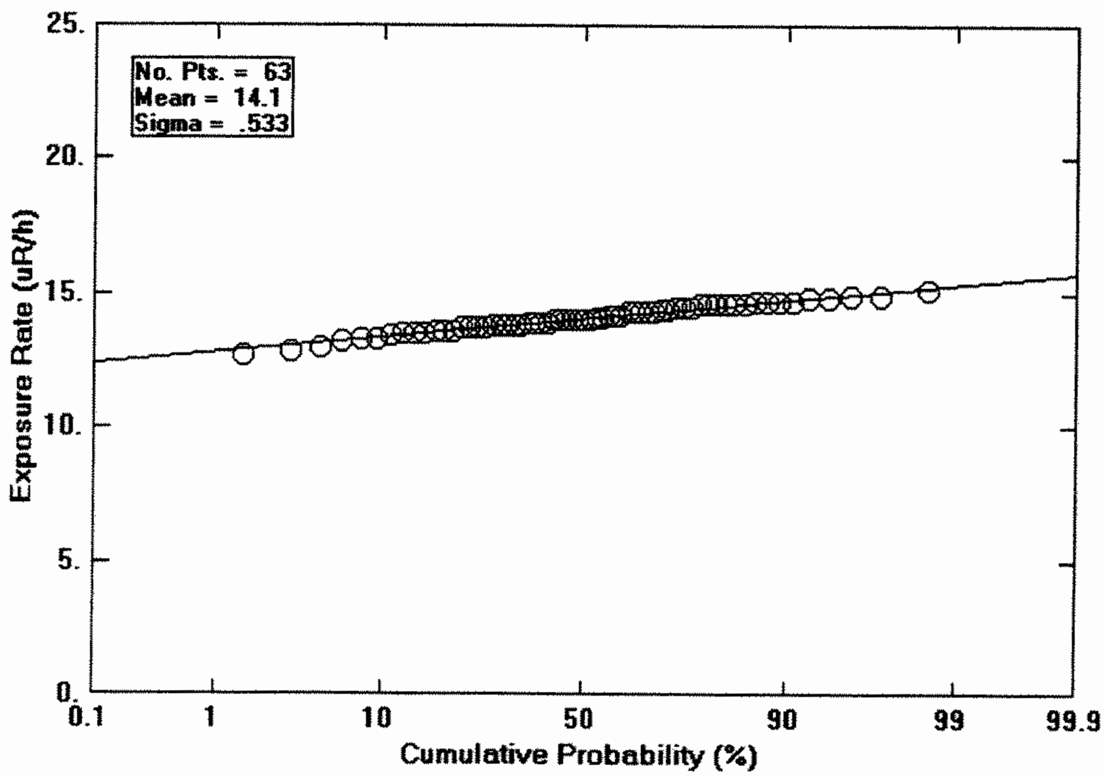

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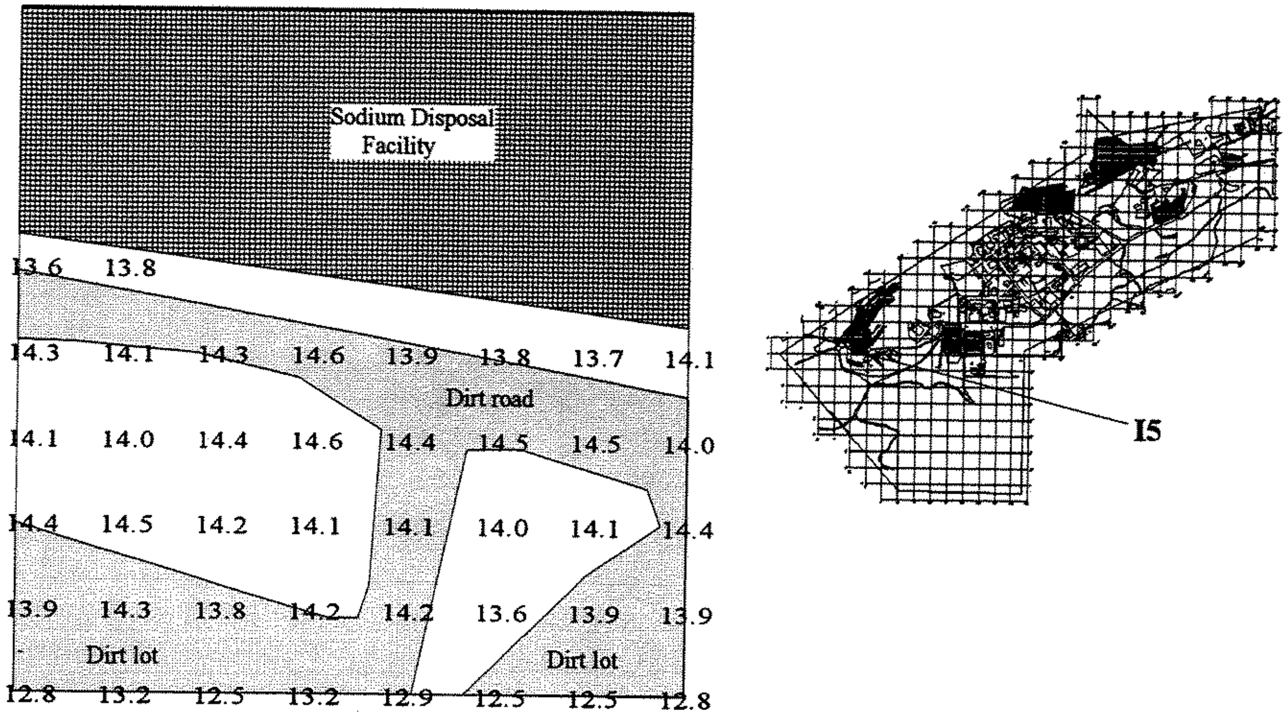
Figure B-64. Ambient Gamma Survey Results - Survey Block I5



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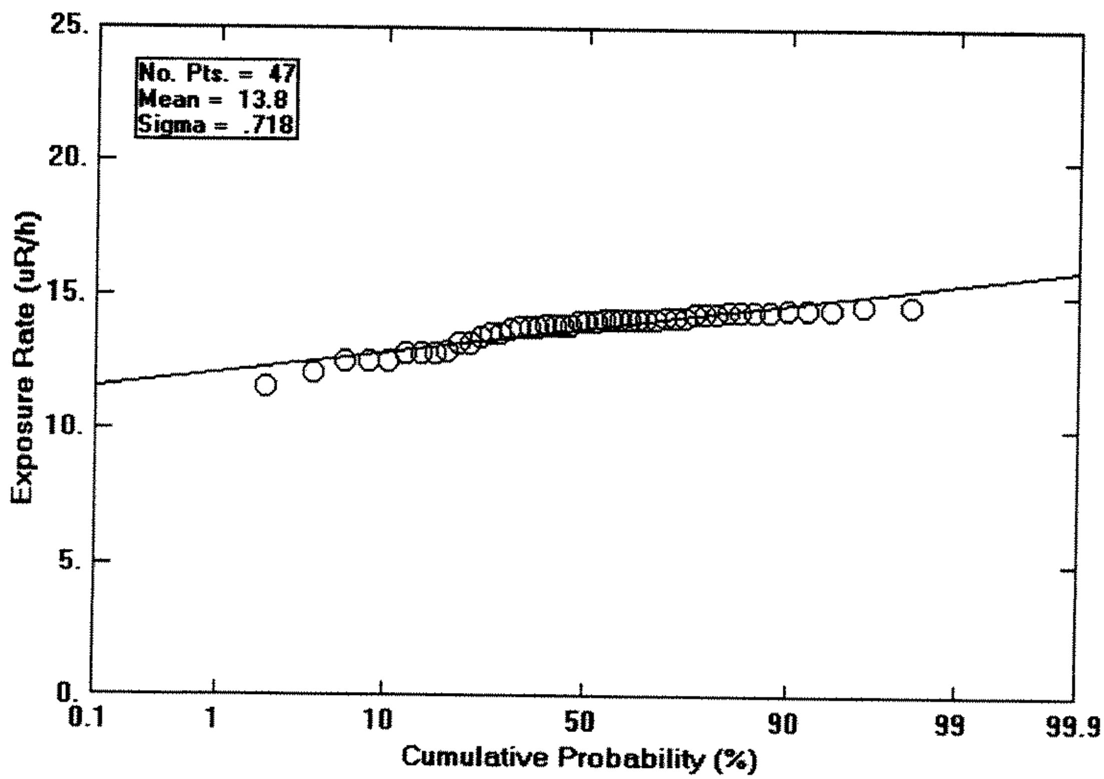

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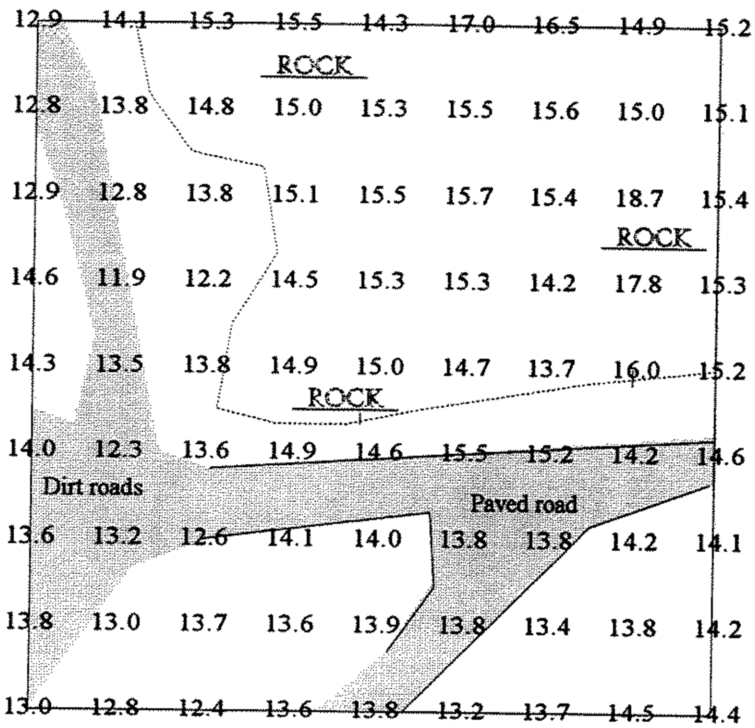
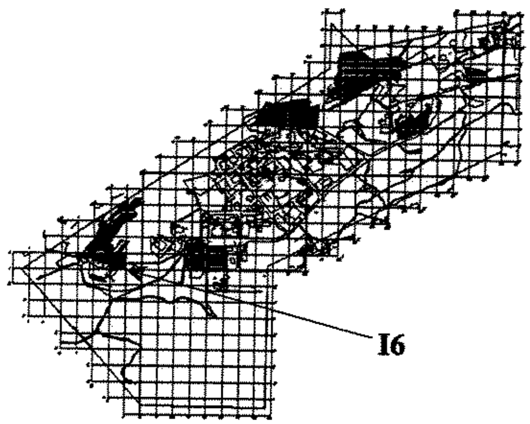
Figure B-65. Ambient Gamma Survey Results - Survey Block I6





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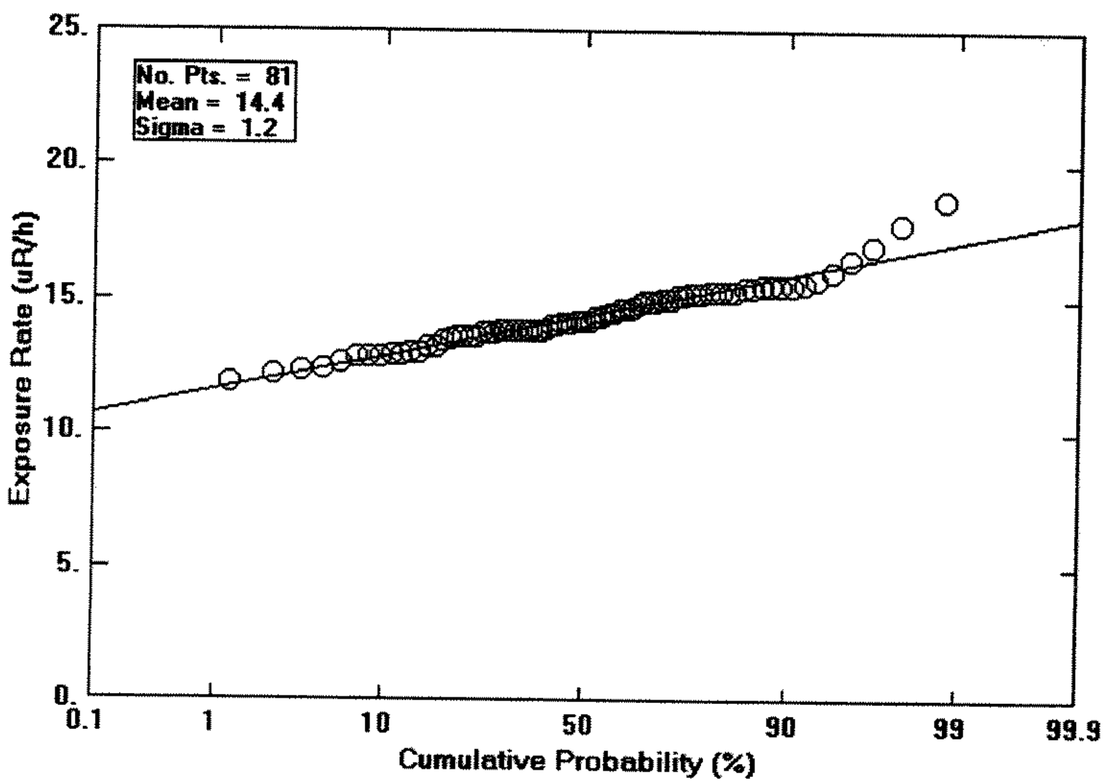

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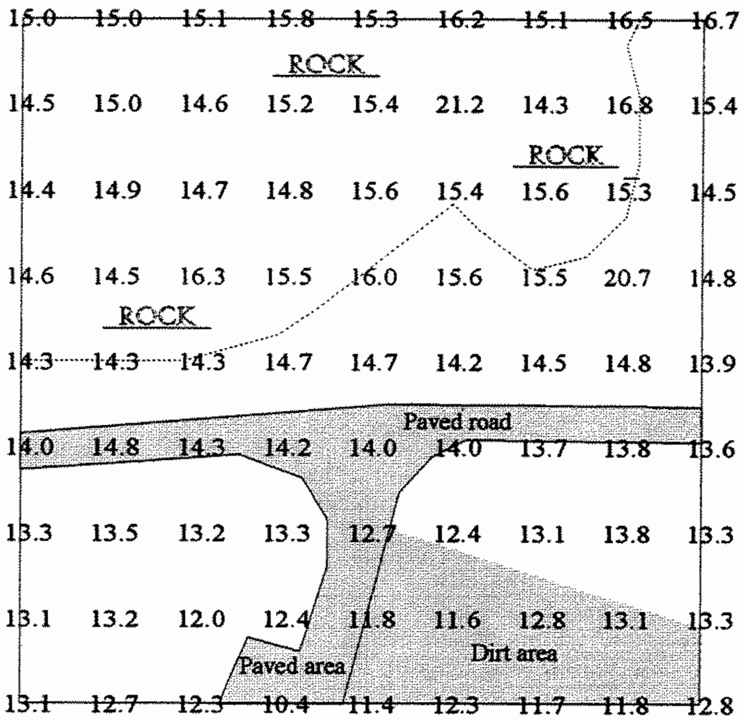
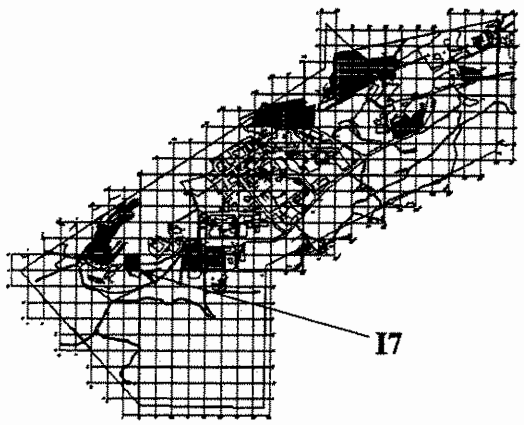
Figure B-66. Ambient Gamma Survey Results - Survey Block I7





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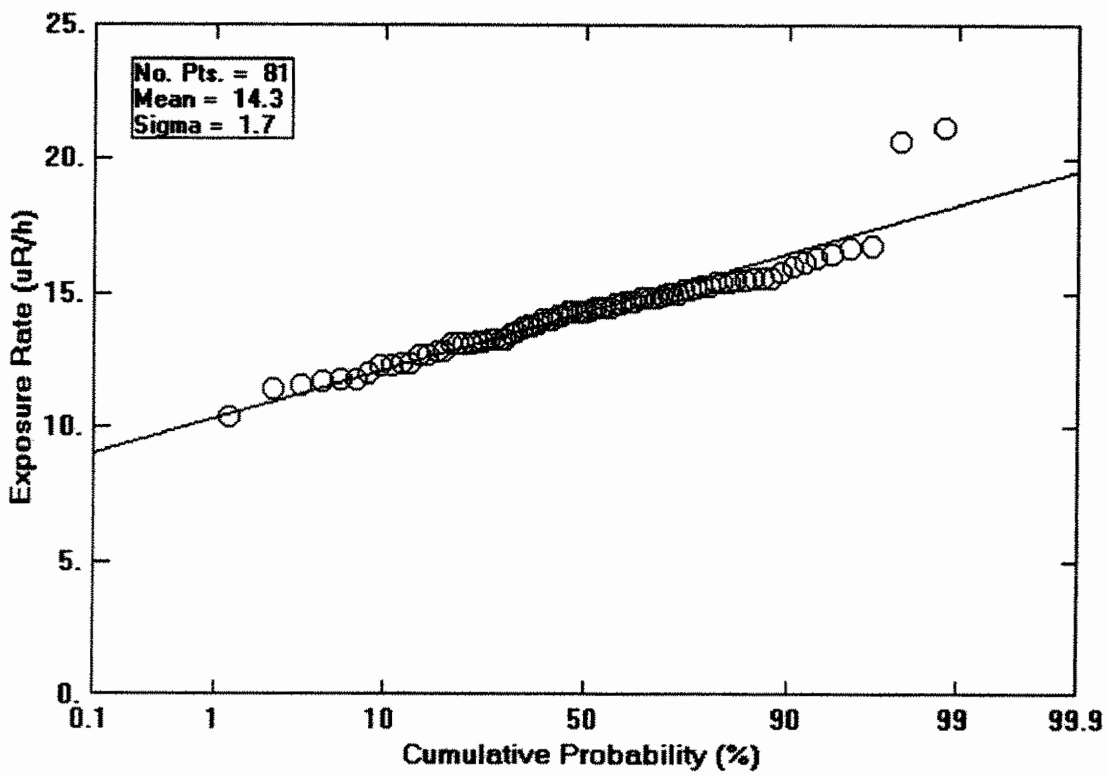

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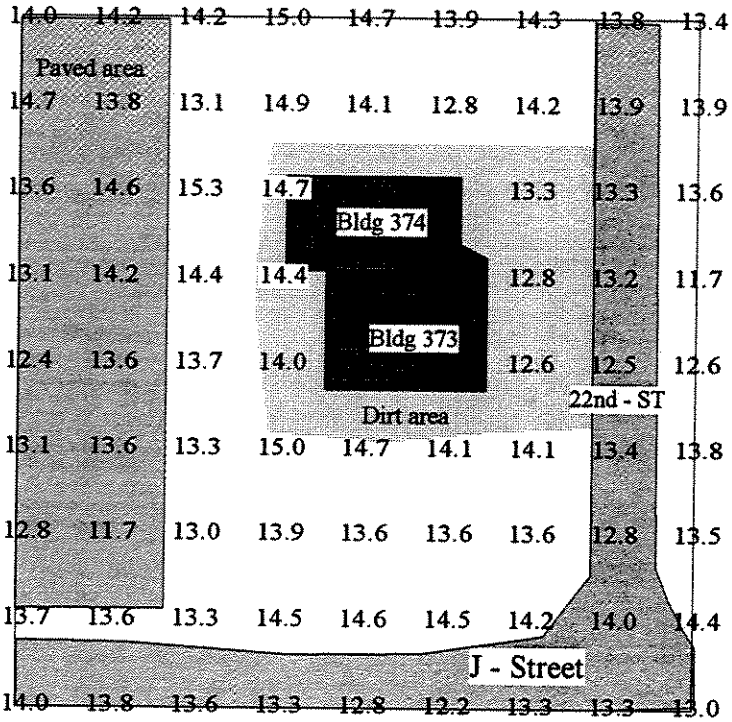
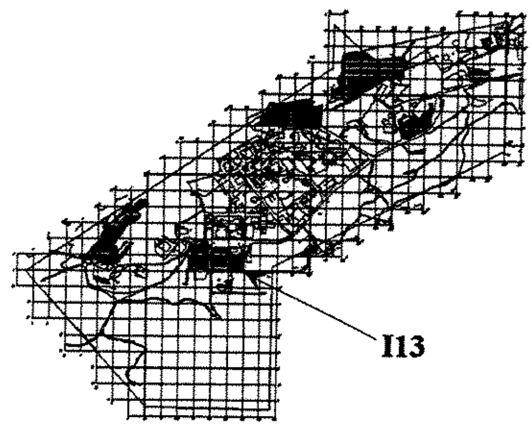
Figure B-67. Ambient Gamma Survey Results - Survey Block I13





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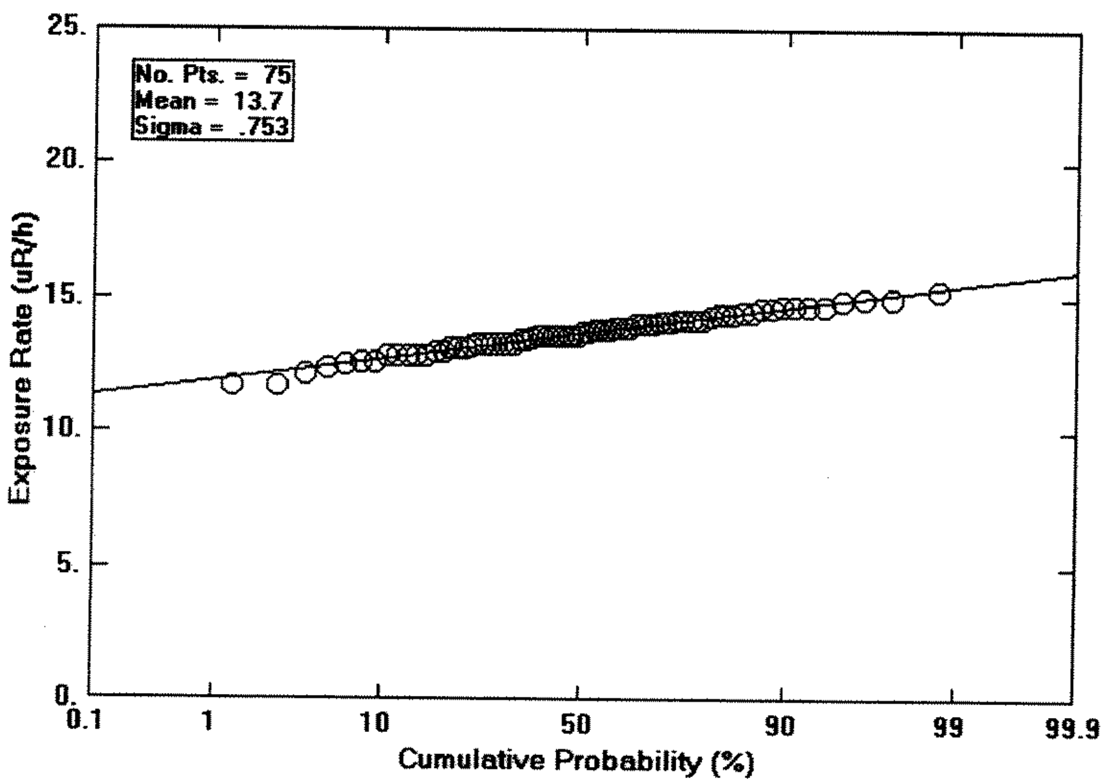

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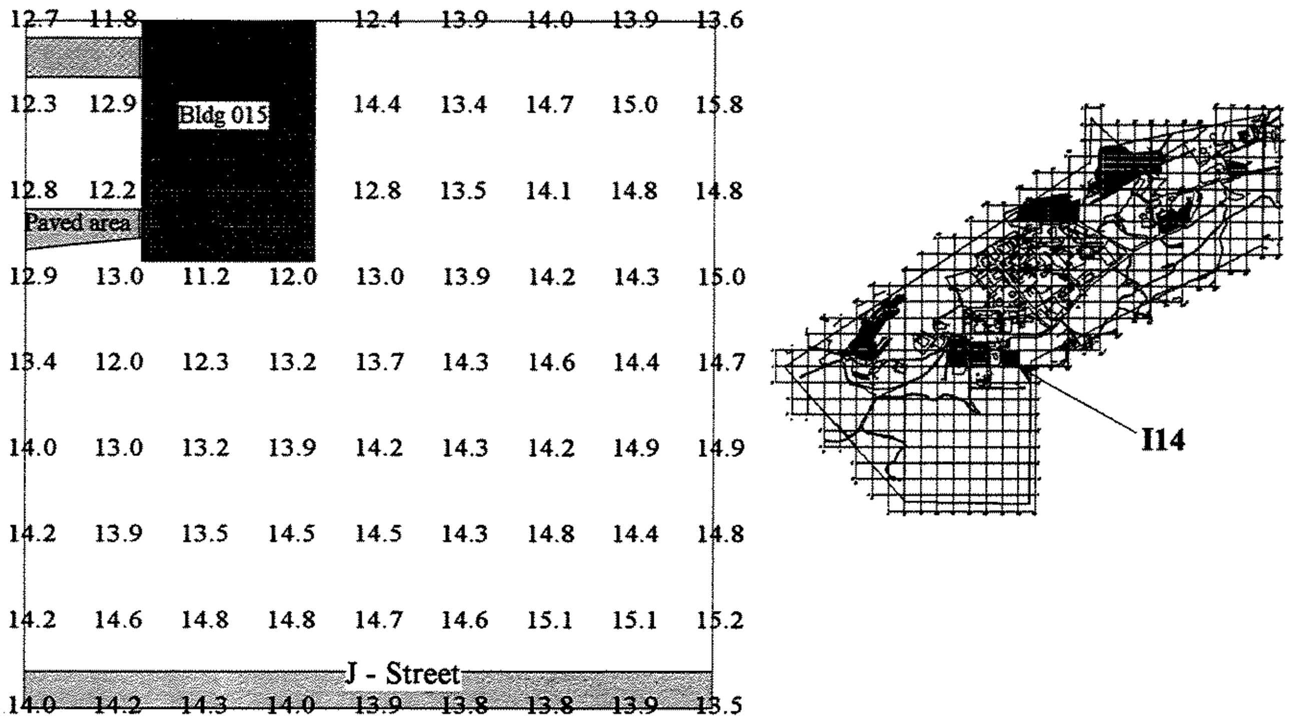
Figure B-68. Ambient Gamma Survey Results - Survey Block I14



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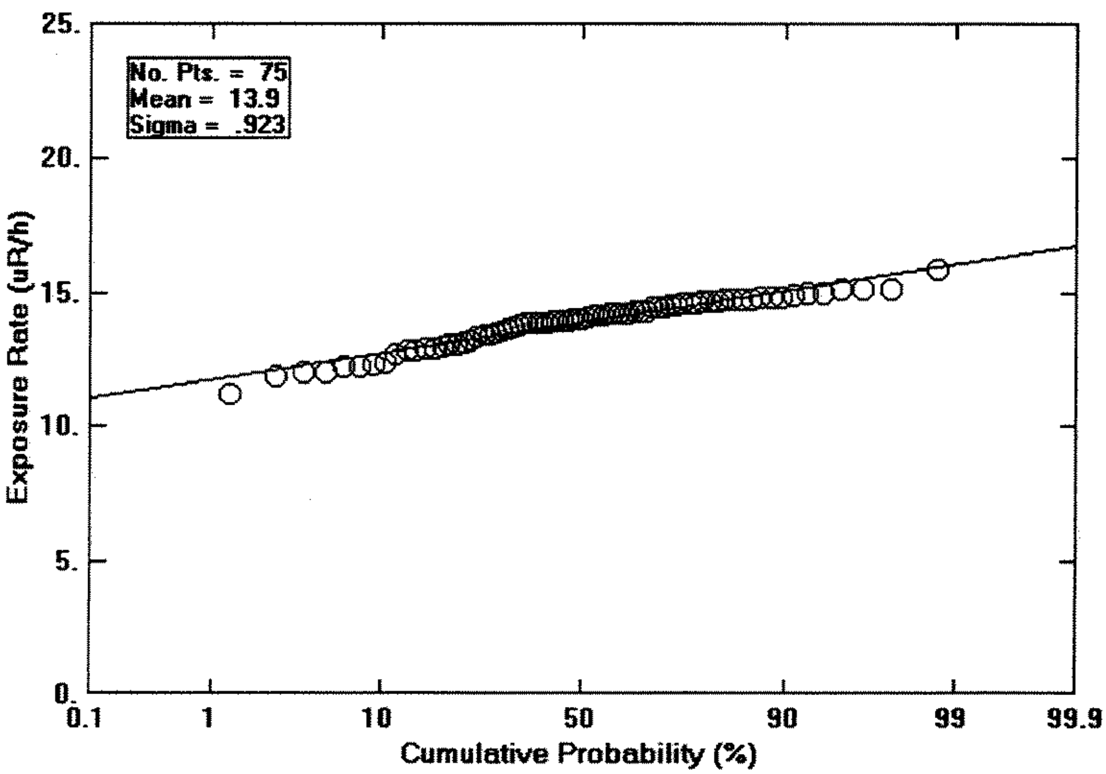

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Figure B-69. Ambient Gamma Survey Results - Survey Block I15

14.2	15.0	15.0	14.9	14.7	14.5	14.7	14.6	15.0
15.3	15.4	15.6	14.9	15.6	15.8	15.6	14.7	16.0
15.3	15.2	14.9	15.1	15.6	15.4	15.3	15.1	15.2
15.5	15.3	16.5	16.1	15.8	15.1	16.2	16.1	16.1
14.7	14.9	14.7	15.3	14.8	14.7	14.9	15.0	14.6
15.3	14.9	15.7	15.3	14.9	15.5	15.3	15.4	14.9
15.3	14.7	15.8	15.1	15.4	15.5	15.0	15.5	15.0
15.6	15.5	15.2	15.2	15.3	15.1	15.2	14.5	15.2
13.8	14.5	14.3	14.1	14.2	14.6	14.4	14.5	14.3

Area IV Site

Area III

J - Street

I

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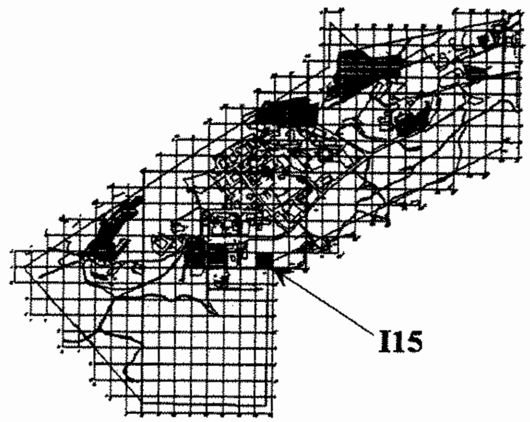

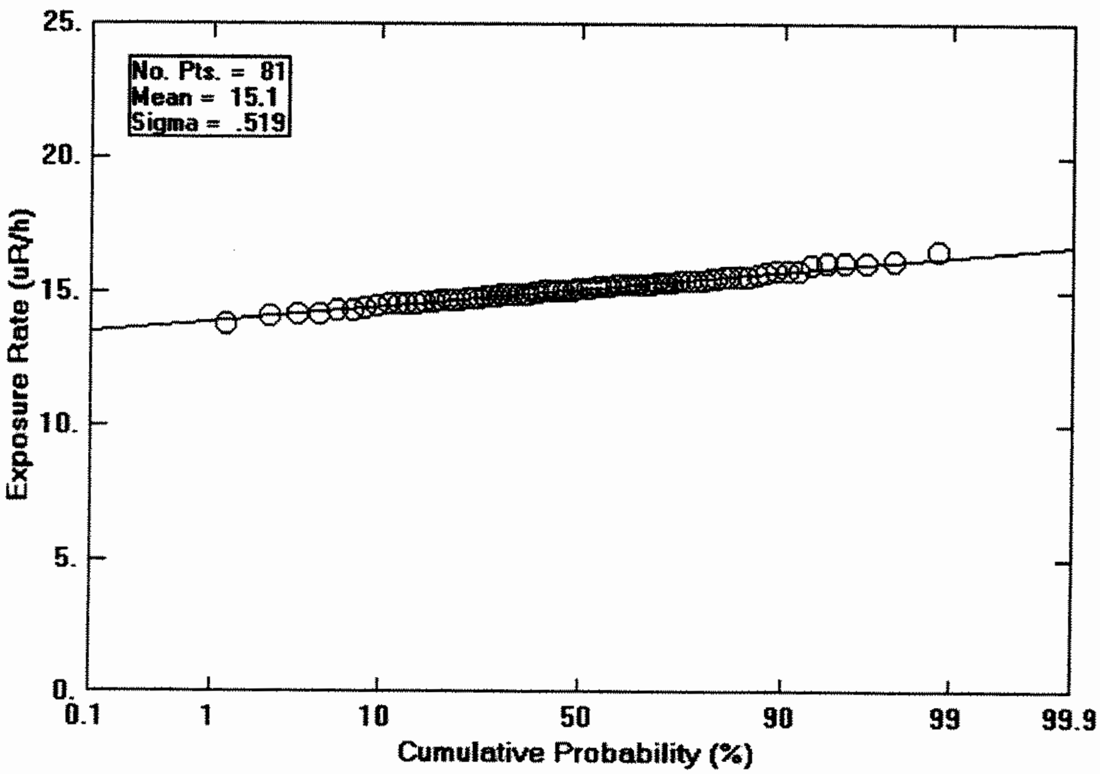

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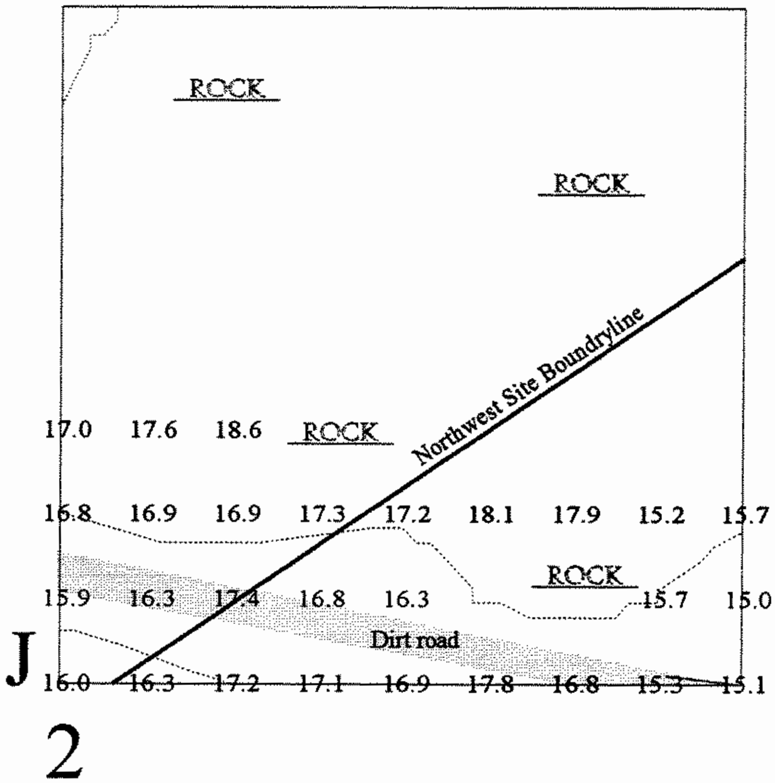
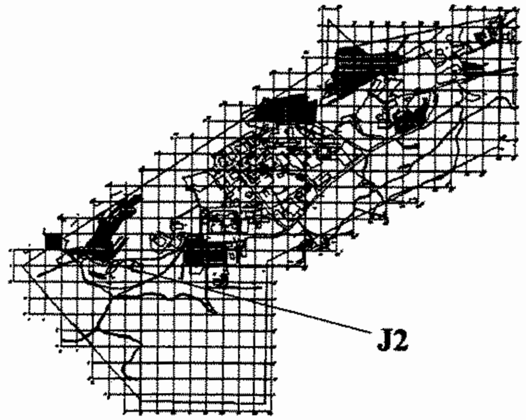
Figure B-70. Ambient Gamma Survey Results - Survey Block J2





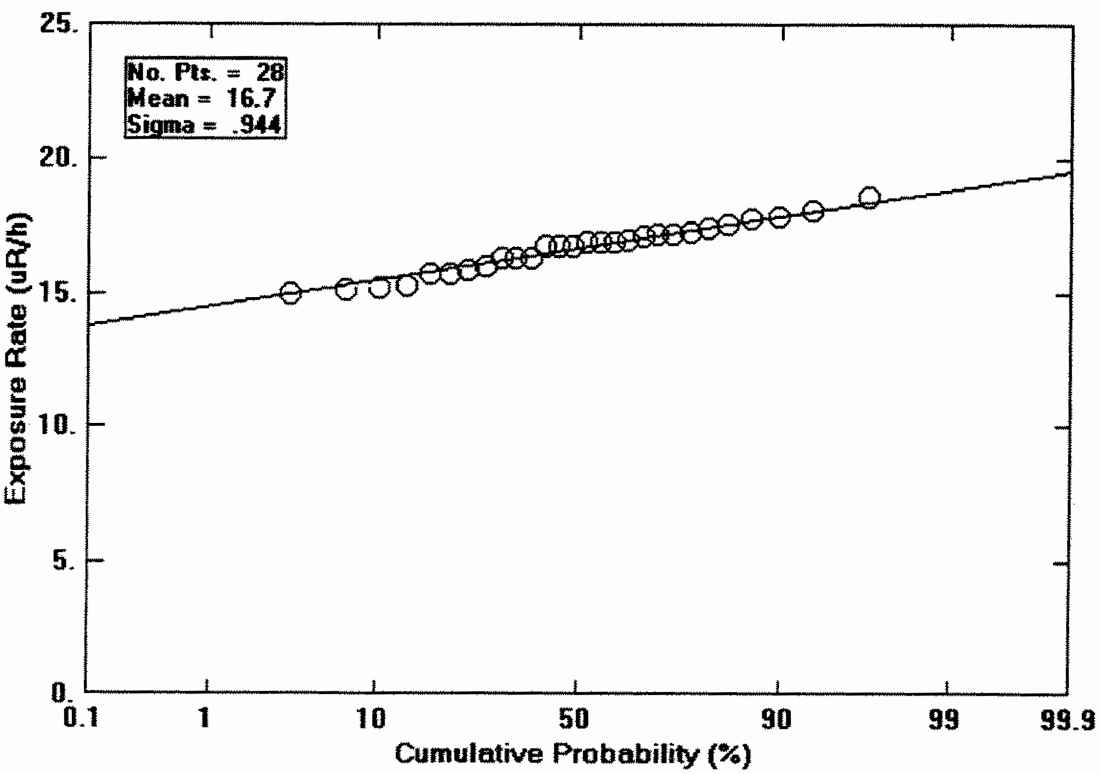


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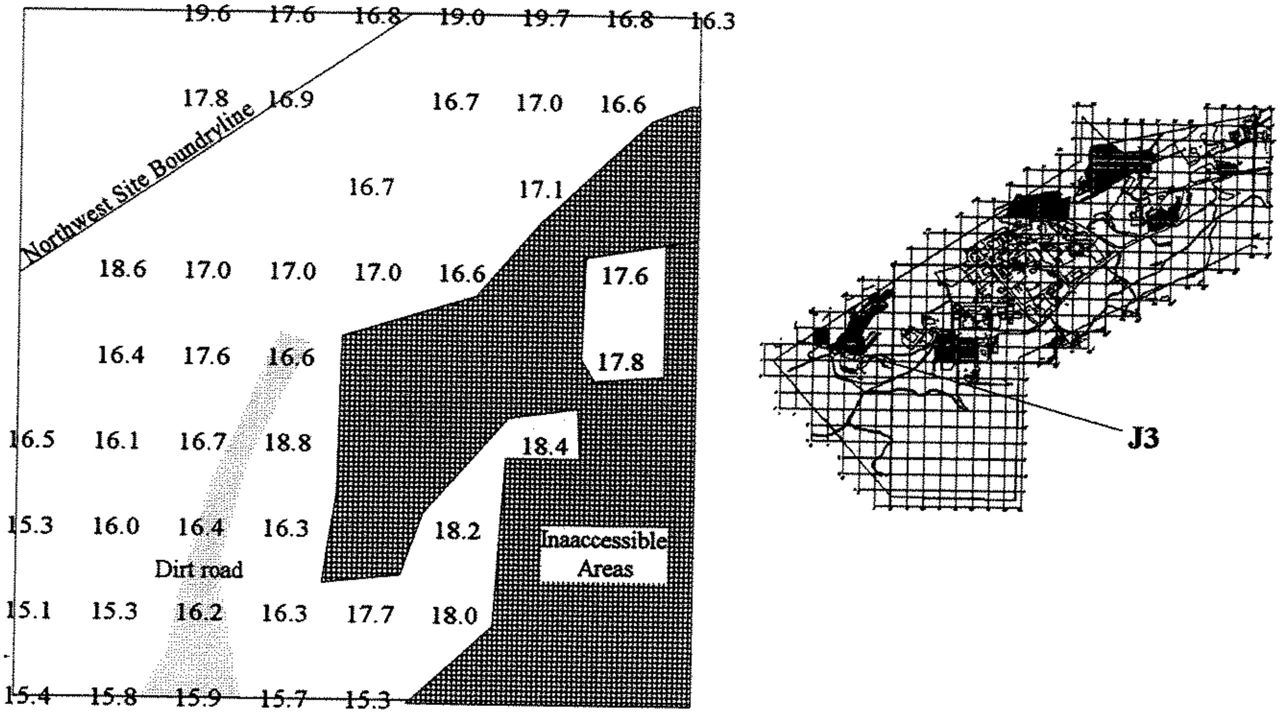
Figure B-71. Ambient Gamma Survey Results - Survey Block J3



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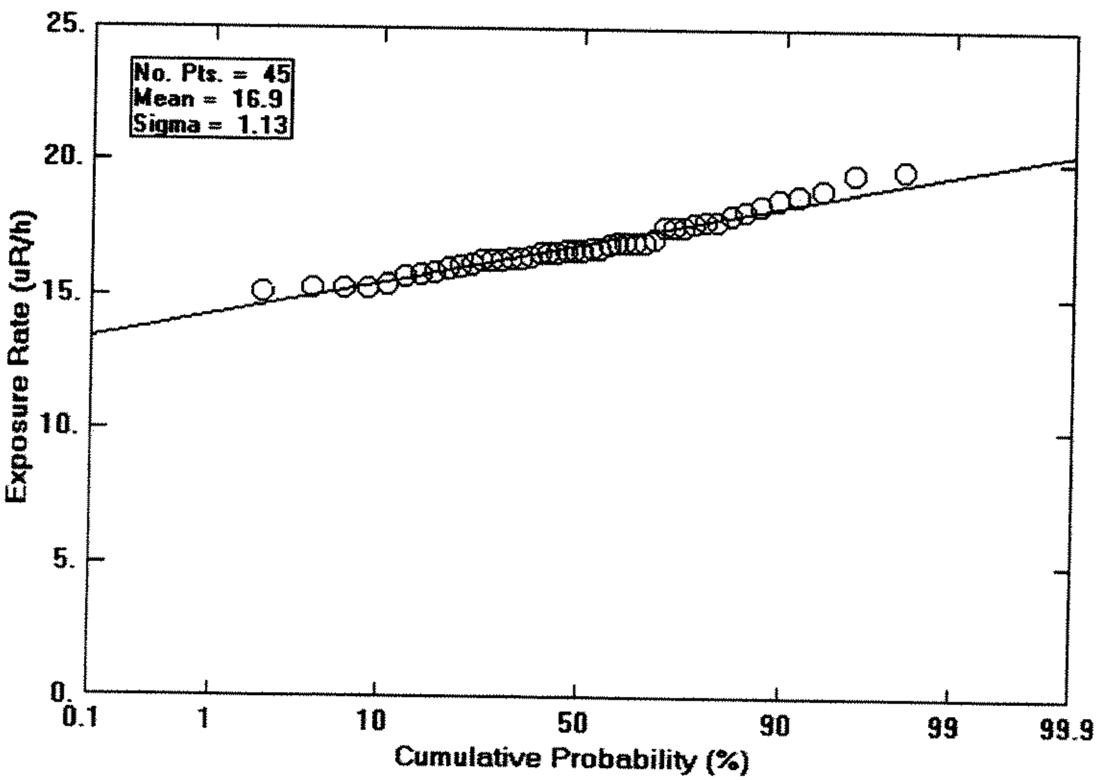

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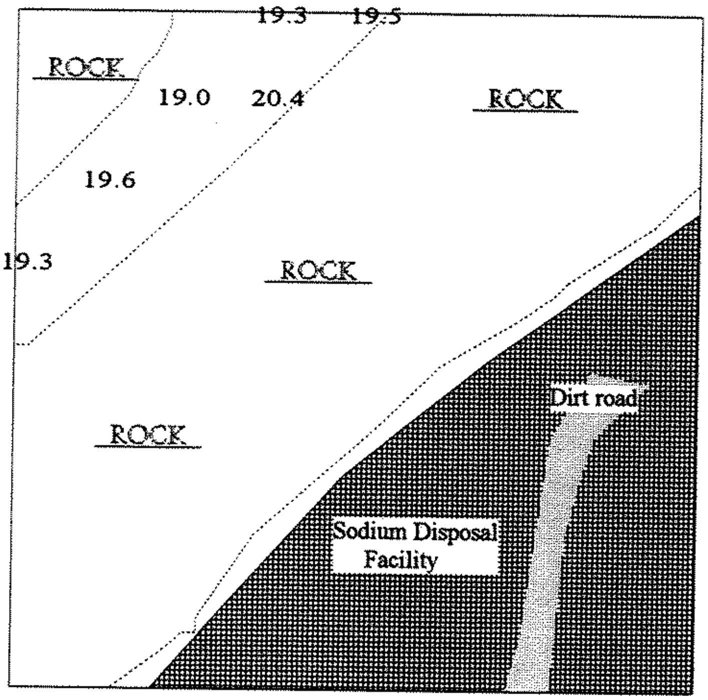
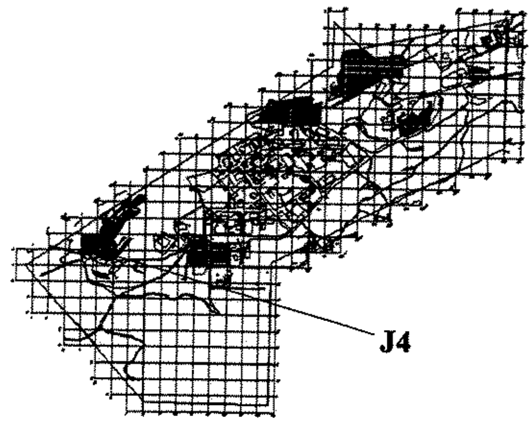
Figure B-72. Ambient Gamma Survey Results - Survey Block J4





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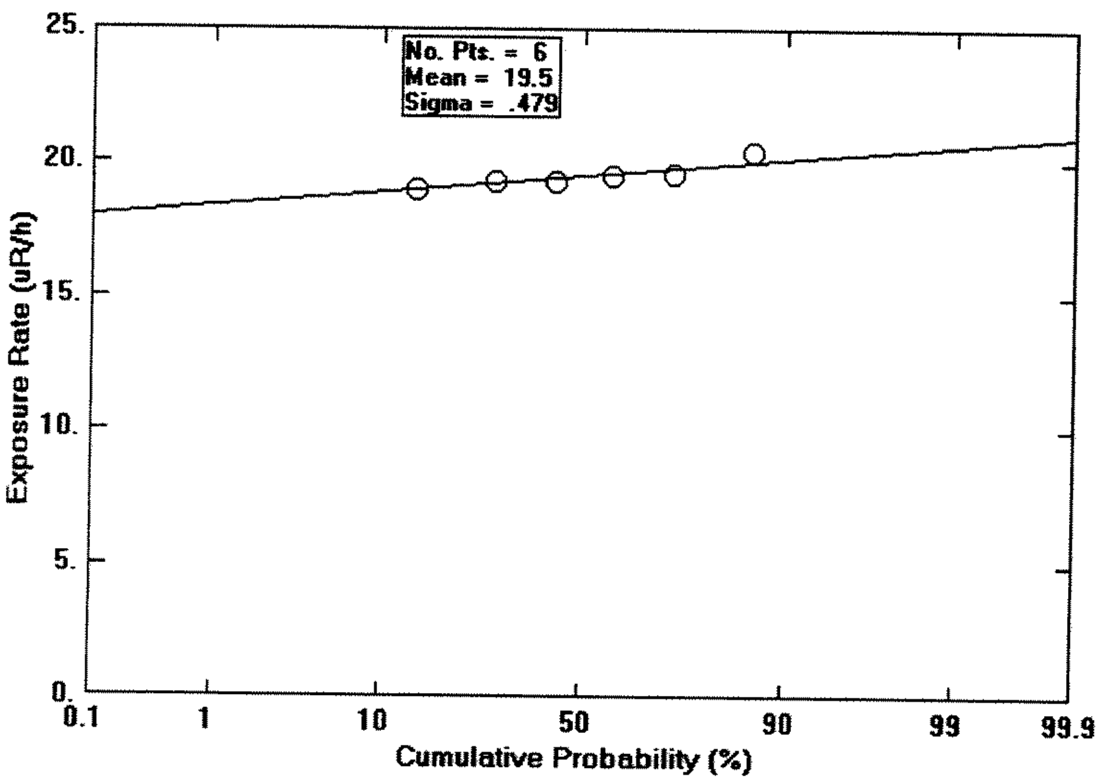

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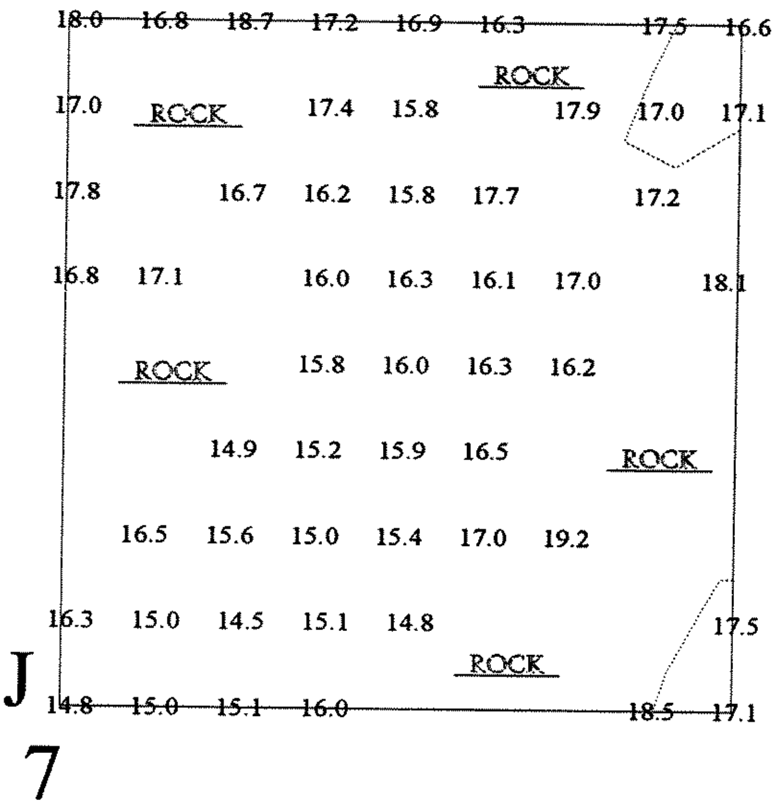
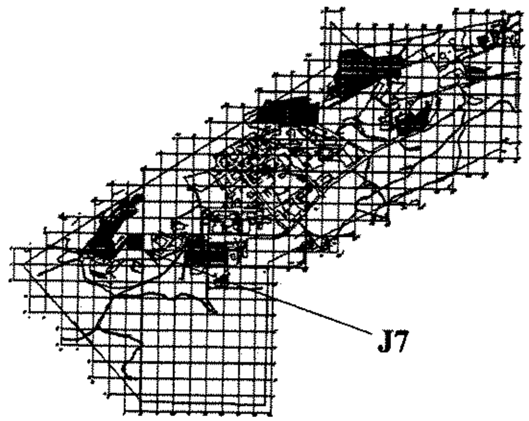
Figure B-73. Ambient Gamma Survey Results - Survey Block J7





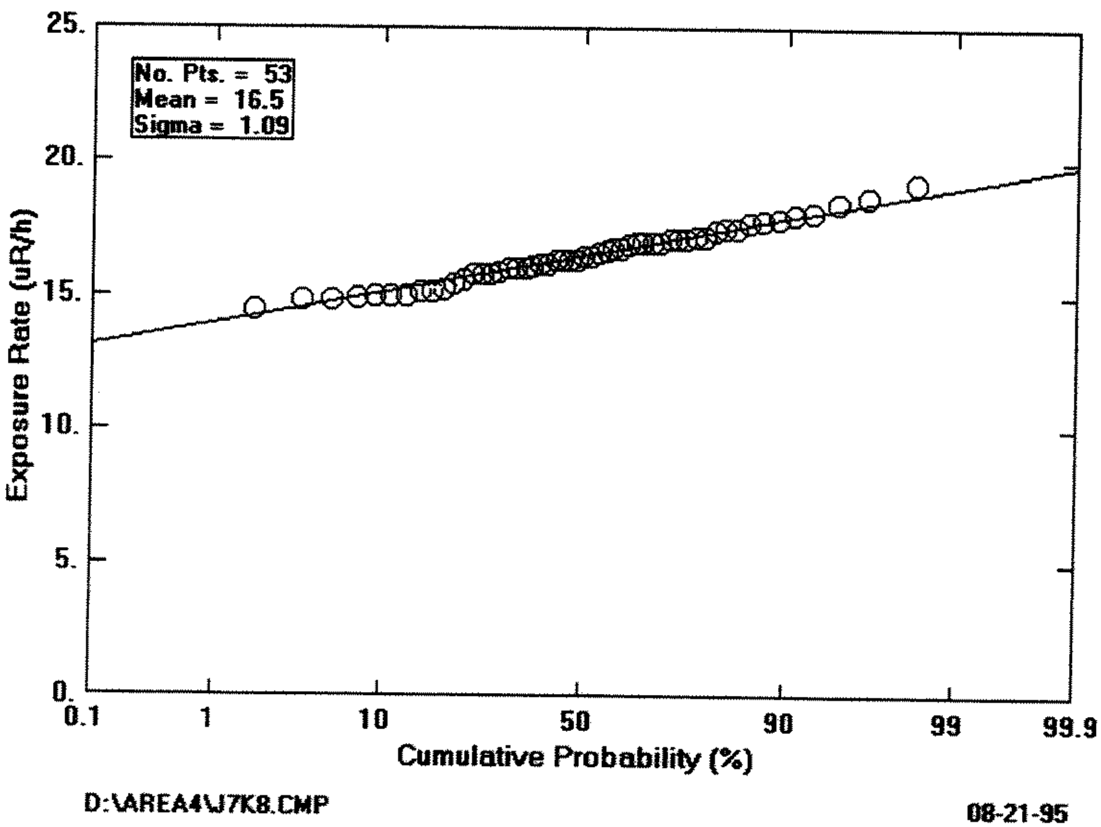
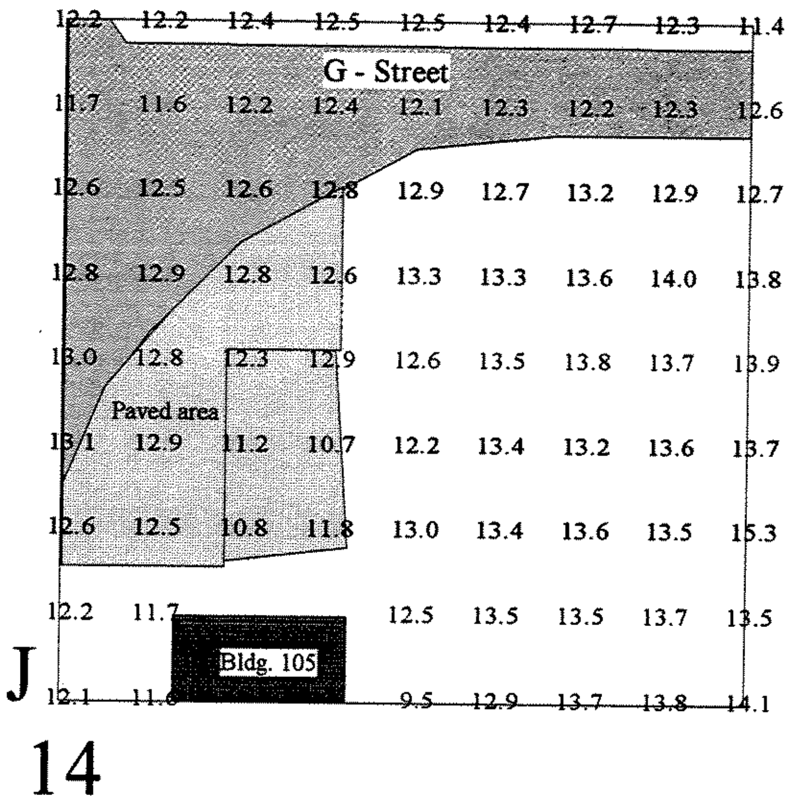
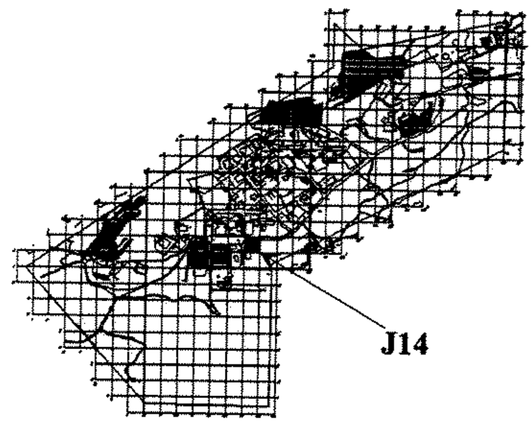


Figure B-74. Ambient Gamma Survey Results - Survey Block J14





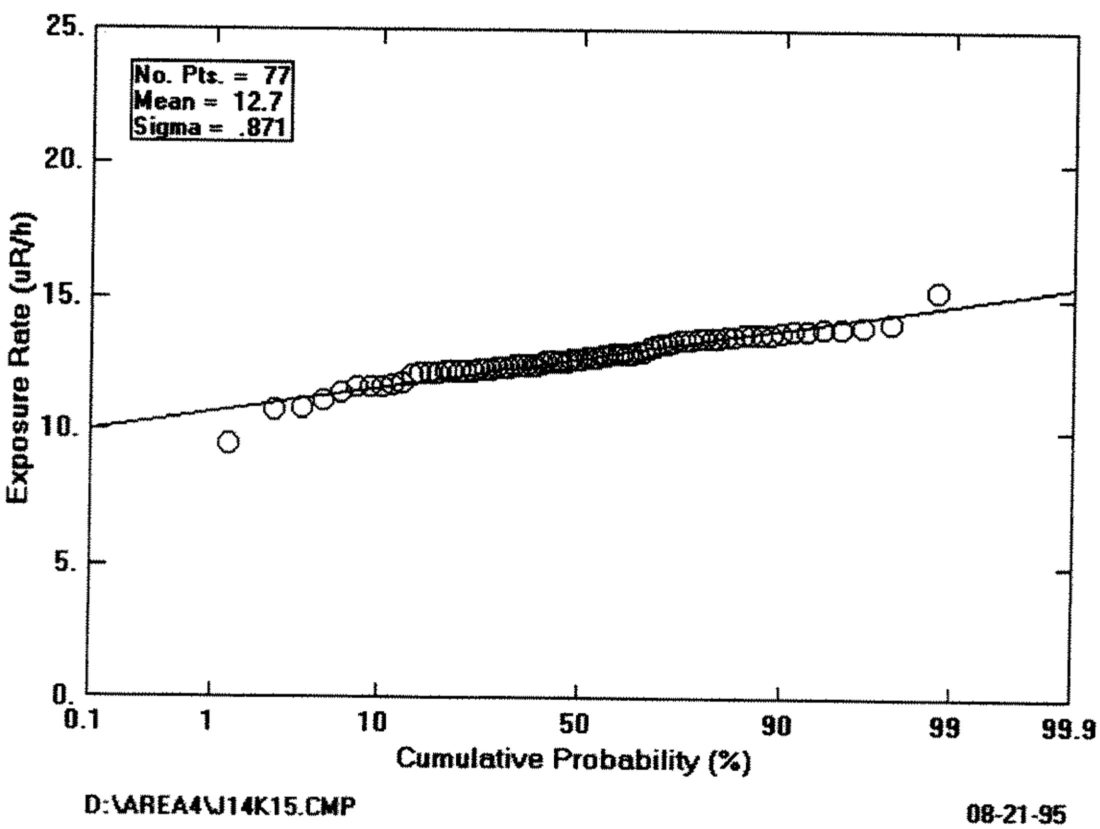
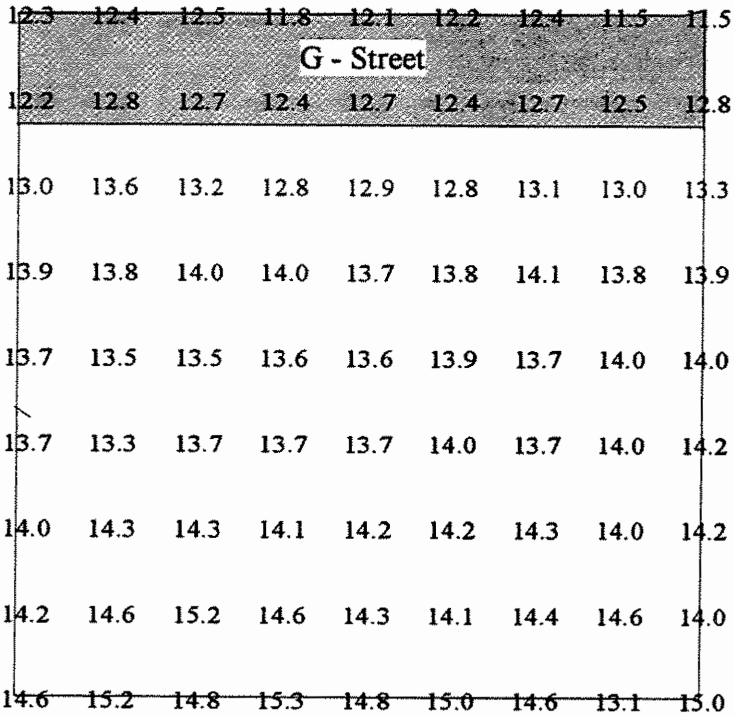
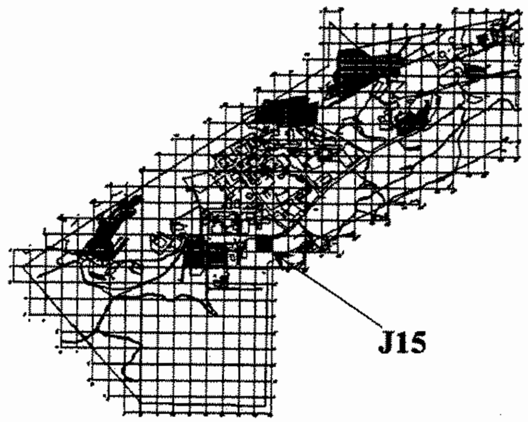


Figure B-75. Ambient Gamma Survey Results - Survey Block J15





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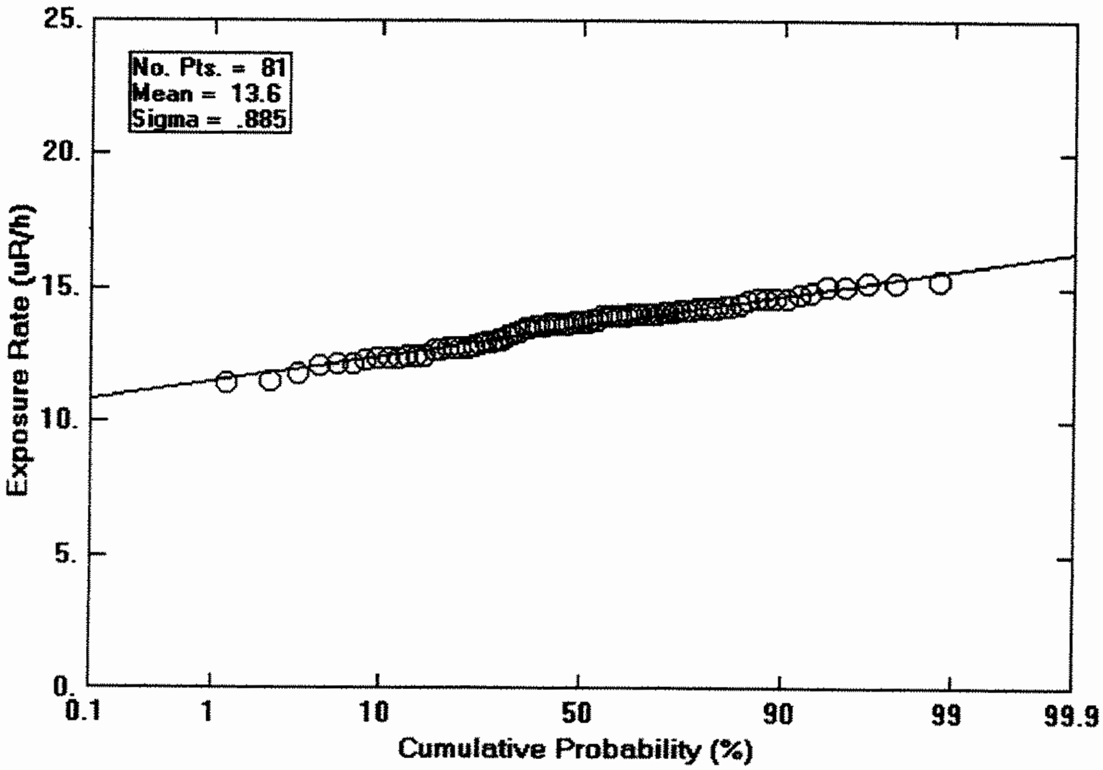

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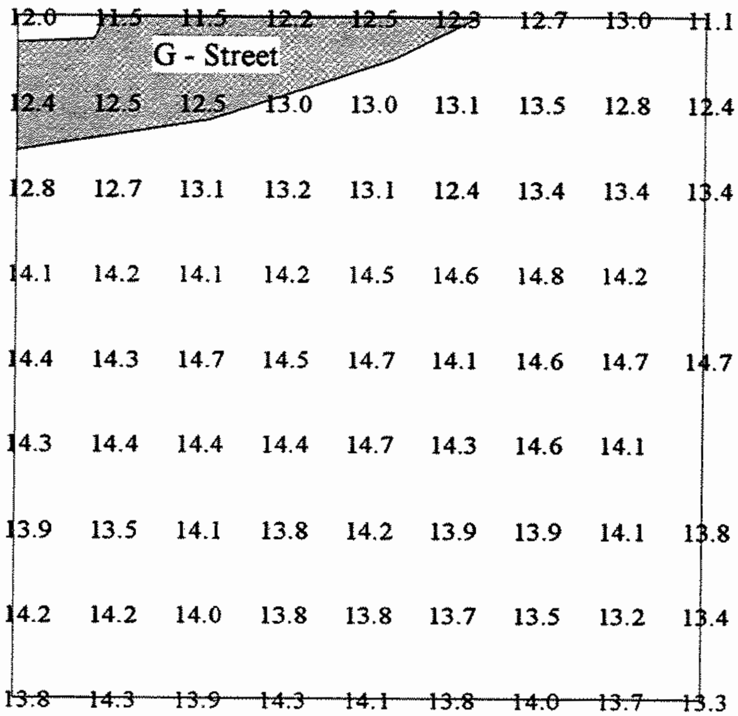
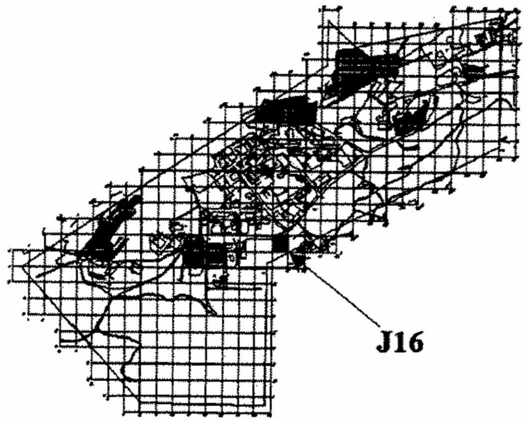
Figure B-76. Ambient Gamma Survey Results - Survey Block J16





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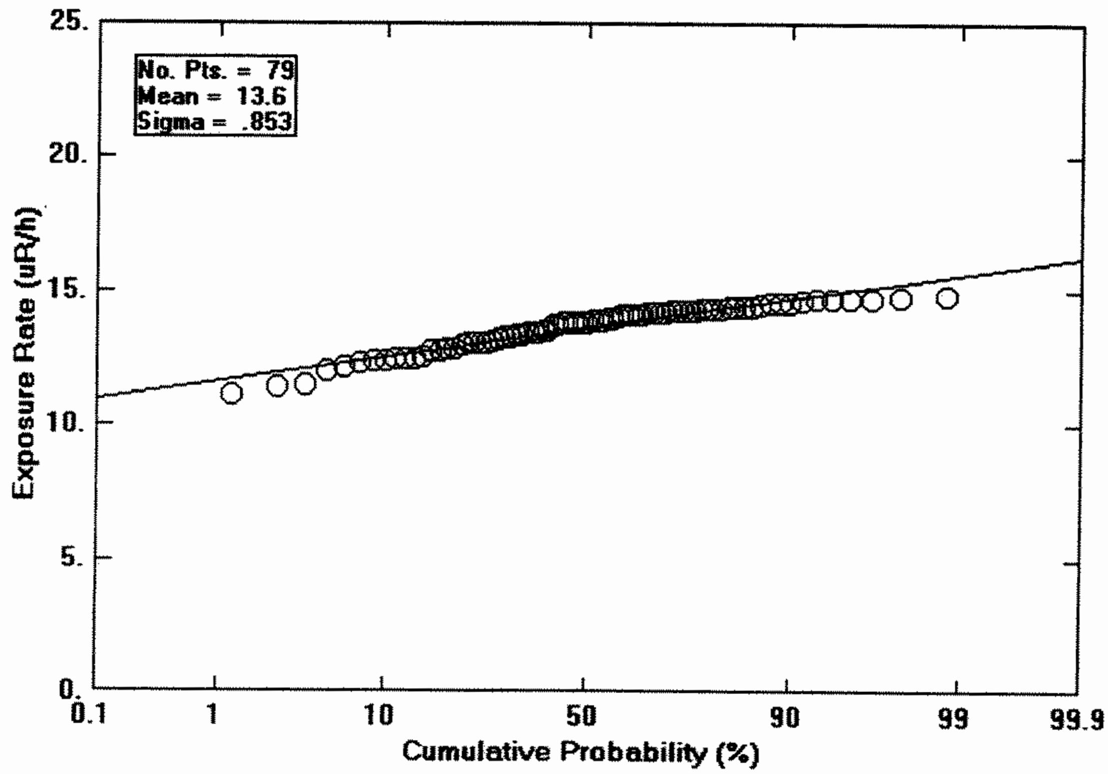

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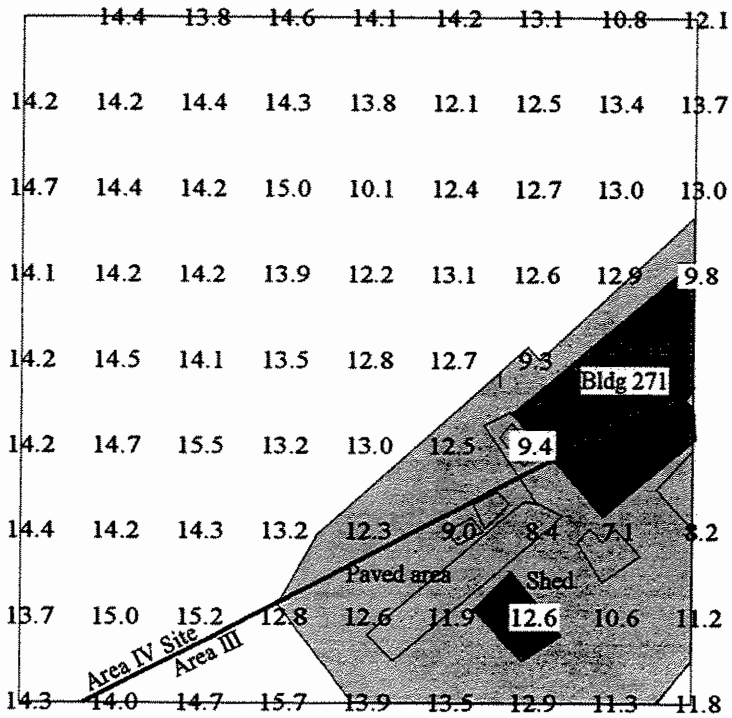
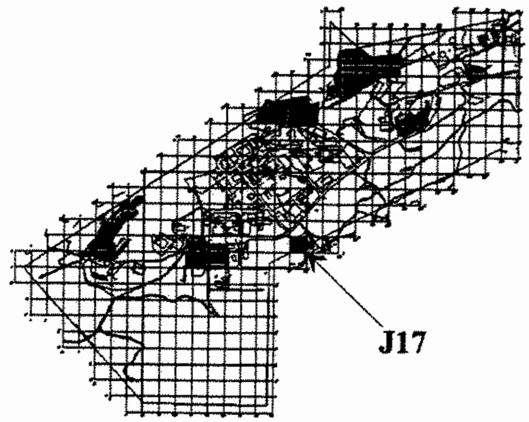
Figure B-77. Ambient Gamma Survey Results - Survey Block J17





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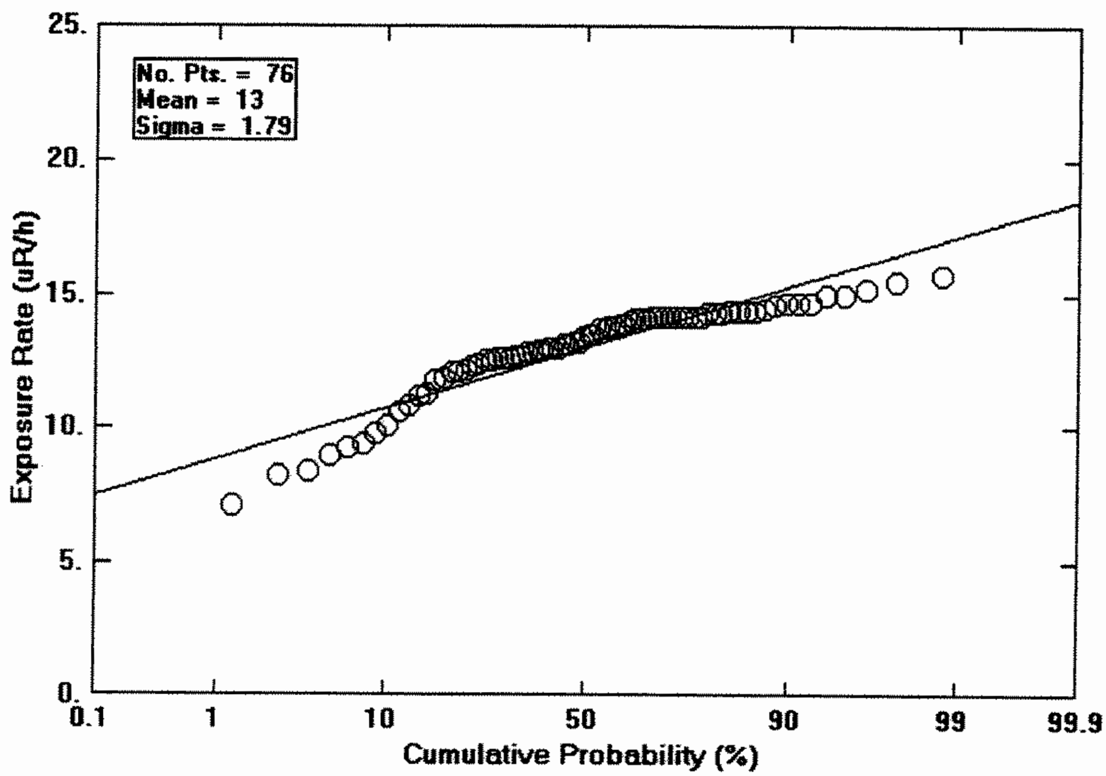

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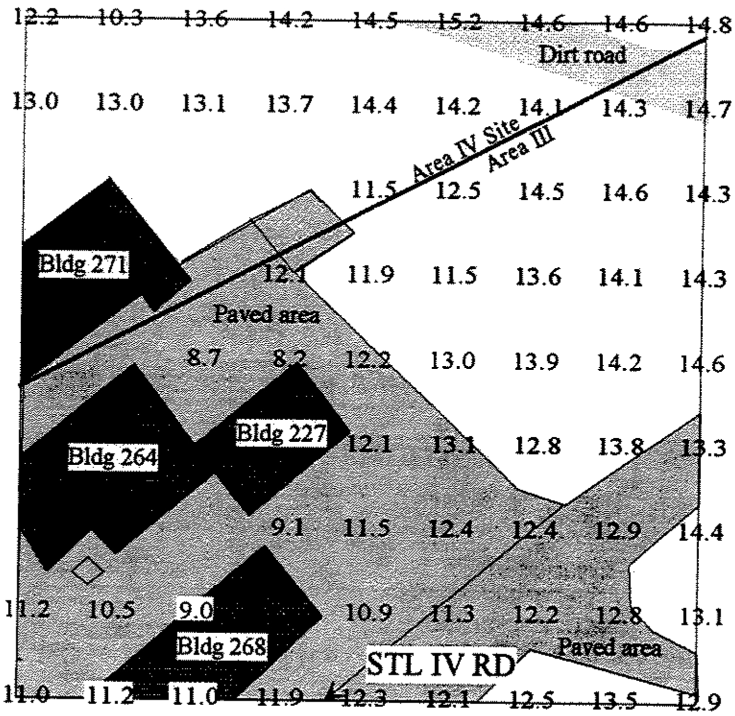
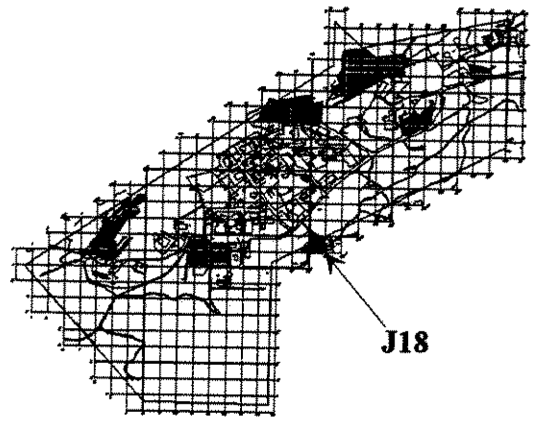
Figure B-78. Ambient Gamma Survey Results - Survey Block J18





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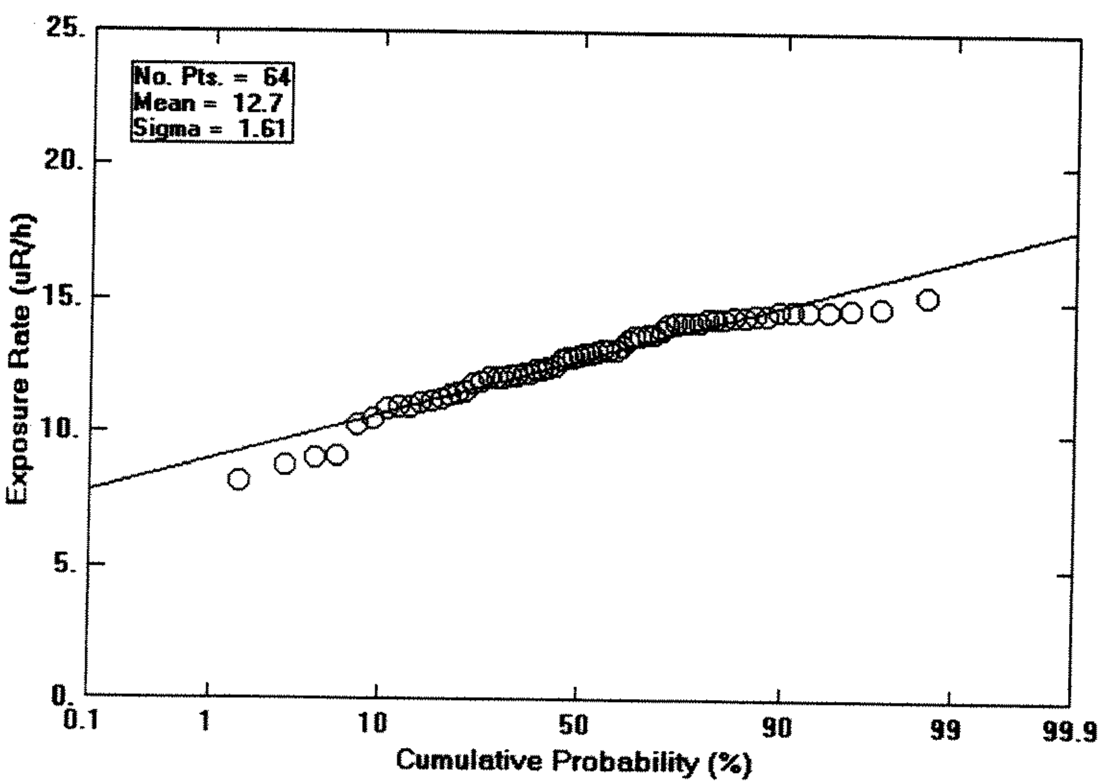

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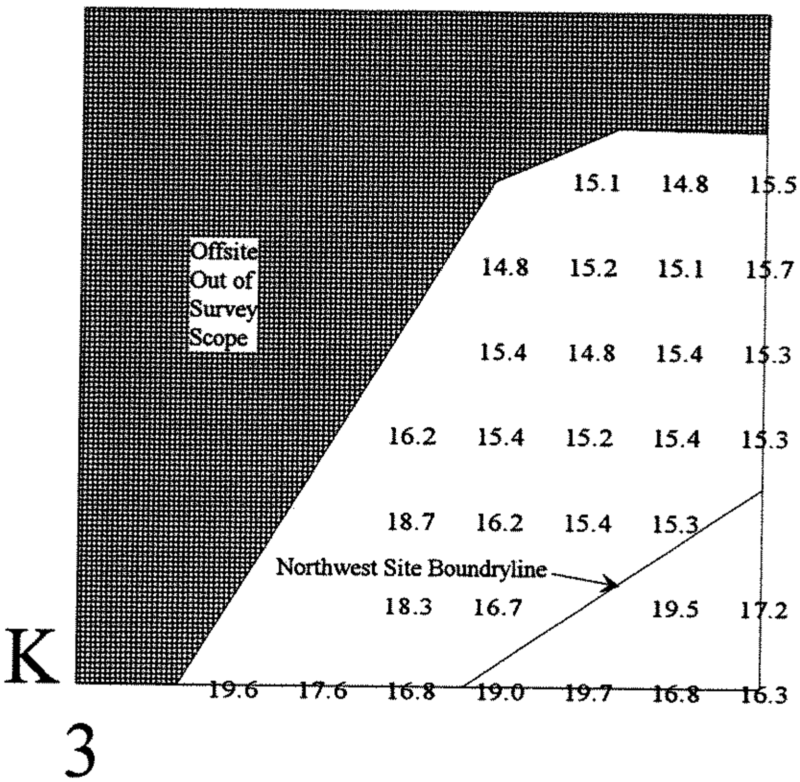
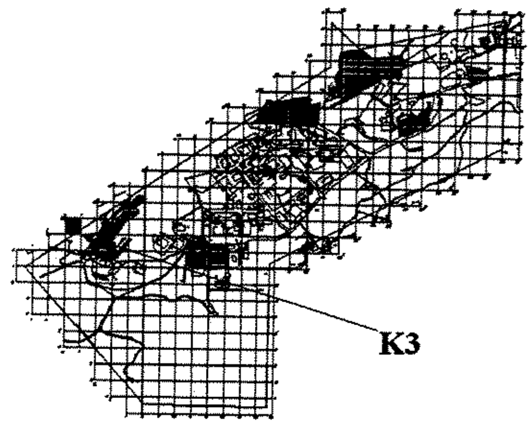
Figure B-79. Ambient Gamma Survey Results - Survey Block K3





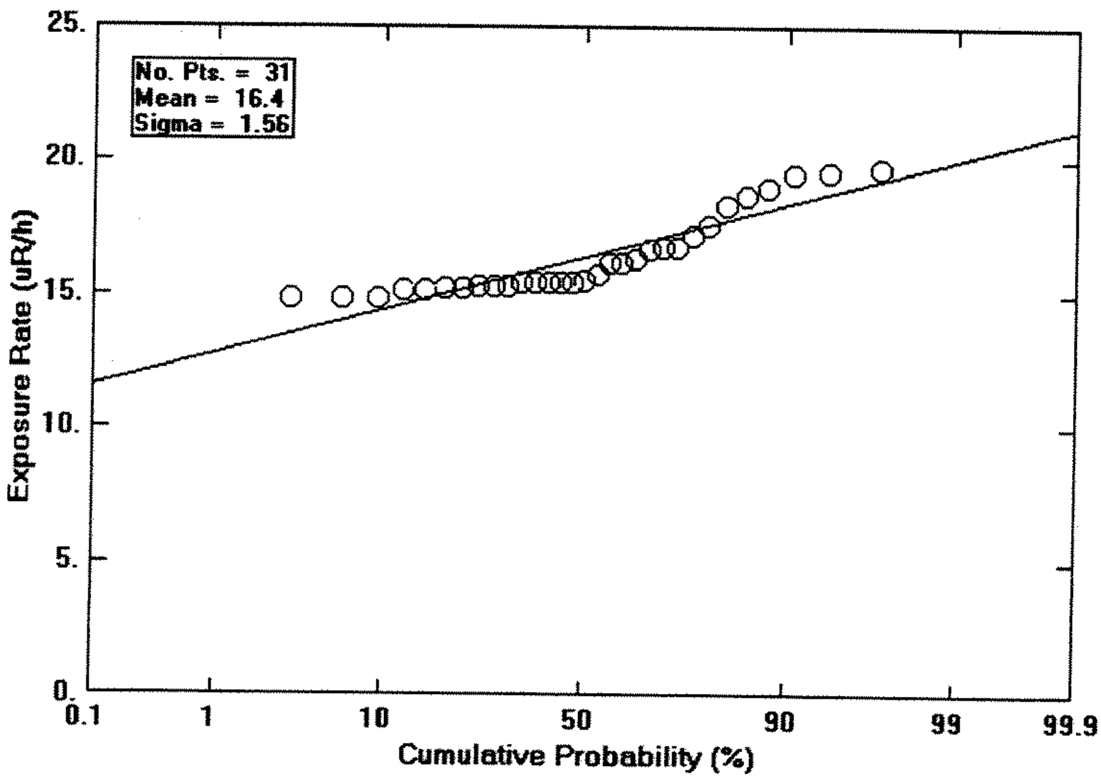


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Figure B-80. Ambient Gamma Survey Results - Survey Block K4

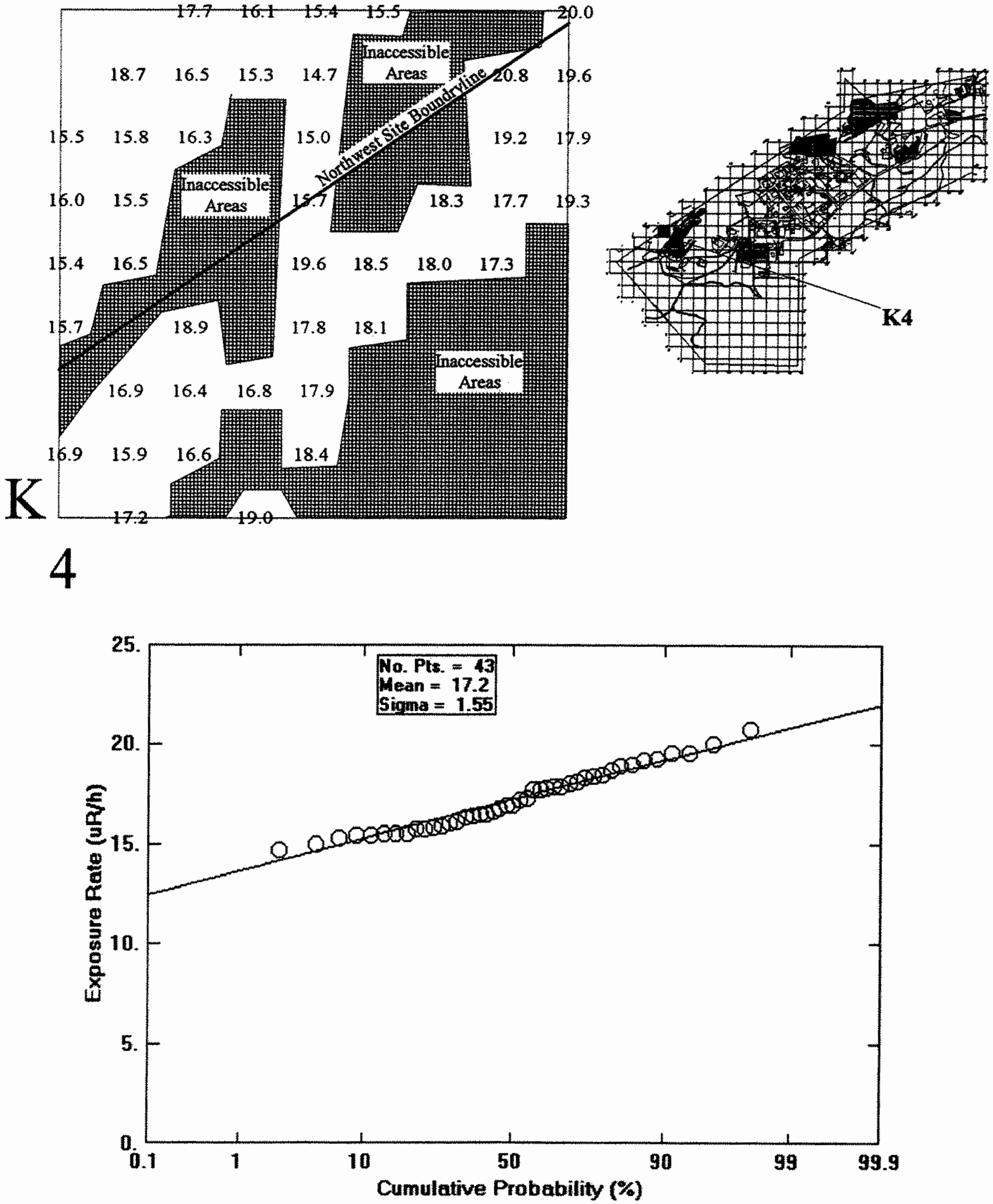

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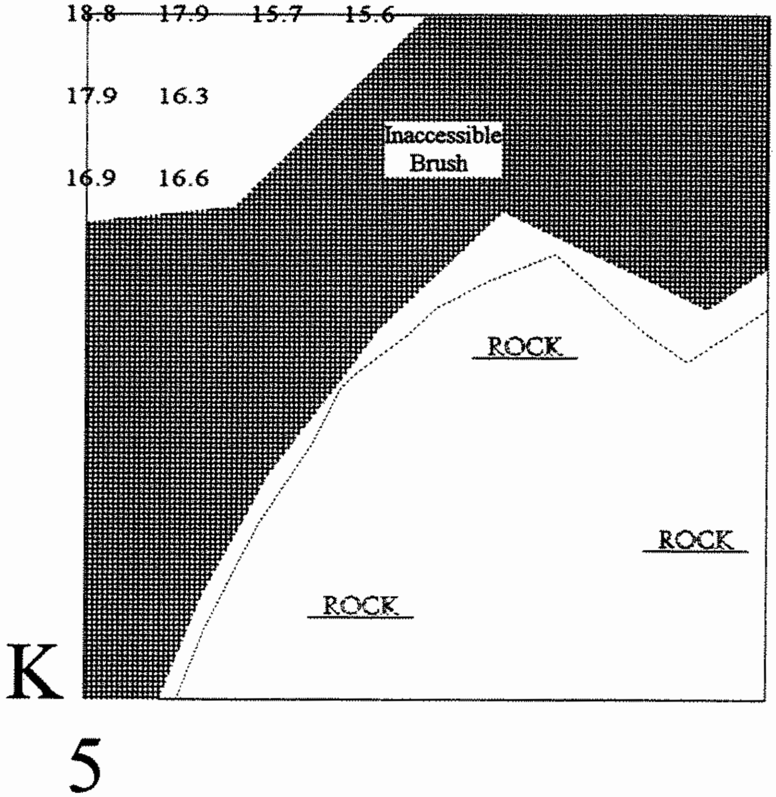
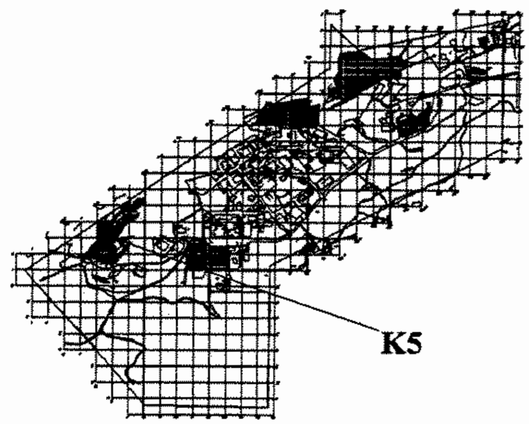
Figure B-81. Ambient Gamma Survey Results - Survey Block K5





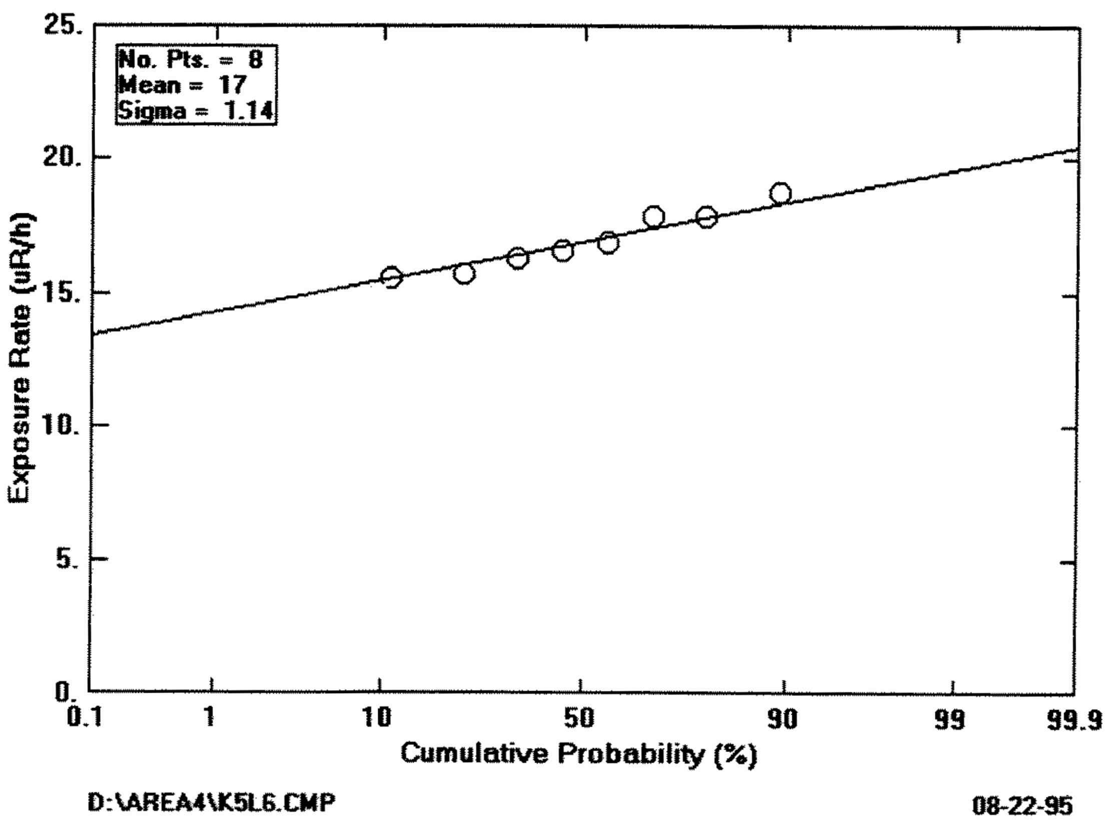
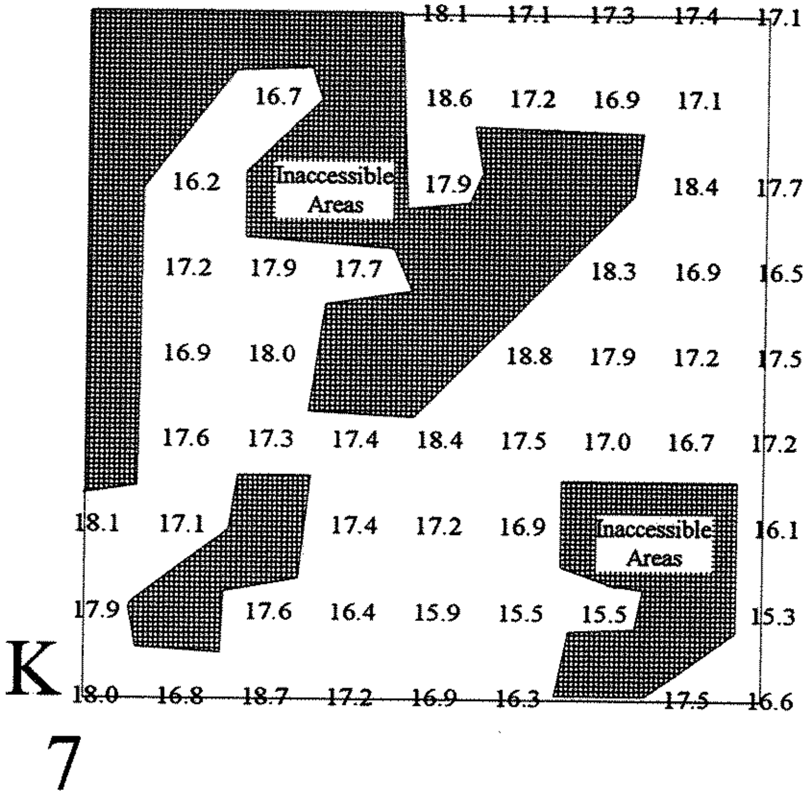
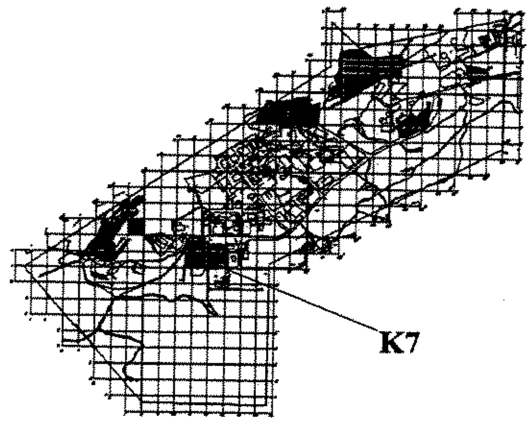


Figure B-82. Ambient Gamma Survey Results - Survey Block K7





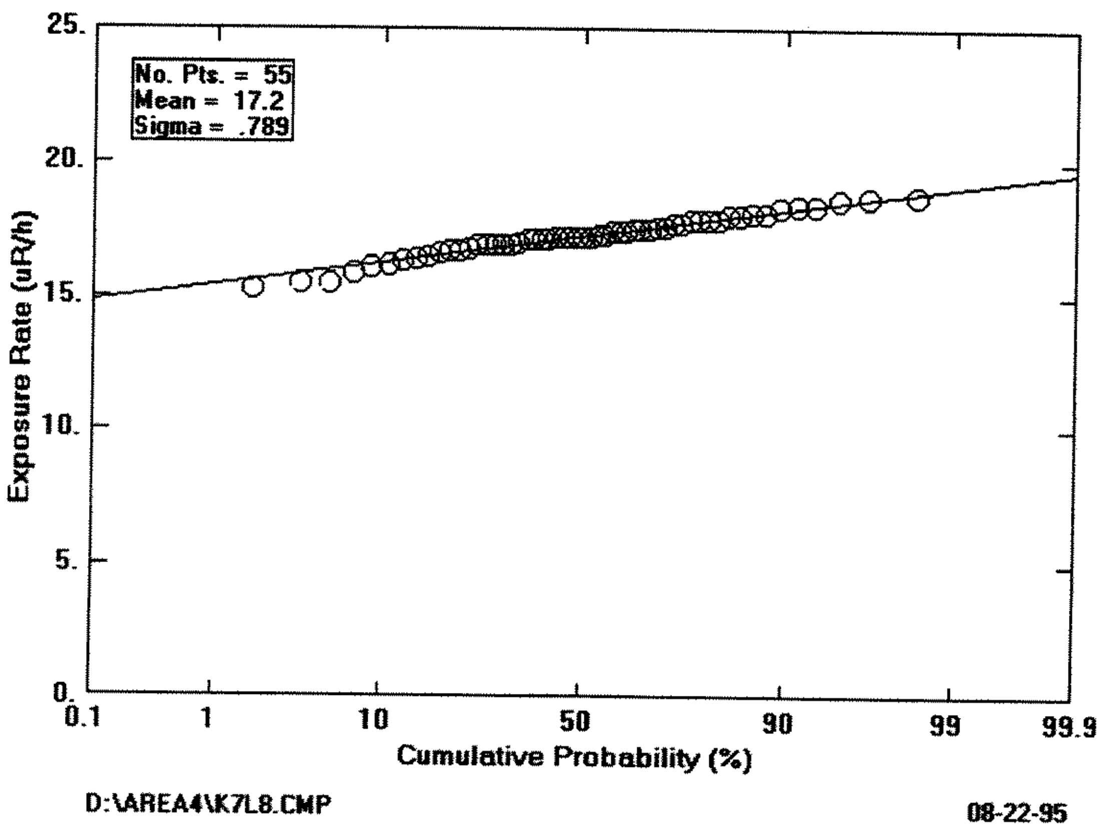
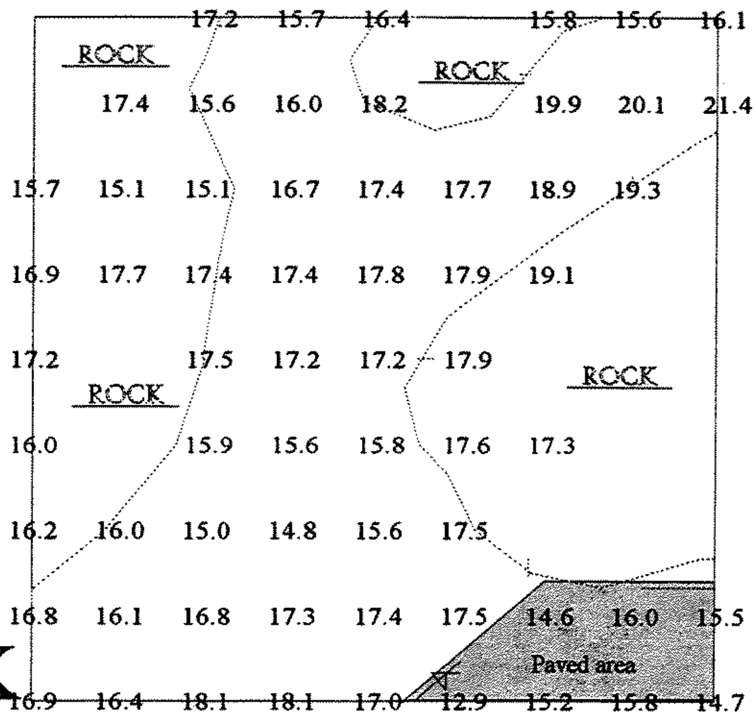
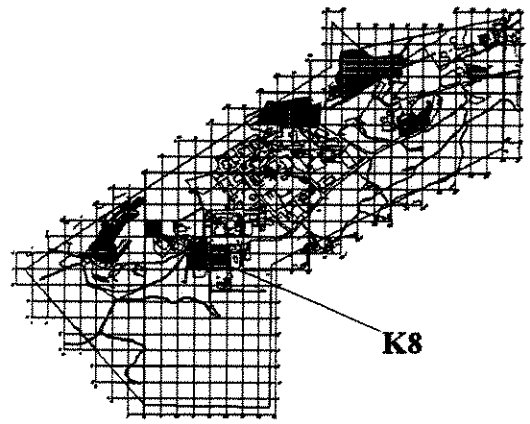


Figure B-83. Ambient Gamma Survey Results - Survey Block K8





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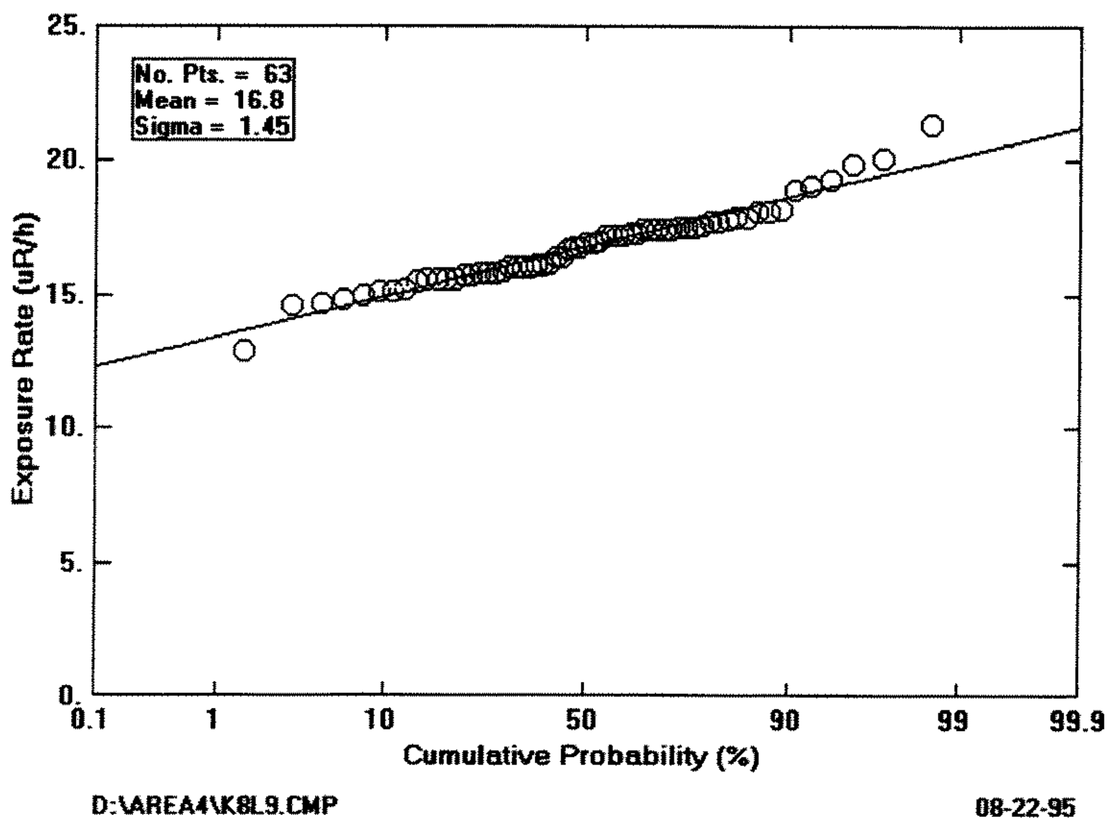
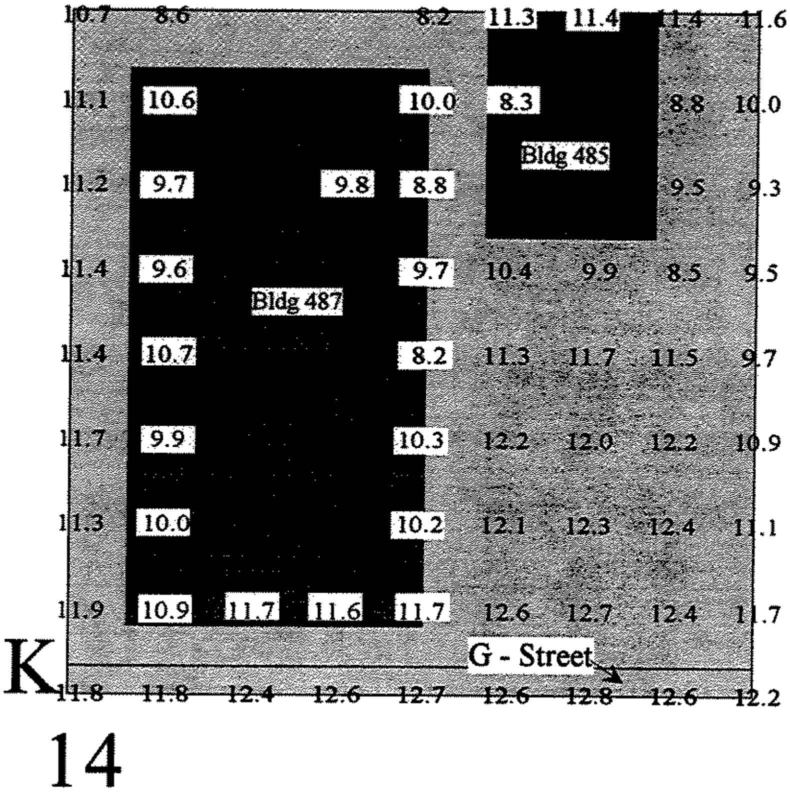
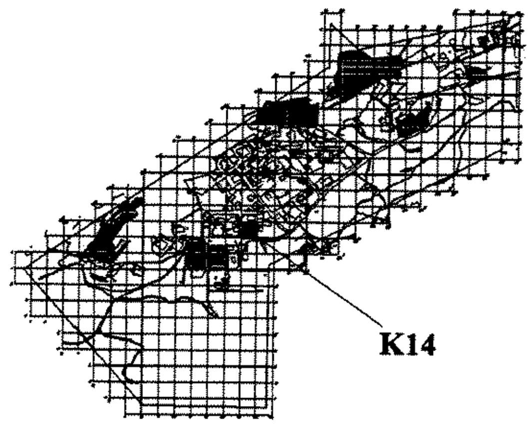


Figure B-84. Ambient Gamma Survey Results - Survey Block K14





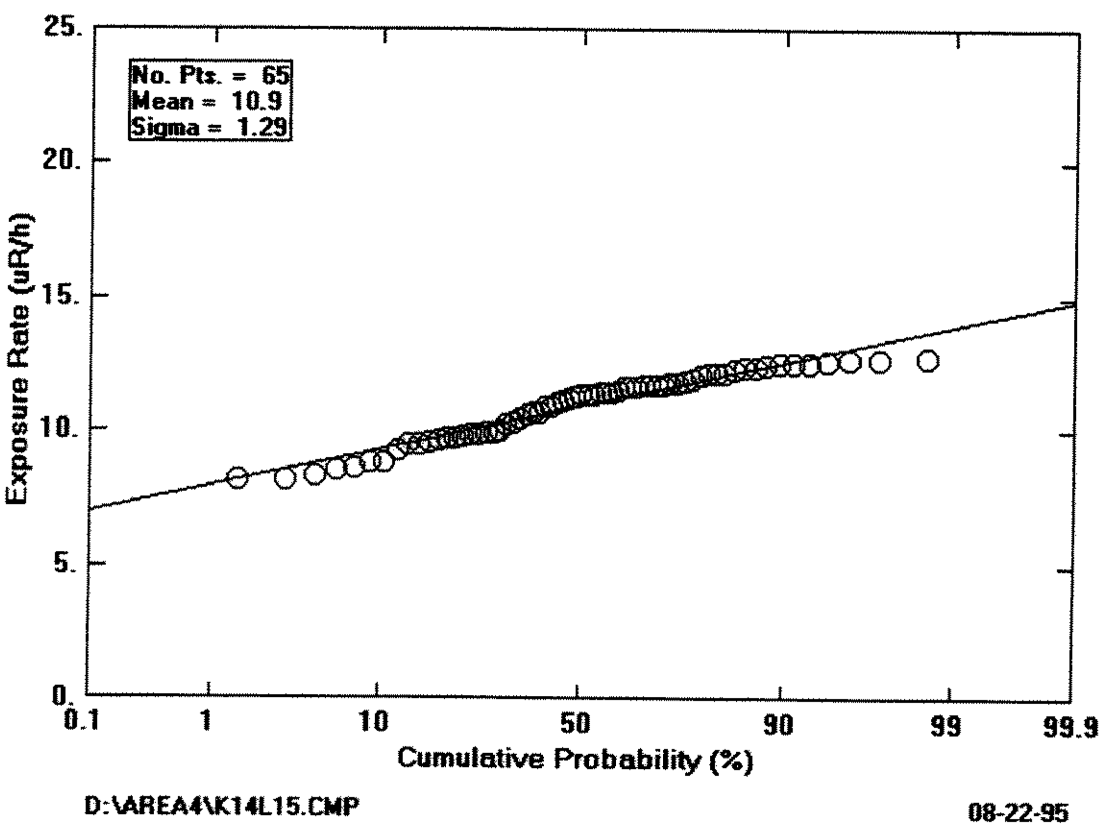
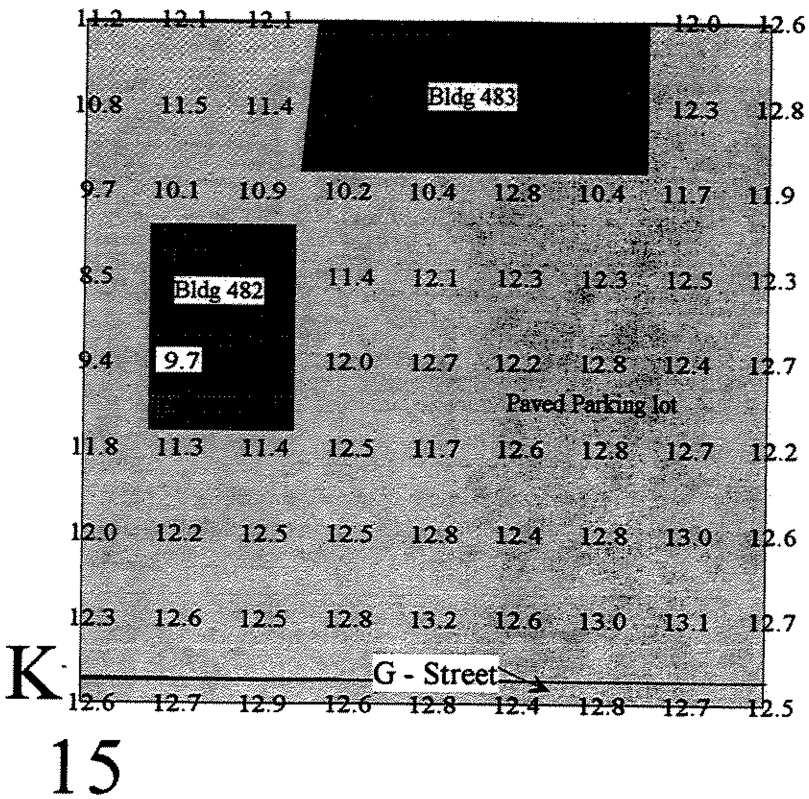
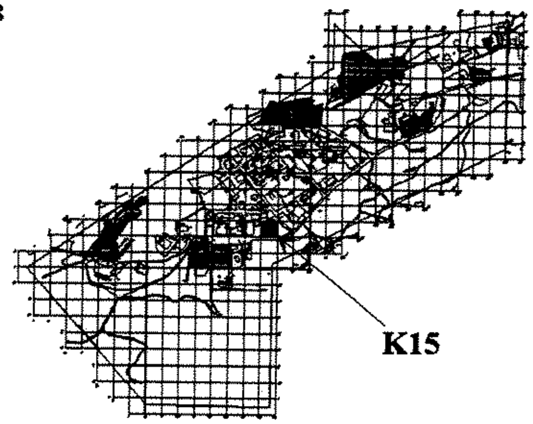


Figure B-85. Ambient Gamma Survey Results - Survey Block K15





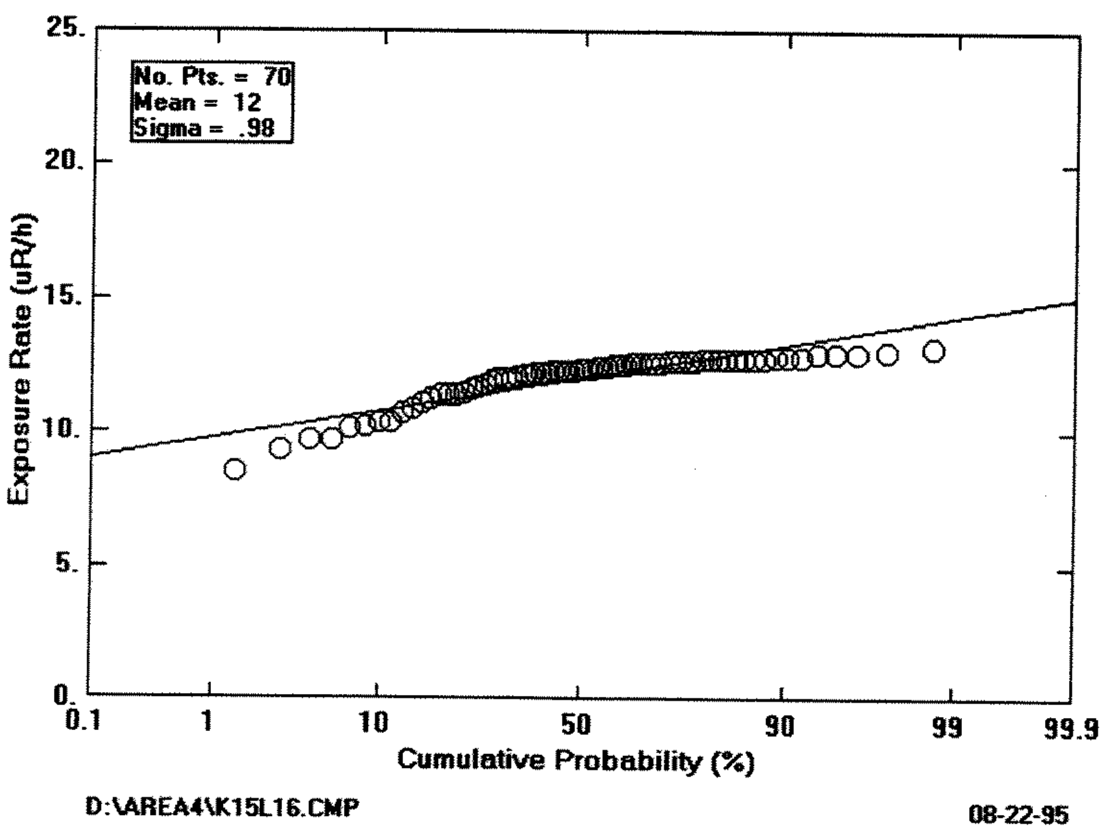
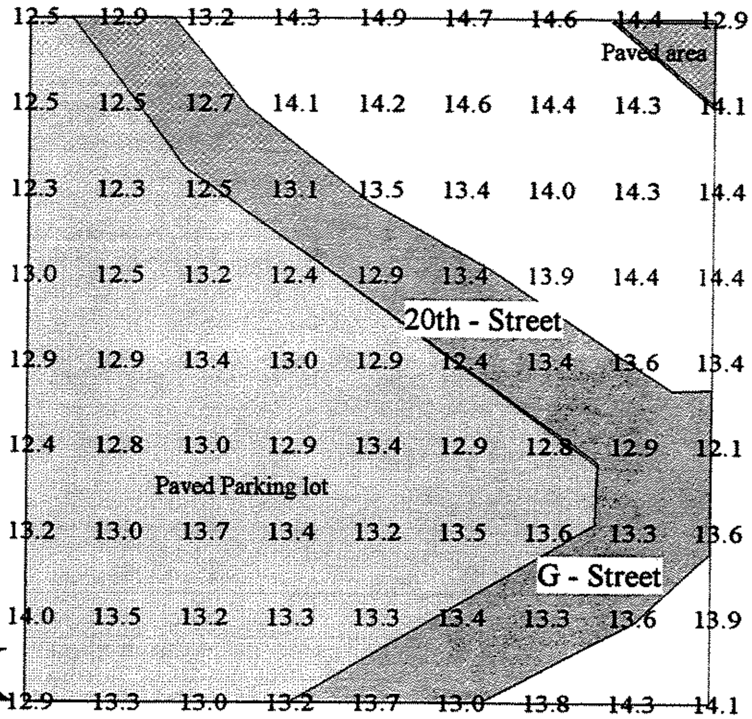
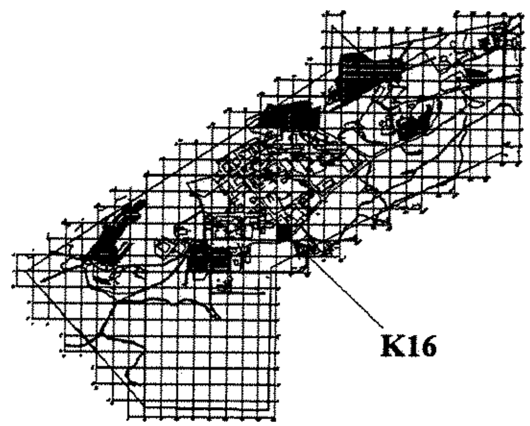


Figure B-86. Ambient Gamma Survey Results - Survey Block K16





K 16

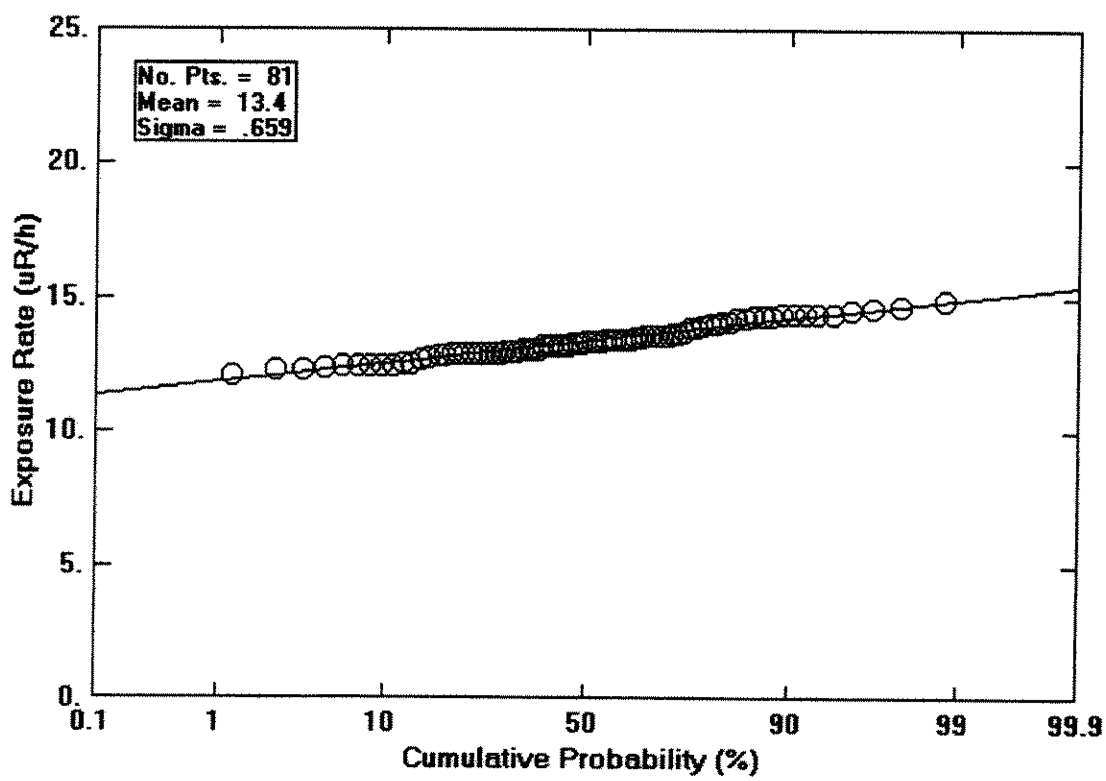


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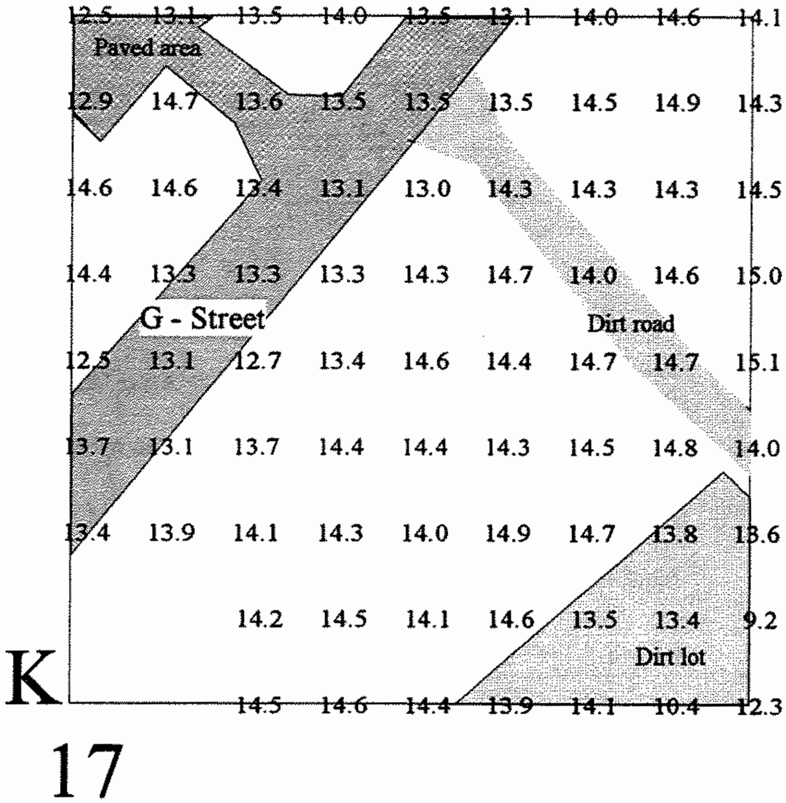
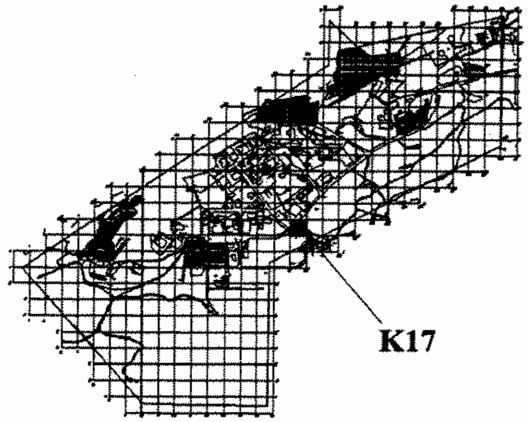
Figure B-87. Ambient Gamma Survey Results - Survey Block K17





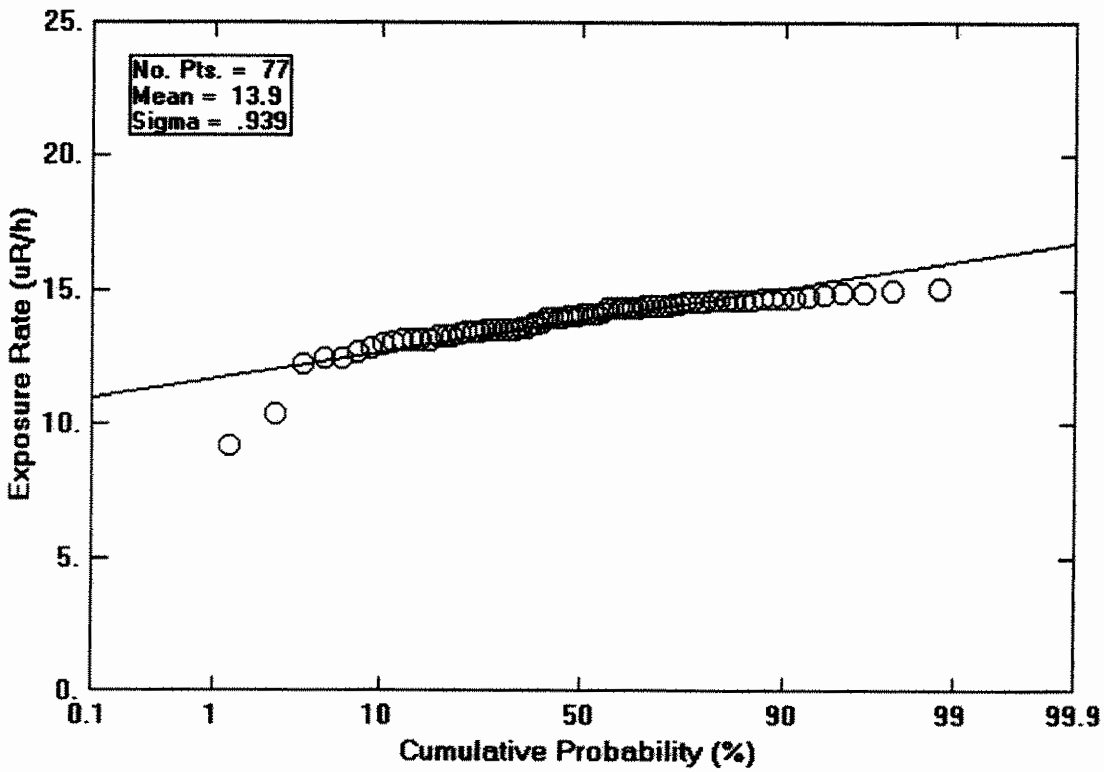


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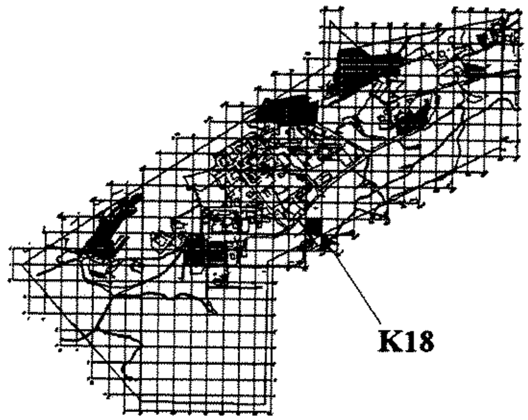
Figure B-88. Ambient Gamma Survey Results - Survey Block K18

13.9	14.5	14.3	14.1	15.0	14.3			
14.5	14.5	14.1	14.2	14.6	14.8	15.0	14.8	14.6
14.1	14.5	15.0	14.6	14.7	14.0	14.9	14.9	15.0
14.3	14.1	14.4	14.4	14.3	14.4	14.5	14.7	14.5
14.4	14.3	14.4	14.4	14.3	14.7	14.4	14.6	15.3
14.1	14.7	14.4	14.8	14.3	14.4	14.7	14.7	14.7
13.0	14.4	14.2	14.6	14.7	14.3	14.7	15.0	15.0
9.3	13.7	14.0	14.7	14.5	14.8	15.0	15.0	14.2
12.2	10.3	13.6	14.2	14.5	15.2	14.6	14.6	14.8

Dirt road

K
18



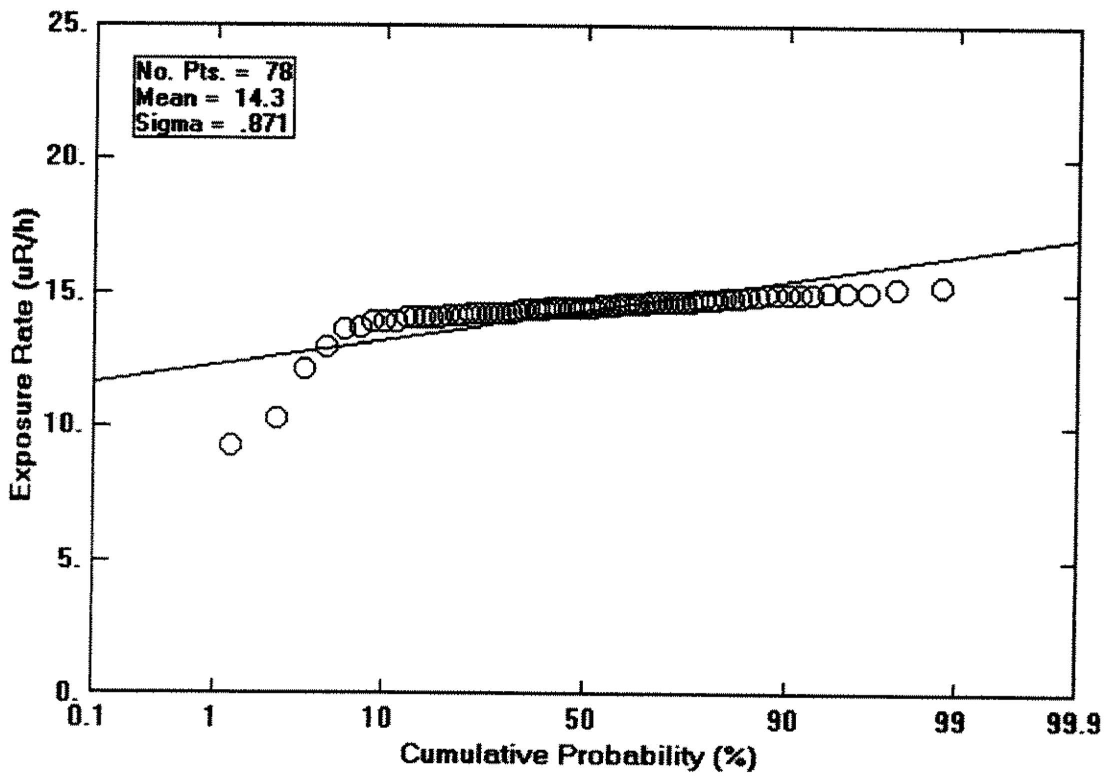


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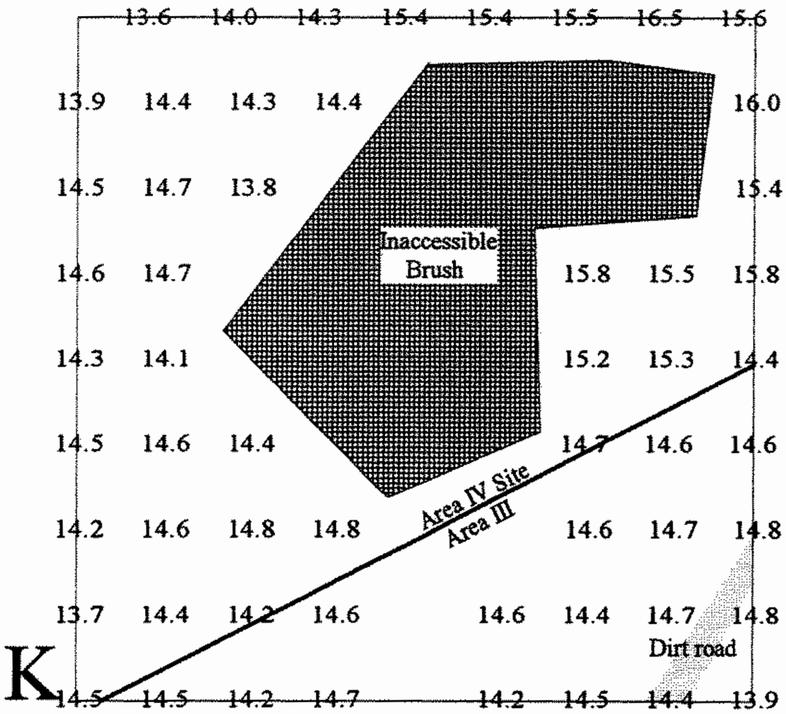
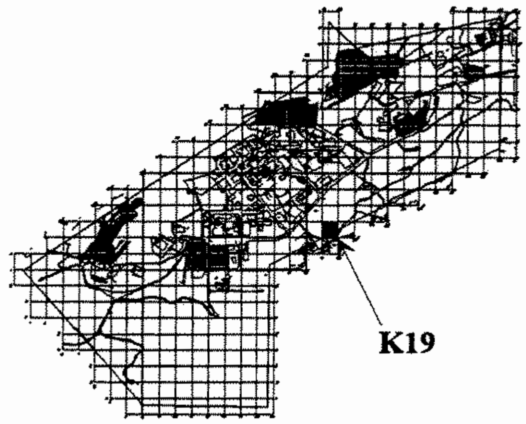
Figure B-89. Ambient Gamma Survey Results - Survey Block K19





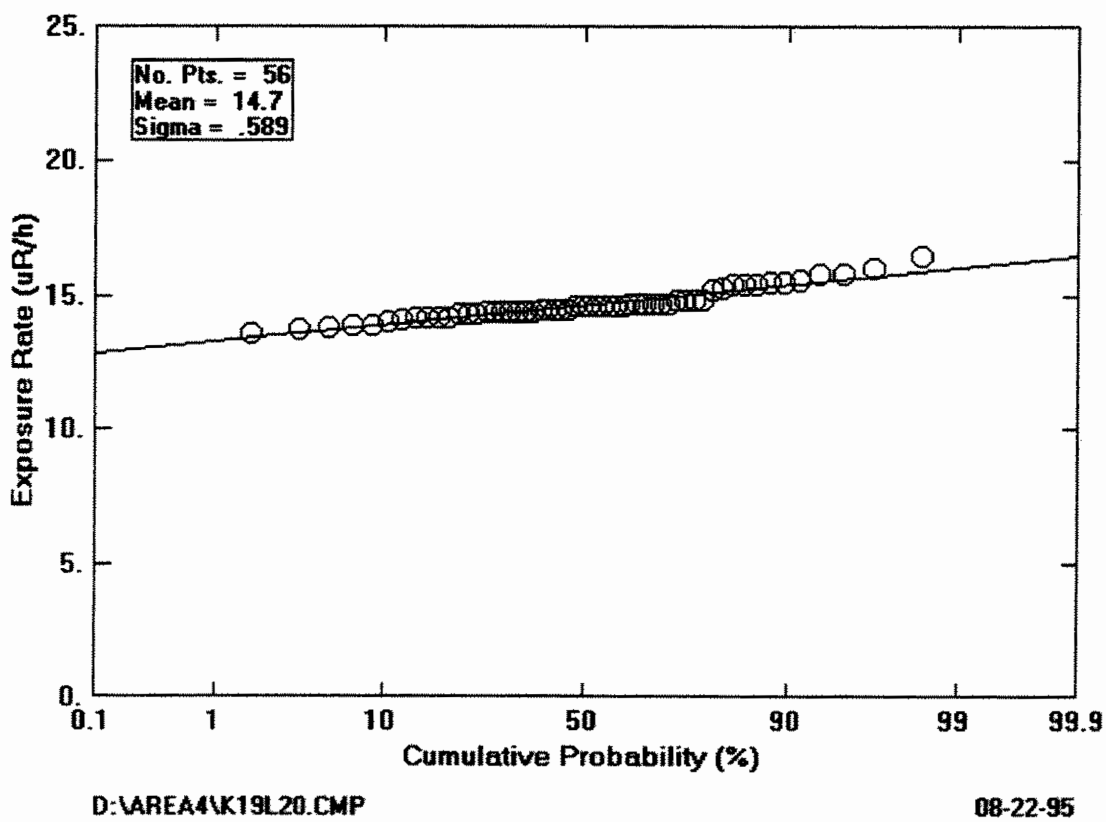
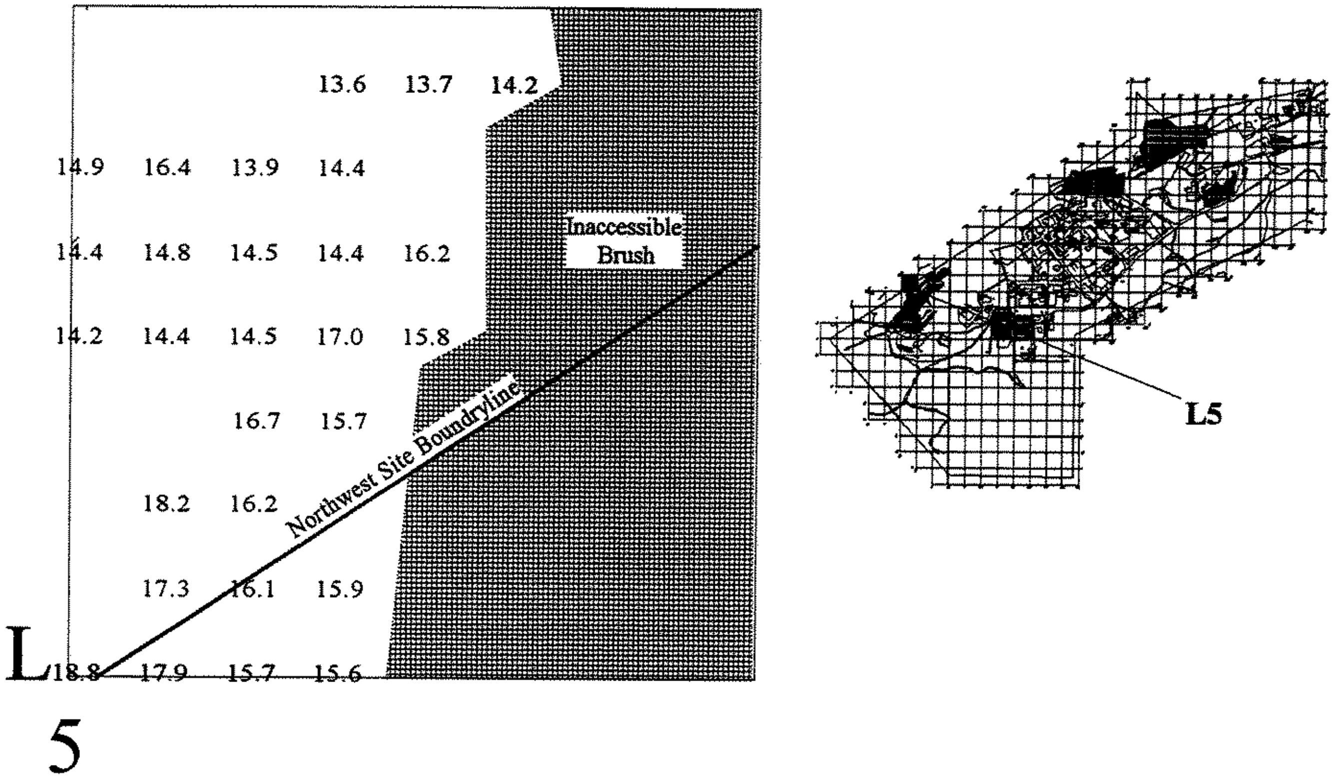


Figure B-90. Ambient Gamma Survey Results - Survey Block L5



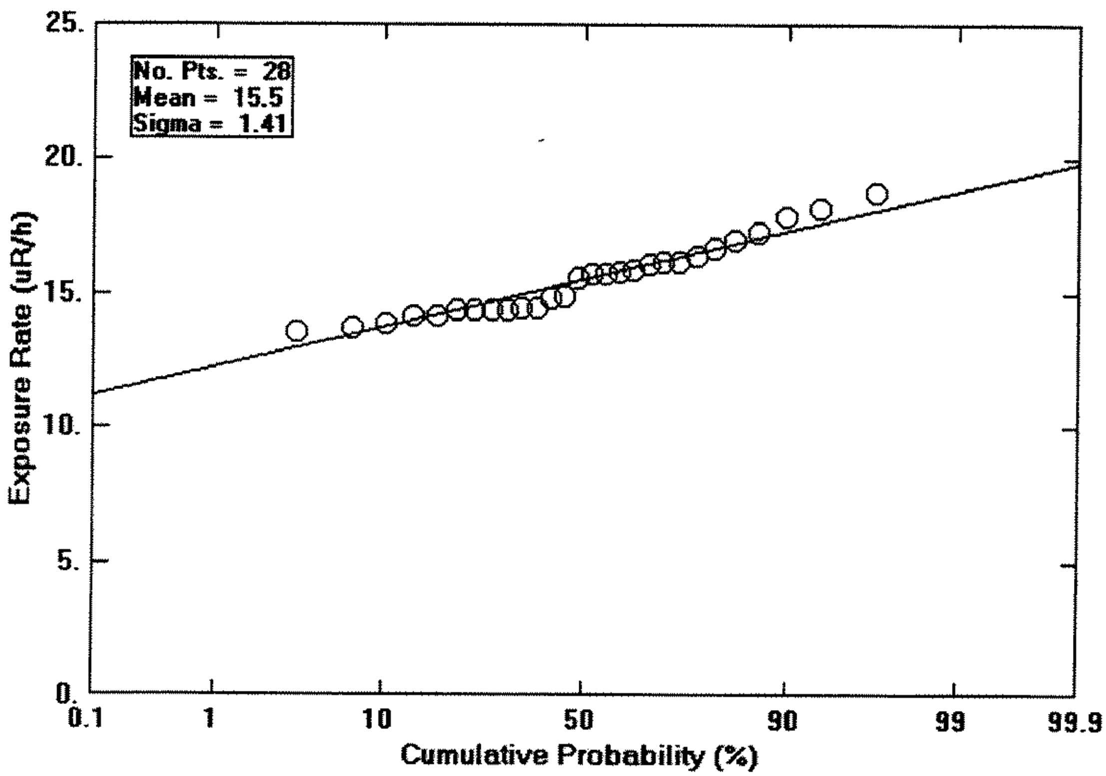


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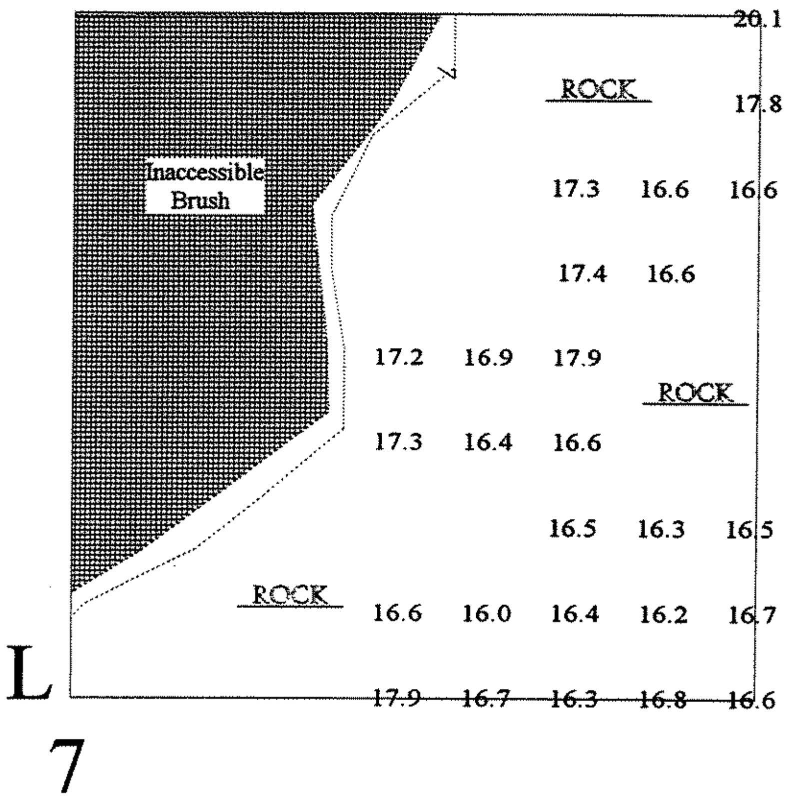
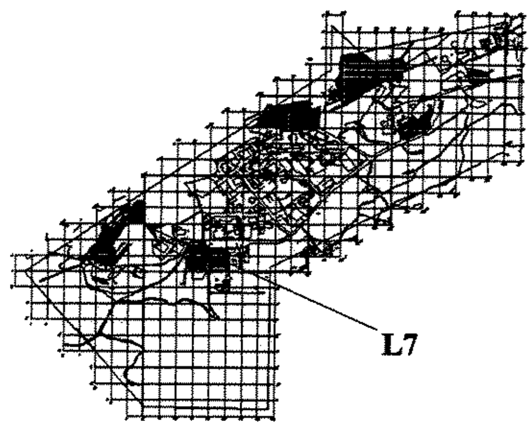
Figure B-91. Ambient Gamma Survey Results - Survey Block L7





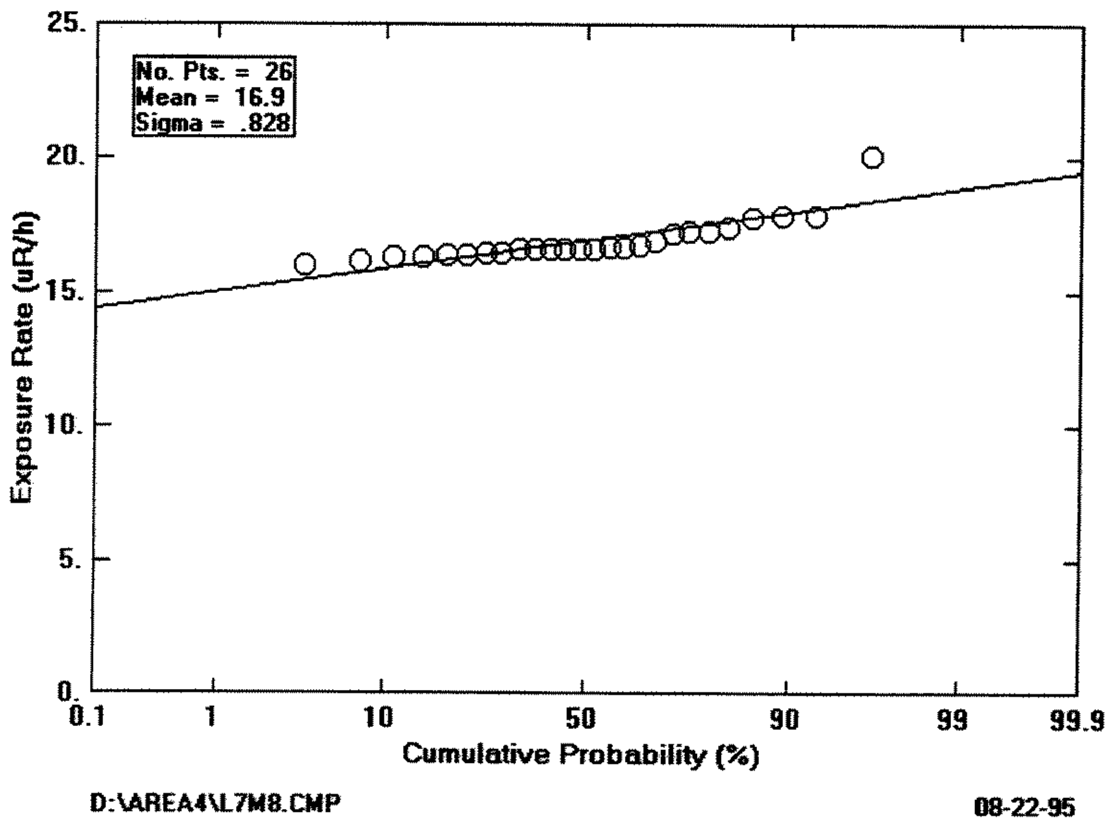
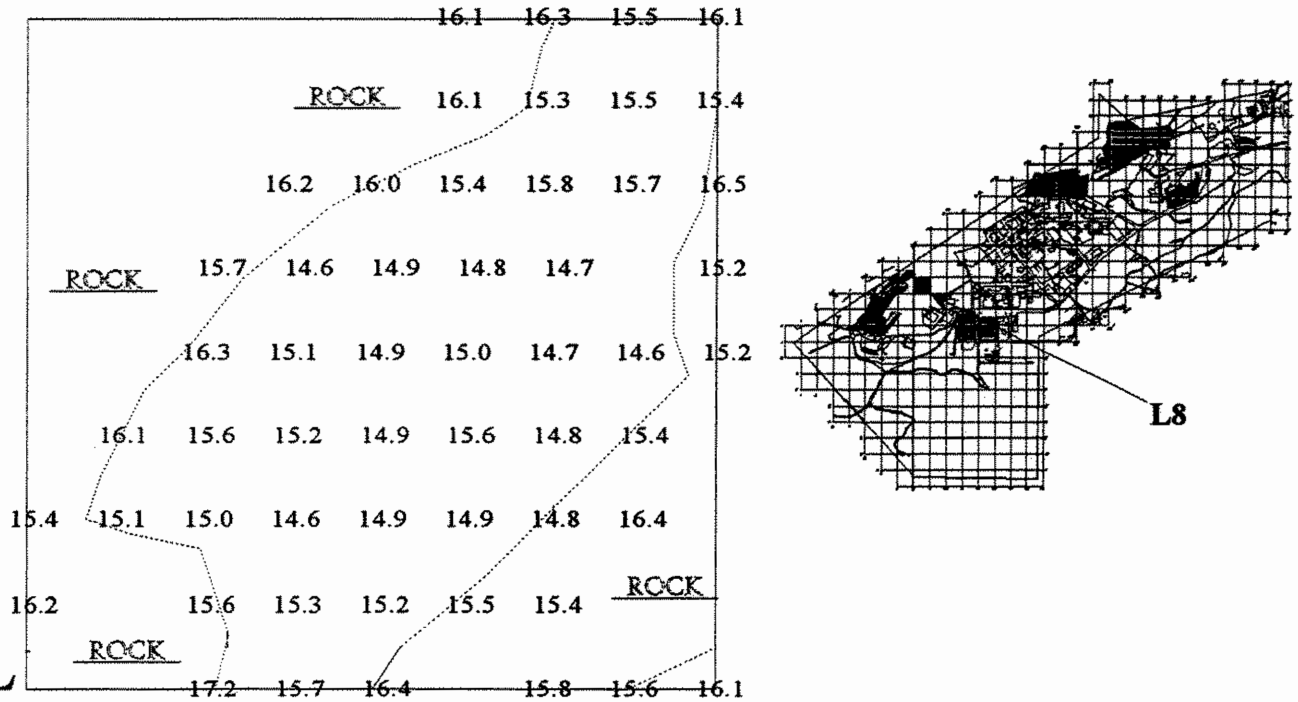


Figure B-92. Ambient Gamma Survey Results - Survey Block L8



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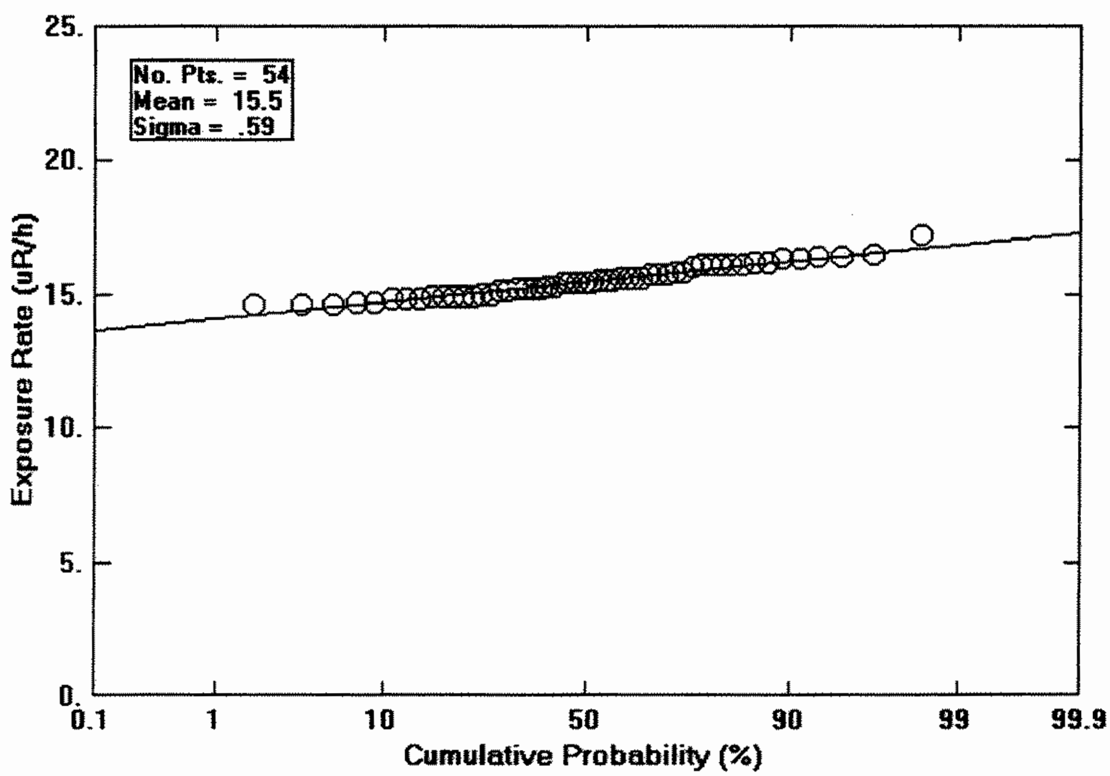

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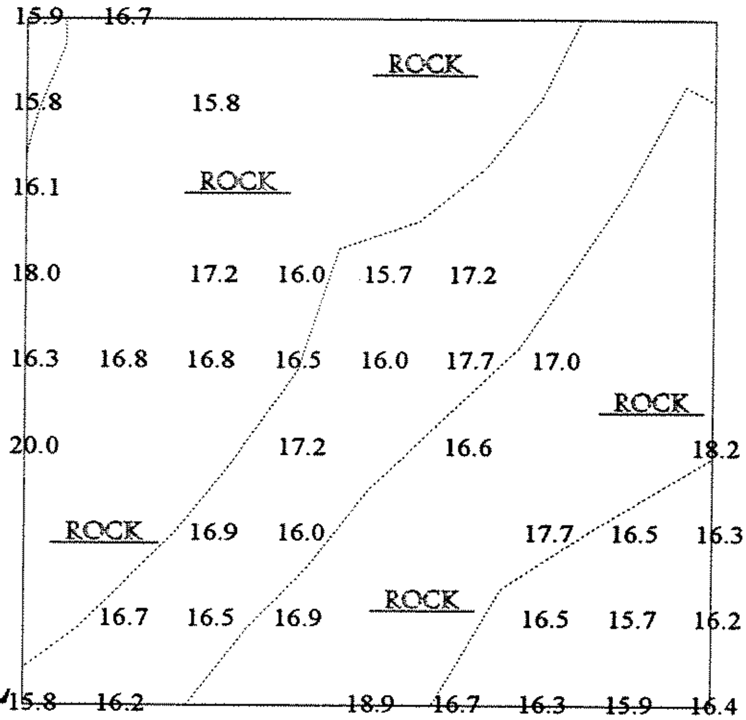
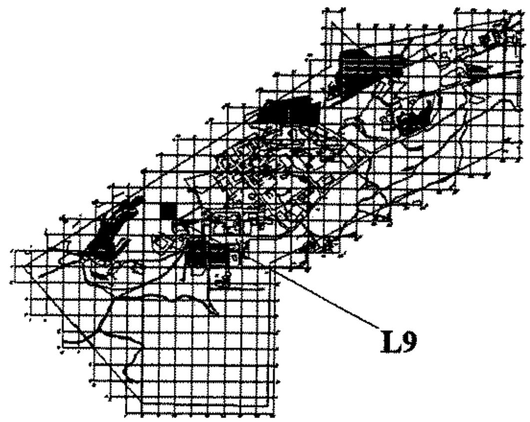
Figure B-93. Ambient Gamma Survey Results - Survey Block L9



L
9



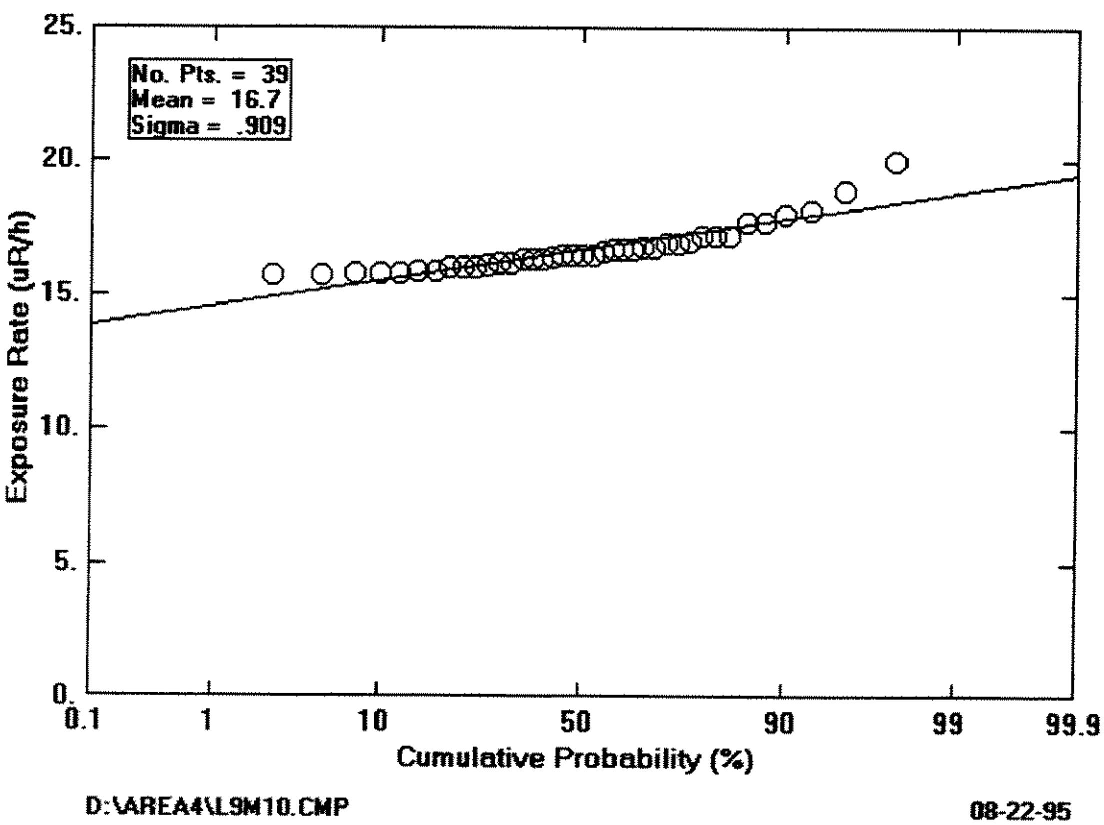
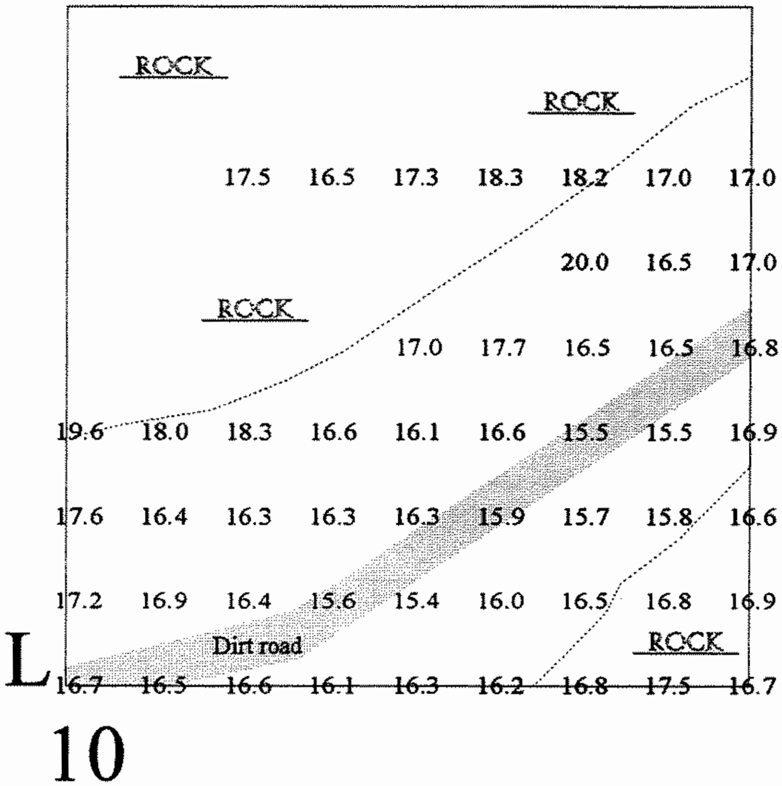
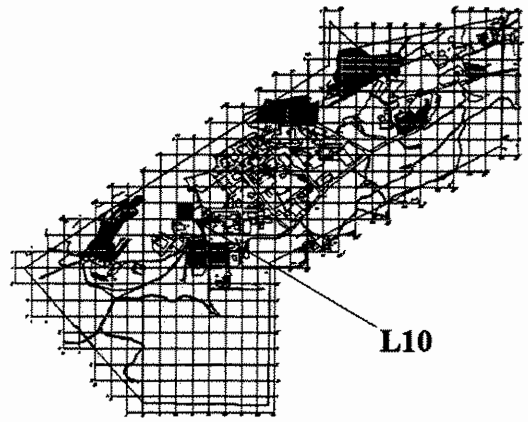


Figure B-94. Ambient Gamma Survey Results - Survey Block L10





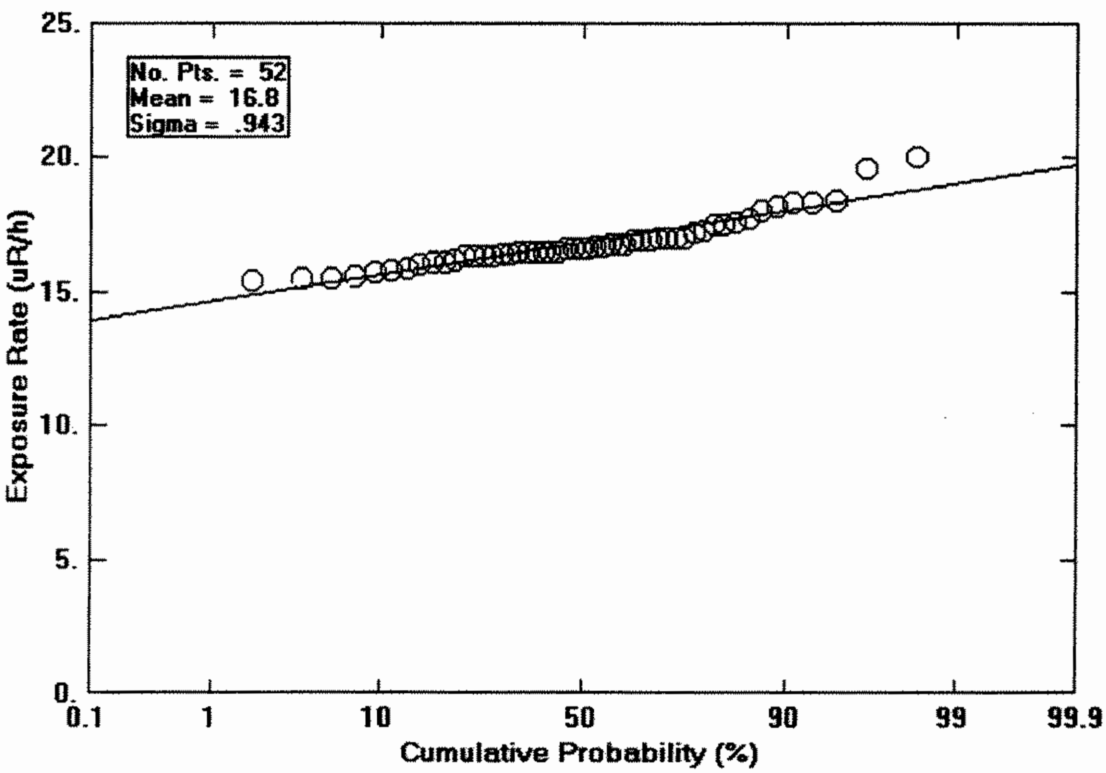


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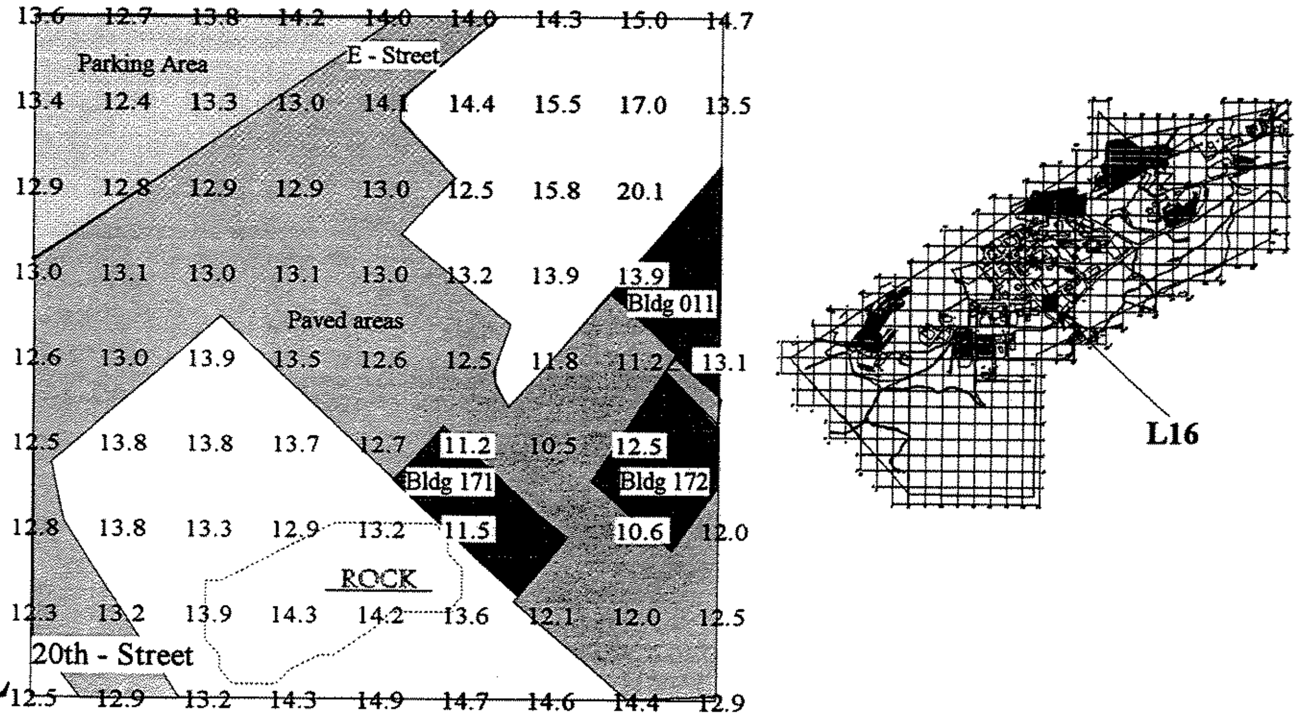
Figure B-95. Ambient Gamma Survey Results - Survey Block L16



L
16

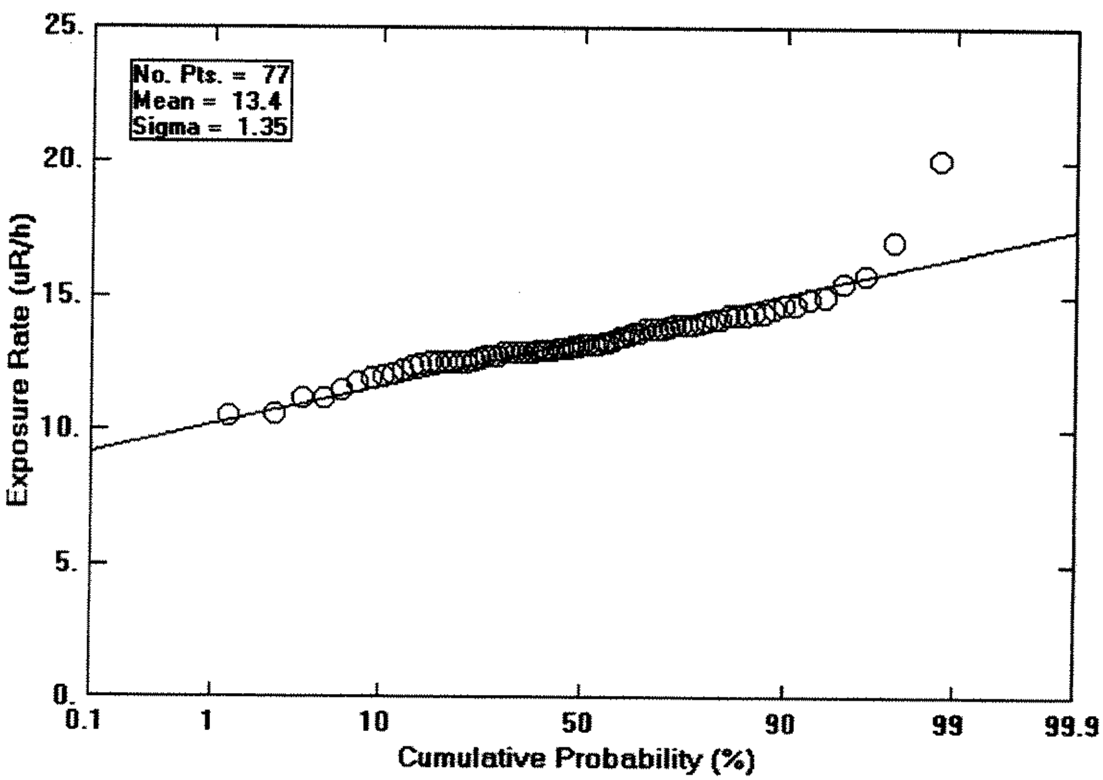


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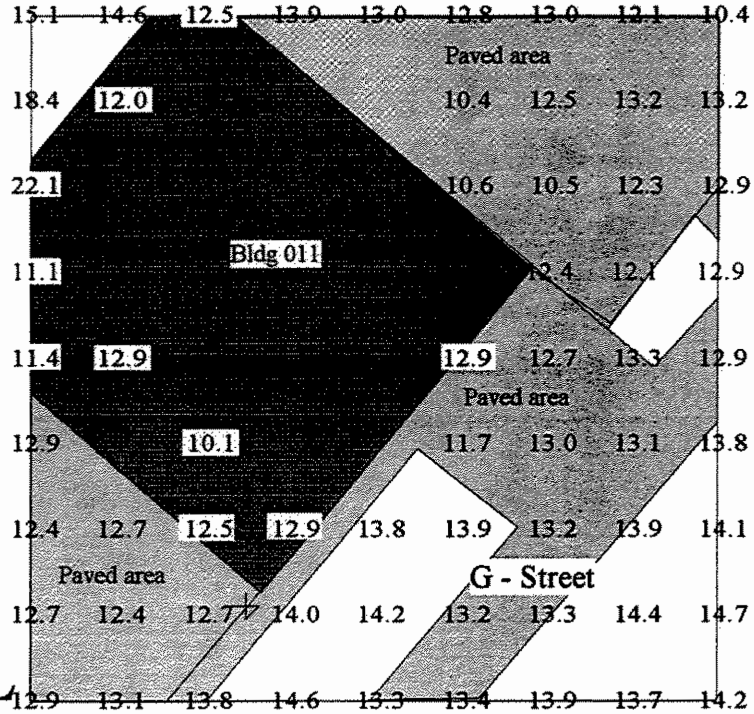
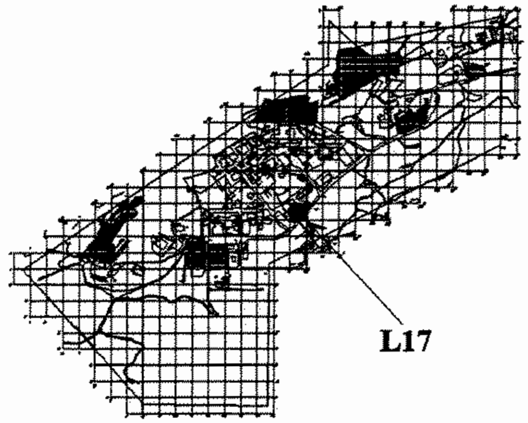
Figure B-96. Ambient Gamma Survey Results - Survey Block L17





L 17

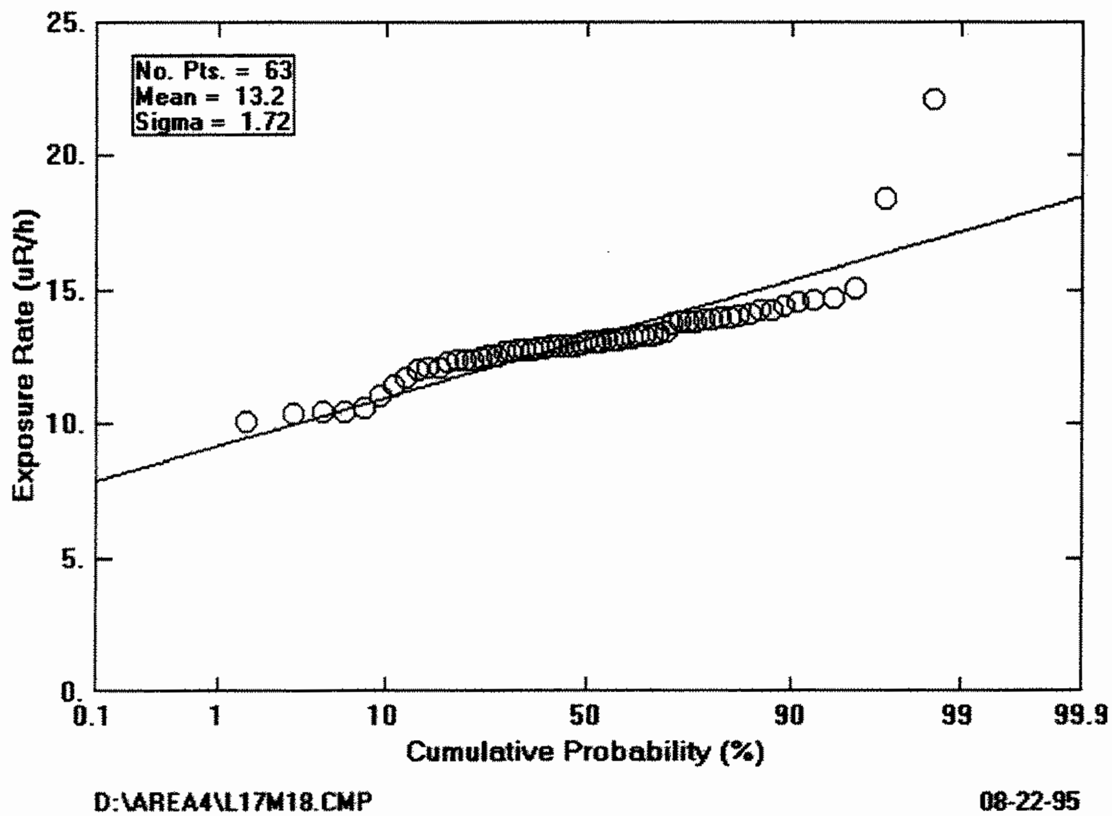
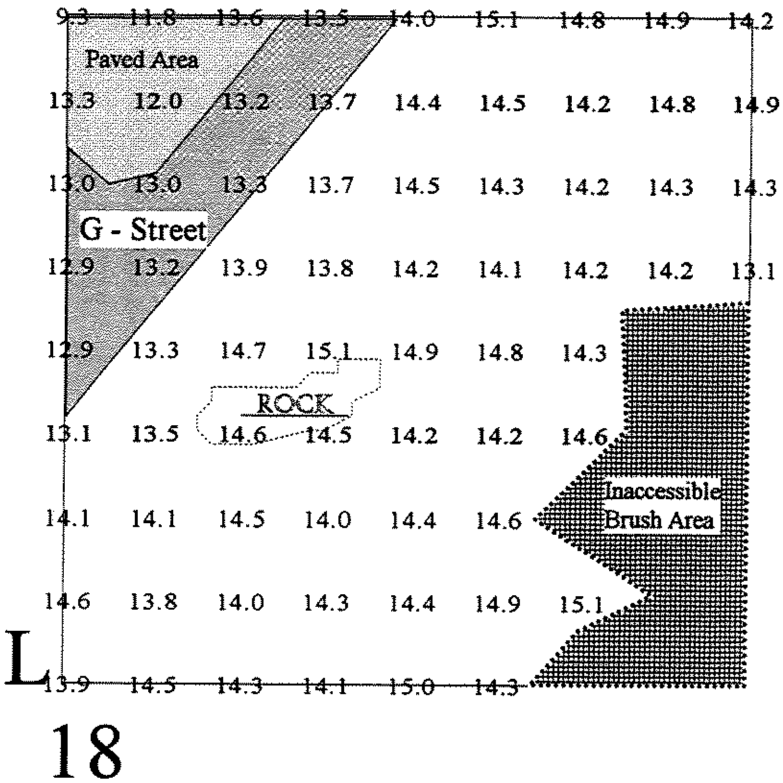
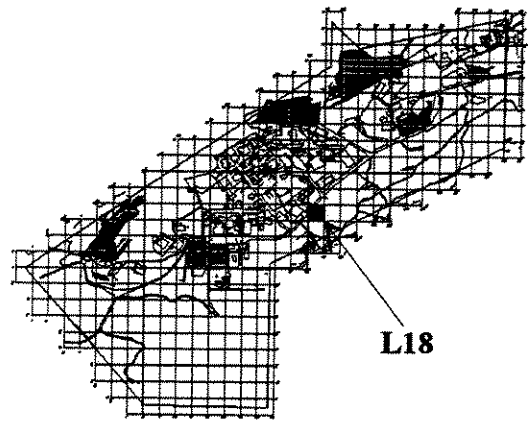


Figure B-97. Ambient Gamma Survey Results - Survey Block L18





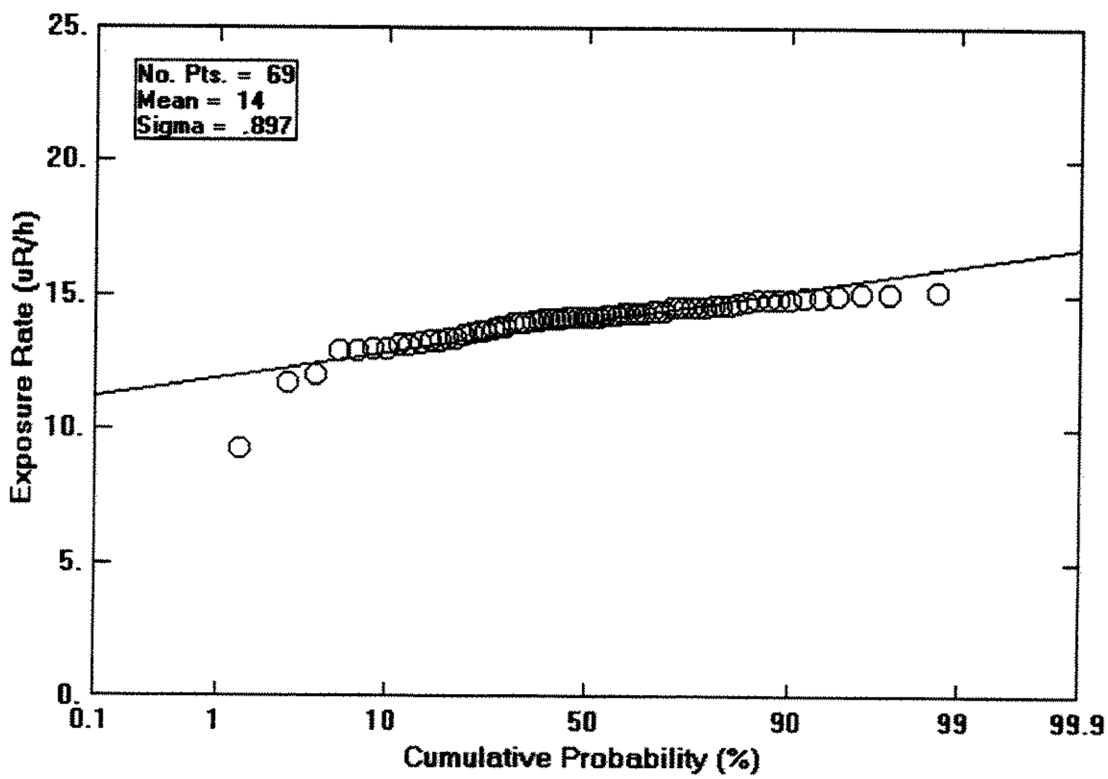


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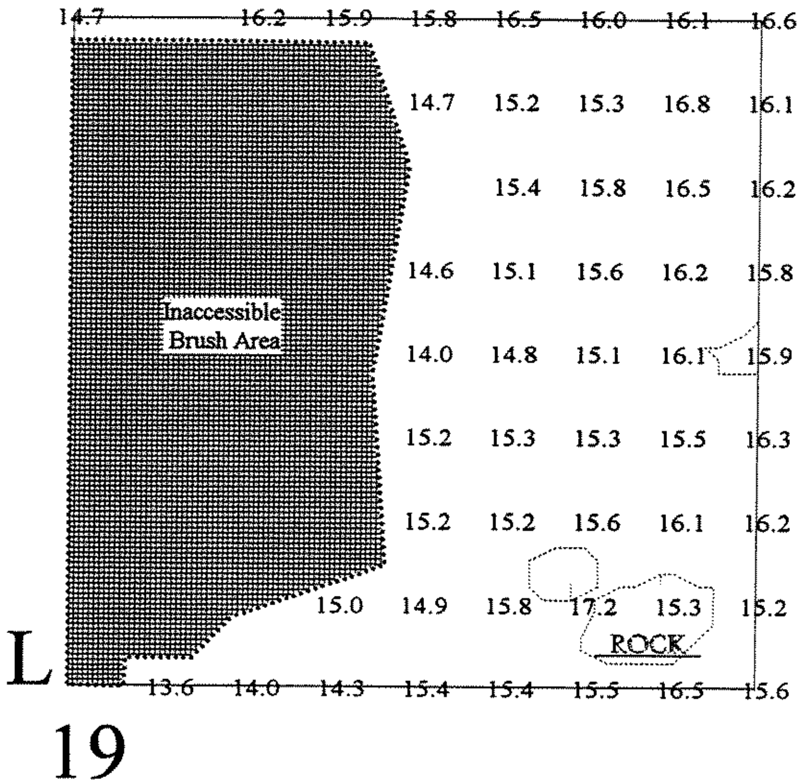
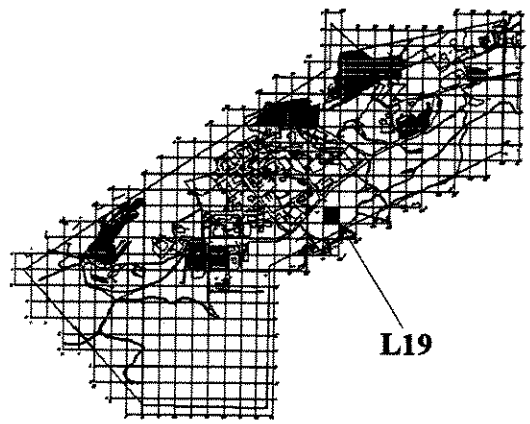
Figure B-98. Ambient Gamma Survey Results - Survey Block L19





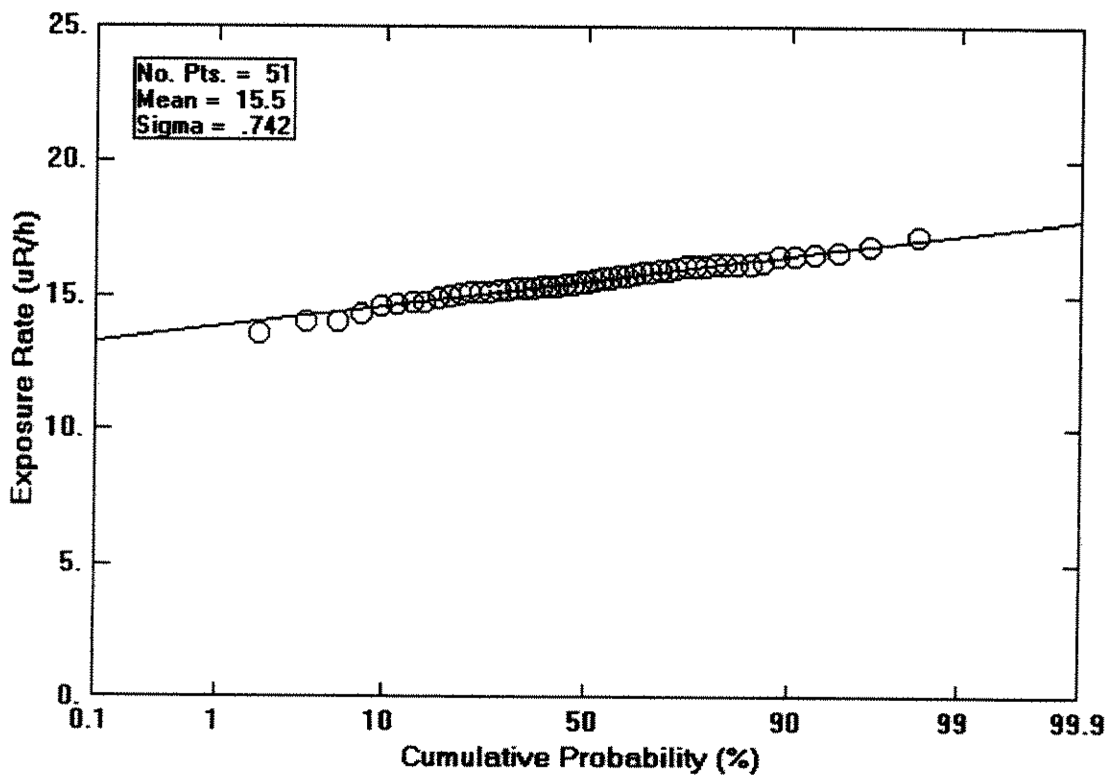


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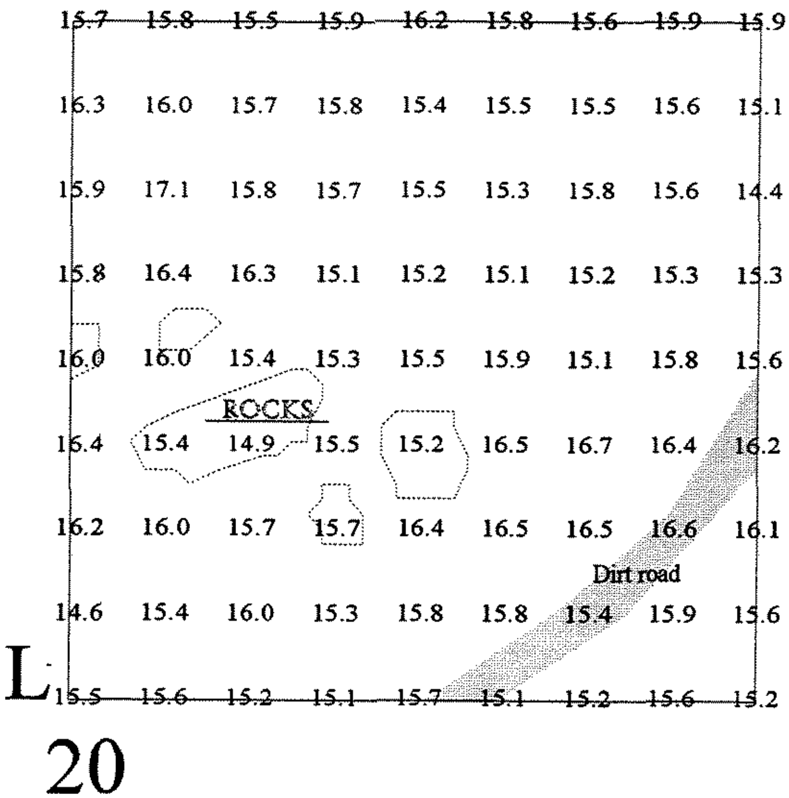
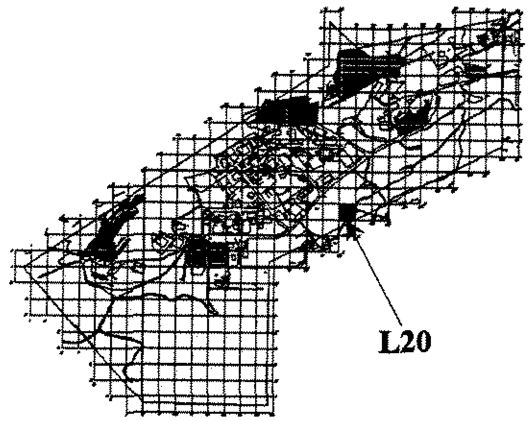
Figure B-99. Ambient Gamma Survey Results - Survey Block L20





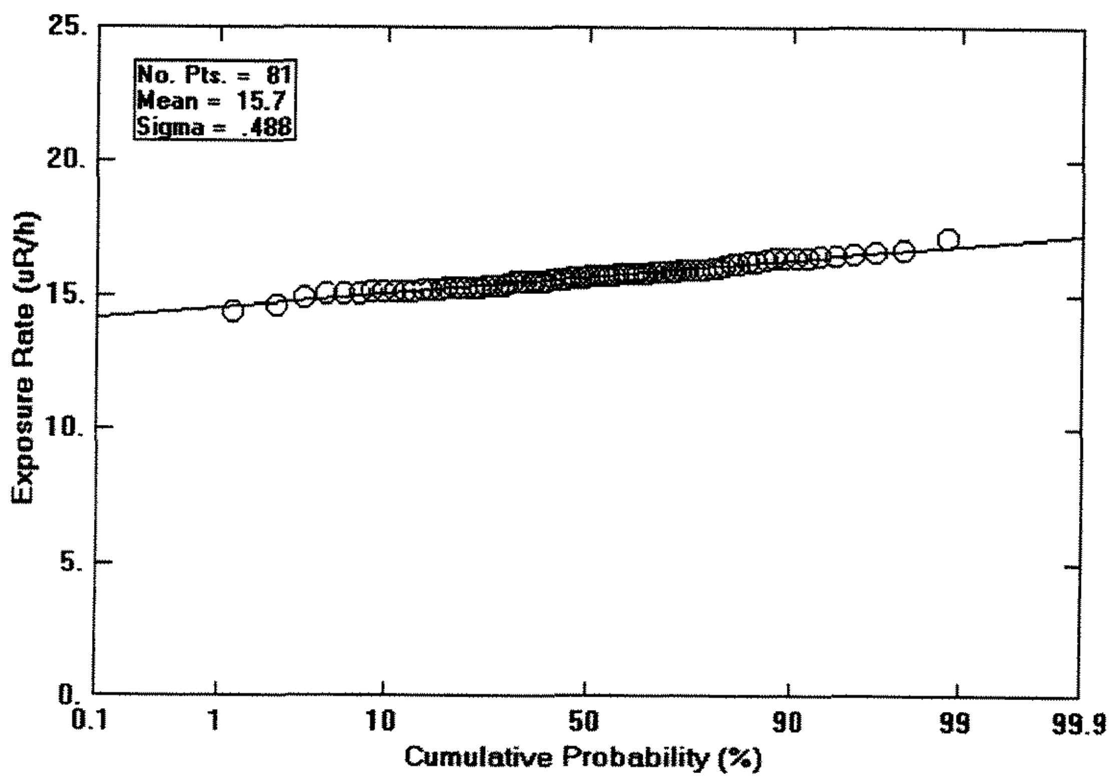


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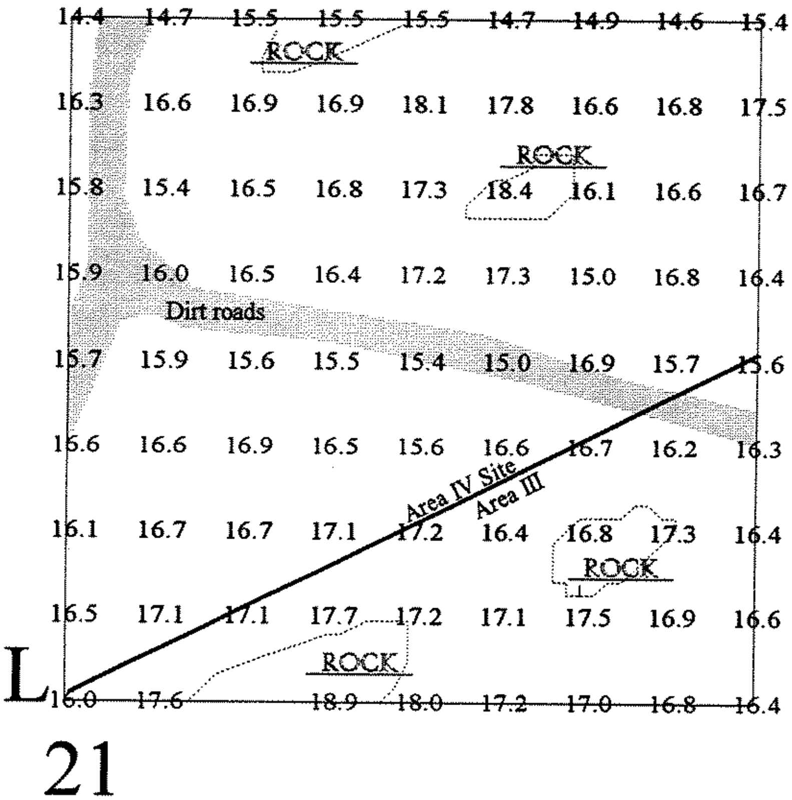
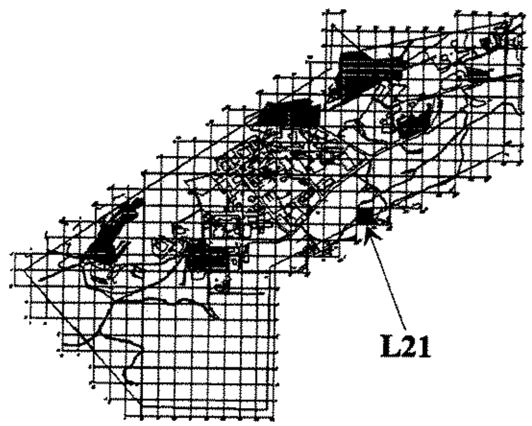
Figure B-100. Ambient Gamma Survey Results - Survey Block L21





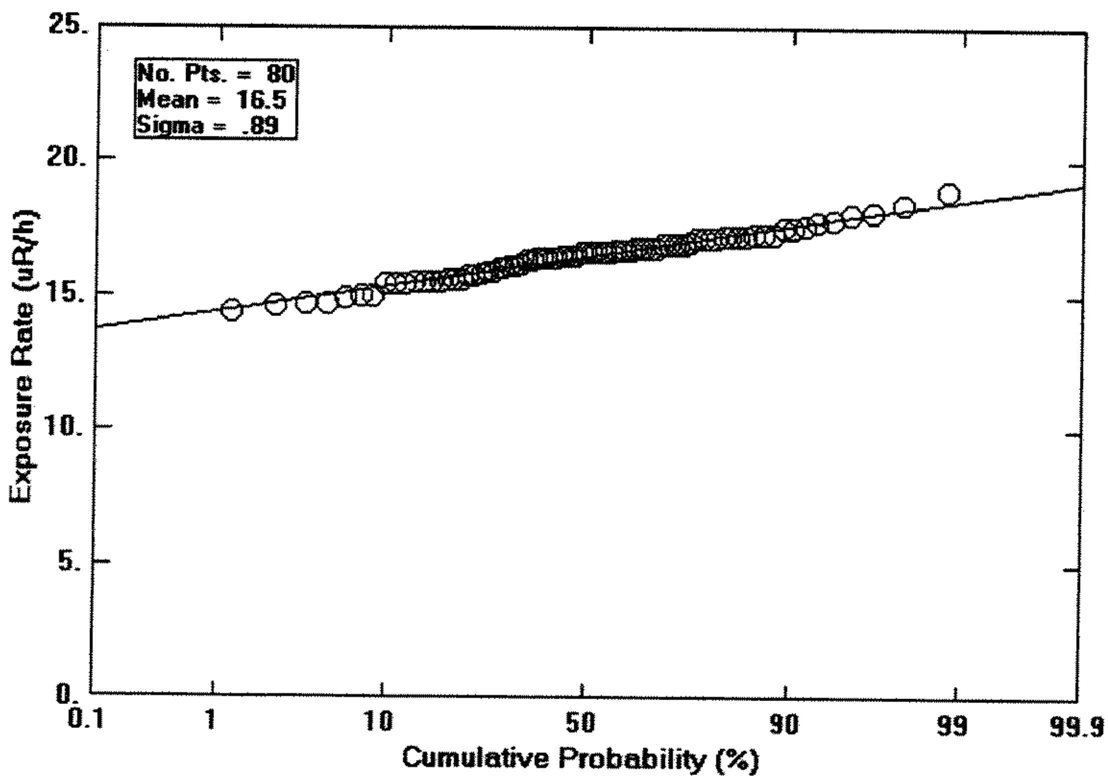


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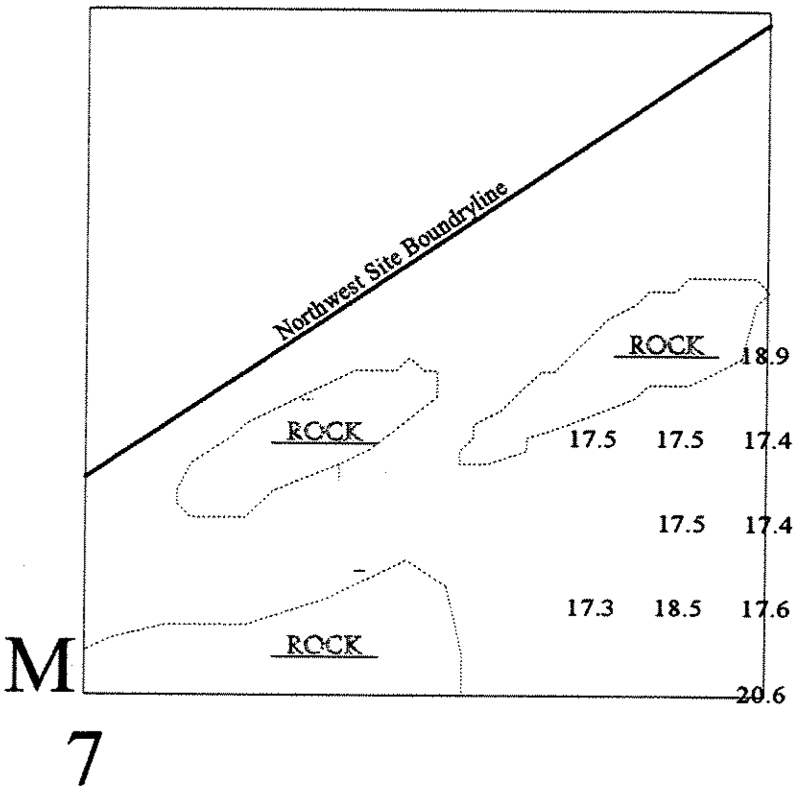
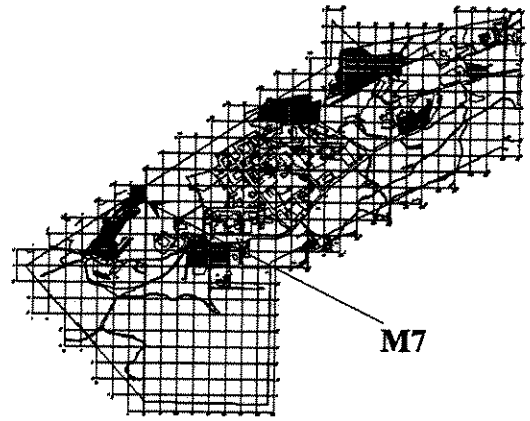
Figure B-101. Ambient Gamma Survey Results - Survey Block M7





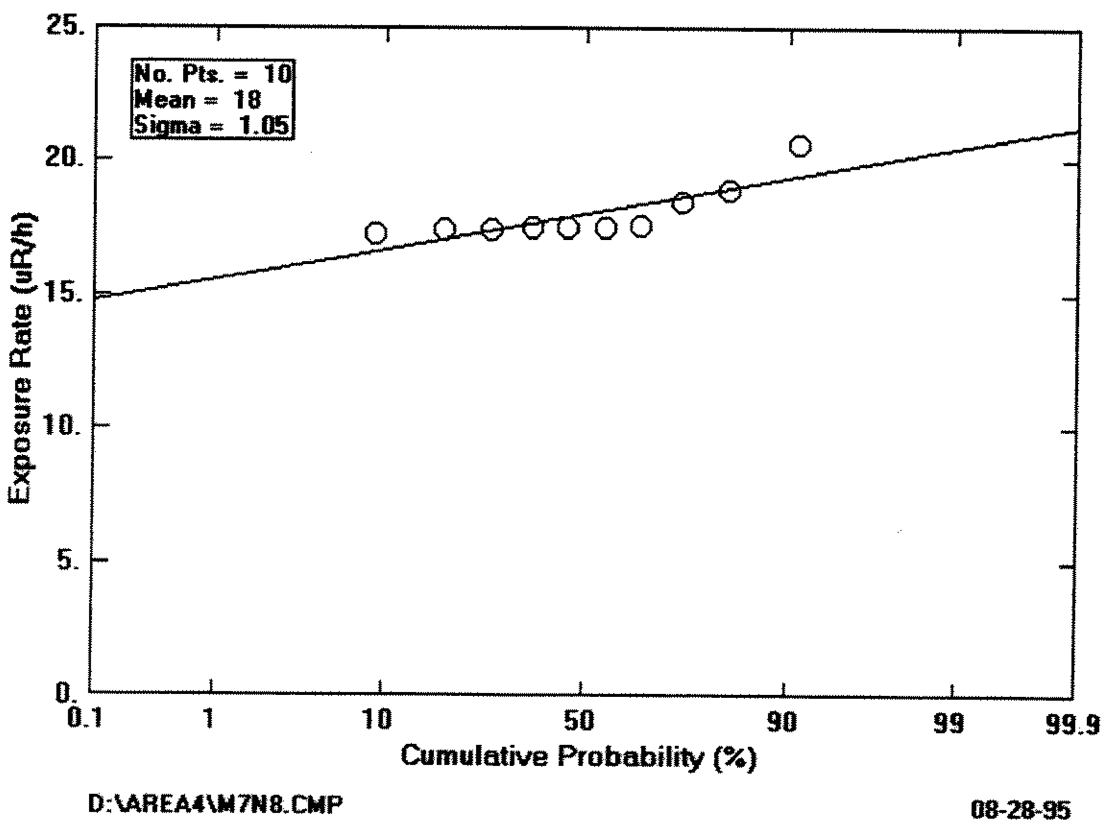
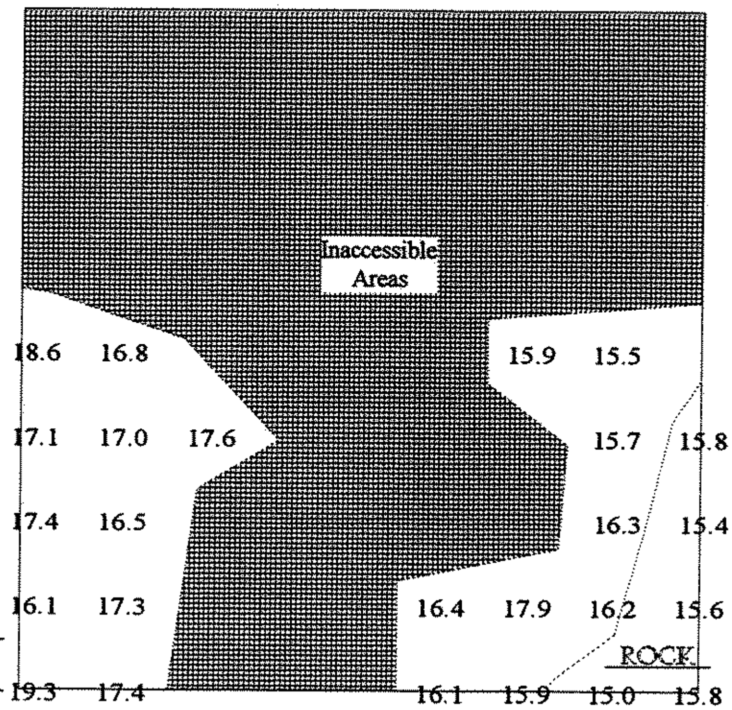
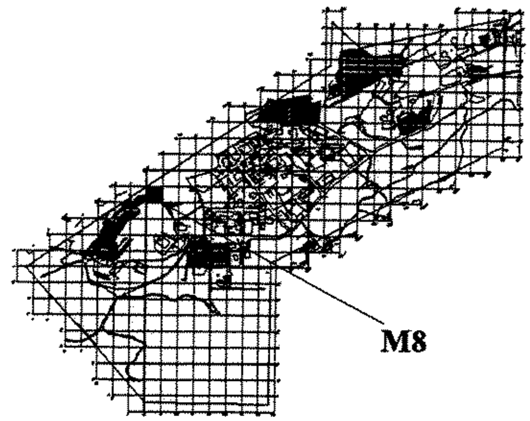


Figure B-102. Ambient Gamma Survey Results - Survey Block M8





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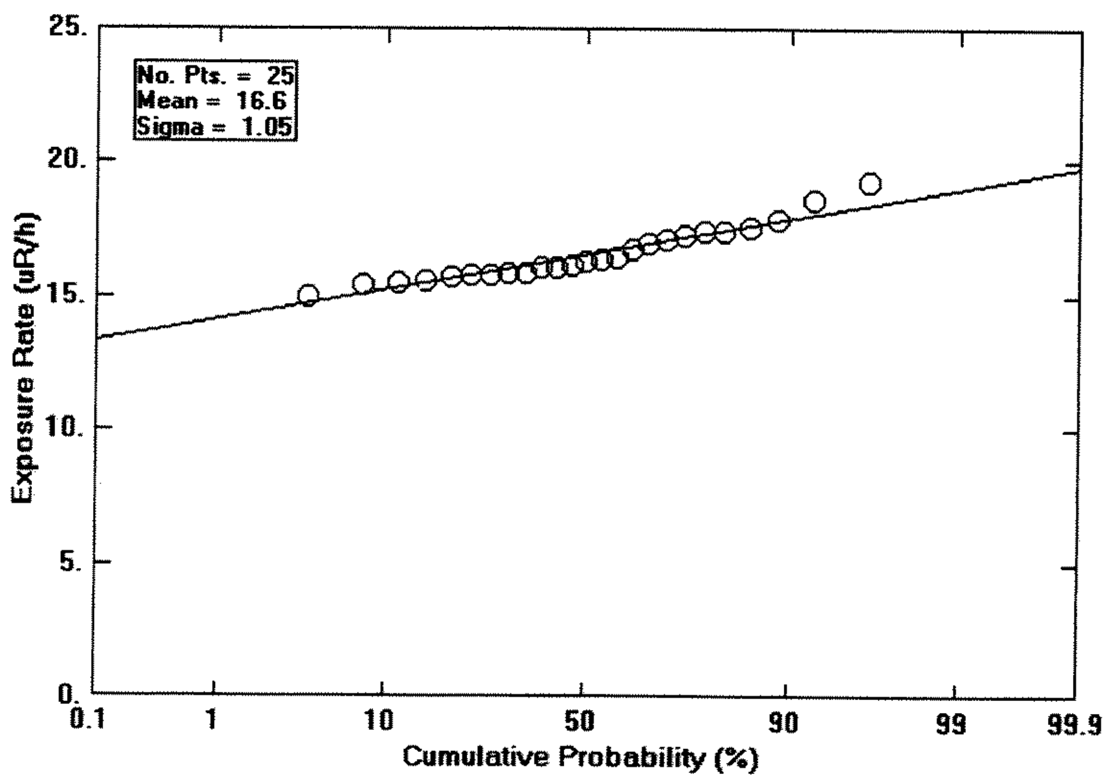

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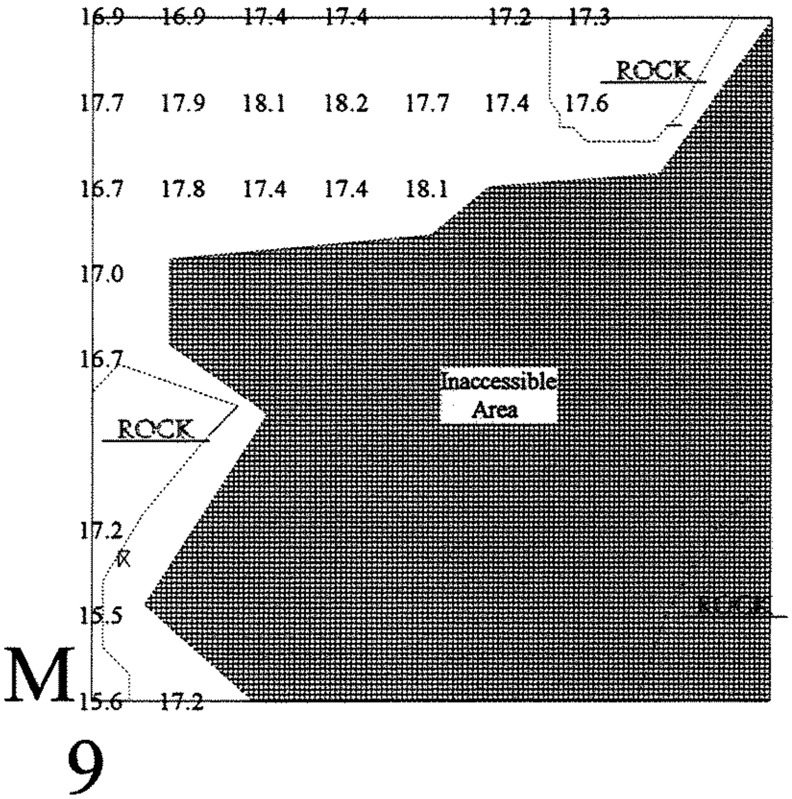
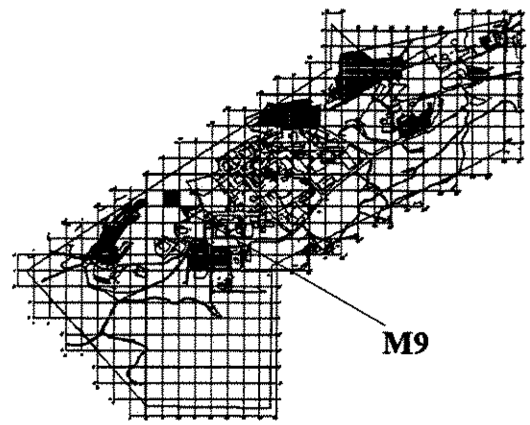
Figure B-103. Ambient Gamma Survey Results - Survey Block M9





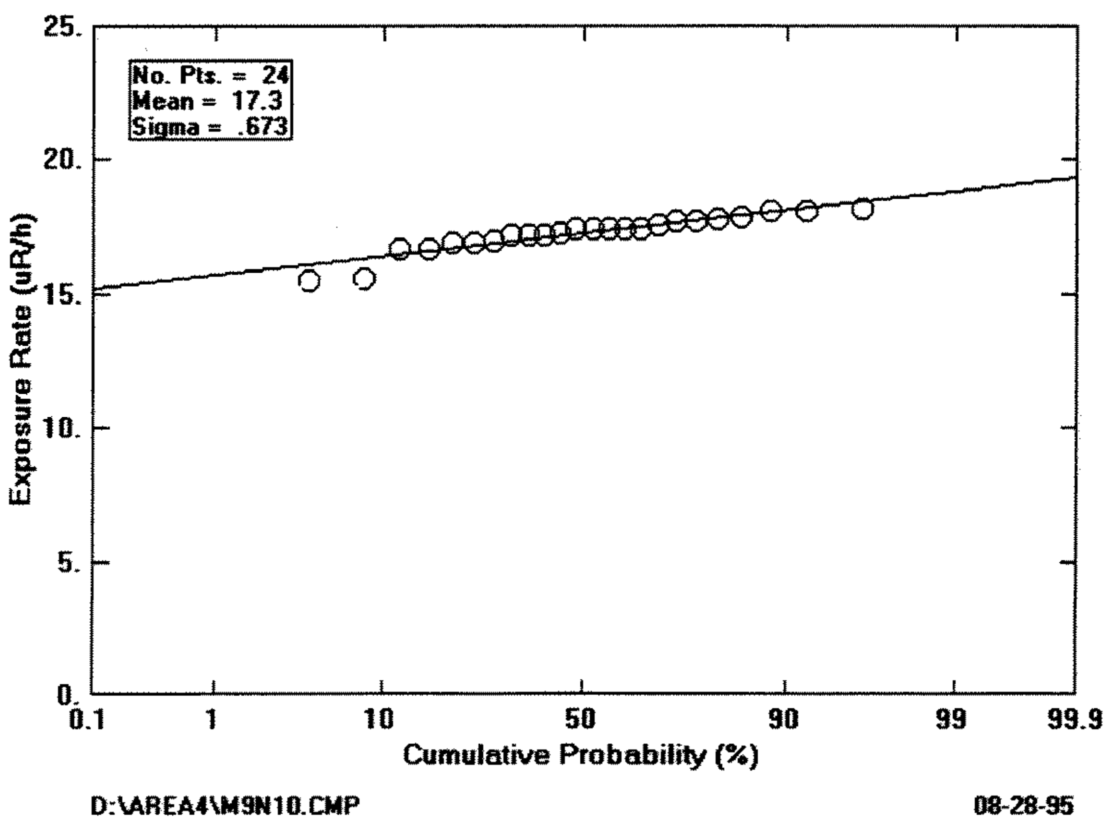
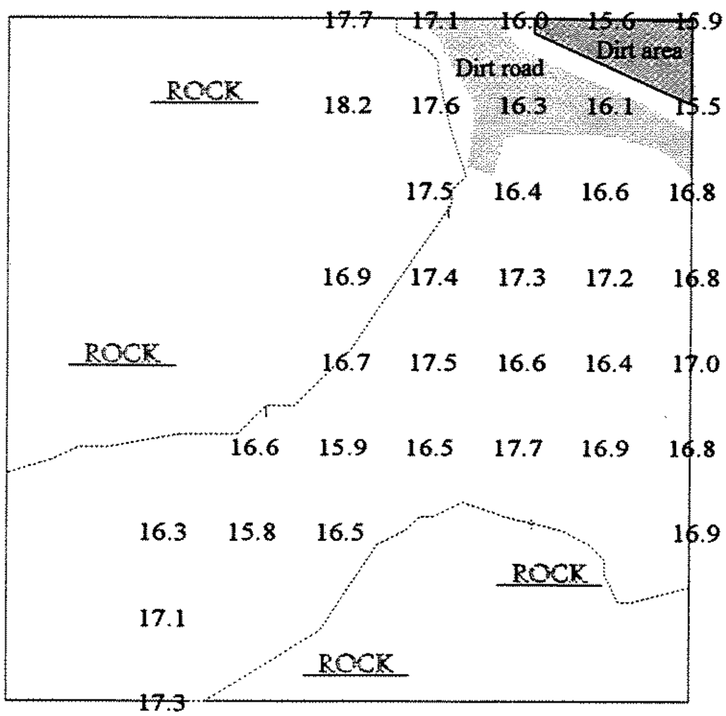
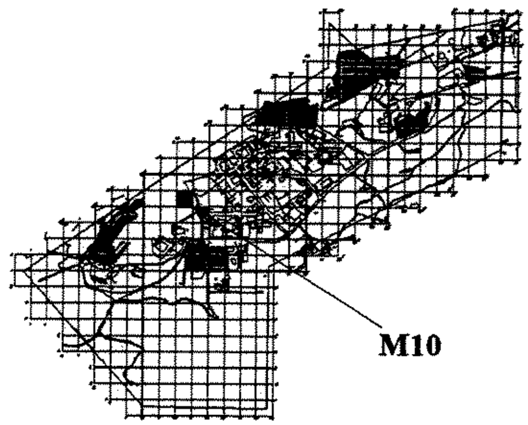


Figure B-104. Ambient Gamma Survey Results - Survey Block M10





M
10

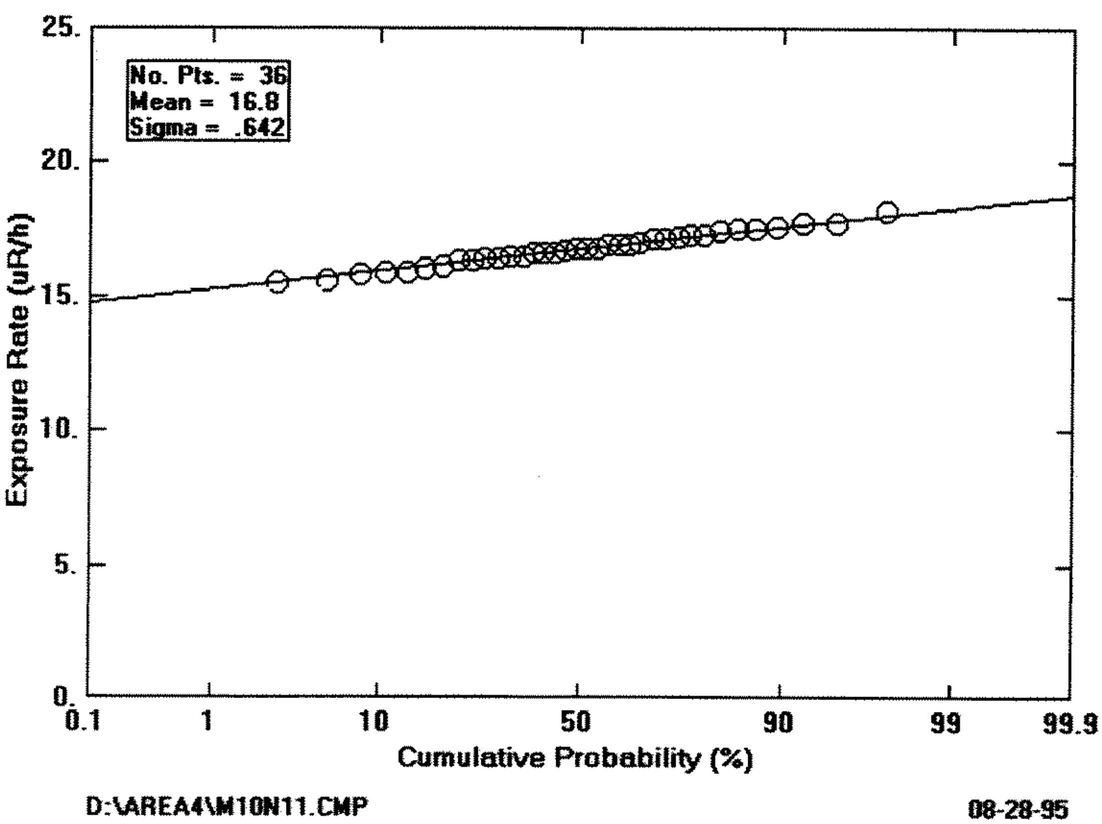
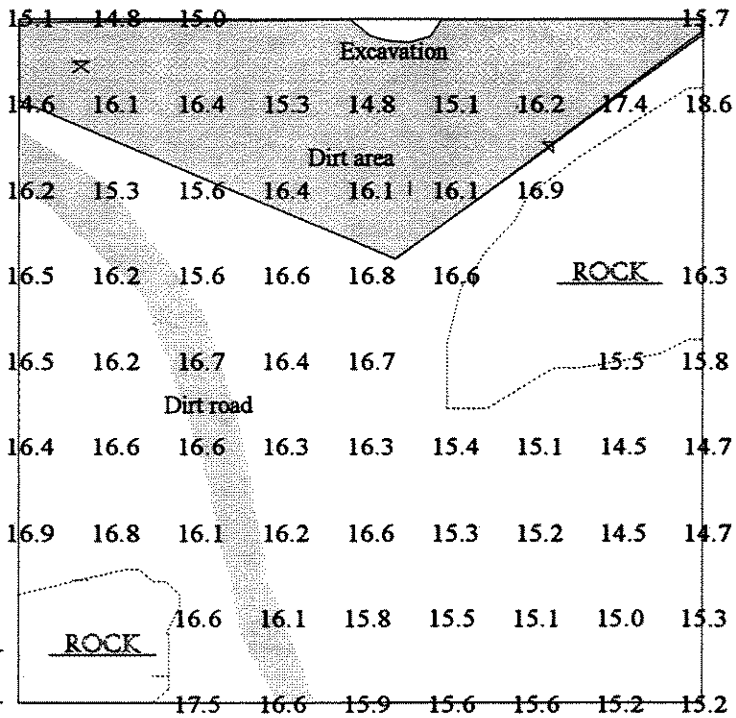
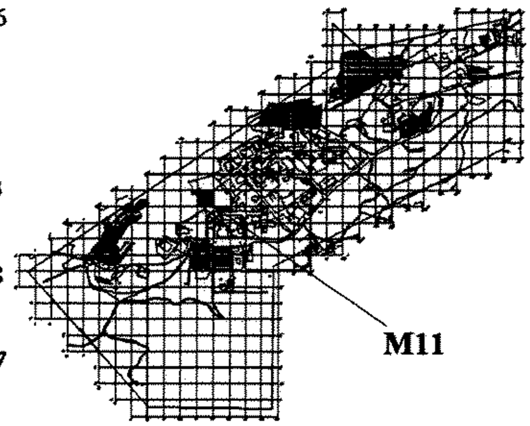


Figure B-105. Ambient Gamma Survey Results - Survey Block M11





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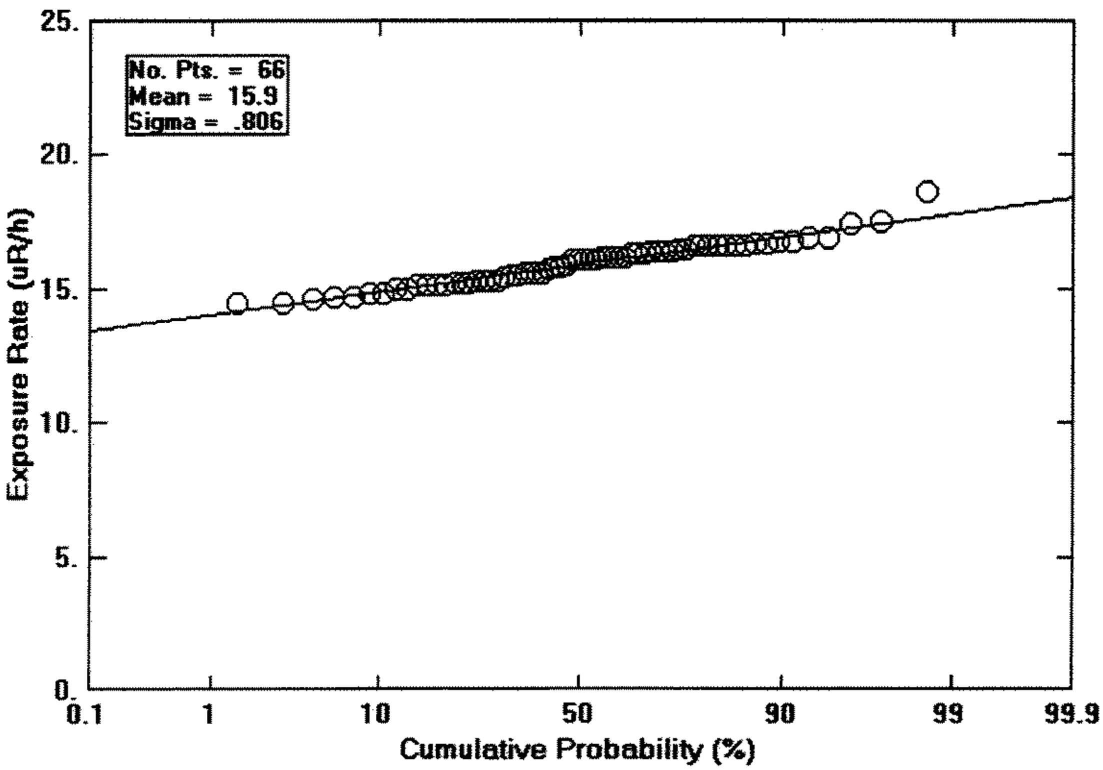

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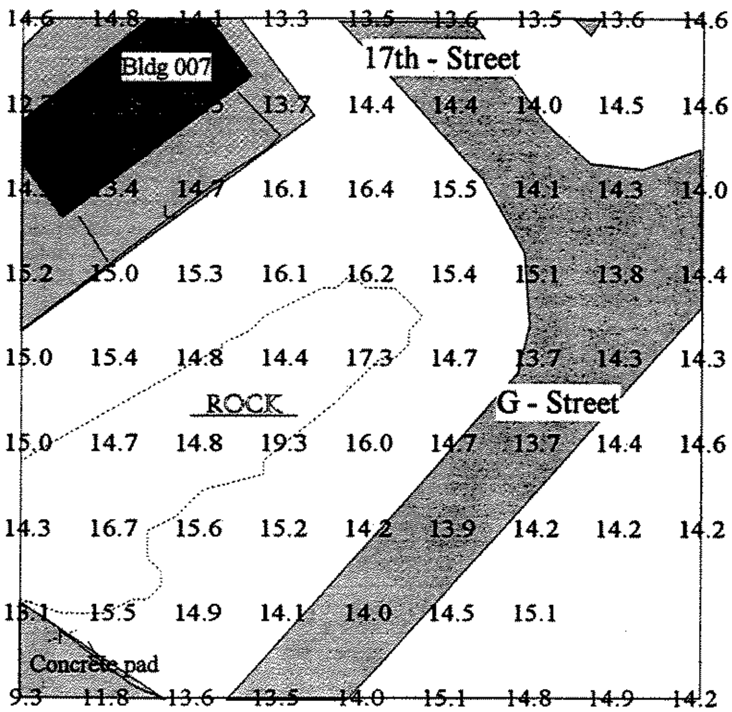
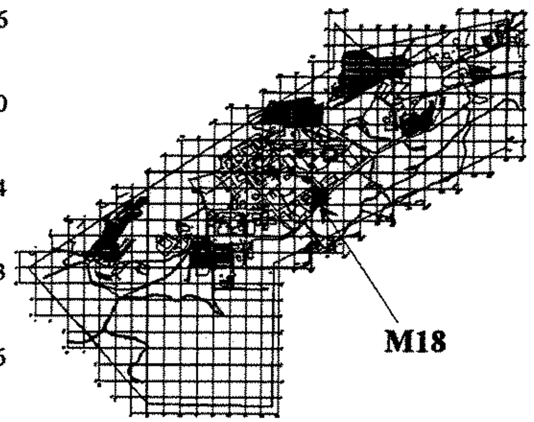
Figure B-106. Ambient Gamma Survey Results - Survey Block M18





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18

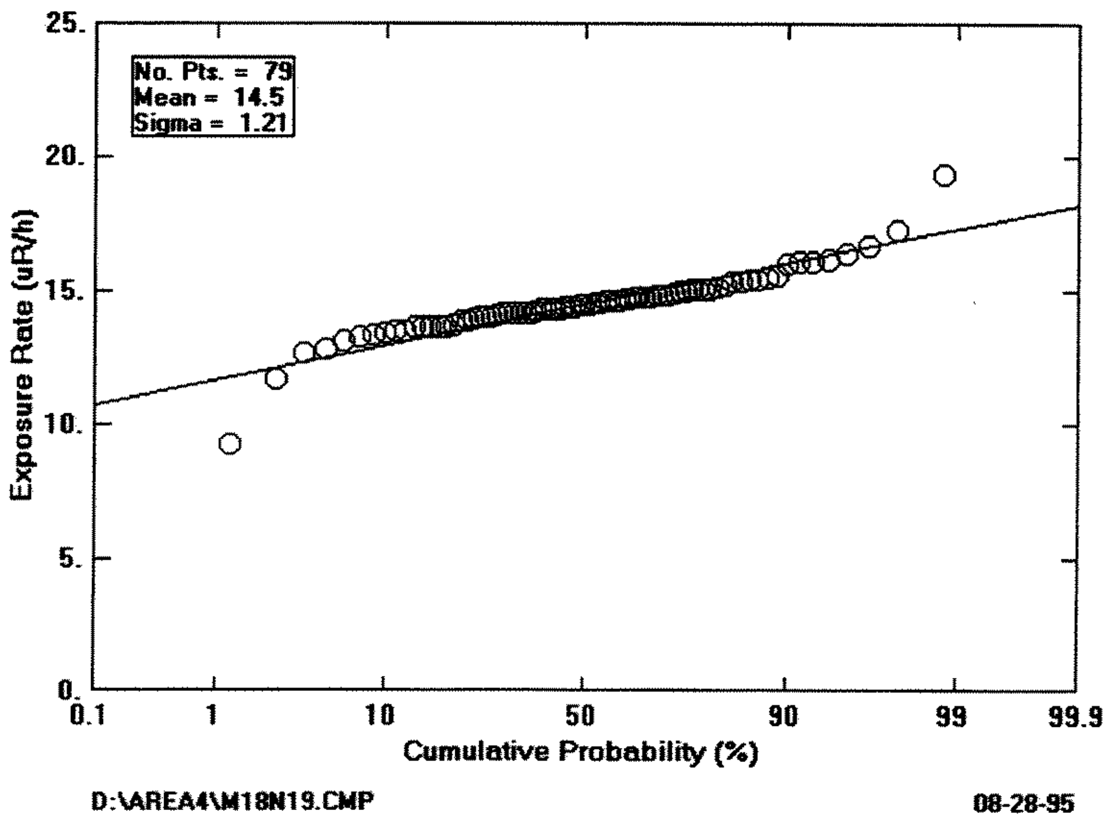
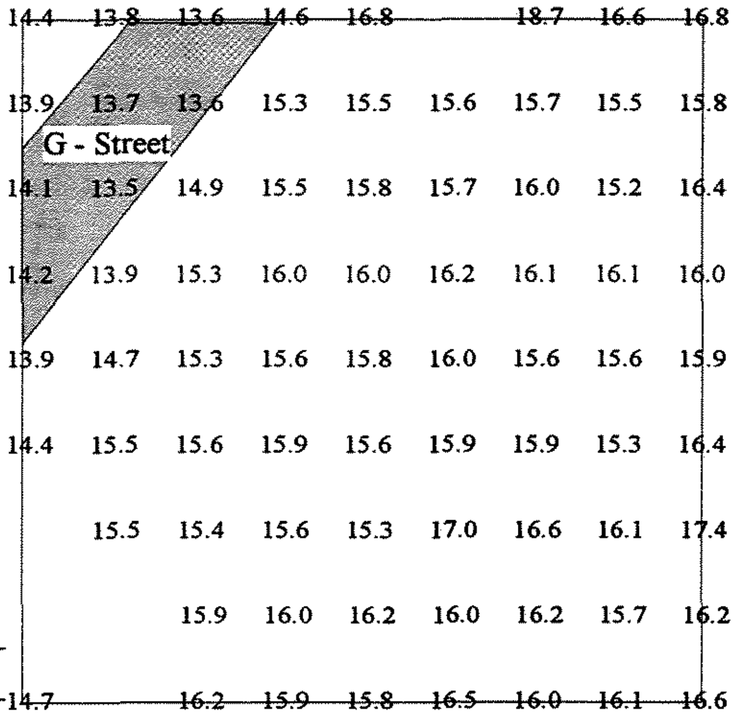
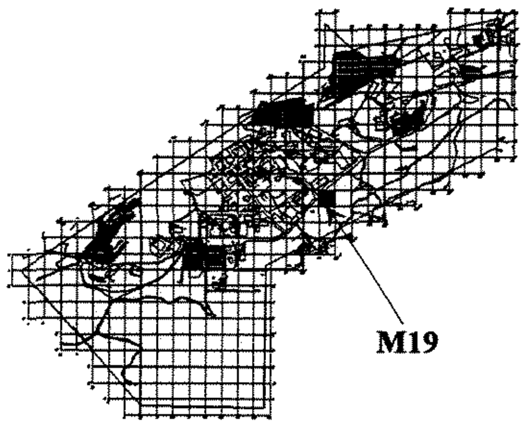


Figure B-107. Ambient Gamma Survey Results - Survey Block M19





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19

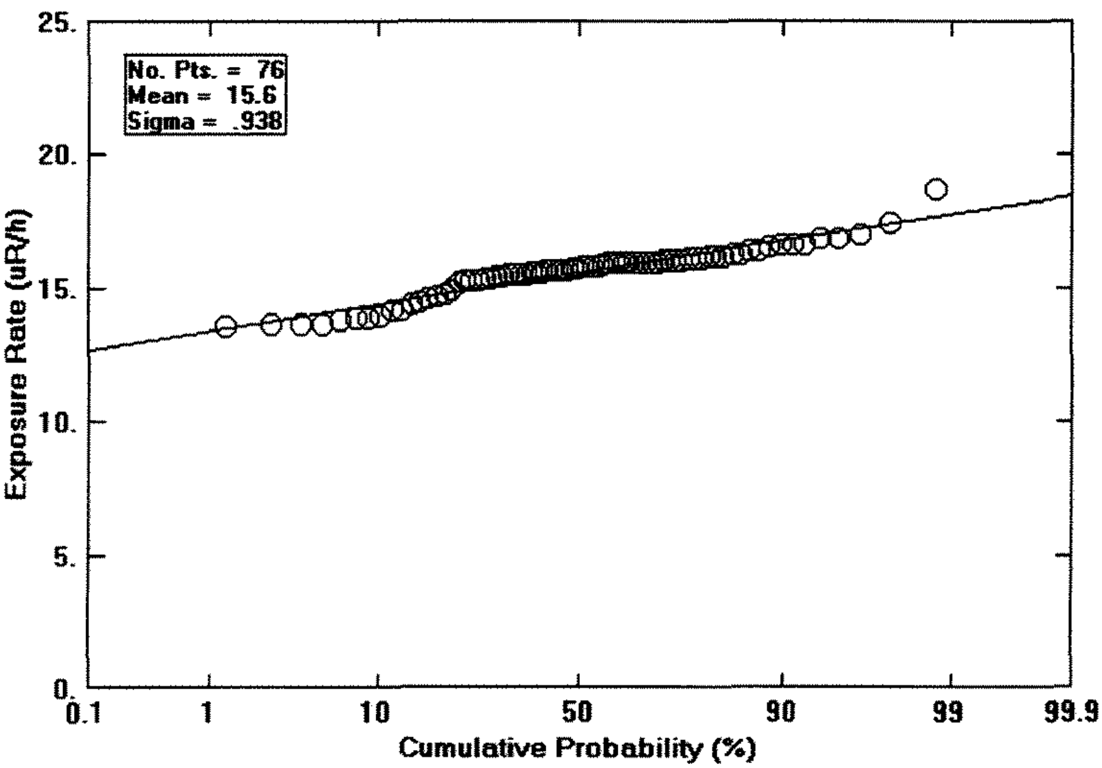

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Figure B-108. Ambient Gamma Survey Results - Survey Block M20

16.1	16.6	18.9	18.3	16.8	16.9	16.1	16.2	15.8
16.7	17.1	17.6	17.8	17.5	17.1	16.6	16.4	16.7
16.2	16.6	16.5	16.6	16.1	16.1	16.2	15.8	16.0
14.6	14.8	15.0	15.1	15.0	14.8	14.8	15.3	15.7
15.6	15.9	15.8	15.7	15.7	16.0	15.5	16.2	16.0
15.0	17.5	19.5	15.1	14.5	13.9	17.1	17.2	15.1
15.5	15.9	15.3	15.7	15.8	15.7	15.3	14.2	16.0
14.1	15.1	15.4	14.8	15.1	15.1	15.2	15.4	14.7
15.7	15.8	15.5	15.9	16.2	15.8	15.6	15.9	15.9

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ROCK

M
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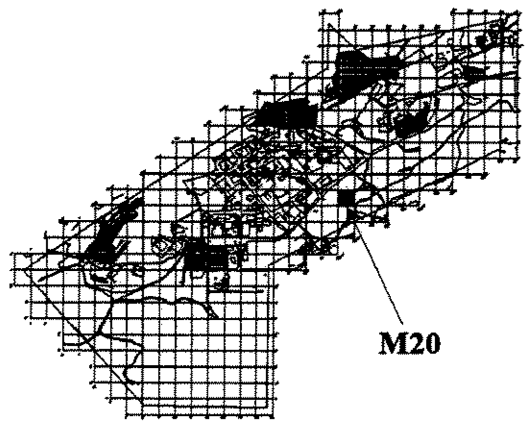

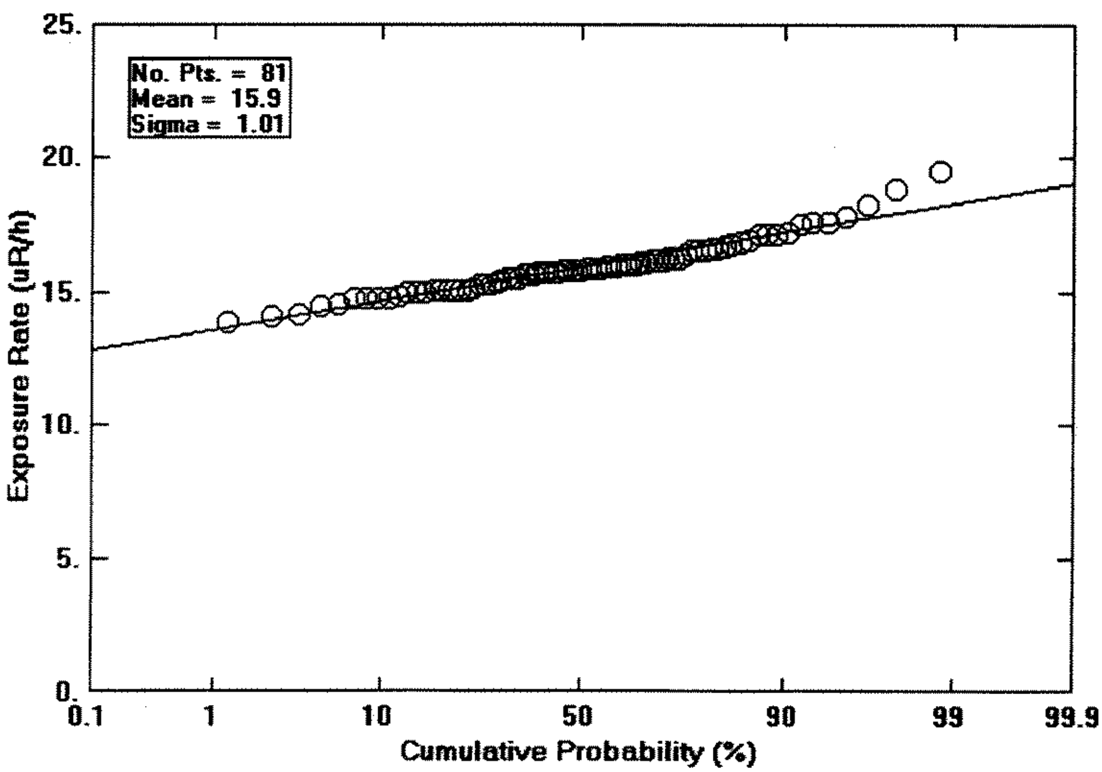

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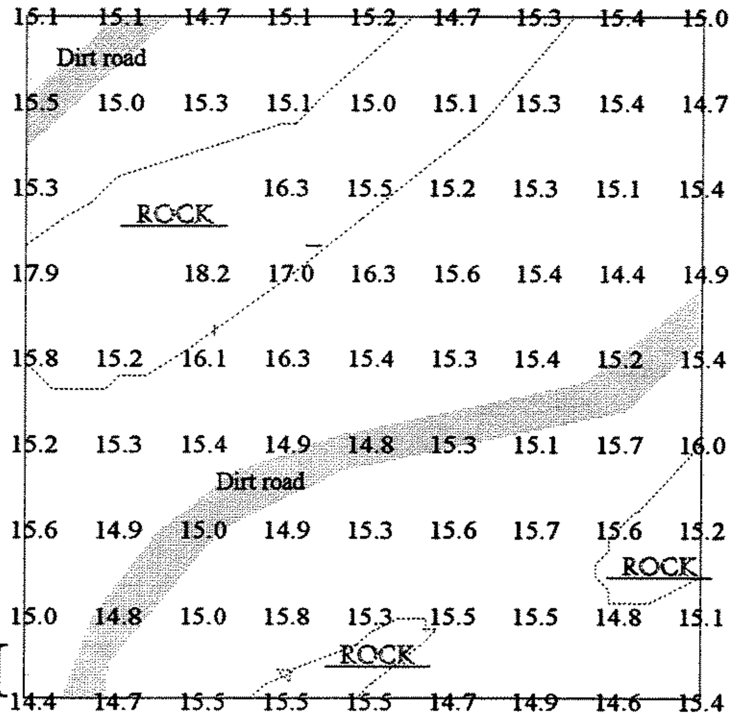
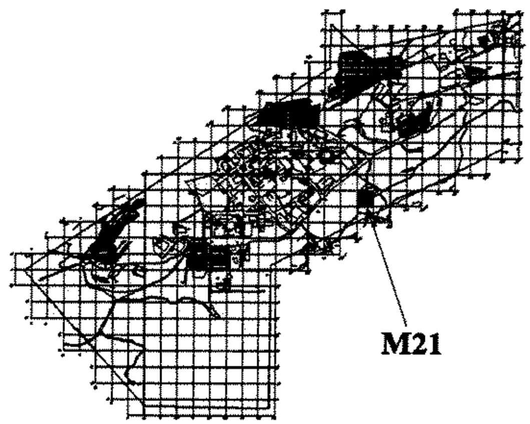
Figure B-109. Ambient Gamma Survey Results - Survey Block M21





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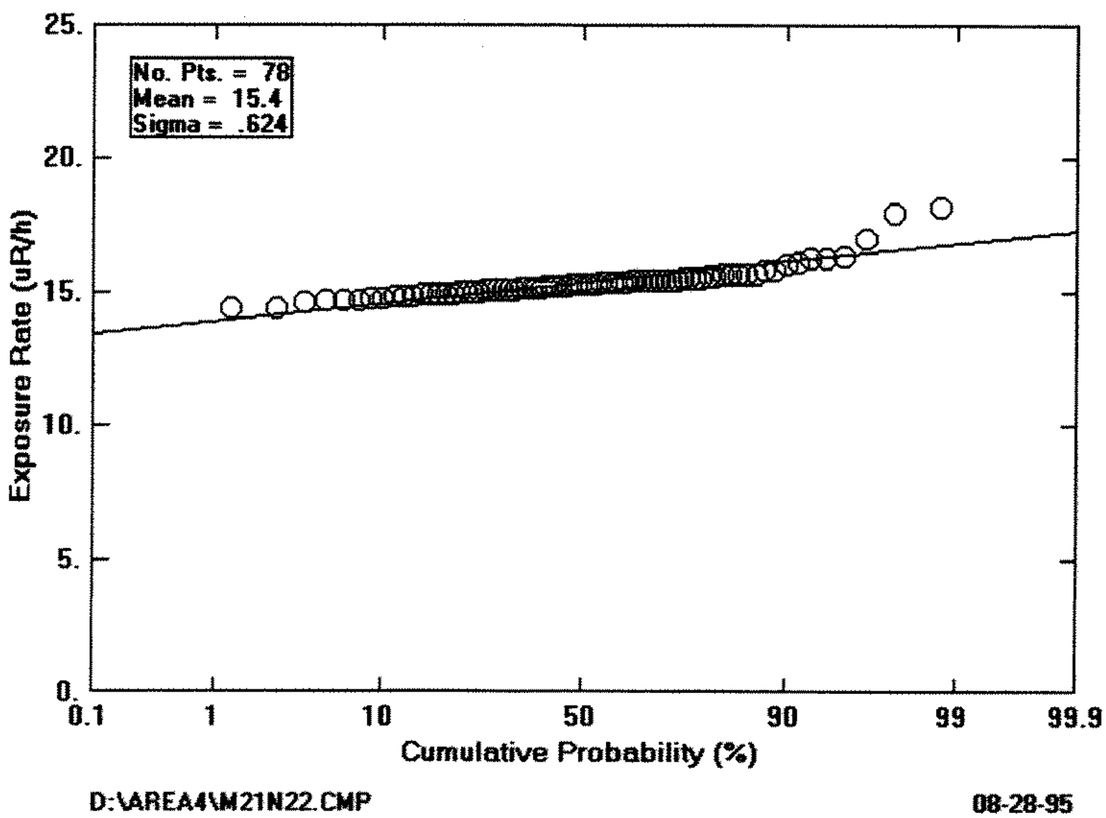
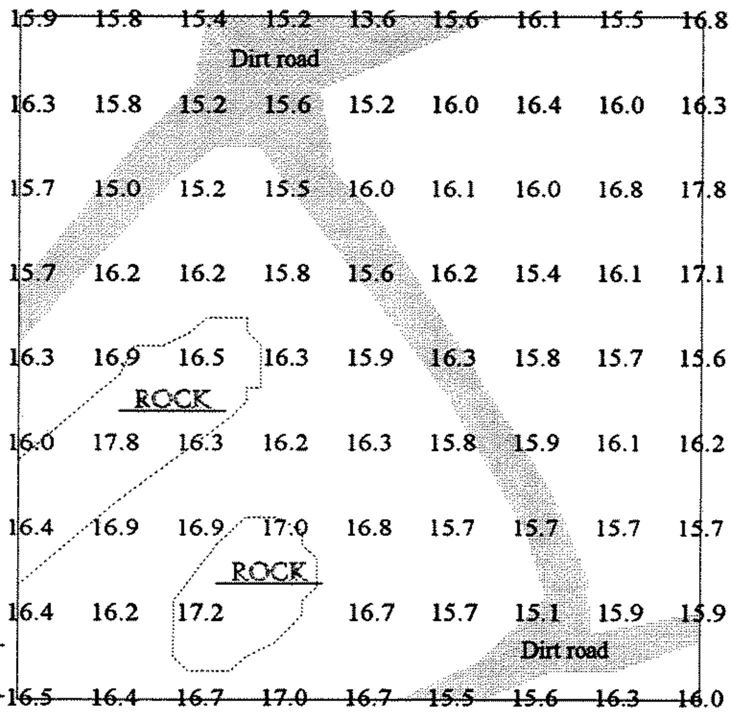
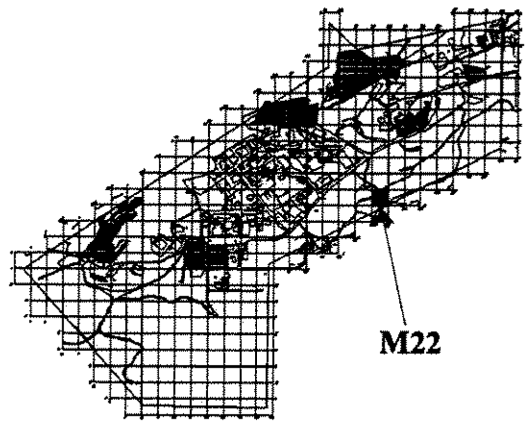


Figure B-110. Ambient Gamma Survey Results - Survey Block M22





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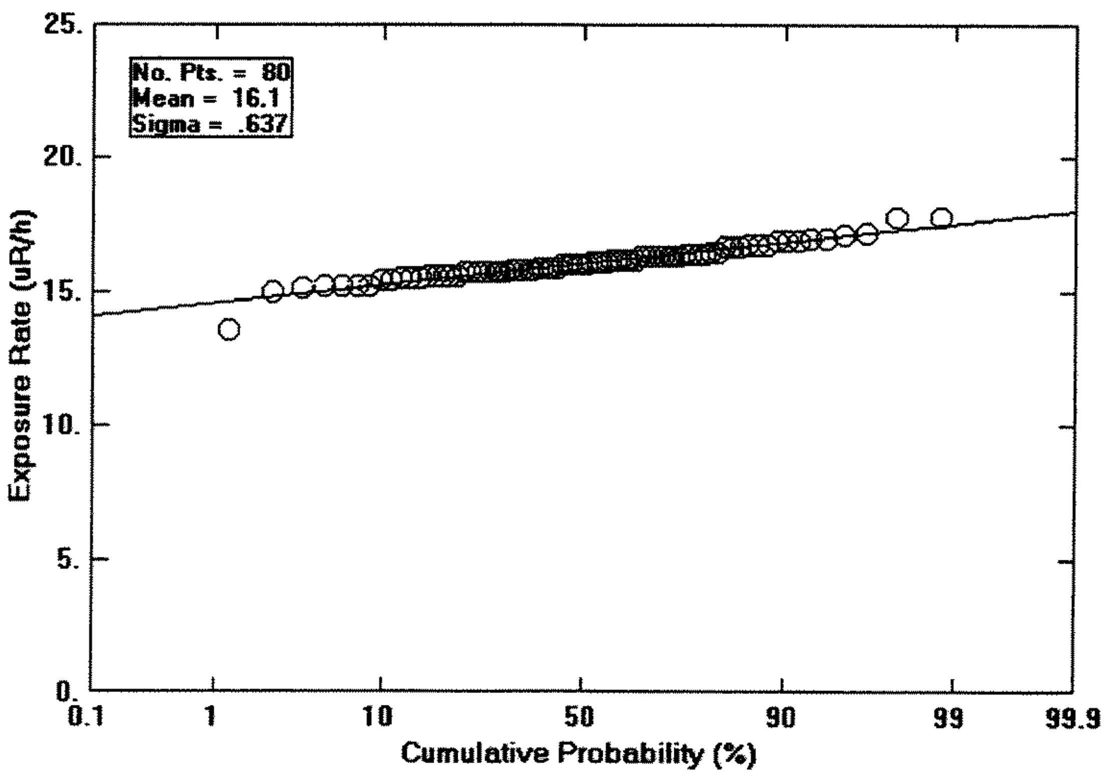

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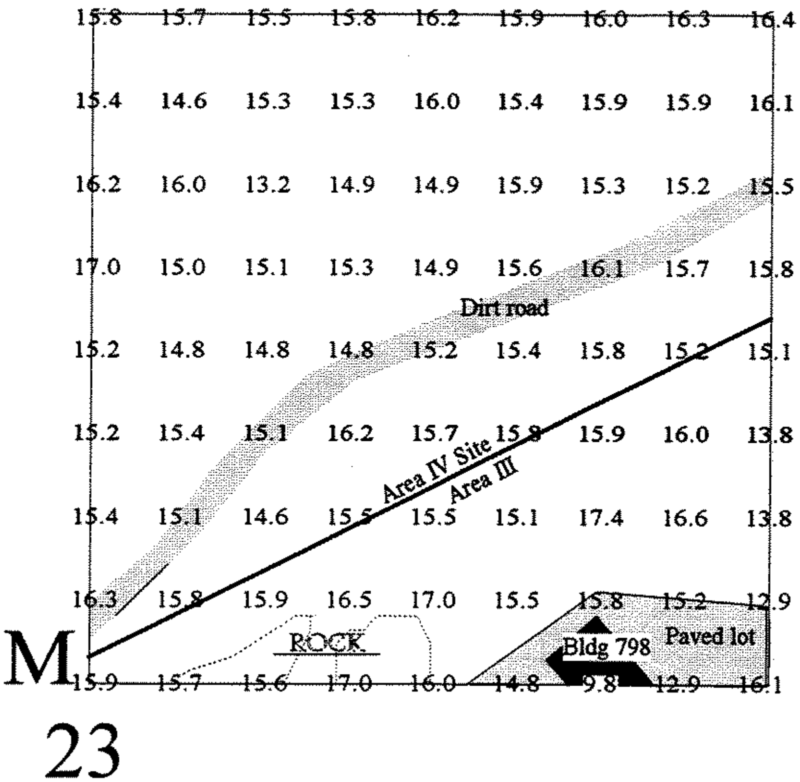
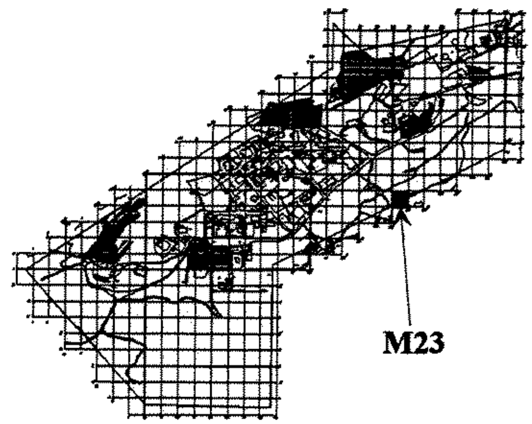
Figure B-111. Ambient Gamma Survey Results - Survey Block M23





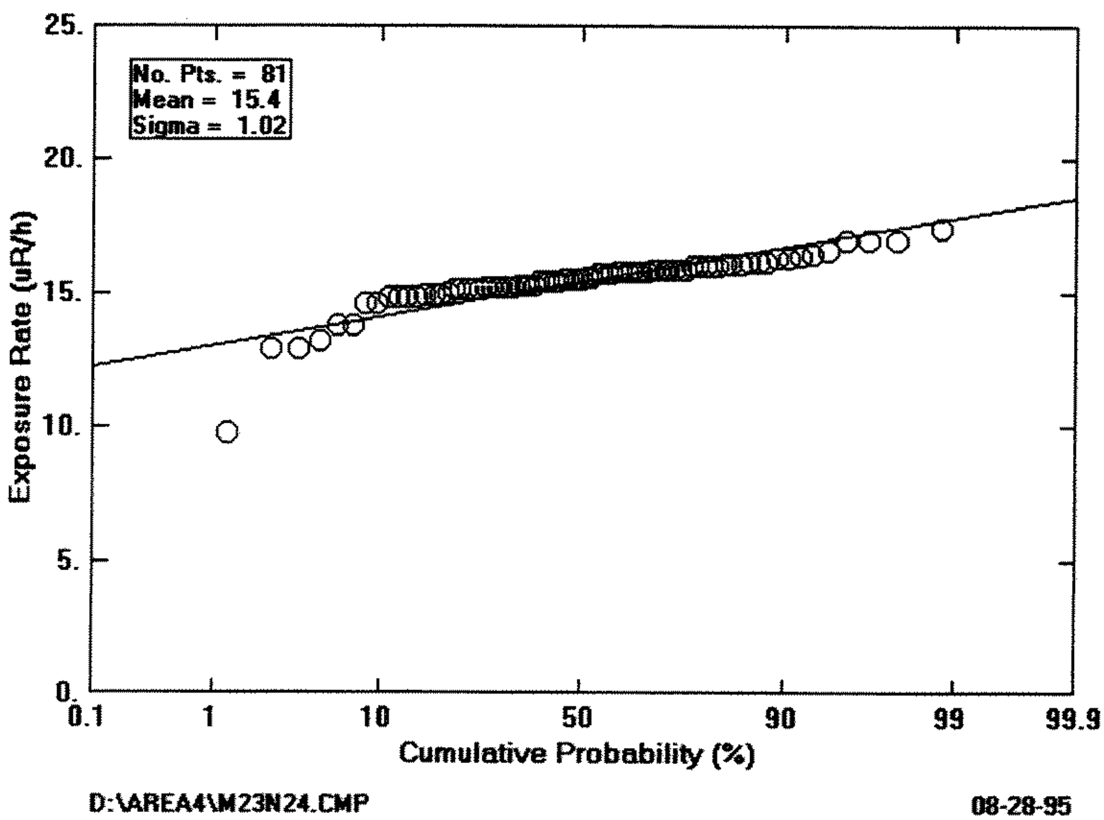
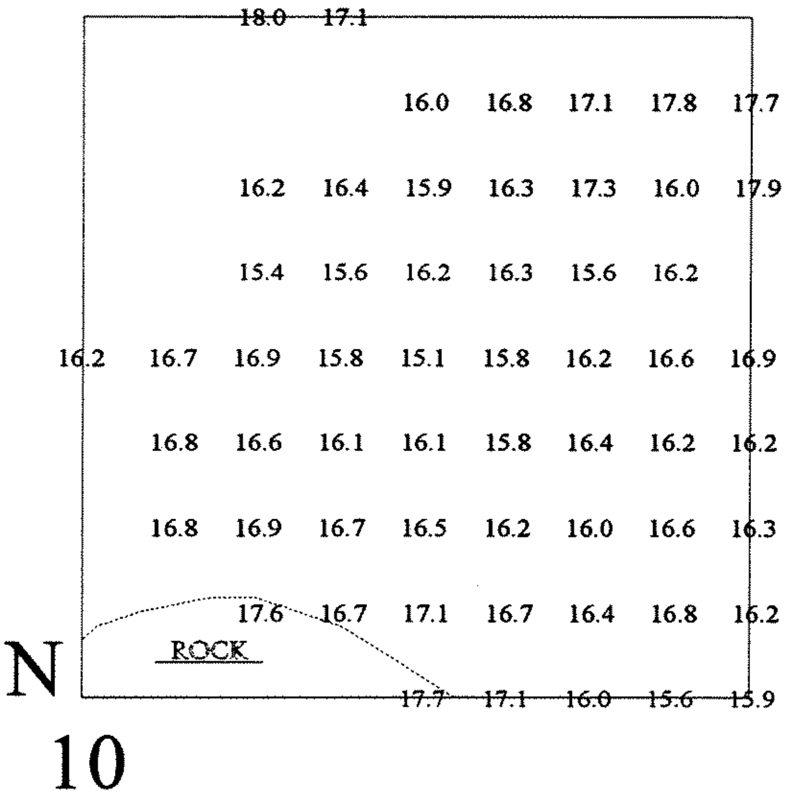
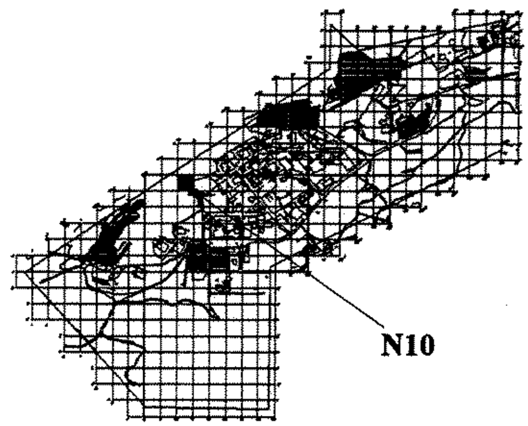


Figure B-112. Ambient Gamma Survey Results - Survey Block N10





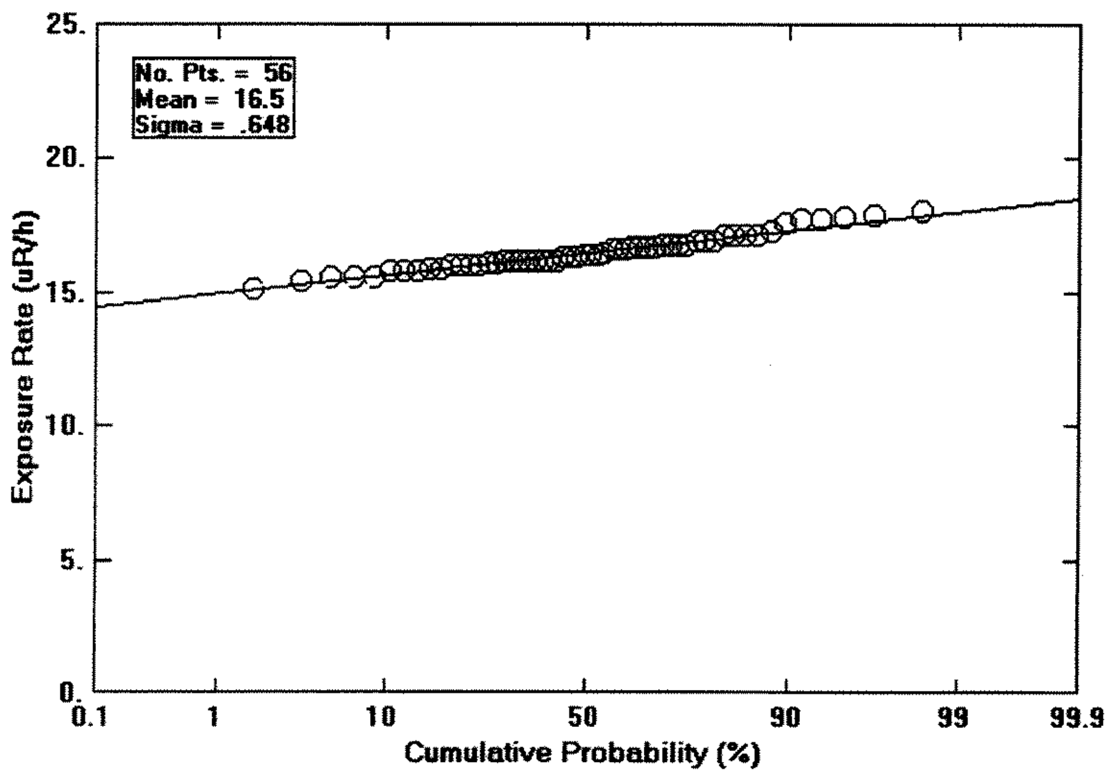


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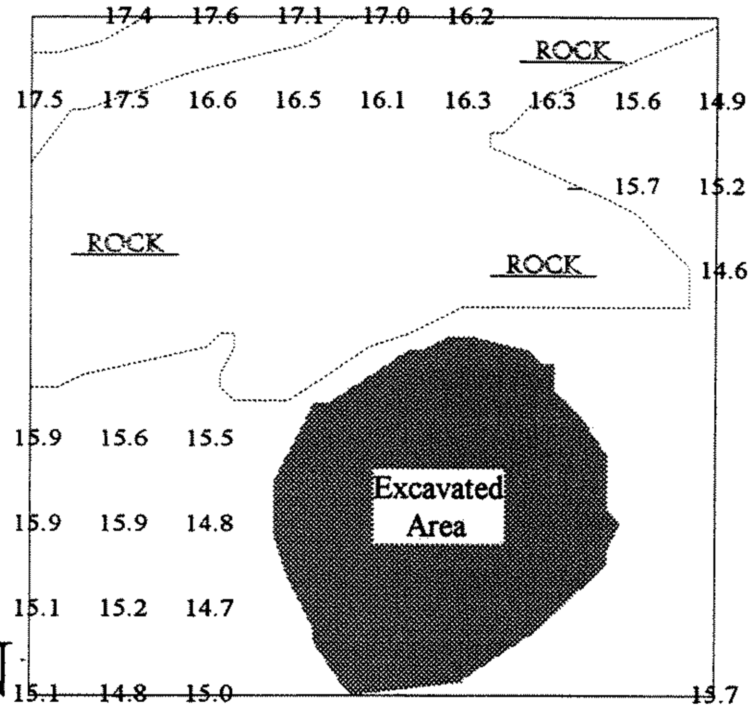
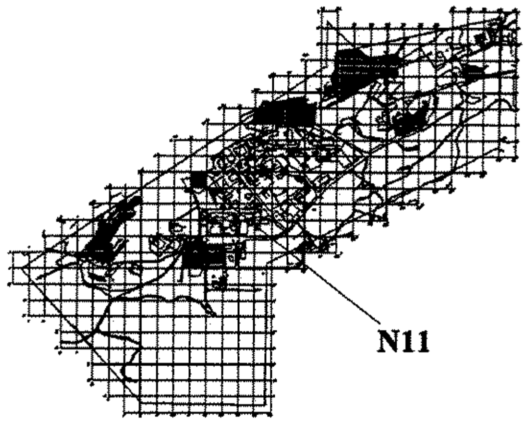
Figure B-113. Ambient Gamma Survey Results - Survey Block N11





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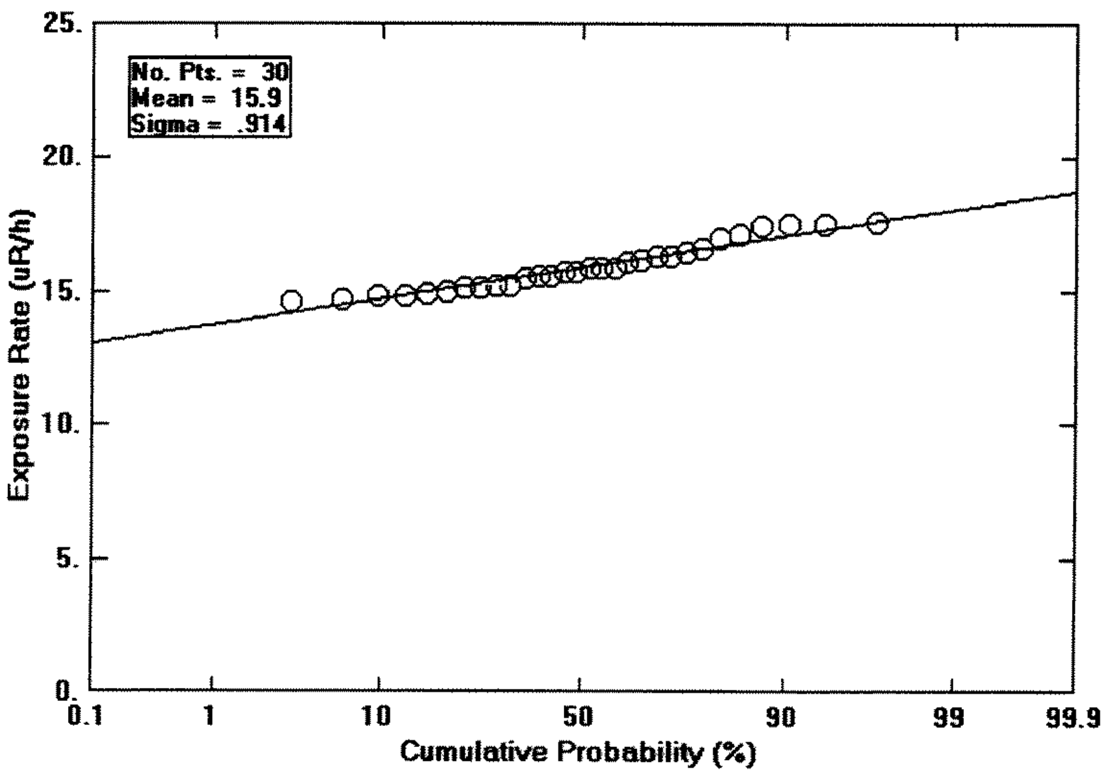

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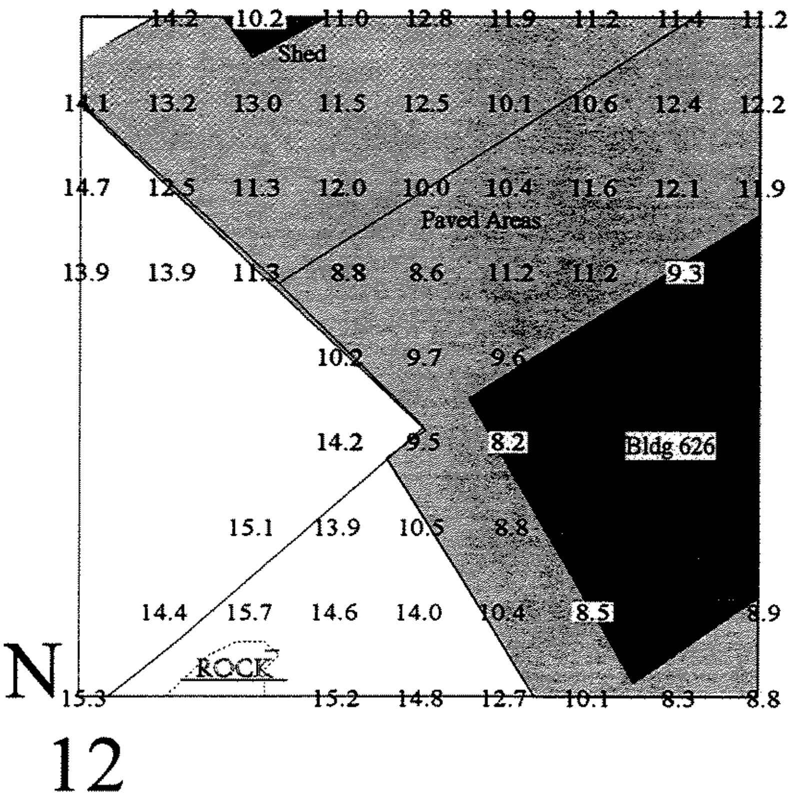
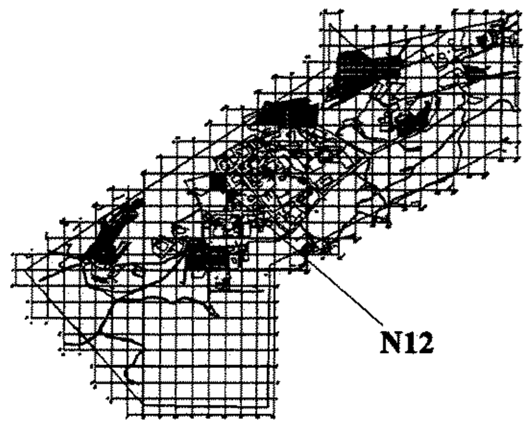
Figure B-114. Ambient Gamma Survey Results - Survey Block N12





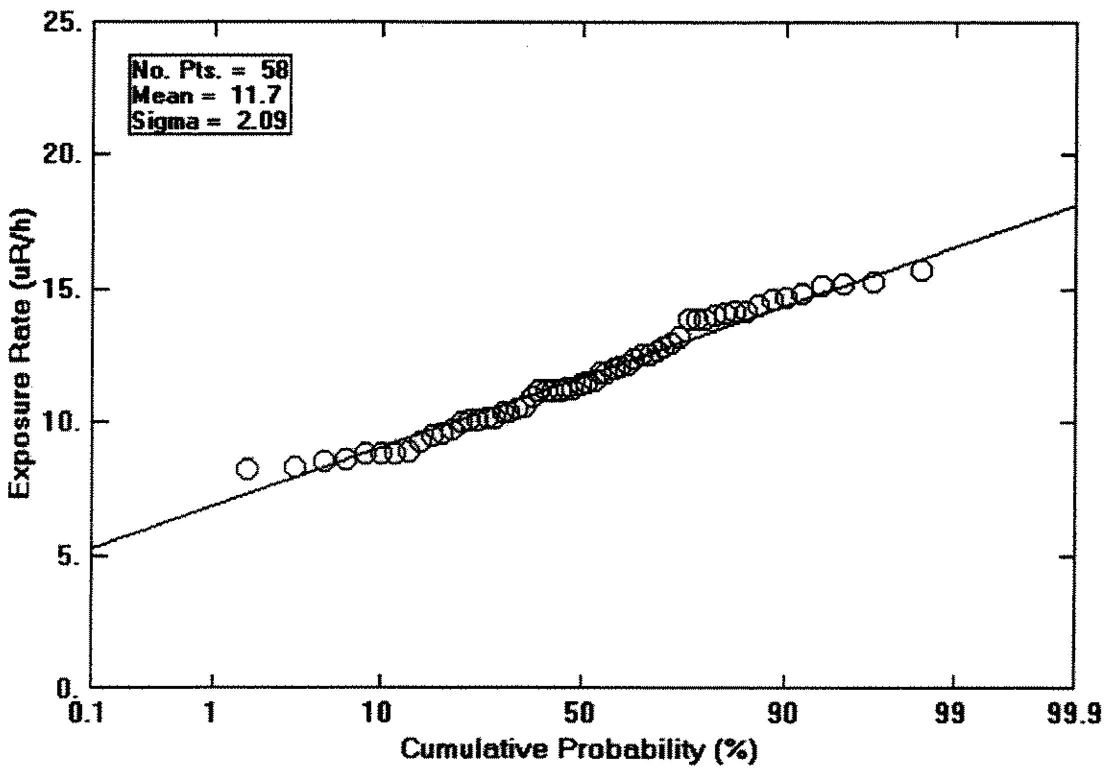


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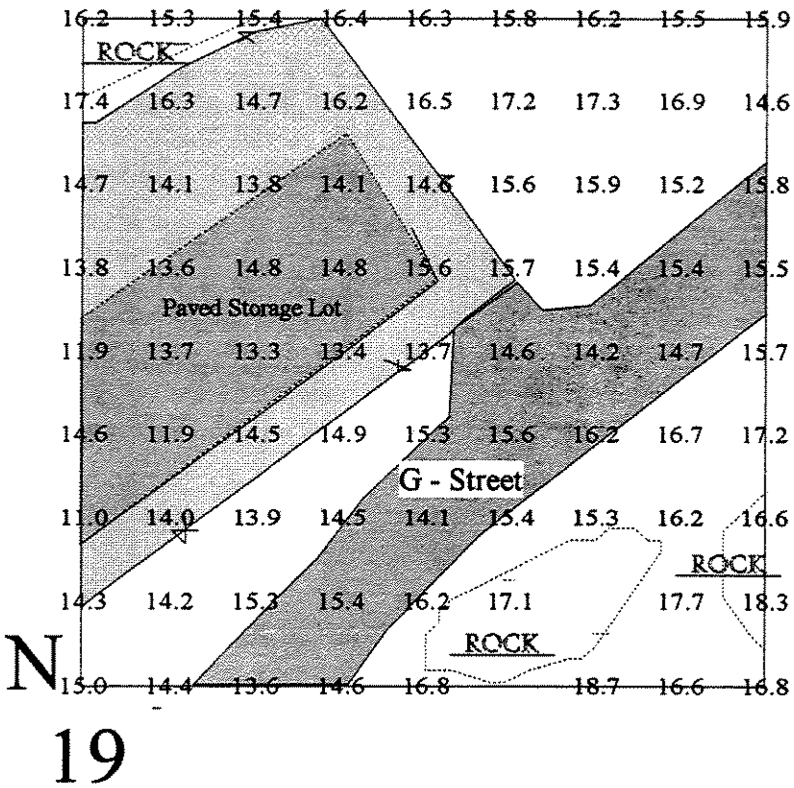
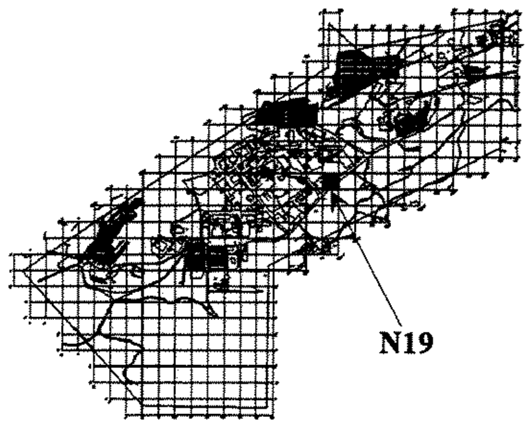
Figure B-115. Ambient Gamma Survey Results - Survey Block N19





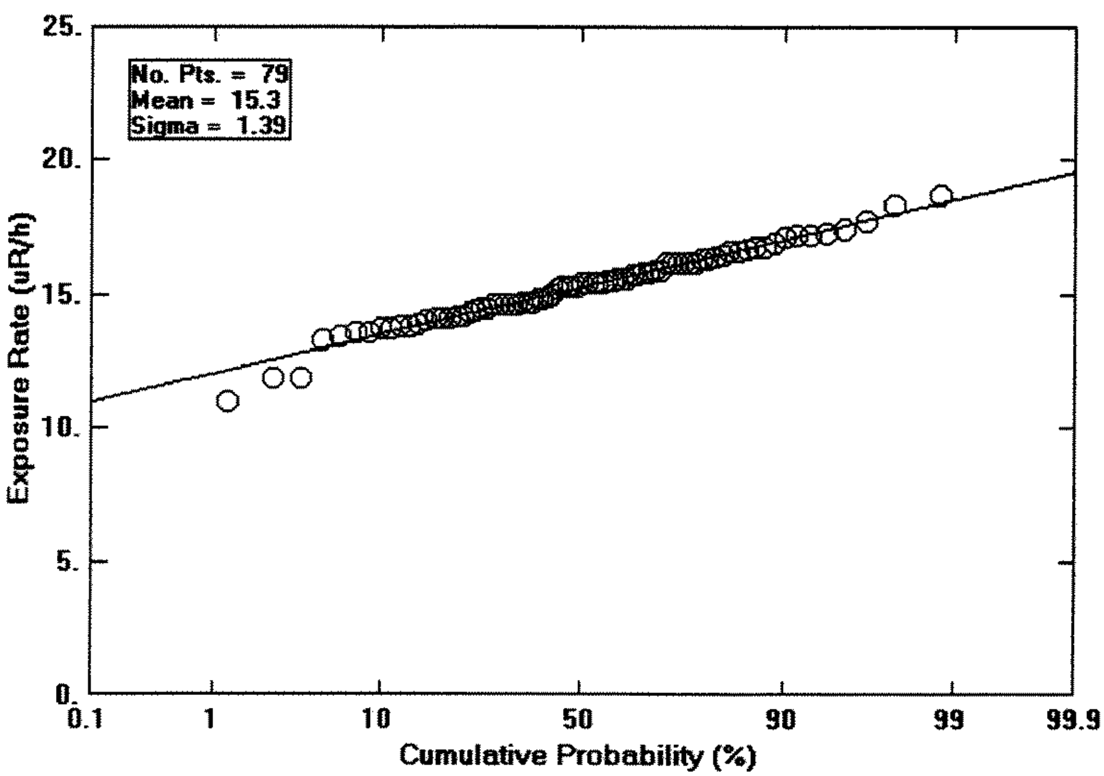


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Figure B-116. Ambient Gamma Survey Results - Survey Block N20

16.8	15.9	15.1	14.5	14.7	14.1	14.1	14.2	13.7
13.8	12.9	13.0	13.2	14.6	14.1	13.6	14.3	14.1
15.0	14.4	14.5	16.6	16.4	17.0	16.3	16.1	16.6
12.8	14.1	14.5	14.4	14.2	14.7	14.6	14.7	15.5
16.5	16.7	16.9	16.6	16.8	16.6	17.1	17.9	18.1
14.4	14.4	14.9	14.4	14.7	14.4	15.2	15.5	14.7
17.5	18.2	17.3	16.5	16.8	16.3	16.1	16.6	16.9
16.8		18.0	15.7	15.5	15.2	16.6	15.1	15.7
16.1	16.6	18.9	18.3	16.8	16.9	16.1	16.2	15.8

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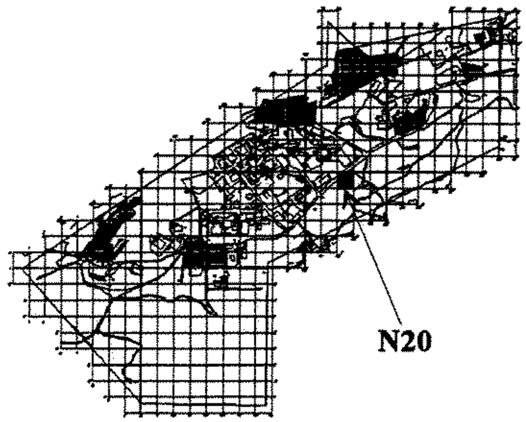


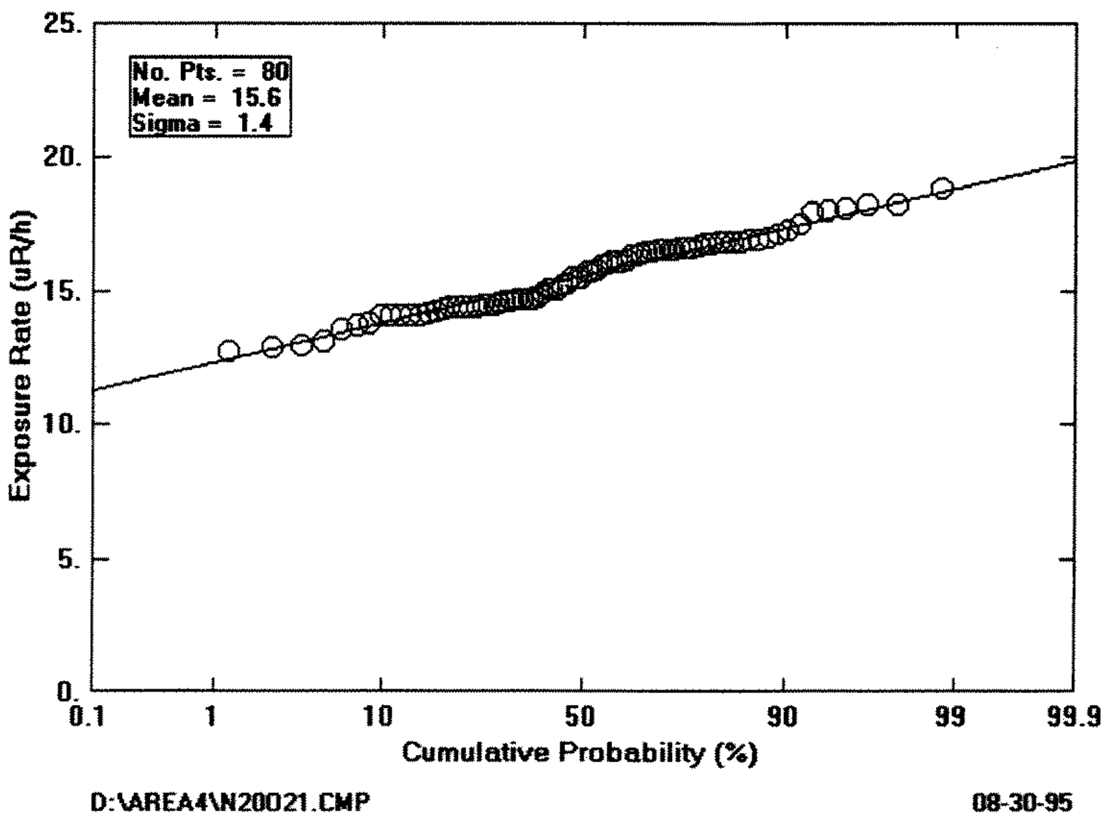
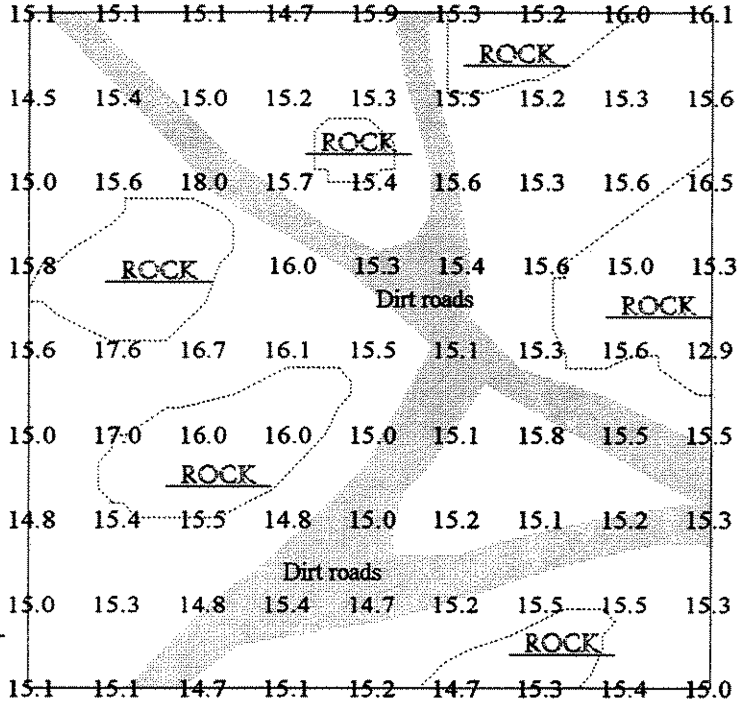
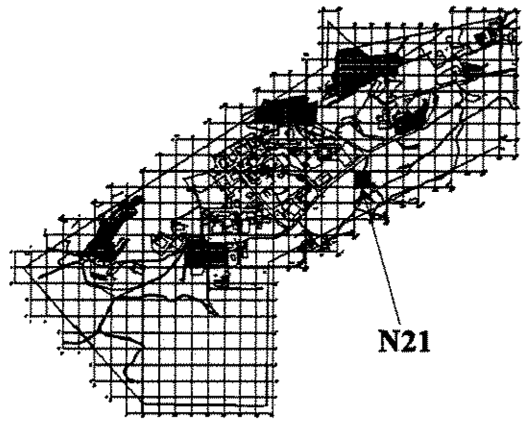


Figure B-117. Ambient Gamma Survey Results - Survey Block N21





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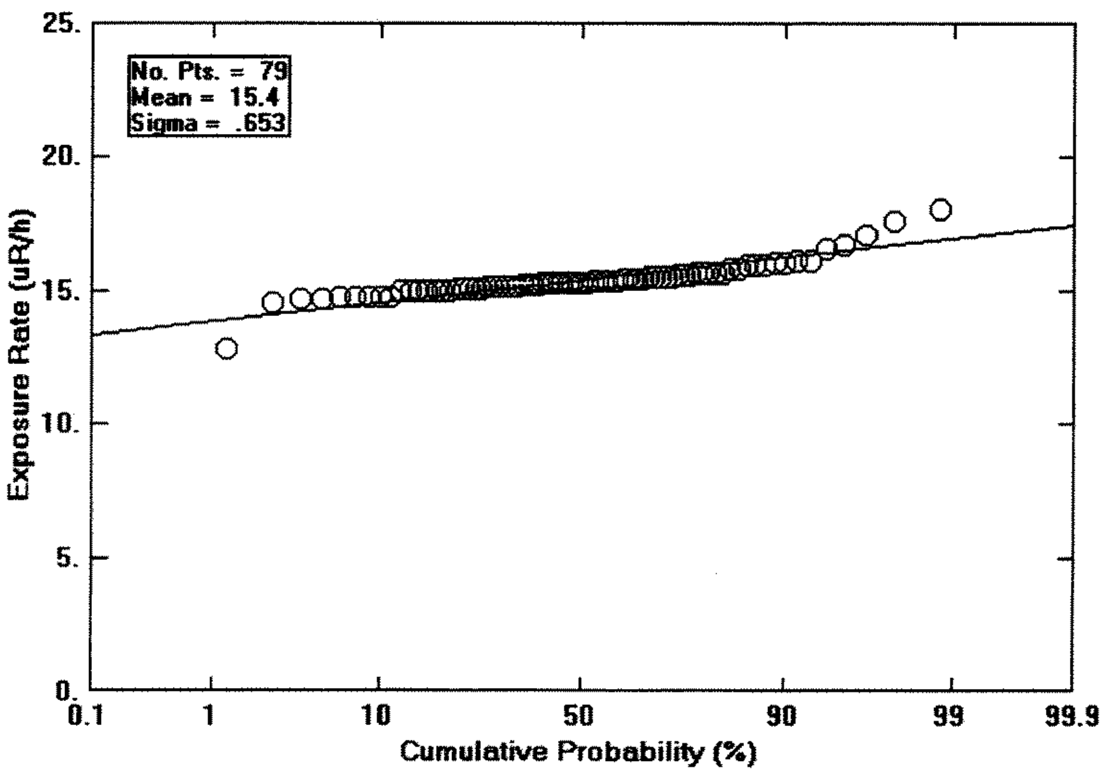

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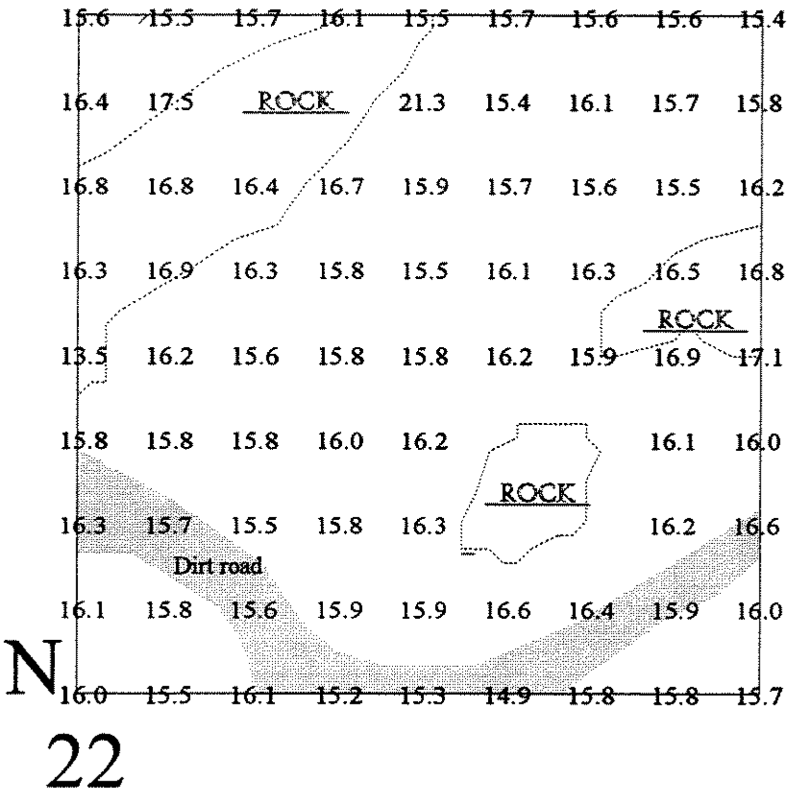
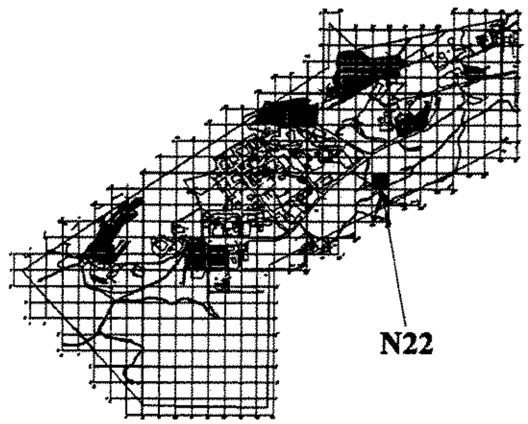
Figure B-118. Ambient Gamma Survey Results - Survey Block N22





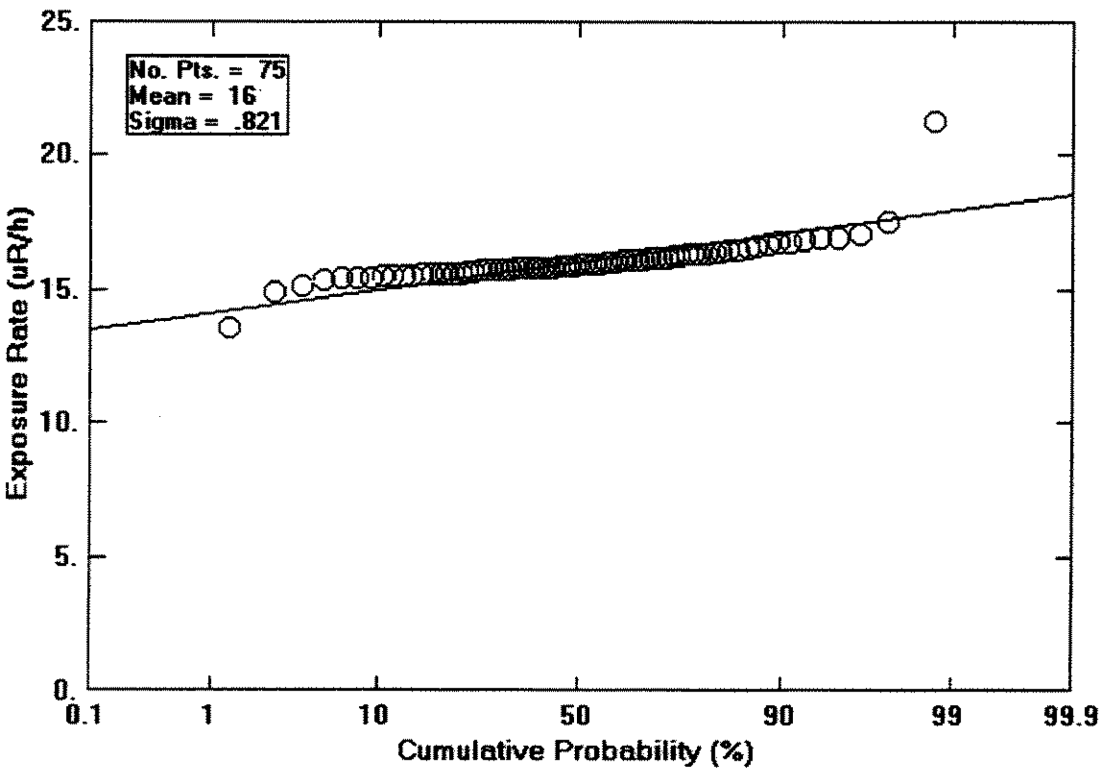


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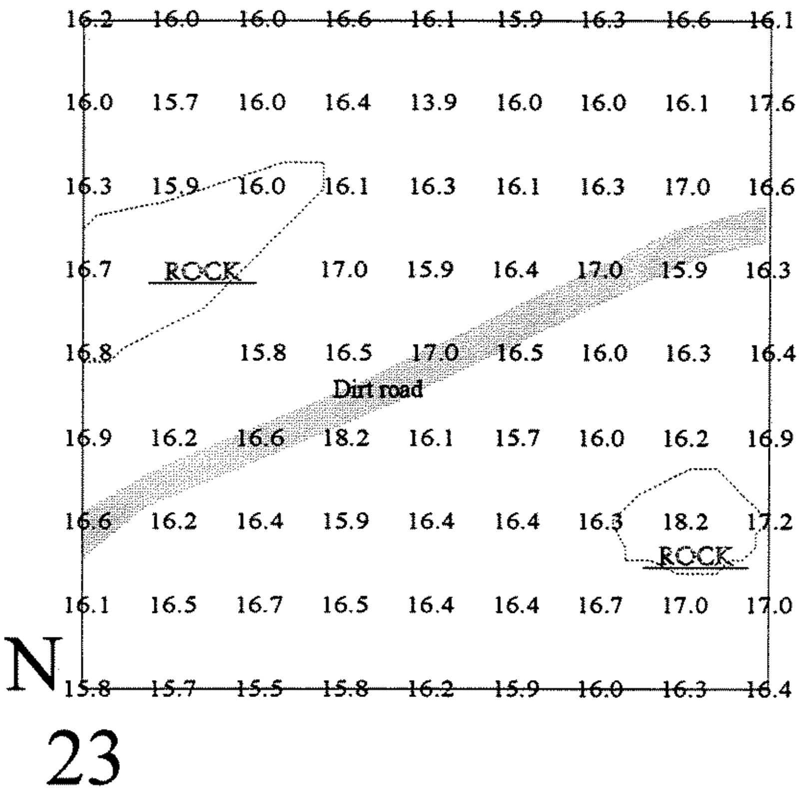
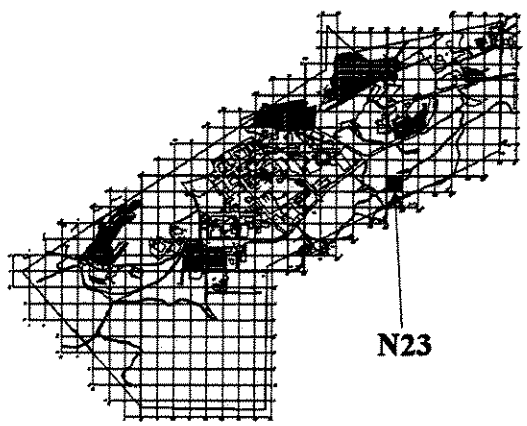
Figure B-119. Ambient Gamma Survey Results - Survey Block N23





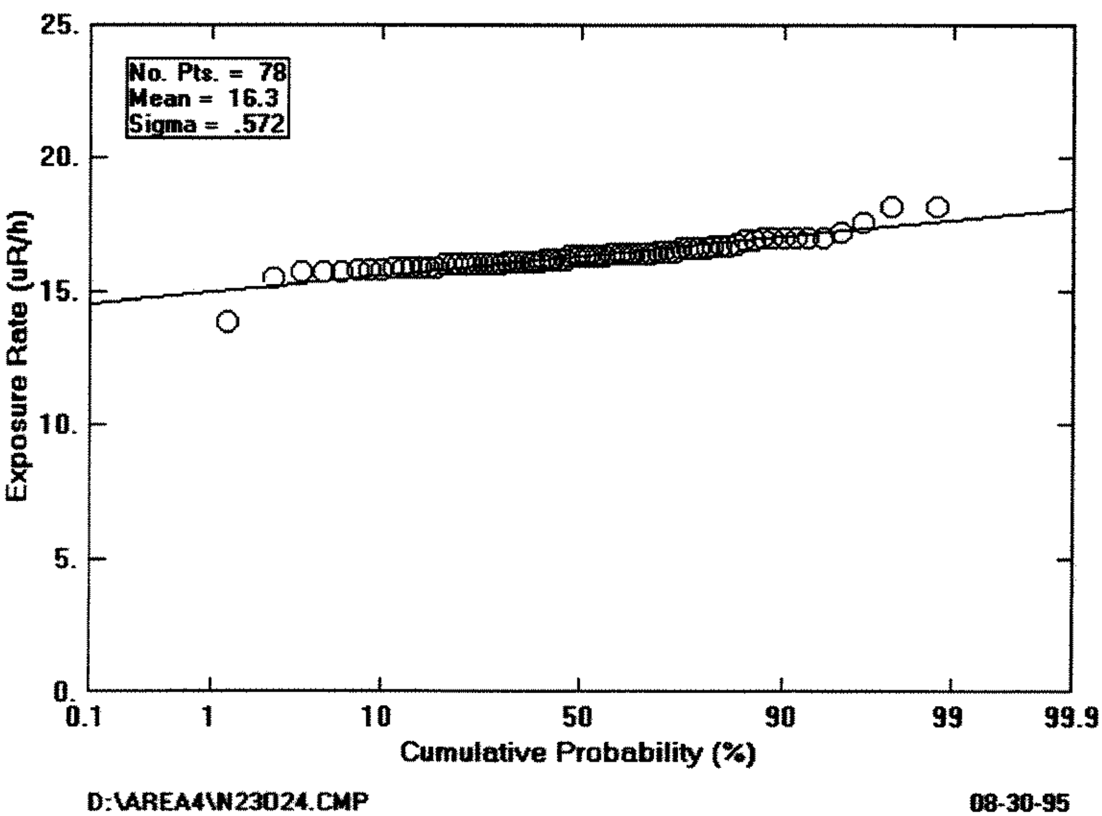
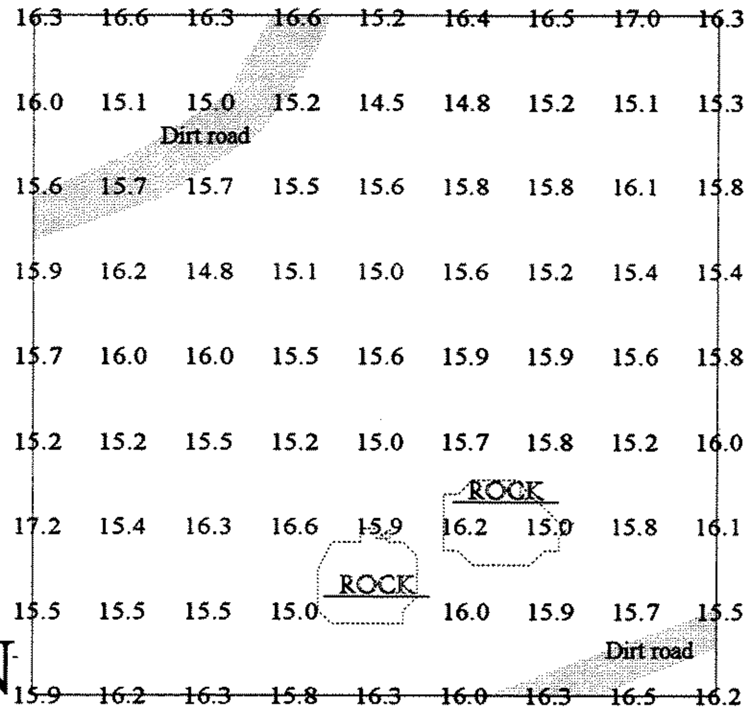


Figure B-120. Ambient Gamma Survey Results - Survey Block N24



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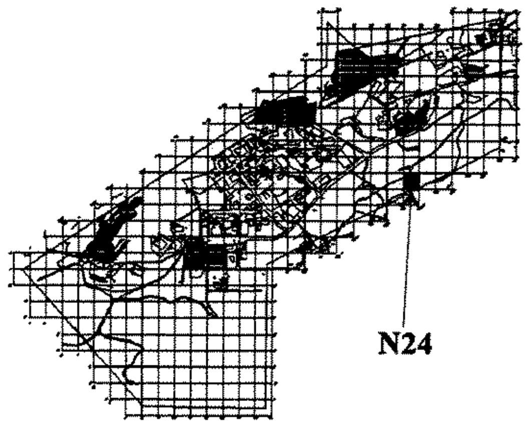

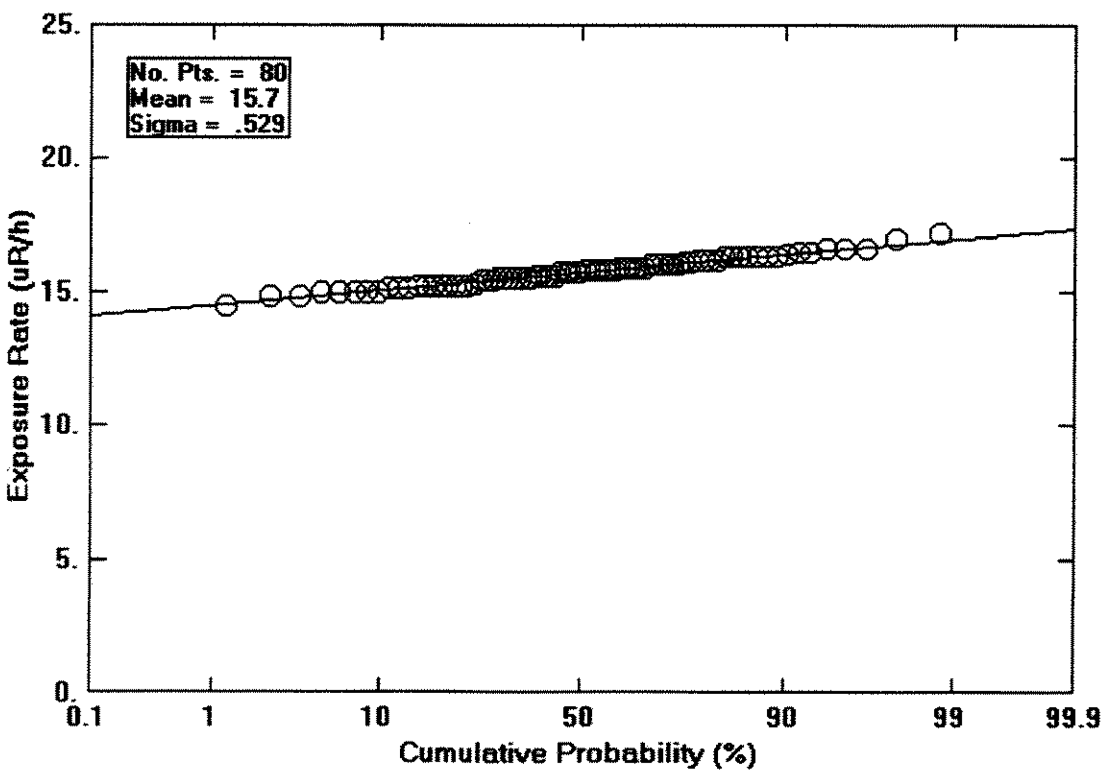

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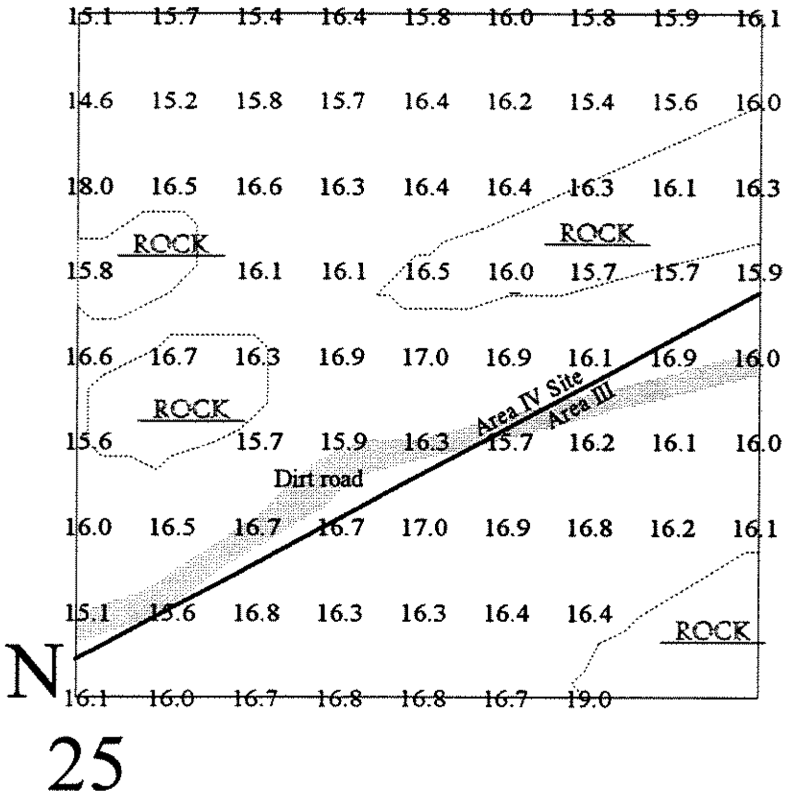
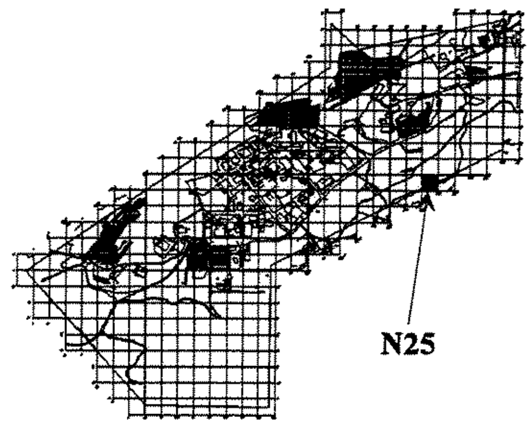
Figure B-121. Ambient Gamma Survey Results - Survey Block N25





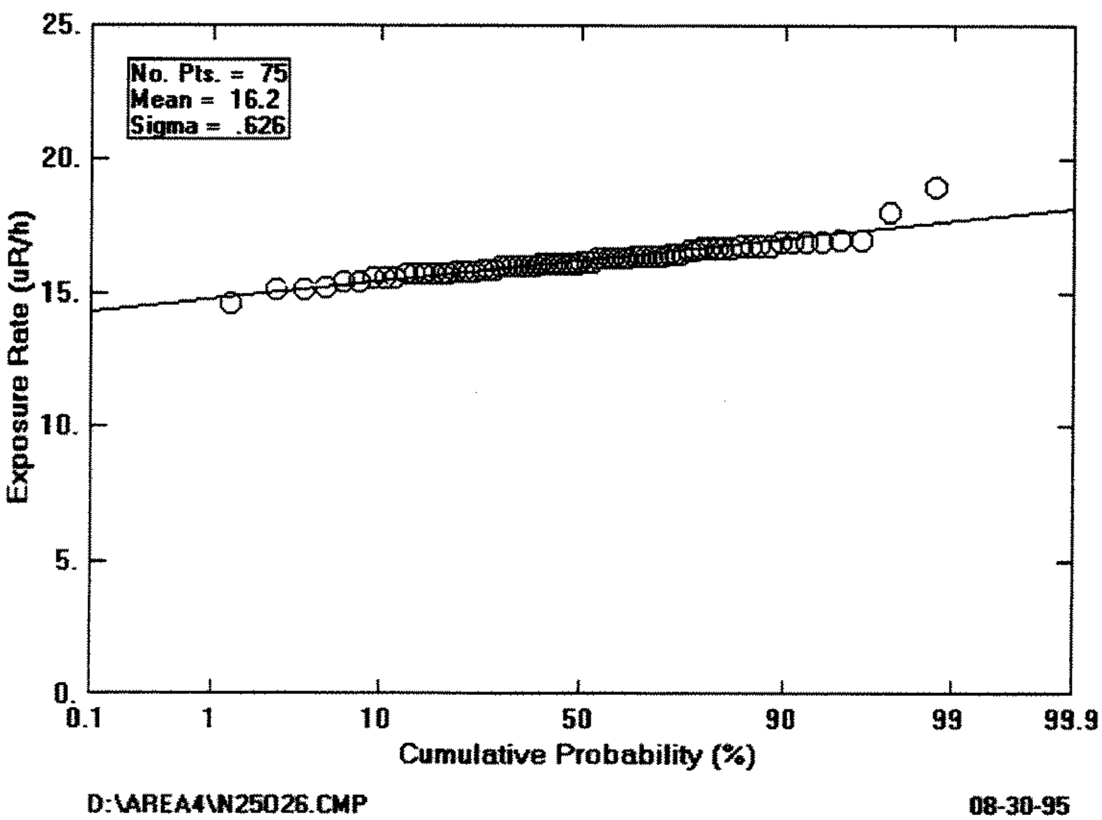
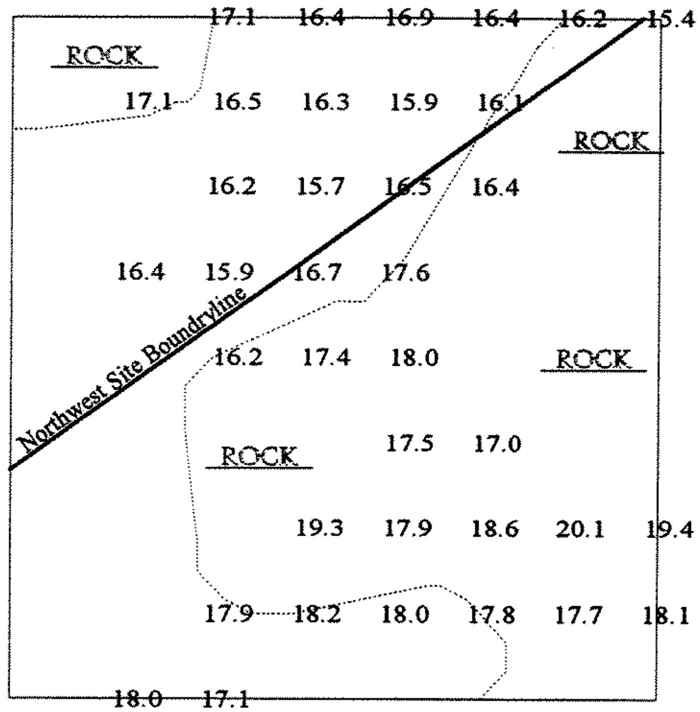
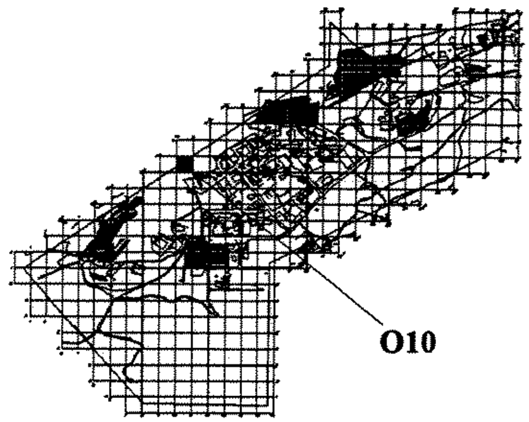


Figure B-122. Ambient Gamma Survey Results - Survey Block O10





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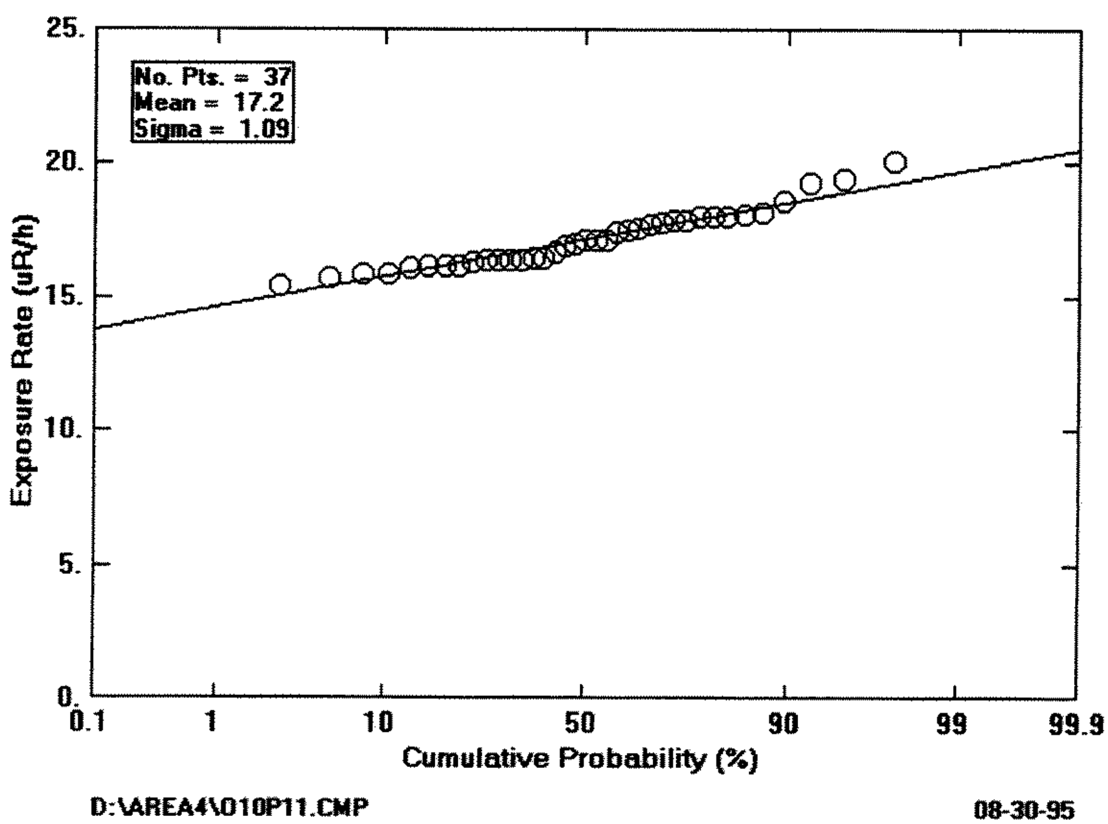
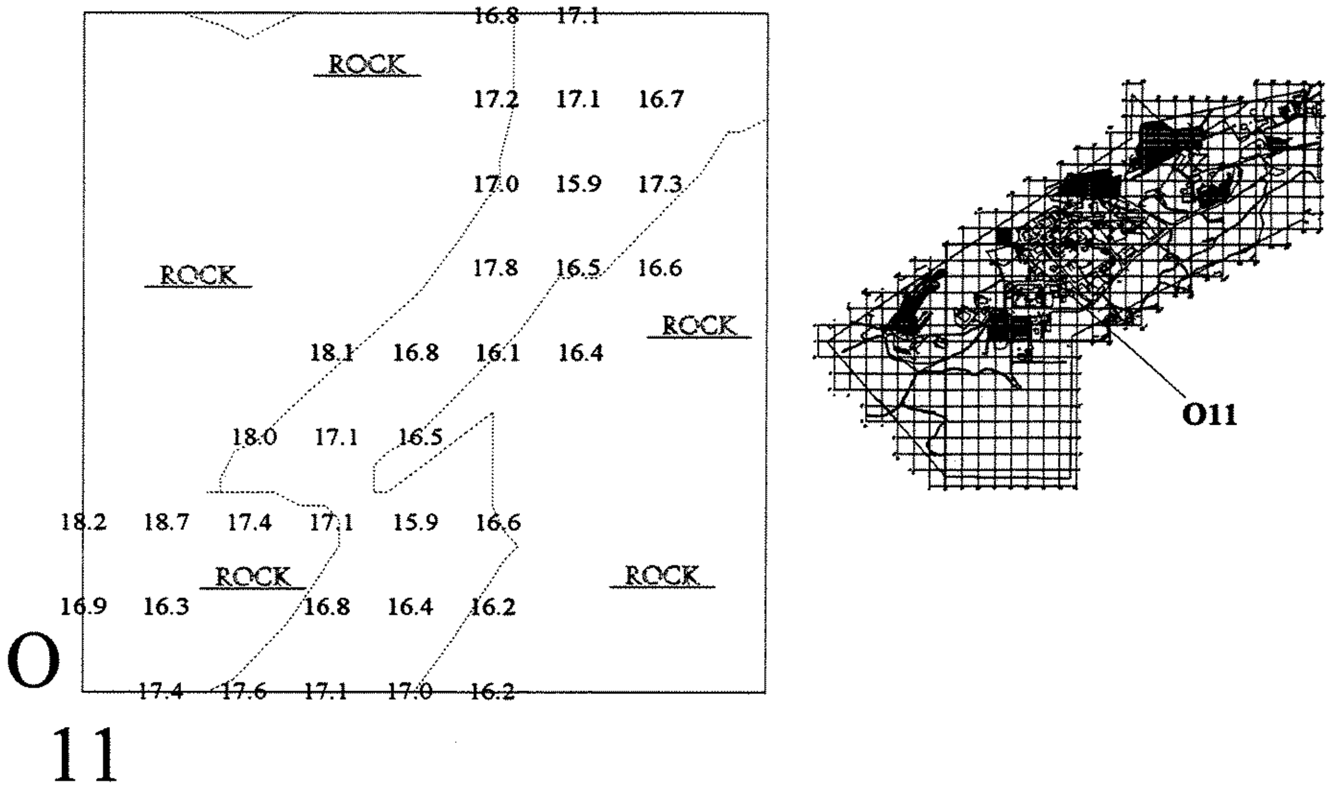


Figure B-123. Ambient Gamma Survey Results - Survey Block O11



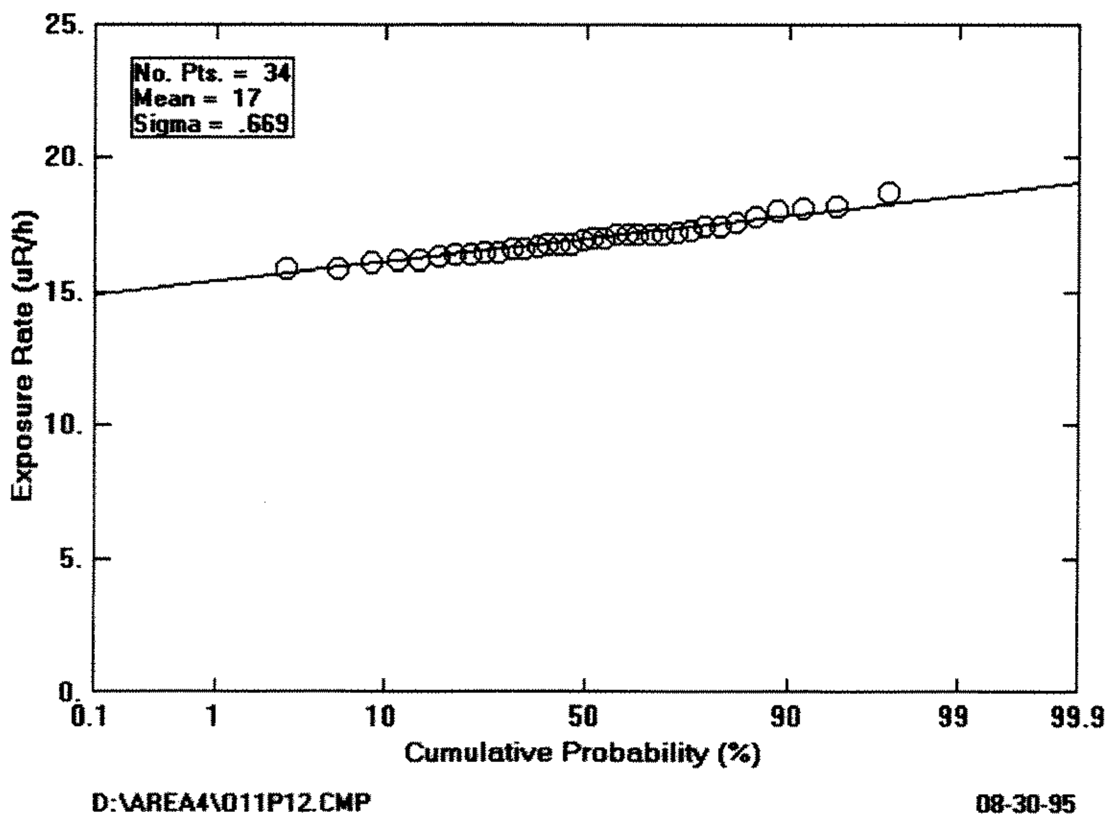
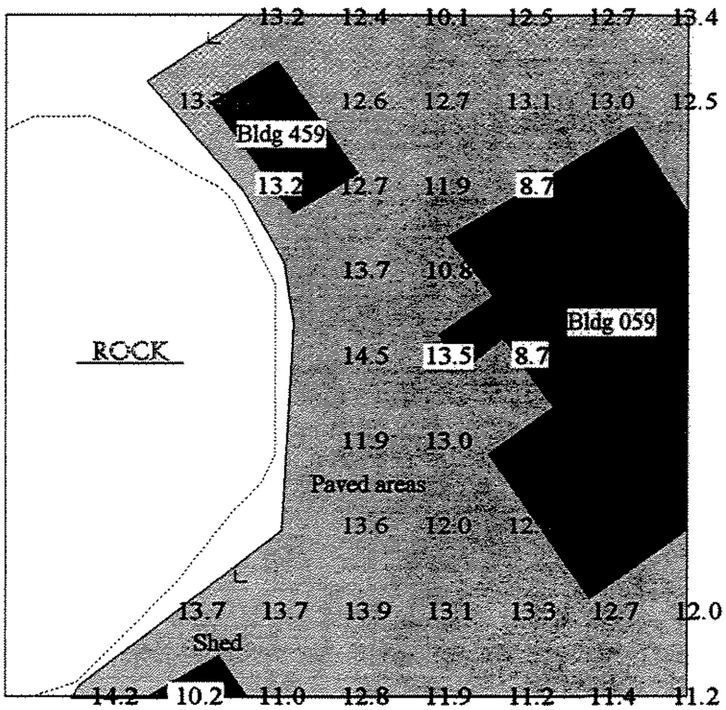
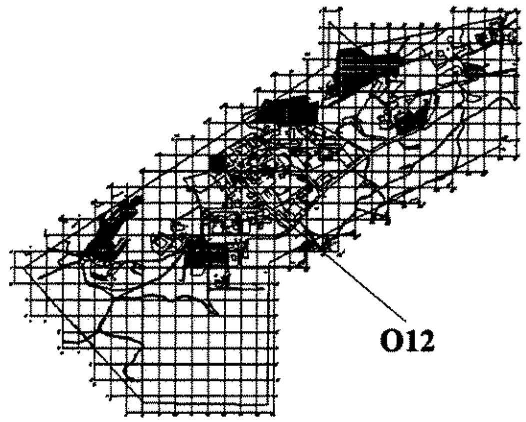


Figure B-124. Ambient Gamma Survey Results - Survey Block O12





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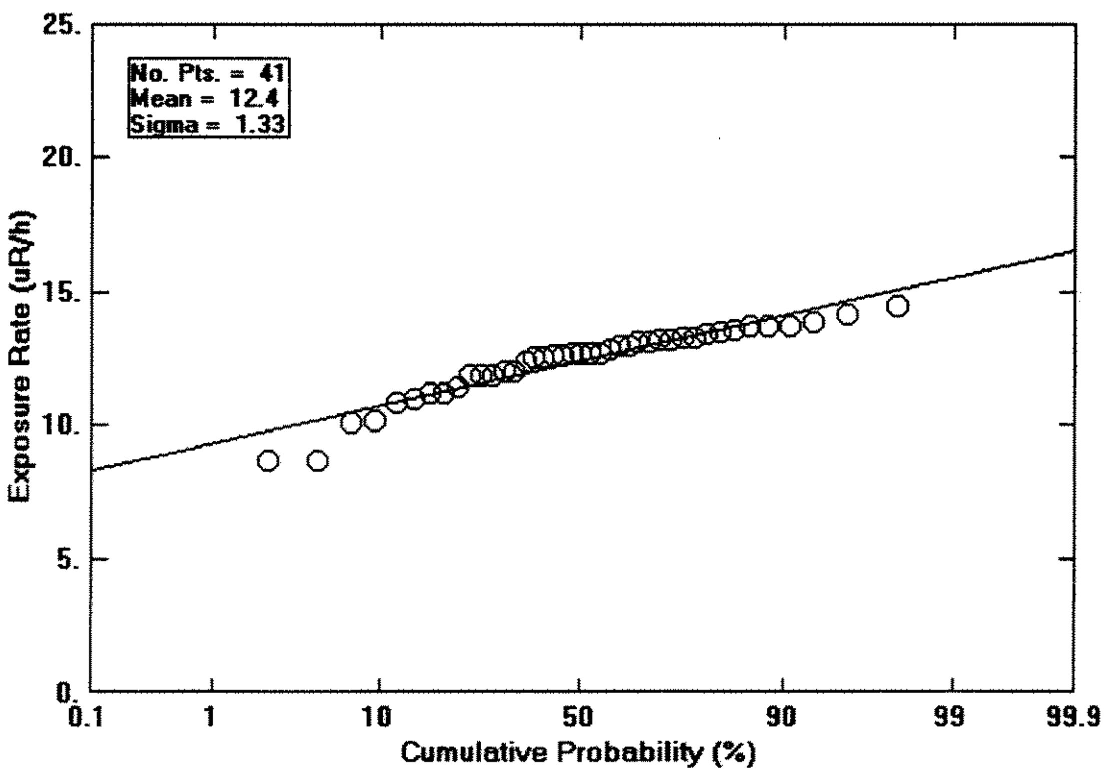

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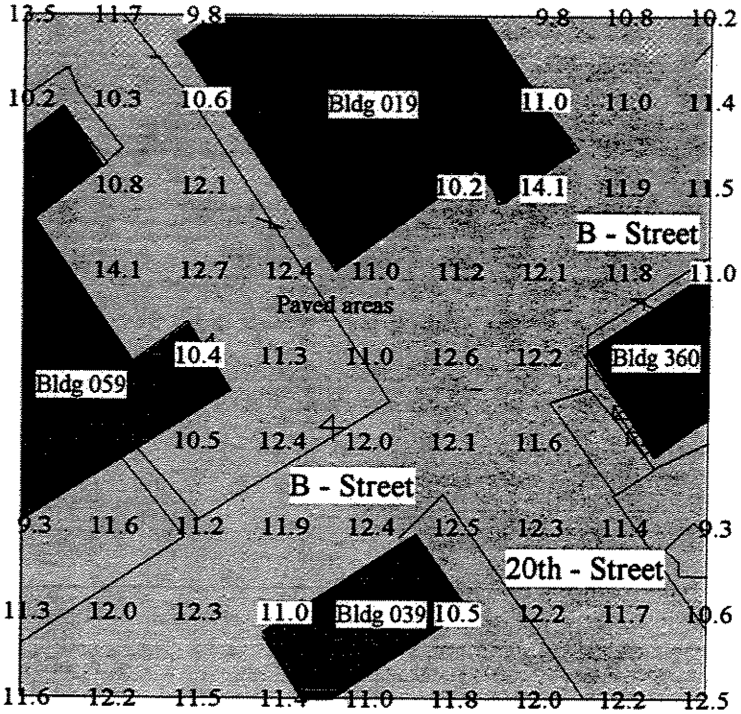
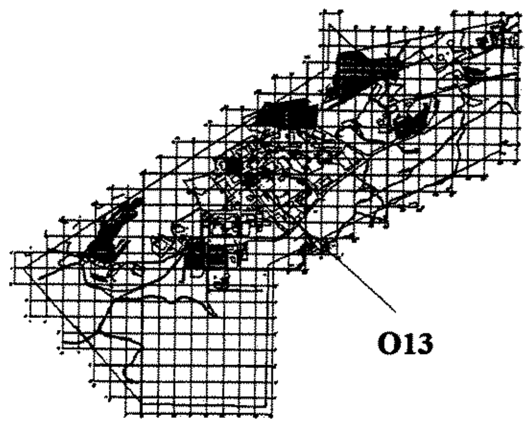
Figure B-125. Ambient Gamma Survey Results - Survey Block O13





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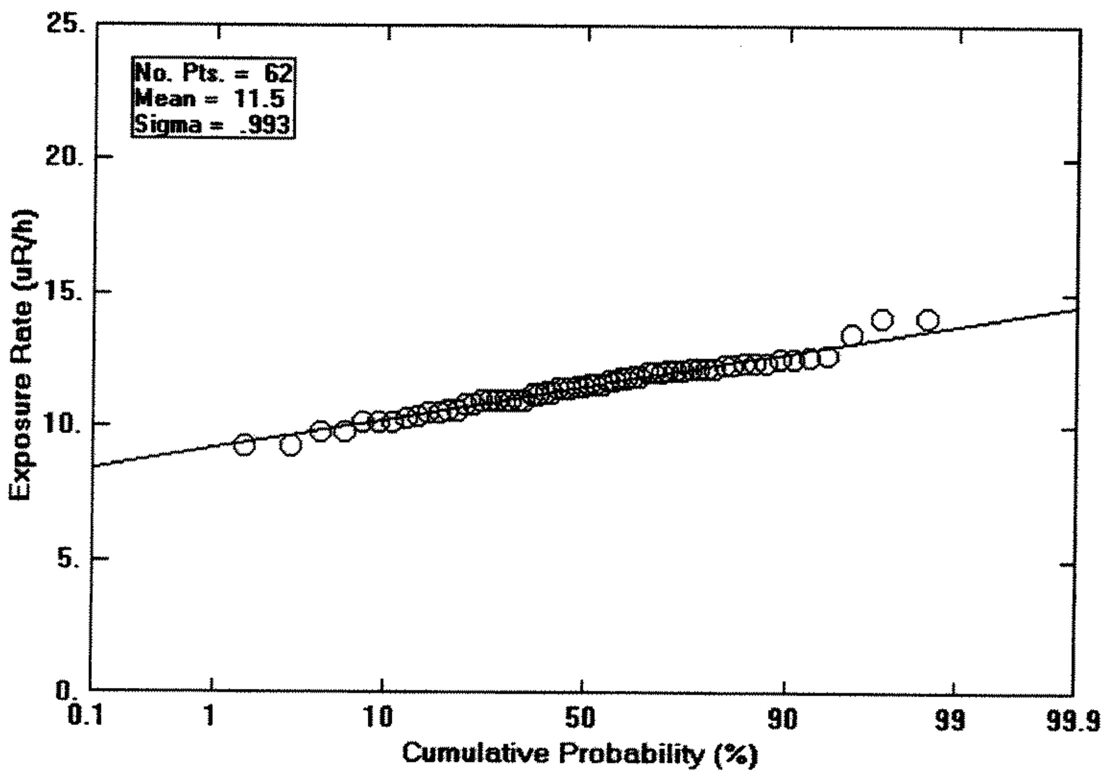

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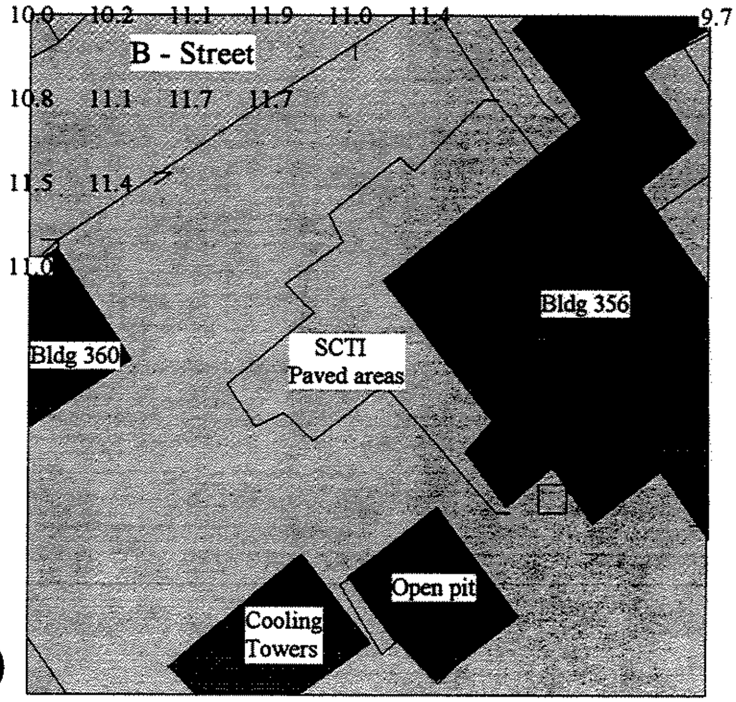
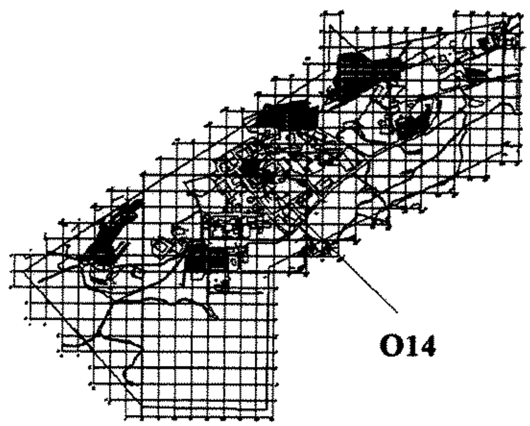
Figure B-126. Ambient Gamma Survey Results - Survey Block O14





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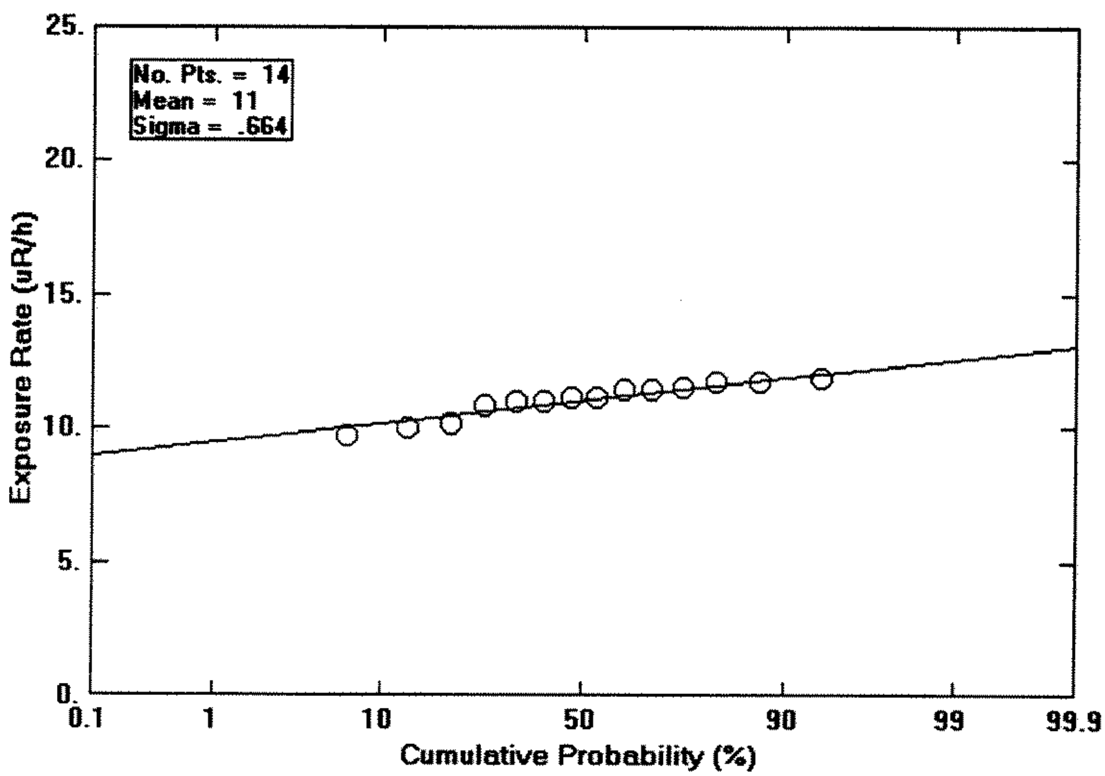

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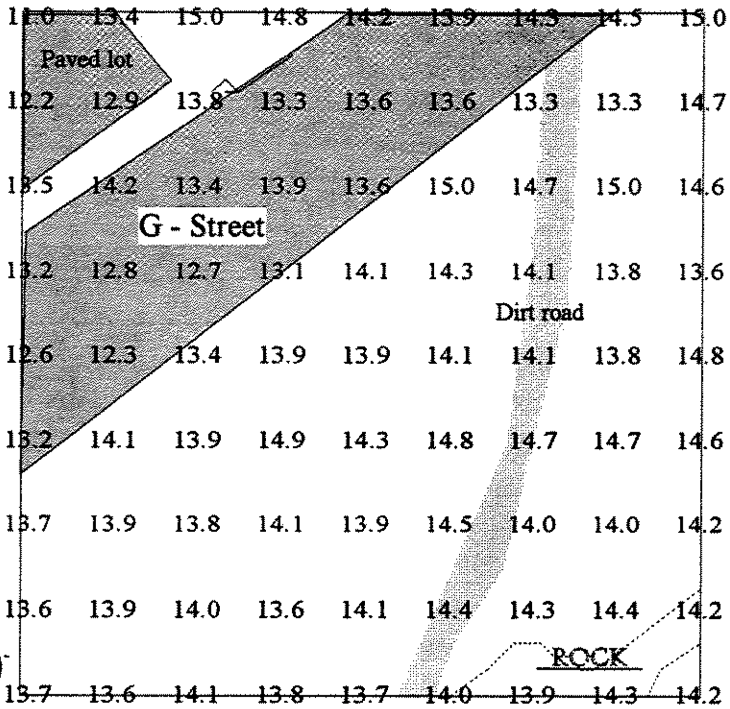
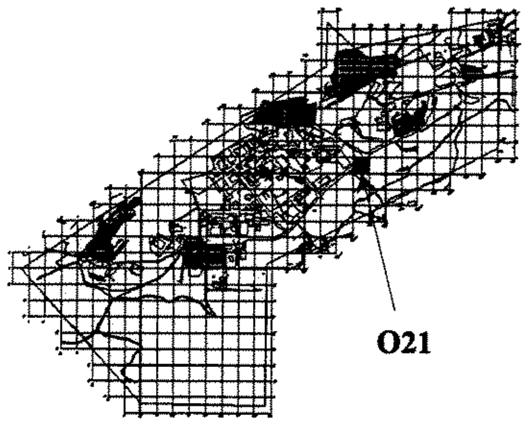
Figure B-127. Ambient Gamma Survey Results - Survey Block O21





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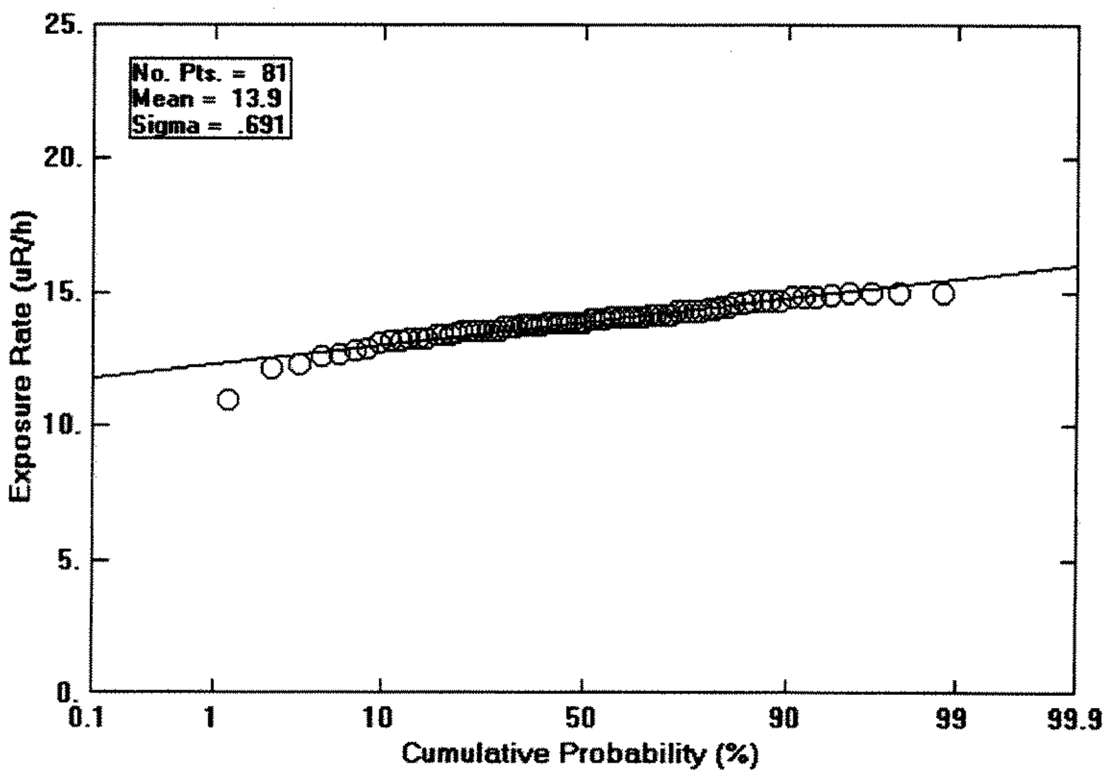

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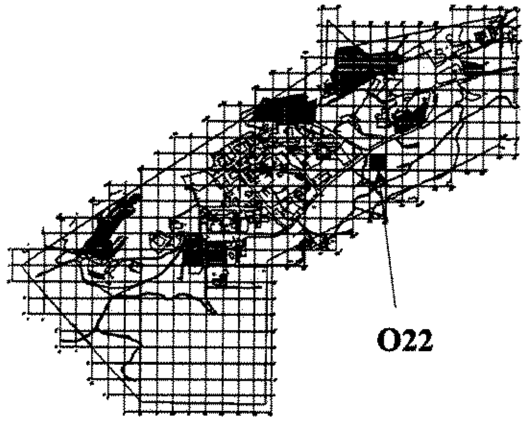
Figure B-128. Ambient Gamma Survey Results - Survey Block O22

15.3	15.1	15.0	14.8	15.2	15.9	16.1	16.5	16.3
15.9	15.7	15.9	16.0	16.0	16.1	15.7	16.6	16.9
15.2	15.3	15.2	15.1	15.7	15.3	15.1	15.1	15.5
16.0	16.2	15.8	16.1	15.9	15.9	16.2	16.0	16.2
15.6	15.2	12.5	15.3	15.3	15.6	15.4	15.4	15.4
16.3	16.2	15.9	15.9	16.3	16.5	15.9	15.6	16.5
15.8	16.1	15.7	15.3	15.4	15.5	15.6	15.5	15.2
15.9	16.4	16.1	16.4	16.5	16.2	16.0	15.8	16.5
15.6	15.5	15.7	16.1	15.5	15.7	15.6	15.6	15.4



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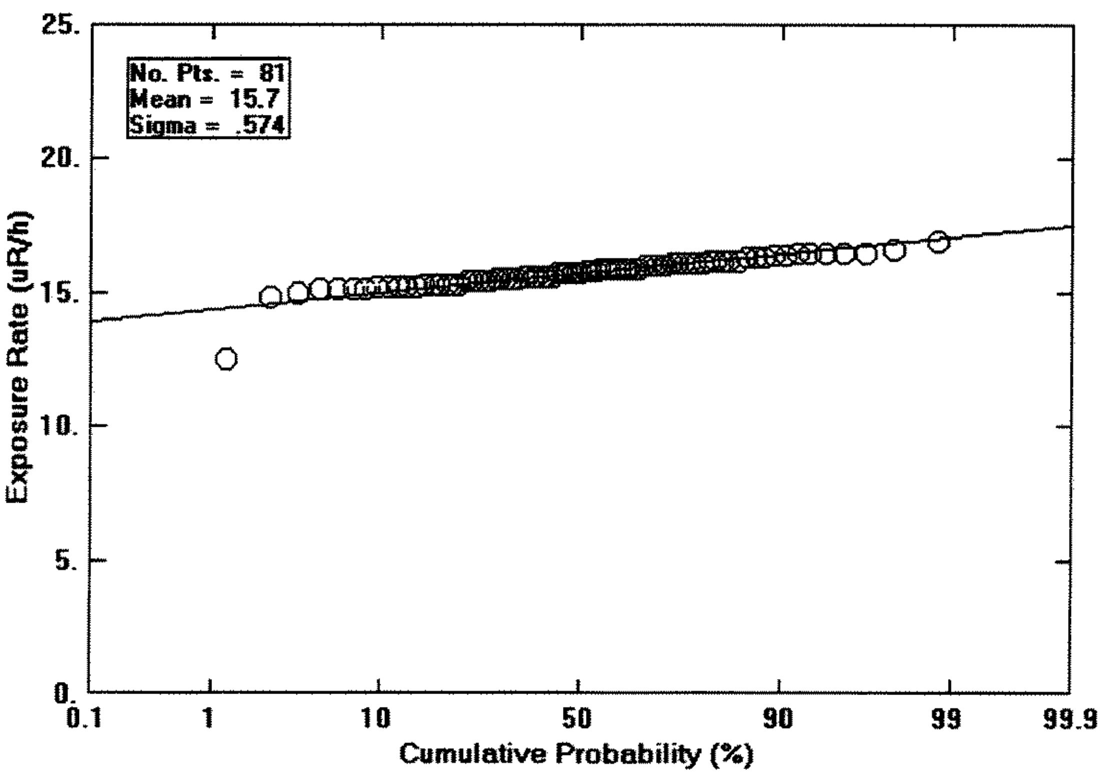

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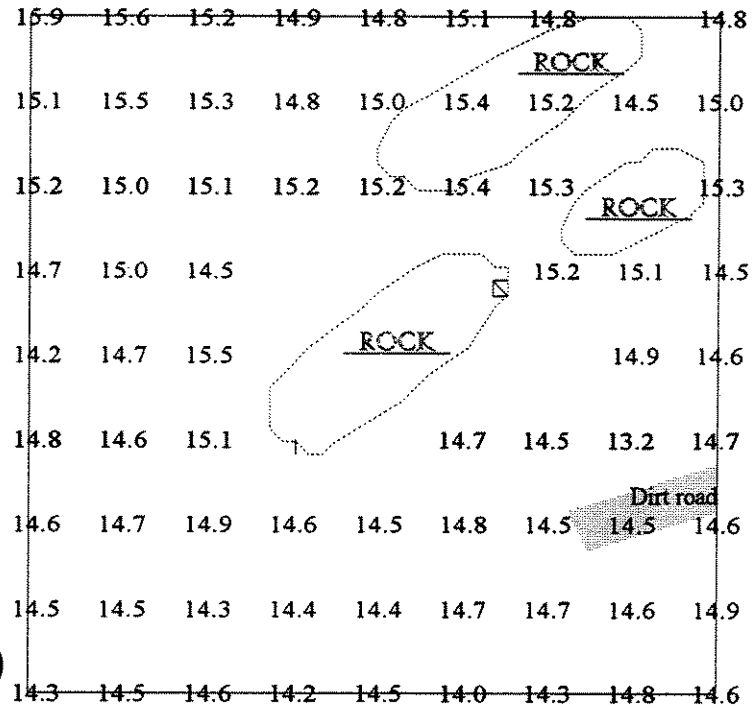
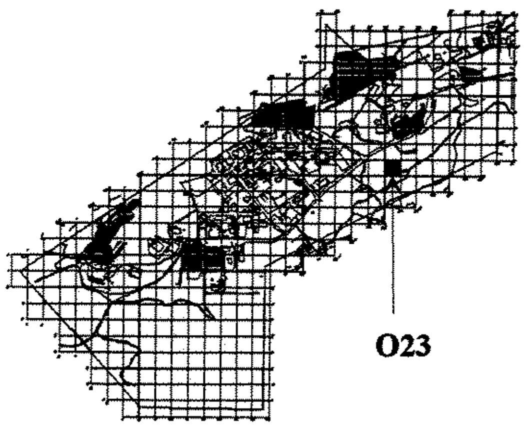
Figure B-129. Ambient Gamma Survey Results - Survey Block O23





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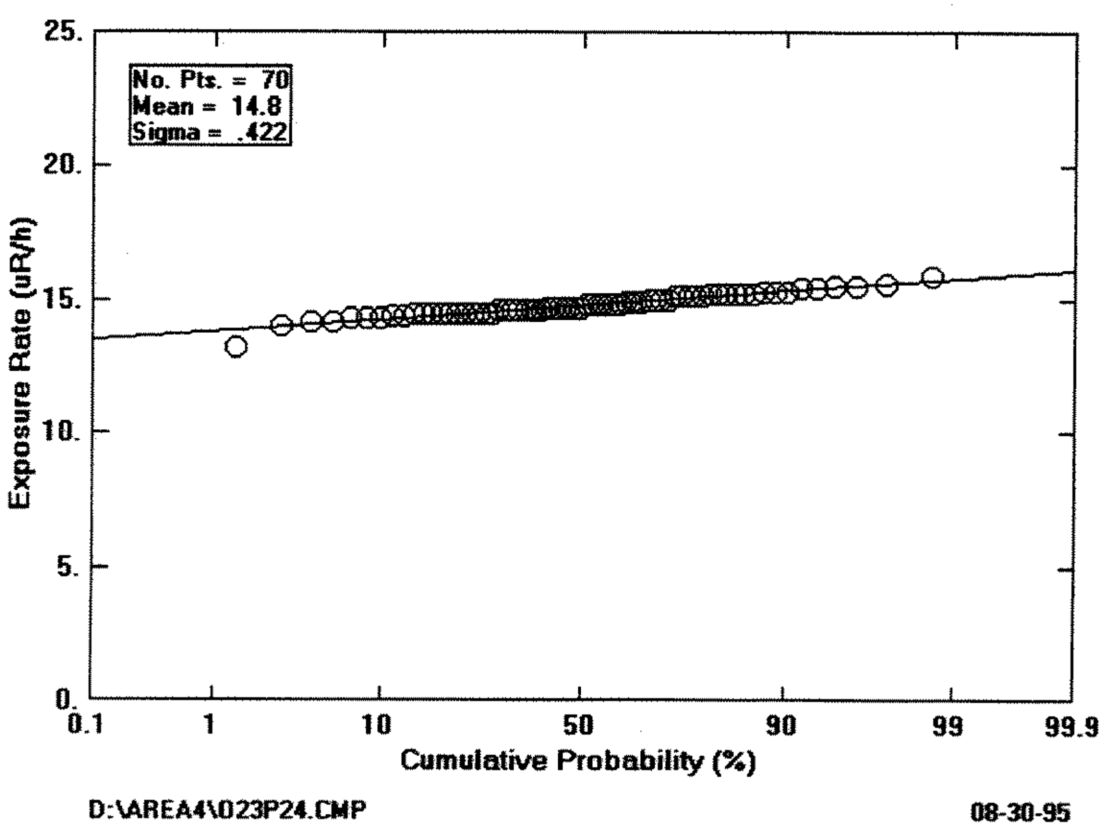
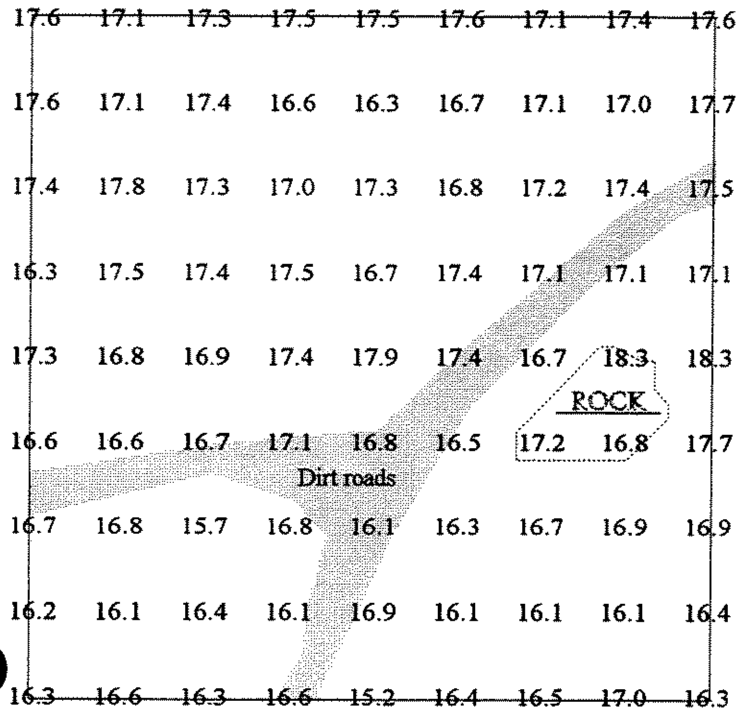
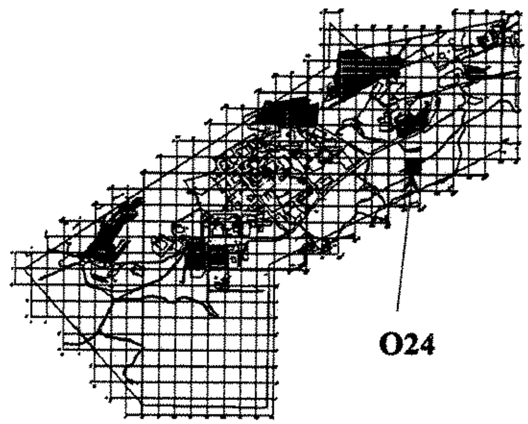


Figure B-130. Ambient Gamma Survey Results - Survey Block O24





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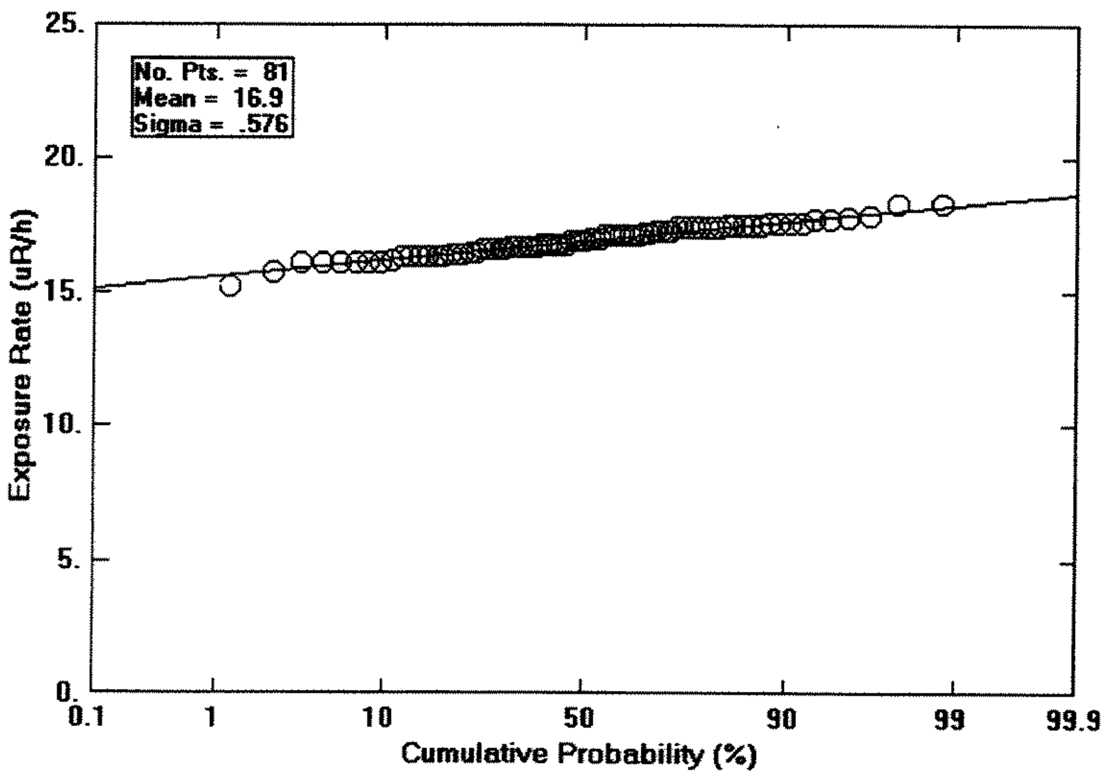

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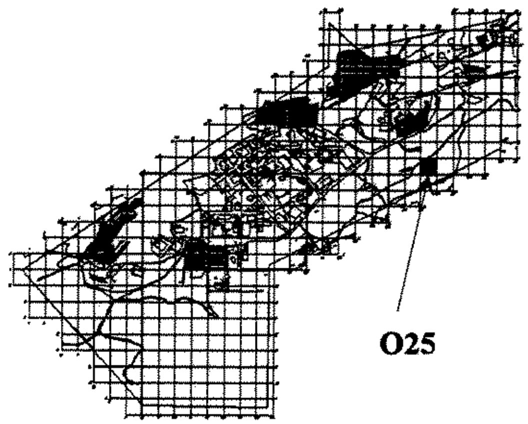
Figure B-131. Ambient Gamma Survey Results - Survey Block O25

Dirt road

16.1	16.1	16.0	16.1	15.6	15.8	15.7	16.0	15.8
15.8	15.6	15.9	15.7	15.4	15.9	16.2	16.1	15.8
15.8	15.5	15.7	15.7	16.0	16.1	16.6	18.4	
15.7	15.3	15.1	15.6	15.7	15.9	16.3		
16.2	16.1	16.1	15.9	15.8	16.2	16.0	17.1	17.9
16.2	16.0	15.9	15.9	16.0	16.3	16.8	17.2	16.9
16.1	15.8	15.9	16.1	16.1	16.1	16.5	16.4	17.0
15.9	15.8	15.9	15.9	16.1	16.6	16.3	16.6	16.2
15.1	15.7	15.4	16.4	15.8	16.0	15.8	15.9	16.1

O
25



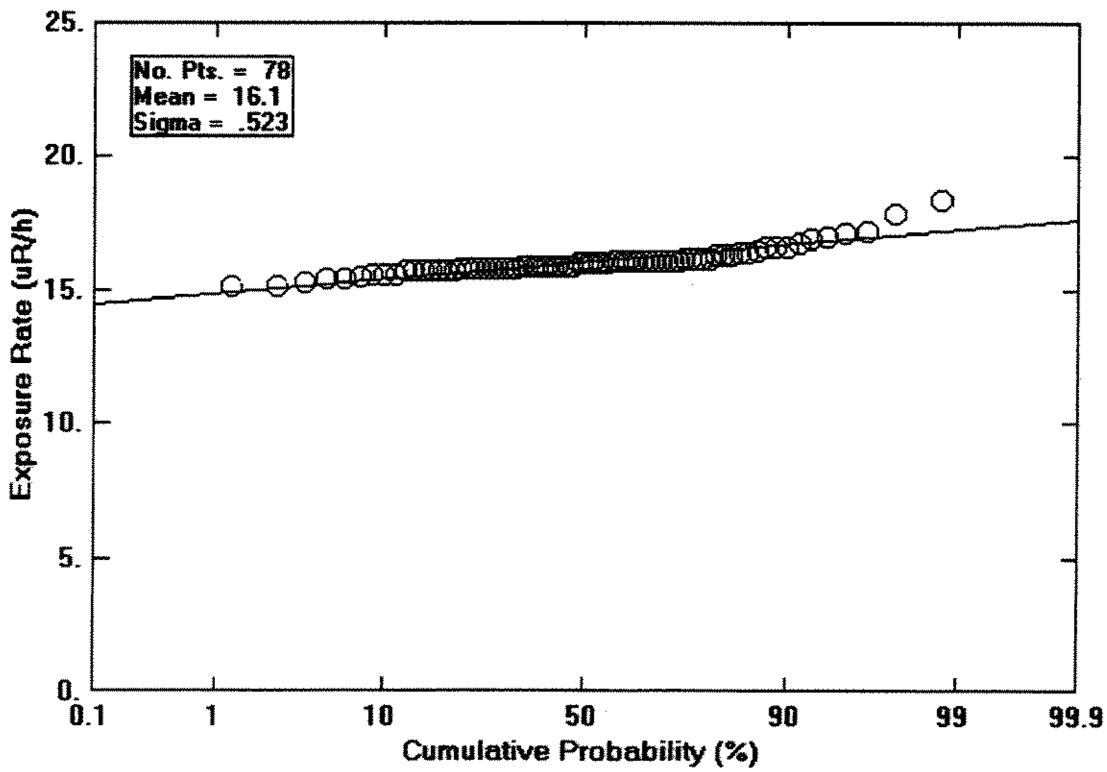


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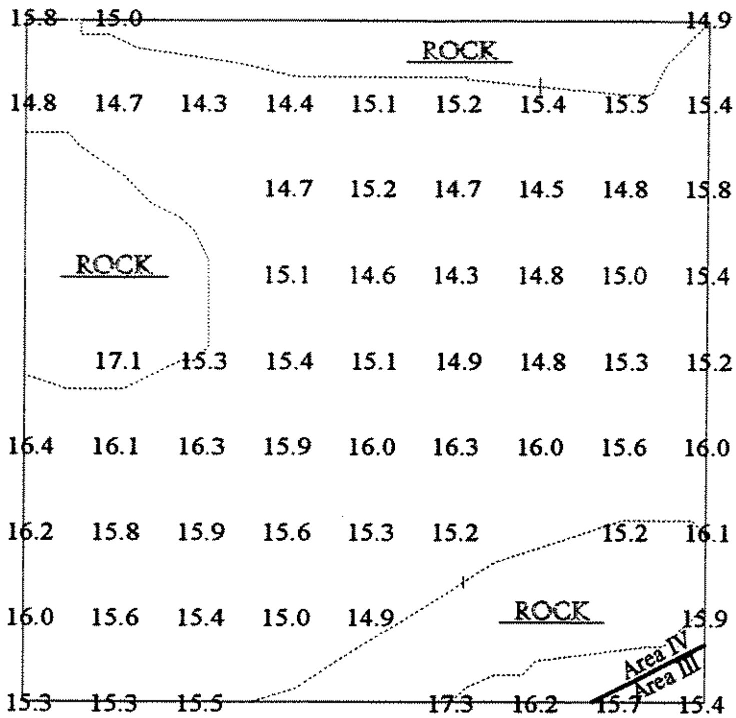
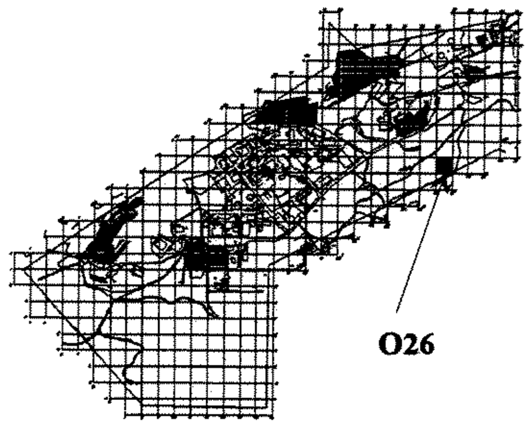
Figure B-132. Ambient Gamma Survey Results - Survey Block O26





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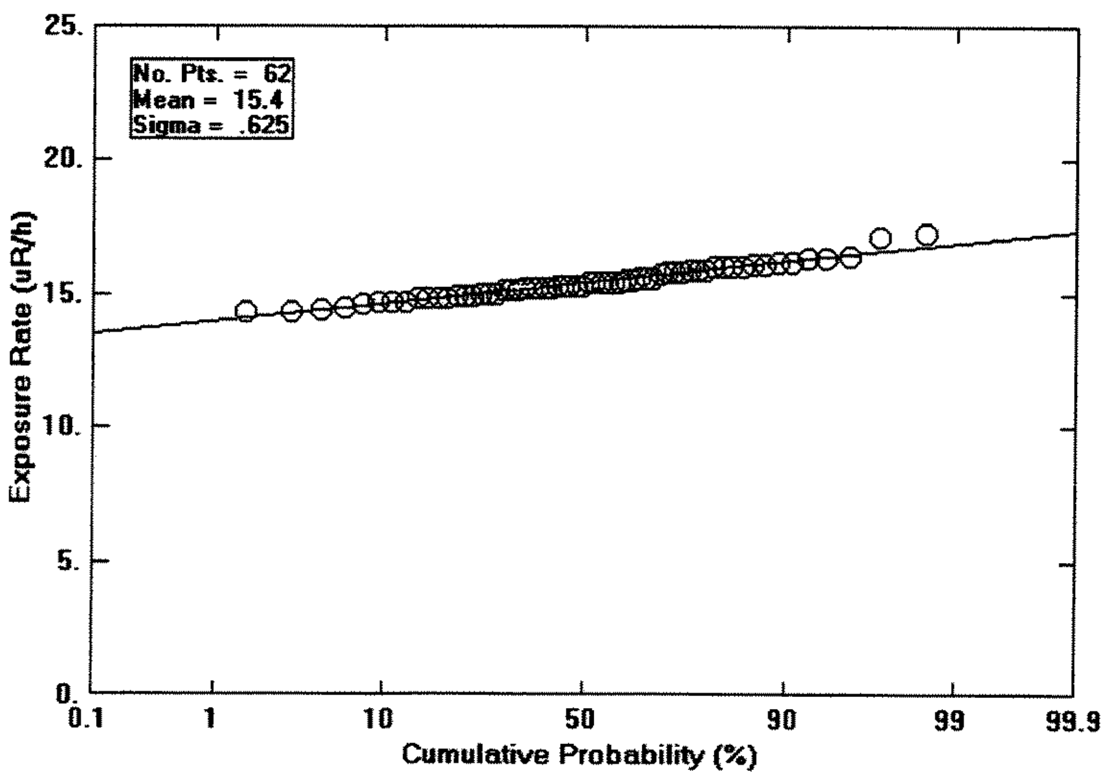

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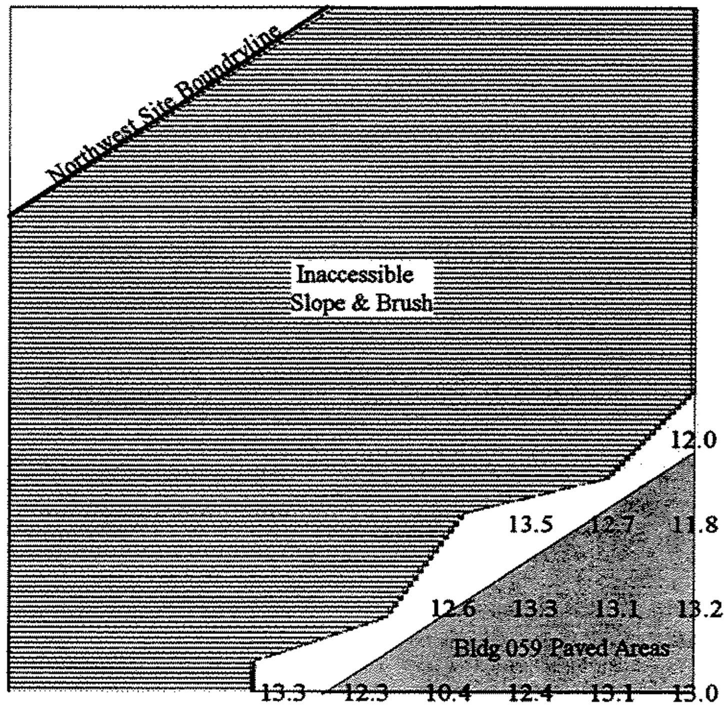
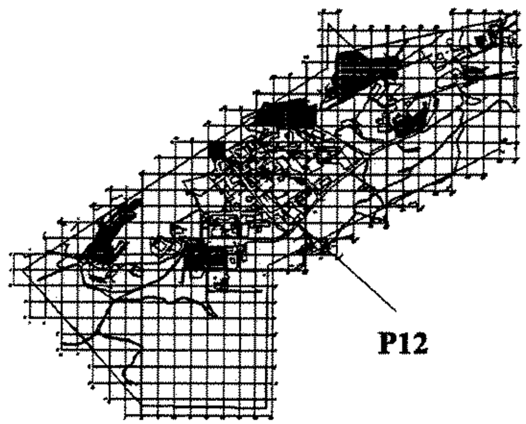
Figure B-134. Ambient Gamma Survey Results - Survey Block P12





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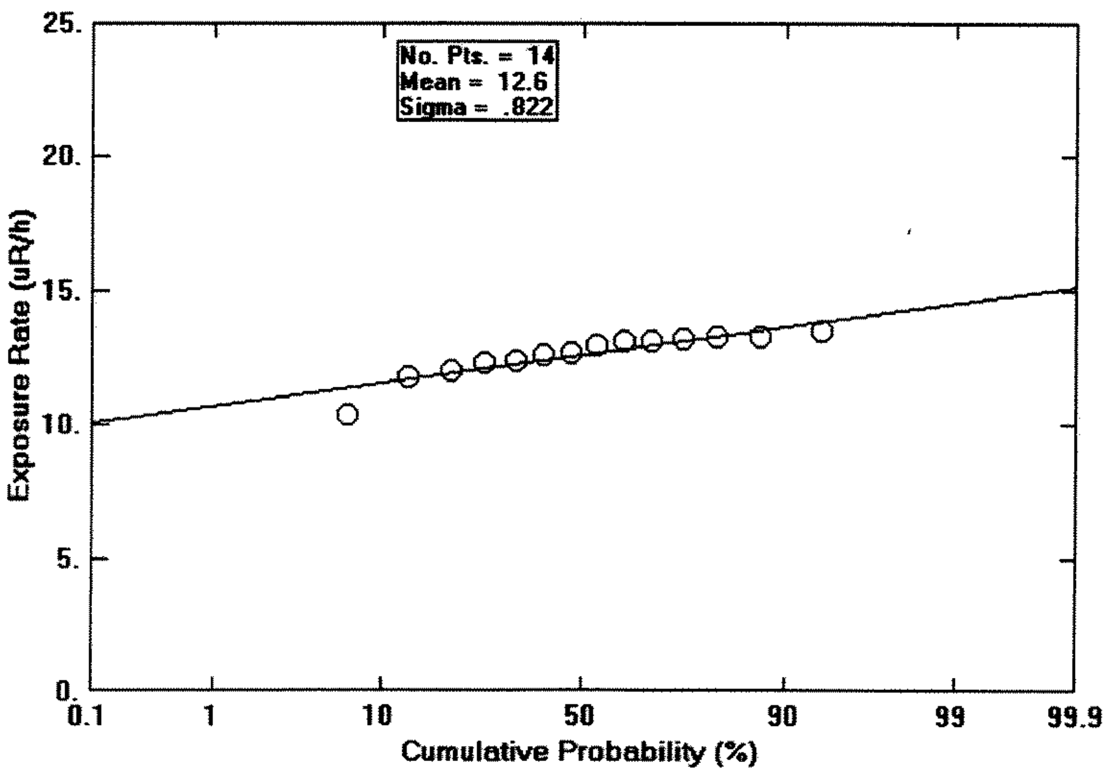

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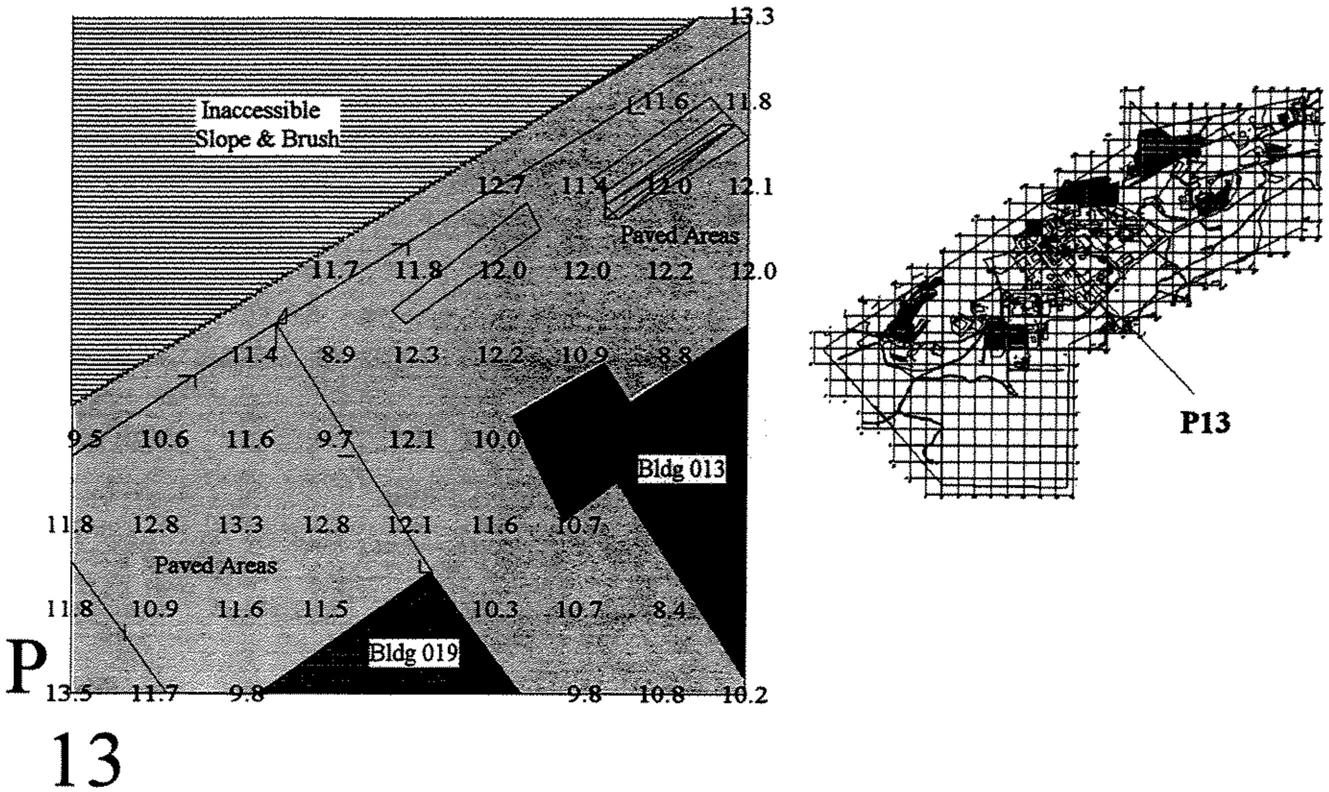
Figure B-135. Ambient Gamma Survey Results - Survey Block P13



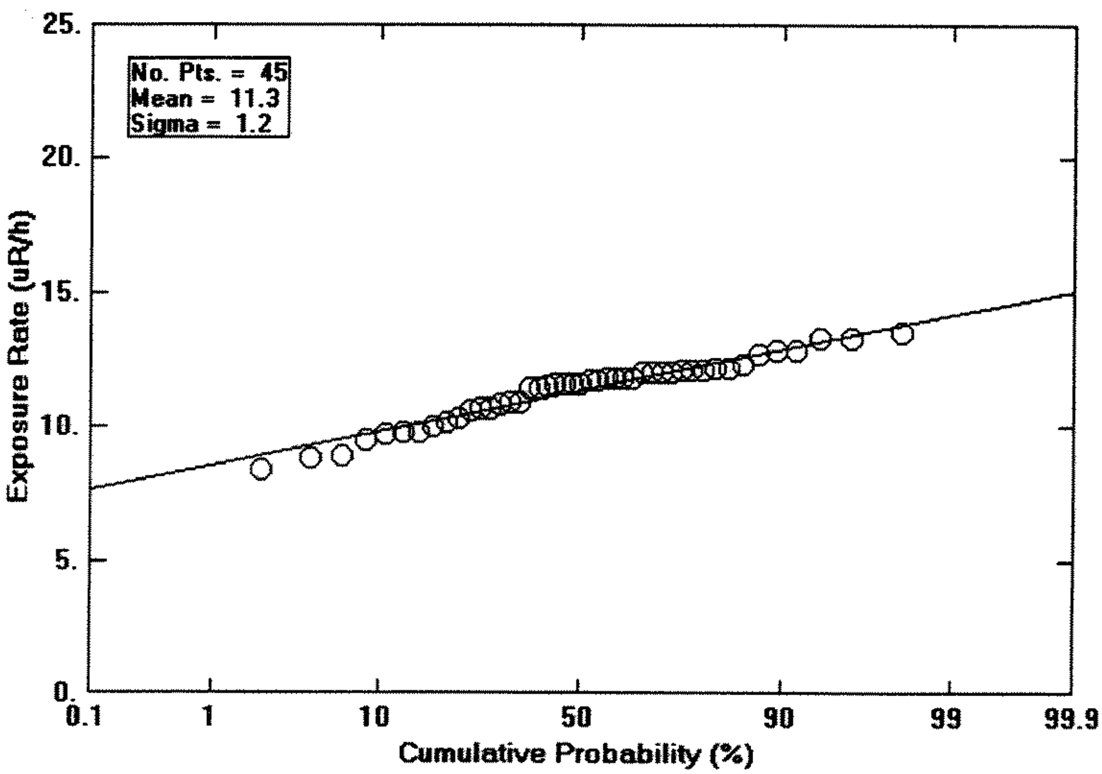


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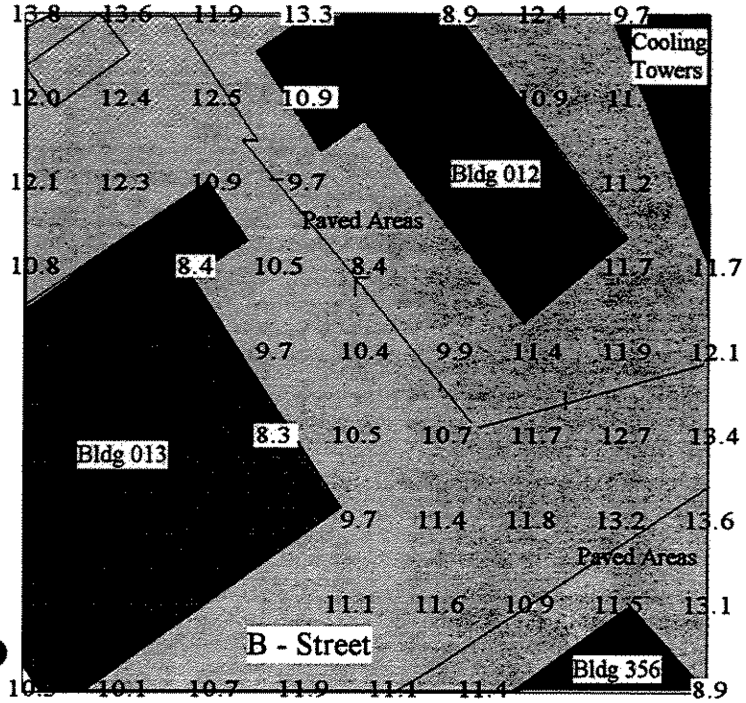
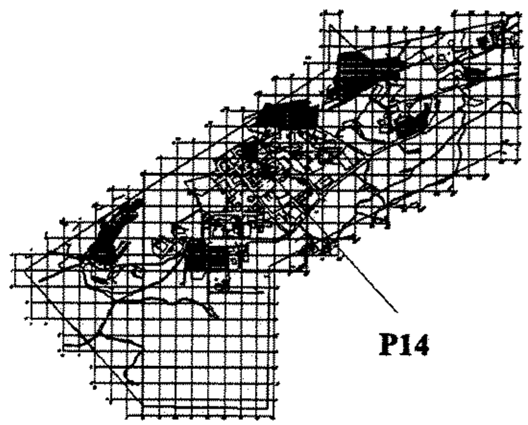
Figure B-136. Ambient Gamma Survey Results - Survey Block P14





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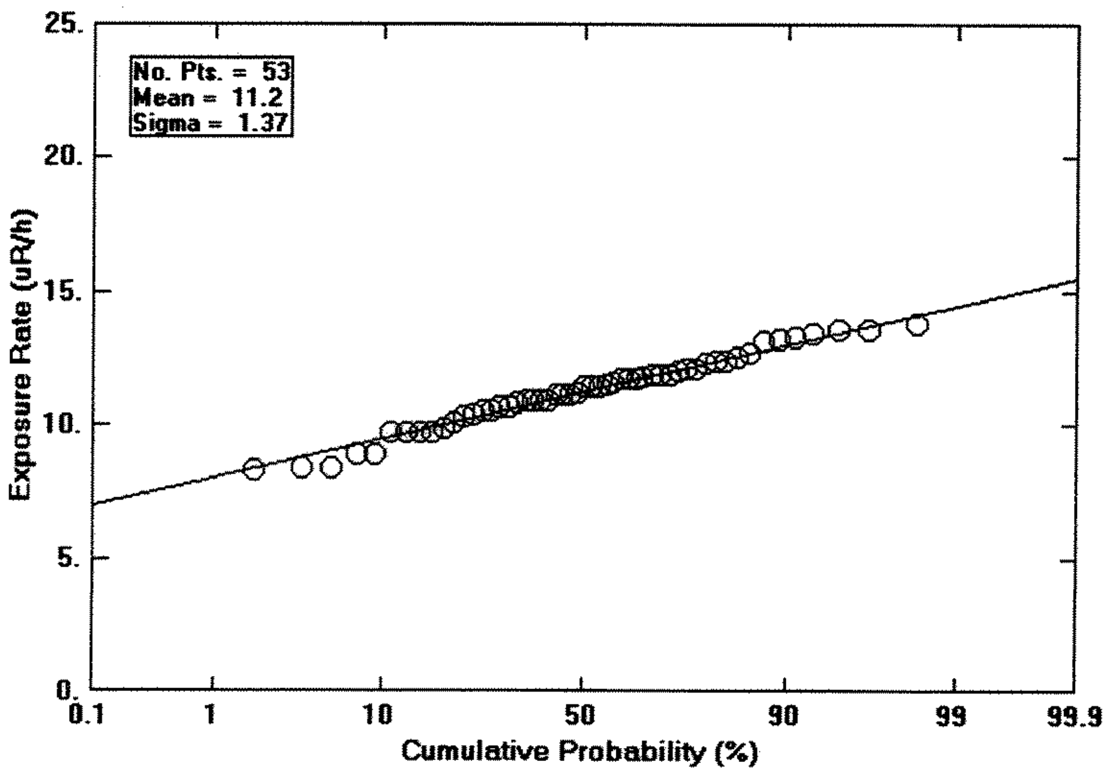

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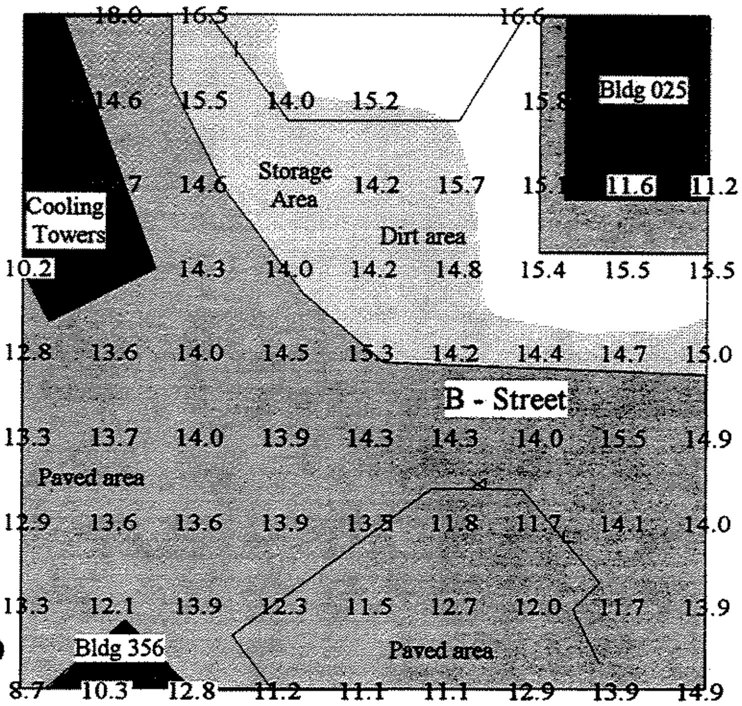
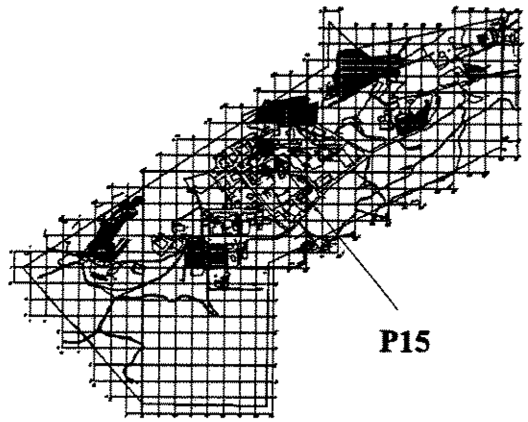
Figure B-137. Ambient Gamma Survey Results - Survey Block P15





P 15

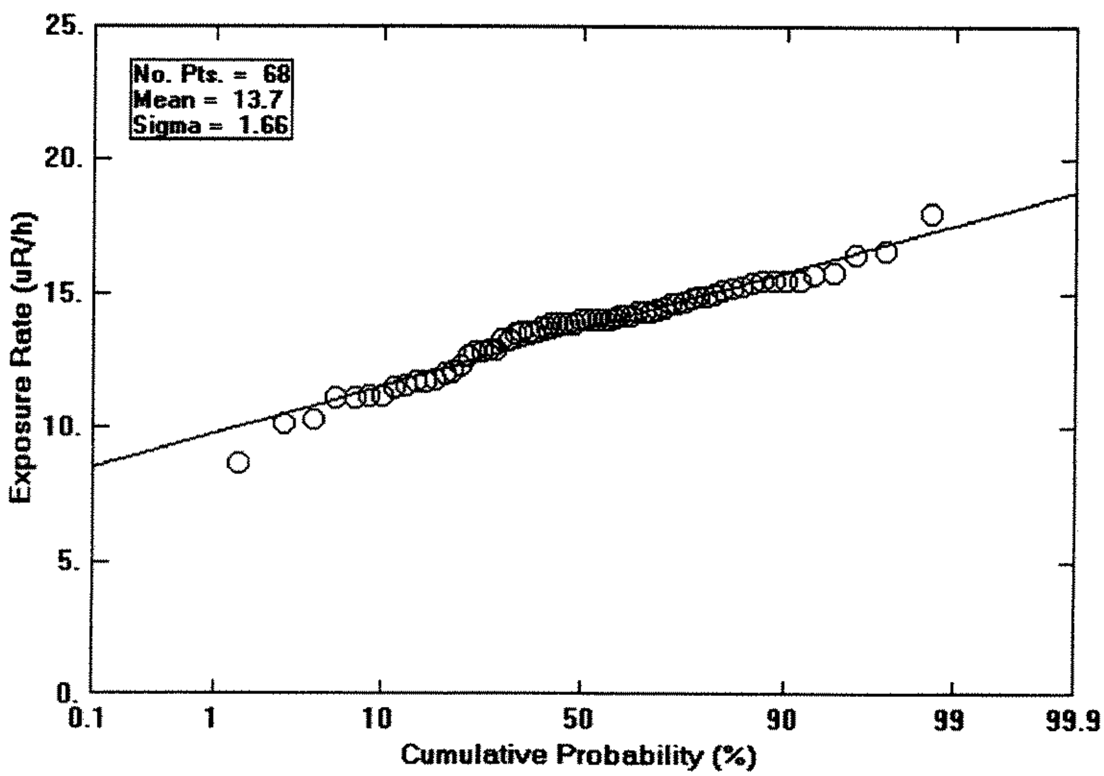


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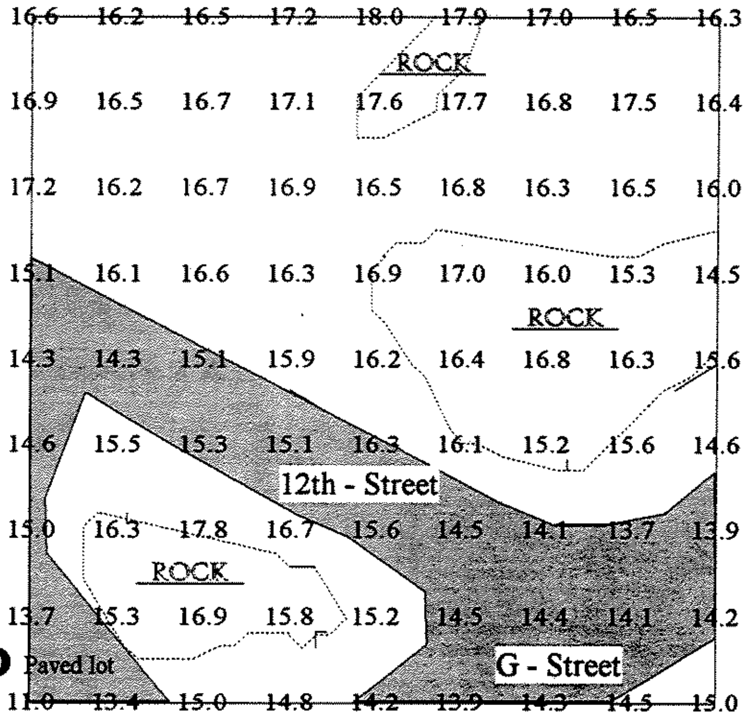
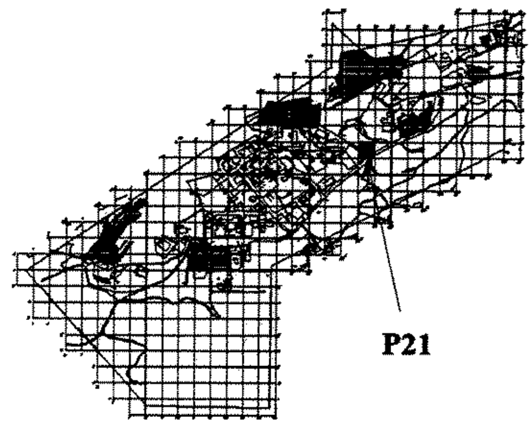
Figure B-138. Ambient Gamma Survey Results - Survey Block P21





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21

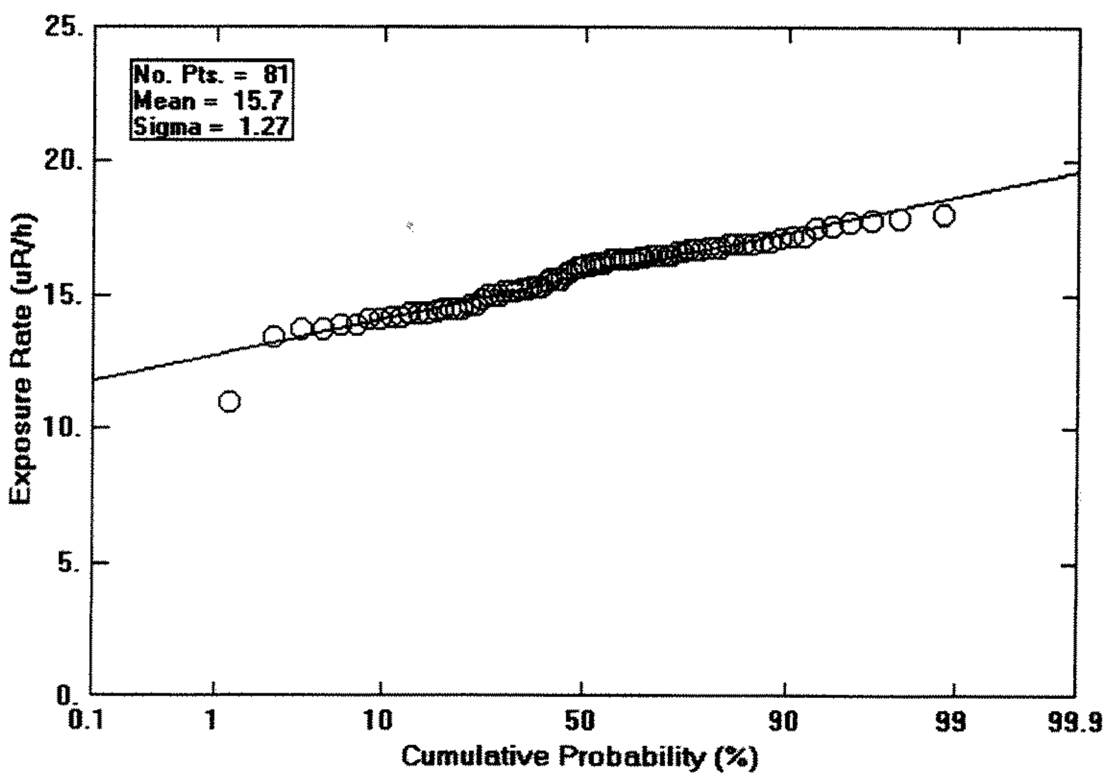

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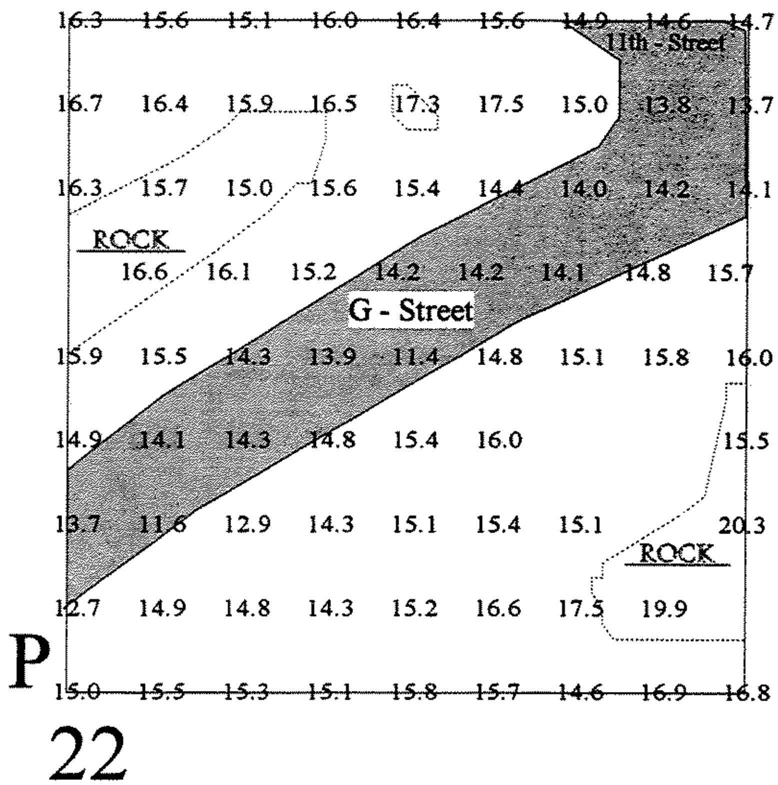
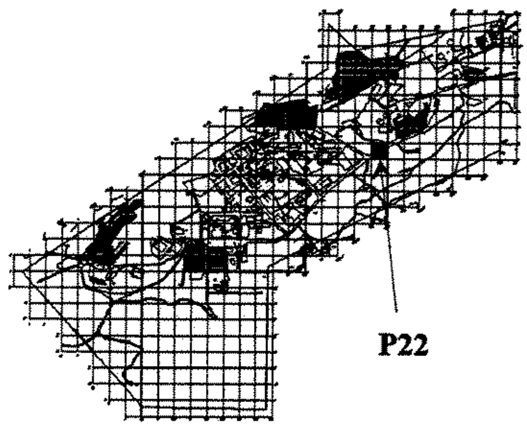
Figure B-139. Ambient Gamma Survey Results - Survey Block P22





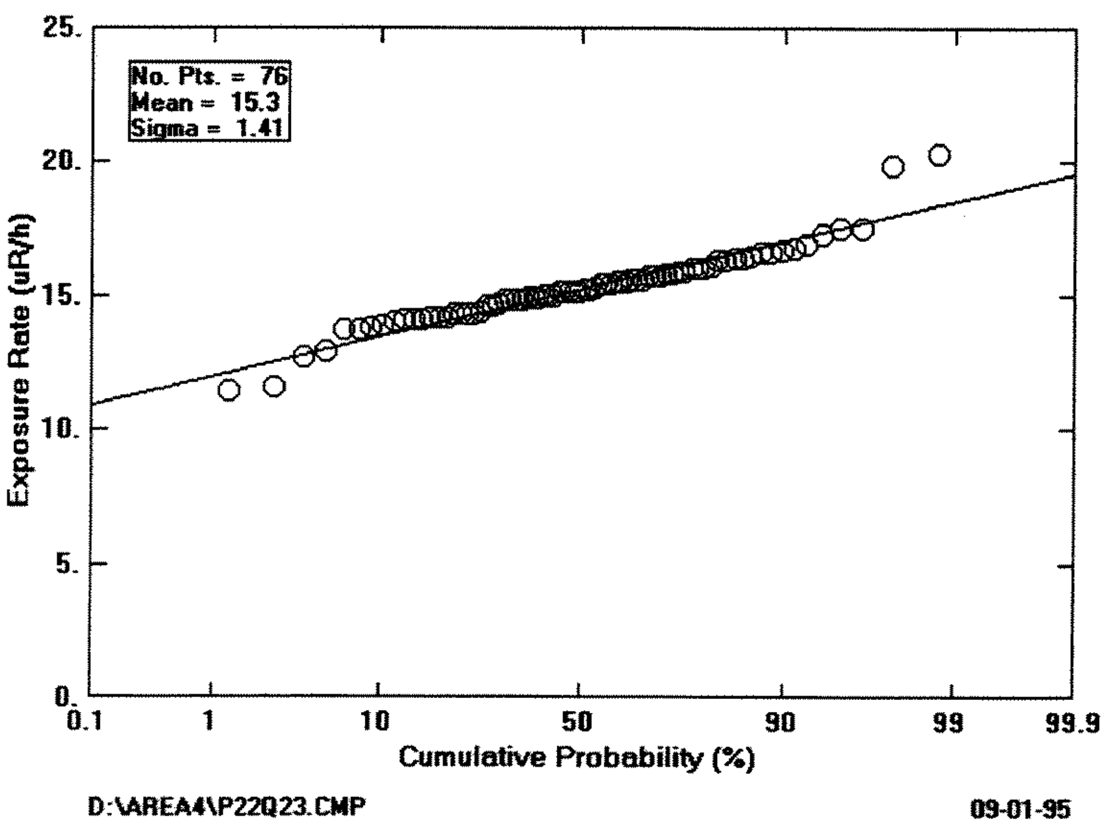
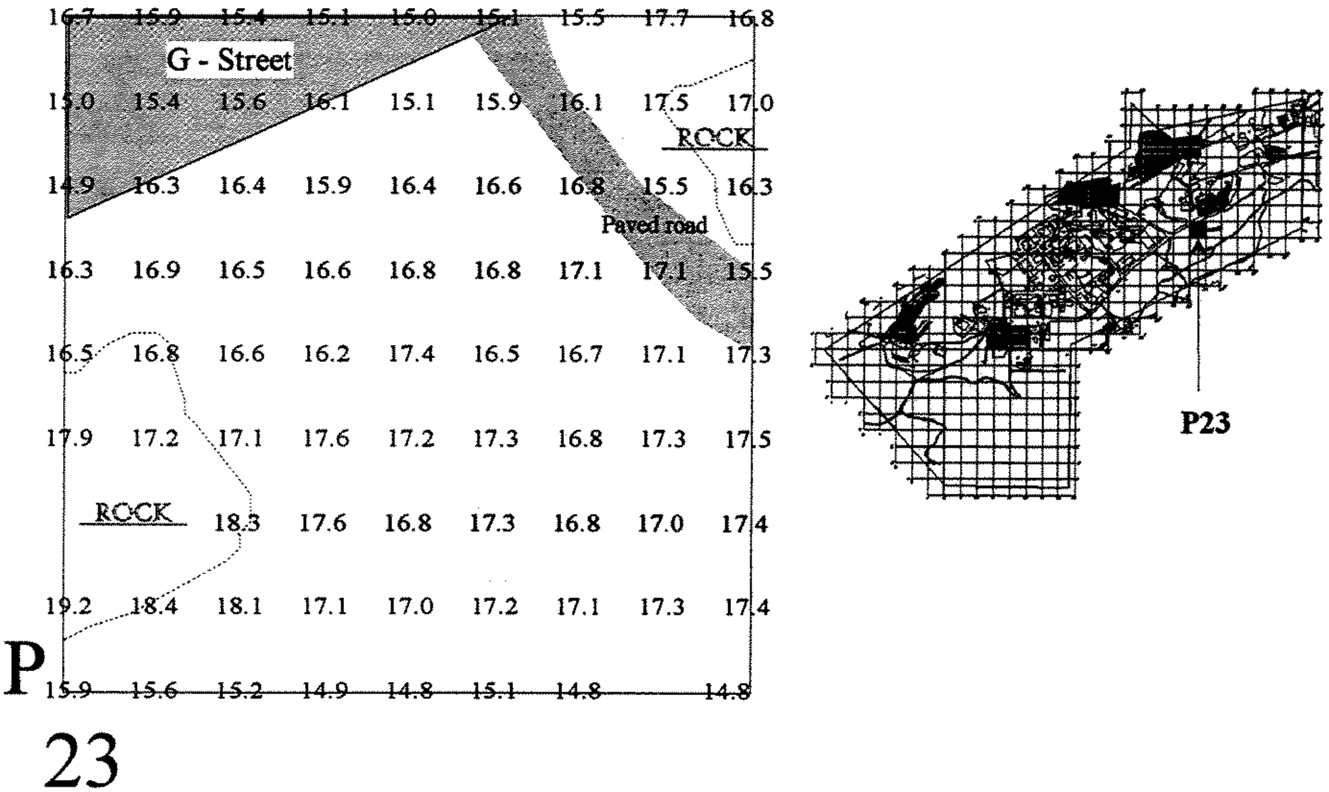


Figure B-140. Ambient Gamma Survey Results - Survey Block P23



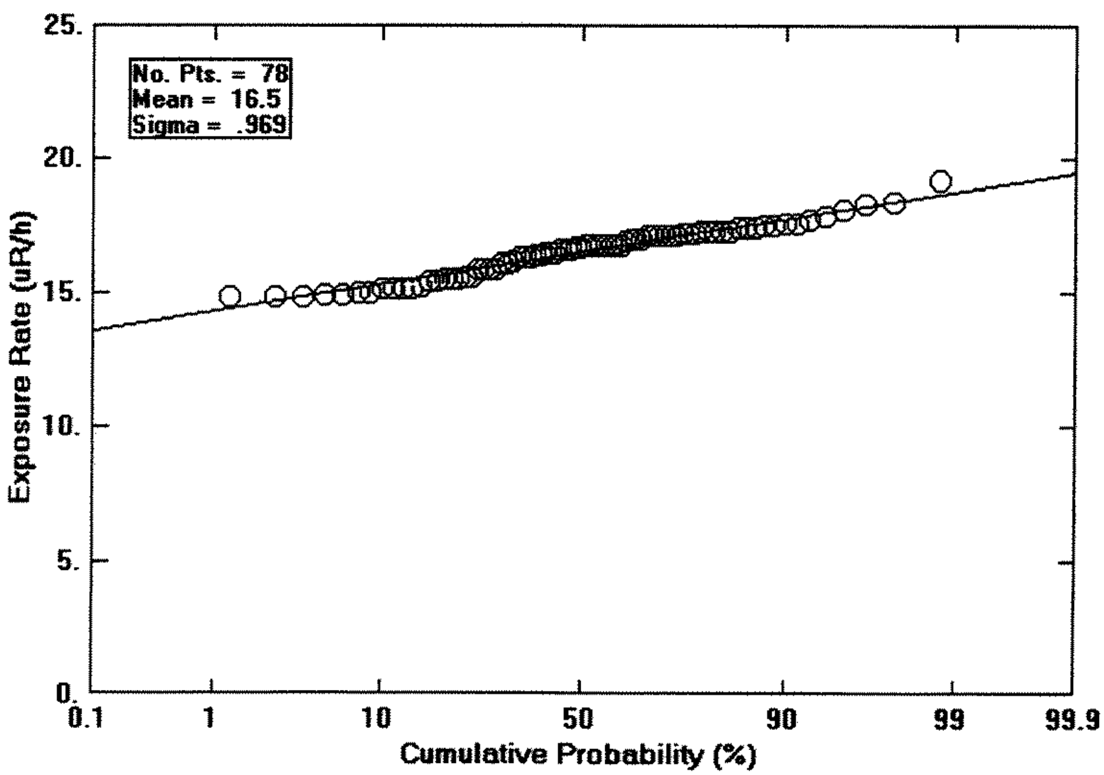


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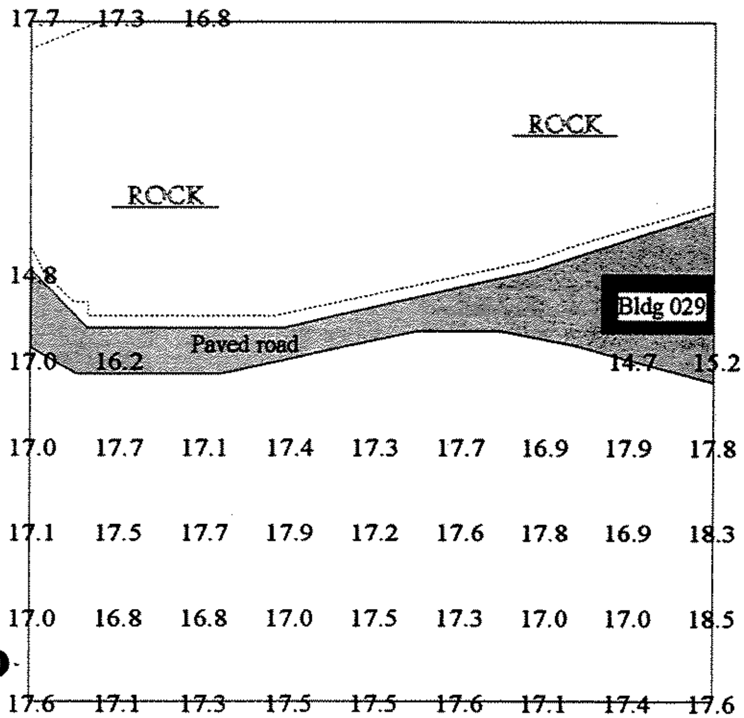
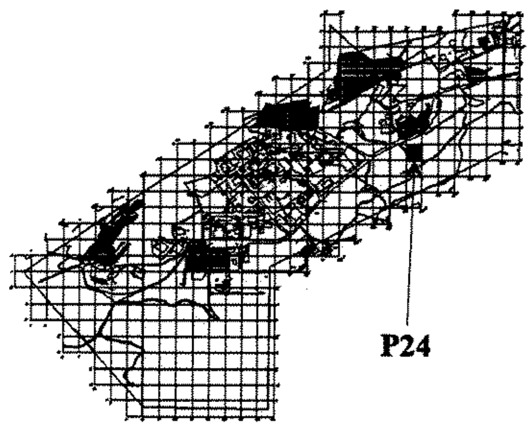
Figure B-141. Ambient Gamma Survey Results - Survey Block P24





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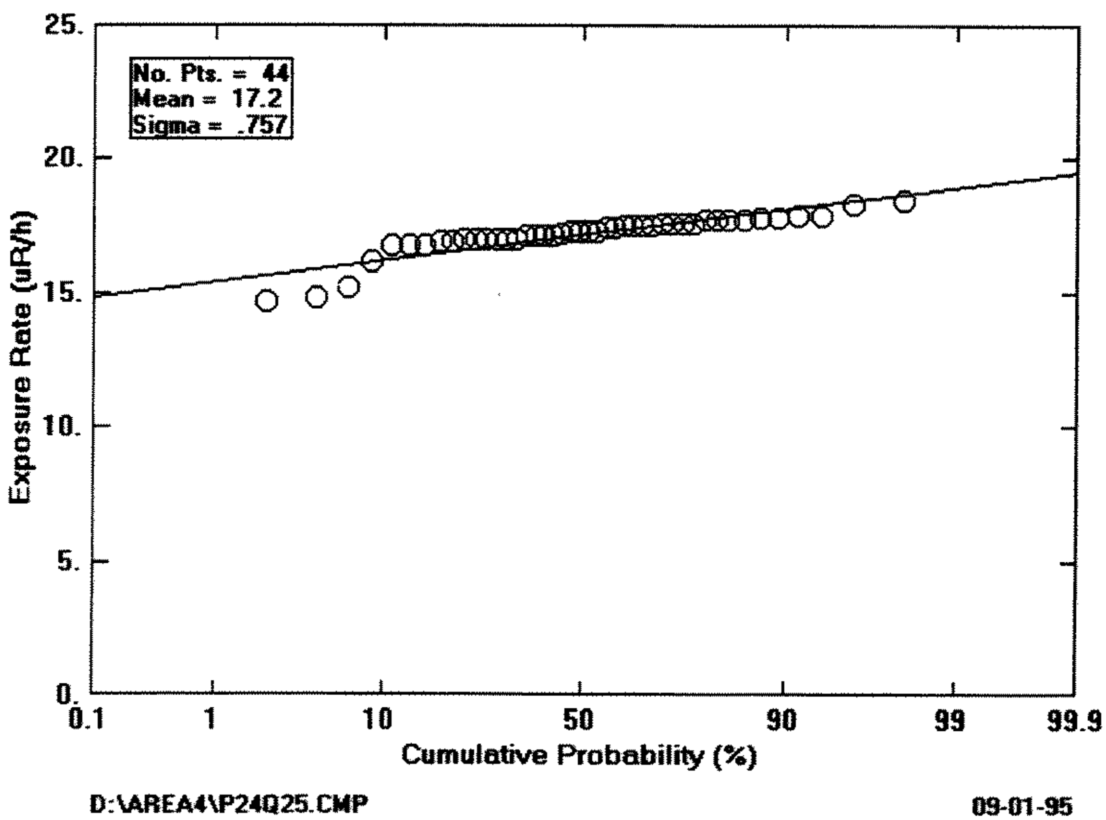
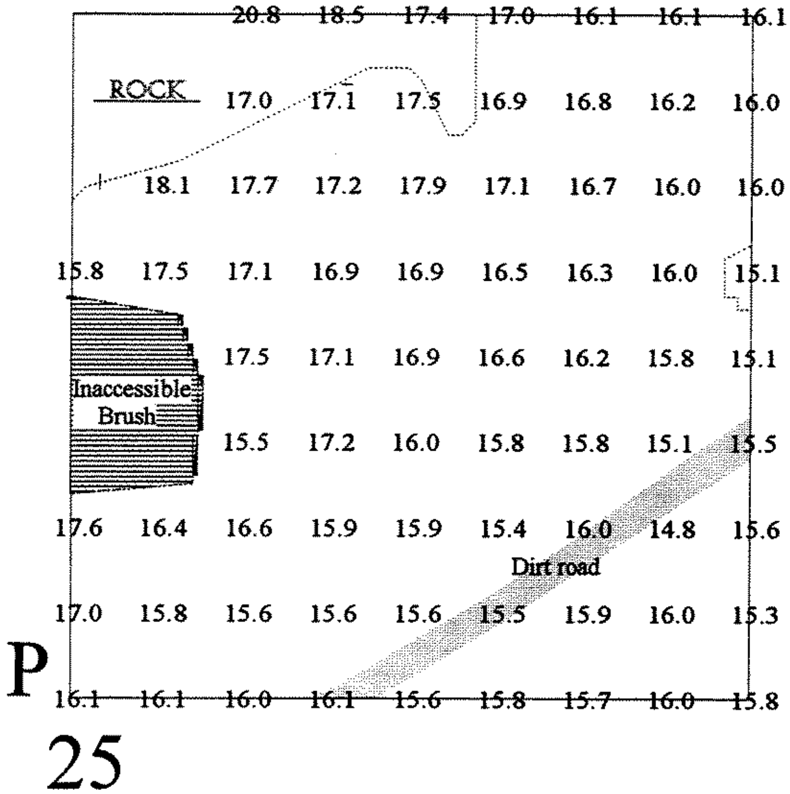
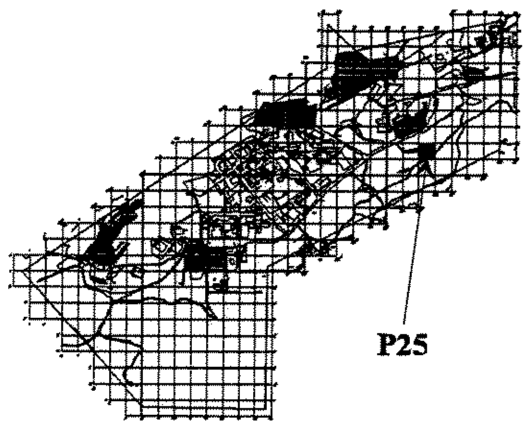


Figure B-142. Ambient Gamma Survey Results - Survey Block P25





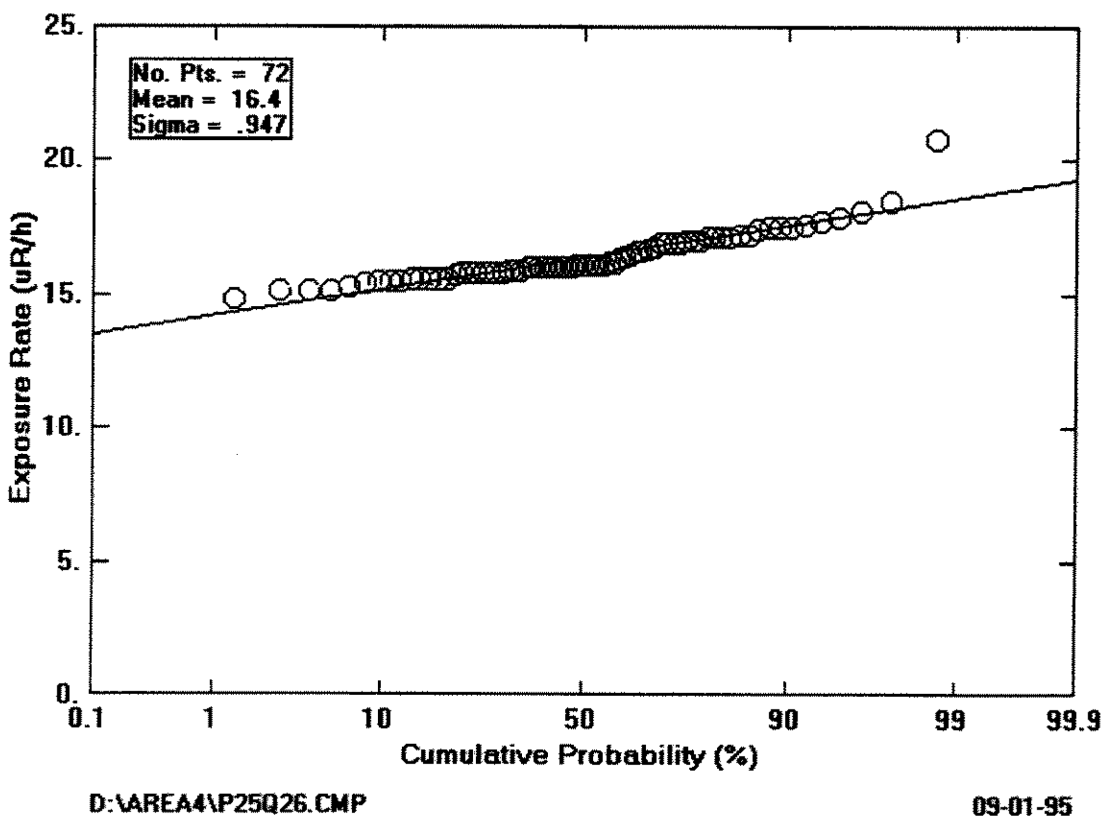
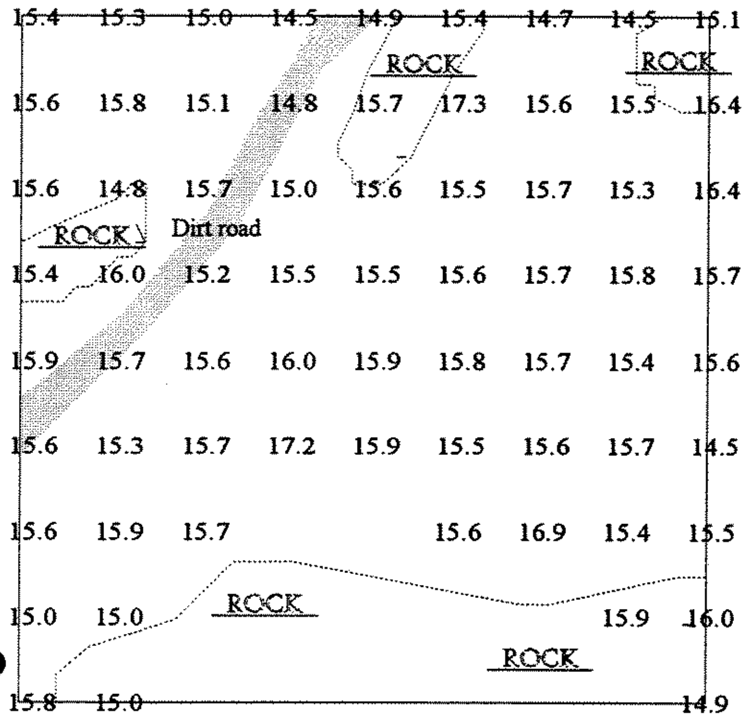
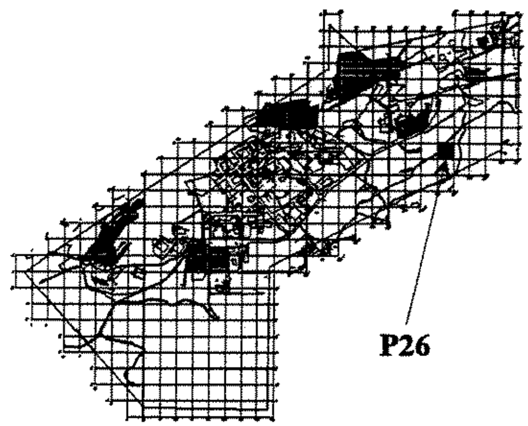


Figure B-143. Ambient Gamma Survey Results - Survey Block P26





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26

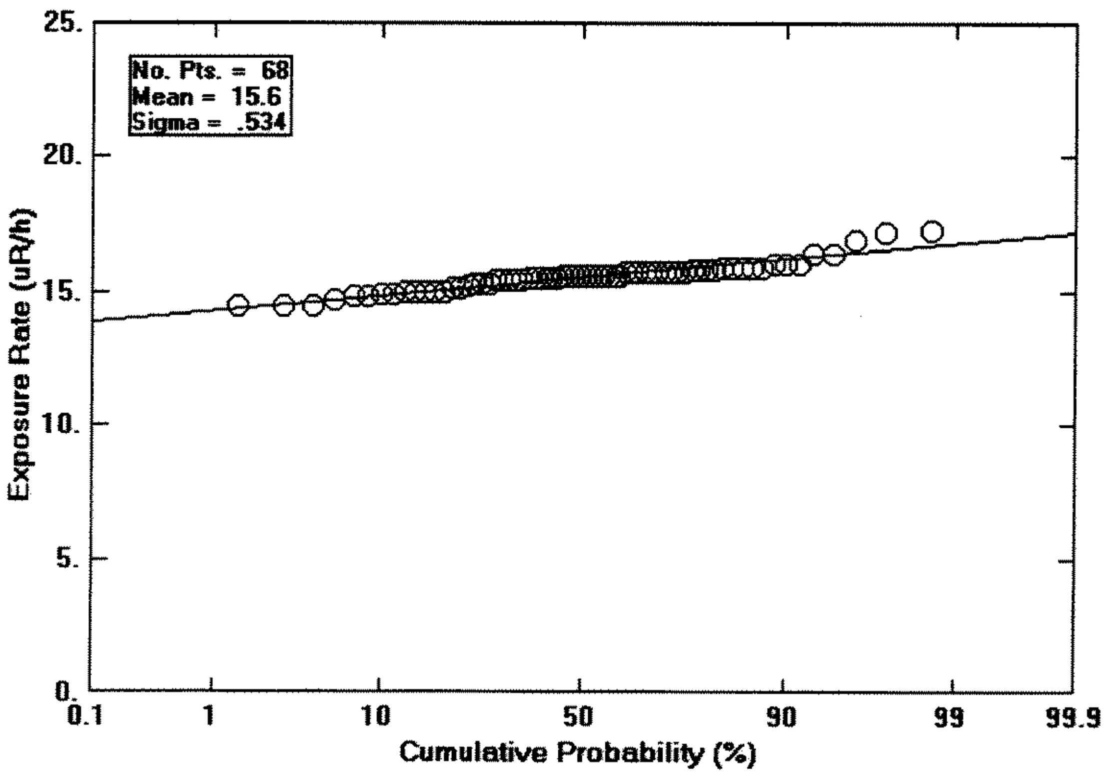

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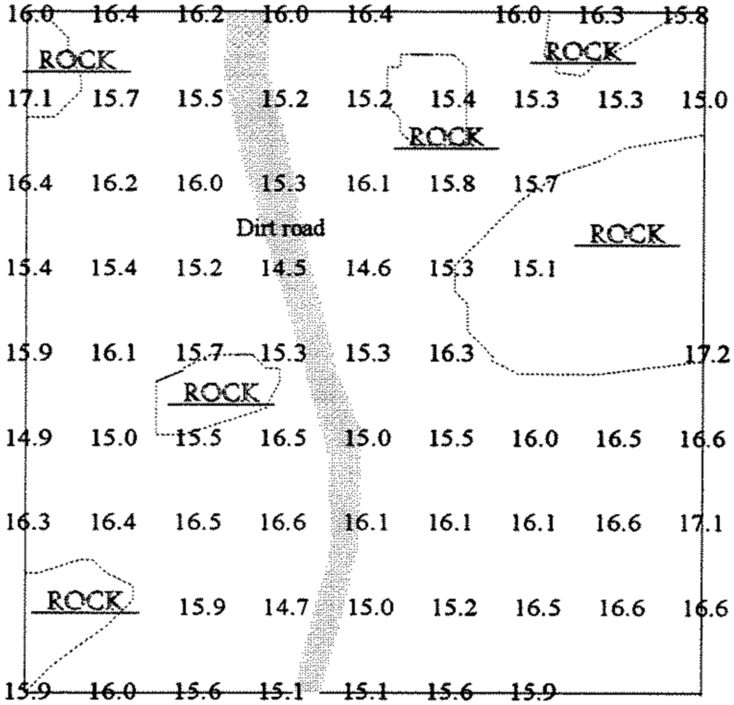
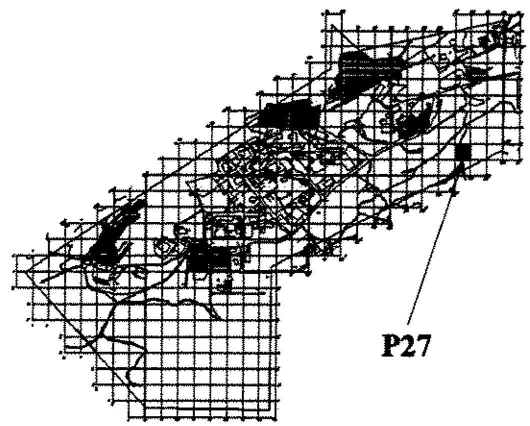
Figure B-144. Ambient Gamma Survey Results - Survey Block P27





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27

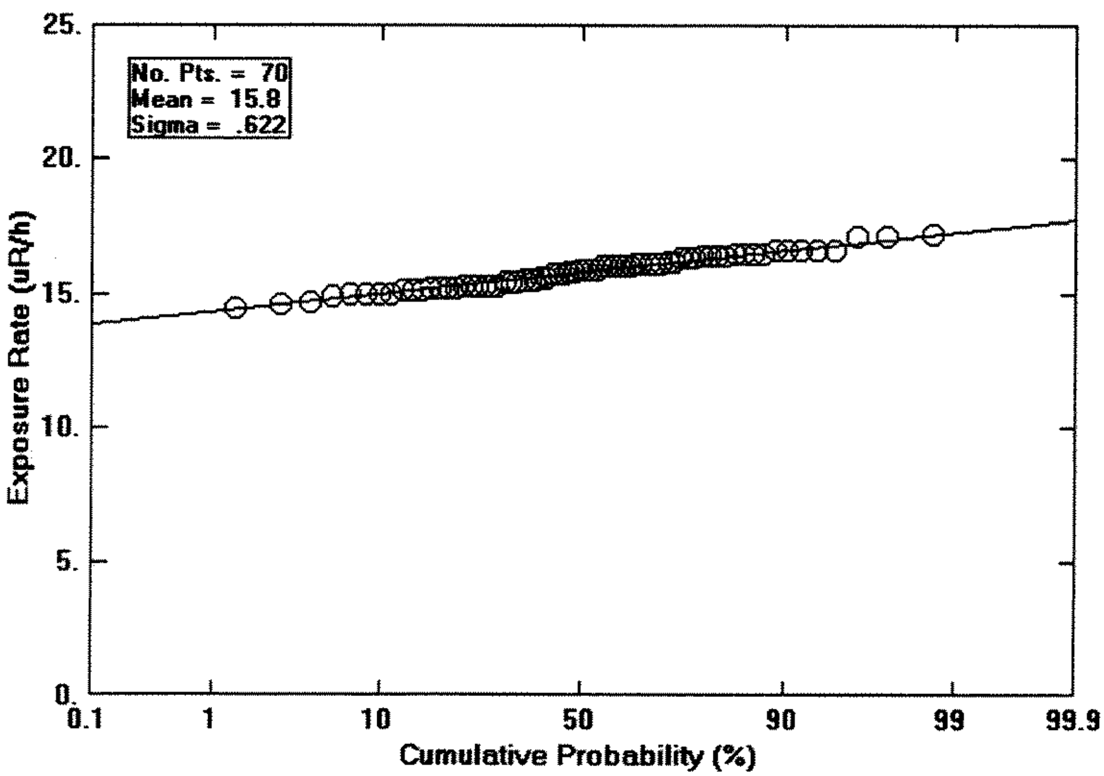

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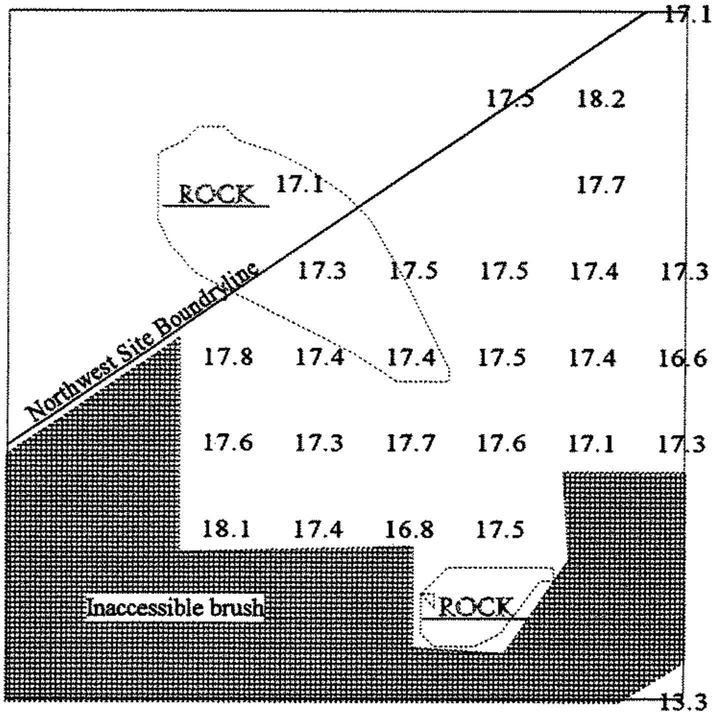
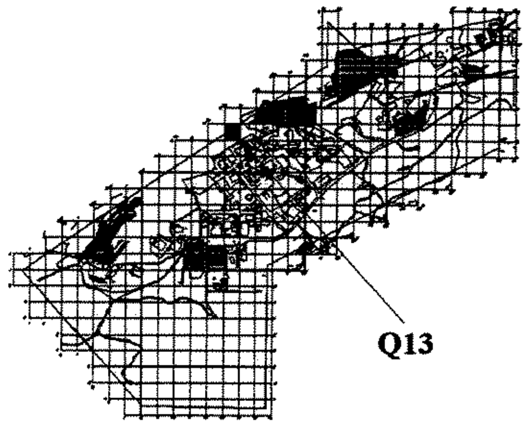
Figure B-145. Ambient Gamma Survey Results - Survey Block Q13





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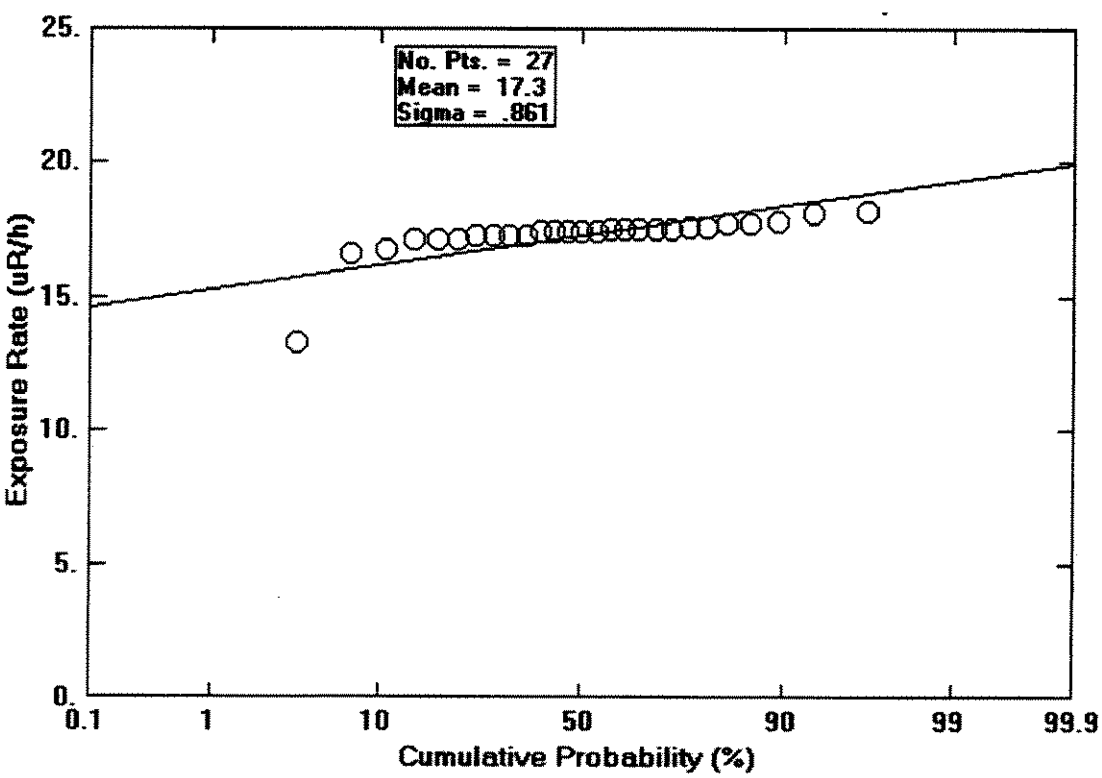

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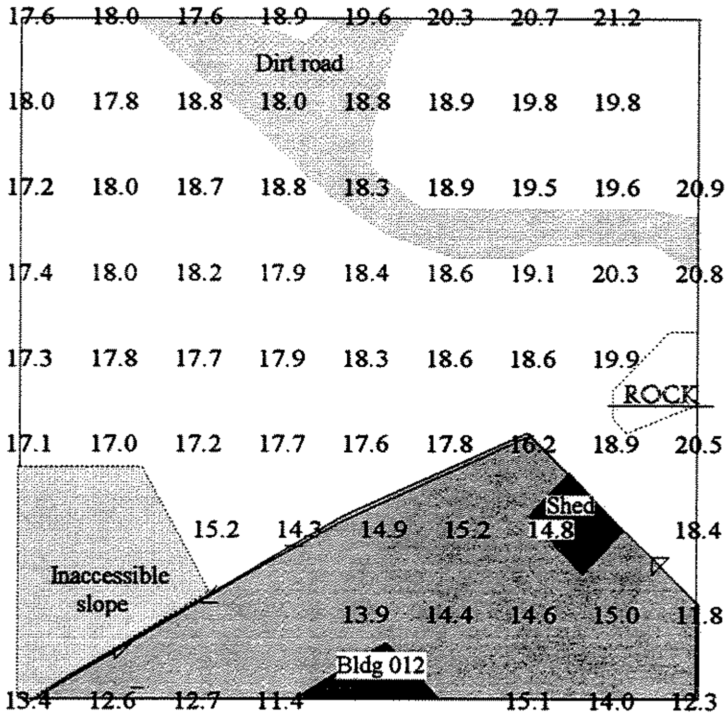
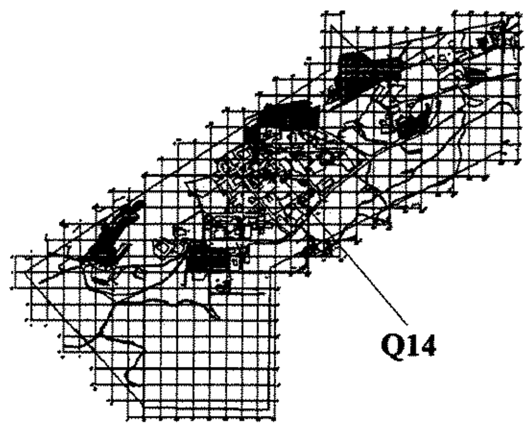
Figure B-146. Ambient Gamma Survey Results - Survey Block Q14





Q
14

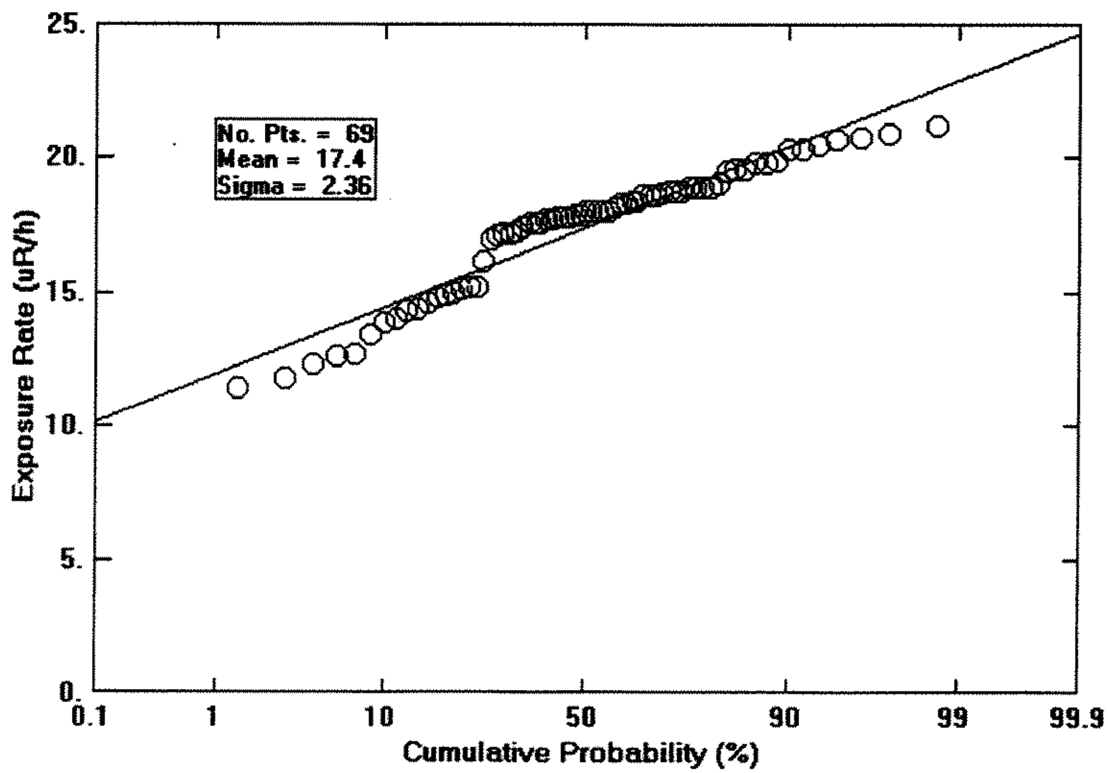


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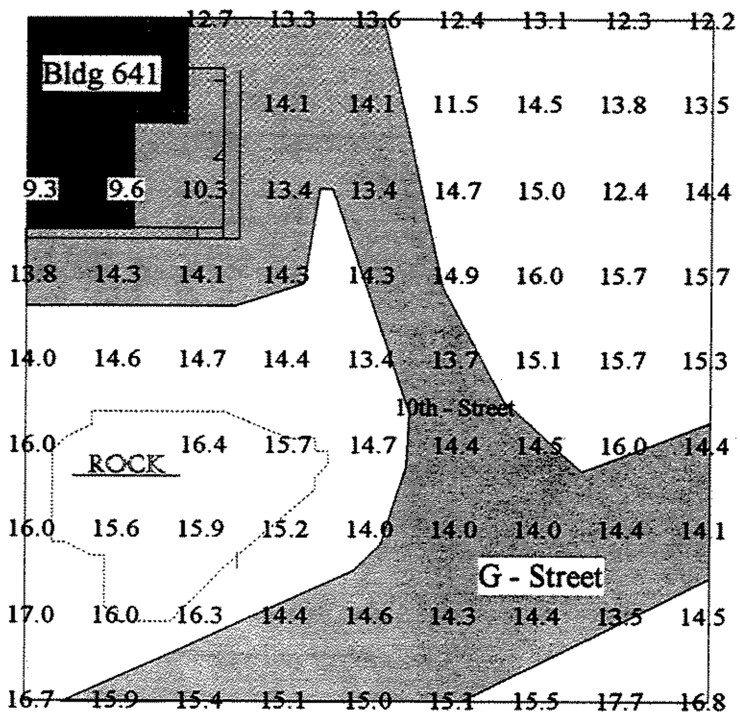
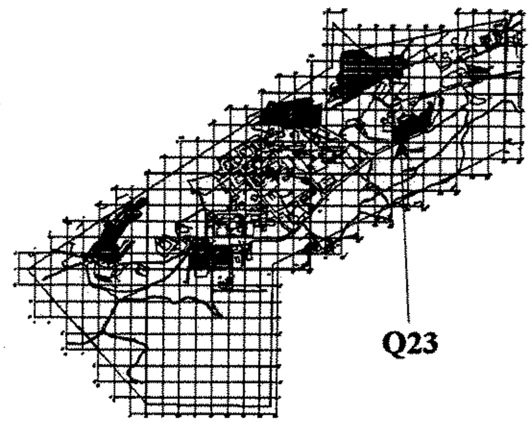
Figure B-147. Ambient Gamma Survey Results - Survey Block Q23





Q
23

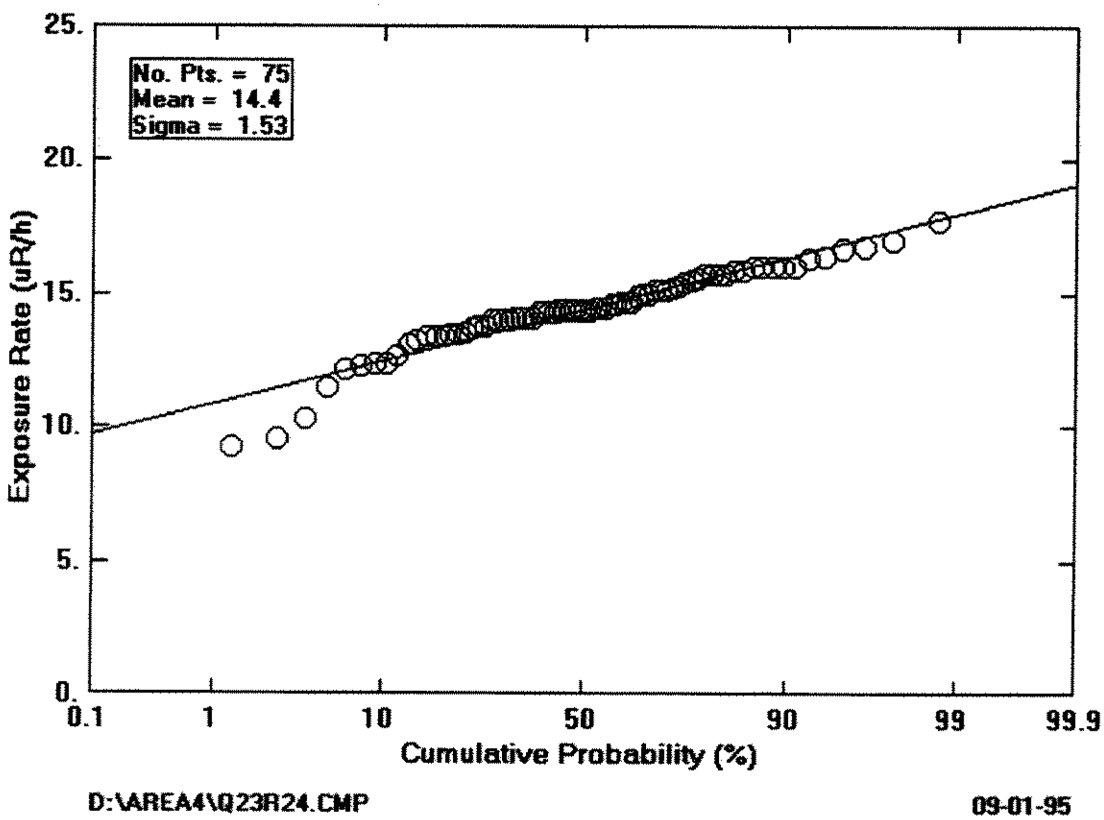
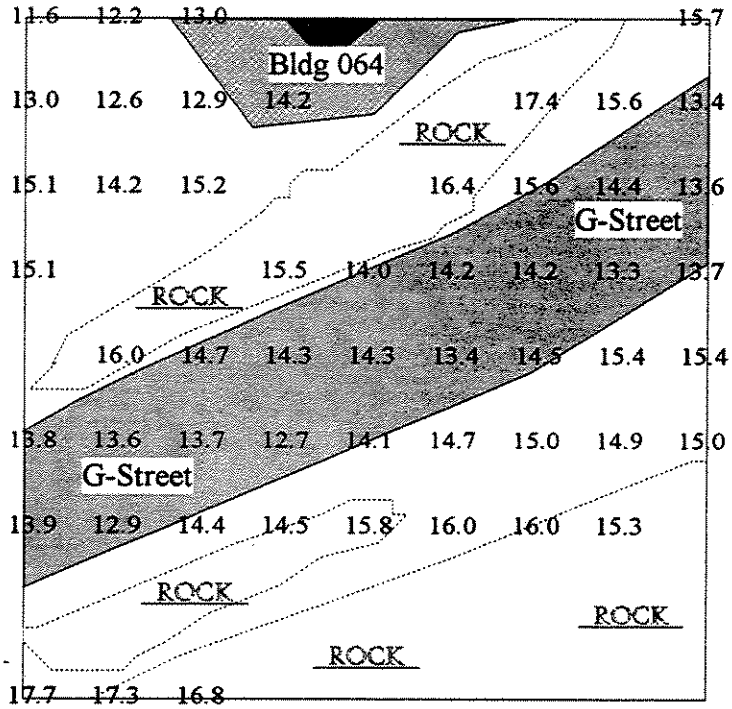
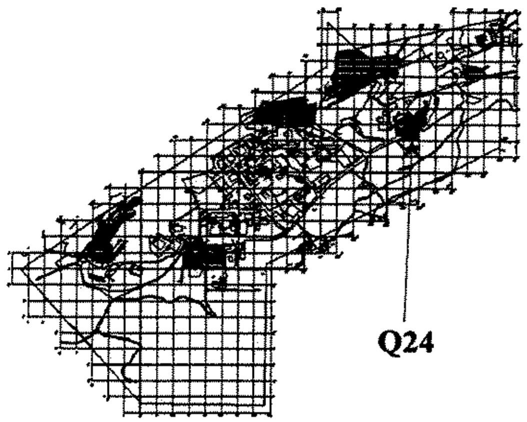


Figure B-148. Ambient Gamma Survey Results - Survey Block Q24





Q-24

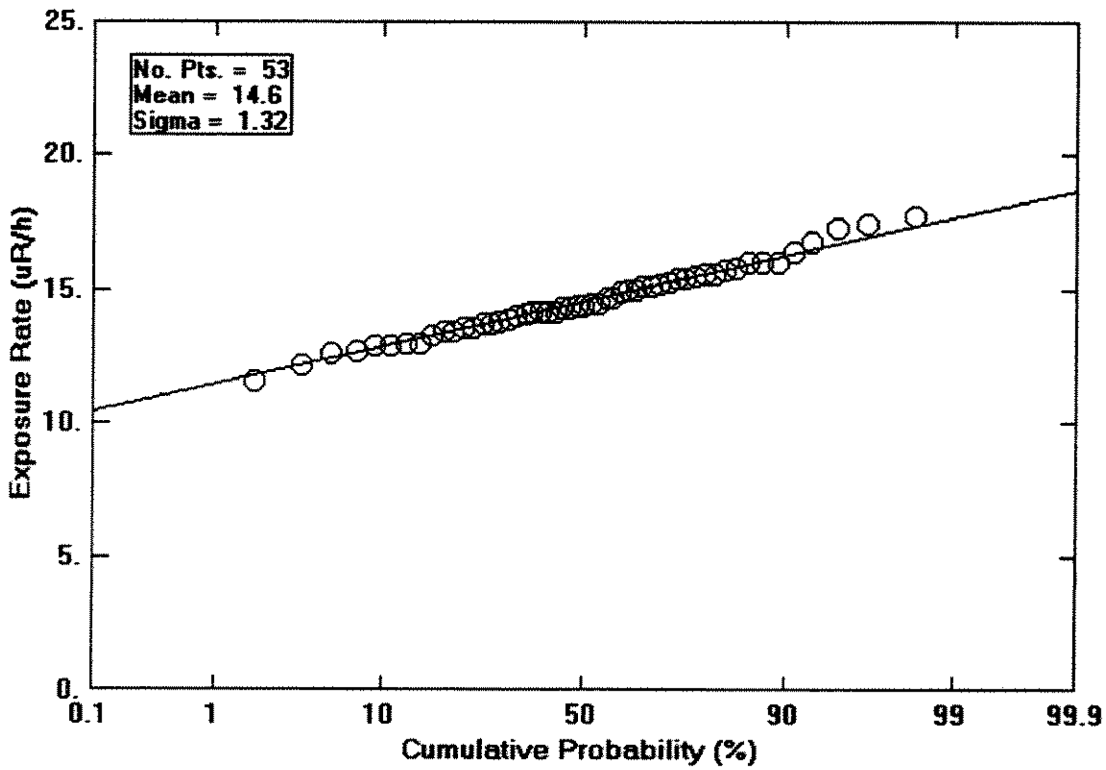


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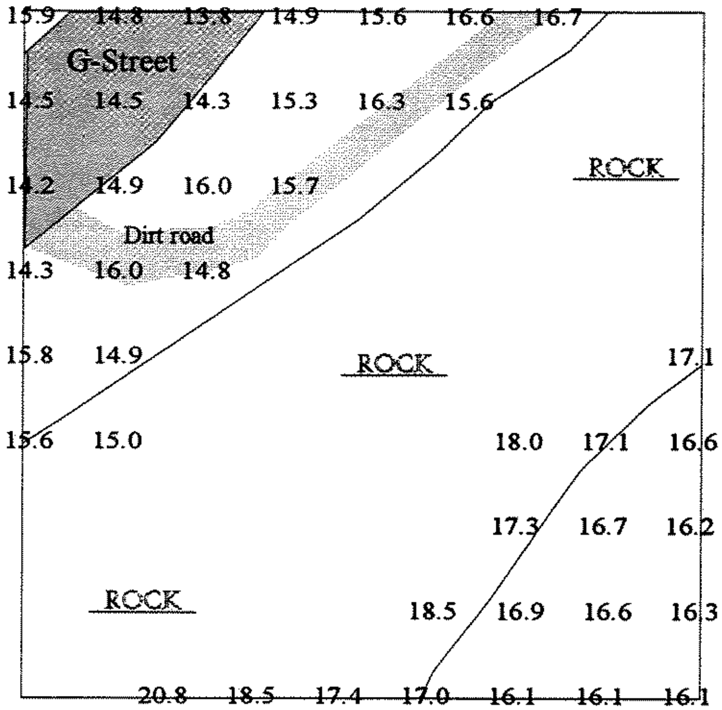
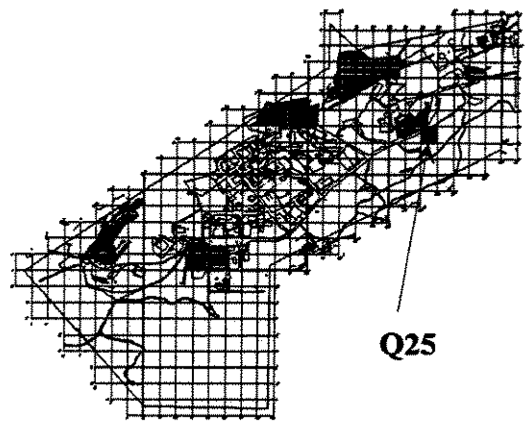
Figure B-149. Ambient Gamma Survey Results - Survey Block Q25





Q 25

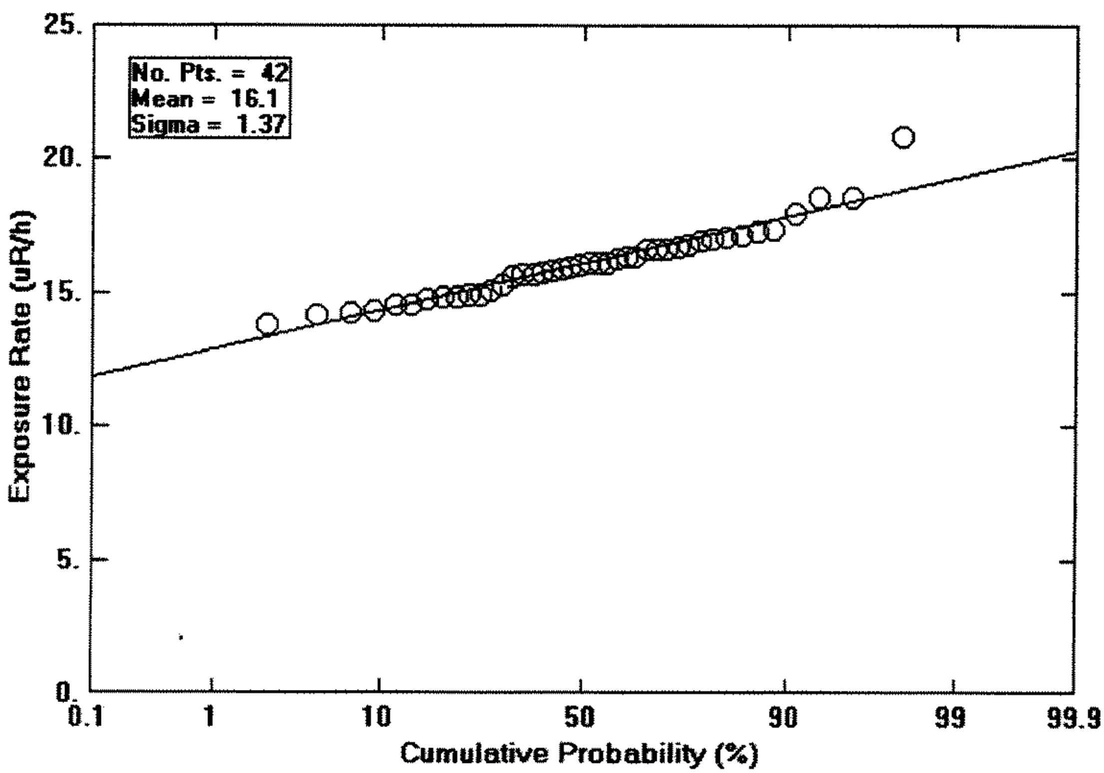


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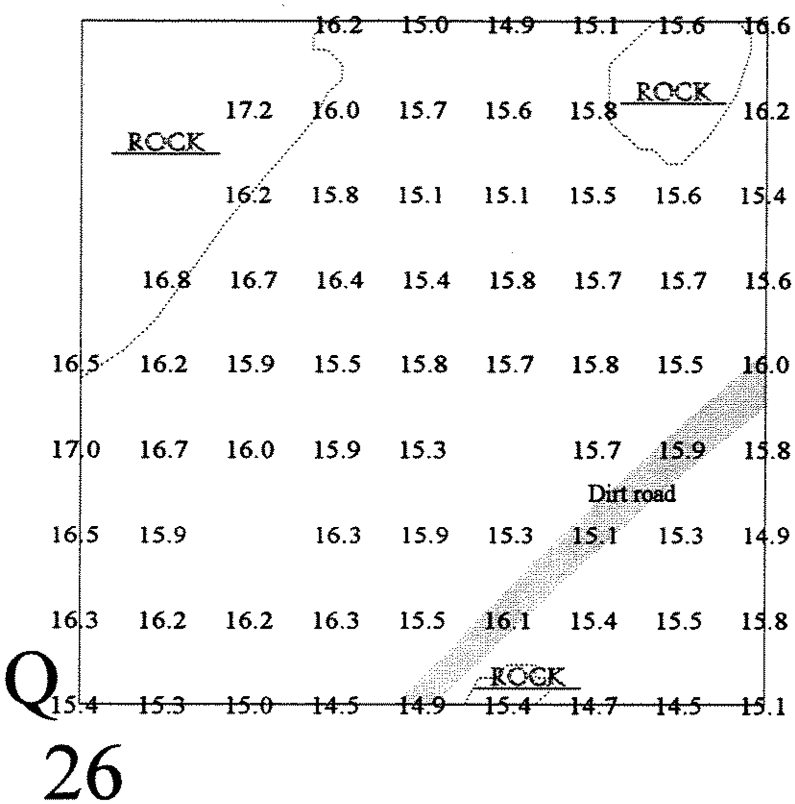
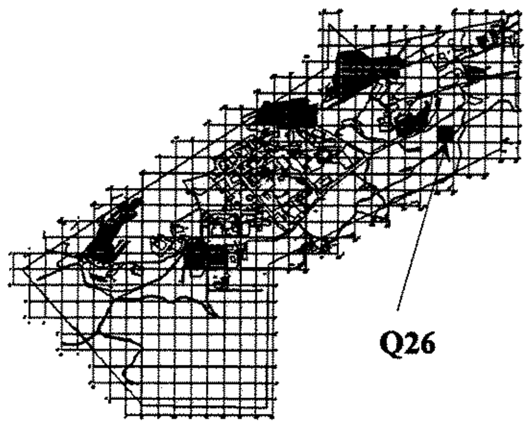
Figure B-150. Ambient Gamma Survey Results - Survey Block Q26





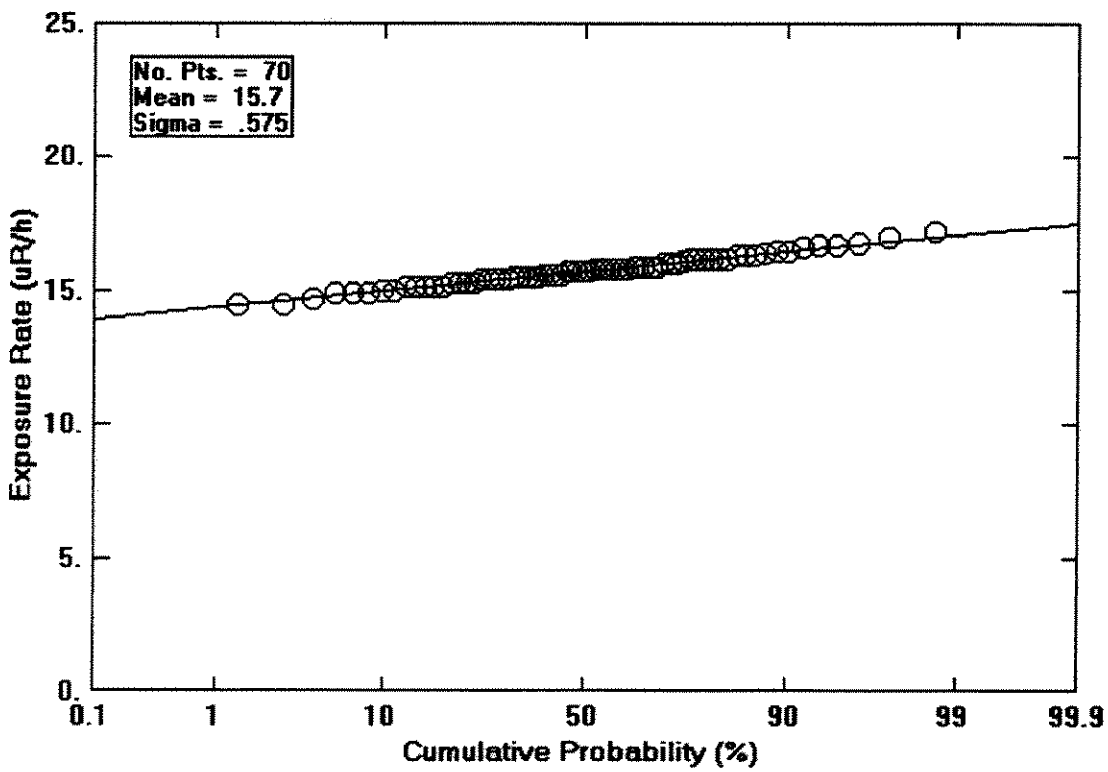


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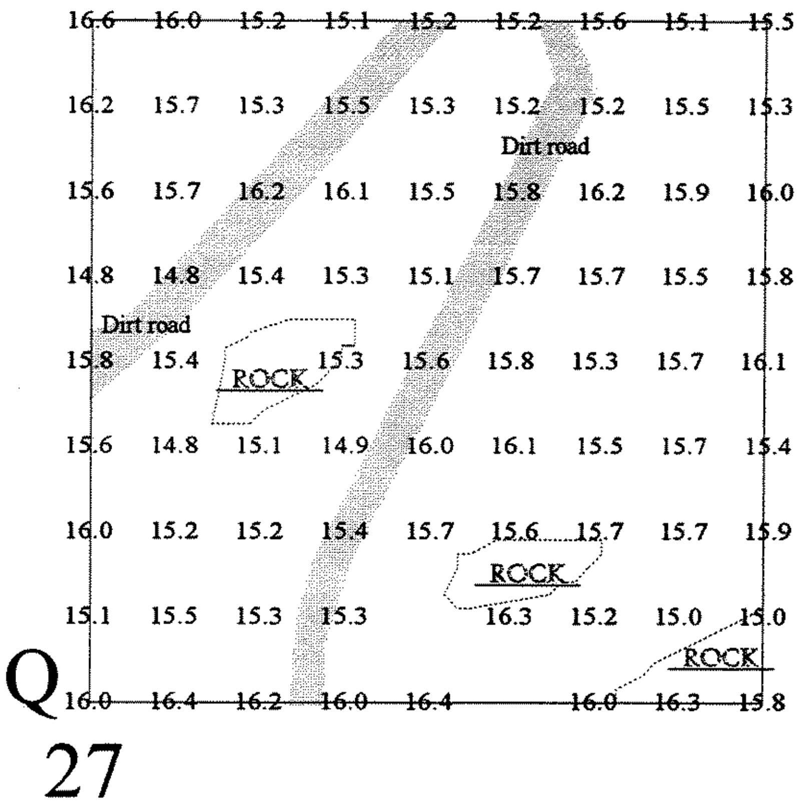
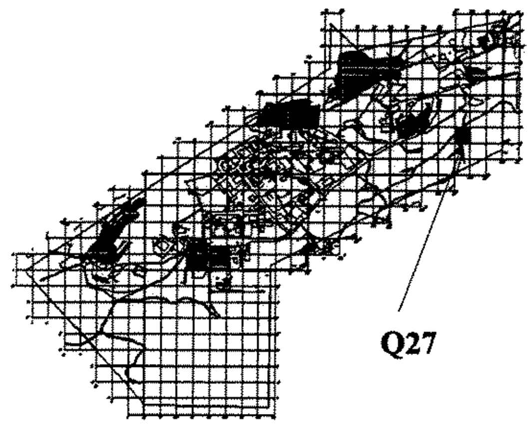
Figure B-151. Ambient Gamma Survey Results - Survey Block Q27





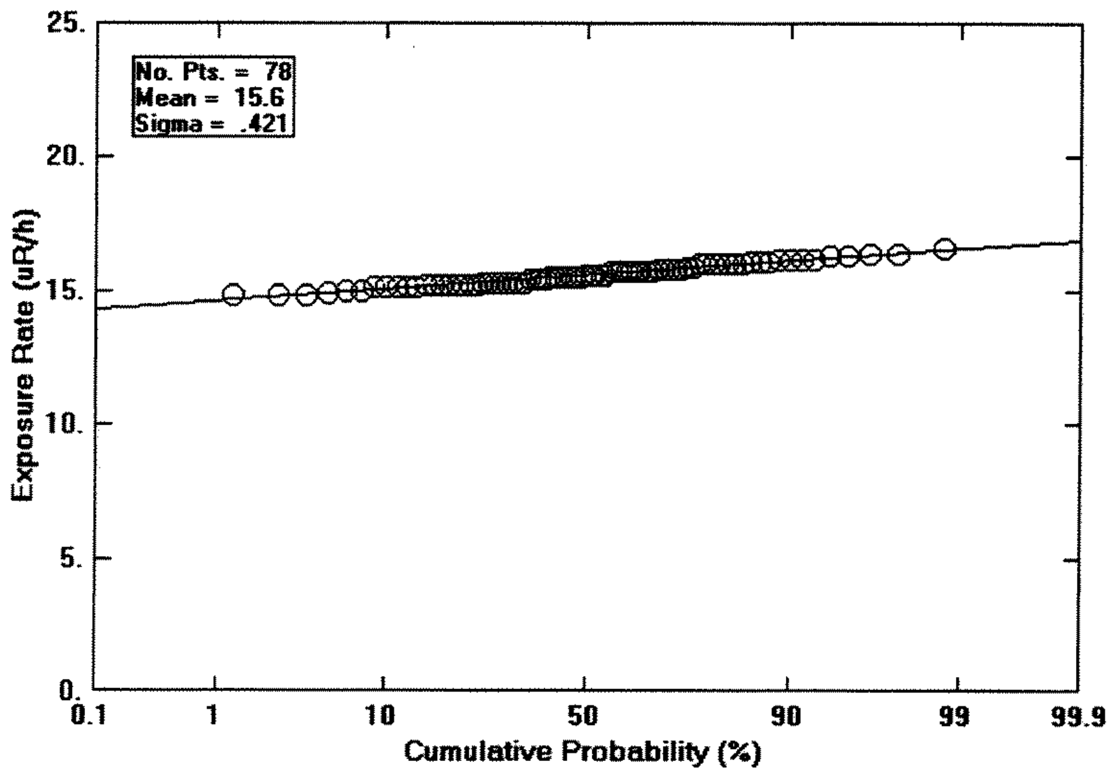


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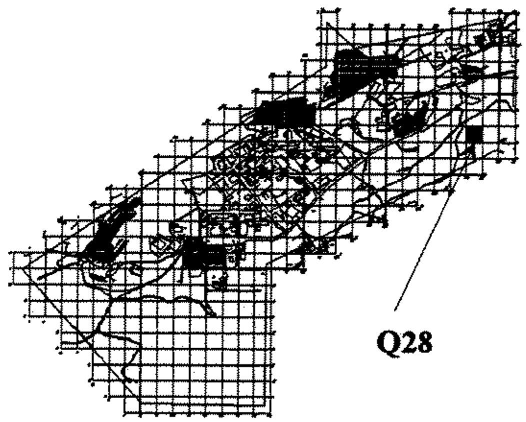
Figure B-152. Ambient Gamma Survey Results - Survey Block Q28

var1	var2	var3	var4	var5	var6	var7	var8	var9
14.2	14.5	15.3	15.3	14.9	15.1	15.4	15.3	15.3
14.5	15.0	15.1	15.1	15.0	15.3	15.5	15.3	15.5
15.3	14.8	15.1	14.3	15.2	15.3	15.0	15.4	15.0
14.9	14.9	15.1	15.0	15.3	15.3	15.5	14.8	15.3
15.9	15.0	14.8	14.8	14.7	14.8	14.6	15.1	15.4
15.5	15.0	14.8	14.4	15.0	14.9	14.9	14.8	14.5
14.8	14.6	15.4	15.3	15.1	15.0			16.5
14.6	15.3	14.6	14.8	14.8		16.4	15.9	16.3
14.9	15.0	14.9				15.5	15.6	15.8

Q
28



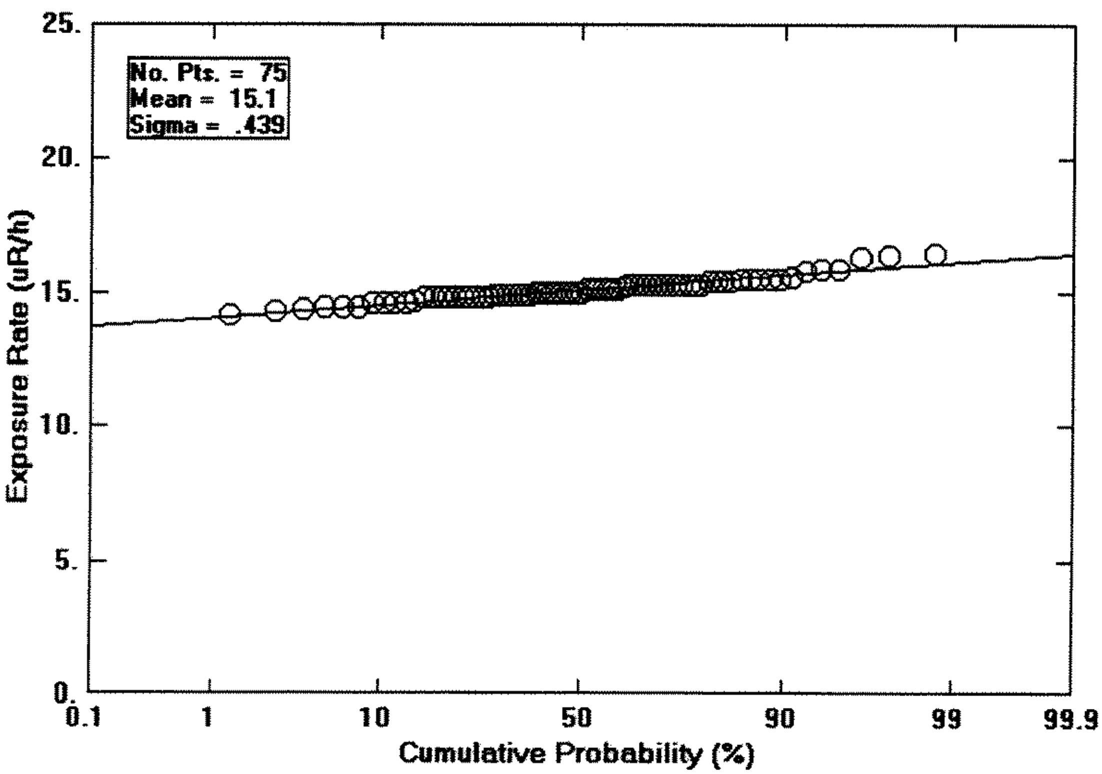


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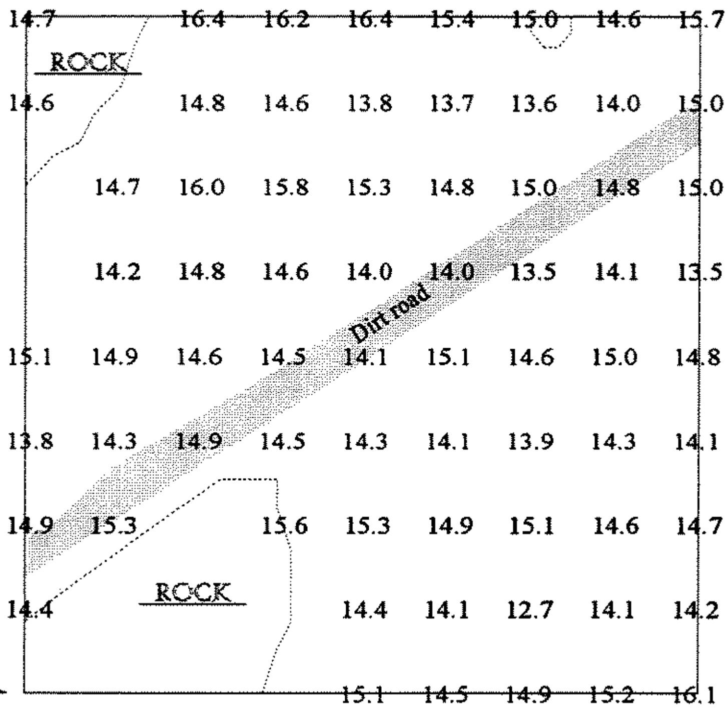
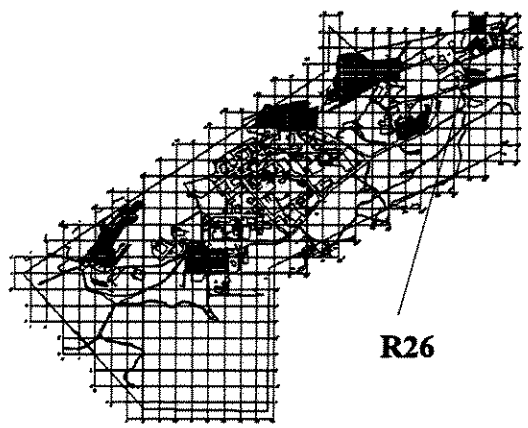
Figure B-153. Ambient Gamma Survey Results - Survey Block R26





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26

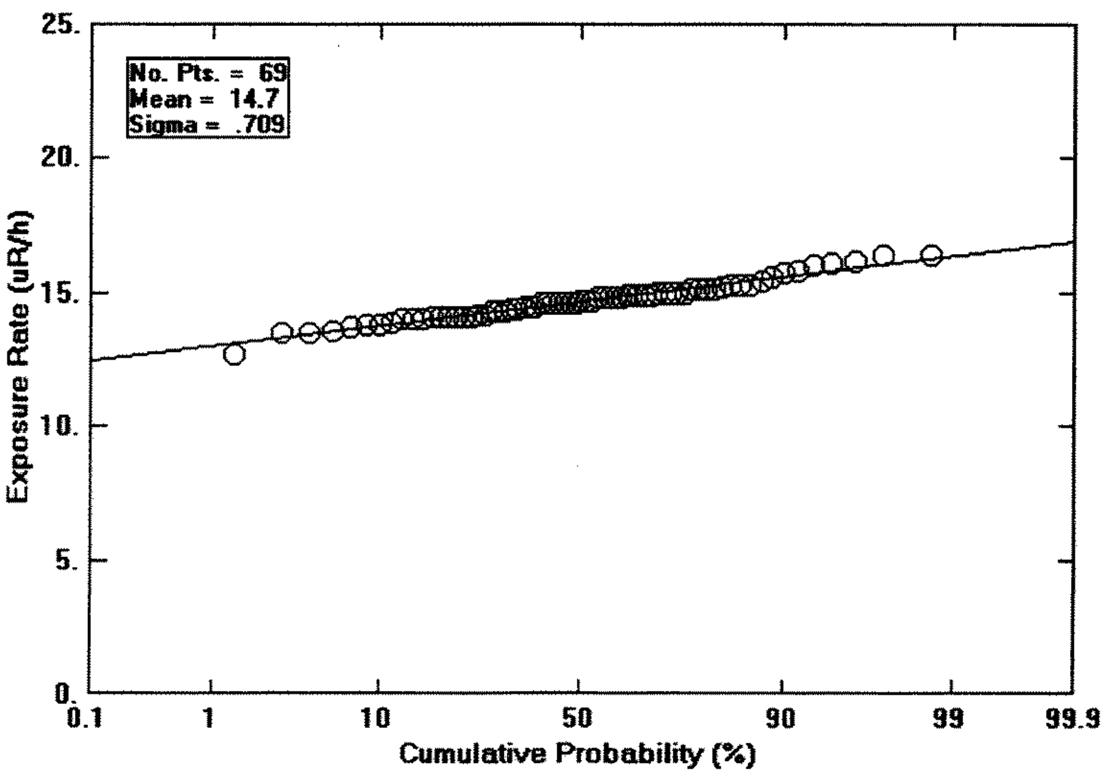

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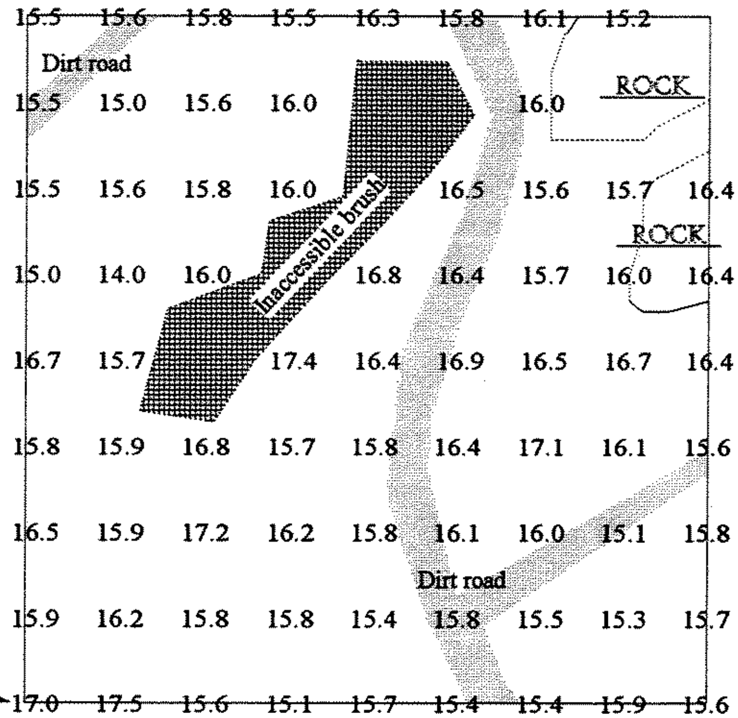
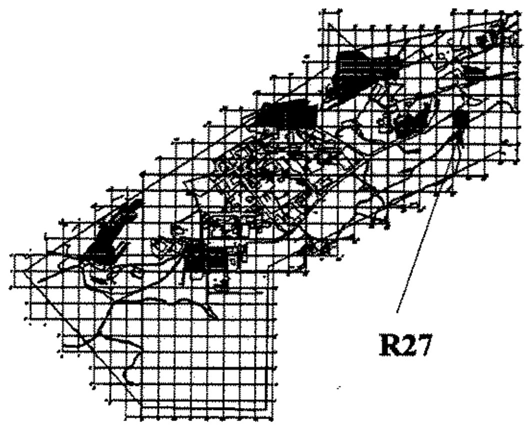
Figure B-154. Ambient Gamma Survey Results - Survey Block R27





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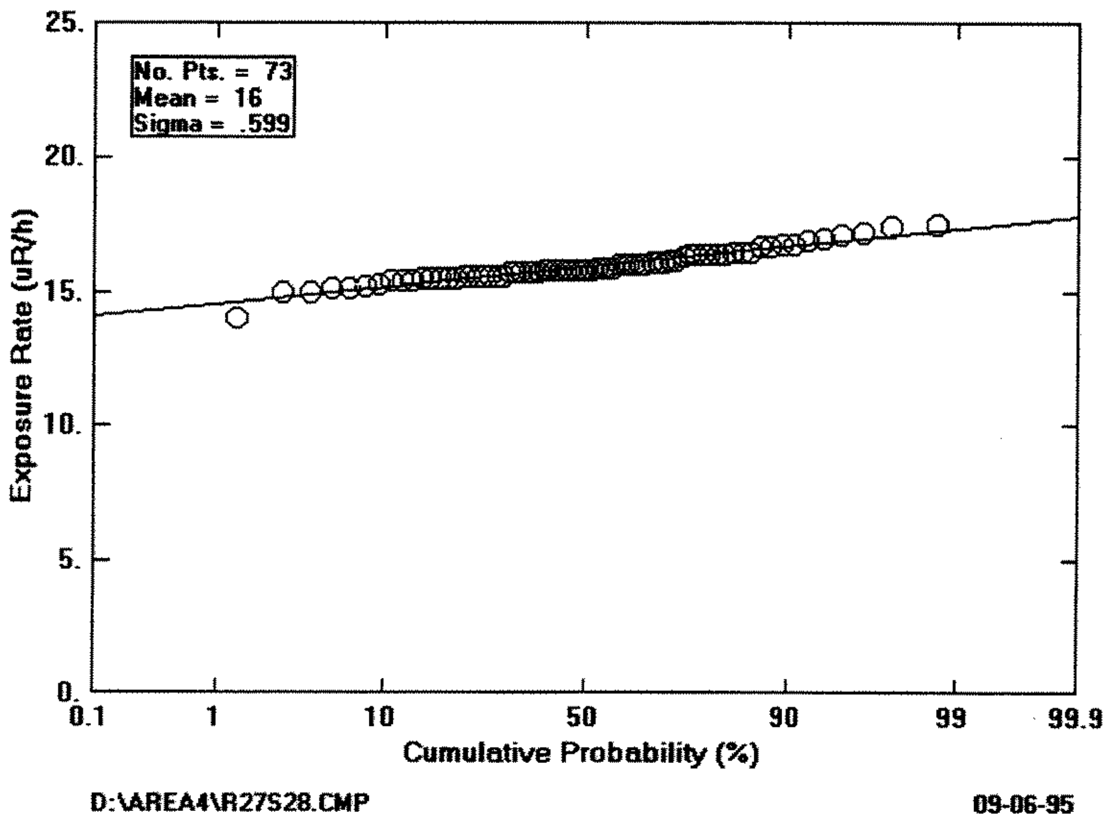
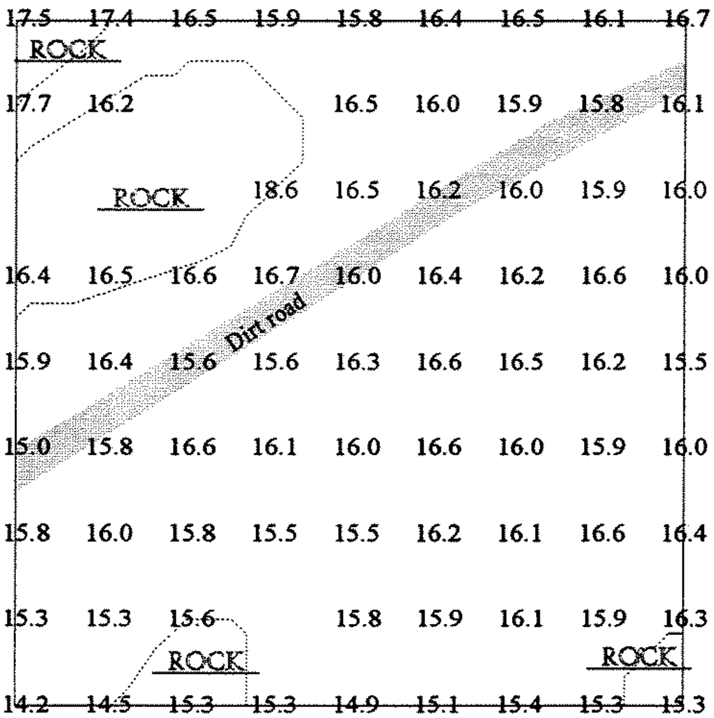
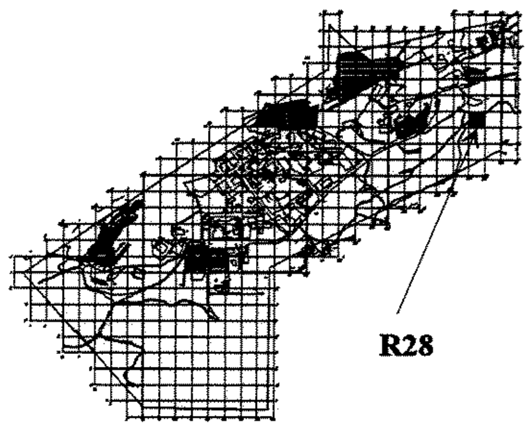


Figure B-155. Ambient Gamma Survey Results - Survey Block R28





R
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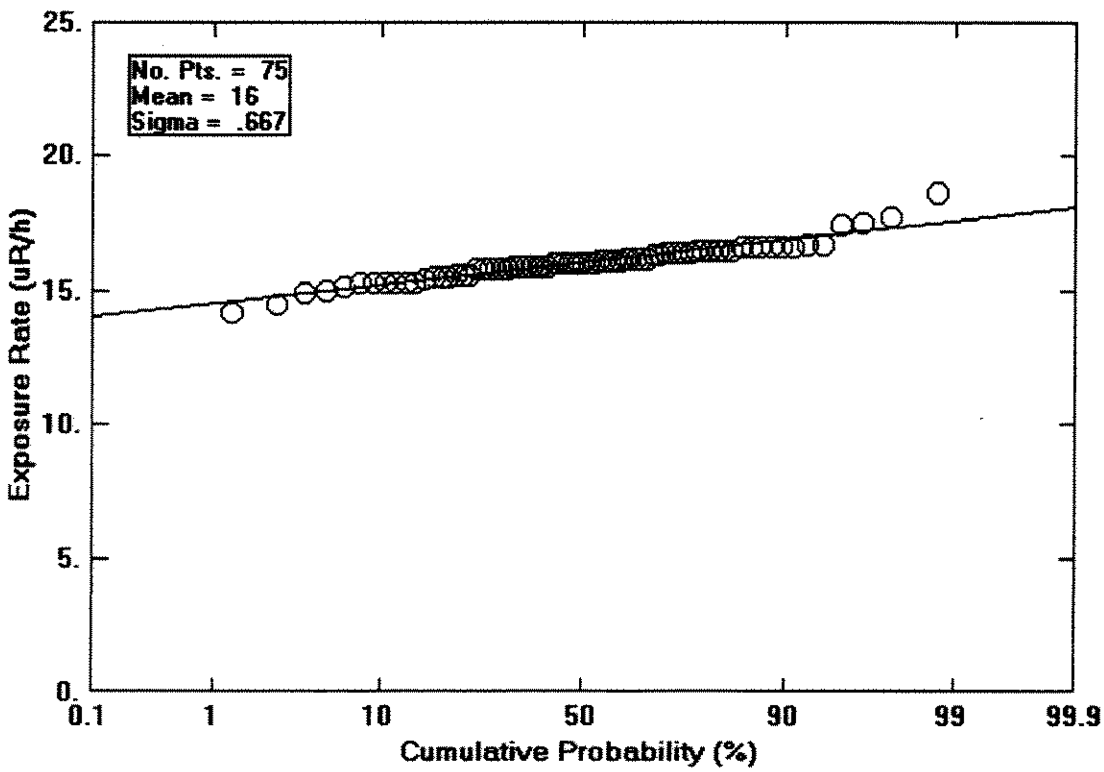

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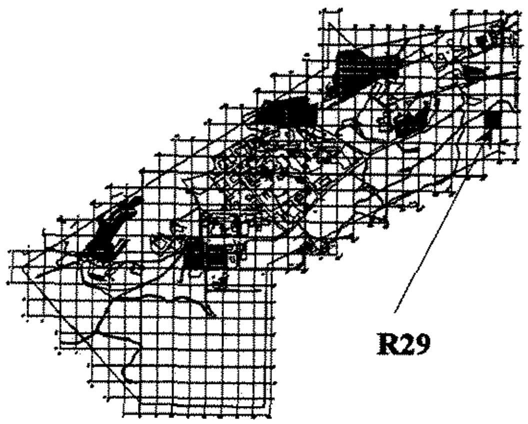
Figure B-156. Ambient Gamma Survey Results - Survey Block R29

Dirt road

17.0	17.1	17.1	16.6	16.6	16.7	16.7	16.5	16.4
16.5	17.0	16.3	16.6	16.4	16.0	16.0	16.2	15.9
16.4	16.5	16.6	15.9	15.9	15.8	15.7	16.2	16.7
15.6	15.9	15.9	15.4	15.4	15.6	15.4	15.0	15.7
15.5	15.4	15.3	15.4	15.5	15.4	15.6	15.5	15.9
15.6	15.2	15.4	15.6	15.8	15.2	17.2	16.4	16.4
15.7	14.9	15.3	14.6	16.5	16.1	15.6	16.2	16.4
15.7	15.8	16.1	15.8	15.2	15.4	17.5	16.2	17.2
15.7	16.0	15.2	15.2	15.1	17.2	16.9	16.4	17.3

ROCK



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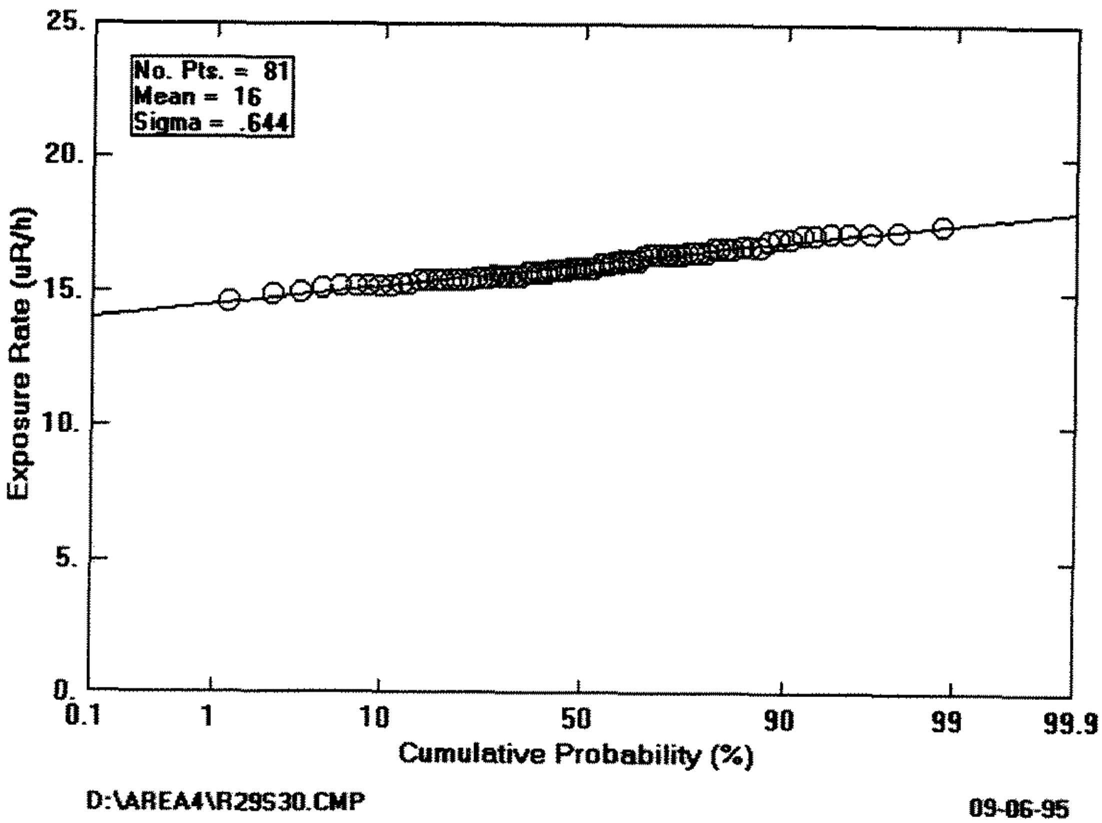
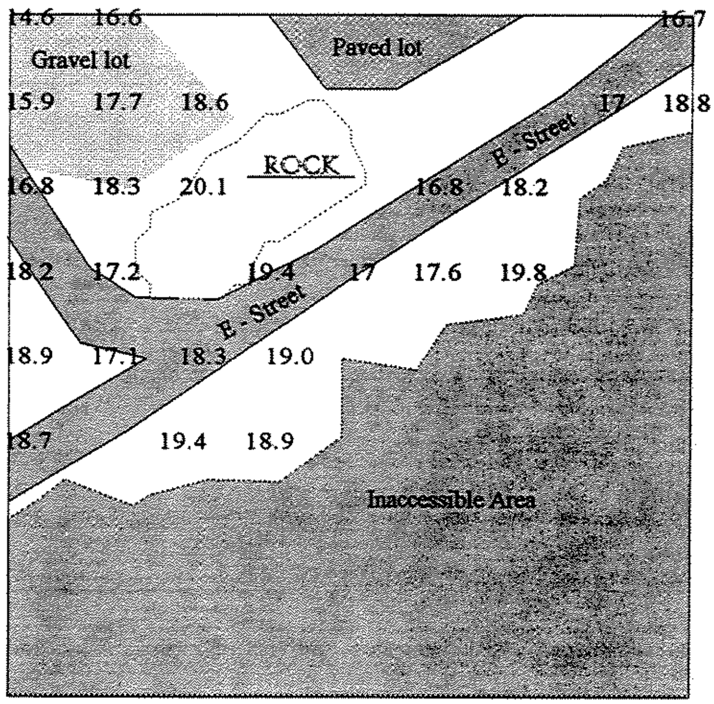
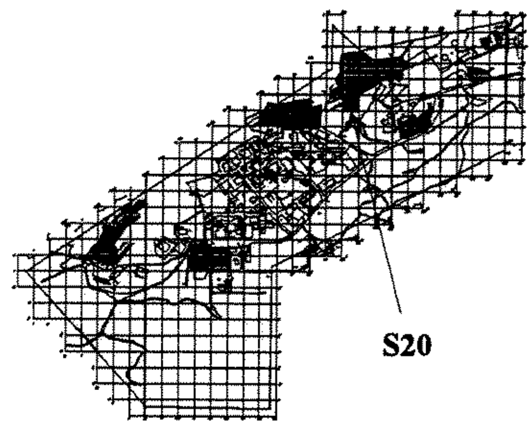


Figure B-157. Ambient Gamma Survey Results - Survey Block S20





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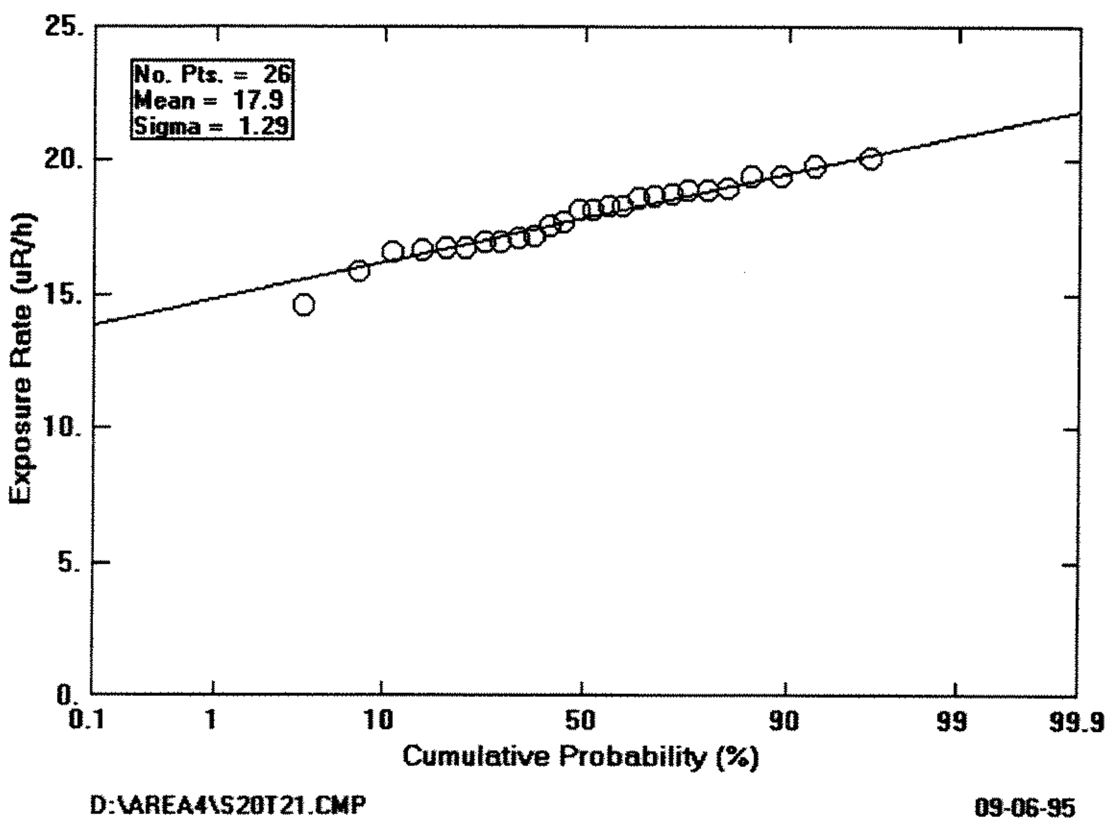
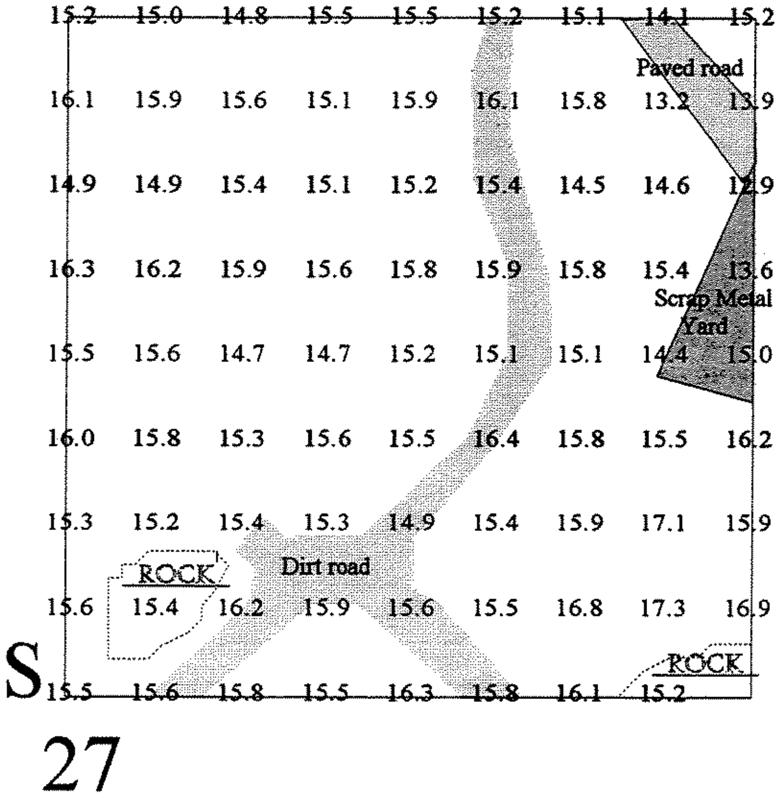
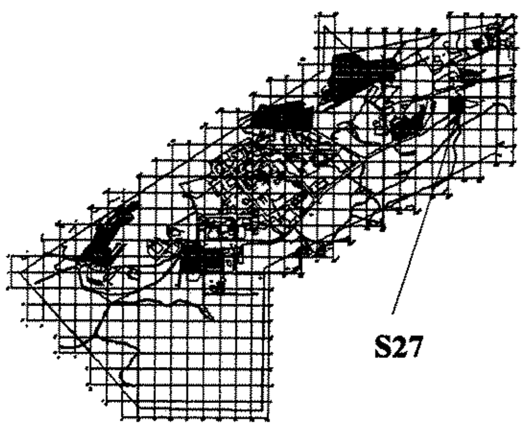


Figure B-158. Ambient Gamma Survey Results - Survey Block S27





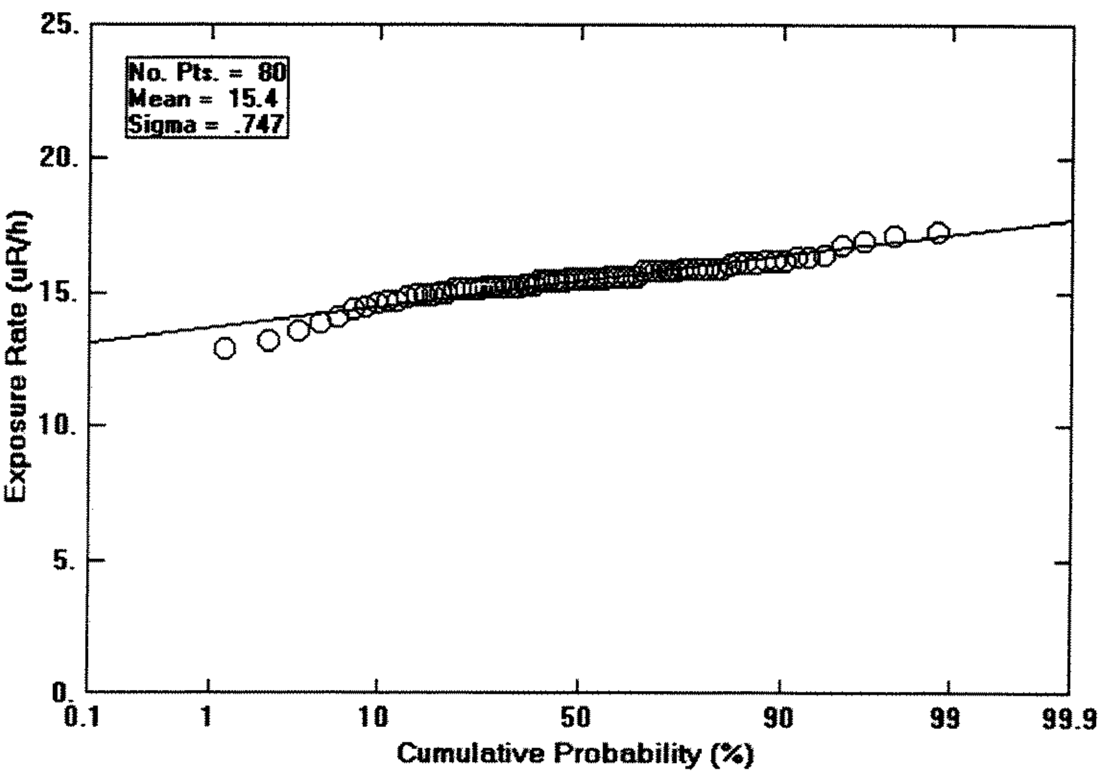


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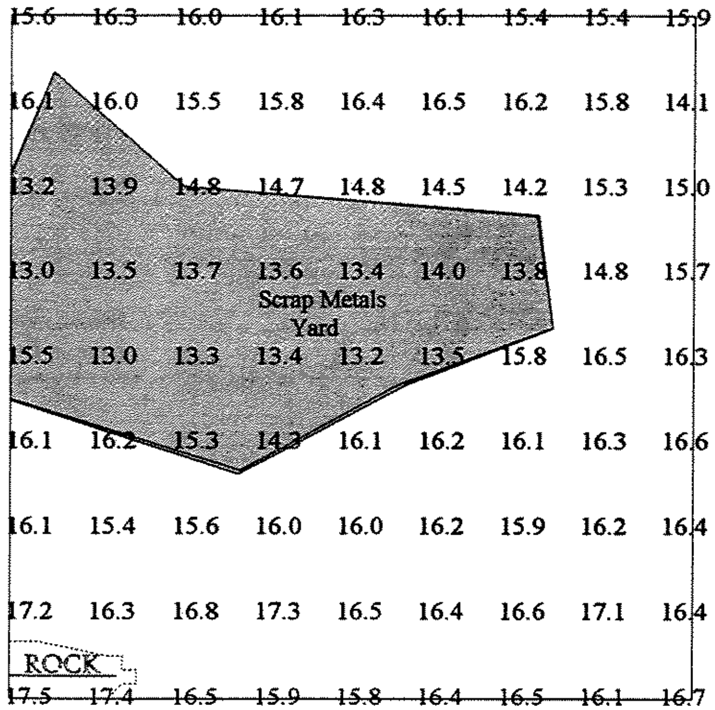
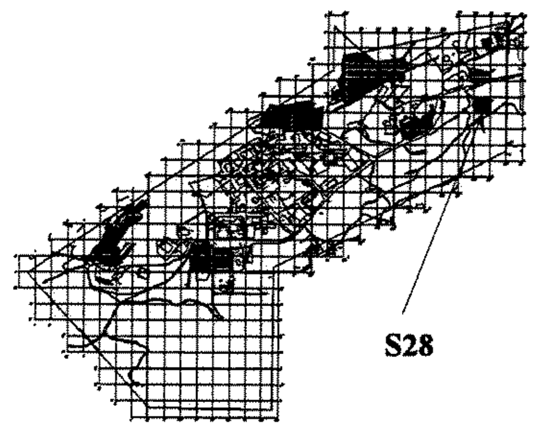
Figure B-159. Ambient Gamma Survey Results - Survey Block S28





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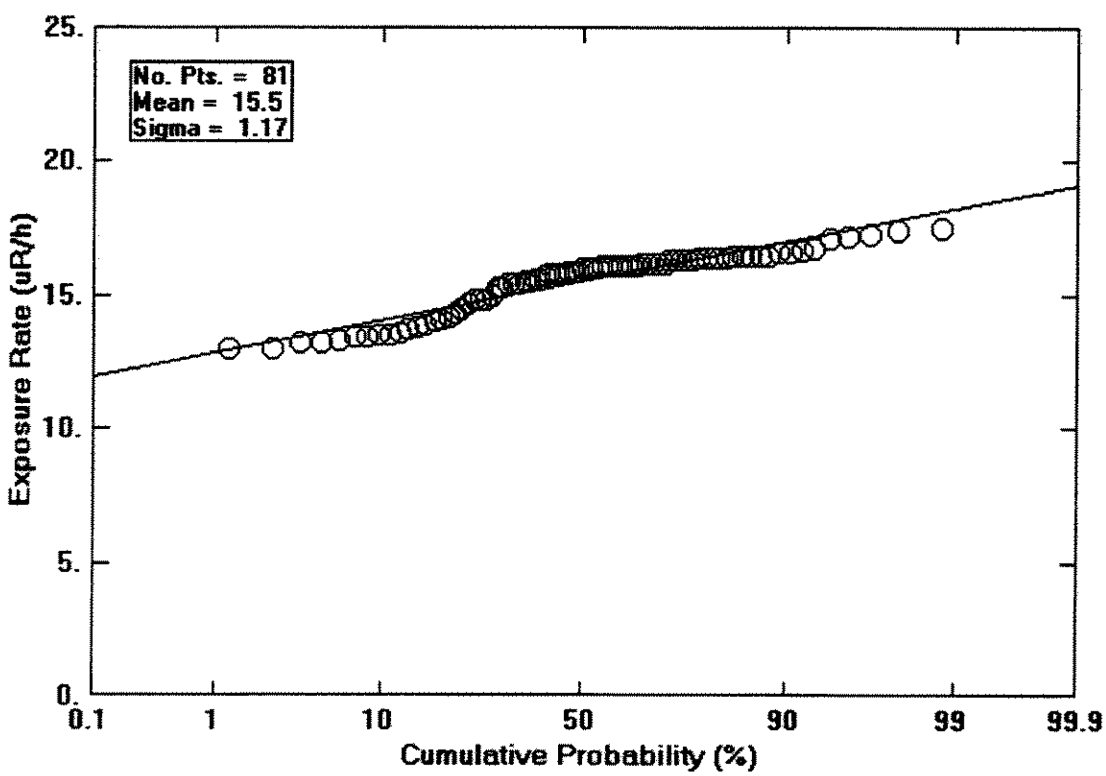

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Figure B-160. Ambient Gamma Survey Results - Survey Block S29

16.0	16.1	16.7	16.8	16.8	16.7	16.5	16.1	15.4
16.1	16.5	16.5	16.2	17.0	16.2	16.7	16.2	16.1
15.1	16.4	16.5	16.5	16.0	16.6	16.3	16.2	15.7
15.9	16.5	16.7	16.7	16.6	16.7	16.3	16.4	16.6
16.9	16.9	16.9	16.8	16.1	16.4	16.7	17.0	17.2
16.8	16.8	17.1	17.2	17.0	17.4	17.2	17.3	17.4
16.7	16.9	17.1	17.1	17.0	17.6	17.2	17.2	16.6
16.9	17.6	17.5	16.8	17.2	17.3	17.2	16.7	16.6
17.0	17.1	17.1	16.6	16.6	16.7	16.7	16.5	16.4

Dirt road

Dirt road

S
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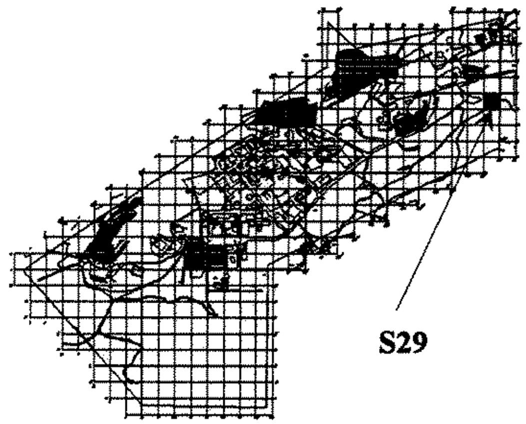

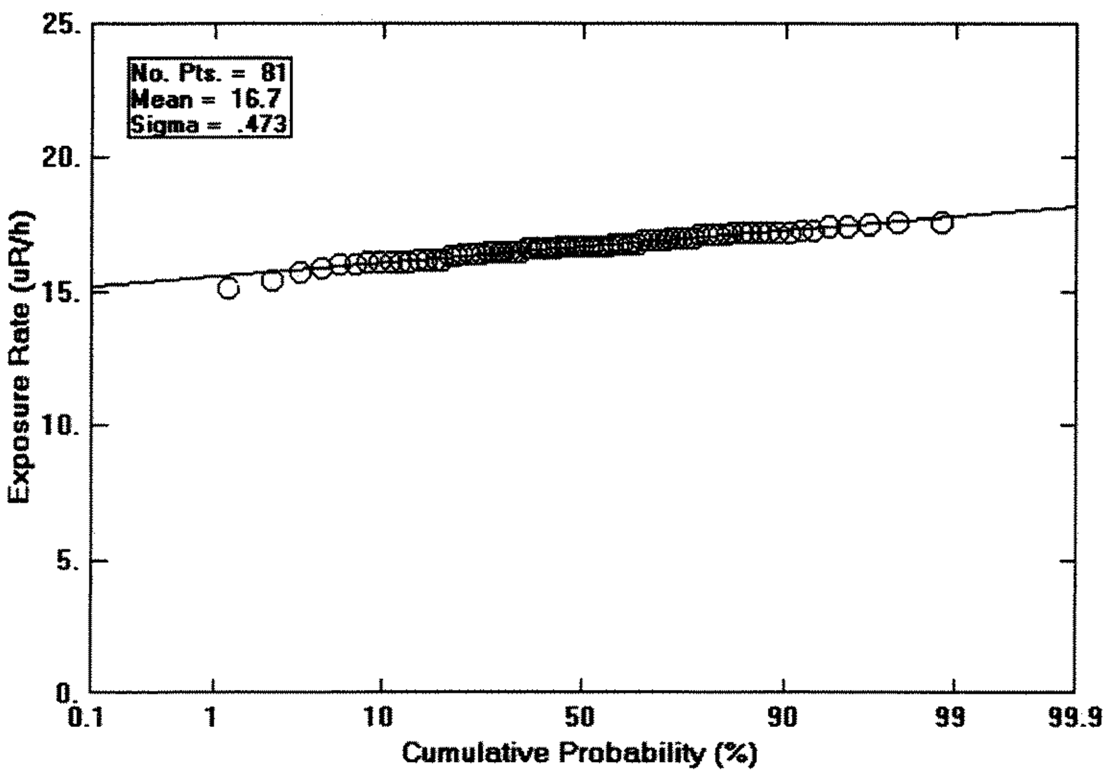

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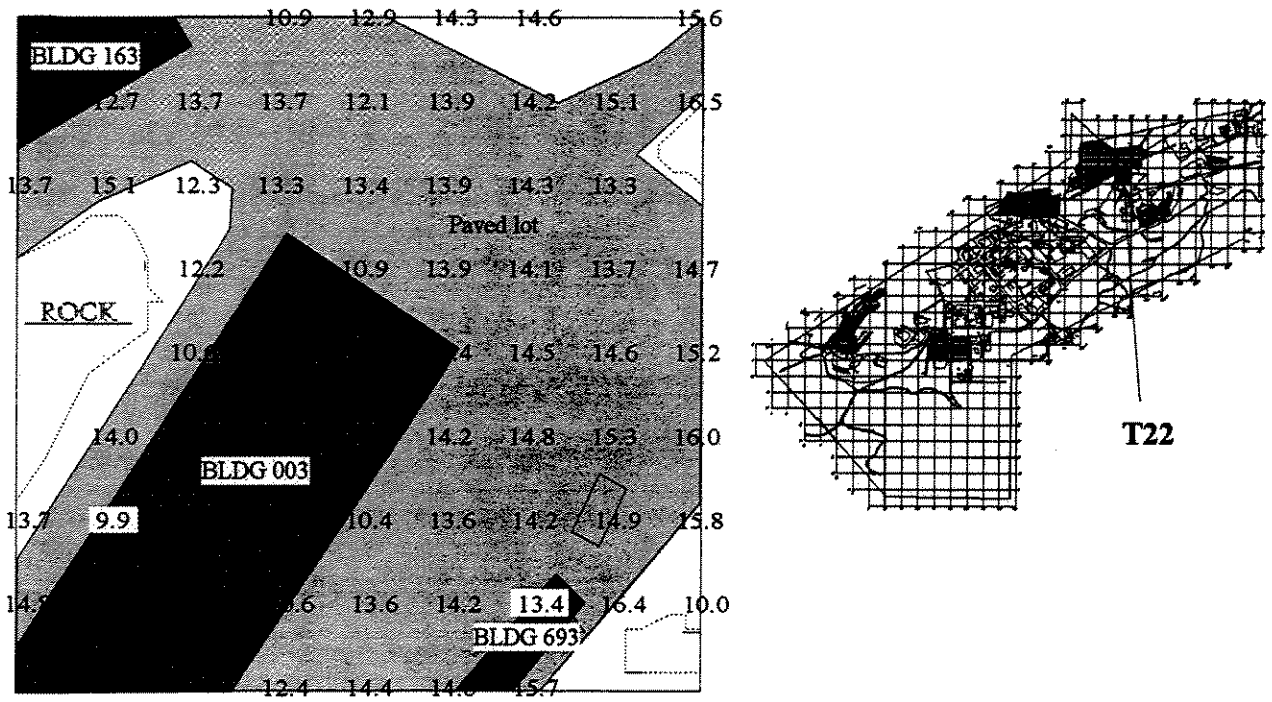
Figure B-161. Ambient Gamma Survey Results - Survey Block T22



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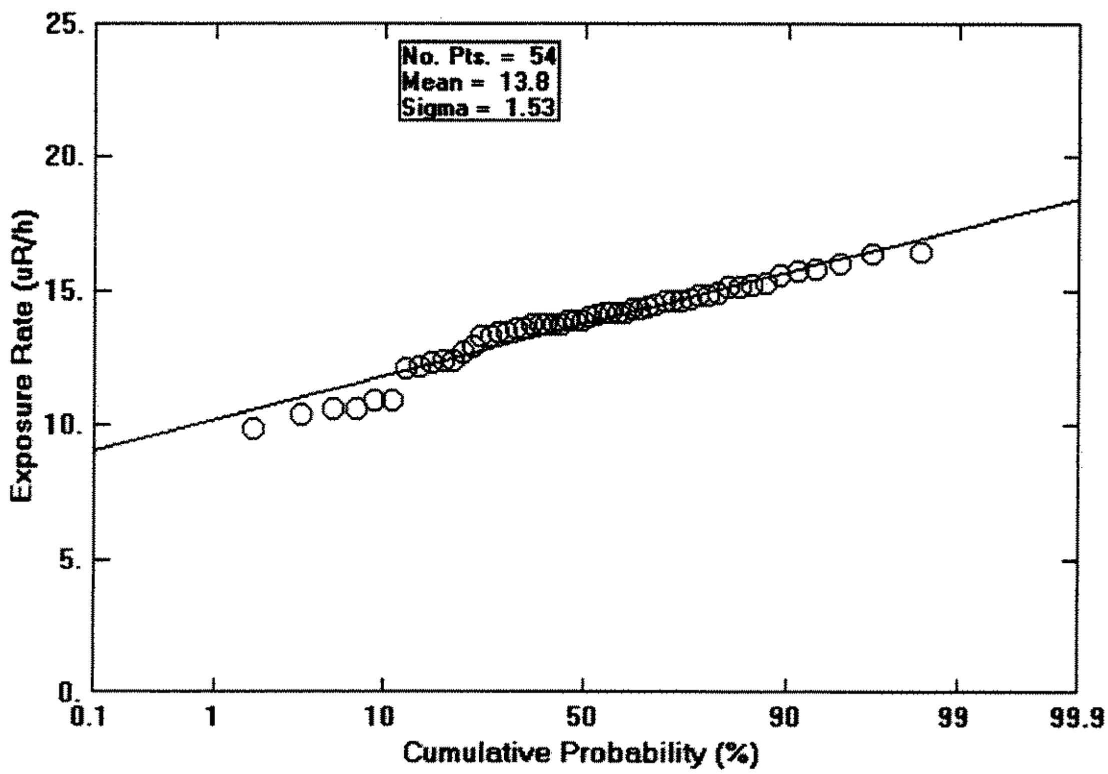

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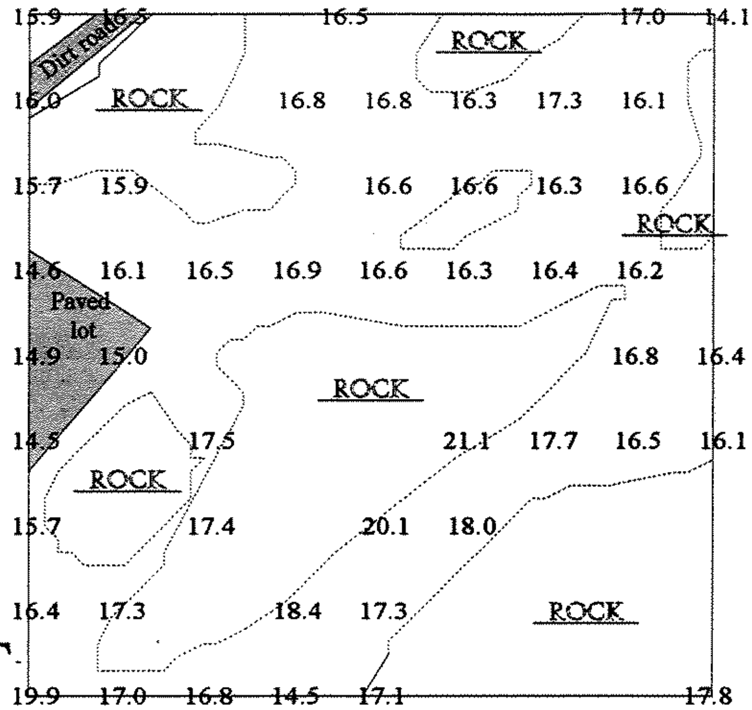
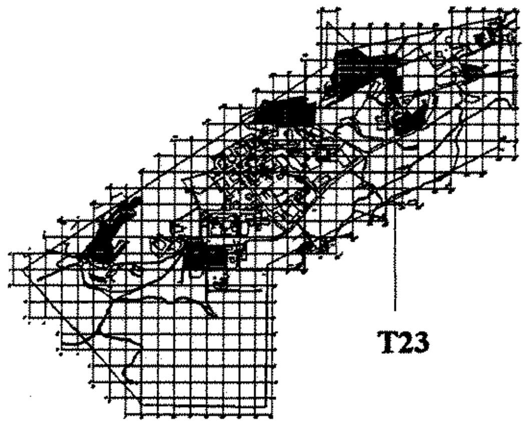
Figure B-162. Ambient Gamma Survey Results - Survey Block T23





T 23

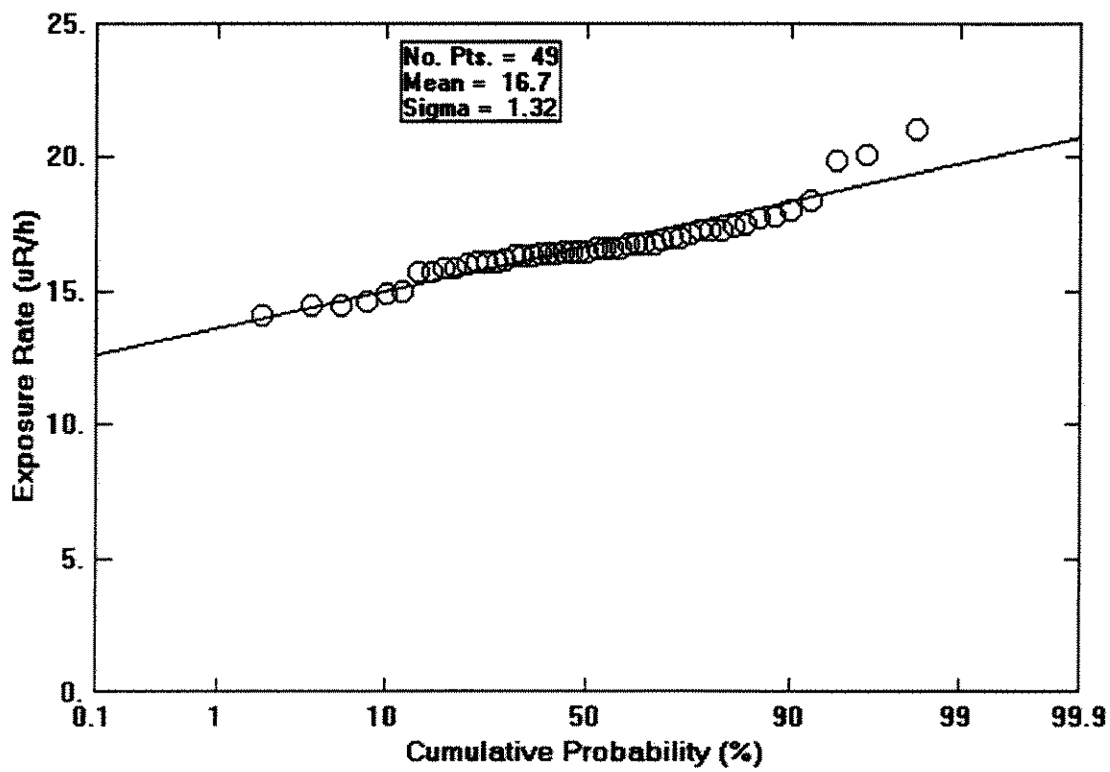


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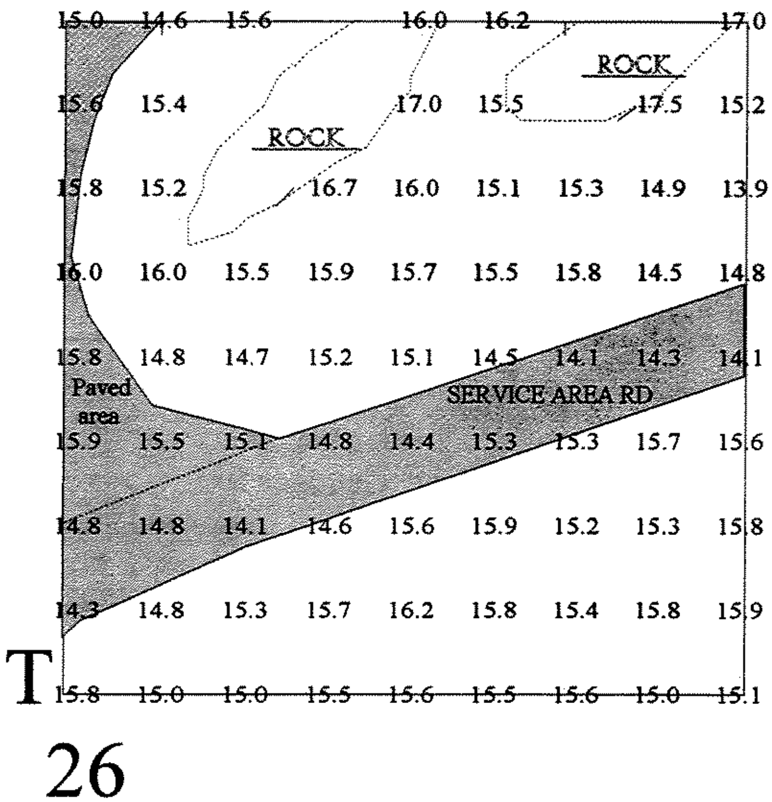
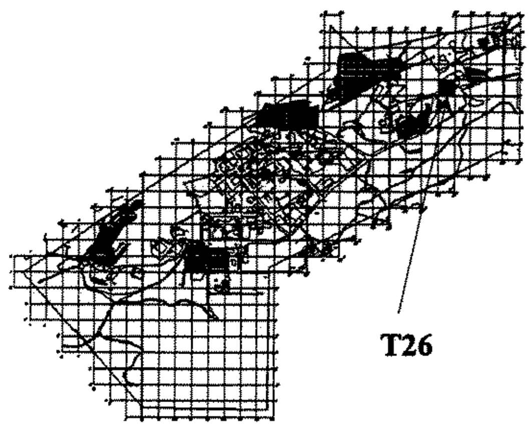
Figure B-163. Ambient Gamma Survey Results - Survey Block T26





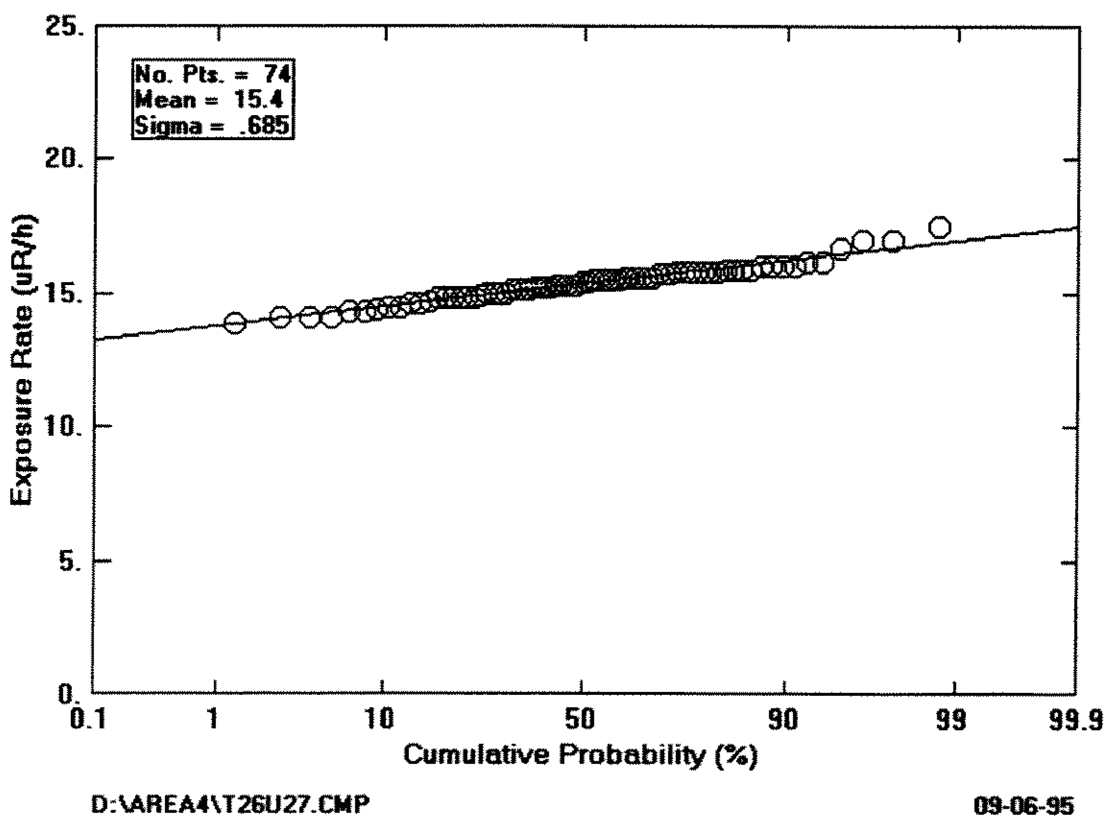
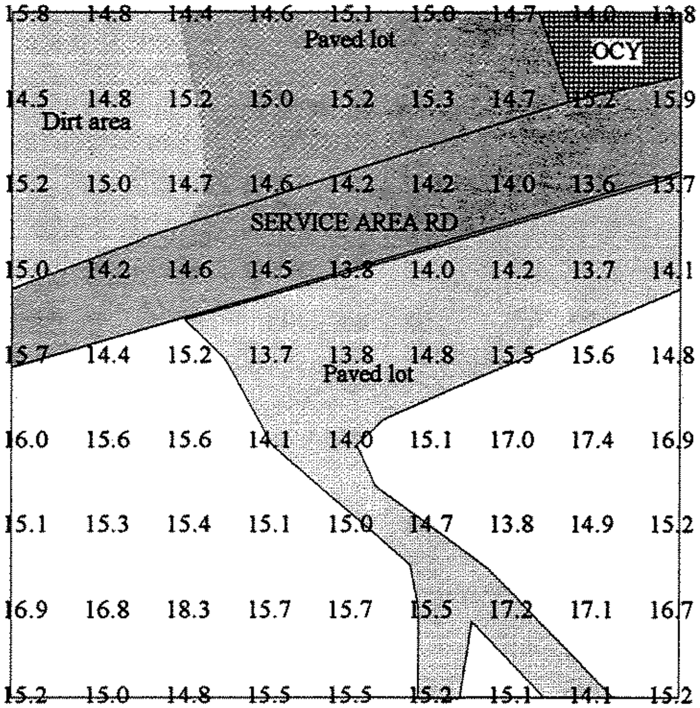
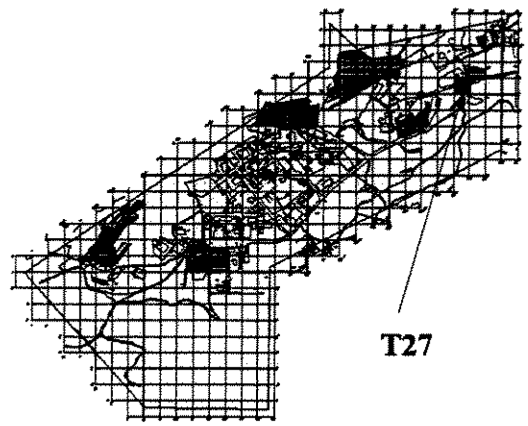


Figure B-164. Ambient Gamma Survey Results - Survey Block T27





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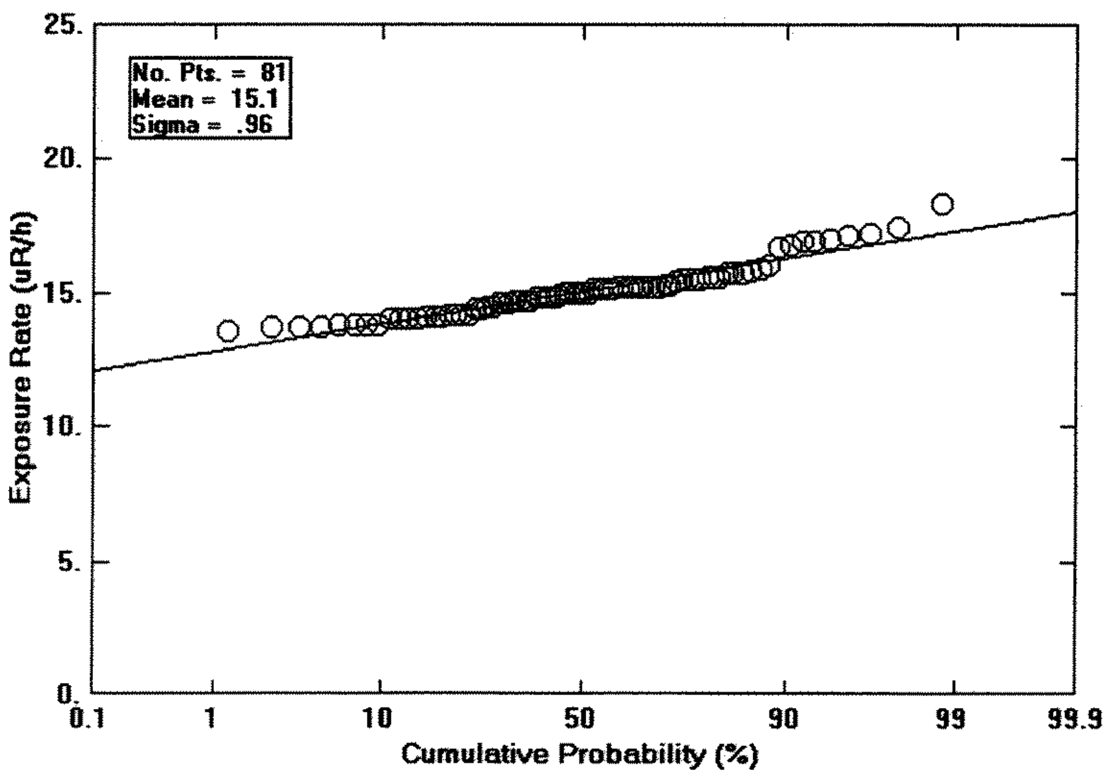

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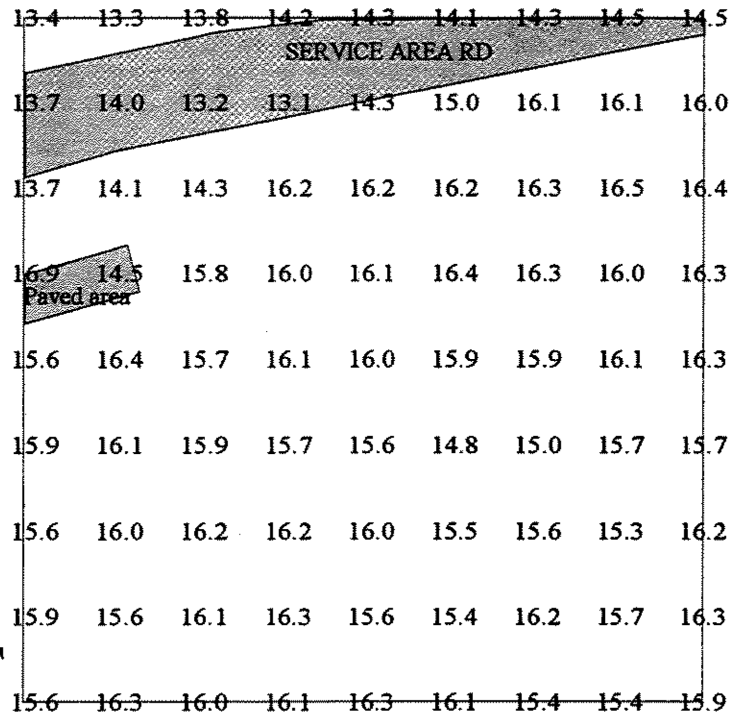
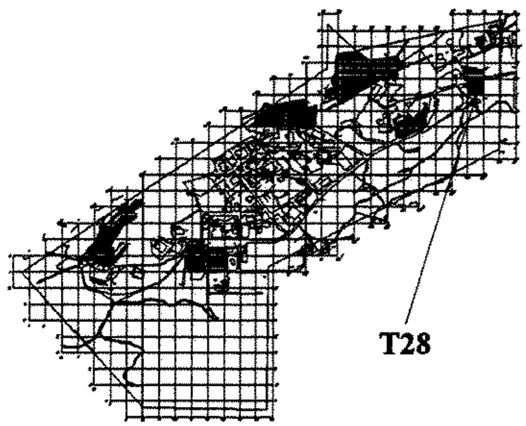
Figure B-165. Ambient Gamma Survey Results - Survey Block T28





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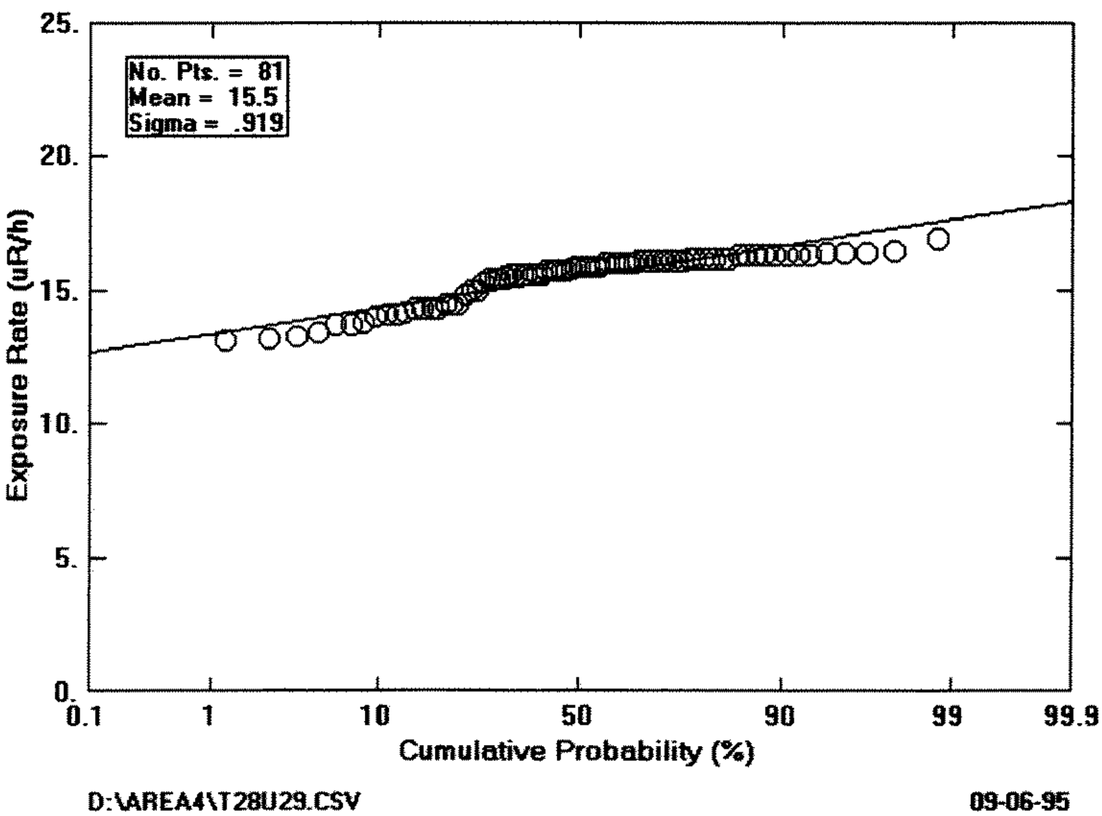

Figure B-166. Ambient Gamma Survey Results - Survey Block T29

15.0	15.2	15.0	15.6	15.9	16.2	16.2	16.6	16.3
16.4	16.2	15.9	16.8	15.7	15.4	16.4	16.3	16.2
15.9	16.0	16.6	16.8	16.6	15.8	16.3	16.2	16.7
15.6	16.1	17.2	16.2	17.3	15.7	15.7	15.6	15.6
15.9	16.2	16.3	17.2	16.5	15.8	15.5	15.8	16.1
16.3	16.1	16.6	17.1	16.9	16.8	16.5	16.7	16.1
15.4	16.1	16.3	16.6	16.2	16.3	16.0	16.1	16.1
16.2	16.4	15.8	15.9	16.2	16.3	15.9	15.8	15.2
16.0	16.1	16.7	16.8	16.8	16.7	16.5	16.1	15.4

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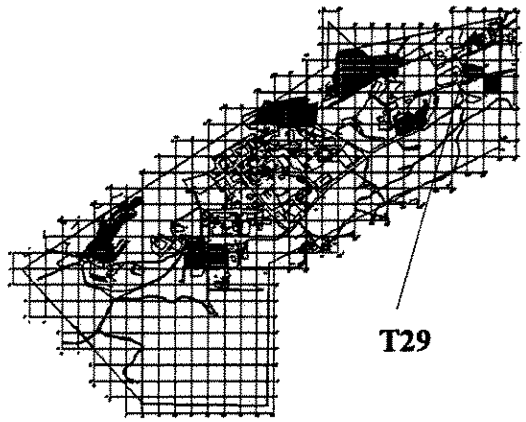

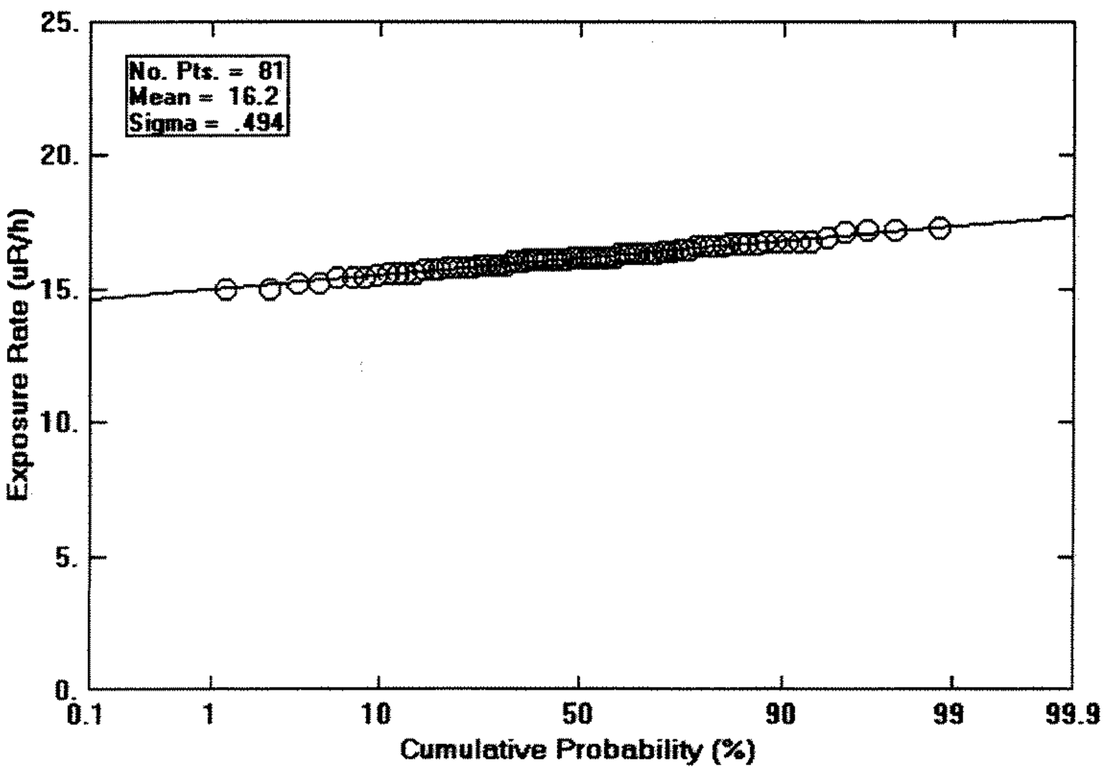

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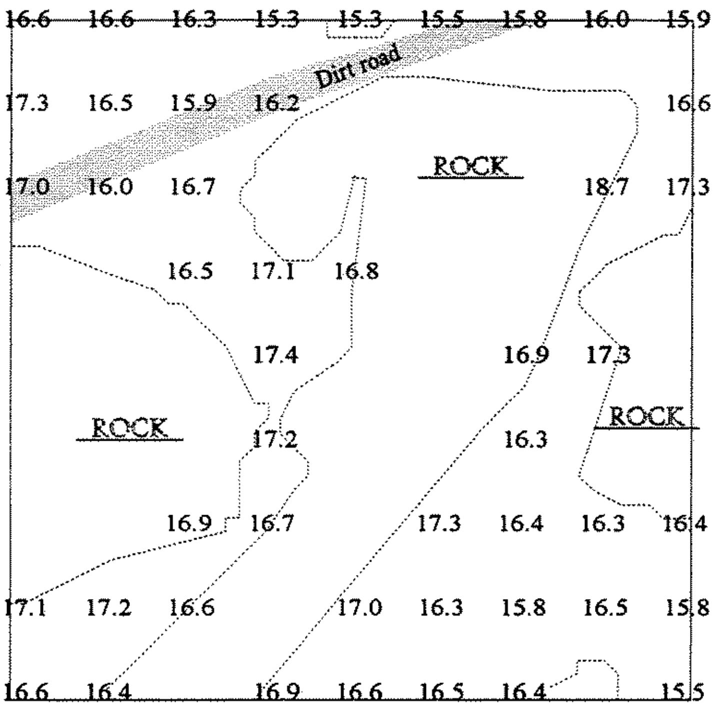
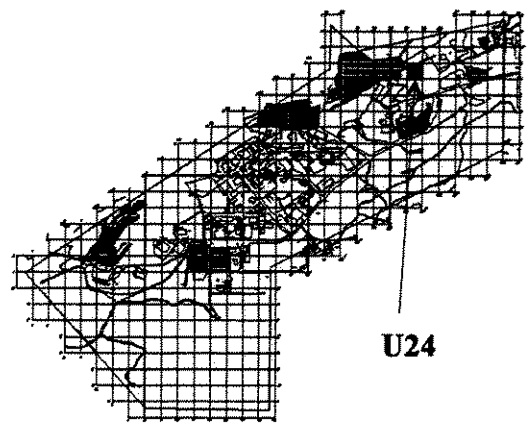
Figure B-167. Ambient Gamma Survey Results - Survey Block U24





U 24

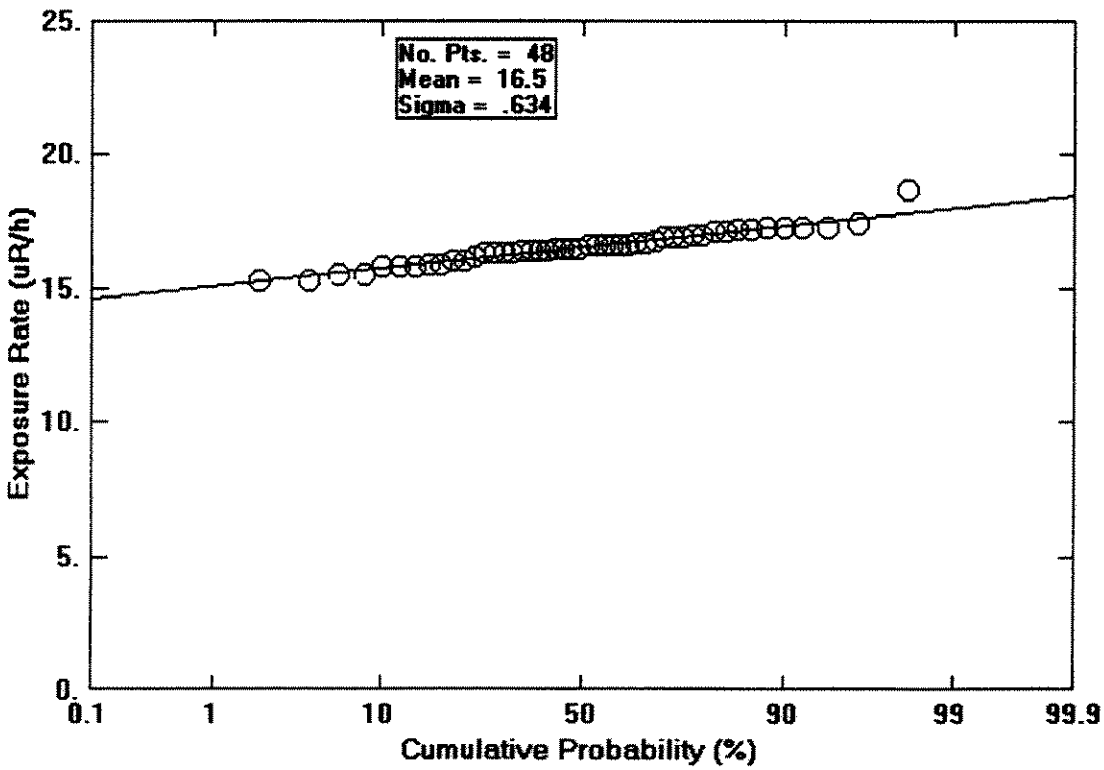


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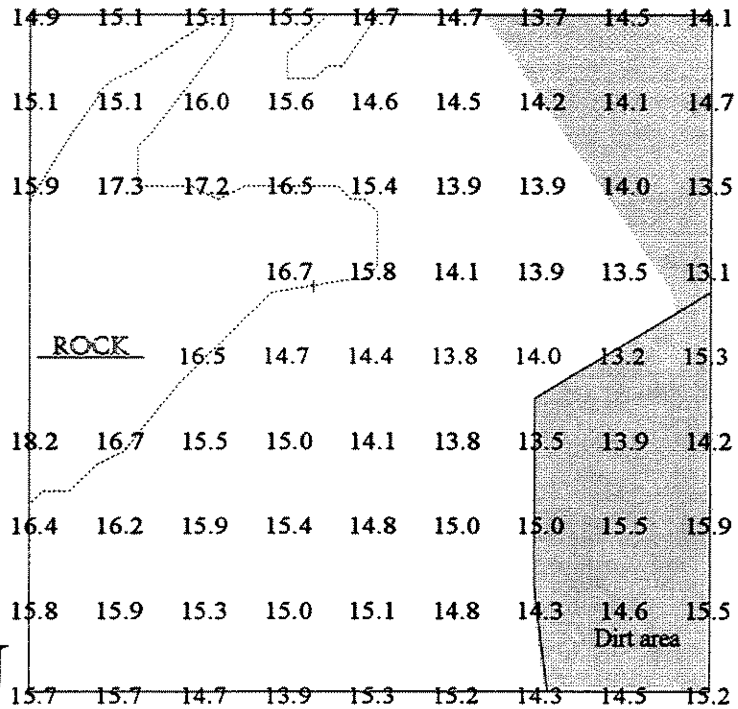
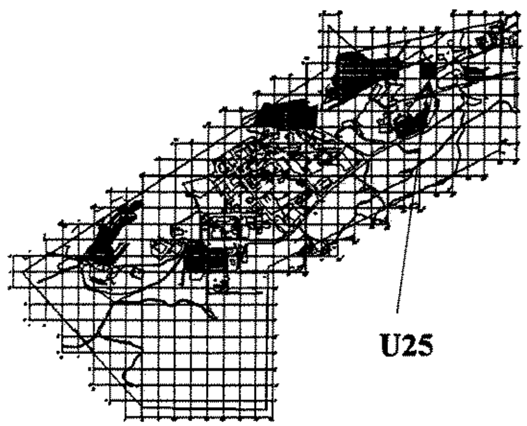
Figure B-168. Ambient Gamma Survey Results - Survey Block U25





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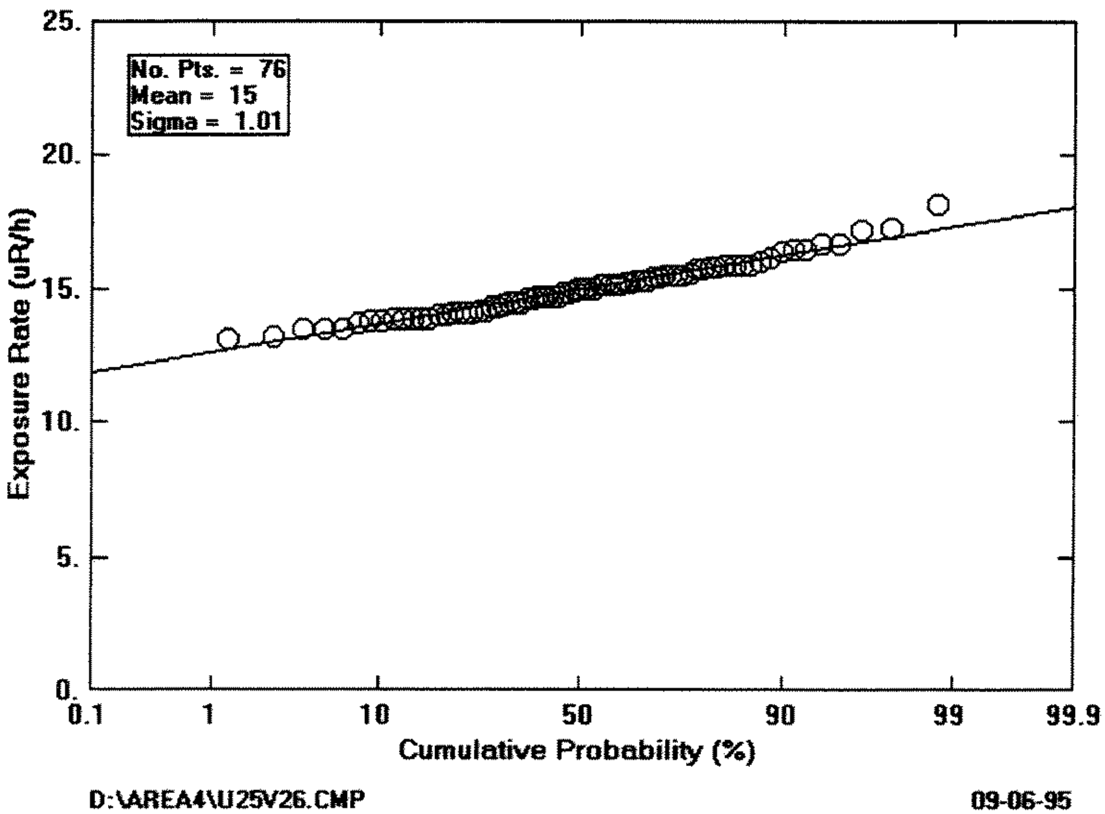
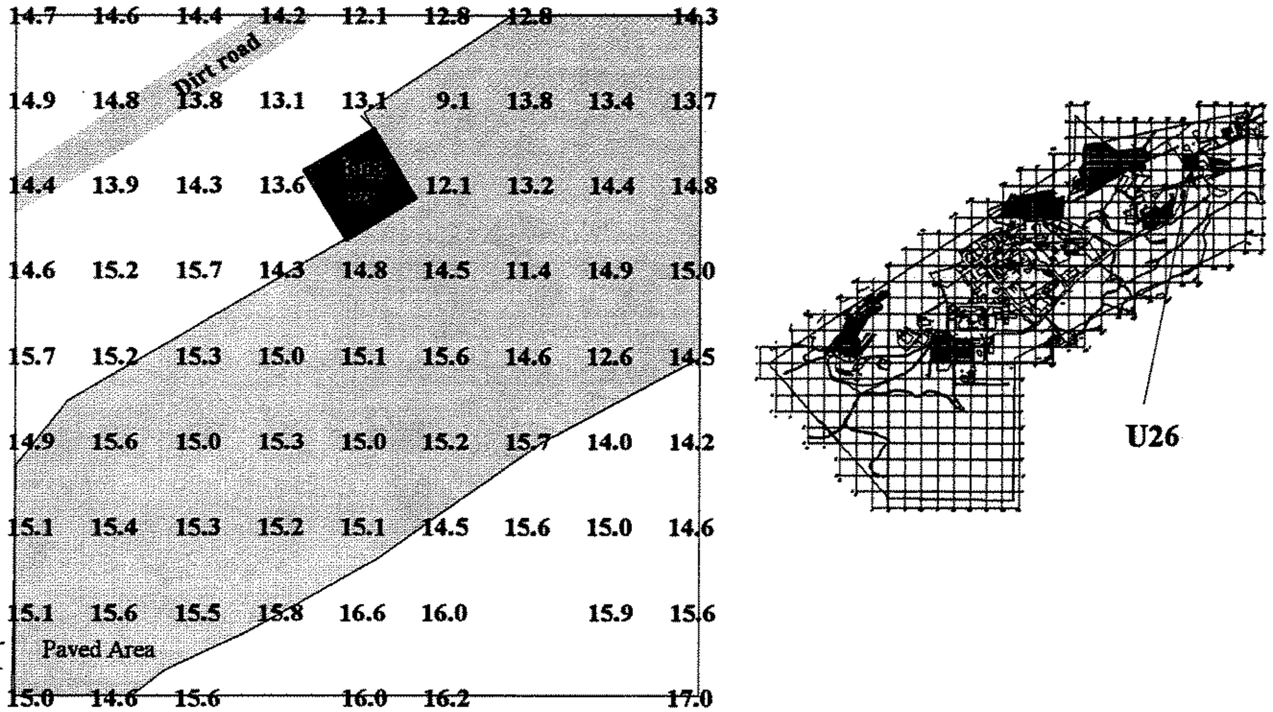


Figure B-169. Ambient Gamma Survey Results - Survey Block U26



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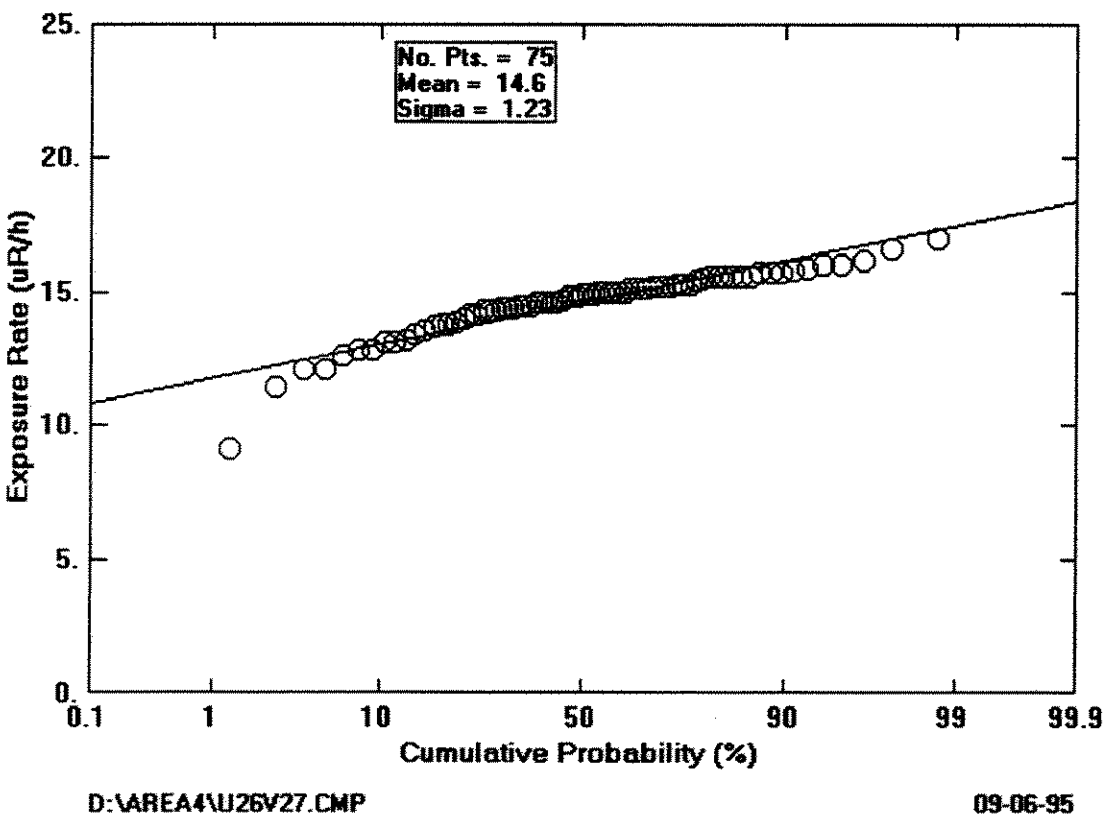
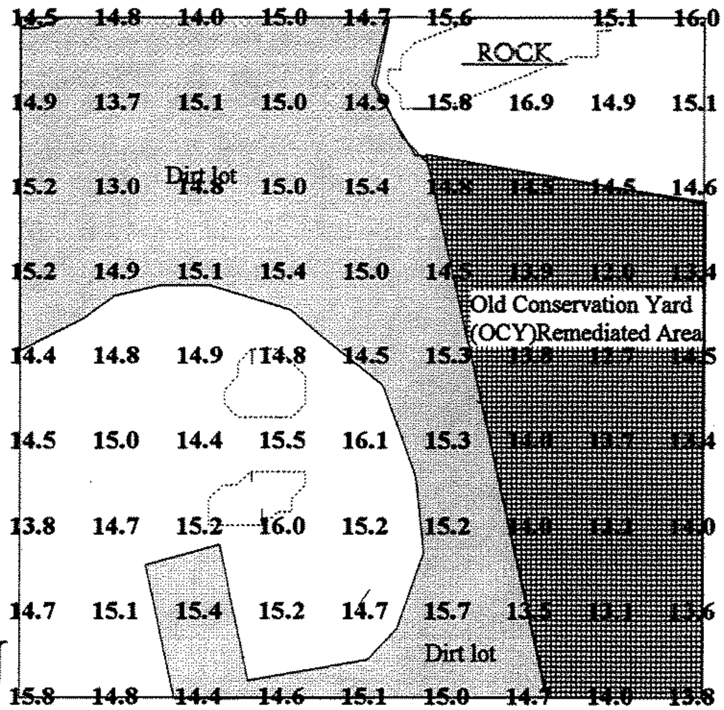
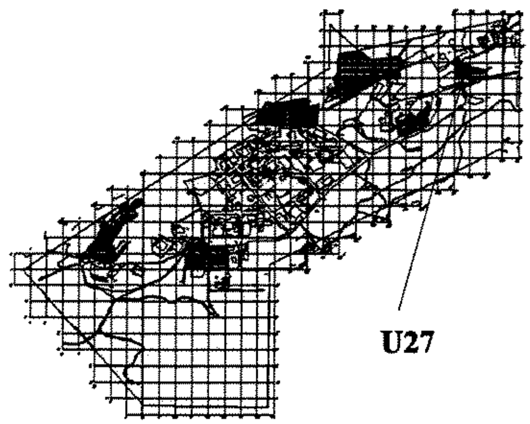


Figure B-170. Ambient Gamma Survey Results - Survey Block U27





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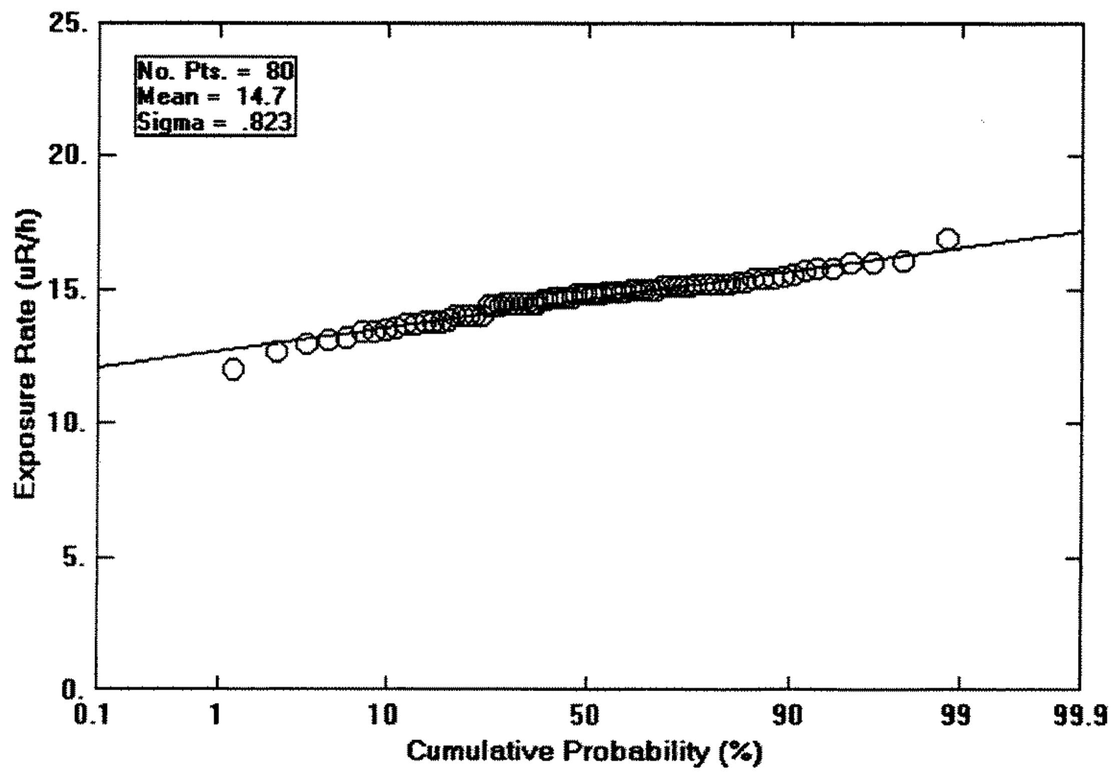

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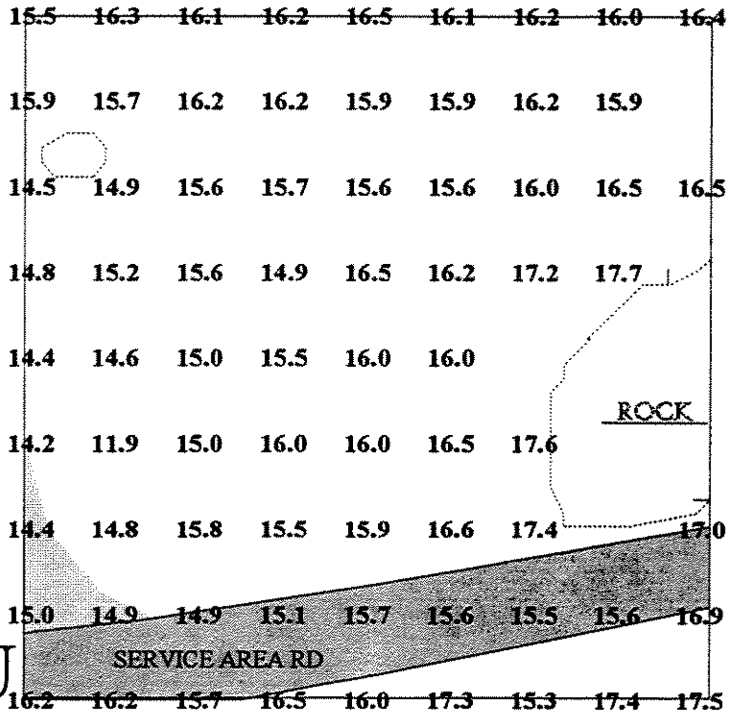
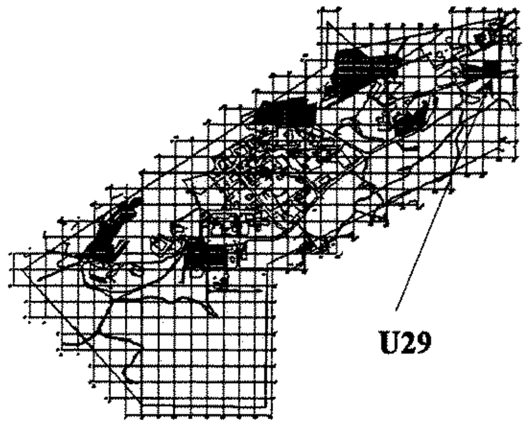
Figure B-171. Ambient Gamma Survey Results - Survey Block U29





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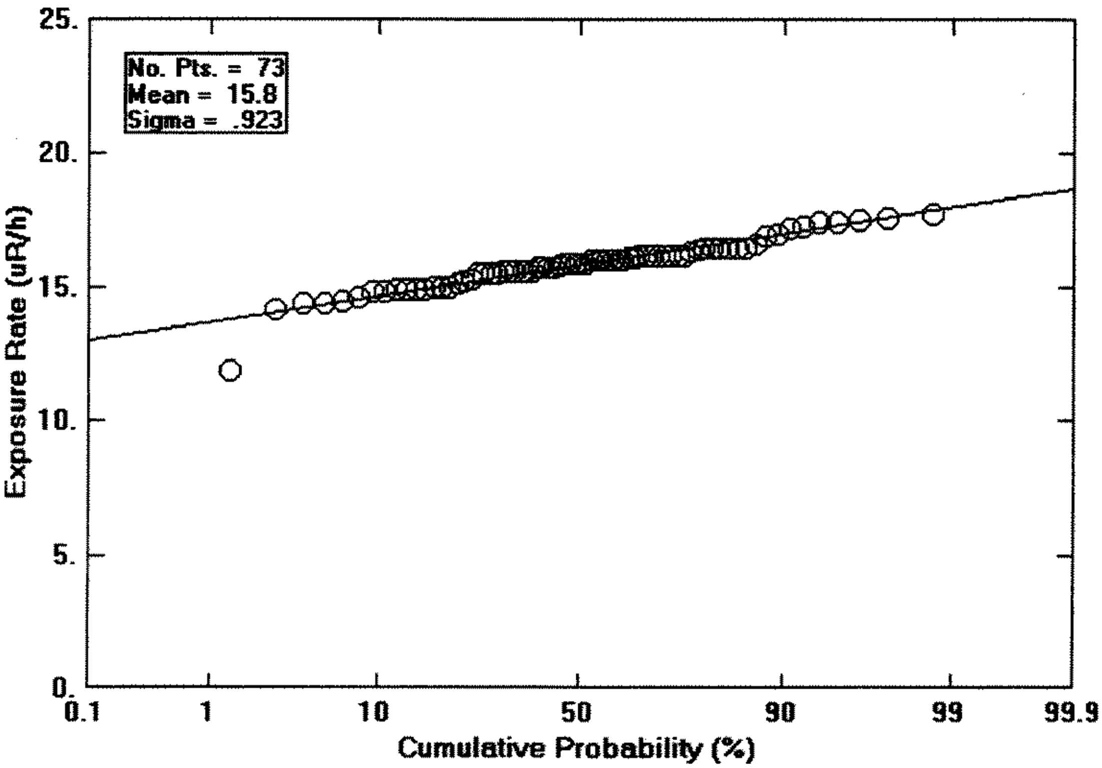

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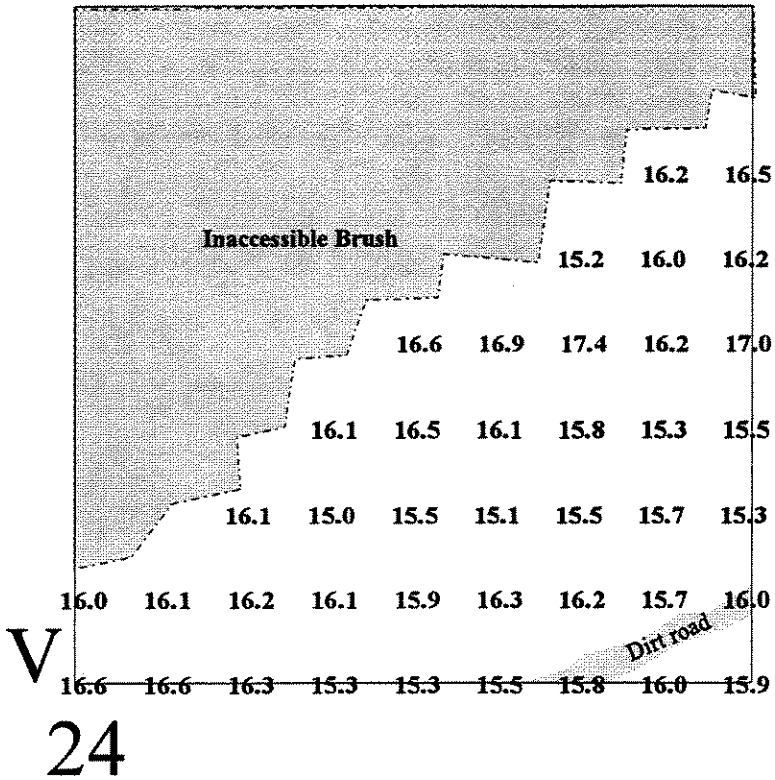
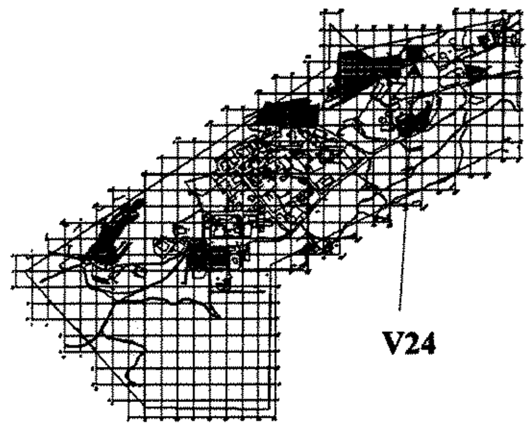
Figure B-172. Ambient Gamma Survey Results - Survey Block V24





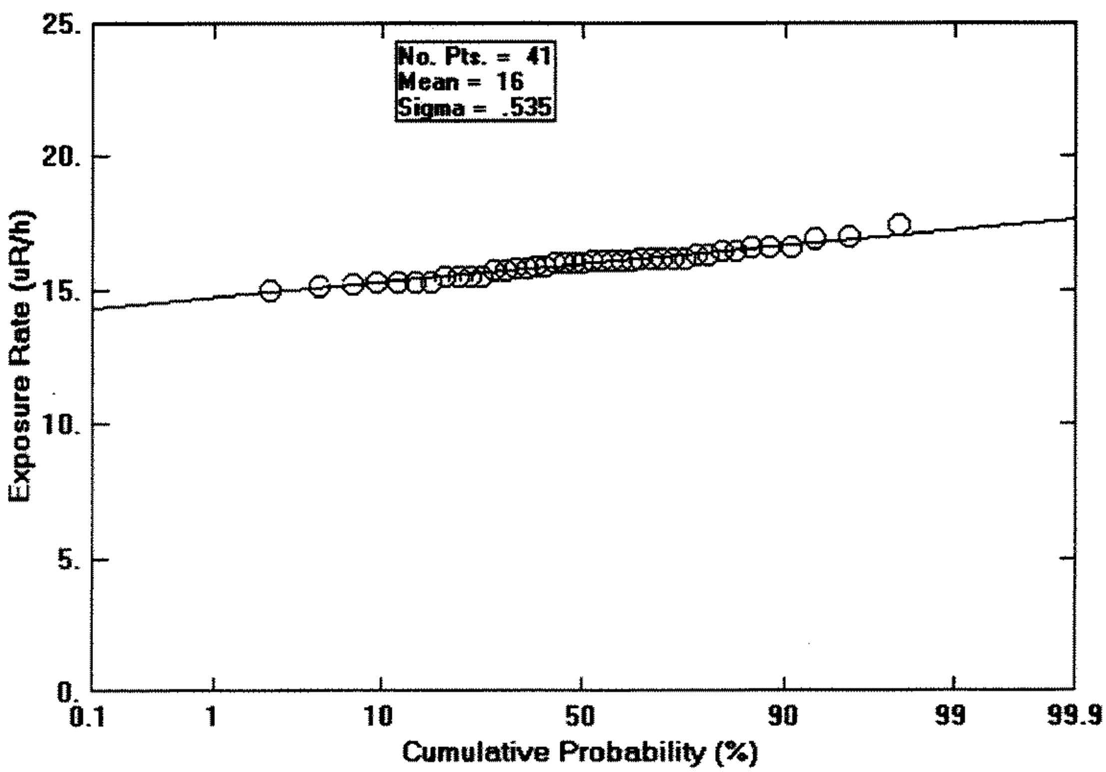


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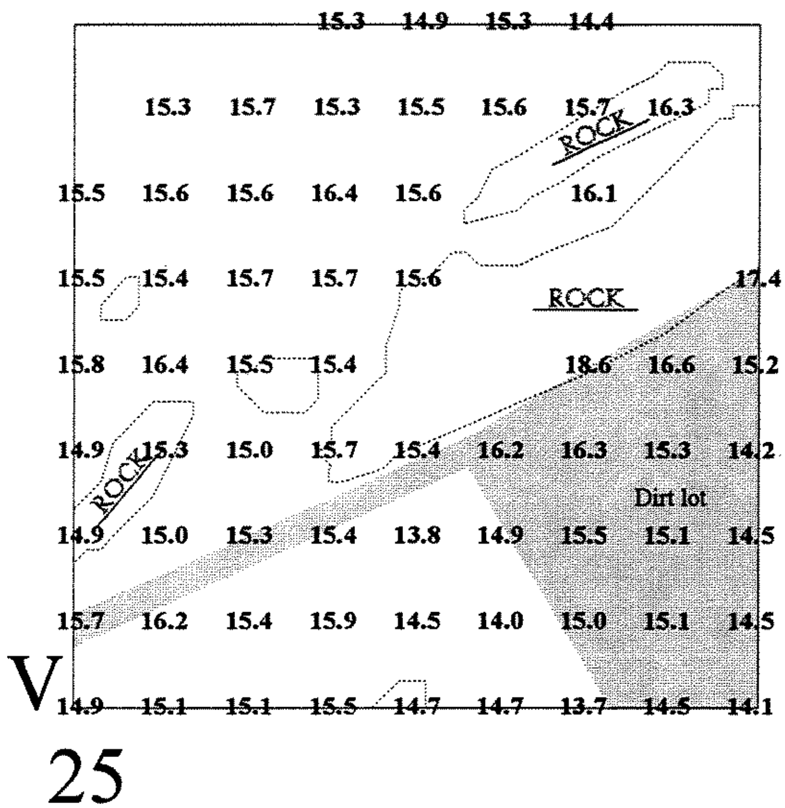
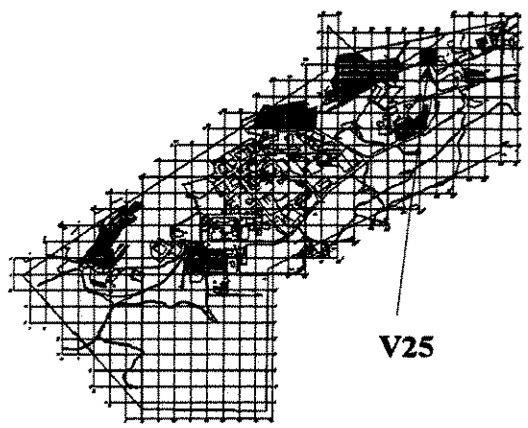
Figure B-173. Ambient Gamma Survey Results - Survey Block V25





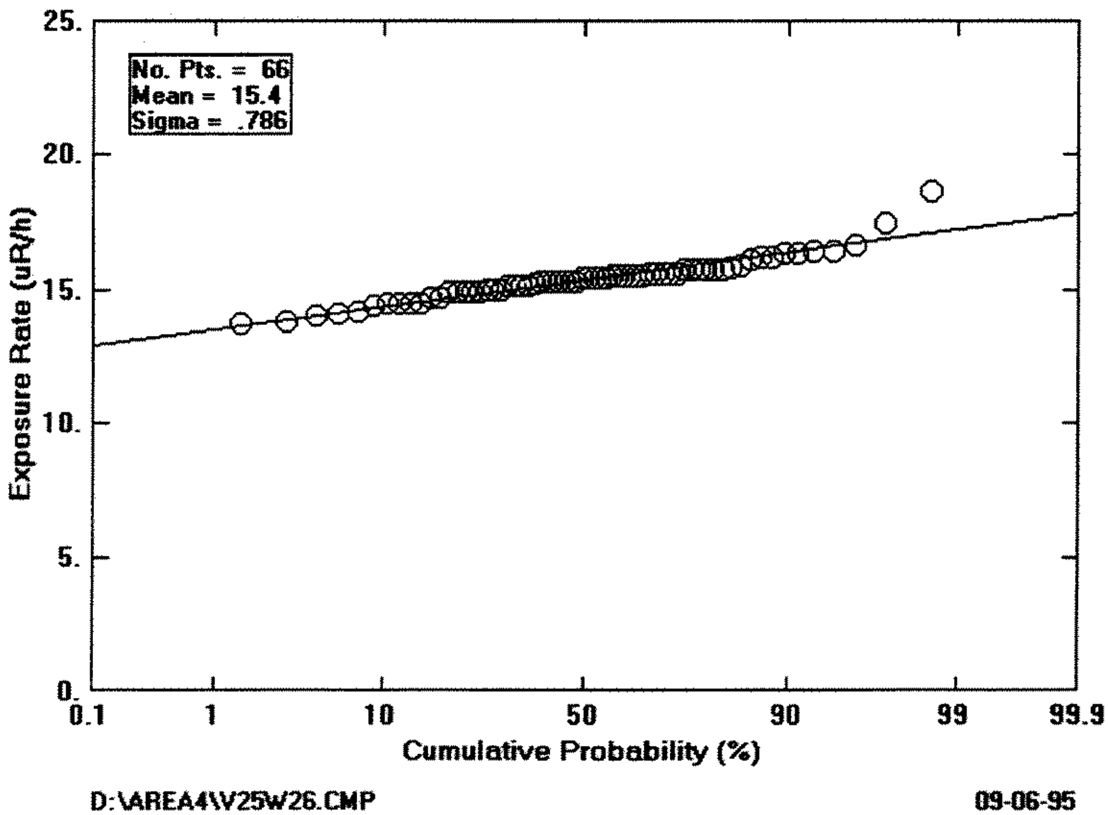
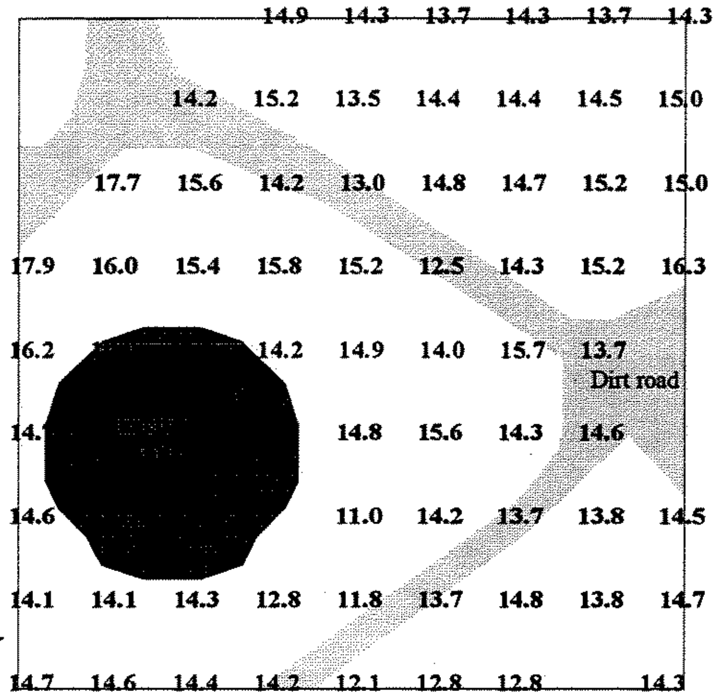
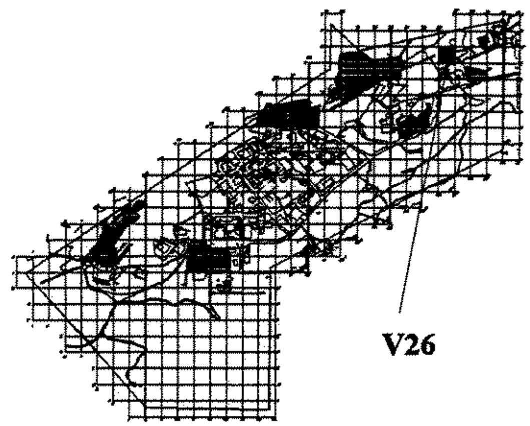


Figure B-174. Ambient Gamma Survey Results - Survey Block V26





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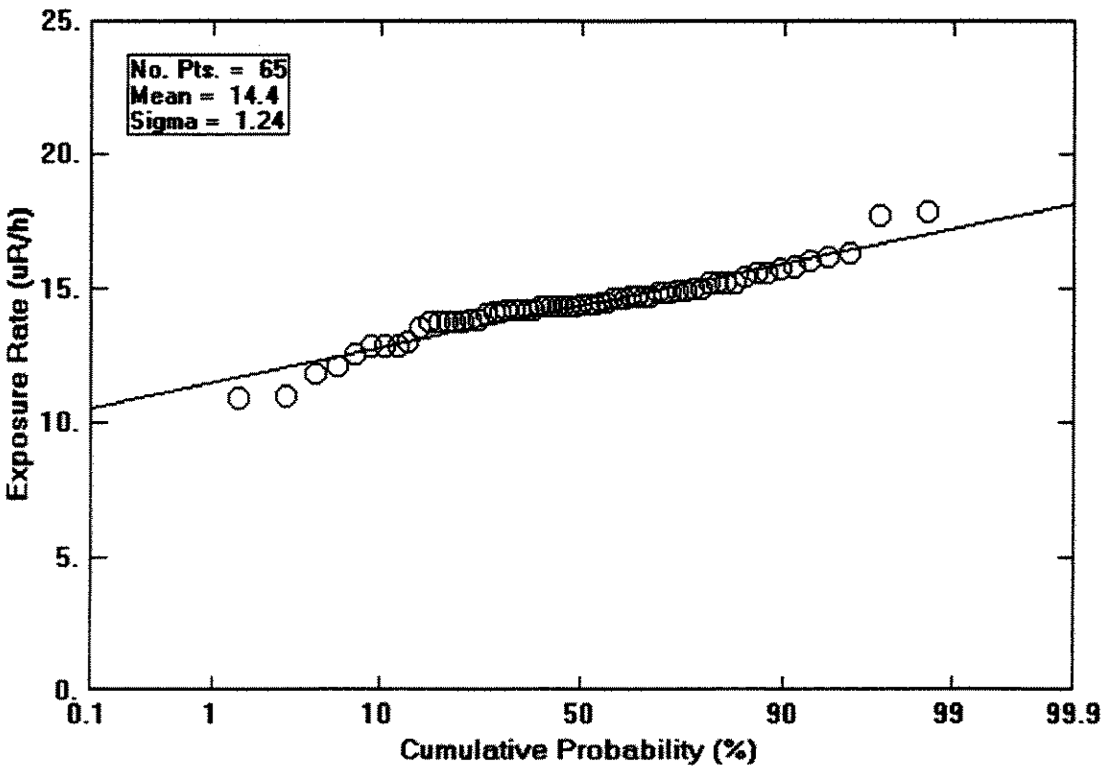

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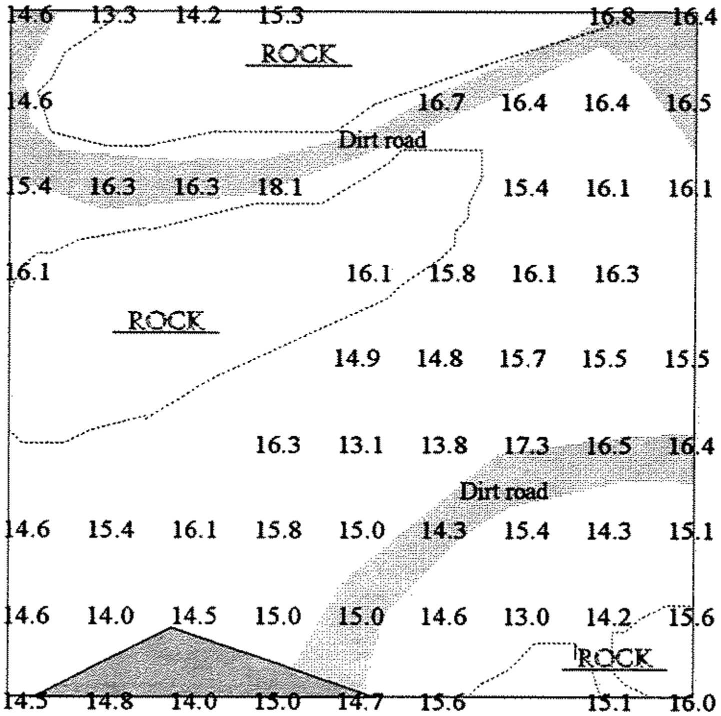
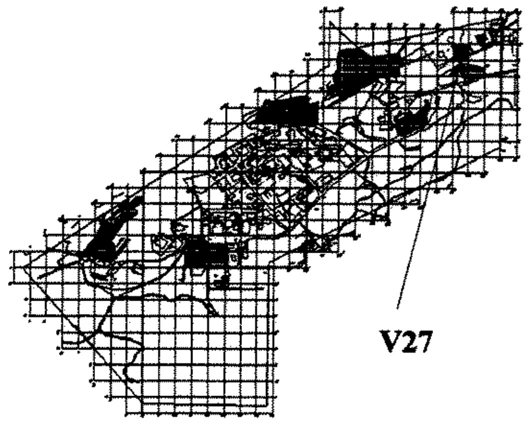
Figure B-175. Ambient Gamma Survey Results - Survey Block V27





V
27

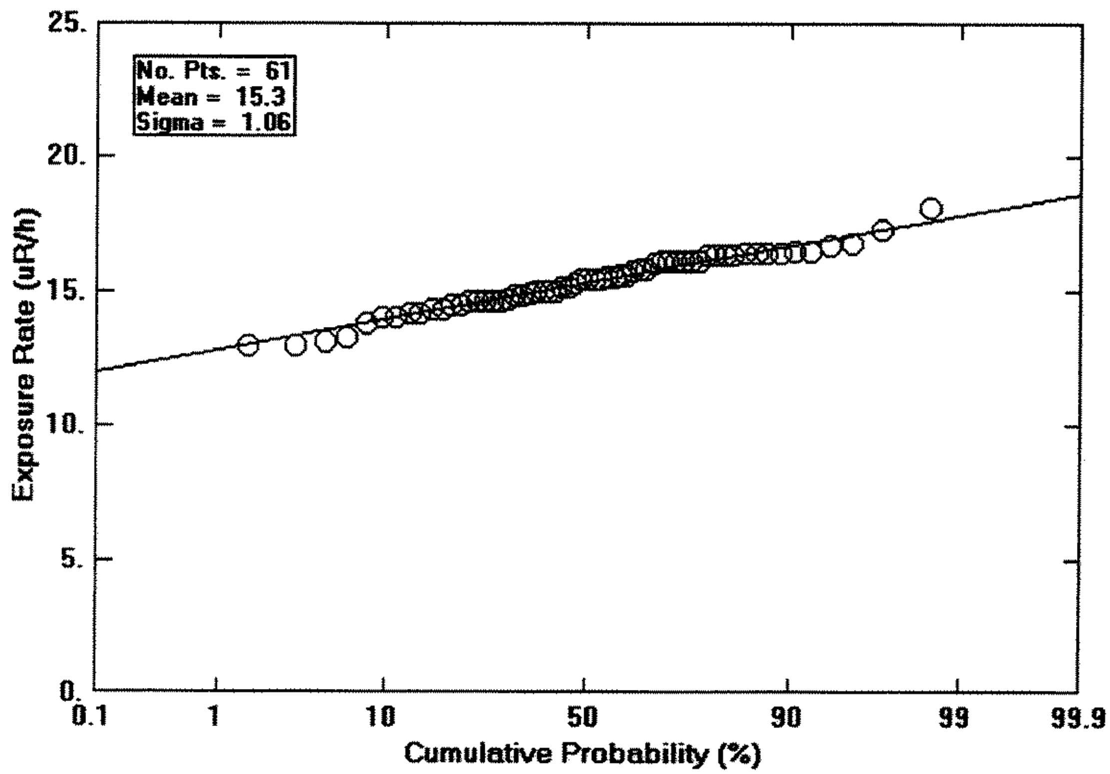


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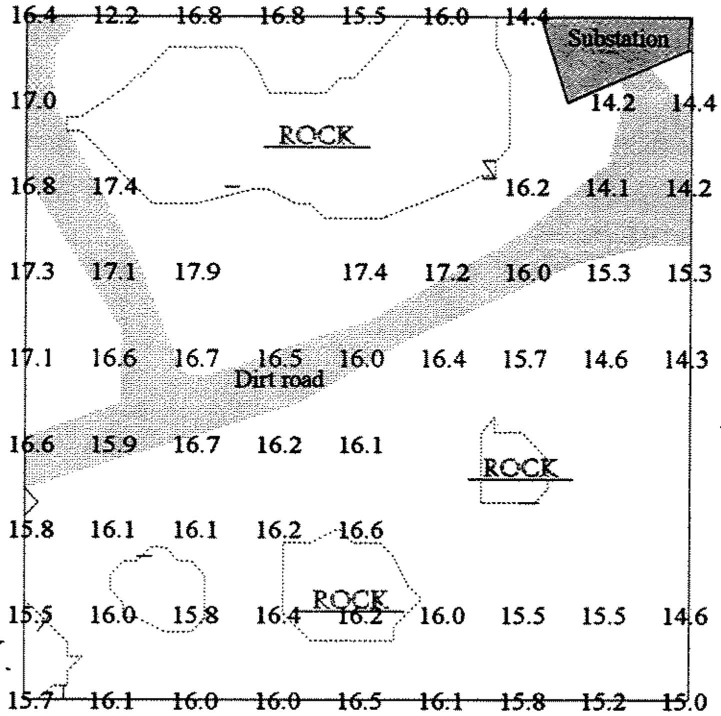
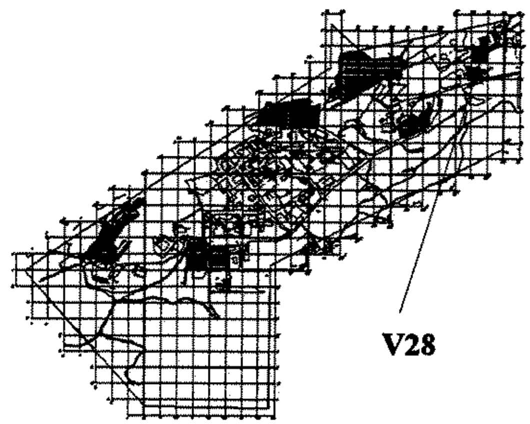
Figure B-176. Ambient Gamma Survey Results - Survey Block V28





V
28

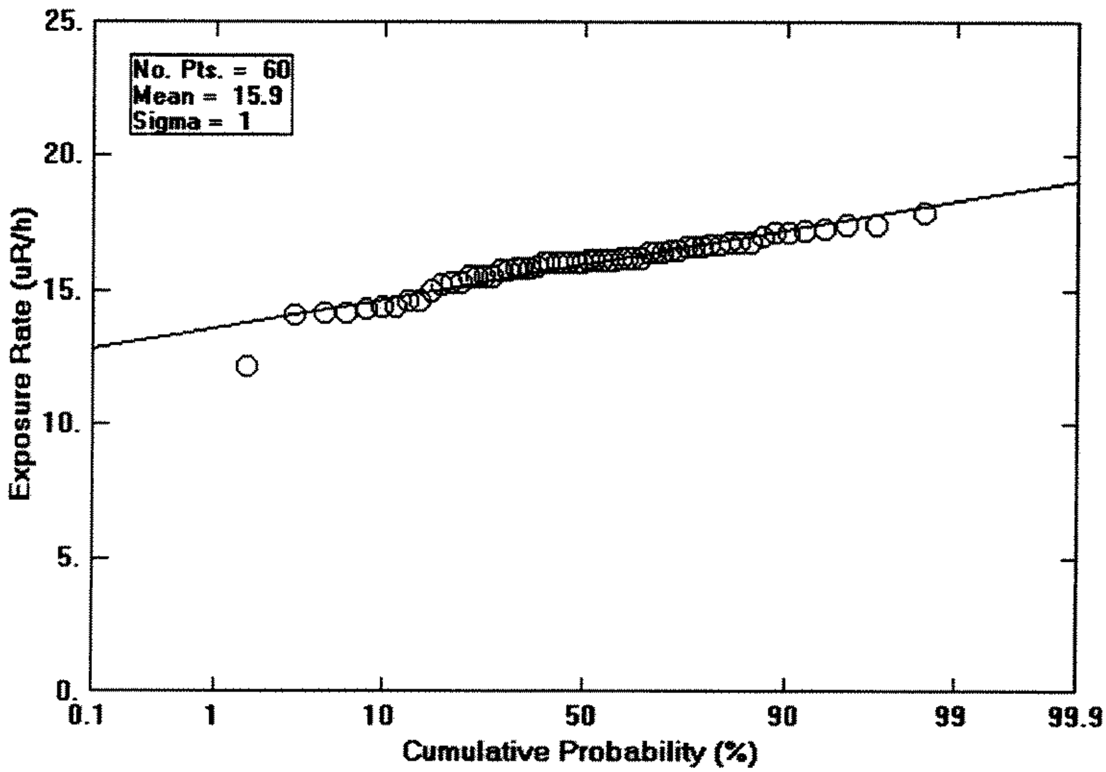


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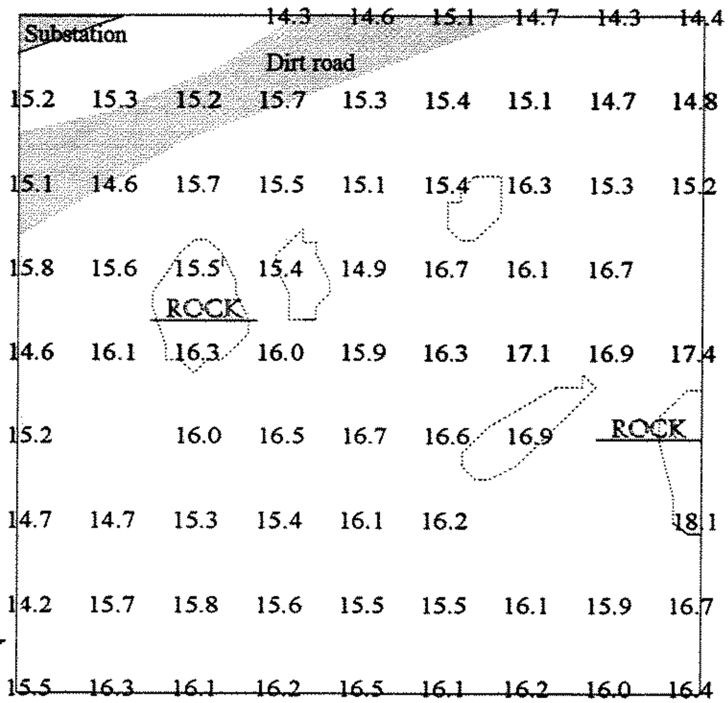
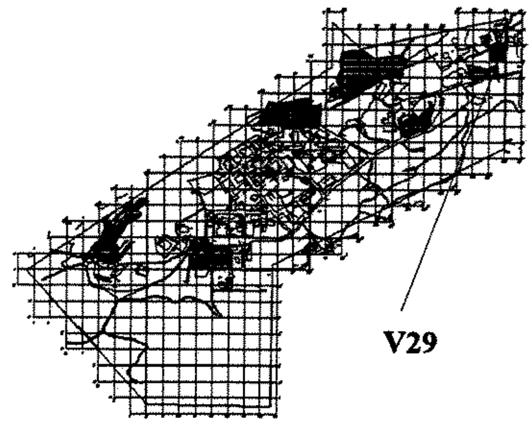
Figure B-177. Ambient Gamma Survey Results - Survey Block V29





V
29

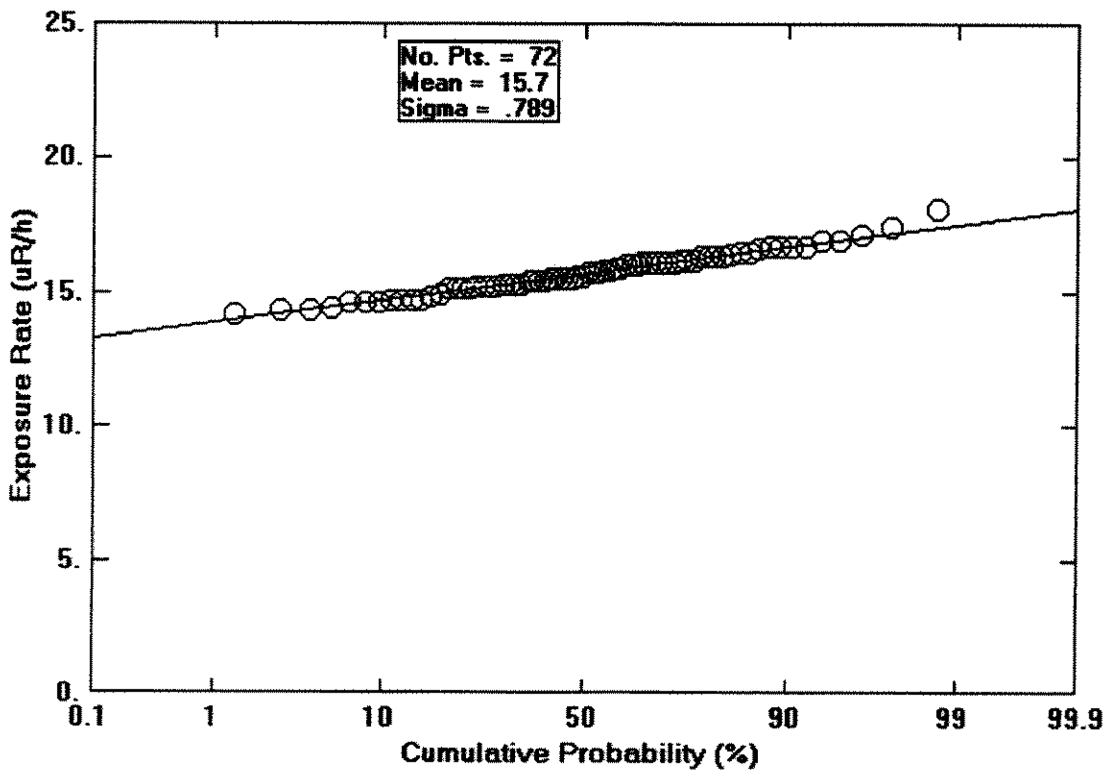


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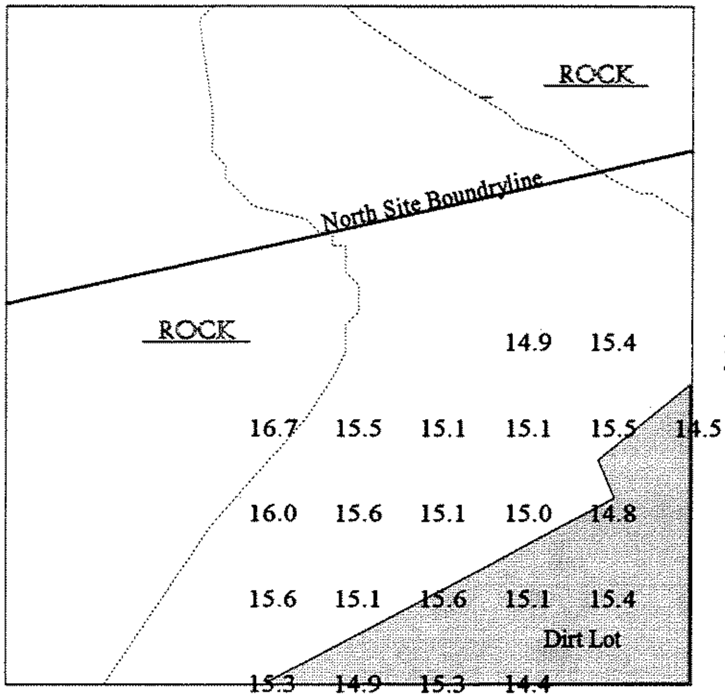
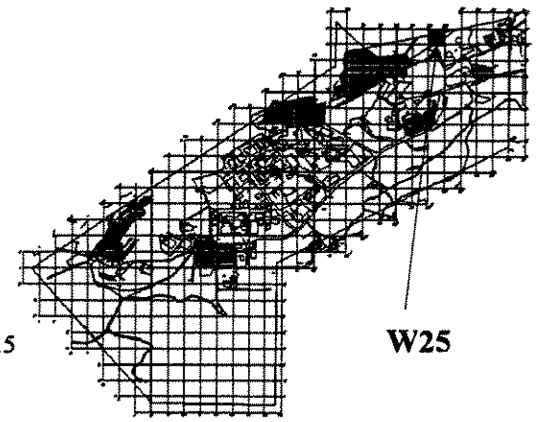
Figure B-178. Ambient Gamma Survey Results - Survey Block W25





W
25

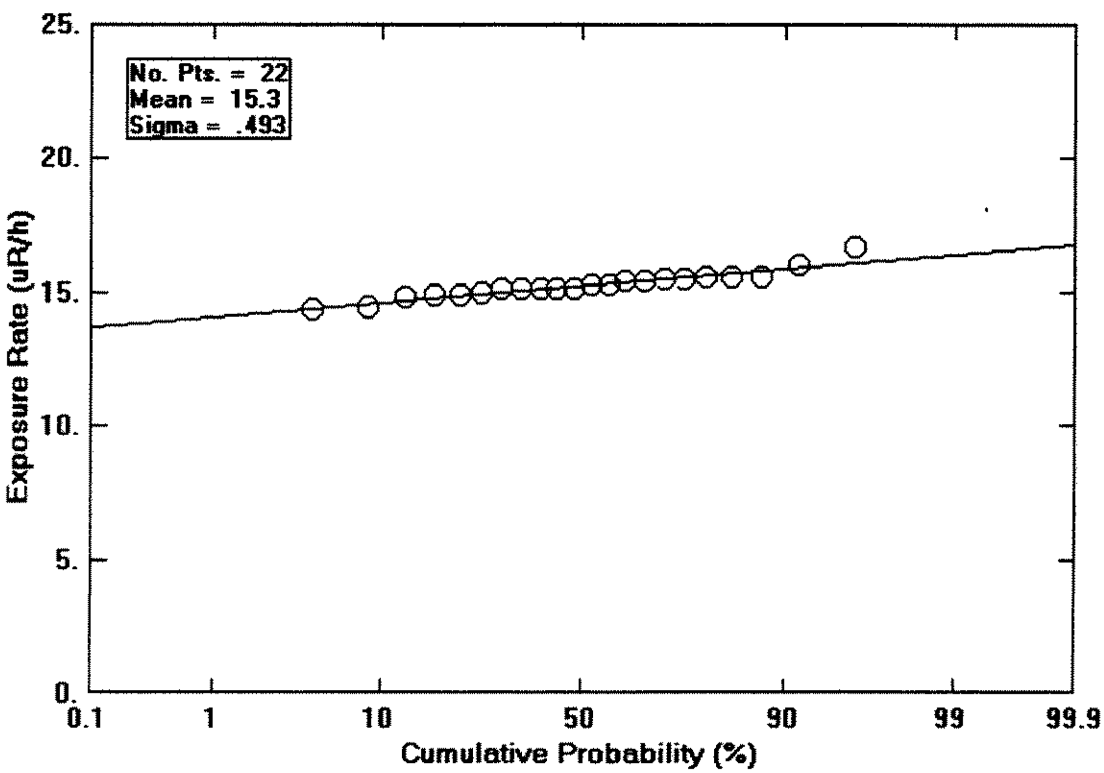


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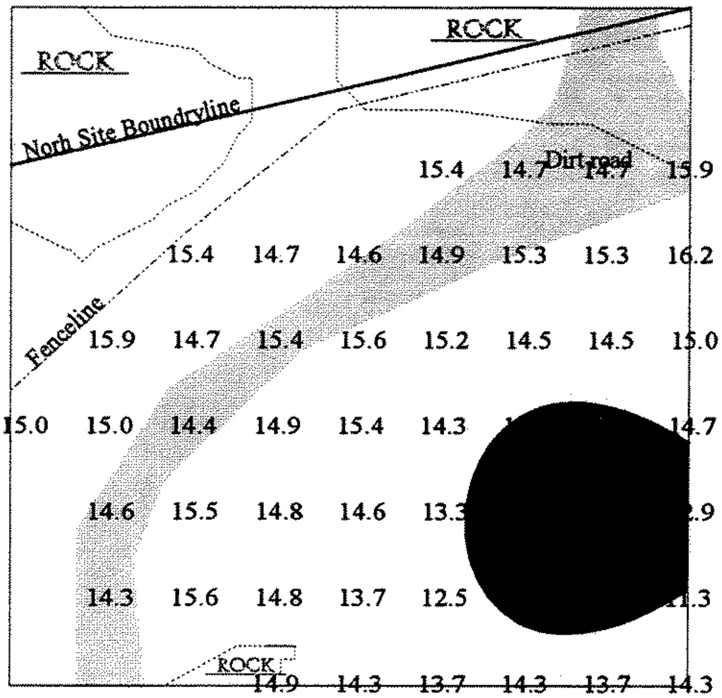
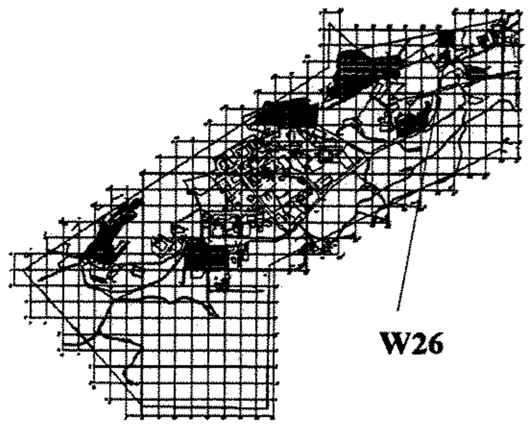
Figure B-179. Ambient Gamma Survey Results - Survey Block W26





W
26

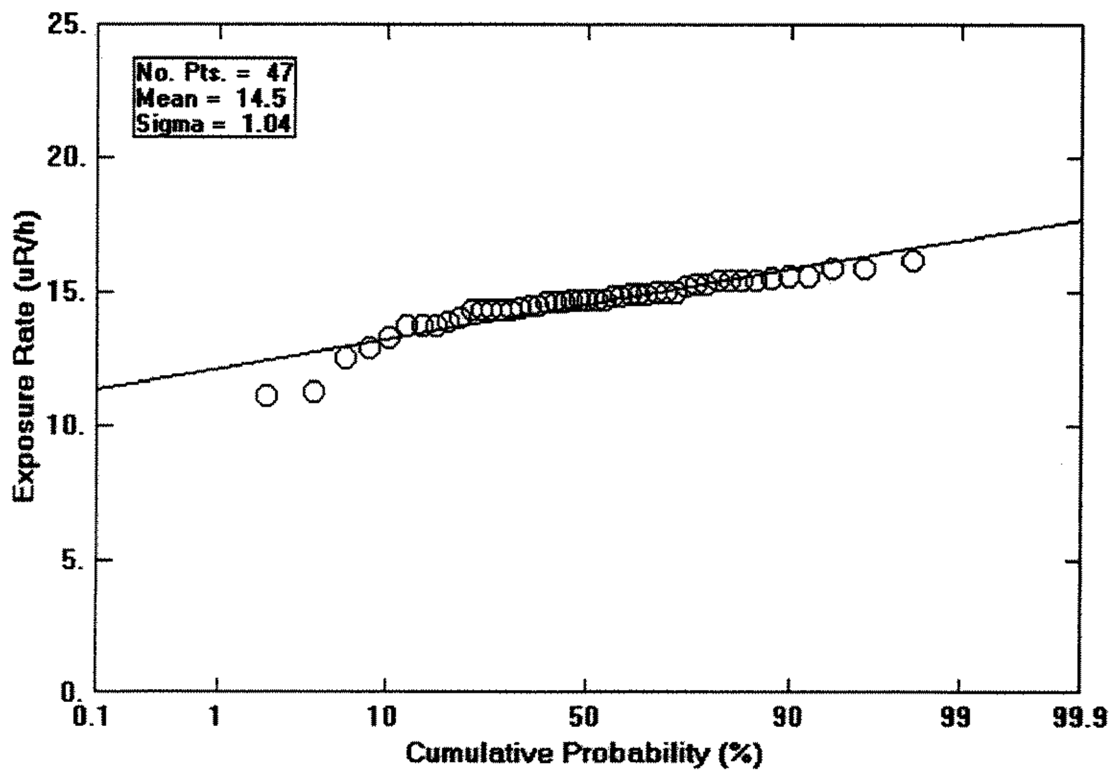


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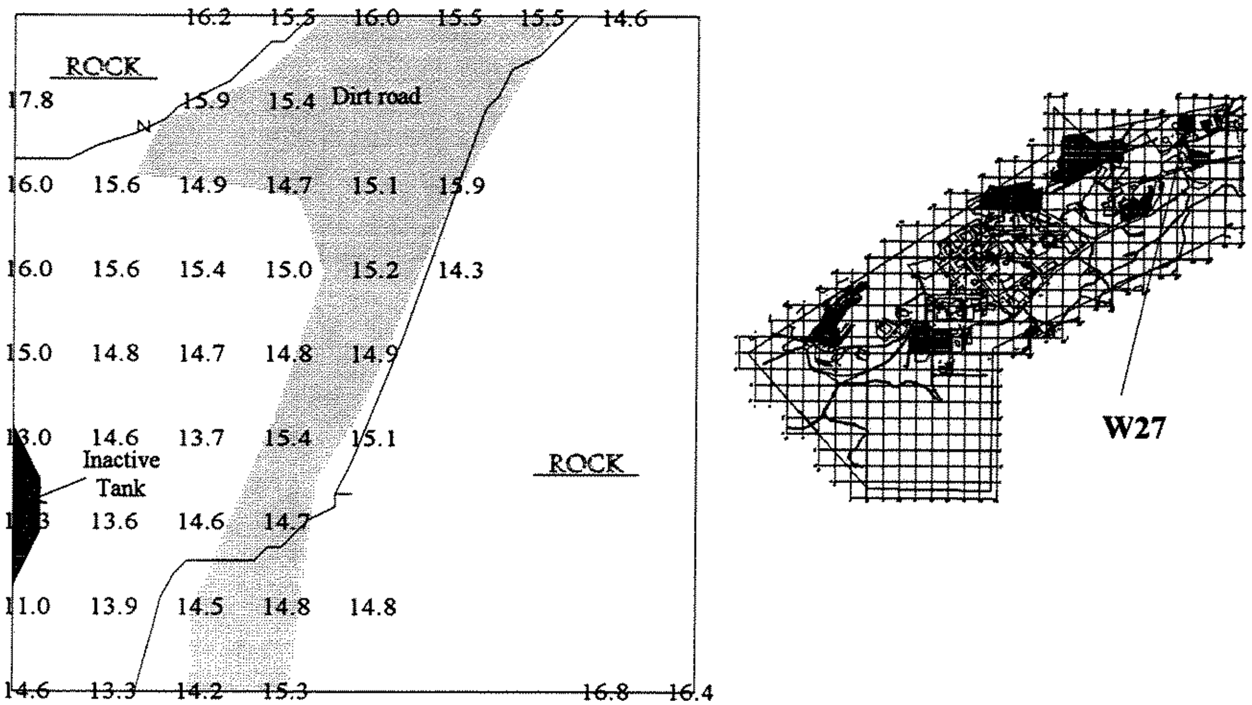
Figure B-180. Ambient Gamma Survey Results - Survey Block W27



W 27

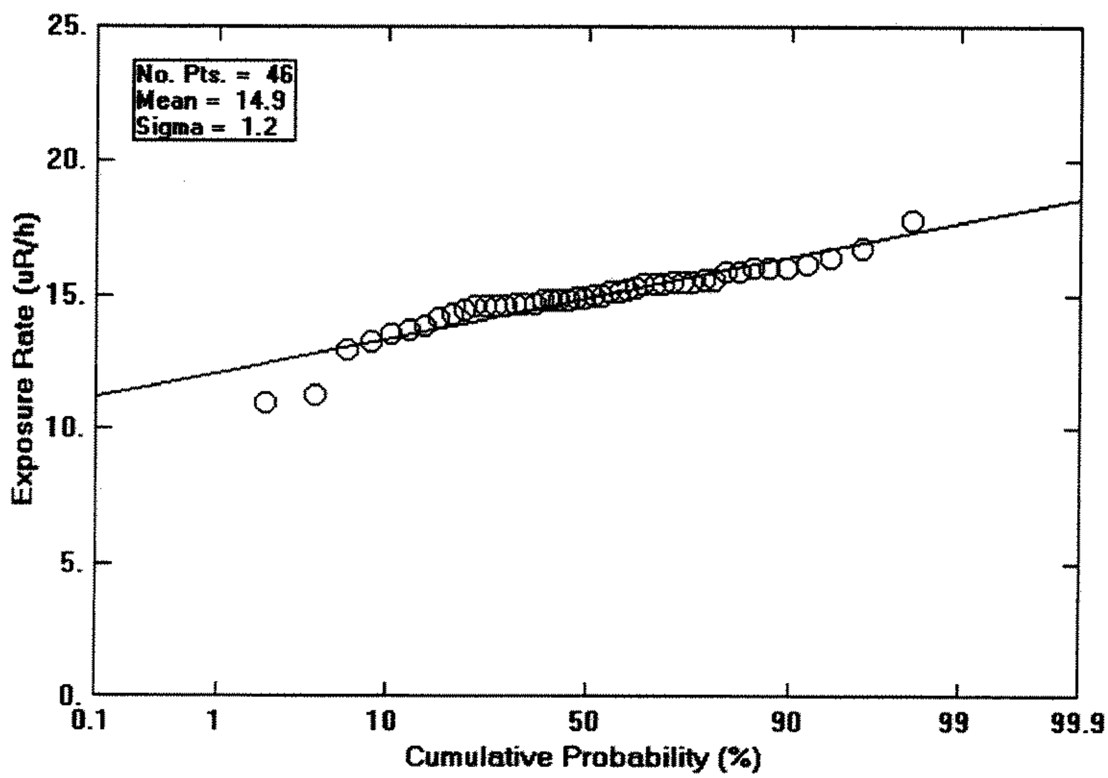


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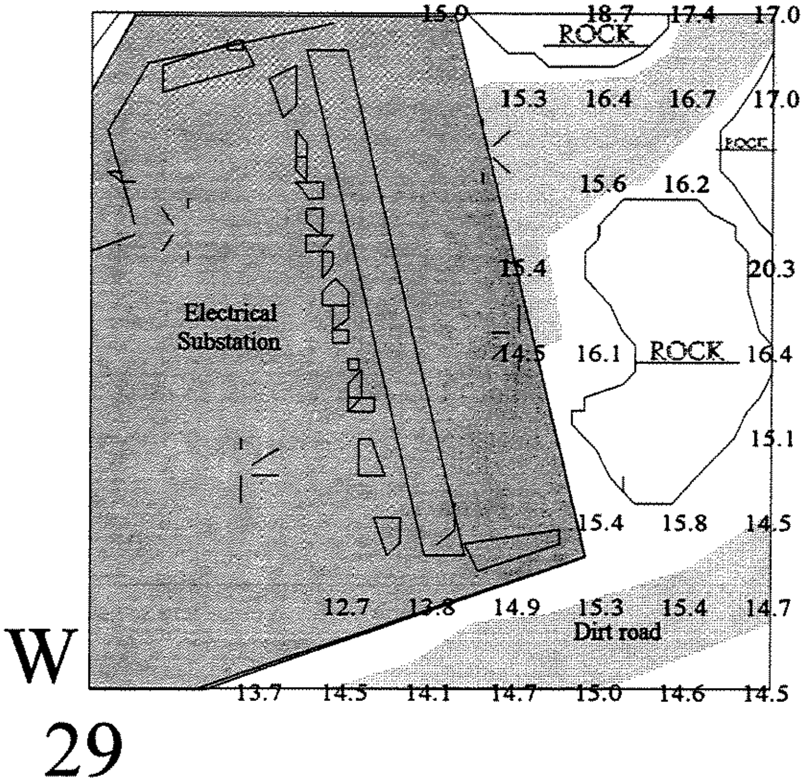
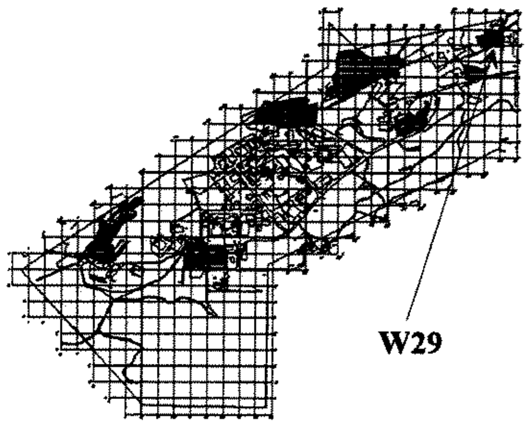
Figure B-181. Ambient Gamma Survey Results - Survey Block W29





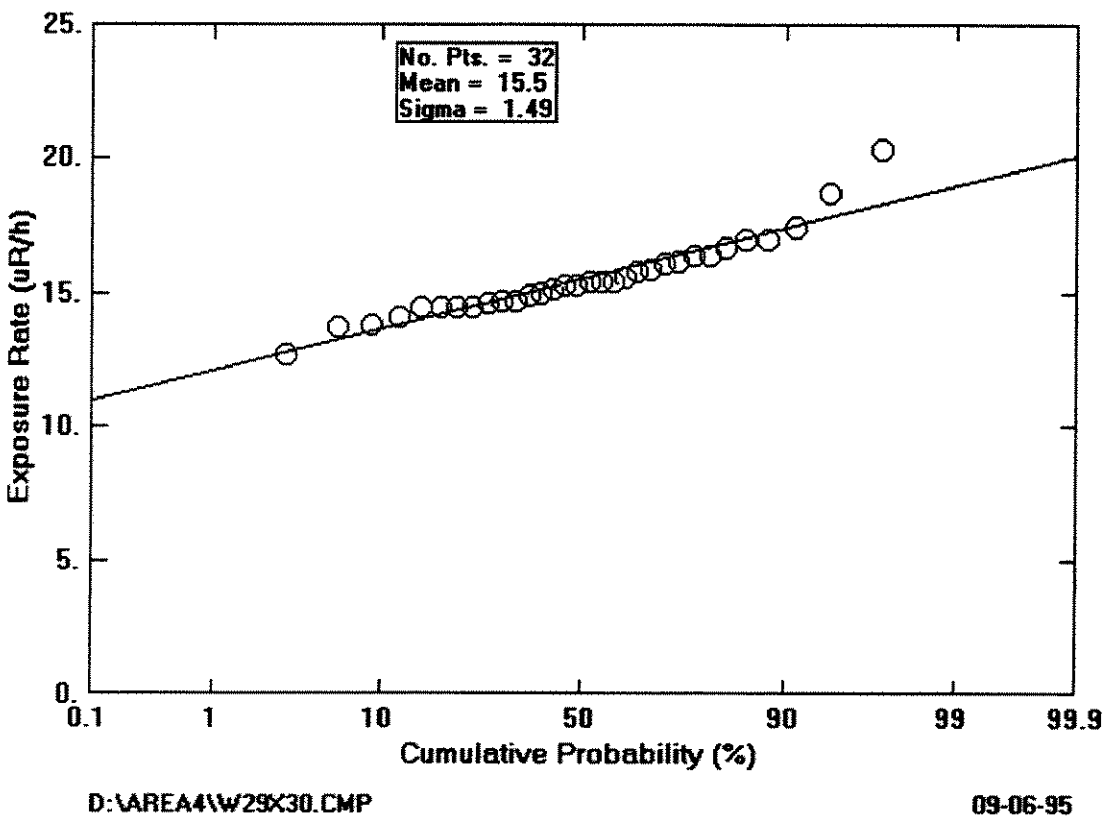
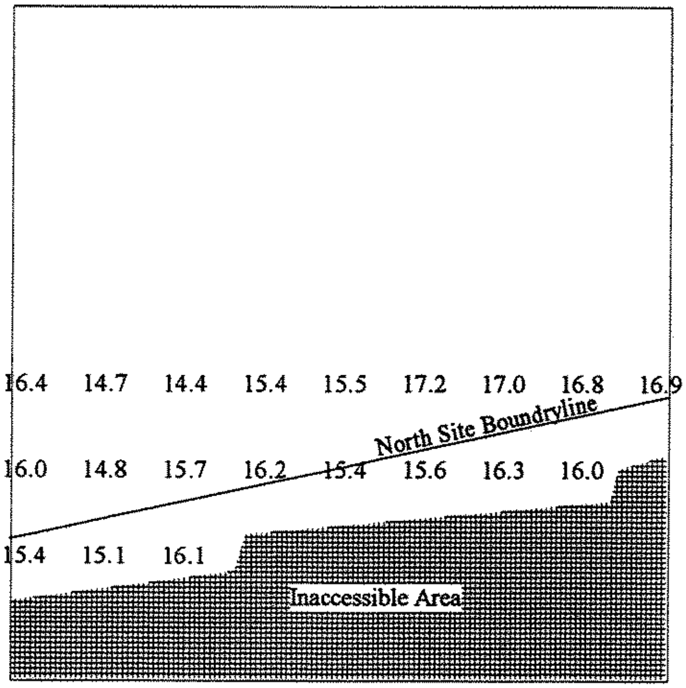
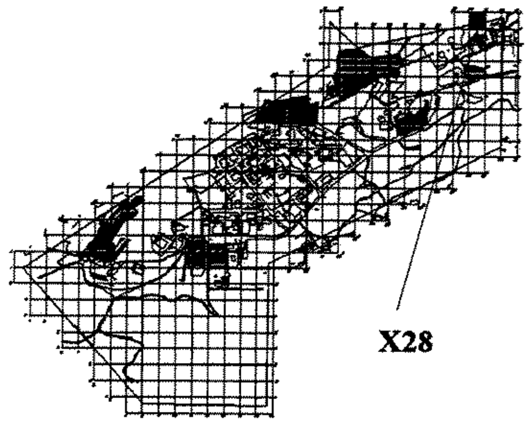


Figure B-182. Ambient Gamma Survey Results - Survey Block X28





X

28

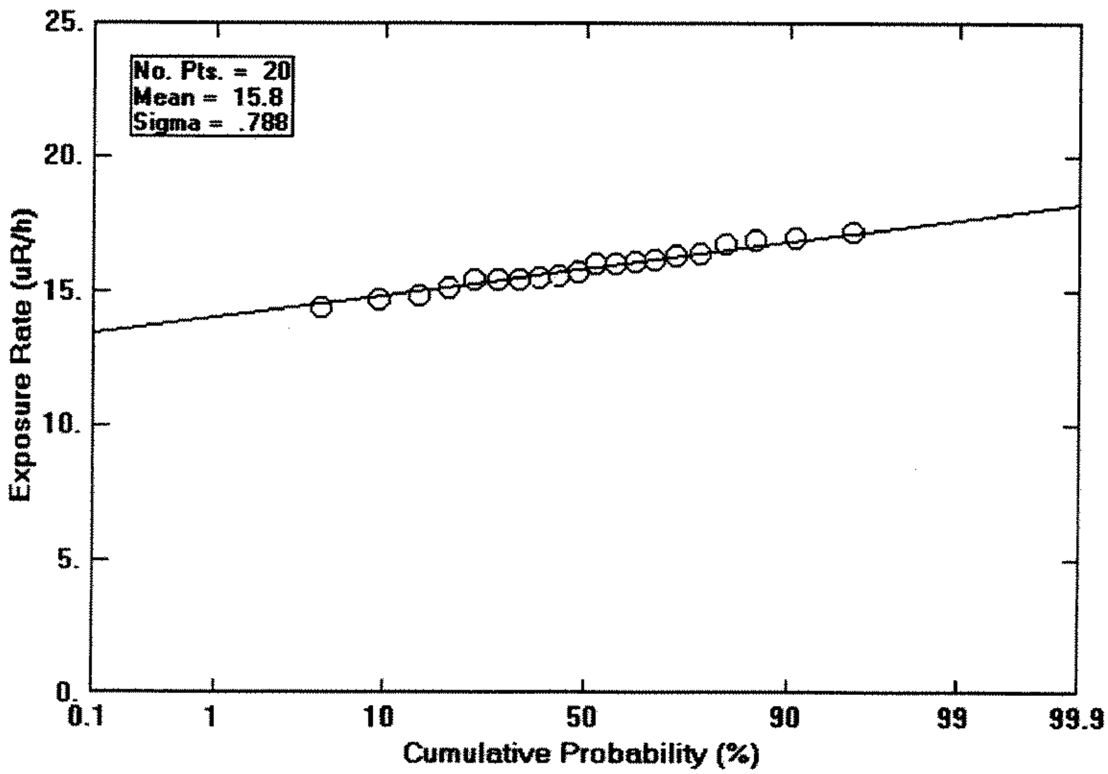


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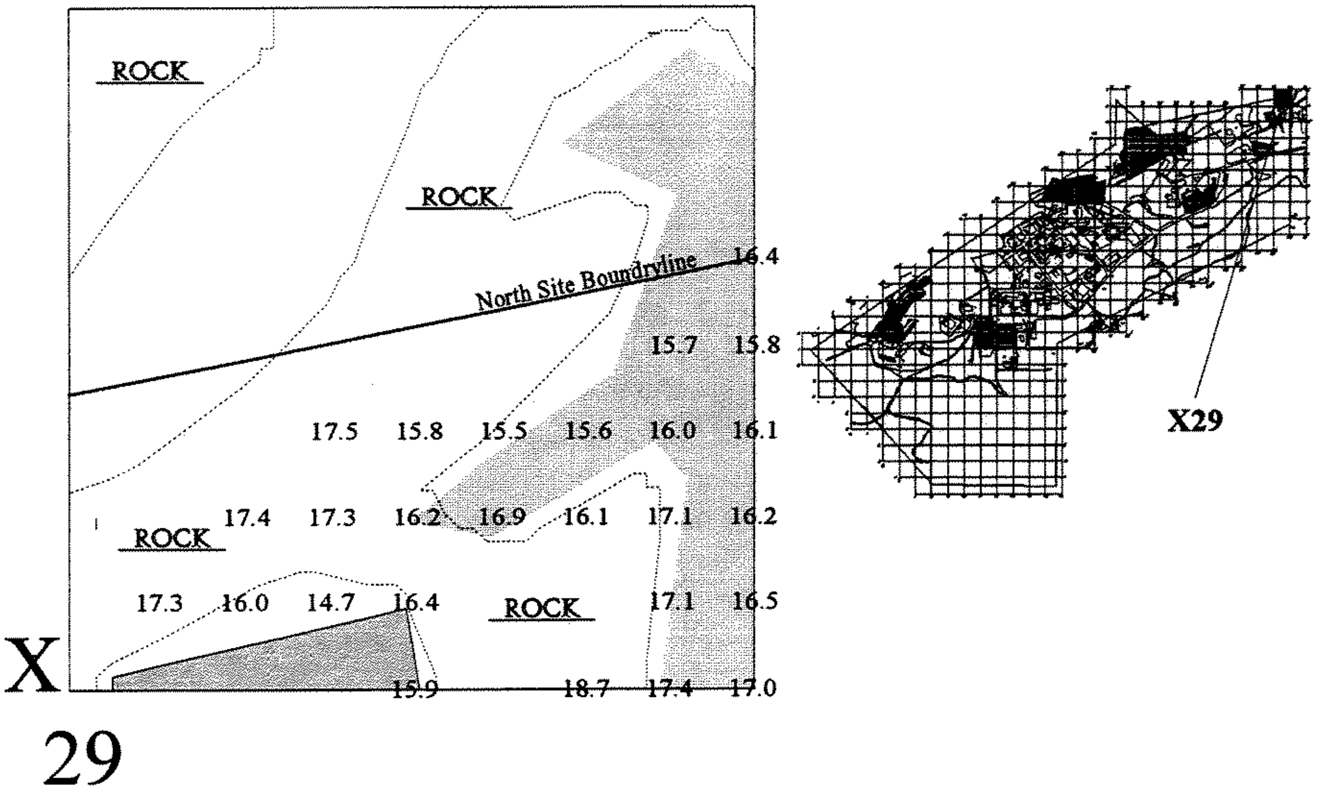
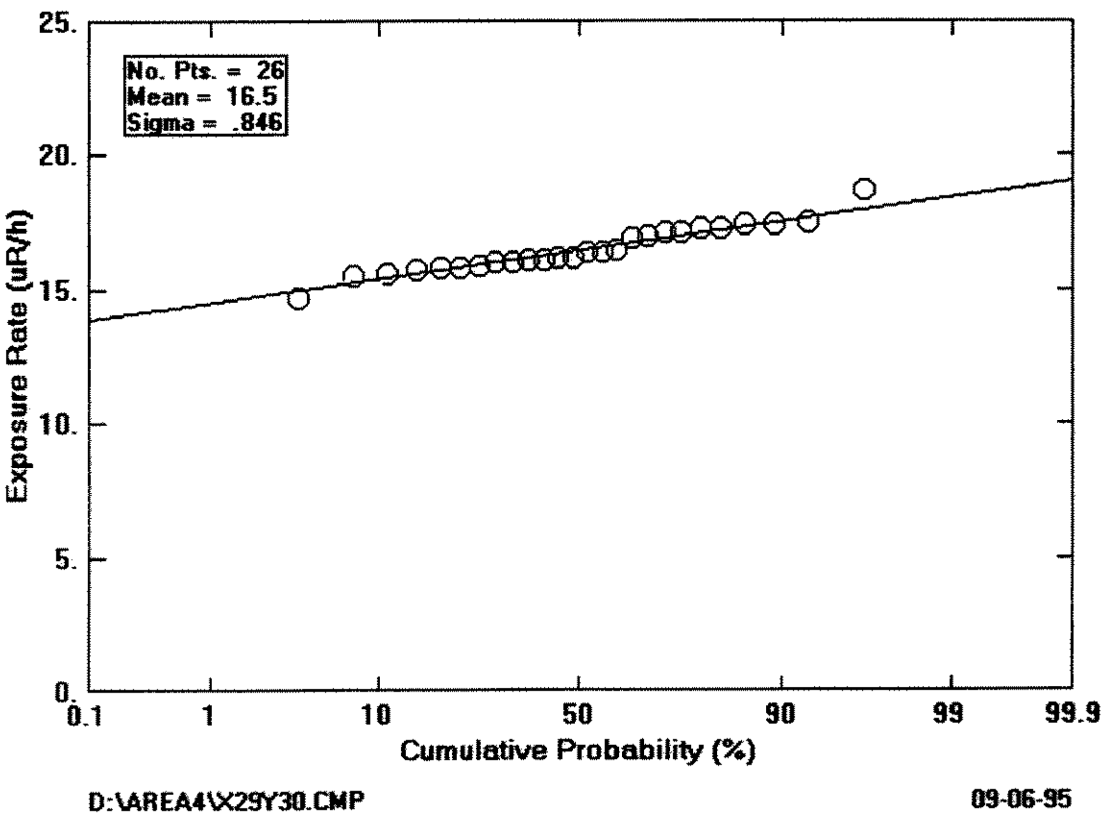
Figure B-183. Ambient Gamma Survey Results - Survey Block X29





APPENDIX C SOIL AND WATER SAMPLE LOCATIONS

Table C-1. Soil Sample Locations and Gamma Exposure Rate - Sorted by Sample ID

Batch No.	Sample ID (A4CM-)	Date	Time	Survey Block	Location Coordinates North	Location Coordinates East	Depth (In.)	Sample Type (Region)	Surface Exposure Rate Det.	Surface Exposure Rate cpm	Surface Exposure Rate Conv. Factor	Surface Exposure Rate Dose Rate (µR/hr)	Sample Exposure Rate Det.	Sample Exposure Rate Cpm	Sample Exposure Rate Conv. Factor	Sample Exposure Rate Dose Rate (µR/hr)	In-soil Exposure Rate Det.	In-soil Exposure Rate cpm	In-soil Exposure Rate Conv. Factor	In-soil Exposure Rate Dose Rate (µR/hr)
1	94-0001	11/17/94	13:45	I03	182	18	6	Burn pit area	G2	3350	226.8	14.8	G2	3300	226.8	14.6	G2	5080	226.8	22.4
1	94-0002	11/17/94	14:25	I03	155	114	6	Burn pit area	G2	3250	226.8	14.3	G2	3100	226.8	13.7	G2	4790	226.8	21.1
1	94-0003	11/18/94	10:00	I03	191	86	6	Burn pit area	G2	3250	221.0	14.7	G2	3200	221.0	14.5	G2	3200	221.0	14.5
1	94-0004	11/18/94	10:00	Field duplicate of A4CM-94-0003									G2	3250						
1	94-0005	11/18/94	13:35	I03	106	102	6	Burn pit area	G2	3250	221.0	14.7	G2	3150	221.0	14.3	G2	4675	221.0	21.2
1	94-0006	11/18/94	14:25	I04	133	12	6	Burn pit area	G2	3125	221.0	14.1	G2	3300	221.0	14.9	G2	4650	221.0	21.0
1	94-0007	11/21/94	09:20	I04	110	140	6	Burn pit area	G2	3350	232.0	14.4	G2	3450	232.0	14.9	G2	5187	232.0	22.4
1	94-0008	11/21/94	10:09	I04	60	130	6	Burn pit area	G2	3300	232.0	14.2	G2	3300	232.0	14.2	G2	5103	232.0	22.0
1	94-0009	11/21/94	12:45	I05	44	41	6	Burn pit area	G2	3150	232.0	13.6	G2	3150	232.0	13.6	G2	5019	232.0	21.6
1	94-0010	11/22/94	09:30	I05	25	126	6	Burn pit area	G2	3050	222.3	13.7	G2	3300	222.3	14.8	G2	5068	222.3	22.8
1	94-0011	11/22/94	10:10	I05	71	125	36	Former pit	G2	3150	222.3	14.2	G2	3200	222.3	14.4	G2	5273	222.3	23.7
1	94-0012	11/22/94		Equipment rinseate sample - a									G2	2100	222.3	9.4				
1	94-0012	11/22/94		Equipment rinseate sample - b									G2	2300	222.3	10.3				
1	94-0013	11/22/94	13:25	I05	81	94	36	Former pit	G2	3150	222.3	14.2	G2	3200	222.3	14.4	G2	5281	222.3	23.8
1	94-0014	11/23/94	13:30	I05	56	159	36	Former pit	G3	3000	215.0	14.0	G3	2900	215.0	13.5	G3	5000	215.0	23.3
1	94-0015	11/28/94	10:30	I05	59	126	36	Former pit	G3	3000	214.9	14.0	G3	3000	214.9	14.0	G3	4961	214.9	23.1
1	94-0016	11/23/94	12:30	I05	53	181	36	Former pit	G3	3000	215.0	14.0	G3	2950	215.0	13.7	G3	5292	215.0	24.6
1	94-0017	11/28/94	13:00	I05	73	125	36	Former pit	G3	2950	214.9	13.7	G3	2950	214.9	13.7	G3	4770	214.9	22.2
1	94-0018	11/28/94	13:50	I05	75	84	36	Former pit	G3	2900	214.9	13.5	G3	2850	214.9	13.3	G3	4789	214.9	22.3
1	94-0019	11/29/94	13:00	I05	53	163	36	Former pit	G3	3050	214.9	14.2	G3	2950	214.9	13.7	G3	4879	214.9	22.7
1	94-0020	11/29/94	13:45	I05	81	52	36	Former pit	G3	2950	214.9	13.7	G3	3000	214.9	14.0	G3	4913	214.9	22.9
1	94-0021	11/30/94	08:15	I05	62	164	36	Former pit	G3	2900	210.5	13.8	G3	2800	210.5	13.3	G3	4821	210.5	22.9
1	94-0022	11/30/94	09:00	I05	45	177	30	Former pit	G3	2900	210.5	13.8	G3	2900	210.5	13.8	G3	4681	210.5	22.2
2	95-0001A	02/15/95	08:15	I06	17	25	8	Burn pit area	G3	2500	209.9	11.9	G3	2600	209.9	12.4	G3	3966	209.9	18.9
2	95-0002A	02/15/95	09:00	I06	82	155	8	Burn pit area	G3	2900	209.9	13.8	G3	2500	209.9	11.9	G3	4237	209.9	20.2
2	95-0003A	02/15/95	09:50	I06	126	175	6	Burn pit area	G3	2900	209.9	13.8	G3	2900	209.9	13.8	G3	3911	209.9	18.6
2	95-0004A	02/16/95	08:45	I06	170	200	6	Burn pit area	G3	2800	193.8	14.4	G3	3000	193.8	15.5	G3	4218	193.8	21.8
2	95-0005A	02/16/95	09:30	J03	27	122	6	Burn pit area	G3	3100	193.8	16.0	G3	2900	193.8	15.0	G3	4493	193.8	23.2
2	95-0006A	02/16/95	10:05	J03	65	155	6	Burn pit area	G3	3000	193.8	15.5	G3	2900	193.8	15.0	G3	4208	193.8	21.7
2	95-0007A	02/16/95	12:50	J03	25	40	6	Burn pit area	G3	2700	193.8	13.9	G3	2700	193.8	13.9	G3	4340	193.8	22.4
2	95-0008A	02/16/95	13:30	J03	73	55	6	Burn pit area	G3	2900	193.8	15.0	G3	2800	193.8	14.4	G3	4602	193.8	23.7
2	95-0009	02/22/95	08:30	T29	180	83	6	Drain-OCY:SE	G3	3800	198.6	19.1	G3	3700	198.6	18.6	G3	6261	198.6	31.5
2	95-0010	02/22/95	09:43	T29	103	108	6	Drain-OCY:SE	G3	3600	198.6	18.1	G3	3500	198.6	17.6	G3	4794	198.6	24.1
2	95-0011	02/21/95	08:30	I13	45	144	42	Leachf'd-373	G3	2800	197.9	14.1	G3	2700	197.9	13.6	G3	4865	197.9	24.6
2	95-0012	02/21/95	09:15	J13	59	142	38	Leachf'd-373	G3	2700	197.9	13.6	G3	2600	197.9	13.1	G3	4821	197.9	24.4

Table C-1. Soil Sample Locations and Gamma Exposure Rate - Sorted by Sample ID

Batch No.	Sample ID (A4CM-)	Date	Time	Survey Block	Location Coordinates North	Location Coordinates East	Depth (in.)	Sample Type (Region)	Surface Exposure Rate Det.	Surface Exposure Rate cpm	Surface Exposure Rate Conv. Factor	Surface Exposure Rate Dose Rate (µR/hr)	Sample Exposure Rate Det.	Sample Exposure Rate Cpm	Sample Exposure Rate Conv. Factor	Sample Exposure Rate Dose Rate (µR/hr)	In-soil Exposure Rate Det.	In-soil Exposure Rate cpm	In-soil Exposure Rate Conv. Factor	In-soil Exposure Rate Dose Rate (µR/hr)
2	95-0013	02/22/95	10:20	T29	0	136	6	Drain-OCY:SE	G3	3500	198.6	17.6	G3	3200	198.6	16.1	G3	4627	198.6	23.3
2	95-0014	02/22/95	13:40	I14	20	19	6	Drain-J St.	G3	3200	198.6	16.1	G3	3200	198.6	16.1	G3	4184	198.6	21.1
2	95-0015	02/22/95	13:40	Field duplicate of A4CM-95-0014									G3	3000	198.6	15.1				
2	95-0016A	02/23/95	08:35	H14	190	50	6	Drain-J St.	G3	2900	202.9	14.3	G3	2900	202.9	14.3	G3	4898	202.9	24.1
2	95-0017A	02/23/95	09:30	H15	185	100	6	Drain-J St.	G3	3100	202.9	15.3	G3	2900	202.9	14.3	G3	4709	202.9	23.2
2	95-0018	02/20/95	12:30	R24	89	175	30	Leachf'd-064	G3	3500	200.0	17.5	G3	3300	200.0	16.5	G3	4674	200.0	23.4
2	95-0019	02/20/95	13:05	R24	91	184	30	Leachf'd-064	G3	3200	200.0	16.0	G3	2900	200.0	14.5	G3	4720	200.0	23.6
2	95-0020A	02/23/95	10:15	I15	20	130	6	Drain-J St.	G3	3100	202.9	15.3	G3	2900	202.9	14.3	G3	4361	202.9	21.5
2	95-0021	02/23/95	12:45	Equipment rinseate sample - a									G3	2600	202.9	12.8				
2	95-0022	02/23/95	12:45	Equipment rinseate sample - b									G3	2600	202.9	12.8				
2	95-0023A	02/23/95	13:30	G15	150	125	6	Drain-L St.	G3	3100	202.9	15.3	G3	2900	202.9	14.3	G3	4481	202.9	22.1
3	95-0024	03/06/95	08:30	G13	125	175	6	Drain-L St.	G3	2800	190.0	14.7	G3	2700	190.0	14.2	G3	5340	190.0	28.1
3	95-0025	03/06/95	10:30	Equipment rinseate sample - a									G3	2200	190.0	11.6				
3	95-0026	03/06/95	10:30	Equipment rinseate sample - b									G3	2200	190.0	11.6				
3	95-0027	03/06/95	09:00	G14	150	100	6	Drain-L St.	G3	2800	190.0	14.7	G3	2800	190.0	14.7	G3	4199	190.0	22.1
3	95-0028	03/06/95	09:30	G15	125	50	6	Drain-L St.	G3	2900	190.0	15.3	G3	2700	190.0	14.2	G3	4734	190.0	24.9
3	95-0029	03/06/95	13:10	J15	100	0	6	Drain-G St:W	G3	2800	190.0	14.7	G3	2600	190.0	13.7	G3	3778	190.0	19.9
3	95-0030	03/06/95	13:40	J16	35	0	6	Drain-G St:W	G3	2600	190.0	13.7	G3	2500	190.0	13.2	G3	3393	190.0	17.9
3	95-0031	03/06/95	08:15	T27	100	50	6	Drain-OCY:W	G3	2500	196.5	12.7	G3	2500	196.5	12.7	G3	3390	196.5	17.3
3	95-0032	03/07/95	09:00	S27	150	90	6	Drain-OCY:W	G3	2700	196.5	13.7	G3	2500	196.5	12.7	G3	3893	196.5	19.8
3	95-0033	03/07/95	10:05	S27	5	150	6	Drain-OCY:W	G3	2900	196.5	14.8	G3	2900	196.5	14.8	G3	4120	196.5	21.0
3	95-0034	03/07/95	12:30	S28	20	125	4	Drain-OCY:W	G3	3000	196.5	15.3	G3	2900	196.5	14.8	G3	3362	196.5	17.1
3	95-0035	03/07/95	13:00	S29	70	75	6	Drain-OCY:W	G3	3000	196.5	15.3	G3	2600	196.5	13.2	G3	4125	196.5	21.0
3	95-0036	03/07/95	13:00	Field duplicate of A4CM-95-0035									G3	2600	196.5	13.2				
3	95-0037	03/08/95	08:00	W25	62	126	6	Drain-OCY:N	G3	2900	189.9	15.3	G3	2800	189.9	14.7	G3	4275	189.9	22.5
3	95-0038	03/08/95	09:30	W26	170	100	6	Drain-OCY:N	G3	2800	189.9	14.7	G3	2800	189.9	14.7	G3	4612	189.9	24.3
3	95-0039	03/08/95	10:35	X27	20	101	6	Drain-OCY:N	G3	2800	189.9	14.7	G3	2700	189.9	14.2	G3	4631	189.9	24.4
3	95-0040	03/08/95	12:35	X28	35	0	6	Drain-OCY:N	G3	2300	189.9	12.1	G3	2300	189.9	12.1	G3	3805	189.9	20.0
3	95-0041	03/08/95	13:20	V23	160	180	4	Drain-pond	G3	3200	189.9	16.9	G3	3100	189.9	16.3	G3	3100	189.9	16.3
3	95-0042	03/09/95	08:00	W24	65	75	6	Drain-pond	G3	3200	189.2	16.9	G3	3100	189.2	16.4	G3	4092	189.2	21.6
3	95-0043	03/09/95	09:15	K19	125	10	5	Drain-17 St.	G3	3100	189.2	16.4	G3	2900	189.2	15.3	G3	4327	189.2	22.9
3	95-0044	03/09/95	09:45	K19	150	80	6	Drain-17 St.	G3	3100	189.2	16.4	G3	3000	189.2	15.9	G3	4146	189.2	21.9
3	95-0045	03/09/95	12:20	L19	27	36	6	Drain-17 St.	G3	2900	189.2	15.3	G3	2800	189.2	14.8	G3	3991	189.2	21.1
3	95-0046	03/09/95	12:20	L19	27	36	30	Drain-17 St.	G3	2900	189.2	15.3	G3	2800	189.2	14.8	G3	4801	189.2	25.4
4	95-0047	03/28/95	09:40	K09	27	65	6	Bldg. 009	G3	3500	201.0	17.4	G3	3400	201.0	16.9	G3	4124	201.0	20.5

Table C-1. Soil Sample Locations and Gamma Exposure Rate - Sorted by Sample ID

Batch No.	Sample ID (A4CM-)	Date	Time	Survey Block	Location Coordinates North	Location Coordinates East	Depth (in.)	Sample Type (Region)	Surface Exposure Rate Det.	Surface cpm	Surface Conv. Factor	Surface Dose Rate (µR/hr)	Sample Exposure Rate Det.	Sample Cpm	Sample Conv. Factor	Sample Dose Rate (µR/hr)	In-soil Exposure Rate Det.	In-soil cpm	In-soil Conv. Factor	In-soil Dose Rate (µR/hr)
4	95-0048	03/28/95	10:30	I08	155	152	6	Bldg. 009	G3	2800	201.0	13.9	G3	2700	201.0	13.4	G3	3952	201.0	19.7
4	95-0049	03/28/95	11:00	K10	163	175	3	Bldg 100	G3	3000	201.0	14.9	G3	2800	201.0	13.9	G3	4042	201.0	20.1
4	95-0050	03/28/95	14:30	Equipment rinseate sample - a									G3	2300	201.0	11.4				
4	95-0051	03/28/95	14:30	Equipment rinseate sample - b									G3	2400	201.0	11.9				
4	95-0052	03/29/95	08:15	K11	109	36	6	Bldg 100	G3	3000	195.8	15.3	G3	2900	195.8	14.8	G3	4441	195.8	22.7
4	95-0053	03/29/95	08:35	J10	56	80	4	Bldg 020	G3	3400	195.8	17.4	G3	3400	195.8	17.4	G3	3725	195.8	19.0
4	95-0054	03/29/95	09:10	J11	156	120	6	Bldg 020	G3	2900	195.8	14.8	G3	2800	195.8	14.3	G3	4111	195.8	21.0
4	95-0055	03/29/95	12:15	H12	148	118	6	Bldg 055	G3	2800	195.8	14.3	G3	2700	195.8	13.8	G3	4006	195.8	20.5
4	95-0056	03/29/95	12:15	Field duplicate of A4CM-95-0055									G3	2700	195.8	13.8				
4	95-0057	03/29/95	13:10	I11	116	179	6	Bldg 055	G3	2800	195.8	14.3	G3	2800	195.8	14.3	G3	3783	195.8	19.3
4	95-0058	03/29/95	13:45	I13	33	72	6	Bldg 373	G3	2700	195.8	13.8	G3	2600	195.8	13.3	G3	4070	195.8	20.8
4	95-0059	03/30/95	08:40	I13	51	109	6	Bldg 373	G3	2700	192.6	14.0	G3	2700	192.6	14.0	G3	4266	192.6	22.1
4	95-0060	03/30/95	10:00	H12	40	167	6	Bldg 363	G3	2600	192.6	13.5	G3	2500	192.6	13.0	G3	4281	192.6	22.2
4	95-0061	03/30/95	10:30	H12	0	70	6	Bldg 363	G3	2600	192.6	13.5	G3	2600	192.6	13.5	G3	4175	192.6	21.7
4	95-0062	03/30/95	13:20	L17	196	23	6	Bldg 011	G3	2900	192.6	15.1	G3	2700	192.6	14.0	G3	4176	192.6	21.7
4	95-0063	03/30/95	13:00	M16	30	143	6	Bldg 011	G3	2700	192.6	14.0	G3	2700	192.6	14.0	G3	4584	192.6	23.8
4	95-0064	03/31/95	08:15	Q20	111	182	6	Bldg 093	G3	2900	193.3	15.0	G3	2900	193.3	15.0	G3	4673	193.3	24.2
4	95-0065	03/31/95	08:45	R21	125	1	7	Bldg 093	G3	3500	193.3	18.1	G3	3200	193.3	16.6	G3	5034	193.3	26.0
4	95-0066	03/31/95	10:00	P24	9	182	8	Bldg 029	G3	2800	193.3	14.5	G3	2800	193.3	14.5	G3	4517	193.3	23.4
4	95-0067	03/31/95	10:35	P24	59	123	6	Bldg 029	G3	2800	193.3	14.5	G3	2900	193.3	15.0	G3	4698	193.3	24.3
4	95-0068	03/31/95	13:10	R24	118	159	6	Bldg 064	G3	2900	193.3	15.0	G3	2900	193.3	15.0	G3	4507	193.3	23.3
4	95-0069	03/31/95	12:40	Q24	140	40	6	Bldg 064	G3	2700	193.3	14.0	G3	2500	193.3	12.9	G3	4081	193.3	21.1
5	95-0070	04/18/95	12:45	K17	10	5	6	Drain-20 St.	G3	2800	186.4	15.0	G3	2600	186.4	13.9	G3	3653	186.4	19.6
5	95-0071	04/18/95	13:10	K17	50	35	6	Drain-20 St.	G3	2400	186.4	12.9	G3	2000	186.4	10.7	G3	3404	186.4	18.3
5	95-0072	04/21/95	12:30	M18	60	200	5	Drain-17 St.	G3	2700	191.7	14.1	G3	2300	191.7	12.0	G3	3232	191.7	16.9
5	95-0073	04/21/95	12:30	M18	60	200	30	Drain-17 St.	G3	2700	191.7	14.1	G3	2500	191.7	13.0	G3	3768	191.7	19.7
5	95-0074	04/19/95	08:10	L18	50	190	6	Drain-17 St.	G3	2800	197.4	14.2	G3	2900	197.4	14.7	G3	4278	197.4	21.7
5	95-0075	04/19/95	10:20	Q14	85	60	6	Drain-010	G3	3400	197.4	17.2	G3	3300	197.4	16.7	G3	4227	197.4	21.4
5	95-0076	04/19/95	11:10	Q13	35	120	6	Drain-010	G3	3400	197.4	17.2	G3	3200	197.4	16.2	G3	3938	197.4	19.9
5	95-0077	04/19/95	12:35	Q20	150	117	72	Leachf'd-093	G3	3200	197.4	16.2	G3	3000	197.4	15.2				
5	95-0078	04/19/95	12:35	Q20	150	122	72	Leachf'd-093	G3	3200	197.4	16.2	G3	2900	197.4	14.7				
5	95-0079	04/20/95	08:15	U22	89	99	54	Leachf'd-SRE	G3	3000	202.0	14.9	G3	2900	202.0	14.4	G3	4800	202.0	23.8
5	95-0080	04/20/95	08:15	U22	104	106	54	Leachf'd-SRE	G3	3000	202.0	14.9	G3	2900	202.0	14.4	G3	4600	202.0	22.8
5	95-0081	04/20/95	08:15	Field duplicate of A4CM-95-0080									G3	3000	202.0	14.9				
5	95-0082	04/20/95	10:30	P19	21	143	6	Bldg 023	G3	3000	202.0	14.9	G3	2800	202.0	13.9	G3	4292	202.0	21.2

Table C-1. Soil Sample Locations and Gamma Exposure Rate - Sorted by Sample ID

Batch No.	Sample ID (A4CM-)	Date	Time	Survey Block	Location Coordinates North	East	Depth (in.)	Sample Type (Region)	Surface Exposure Rate Det.	cpm	Conv. Factor	Dose Rate (µR/hr)	Sample Exposure Rate Det.	Cpm	Conv. Factor	Dose Rate (µR/hr)	In-soil Exposure Rate Det.	cpm	Conv. Factor	Dose Rate (µR/hr)
5	95-0083	04/20/95	12:40	J08	2	110	60	Leachf'd-009	G3	2800	202.0	13.9	G3	2900	202.0	14.4	G3	3900	202.0	19.3
5	95-0084	04/20/95	12:40	K08	15	110	60	Leachf'd-009	G3	2800	202.0	13.9	G3	3000	202.0	14.9	G3	3500	202.0	17.3
5	95-0085	04/20/95	14:40	Equipment rinseate sample - a									G3	2300	202.0	11.4				
5	95-0086	04/20/95	14:40	Equipment rinseate sample - b									G3	2300	202.0	11.4				
5	95-0087	04/21/95	08:00	N09	35	170	5	Drain-I'fill	G3	3500	191.7	18.3	G3	2900	191.7	15.1	G3	3148	191.7	16.4
5	95-0088	04/21/95	08:00	N09	170	155	5	Drain-I'fill	G3	3500	191.7	18.3	G3	3400	191.7	17.7	G3	4376	191.7	22.8
5	95-0089	04/24/95	12:35	U22	185	193		SRE pond - a	G3	1900	200.4	9.5	G3	2400	200.4	12.0				
5	95-0090	04/24/95	12:35	U22	185	193		SRE pond - b	G3	1900	200.4	9.5	G3	2300	200.4	11.5				
5	95-0091	04/24/95	10:45	Field blank sample for SRE pond water samples - a									G3	2300	200.4	11.5				
5	95-0092	04/24/95	10:45	Field blank sample for SRE pond water samples - a									G3	2300	200.4	11.5				
5	95-0093	04/24/95	12:35	U22	185	193	48	Pond sediment	G3	1900	200.4	9.5	G3	2400	200.4	12.0				
5	95-0094	04/24/95	13:00	V23	10	15		SRE pond - a	G3	1800	200.4	9.0	G3	2400	200.4	12.0				
5	95-0095	04/24/95	13:00	V23	10	15		SRE pond - b	G3	1800	200.4	9.0	G3	2400	200.4	12.0				
5	95-0096	04/24/95	13:00	V23	10	15	48	Pond sediment	G3	1800	200.4	9.0	G3	2400	200.4	12.0				
6	95-0097	05/08/95	08:30	T19	50	112	6	Bldg SRE	G3	3200	214.6	14.9	G3	3000	214.6	14.0	G3	4711	214.6	22.0
6	95-0098	05/08/95	09:15	T19	80	80	4	Bldg SRE	G3	3400	214.6	15.8	G3	3500	214.6	16.3	G3	4011	214.6	18.7
6	95-0099	05/08/95	10:20	S21	160	169	6	Bldg 003	G3	3300	214.6	15.4	G3	3100	214.6	14.4	G3	4466	214.6	20.8
6	95-0100	05/08/95	14:45	Equipment rinseate sample - a									G3	2300	214.6	10.7				
6	95-0101	05/08/95	14:45	Equipment rinseate sample - b									G3	2300	214.6	10.7				
6	95-0102	05/08/95	12:20	T22	118	45	7	Bldg 003	G3	3300	214.6	15.4	G3	3200	214.6	14.9	G3	4871	214.6	22.7
6	95-0103	05/08/95	12:20	Field duplicate of A4CM-95-0102									G3	3200	214.6	14.9				
6	95-0104	05/09/95	09:50	Q19	92	133	6	Bldg 023	G3	3400	204.1	16.7	G3	3300	204.1	16.2	G3	4515	204.1	22.1
6	95-0105	05/09/95	10:35	Q17	171	85	4	Bldg 024	G3	4000	204.1	19.6	G3	4200	204.1	20.6	G3	3247	204.1	15.9
6	95-0106	05/09/95	12:15	Q16	155	64	6	Bldg 024	G3	8500	204.1	41.6	G3	4000	204.1	19.6	G3	4993	204.1	24.5
6	95-0107	05/09/95	13:00	Q15	75	140	6	Bldg 028	G3	4200	204.1	20.6	G3	3900	204.1	19.1	G3	4298	204.1	21.1
6	95-0108	05/09/95	13:40	R15	34	94	4	Bldg 028	G3	4900	204.1	24.0	G3	4800	204.1	23.5	G3	4552	204.1	22.3
6	95-0109	05/10/95	09:50	Q14	87	146	6	Bldg 012	G3	3900	196.5	19.8	G3	3400	196.5	17.3	G3	4671	196.5	23.8
6	95-0110	05/10/95	10:45	P17	88	190	5	Bldg 005	G3	3200	196.5	16.3	G3	2900	196.5	14.8	G3	4336	196.5	22.1
6	95-0111	05/10/95	12:30	P22	27	178	3	Hot spot 006	G3	5400	196.5	27.5	G3	3100	196.5	15.8	G3	4830	196.5	24.6
6	95-0112	05/10/95	14:15	I07	123	163	30	Hot spot-RSL6	G3	2900	196.5	14.8	G3	2700	196.5	13.7	G3	4429	196.5	22.5
6	95-0113	05/11/95	08:35	O18	58	3	4	Bldg 005	G3	3100	200.9	15.4	G3	3000	200.9	14.9	G3	4454	200.9	22.2
6	95-0114	05/11/95	10:10	P13	101	42	5	Bldg 019	G3	3100	200.9	15.4	G3	2800	200.9	13.9	G3	4194	200.9	20.9
6	95-0115	05/11/95	10:30	P12	68	177	6	Bldg 059	G3	2800	200.9	13.9	G3	2800	200.9	13.9	G3	4293	200.9	21.4
6	95-0116	05/11/95	12:15	P12	89	179	6	Bldg 019	G3	3100	200.9	15.4	G3	3000	200.9	14.9	G3	4110	200.9	20.5
6	95-0117	05/11/95	12:50	P12	80	110	6	Bldg 059	G3	3200	200.9	15.9	G3	2900	200.9	14.4	G3	4384	200.9	21.8

Table C-1. Soil Sample Locations and Gamma Exposure Rate - Sorted by Sample ID

Batch No.	Sample ID (A4CM-)	Date	Time	Survey Block	Location Coordinates North	Location Coordinates East	Depth (in.)	Sample Type (Region)	Surface Exposure Rate Det.	Surface Exposure Rate cpm	Surface Exposure Rate Conv. Factor	Surface Exposure Rate Dose Rate (μR/hr)	Sample Exposure Rate Det.	Sample Exposure Rate Cpm	Sample Exposure Rate Conv. Factor	Sample Exposure Rate Dose Rate (μR/hr)	In-soil Exposure Rate Det.	In-soil Exposure Rate cpm	In-soil Exposure Rate Conv. Factor	In-soil Exposure Rate Dose Rate (μR/hr)
6	95-0118	05/19/95	08:10	H08	110	28	6	Hot spot-RSL51	G3	3400	194.6	17.5	G3	3000	194.6	15.4	G3	5046	194.6	25.9
6	95-0119	05/19/95	08:45	E12	120	200	6	Hot spot-RSL20	G3	5000	194.6	25.7	G3	4300	194.6	22.1	G3	7209	194.6	37.0
6	95-0120	05/19/95	10:10	M22	144	188	6	Hot spot-M22	G3	3400	194.6	17.5	G3	3200	194.6	16.4	G3	4446	194.6	22.8
7	95-0121	06/12/95	08:15	G06	87	105	6	Ad	G3	2600	199.0	13.1	G3	2600	199.0	13.1	G3	3865	199.0	19.4
7	95-0122	06/12/95	10:00	F15	29	17	6	Ad	G3	3000	199.0	15.1	G3	2900	199.0	14.6	G3	4373	199.0	22.0
7	95-0123	06/12/95	10:00	Field duplicate of A4CM-95-0122					G3				G3	2900	199.0	14.6				
7	95-0124	06/12/95	12:15	E04	30	75	6	Ad	G3	1900	199.0	9.5	G3	1800	199.0	9.0	G3	2337	199.0	11.7
7	95-0125	06/12/95	13:00	G10	193	138	6	Ad	G3	2500	199.0	12.6	G3	2500	199.0	12.6	G3	3371	199.0	16.9
7	95-0126	06/13/95	08:00	P25	142	192	6	Au	G3	3100	197.3	15.7	G3	2900	197.3	14.7	G3	4204	197.3	21.3
7	95-0127	06/13/95	09:45	O27	32	22	6	Au	G3	3000	197.3	15.2	G3	3000	197.3	15.2	G3	4636	197.3	23.5
7	95-0128	06/13/95	10:35	I08	173	67	6	Au	G3	2800	197.3	14.2	G3	2800	197.3	14.2	G3	3859	197.3	19.6
7	95-0129	06/13/95	12:30	J16	99	41	6	Dr	G3	3000	197.3	15.2	G3	2700	197.3	13.7	G3	4372	197.3	22.2
7	95-0130	06/13/95	14:00	Equipment rinseate sample - b					G3				G3	2300	197.3	11.7				
7	95-0131	06/13/95	14:00	Equipment rinseate sample - a					G3				G3	2300	197.3	11.7				
7	95-0132	06/14/95	07:20	D07	189	81	6	Mch	G3	2200	205.7	10.7	G3	2100	205.7	10.2	G3	2487	205.7	12.1
7	95-0133	06/14/95	07:50	E08	51	19	6	Mch	G3	2500	205.7	12.2	G3	2400	205.7	11.7	G3	3642	205.7	17.7
7	95-0134	06/14/95	08:35	E09	143	106	6	Mch	G3	2500	205.7	12.2	G3	2500	205.7	12.2	G3	3518	205.7	17.1
7	95-0135	06/14/95	10:35	D07	2	14	6	Mch	G3	2000	205.7	9.7	G3	1800	205.7	8.8	G3	2205	205.7	10.7
7	95-0136	06/15/95	08:20	G09	164	119	6	Ad	G3	2900	207.9	13.9	G3	2900	207.9	13.9	G3	4449	207.9	21.4
7	95-0137	06/15/95	09:00	Q29	113	94	6	Dr	G3	3200	207.9	15.4	G3	3100	207.9	14.9	G3	5012	207.9	24.1
7	95-0138	06/15/95	10:20	C10	188	103	4	Mch	G3	2200	207.9	10.6	G3	2200	207.9	10.6	G3	3040	207.9	14.6
7	95-0139	06/15/95	10:48	B10	180	119	6	Au	G3	2300	207.9	11.1	G3	2300	207.9	11.1	G3	3440	207.9	16.5
7	95-0140	06/19/95	08:00	O11	1	60	6	Rc	G3	3100	207.3	15.0	G3	3100	207.3	15.0	G3	4475	207.3	21.6
7	95-0141	06/19/95	08:40	V27	186	188	6	Rc	G3	3100	207.3	15.0	G3	3000	207.3	14.5	G3	4735	207.3	22.8
7	95-0142	06/19/95	10:00	P13	144	106	6	Rc	G8	3000	211.0	14.2	G8	2900	211.0	13.7	G8	4769	211.0	22.6
7	95-0143	06/19/95	12:10	J07	125	107	6	Rc	G8	3300	211.0	15.6	G8	3200	211.0	15.2	G8	4510	211.0	21.4
8	95-0144	06/20/95	10:00	1	8	1	6	BG-03	G8	3200	215.0	14.9	G8	3100	215.0	14.4	G8	3954	215.0	18.4
8	95-0145	06/20/95	10:30	19	14	84	6	BG-03	G8	3100	215.0	14.4	G8	2900	215.0	13.5	G8	3181	215.0	14.8
8	95-0146	06/21/95	10:00	7	4	61	6	BG-02	G8	3200	211.2	15.2	G8	3200	211.2	15.2	G8	5263	211.2	24.9
8	95-0147	06/21/95	10:00	76	77	54	6	BG-02	G8	3500	211.2	16.6	G8	3500	211.2	16.6	G8	5386	211.2	25.5
8	95-0148	06/22/95	10:00	25	27	44	6	BG-04	G8	3500	212.8	16.4	G8	3400	212.8	16.0	G8	5110	212.8	24.0
8	95-0149	06/22/95	10:30	90	88	99	6	BG-04	G8	3400	212.8	16.0	G8	3300	212.8	15.5	G8	4875	212.8	22.9
8	95-0150	06/26/95	07:20	K11	48	51	6	Au	G6	3300	198.7	16.6	G6	3200	198.7	16.1	G6	4576	198.7	23.0
8	95-0151	06/26/95	08:15	K07	23	155	6	Rc	G6	3100	198.7	15.6	G6	3000	198.7	15.1	G6	3596	198.7	18.1
8	95-0152	06/26/95	09:40	H12	0	70	6	363-2Repeat	G6	2900	198.7	14.6	G6	3000	198.7	15.1	G6	4323	198.7	21.8

Table C-1. Soil Sample Locations and Gamma Exposure Rate - Sorted by Sample ID

Batch No.	Sample ID (A4CM-)	Date	Time	Survey Block	Location Coordinates North	Location Coordinates East	Depth (in.)	Sample Type (Region)	Surface Exposure Rate Det.	Surface Exposure Rate cpm	Surface Exposure Rate Conv. Factor	Surface Exposure Rate Dose Rate (µR/hr)	Sample Exposure Rate Det.	Sample Exposure Rate Cpm	Sample Exposure Rate Conv. Factor	Sample Exposure Rate Dose Rate (µR/hr)	In-soil Exposure Rate Det.	In-soil Exposure Rate cpm	In-soil Exposure Rate Conv. Factor	In-soil Exposure Rate Dose Rate (µR/hr)
8	95-0153	06/26/95	NR	V23	75	125	6	HS-0011	G6	3300	198.7	16.6	G6	3500	198.7	17.6	G6	5347	198.7	26.9
8	95-0154	06/26/95	12:35	R14	50	200	6	HS-0010	G6	4500	198.7	22.6	G6	4200	198.7	21.1	G6	4586	198.7	23.1
8	95-0155	06/27/95	07:10	B14	0	200	6	HS-0005	G6	4400	214.1	20.6	G6	4400	214.1	20.6	G6	7138	214.1	33.3
8	95-0156	06/27/95	08:00	G09	92	65	6	HS-0012	G6	3300	214.1	15.4	G6	2900	214.1	13.5	G6	4465	214.1	20.9
8	95-0157	06/27/95	09:35	M20	105	55	6	HS-0013	G6	3600	214.1	16.8	G6	3300	214.1	15.4	G6	4341	214.1	20.3
8	95-0158	06/27/95	10:30	N21	10	10	6	HS-0014	G6	3400	214.1	15.9	G6	3300	214.1	15.4	G6	4640	214.1	21.7
8	95-0159	06/27/95	09:35	Field duplicate of A4CM-95-0157									G6	3300	214.1	15.4				
8	95-0160	06/27/95	12:15	Equipment rinseate sample - a									G6	2200	214.1	10.3				
8	95-0161	06/27/95	12:15	Equipment rinseate sample - b									G6	2200	214.1	10.3				
8	95-0162	06/28/95	07:30	S28	110	110	6	HS-0015	G6	2500	209.9	11.9	G6	2500	209.9	11.9	G6	4725	209.9	22.5

Table C-2. Soil Sample Locations and Gamma Exposure Rate - Sorted by Sample Type (Region)

Batch No.	Sample ID (A4CM-)	Date	Time	Survey Block	Location Coordinates North	Location Coordinates East	Depth (in.)	Sample Type (Region)	Surface Exposure Rate Det.	Surface Exposure Rate cpm	Surface Exposure Rate Conv. Factor	Surface Exposure Rate Dose Rate (µR/hr)	Sample Exposure Rate Det.	Sample Exposure Rate Cpm	Sample Exposure Rate Conv. Factor	Sample Exposure Rate Dose Rate (µR/hr)	In-soil Exposure Rate Det.	In-soil Exposure Rate cpm	In-soil Exposure Rate Conv. Factor	In-soil Exposure Rate Dose Rate (µR/hr)
7	95-0121	06/12/95	08:15	G06	87	105	6	Ad	G3	2600	199.0	13.1	G3	2600	199.0	13.1	G3	3865	199.0	19.4
7	95-0122	06/12/95	10:00	F15	29	17	6	Ad	G3	3000	199.0	15.1	G3	2900	199.0	14.6	G3	4373	199.0	22.0
7	95-0124	06/12/95	12:15	E04	30	75	6	Ad	G3	1900	199.0	9.5	G3	1800	199.0	9.0	G3	2337	199.0	11.7
7	95-0125	06/12/95	13:00	G10	193	138	6	Ad	G3	2500	199.0	12.6	G3	2500	199.0	12.6	G3	3371	199.0	16.9
7	95-0136	06/15/95	08:20	G09	164	119	6	Ad	G3	2900	207.9	13.9	G3	2900	207.9	13.9	G3	4449	207.9	21.4
7	95-0126	06/13/95	08:00	P25	142	192	6	Au	G3	3100	197.3	15.7	G3	2900	197.3	14.7	G3	4204	197.3	21.3
7	95-0127	06/13/95	09:45	O27	32	22	6	Au	G3	3000	197.3	15.2	G3	3000	197.3	15.2	G3	4636	197.3	23.5
7	95-0128	06/13/95	10:35	I08	173	67	6	Au	G3	2800	197.3	14.2	G3	2800	197.3	14.2	G3	3859	197.3	19.6
7	95-0139	06/15/95	10:48	B10	180	119	6	Au	G3	2300	207.9	11.1	G3	2300	207.9	11.1	G3	3440	207.9	16.5
8	95-0150	06/26/95	07:20	K11	48	51	6	Au	G6	3300	198.7	16.6	G6	3200	198.7	16.1	G6	4576	198.7	23.0
8	95-0146	06/21/95	10:00	7	4	61	6	BG-02	G8	3200	211.2	15.2	G8	3200	211.2	15.2	G8	5263	211.2	24.9
8	95-0147	06/21/95	10:00	76	77	54	6	BG-02	G8	3500	211.2	16.6	G8	3500	211.2	16.6	G8	5386	211.2	25.5
8	95-0144	06/20/95	10:00	1	8	1	6	BG-03	G8	3200	215.0	14.9	G8	3100	215.0	14.4	G8	3954	215.0	18.4
8	95-0145	06/20/95	10:30	19	14	84	6	BG-03	G8	3100	215.0	14.4	G8	2900	215.0	13.5	G8	3181	215.0	14.8
8	95-0148	06/22/95	10:00	25	27	44	6	BG-04	G8	3500	212.8	16.4	G8	3400	212.8	16.0	G8	5110	212.8	24.0
8	95-0149	06/22/95	10:30	90	88	99	6	BG-04	G8	3400	212.8	16.0	G8	3300	212.8	15.5	G8	4875	212.8	22.9
6	95-0099	05/08/95	10:20	S21	160	169	6	Bldg 003	G3	3300	214.6	15.4	G3	3100	214.6	14.4	G3	4466	214.6	20.8
6	95-0102	05/08/95	12:20	T22	118	45	7	Bldg 003	G3	3300	214.6	15.4	G3	3200	214.6	14.9	G3	4871	214.6	22.7
6	95-0110	05/10/95	10:45	P17	88	190	5	Bldg 005	G3	3200	196.5	16.3	G3	2900	196.5	14.8	G3	4336	196.5	22.1
6	95-0113	05/11/95	08:35	O18	58	3	4	Bldg 005	G3	3100	200.9	15.4	G3	3000	200.9	14.9	G3	4454	200.9	22.2
4	95-0047	03/28/95	09:40	K09	27	65	6	Bldg 009	G3	3500	201.0	17.4	G3	3400	201.0	16.9	G3	4124	201.0	20.5
4	95-0048	03/28/95	10:30	I08	155	152	6	Bldg 009	G3	2800	201.0	13.9	G3	2700	201.0	13.4	G3	3952	201.0	19.7
4	95-0062	03/30/95	13:20	L17	196	23	6	Bldg 011	G3	2900	192.6	15.1	G3	2700	192.6	14.0	G3	4176	192.6	21.7
4	95-0063	03/30/95	13:00	M16	30	143	6	Bldg 011	G3	2700	192.6	14.0	G3	2700	192.6	14.0	G3	4584	192.6	23.8
6	95-0109	05/10/95	09:50	Q14	87	146	6	Bldg 012	G3	3900	196.5	19.8	G3	3400	196.5	17.3	G3	4671	196.5	23.8
6	95-0114	05/11/95	10:10	P13	101	42	5	Bldg 019	G3	3100	200.9	15.4	G3	2800	200.9	13.9	G3	4194	200.9	20.9
6	95-0116	05/11/95	12:15	P12	89	179	6	Bldg 019	G3	3100	200.9	15.4	G3	3000	200.9	14.9	G3	4110	200.9	20.5
4	95-0053	03/29/95	08:35	J10	56	80	4	Bldg 020	G3	3400	195.8	17.4	G3	3400	195.8	17.4	G3	3725	195.8	19.0
4	95-0054	03/29/95	09:10	J11	156	120	6	Bldg 020	G3	2900	195.8	14.8	G3	2800	195.8	14.3	G3	4111	195.8	21.0
5	95-0082	04/20/95	10:30	P19	21	143	6	Bldg 023	G3	3000	202.0	14.9	G3	2800	202.0	13.9	G3	4292	202.0	21.2
6	95-0104	05/09/95	09:50	Q19	92	133	6	Bldg 023	G3	3400	204.1	16.7	G3	3300	204.1	16.2	G3	4515	204.1	22.1
6	95-0105	05/09/95	10:35	Q17	171	85	4	Bldg 024	G3	4000	204.1	19.6	G3	4200	204.1	20.6	G3	3247	204.1	15.9
6	95-0106	05/09/95	12:15	Q16	155	64	6	Bldg 024	G3	8500	204.1	41.6	G3	4000	204.1	19.6	G3	4993	204.1	24.5
6	95-0107	05/09/95	13:00	Q15	75	140	6	Bldg 028	G3	4200	204.1	20.6	G3	3900	204.1	19.1	G3	4298	204.1	21.1
6	95-0108	05/09/95	13:40	R15	34	94	4	Bldg 028	G3	4900	204.1	24.0	G3	4800	204.1	23.5	G3	4552	204.1	22.3

Table C-2. Soil Sample Locations and Gamma Exposure Rate - Sorted by Sample Type (Region)

Batch No.	Sample ID (A4CM-)	Date	Time	Survey Block	Location Coordinates North	Location Coordinates East	Depth (In.)	Sample Type (Region)	Surface Exposure Rate Det.	Surface cpm	Surface Conv. Factor	Surface Dose Rate (µR/hr)	Sample Exposure Rate Det.	Sample Cpm	Sample Conv. Factor	Sample Dose Rate (µR/hr)	In-soil Exposure Rate Det.	In-soil cpm	In-soil Conv. Factor	In-soil Dose Rate (µR/hr)
4	95-0066	03/31/95	10:00	P24	9	182	8	Bldg 029	G3	2800	193.3	14.5	G3	2800	193.3	14.5	G3	4517	193.3	23.4
4	95-0067	03/31/95	10:35	P24	59	123	6	Bldg 029	G3	2800	193.3	14.5	G3	2900	193.3	15.0	G3	4698	193.3	24.3
4	95-0055	03/29/95	12:15	H12	148	118	6	Bldg 055	G3	2800	195.8	14.3	G3	2700	195.8	13.8	G3	4006	195.8	20.5
4	95-0057	03/29/95	13:10	I11	116	179	6	Bldg 055	G3	2800	195.8	14.3	G3	2800	195.8	14.3	G3	3783	195.8	19.3
6	95-0115	05/11/95	10:30	P12	68	177	6	Bldg 059	G3	2800	200.9	13.9	G3	2800	200.9	13.9	G3	4293	200.9	21.4
6	95-0117	05/11/95	12:50	P12	80	110	6	Bldg 059	G3	3200	200.9	15.9	G3	2900	200.9	14.4	G3	4384	200.9	21.8
4	95-0068	03/31/95	13:10	R24	118	159	6	Bldg 064	G3	2900	193.3	15.0	G3	2900	193.3	15.0	G3	4507	193.3	23.3
4	95-0069	03/31/95	12:40	Q24	140	40	6	Bldg 064	G3	2700	193.3	14.0	G3	2500	193.3	12.9	G3	4081	193.3	21.1
4	95-0064	03/31/95	08:15	Q20	111	182	6	Bldg 093	G3	2900	193.3	15.0	G3	2900	193.3	15.0	G3	4673	193.3	24.2
4	95-0065	03/31/95	08:45	R21	125	1	7	Bldg 093	G3	3500	193.3	18.1	G3	3200	193.3	16.6	G3	5034	193.3	26.0
4	95-0049	03/28/95	11:00	K10	163	175	3	Bldg 100	G3	3000	201.0	14.9	G3	2800	201.0	13.9	G3	4042	201.0	20.1
4	95-0052	03/29/95	08:15	K11	109	36	6	Bldg 100	G3	3000	195.8	15.3	G3	2900	195.8	14.8	G3	4441	195.8	22.7
4	95-0060	03/30/95	10:00	H12	40	167	6	Bldg 363	G3	2600	192.6	13.5	G3	2500	192.6	13.0	G3	4281	192.6	22.2
4	95-0061	03/30/95	10:30	H12	0	70	6	Bldg 363	G3	2600	192.6	13.5	G3	2600	192.6	13.5	G3	4175	192.6	21.7
8	95-0152	06/26/95	09:40	H12	0	70	6	363-2Repeat	G6	2900	198.7	14.6	G6	3000	198.7	15.1	G6	4323	198.7	21.8
4	95-0058	03/29/95	13:45	I13	33	72	6	Bldg 373	G3	2700	195.8	13.8	G3	2600	195.8	13.3	G3	4070	195.8	20.8
4	95-0059	03/30/95	08:40	I13	51	109	6	Bldg 373	G3	2700	192.6	14.0	G3	2700	192.6	14.0	G3	4266	192.6	22.1
6	95-0097	05/08/95	08:30	T19	50	112	6	Bldg SRE	G3	3200	214.6	14.9	G3	3000	214.6	14.0	G3	4711	214.6	22.0
6	95-0098	05/08/95	09:15	T19	80	80	4	Bldg SRE	G3	3400	214.6	15.8	G3	3500	214.6	16.3	G3	4011	214.6	18.7
1	94-0001	11/17/94	13:45	I03	182	18	6	Burn pit area	G2	3350	226.8	14.8	G2	3300	226.8	14.6	G2	5080	226.8	22.4
1	94-0002	11/17/94	14:25	I03	155	114	6	Burn pit area	G2	3250	226.8	14.3	G2	3100	226.8	13.7	G2	4790	226.8	21.1
1	94-0003	11/18/94	10:00	I03	191	86	6	Burn pit area	G2	3250	221.0	14.7	G2	3200	221.0	14.5	G2	3200	221.0	14.5
1	94-0005	11/18/94	13:35	I03	106	102	6	Burn pit area	G2	3250	221.0	14.7	G2	3150	221.0	14.3	G2	4675	221.0	21.2
1	94-0006	11/18/94	14:25	I04	133	12	6	Burn pit area	G2	3125	221.0	14.1	G2	3300	221.0	14.9	G2	4650	221.0	21.0
1	94-0007	11/21/94	09:20	I04	110	140	6	Burn pit area	G2	3350	232.0	14.4	G2	3450	232.0	14.9	G2	5187	232.0	22.4
1	94-0008	11/21/94	10:09	I04	60	130	6	Burn pit area	G2	3300	232.0	14.2	G2	3300	232.0	14.2	G2	5103	232.0	22.0
1	94-0009	11/21/94	12:45	I05	44	41	6	Burn pit area	G2	3150	232.0	13.6	G2	3150	232.0	13.6	G2	5019	232.0	21.6
1	94-0010	11/22/94	09:30	I05	25	126	6	Burn pit area	G2	3050	222.3	13.7	G2	3300	222.3	14.8	G2	5068	222.3	22.8
2	95-0001A	02/15/95	08:15	I06	17	25	8	Burn pit area	G3	2500	209.9	11.9	G3	2600	209.9	12.4	G3	3966	209.9	18.9
2	95-0002A	02/15/95	09:00	I06	82	155	8	Burn pit area	G3	2900	209.9	13.8	G3	2500	209.9	11.9	G3	4237	209.9	20.2
2	95-0003A	02/15/95	09:50	I06	126	175	6	Burn pit area	G3	2900	209.9	13.8	G3	2900	209.9	13.8	G3	3911	209.9	18.6
2	95-0004A	02/16/95	08:45	I06	170	200	6	Burn pit area	G3	2800	193.8	14.4	G3	3000	193.8	15.5	G3	4218	193.8	21.8
2	95-0005A	02/16/95	09:30	J03	27	122	6	Burn pit area	G3	3100	193.8	16.0	G3	2900	193.8	15.0	G3	4493	193.8	23.2
2	95-0006A	02/16/95	10:05	J03	65	155	6	Burn pit area	G3	3000	193.8	15.5	G3	2900	193.8	15.0	G3	4208	193.8	21.7
2	95-0007A	02/16/95	12:50	J03	25	40	6	Burn pit area	G3	2700	193.8	13.9	G3	2700	193.8	13.9	G3	4340	193.8	22.4

Table C-2. Soil Sample Locations and Gamma Exposure Rate - Sorted by Sample Type (Region)

Batch No.	Sample ID (A4CM-)	Date	Time	Survey Block	Location Coordinates North	Location Coordinates East	Depth (in.)	Sample Type (Region)	Surface Exposure Rate Det.	Surface Exposure Rate cpm	Surface Exposure Rate Conv. Factor	Surface Exposure Rate Dose Rate (µR/hr)	Sample Exposure Rate Det.	Sample Exposure Rate Cpm	Sample Exposure Rate Conv. Factor	Sample Exposure Rate Dose Rate (µR/hr)	In-soil Exposure Rate Det.	In-soil Exposure Rate cpm	In-soil Exposure Rate Conv. Factor	In-soil Exposure Rate Dose Rate (µR/hr)
2	95-0008A	02/16/95	13:30	J03	73	55	6	Burn pit area	G3	2900	193.8	15.0	G3	2800	193.8	14.4	G3	4602	193.8	23.7
7	95-0129	06/13/95	12:30	J16	99	41	6	Dr	G3	3000	197.3	15.2	G3	2700	197.3	13.7	G3	4372	197.3	22.2
7	95-0137	06/15/95	09:00	Q29	113	94	6	Dr	G3	3200	207.9	15.4	G3	3100	207.9	14.9	G3	5012	207.9	24.1
5	95-0075	04/19/95	10:20	Q14	85	60	6	Drain-010	G3	3400	197.4	17.2	G3	3300	197.4	16.7	G3	4227	197.4	21.4
5	95-0076	04/19/95	11:10	Q13	35	120	6	Drain-010	G3	3400	197.4	17.2	G3	3200	197.4	16.2	G3	3938	197.4	19.9
3	95-0043	03/09/95	09:15	K19	125	10	5	Drain-17 St.	G3	3100	189.2	16.4	G3	2900	189.2	15.3	G3	4327	189.2	22.9
3	95-0044	03/09/95	09:45	K19	150	80	6	Drain-17 St.	G3	3100	189.2	16.4	G3	3000	189.2	15.9	G3	4146	189.2	21.9
3	95-0045	03/09/95	12:20	L19	27	36	6	Drain-17 St.	G3	2900	189.2	15.3	G3	2800	189.2	14.8	G3	3991	189.2	21.1
3	95-0046	03/09/95	12:20	L19	27	36	30	Drain-17 St.	G3	2900	189.2	15.3	G3	2800	189.2	14.8	G3	4801	189.2	25.4
5	95-0072	04/21/95	12:30	M18	60	200	5	Drain-17 St.	G3	2700	191.7	14.1	G3	2300	191.7	12.0	G3	3232	191.7	16.9
5	95-0073	04/21/95	12:30	M18	60	200	30	Drain-17 St.	G3	2700	191.7	14.1	G3	2500	191.7	13.0	G3	3768	191.7	19.7
5	95-0074	04/19/95	08:10	L18	50	190	6	Drain-17 St.	G3	2800	197.4	14.2	G3	2900	197.4	14.7	G3	4278	197.4	21.7
5	95-0070	04/18/95	12:45	K17	10	5	6	Drain-20 St.	G3	2800	186.4	15.0	G3	2600	186.4	13.9	G3	3653	186.4	19.6
5	95-0071	04/18/95	13:10	K17	50	35	6	Drain-20 St.	G3	2400	186.4	12.9	G3	2000	186.4	10.7	G3	3404	186.4	18.3
3	95-0029	03/06/95	13:10	J15	100	0	6	Drain-G St:W	G3	2800	190.0	14.7	G3	2600	190.0	13.7	G3	3778	190.0	19.9
3	95-0030	03/06/95	13:40	J16	35	0	6	Drain-G St:W	G3	2600	190.0	13.7	G3	2500	190.0	13.2	G3	3393	190.0	17.9
2	95-0014	02/22/95	13:40	I14	20	19	6	Drain-J St.	G3	3200	198.6	16.1	G3	3200	198.6	16.1	G3	4184	198.6	21.1
2	95-0016A	02/23/95	08:35	H14	190	50	6	Drain-J St.	G3	2900	202.9	14.3	G3	2900	202.9	14.3	G3	4898	202.9	24.1
2	95-0017A	02/23/95	09:30	H15	185	100	6	Drain-J St.	G3	3100	202.9	15.3	G3	2900	202.9	14.3	G3	4709	202.9	23.2
2	95-0020A	02/23/95	10:15	I15	20	130	6	Drain-J St.	G3	3100	202.9	15.3	G3	2900	202.9	14.3	G3	4361	202.9	21.5
2	95-0023A	02/23/95	13:30	G15	150	125	6	Drain-L St.	G3	3100	202.9	15.3	G3	2900	202.9	14.3	G3	4481	202.9	22.1
3	95-0024	03/06/95	08:30	G13	125	175	6	Drain-L St.	G3	2800	190.0	14.7	G3	2700	190.0	14.2	G3	5340	190.0	28.1
3	95-0027	03/06/95	09:00	G14	150	100	6	Drain-L St.	G3	2800	190.0	14.7	G3	2800	190.0	14.7	G3	4199	190.0	22.1
3	95-0028	03/06/95	09:30	G15	125	50	6	Drain-L St.	G3	2900	190.0	15.3	G3	2700	190.0	14.2	G3	4734	190.0	24.9
5	95-0087	04/21/95	08:00	N09	35	170	5	Drain-056 I'fill	G3	3500	191.7	18.3	G3	2900	191.7	15.1	G3	3148	191.7	16.4
5	95-0088	04/21/95	08:00	N09	170	155	5	Drain-056 I'fill	G3	3500	191.7	18.3	G3	3400	191.7	17.7	G3	4376	191.7	22.8
3	95-0037	03/08/95	08:00	W25	62	126	6	Drain-OCY:N	G3	2900	189.9	15.3	G3	2800	189.9	14.7	G3	4275	189.9	22.5
3	95-0038	03/08/95	09:30	W26	170	100	6	Drain-OCY:N	G3	2800	189.9	14.7	G3	2800	189.9	14.7	G3	4612	189.9	24.3
3	95-0039	03/08/95	10:35	X27	20	101	6	Drain-OCY:N	G3	2800	189.9	14.7	G3	2700	189.9	14.2	G3	4631	189.9	24.4
3	95-0040	03/08/95	12:35	X28	35	0	6	Drain-OCY:N	G3	2300	189.9	12.1	G3	2300	189.9	12.1	G3	3805	189.9	20.0
2	95-0009	02/22/95	08:30	T29	180	83	6	Drain-OCY:SE	G3	3800	198.6	19.1	G3	3700	198.6	18.6	G3	6261	198.6	31.5
2	95-0010	02/22/95	09:43	T29	103	108	6	Drain-OCY:SE	G3	3600	198.6	18.1	G3	3500	198.6	17.6	G3	4794	198.6	24.1
2	95-0013	02/22/95	10:20	T29	0	136	6	Drain-OCY:SE	G3	3500	198.6	17.6	G3	3200	198.6	16.1	G3	4627	198.6	23.3
3	95-0031	03/06/95	08:15	T27	100	50	6	Drain-OCY:W	G3	2500	196.5	12.7	G3	2500	196.5	12.7	G3	3390	196.5	17.3
3	95-0032	03/07/95	09:00	S27	150	90	6	Drain-OCY:W	G3	2700	196.5	13.7	G3	2500	196.5	12.7	G3	3893	196.5	19.8

Table C-2. Soil Sample Locations and Gamma Exposure Rate - Sorted by Sample Type (Region)

Batch No.	Sample ID (A4CM-)	Date	Time	Survey Block	Location Coordinates North	Location Coordinates East	Depth (in.)	Sample Type (Region)	Surface Exposure Rate Det.	Surface cpm	Surface Conv. Factor	Surface Dose Rate (µR/hr)	Sample Exposure Rate Det.	Sample Cpm	Sample Conv. Factor	Sample Dose Rate (µR/hr)	In-soil Exposure Rate Det.	In-soil cpm	In-soil Conv. Factor	In-soil Dose Rate (µR/hr)
3	95-0033	03/07/95	10:05	S27	5	150	6	Drain-OCY:W	G3	2900	196.5	14.8	G3	2900	196.5	14.8	G3	4120	196.5	21.0
3	95-0034	03/07/95	12:30	S28	20	125	4	Drain-OCY:W	G3	3000	196.5	15.3	G3	2900	196.5	14.8	G3	3362	196.5	17.1
3	95-0035	03/07/95	13:00	S29	70	75	6	Drain-OCY:W	G3	3000	196.5	15.3	G3	2600	196.5	13.2	G3	4125	196.5	21.0
3	95-0041	03/08/95	13:20	V23	160	180	4	Drain-SRE pond	G3	3200	189.9	16.9	G3	3100	189.9	16.3	G3	3100	189.9	16.3
3	95-0042	03/09/95	08:00	W24	65	75	6	Drain-SRE pond	G3	3200	189.2	16.9	G3	3100	189.2	16.4	G3	4092	189.2	21.6
1	94-0011	11/22/94	10:10	I05	71	125	36	Former pit	G2	3150	222.3	14.2	G2	3200	222.3	14.4	G2	5273	222.3	23.7
1	94-0013	11/22/94	13:25	I05	81	94	36	Former pit	G2	3150	222.3	14.2	G2	3200	222.3	14.4	G2	5281	222.3	23.8
1	94-0014	11/23/94	13:30	I05	56	159	36	Former pit	G3	3000	215.0	14.0	G3	2900	215.0	13.5	G3	5000	215.0	23.3
1	94-0015	11/28/94	10:30	I05	59	126	36	Former pit	G3	3000	214.9	14.0	G3	3000	214.9	14.0	G3	4961	214.9	23.1
1	94-0016	11/23/94	12:30	I05	53	181	36	Former pit	G3	3000	215.0	14.0	G3	2950	215.0	13.7	G3	5292	215.0	24.6
1	94-0017	11/28/94	13:00	I05	73	125	36	Former pit	G3	2950	214.9	13.7	G3	2950	214.9	13.7	G3	4770	214.9	22.2
1	94-0018	11/28/94	13:50	I05	75	84	36	Former pit	G3	2900	214.9	13.5	G3	2850	214.9	13.3	G3	4789	214.9	22.3
1	94-0019	11/29/94	13:00	I05	53	163	36	Former pit	G3	3050	214.9	14.2	G3	2950	214.9	13.7	G3	4879	214.9	22.7
1	94-0020	11/29/94	13:45	I05	81	52	36	Former pit	G3	2950	214.9	13.7	G3	3000	214.9	14.0	G3	4913	214.9	22.9
1	94-0021	11/30/94	08:15	I05	62	164	36	Former pit	G3	2900	210.5	13.8	G3	2800	210.5	13.3	G3	4821	210.5	22.9
1	94-0022	11/30/94	09:00	I05	45	177	30	Former pit	G3	2900	210.5	13.8	G3	2900	210.5	13.8	G3	4681	210.5	22.2
6	95-0111	05/10/95	12:30	P22	27	178	3	Hot spot 006	G3	5400	196.5	27.5	G3	3100	196.5	15.8	G3	4830	196.5	24.6
6	95-0120	05/19/95	10:10	M22	144	188	6	Hot spot-M22	G3	3400	194.6	17.5	G3	3200	194.6	16.4	G3	4446	194.6	22.8
6	95-0119	05/19/95	08:45	E12	120	200	6	Hot spot-RSL20	G3	5000	194.6	25.7	G3	4300	194.6	22.1	G3	7209	194.6	37.0
6	95-0118	05/19/95	08:10	H08	110	28	6	Hot spot-RSL51	G3	3400	194.6	17.5	G3	3000	194.6	15.4	G3	5046	194.6	25.9
6	95-0112	05/10/95	14:15	I07	123	163	30	Hot spot-RSL6	G3	2900	196.5	14.8	G3	2700	196.5	13.7	G3	4429	196.5	22.5
8	95-0155	06/27/95	07:10	B14	0	200	6	HS-0005	G6	4400	214.1	20.6	G6	4400	214.1	20.6	G6	7138	214.1	33.3
8	95-0154	06/26/95	12:35	R14	50	200	6	HS-0010	G6	4500	198.7	22.6	G6	4200	198.7	21.1	G6	4586	198.7	23.1
8	95-0153	06/26/95	NR	V23	75	125	6	HS-0011	G6	3300	198.7	16.6	G6	3500	198.7	17.6	G6	5347	198.7	26.9
8	95-0156	06/27/95	08:00	G09	92	65	6	HS-0012	G6	3300	214.1	15.4	G6	2900	214.1	13.5	G6	4465	214.1	20.9
8	95-0157	06/27/95	09:35	M20	105	55	6	HS-0013	G6	3600	214.1	16.8	G6	3300	214.1	15.4	G6	4341	214.1	20.3
8	95-0158	06/27/95	10:30	N21	10	10	6	HS-0014	G6	3400	214.1	15.9	G6	3300	214.1	15.4	G6	4640	214.1	21.7
8	95-0162	06/28/95	07:30	S28	110	110	6	HS-0015	G6	2500	209.9	11.9	G6	2500	209.9	11.9	G6	4725	209.9	22.5
5	95-0083	04/20/95	12:40	J08	2	110	60	Leachf'd-009	G3	2800	202.0	13.9	G3	2900	202.0	14.4	G3	3900	202.0	19.3
5	95-0084	04/20/95	12:40	K08	15	110	60	Leachf'd-009	G3	2800	202.0	13.9	G3	3000	202.0	14.9	G3	3500	202.0	17.3
2	95-0018	02/20/95	12:30	R24	89	175	30	Leachf'd-064	G3	3500	200.0	17.5	G3	3300	200.0	16.5	G3	4674	200.0	23.4
2	95-0019	02/20/95	13:05	R24	91	184	30	Leachf'd-064	G3	3200	200.0	16.0	G3	2900	200.0	14.5	G3	4720	200.0	23.6
5	95-0077	04/19/95	12:35	Q20	150	117	72	Leachf'd-093	G3	3200	197.4	16.2	G3	3000	197.4	15.2				
5	95-0078	04/19/95	12:35	Q20	150	122	72	Leachf'd-093	G3	3200	197.4	16.2	G3	2900	197.4	14.7				
2	95-0011	02/21/95	08:30	I13	45	144	42	Leachf'd-373	G3	2800	197.9	14.1	G3	2700	197.9	13.6	G3	4865	197.9	24.6

Table C-2. Soil Sample Locations and Gamma Exposure Rate - Sorted by Sample Type (Region)

Batch No.	Sample ID (A4CM-)	Date	Time	Survey Block	Location Coordinates North	Location Coordinates East	Depth (in.)	Sample Type (Region)	Surface Exposure Rate Det.	Surface Exposure Rate cpm	Surface Exposure Rate Conv. Factor	Surface Exposure Rate Dose Rate (µR/hr)	Sample Exposure Rate Det.	Sample Exposure Rate Cpm	Sample Exposure Rate Conv. Factor	Sample Exposure Rate Dose Rate (µR/hr)	In-soil Exposure Rate Det.	In-soil Exposure Rate cpm	In-soil Exposure Rate Conv. Factor	In-soil Exposure Rate Dose Rate (µR/hr)
2	95-0012	02/21/95	09:15	J13	59	142	38	Leachf'd-373	G3	2700	197.9	13.6	G3	2600	197.9	13.1	G3	4821	197.9	24.4
5	95-0079	04/20/95	08:15	U22	89	99	54	Leachf'd-SRE	G3	3000	202.0	14.9	G3	2900	202.0	14.4	G3	4800	202.0	23.8
5	95-0080	04/20/95	08:15	U22	104	106	54	Leachf'd-SRE	G3	3000	202.0	14.9	G3	2900	202.0	14.4	G3	4600	202.0	22.8
7	95-0132	06/14/95	07:20	D07	189	81	6	Mch	G3	2200	205.7	10.7	G3	2100	205.7	10.2	G3	2487	205.7	12.1
7	95-0133	06/14/95	07:50	E08	51	19	6	Mch	G3	2500	205.7	12.2	G3	2400	205.7	11.7	G3	3642	205.7	17.7
7	95-0134	06/14/95	08:35	E09	143	106	6	Mch	G3	2500	205.7	12.2	G3	2500	205.7	12.2	G3	3518	205.7	17.1
7	95-0135	06/14/95	10:35	D07	2	14	6	Mch	G3	2000	205.7	9.7	G3	1800	205.7	8.8	G3	2205	205.7	10.7
7	95-0138	06/15/95	10:20	C10	188	103	4	Mch	G3	2200	207.9	10.6	G3	2200	207.9	10.6	G3	3040	207.9	14.6
5	95-0093	04/24/95	12:35	U22	185	193	48	Pond sediment	G3	1900	200.4	9.5	G3	2400	200.4	12.0				
5	95-0096	04/24/95	13:00	V23	10	15	48	Pond sediment	G3	1800	200.4	9.0	G3	2400	200.4	12.0				
7	95-0140	06/19/95	08:00	O11	1	60	6	Rc	G3	3100	207.3	15.0	G3	3100	207.3	15.0	G3	4475	207.3	21.6
7	95-0141	06/19/95	08:40	V27	186	188	6	Rc	G3	3100	207.3	15.0	G3	3000	207.3	14.5	G3	4735	207.3	22.8
7	95-0142	06/19/95	10:00	P13	144	106	6	Rc	G8	3000	211.0	14.2	G8	2900	211.0	13.7	G8	4769	211.0	22.6
7	95-0143	06/19/95	12:10	J07	125	107	6	Rc	G8	3300	211.0	15.6	G8	3200	211.0	15.2	G8	4510	211.0	21.4
8	95-0151	06/26/95	08:15	K07	23	155	6	Rc	G6	3100	198.7	15.6	G6	3000	198.7	15.1	G6	3596	198.7	18.1
5	95-0089	04/24/95	12:35	U22	185	193		SRE pond - a	G3	1900	200.4	9.5	G3	2400	200.4	12.0				
5	95-0094	04/24/95	13:00	V23	10	15		SRE pond - a	G3	1800	200.4	9.0	G3	2400	200.4	12.0				
5	95-0090	04/24/95	12:35	U22	185	193		SRE pond - b	G3	1900	200.4	9.5	G3	2300	200.4	11.5				
5	95-0095	04/24/95	13:00	V23	10	15		SRE pond - b	G3	1800	200.4	9.0	G3	2400	200.4	12.0				
1	94-0012	11/22/94		Equipment rinseate sample - a									G2	2100	222.3	9.4				
1	94-0012	11/22/94		Equipment rinseate sample - b									G2	2300	222.3	10.3				
2	95-0021	02/23/95	12:45	Equipment rinseate sample - a									G3	2600	202.9	12.8				
2	95-0022	02/23/95	12:45	Equipment rinseate sample - b									G3	2600	202.9	12.8				
3	95-0025	03/06/95	10:30	Equipment rinseate sample - a									G3	2200	190.0	11.6				
3	95-0026	03/06/95	10:30	Equipment rinseate sample - b									G3	2200	190.0	11.6				
4	95-0050	03/28/95	14:30	Equipment rinseate sample - a									G3	2300	201.0	11.4				
4	95-0051	03/28/95	14:30	Equipment rinseate sample - b									G3	2400	201.0	11.9				
5	95-0085	04/20/95	14:40	Equipment rinseate sample - a									G3	2300	202.0	11.4				
5	95-0086	04/20/95	14:40	Equipment rinseate sample - b									G3	2300	202.0	11.4				
6	95-0100	05/08/95	14:45	Equipment rinseate sample - a									G3	2300	214.6	10.7				
6	95-0101	05/08/95	14:45	Equipment rinseate sample - b									G3	2300	214.6	10.7				
7	95-0130	06/13/95	14:00	Equipment rinseate sample - b					G3				G3	2300	197.3	11.7				
7	95-0131	06/13/95	14:00	Equipment rinseate sample - a					G3				G3	2300	197.3	11.7				
8	95-0160	06/27/95	12:15	Equipment rinseate sample - a									G6	2200	214.1	10.3				
8	95-0161	06/27/95	12:15	Equipment rinseate sample - b									G6	2200	214.1	10.3				

Table C-2. Soil Sample Locations and Gamma Exposure Rate - Sorted by Sample Type (Region)

Batch No.	Sample ID (A4CM-)	Date	Time	Location Survey Block	Location Coordinates North	Location Coordinates East	Depth (in.)	Sample Type (Region)	Surface Exposure Rate Det.	Surface Exposure Rate cpm	Surface Exposure Rate Conv. Factor	Surface Exposure Rate Dose Rate (µR/hr)	Sample Exposure Rate Det.	Sample Exposure Rate Cpm	Sample Exposure Rate Conv. Factor	Sample Exposure Rate Dose Rate (µR/hr)	In-soil Exposure Rate Det.	In-soil Exposure Rate cpm	In-soil Exposure Rate Conv. Factor	In-soil Exposure Rate Dose Rate (µR/hr)
5	95-0091	04/24/95	10:45	Field blank sample for SRE pond water samples - a									G3	2300	200.4	11.5				
5	95-0092	04/24/95	10:45	Field blank sample for SRE pond water samples - a									G3	2300	200.4	11.5				
1	94-0004	11/18/94	10:00	Field duplicate of A4CM-94-0003									G2	3250						
2	95-0015	02/22/95	13:40	Field duplicate of A4CM-95-0014									G3	3000	198.6	15.1				
3	95-0036	03/07/95	13:00	Field duplicate of A4CM-95-0035									G3	2600	196.5	13.2				
4	95-0056	03/29/95	12:15	Field duplicate of A4CM-95-0055									G3	2700	195.8	13.8				
5	95-0081	04/20/95	08:15	Field duplicate of A4CM-95-0080									G3	3000	202.0	14.9				
6	95-0103	05/08/95	12:20	Field duplicate of A4CM-95-0102									G3	3200	214.6	14.9				
7	95-0123	06/12/95	10:00	Field duplicate of A4CM-95-0122					G3				G3	2900	199.0	14.6				
8	95-0159	06/27/95	09:35	Field duplicate of A4CM-95-0157									G6	3300	214.1	15.4				

Table C-3. Soil Sample Locations and Gamma Exposure Rate - Sorted by Block ID

Batch No.	Sample ID (A4CM-)	Date	Time	Survey Block	Location Coordinates North	East	Depth (in.)	Sample Type (Region)	Surface Exposure Rate Det.	cpm	Conv. Factor	Dose Rate (µR/hr)	Sample Exposure Rate Det.	Cpm	Conv. Factor	Dose Rate (µR/hr)	In-soil Exposure Rate Det.	cpm	Conv. Factor	Dose Rate (µR/hr)
8	95-0144	06/20/95	10:00	1	8	1	6	BG-03	G8	3200	215.0	14.9	G8	3100	215.0	14.4	G8	3954	215.0	18.4
8	95-0146	06/21/95	10:00	7	4	61	6	BG-02	G8	3200	211.2	15.2	G8	3200	211.2	15.2	G8	5263	211.2	24.9
8	95-0145	06/20/95	10:30	19	14	84	6	BG-03	G8	3100	215.0	14.4	G8	2900	215.0	13.5	G8	3181	215.0	14.8
8	95-0148	06/22/95	10:00	25	27	44	6	BG-04	G8	3500	212.8	16.4	G8	3400	212.8	16.0	G8	5110	212.8	24.0
8	95-0147	06/21/95	10:00	76	77	54	6	BG-02	G8	3500	211.2	16.6	G8	3500	211.2	16.6	G8	5386	211.2	25.5
8	95-0149	06/22/95	10:30	90	88	99	6	BG-04	G8	3400	212.8	16.0	G8	3300	212.8	15.5	G8	4875	212.8	22.9
7	95-0139	06/15/95	10:48	B10	180	119	6	Au	G3	2300	207.9	11.1	G3	2300	207.9	11.1	G3	3440	207.9	16.5
8	95-0155	06/27/95	07:10	B14	0	200	6	HS-0005	G6	4400	214.1	20.6	G6	4400	214.1	20.6	G6	7138	214.1	33.3
7	95-0138	06/15/95	10:20	C10	188	103	4	Mch	G3	2200	207.9	10.6	G3	2200	207.9	10.6	G3	3040	207.9	14.6
7	95-0135	06/14/95	10:35	D07	2	14	6	Mch	G3	2000	205.7	9.7	G3	1800	205.7	8.8	G3	2205	205.7	10.7
7	95-0132	06/14/95	07:20	D07	189	81	6	Mch	G3	2200	205.7	10.7	G3	2100	205.7	10.2	G3	2487	205.7	12.1
7	95-0124	06/12/95	12:15	E04	30	75	6	Ad	G3	1900	199.0	9.5	G3	1800	199.0	9.0	G3	2337	199.0	11.7
7	95-0133	06/14/95	07:50	E08	51	19	6	Mch	G3	2500	205.7	12.2	G3	2400	205.7	11.7	G3	3642	205.7	17.7
7	95-0134	06/14/95	08:35	E09	143	106	6	Mch	G3	2500	205.7	12.2	G3	2500	205.7	12.2	G3	3518	205.7	17.1
6	95-0119	05/19/95	08:45	E12	120	200	6	Hot spot-RSL20	G3	5000	194.6	25.7	G3	4300	194.6	22.1	G3	7209	194.6	37.0
7	95-0122	06/12/95	10:00	F15	29	17	6	Ad	G3	3000	199.0	15.1	G3	2900	199.0	14.6	G3	4373	199.0	22.0
7	95-0121	06/12/95	08:15	G06	87	105	6	Ad	G3	2600	199.0	13.1	G3	2600	199.0	13.1	G3	3865	199.0	19.4
8	95-0156	06/27/95	08:00	G09	92	65	6	HS-0012	G6	3300	214.1	15.4	G6	2900	214.1	13.5	G6	4465	214.1	20.9
7	95-0136	06/15/95	08:20	G09	164	119	6	Ad	G3	2900	207.9	13.9	G3	2900	207.9	13.9	G3	4449	207.9	21.4
7	95-0125	06/12/95	13:00	G10	193	138	6	Ad	G3	2500	199.0	12.6	G3	2500	199.0	12.6	G3	3371	199.0	16.9
3	95-0024	03/06/95	08:30	G13	125	175	6	Drain-L St.	G3	2800	190.0	14.7	G3	2700	190.0	14.2	G3	5340	190.0	28.1
3	95-0027	03/06/95	09:00	G14	150	100	6	Drain-L St.	G3	2800	190.0	14.7	G3	2800	190.0	14.7	G3	4199	190.0	22.1
3	95-0028	03/06/95	09:30	G15	125	50	6	Drain-L St.	G3	2900	190.0	15.3	G3	2700	190.0	14.2	G3	4734	190.0	24.9
2	95-0023A	02/23/95	13:30	G15	150	125	6	Drain-L St.	G3	3100	202.9	15.3	G3	2900	202.9	14.3	G3	4481	202.9	22.1
6	95-0118	05/19/95	08:10	H08	110	28	6	Hot spot-RSL51	G3	3400	194.6	17.5	G3	3000	194.6	15.4	G3	5046	194.6	25.9
4	95-0061	03/30/95	10:30	H12	0	70	6	Bldg 363	G3	2600	192.6	13.5	G3	2600	192.6	13.5	G3	4175	192.6	21.7
8	95-0152	06/26/95	09:40	H12	0	70	6	363-2Repeat	G6	2900	198.7	14.6	G6	3000	198.7	15.1	G6	4323	198.7	21.8
4	95-0060	03/30/95	10:00	H12	40	167	6	Bldg 363	G3	2600	192.6	13.5	G3	2500	192.6	13.0	G3	4281	192.6	22.2
4	95-0055	03/29/95	12:15	H12	148	118	6	Bldg 055	G3	2800	195.8	14.3	G3	2700	195.8	13.8	G3	4006	195.8	20.5
2	95-0016A	02/23/95	08:35	H14	190	50	6	Drain-J St.	G3	2900	202.9	14.3	G3	2900	202.9	14.3	G3	4898	202.9	24.1
2	95-0017A	02/23/95	09:30	H15	185	100	6	Drain-J St.	G3	3100	202.9	15.3	G3	2900	202.9	14.3	G3	4709	202.9	23.2
1	94-0005	11/18/94	13:35	I03	106	102	6	Burn pit area	G2	3250	221.0	14.7	G2	3150	221.0	14.3	G2	4675	221.0	21.2
1	94-0002	11/17/94	14:25	I03	155	114	6	Burn pit area	G2	3250	226.8	14.3	G2	3100	226.8	13.7	G2	4790	226.8	21.1
1	94-0001	11/17/94	13:45	I03	182	18	6	Burn pit area	G2	3350	226.8	14.8	G2	3300	226.8	14.6	G2	5080	226.8	22.4

Table C-3. Soil Sample Locations and Gamma Exposure Rate - Sorted by Block ID

Batch No.	Sample ID (A4CM-)	Date	Time	Survey Block	Location Coordinates North	Location Coordinates East	Depth (in.)	Sample Type (Region)	Surface Exposure Rate Det.	Surface cpm	Surface Conv. Factor	Surface Dose Rate (µR/hr)	Sample Exposure Rate Det.	Sample Cpm	Sample Conv. Factor	Sample Dose Rate (µR/hr)	In-soil Exposure Rate Det.	In-soil cpm	In-soil Conv. Factor	In-soil Dose Rate (µR/hr)
1	94-0003	11/18/94	10:00	I03	191	86	6	Burn pit area	G2	3250	221.0	14.7	G2	3200	221.0	14.5	G2	3200	221.0	14.5
1	94-0008	11/21/94	10:09	I04	60	130	6	Burn pit area	G2	3300	232.0	14.2	G2	3300	232.0	14.2	G2	5103	232.0	22.0
1	94-0007	11/21/94	09:20	I04	110	140	6	Burn pit area	G2	3350	232.0	14.4	G2	3450	232.0	14.9	G2	5187	232.0	22.4
1	94-0006	11/18/94	14:25	I04	133	12	6	Burn pit area	G2	3125	221.0	14.1	G2	3300	221.0	14.9	G2	4650	221.0	21.0
1	94-0010	11/22/94	09:30	I05	25	126	6	Burn pit area	G2	3050	222.3	13.7	G2	3300	222.3	14.8	G2	5068	222.3	22.8
1	94-0009	11/21/94	12:45	I05	44	41	6	Burn pit area	G2	3150	232.0	13.6	G2	3150	232.0	13.6	G2	5019	232.0	21.6
1	94-0022	11/30/94	09:00	I05	45	177	30	Former pit	G3	2900	210.5	13.8	G3	2900	210.5	13.8	G3	4681	210.5	22.2
1	94-0019	11/29/94	13:00	I05	53	163	36	Former pit	G3	3050	214.9	14.2	G3	2950	214.9	13.7	G3	4879	214.9	22.7
1	94-0016	11/23/94	12:30	I05	53	181	36	Former pit	G3	3000	215.0	14.0	G3	2950	215.0	13.7	G3	5292	215.0	24.6
1	94-0014	11/23/94	13:30	I05	56	159	36	Former pit	G3	3000	215.0	14.0	G3	2900	215.0	13.5	G3	5000	215.0	23.3
1	94-0015	11/28/94	10:30	I05	59	126	36	Former pit	G3	3000	214.9	14.0	G3	3000	214.9	14.0	G3	4961	214.9	23.1
1	94-0021	11/30/94	08:15	I05	62	164	36	Former pit	G3	2900	210.5	13.8	G3	2800	210.5	13.3	G3	4821	210.5	22.9
1	94-0011	11/22/94	10:10	I05	71	125	36	Former pit	G2	3150	222.3	14.2	G2	3200	222.3	14.4	G2	5273	222.3	23.7
1	94-0017	11/28/94	13:00	I05	73	125	36	Former pit	G3	2950	214.9	13.7	G3	2950	214.9	13.7	G3	4770	214.9	22.2
1	94-0018	11/28/94	13:50	I05	75	84	36	Former pit	G3	2900	214.9	13.5	G3	2850	214.9	13.3	G3	4789	214.9	22.3
1	94-0020	11/29/94	13:45	I05	81	52	36	Former pit	G3	2950	214.9	13.7	G3	3000	214.9	14.0	G3	4913	214.9	22.9
1	94-0013	11/22/94	13:25	I05	81	94	36	Former pit	G2	3150	222.3	14.2	G2	3200	222.3	14.4	G2	5281	222.3	23.8
2	95-0001A	02/15/95	08:15	I06	17	25	8	Burn pit area	G3	2500	209.9	11.9	G3	2600	209.9	12.4	G3	3966	209.9	18.9
2	95-0002A	02/15/95	09:00	I06	82	155	8	Burn pit area	G3	2900	209.9	13.8	G3	2500	209.9	11.9	G3	4237	209.9	20.2
2	95-0003A	02/15/95	09:50	I06	126	175	6	Burn pit area	G3	2900	209.9	13.8	G3	2900	209.9	13.8	G3	3911	209.9	18.6
2	95-0004A	02/16/95	08:45	I06	170	200	6	Burn pit area	G3	2800	193.8	14.4	G3	3000	193.8	15.5	G3	4218	193.8	21.8
6	95-0112	05/10/95	14:15	I07	123	163	30	Hot spot-RSL6	G3	2900	196.5	14.8	G3	2700	196.5	13.7	G3	4429	196.5	22.5
4	95-0048	03/28/95	10:30	I08	155	152	6	Bldg 009	G3	2800	201.0	13.9	G3	2700	201.0	13.4	G3	3952	201.0	19.7
7	95-0128	06/13/95	10:35	I08	173	67	6	Au	G3	2800	197.3	14.2	G3	2800	197.3	14.2	G3	3859	197.3	19.6
4	95-0057	03/29/95	13:10	I11	116	179	6	Bldg 055	G3	2800	195.8	14.3	G3	2800	195.8	14.3	G3	3783	195.8	19.3
4	95-0058	03/29/95	13:45	I13	33	72	6	Bldg 373	G3	2700	195.8	13.8	G3	2600	195.8	13.3	G3	4070	195.8	20.8
2	95-0011	02/21/95	08:30	I13	45	144	42	Leachf'd-373	G3	2800	197.9	14.1	G3	2700	197.9	13.6	G3	4865	197.9	24.6
4	95-0059	03/30/95	08:40	I13	51	109	6	Bldg 373	G3	2700	192.6	14.0	G3	2700	192.6	14.0	G3	4266	192.6	22.1
2	95-0014	02/22/95	13:40	I14	20	19	6	Drain-J St.	G3	3200	198.6	16.1	G3	3200	198.6	16.1	G3	4184	198.6	21.1
2	95-0020A	02/23/95	10:15	I15	20	130	6	Drain-J St.	G3	3100	202.9	15.3	G3	2900	202.9	14.3	G3	4361	202.9	21.5
2	95-0007A	02/16/95	12:50	J03	25	40	6	Burn pit area	G3	2700	193.8	13.9	G3	2700	193.8	13.9	G3	4340	193.8	22.4
2	95-0005A	02/16/95	09:30	J03	27	122	6	Burn pit area	G3	3100	193.8	16.0	G3	2900	193.8	15.0	G3	4493	193.8	23.2
2	95-0006A	02/16/95	10:05	J03	65	155	6	Burn pit area	G3	3000	193.8	15.5	G3	2900	193.8	15.0	G3	4208	193.8	21.7
2	95-0008A	02/16/95	13:30	J03	73	55	6	Burn pit area	G3	2900	193.8	15.0	G3	2800	193.8	14.4	G3	4602	193.8	23.7

Table C-3. Soil Sample Locations and Gamma Exposure Rate - Sorted by Block ID

Batch No.	Sample ID (A4CM-)	Date	Time	Survey Block	Location Coordinates North	Location Coordinates East	Depth (in.)	Sample Type (Region)	Surface Exposure Rate Det.	Surface cpm	Surface Conv. Factor	Surface Dose Rate (µR/hr)	Sample Exposure Rate Det.	Sample Cpm	Sample Conv. Factor	Sample Dose Rate (µR/hr)	In-soil Exposure Rate Det.	In-soil cpm	In-soil Conv. Factor	In-soil Dose Rate (µR/hr)
7	95-0143	06/19/95	12:10	J07	125	107	6	Rc	G8	3300	211.0	15.6	G8	3200	211.0	15.2	G8	4510	211.0	21.4
5	95-0083	04/20/95	12:40	J08	2	110	60	Leachf'd-009	G3	2800	202.0	13.9	G3	2900	202.0	14.4	G3	3900	202.0	19.3
4	95-0053	03/29/95	08:35	J10	56	80	4	Bldg 020	G3	3400	195.8	17.4	G3	3400	195.8	17.4	G3	3725	195.8	19.0
4	95-0054	03/29/95	09:10	J11	156	120	6	Bldg 020	G3	2900	195.8	14.8	G3	2800	195.8	14.3	G3	4111	195.8	21.0
2	95-0012	02/21/95	09:15	J13	59	142	38	Leachf'd-373	G3	2700	197.9	13.6	G3	2600	197.9	13.1	G3	4821	197.9	24.4
3	95-0029	03/06/95	13:10	J15	100	0	6	Drain-G St:W	G3	2800	190.0	14.7	G3	2600	190.0	13.7	G3	3778	190.0	19.9
3	95-0030	03/06/95	13:40	J16	35	0	6	Drain-G St:W	G3	2600	190.0	13.7	G3	2500	190.0	13.2	G3	3393	190.0	17.9
7	95-0129	06/13/95	12:30	J16	99	41	6	Dr	G3	3000	197.3	15.2	G3	2700	197.3	13.7	G3	4372	197.3	22.2
8	95-0151	06/26/95	08:15	K07	23	155	6	Rc	G6	3100	198.7	15.6	G6	3000	198.7	15.1	G6	3596	198.7	18.1
5	95-0084	04/20/95	12:40	K08	15	110	60	Leachf'd-009	G3	2800	202.0	13.9	G3	3000	202.0	14.9	G3	3500	202.0	17.3
4	95-0047	03/28/95	09:40	K09	27	65	6	Bldg 009	G3	3500	201.0	17.4	G3	3400	201.0	16.9	G3	4124	201.0	20.5
4	95-0049	03/28/95	11:00	K10	163	175	3	Bldg 100	G3	3000	201.0	14.9	G3	2800	201.0	13.9	G3	4042	201.0	20.1
8	95-0150	06/26/95	07:20	K11	48	51	6	Au	G6	3300	198.7	16.6	G6	3200	198.7	16.1	G6	4576	198.7	23.0
4	95-0052	03/29/95	08:15	K11	109	36	6	Bldg 100	G3	3000	195.8	15.3	G3	2900	195.8	14.8	G3	4441	195.8	22.7
5	95-0070	04/18/95	12:45	K17	10	5	6	Drain-20 St.	G3	2800	186.4	15.0	G3	2600	186.4	13.9	G3	3653	186.4	19.6
5	95-0071	04/18/95	13:10	K17	50	35	6	Drain-20 St.	G3	2400	186.4	12.9	G3	2000	186.4	10.7	G3	3404	186.4	18.3
3	95-0043	03/09/95	09:15	K19	125	10	5	Drain-17 St.	G3	3100	189.2	16.4	G3	2900	189.2	15.3	G3	4327	189.2	22.9
3	95-0044	03/09/95	09:45	K19	150	80	6	Drain-17 St.	G3	3100	189.2	16.4	G3	3000	189.2	15.9	G3	4146	189.2	21.9
4	95-0062	03/30/95	13:20	L17	196	23	6	Bldg 011	G3	2900	192.6	15.1	G3	2700	192.6	14.0	G3	4176	192.6	21.7
5	95-0074	04/19/95	08:10	L18	50	190	6	Drain-17 St.	G3	2800	197.4	14.2	G3	2900	197.4	14.7	G3	4278	197.4	21.7
3	95-0045	03/09/95	12:20	L19	27	36	6	Drain-17 St.	G3	2900	189.2	15.3	G3	2800	189.2	14.8	G3	3991	189.2	21.1
3	95-0046	03/09/95	12:20	L19	27	36	30	Drain-17 St.	G3	2900	189.2	15.3	G3	2800	189.2	14.8	G3	4801	189.2	25.4
4	95-0063	03/30/95	13:00	M16	30	143	6	Bldg 011	G3	2700	192.6	14.0	G3	2700	192.6	14.0	G3	4584	192.6	23.8
5	95-0072	04/21/95	12:30	M18	60	200	5	Drain-17 St.	G3	2700	191.7	14.1	G3	2300	191.7	12.0	G3	3232	191.7	16.9
5	95-0073	04/21/95	12:30	M18	60	200	30	Drain-17 St.	G3	2700	191.7	14.1	G3	2500	191.7	13.0	G3	3768	191.7	19.7
8	95-0157	06/27/95	09:35	M20	105	55	6	HS-0013	G6	3600	214.1	16.8	G6	3300	214.1	15.4	G6	4341	214.1	20.3
6	95-0120	05/19/95	10:10	M22	144	188	6	Hot spot-M22	G3	3400	194.6	17.5	G3	3200	194.6	16.4	G3	4446	194.6	22.8
5	95-0087	04/21/95	08:00	N09	35	170	5	Drain-056 I'fill	G3	3500	191.7	18.3	G3	2900	191.7	15.1	G3	3148	191.7	16.4
5	95-0088	04/21/95	08:00	N09	170	155	5	Drain-056 I'fill	G3	3500	191.7	18.3	G3	3400	191.7	17.7	G3	4376	191.7	22.8
8	95-0158	06/27/95	10:30	N21	10	10	6	HS-0014	G6	3400	214.1	15.9	G6	3300	214.1	15.4	G6	4640	214.1	21.7
7	95-0140	06/19/95	08:00	O11	1	60	6	Rc	G3	3100	207.3	15.0	G3	3100	207.3	15.0	G3	4475	207.3	21.6
6	95-0113	05/11/95	08:35	O18	58	3	4	Bldg 005	G3	3100	200.9	15.4	G3	3000	200.9	14.9	G3	4454	200.9	22.2
7	95-0127	06/13/95	09:45	O27	32	22	6	Au	G3	3000	197.3	15.2	G3	3000	197.3	15.2	G3	4636	197.3	23.5
6	95-0115	05/11/95	10:30	P12	68	177	6	Bldg 059	G3	2800	200.9	13.9	G3	2800	200.9	13.9	G3	4293	200.9	21.4

Table C-3. Soil Sample Locations and Gamma Exposure Rate - Sorted by Block ID

Batch No.	Sample ID (A4CM-)	Date	Time	Survey Block	Location Coordinates North	Location Coordinates East	Depth (In.)	Sample Type (Region)	Surface Exposure Rate Det.	Surface Exposure Rate cpm	Surface Exposure Rate Conv. Factor	Surface Exposure Rate Dose Rate (µR/hr)	Sample Exposure Rate Det.	Sample Exposure Rate Cpm	Sample Exposure Rate Conv. Factor	Sample Exposure Rate Dose Rate (µR/hr)	In-soil Exposure Rate Det.	In-soil Exposure Rate cpm	In-soil Exposure Rate Conv. Factor	In-soil Exposure Rate Dose Rate (µR/hr)
6	95-0117	05/11/95	12:50	P12	80	110	6	Bldg 059	G3	3200	200.9	15.9	G3	2900	200.9	14.4	G3	4384	200.9	21.8
6	95-0116	05/11/95	12:15	P12	89	179	6	Bldg 019	G3	3100	200.9	15.4	G3	3000	200.9	14.9	G3	4110	200.9	20.5
6	95-0114	05/11/95	10:10	P13	101	42	5	Bldg 019	G3	3100	200.9	15.4	G3	2800	200.9	13.9	G3	4194	200.9	20.9
7	95-0142	06/19/95	10:00	P13	144	106	6	Rc	G8	3000	211.0	14.2	G8	2900	211.0	13.7	G8	4769	211.0	22.6
6	95-0110	05/10/95	10:45	P17	88	190	5	Bldg 005	G3	3200	196.5	16.3	G3	2900	196.5	14.8	G3	4336	196.5	22.1
5	95-0082	04/20/95	10:30	P19	21	143	6	Bldg 023	G3	3000	202.0	14.9	G3	2800	202.0	13.9	G3	4292	202.0	21.2
6	95-0111	05/10/95	12:30	P22	27	178	3	Hot spot 006	G3	5400	196.5	27.5	G3	3100	196.5	15.8	G3	4830	196.5	24.6
4	95-0066	03/31/95	10:00	P24	9	182	8	Bldg 029	G3	2800	193.3	14.5	G3	2800	193.3	14.5	G3	4517	193.3	23.4
4	95-0067	03/31/95	10:35	P24	59	123	6	Bldg 029	G3	2800	193.3	14.5	G3	2900	193.3	15.0	G3	4698	193.3	24.3
7	95-0126	06/13/95	08:00	P25	142	192	6	Au	G3	3100	197.3	15.7	G3	2900	197.3	14.7	G3	4204	197.3	21.3
5	95-0076	04/19/95	11:10	Q13	35	120	6	Drain-010	G3	3400	197.4	17.2	G3	3200	197.4	16.2	G3	3938	197.4	19.9
5	95-0075	04/19/95	10:20	Q14	85	60	6	Drain-010	G3	3400	197.4	17.2	G3	3300	197.4	16.7	G3	4227	197.4	21.4
6	95-0109	05/10/95	09:50	Q14	87	146	6	Bldg 012	G3	3900	196.5	19.8	G3	3400	196.5	17.3	G3	4671	196.5	23.8
6	95-0107	05/09/95	13:00	Q15	75	140	6	Bldg 028	G3	4200	204.1	20.6	G3	3900	204.1	19.1	G3	4298	204.1	21.1
6	95-0106	05/09/95	12:15	Q16	155	64	6	Bldg 024	G3	8500	204.1	41.6	G3	4000	204.1	19.6	G3	4993	204.1	24.5
6	95-0105	05/09/95	10:35	Q17	171	85	4	Bldg 024	G3	4000	204.1	19.6	G3	4200	204.1	20.6	G3	3247	204.1	15.9
6	95-0104	05/09/95	09:50	Q19	92	133	6	Bldg 023	G3	3400	204.1	16.7	G3	3300	204.1	16.2	G3	4515	204.1	22.1
4	95-0064	03/31/95	08:15	Q20	111	182	6	Bldg 093	G3	2900	193.3	15.0	G3	2900	193.3	15.0	G3	4673	193.3	24.2
5	95-0077	04/19/95	12:35	Q20	150	117	72	Leachf'd-093	G3	3200	197.4	16.2	G3	3000	197.4	15.2				
5	95-0078	04/19/95	12:35	Q20	150	122	72	Leachf'd-093	G3	3200	197.4	16.2	G3	2900	197.4	14.7				
4	95-0069	03/31/95	12:40	Q24	140	40	6	Bldg 064	G3	2700	193.3	14.0	G3	2500	193.3	12.9	G3	4081	193.3	21.1
7	95-0137	06/15/95	09:00	Q29	113	94	6	Dr	G3	3200	207.9	15.4	G3	3100	207.9	14.9	G3	5012	207.9	24.1
8	95-0154	06/26/95	12:35	R14	50	200	6	HS-0010	G6	4500	198.7	22.6	G6	4200	198.7	21.1	G6	4586	198.7	23.1
6	95-0108	05/09/95	13:40	R15	34	94	4	Bldg 028	G3	4900	204.1	24.0	G3	4800	204.1	23.5	G3	4552	204.1	22.3
4	95-0065	03/31/95	08:45	R21	125	1	7	Bldg 093	G3	3500	193.3	18.1	G3	3200	193.3	16.6	G3	5034	193.3	26.0
2	95-0018	02/20/95	12:30	R24	89	175	30	Leachf'd-064	G3	3500	200.0	17.5	G3	3300	200.0	16.5	G3	4674	200.0	23.4
2	95-0019	02/20/95	13:05	R24	91	184	30	Leachf'd-064	G3	3200	200.0	16.0	G3	2900	200.0	14.5	G3	4720	200.0	23.6
4	95-0068	03/31/95	13:10	R24	118	159	6	Bldg 064	G3	2900	193.3	15.0	G3	2900	193.3	15.0	G3	4507	193.3	23.3
6	95-0099	05/08/95	10:20	S21	160	169	6	Bldg 003	G3	3300	214.6	15.4	G3	3100	214.6	14.4	G3	4466	214.6	20.8
3	95-0033	03/07/95	10:05	S27	5	150	6	Drain-OCY:W	G3	2900	196.5	14.8	G3	2900	196.5	14.8	G3	4120	196.5	21.0
3	95-0032	03/07/95	09:00	S27	150	90	6	Drain-OCY:W	G3	2700	196.5	13.7	G3	2500	196.5	12.7	G3	3893	196.5	19.8
3	95-0034	03/07/95	12:30	S28	20	125	4	Drain-OCY:W	G3	3000	196.5	15.3	G3	2900	196.5	14.8	G3	3362	196.5	17.1
8	95-0162	06/28/95	07:30	S28	110	110	6	HS-0015	G6	2500	209.9	11.9	G6	2500	209.9	11.9	G6	4725	209.9	22.5
3	95-0035	03/07/95	13:00	S29	70	75	6	Drain-OCY:W	G3	3000	196.5	15.3	G3	2600	196.5	13.2	G3	4125	196.5	21.0

Table C-3. Soil Sample Locations and Gamma Exposure Rate - Sorted by Block ID

Batch No.	Sample ID (A4CM-)	Date	Time	Survey Block	Location Coordinates North	East	Depth (in.)	Sample Type (Region)	Surface Exposure Rate Det.	cpm	Conv. Factor	Dose Rate (µR/hr)	Sample Exposure Rate Det.	Cpm	Conv. Factor	Dose Rate (µR/hr)	In-soil Exposure Rate Det.	cpm	Conv. Factor	Dose Rate (µR/hr)
6	95-0097	05/08/95	08:30	T19	50	112	6	Bldg SRE	G3	3200	214.6	14.9	G3	3000	214.6	14.0	G3	4711	214.6	22.0
6	95-0098	05/08/95	09:15	T19	80	80	4	Bldg SRE	G3	3400	214.6	15.8	G3	3500	214.6	16.3	G3	4011	214.6	18.7
6	95-0102	05/08/95	12:20	T22	118	45	7	Bldg 003	G3	3300	214.6	15.4	G3	3200	214.6	14.9	G3	4871	214.6	22.7
3	95-0031	03/06/95	08:15	T27	100	50	6	Drain-OCY:W	G3	2500	196.5	12.7	G3	2500	196.5	12.7	G3	3390	196.5	17.3
2	95-0013	02/22/95	10:20	T29	0	136	6	Drain-OCY:SE	G3	3500	198.6	17.6	G3	3200	198.6	16.1	G3	4627	198.6	23.3
2	95-0010	02/22/95	09:43	T29	103	108	6	Drain-OCY:SE	G3	3600	198.6	18.1	G3	3500	198.6	17.6	G3	4794	198.6	24.1
2	95-0009	02/22/95	08:30	T29	180	83	6	Drain-OCY:SE	G3	3800	198.6	19.1	G3	3700	198.6	18.6	G3	6261	198.6	31.5
5	95-0079	04/20/95	08:15	U22	89	99	54	Leachf'd-SRE	G3	3000	202.0	14.9	G3	2900	202.0	14.4	G3	4800	202.0	23.8
5	95-0080	04/20/95	08:15	U22	104	106	54	Leachf'd-SRE	G3	3000	202.0	14.9	G3	2900	202.0	14.4	G3	4600	202.0	22.8
5	95-0089	04/24/95	12:35	U22	185	193		SRE pond - a	G3	1900	200.4	9.5	G3	2400	200.4	12.0				
5	95-0090	04/24/95	12:35	U22	185	193		SRE pond - b	G3	1900	200.4	9.5	G3	2300	200.4	11.5				
5	95-0093	04/24/95	12:35	U22	185	193	48	Pond sediment	G3	1900	200.4	9.5	G3	2400	200.4	12.0				
5	95-0094	04/24/95	13:00	V23	10	15		SRE pond - a	G3	1800	200.4	9.0	G3	2400	200.4	12.0				
5	95-0095	04/24/95	13:00	V23	10	15		SRE pond - b	G3	1800	200.4	9.0	G3	2400	200.4	12.0				
5	95-0096	04/24/95	13:00	V23	10	15	48	Pond sediment	G3	1800	200.4	9.0	G3	2400	200.4	12.0				
8	95-0153	06/26/95	NR	V23	75	125	6	HS-0011	G6	3300	198.7	16.6	G6	3500	198.7	17.6	G6	5347	198.7	26.9
3	95-0041	03/08/95	13:20	V23	160	180	4	Drain-SRE pond	G3	3200	189.9	16.9	G3	3100	189.9	16.3	G3	3100	189.9	16.3
7	95-0141	06/19/95	08:40	V27	186	188	6	Rc	G3	3100	207.3	15.0	G3	3000	207.3	14.5	G3	4735	207.3	22.8
3	95-0042	03/09/95	08:00	W24	65	75	6	Drain-SRE pond	G3	3200	189.2	16.9	G3	3100	189.2	16.4	G3	4092	189.2	21.6
3	95-0037	03/08/95	08:00	W25	62	126	6	Drain-OCY:N	G3	2900	189.9	15.3	G3	2800	189.9	14.7	G3	4275	189.9	22.5
3	95-0038	03/08/95	09:30	W26	170	100	6	Drain-OCY:N	G3	2800	189.9	14.7	G3	2800	189.9	14.7	G3	4612	189.9	24.3
3	95-0039	03/08/95	10:35	X27	20	101	6	Drain-OCY:N	G3	2800	189.9	14.7	G3	2700	189.9	14.2	G3	4631	189.9	24.4
3	95-0040	03/08/95	12:35	X28	35	0	6	Drain-OCY:N	G3	2300	189.9	12.1	G3	2300	189.9	12.1	G3	3805	189.9	20.0
1	94-0012	11/22/94		Equipment rinseate sample - a									G2	2100	222.3	9.4				
1	94-0012	11/22/94		Equipment rinseate sample - b									G2	2300	222.3	10.3				
2	95-0021	02/23/95	12:45	Equipment rinseate sample - a									G3	2600	202.9	12.8				
2	95-0022	02/23/95	12:45	Equipment rinseate sample - b									G3	2600	202.9	12.8				
3	95-0025	03/06/95	10:30	Equipment rinseate sample - a									G3	2200	190.0	11.6				
3	95-0026	03/06/95	10:30	Equipment rinseate sample - b									G3	2200	190.0	11.6				
4	95-0050	03/28/95	14:30	Equipment rinseate sample - a									G3	2300	201.0	11.4				
4	95-0051	03/28/95	14:30	Equipment rinseate sample - b									G3	2400	201.0	11.9				
5	95-0085	04/20/95	14:40	Equipment rinseate sample - a									G3	2300	202.0	11.4				
5	95-0086	04/20/95	14:40	Equipment rinseate sample - b									G3	2300	202.0	11.4				
6	95-0100	05/08/95	14:45	Equipment rinseate sample - a									G3	2300	214.6	10.7				

Table C-3. Soil Sample Locations and Gamma Exposure Rate - Sorted by Block ID

Batch No.	Sample ID (A4CM-)	Date	Time	Location Survey Block	Coordinates North	East	Depth (In.)	Sample Type (Region)	Surface Exposure Rate Det.	cpm	Conv. Factor	Dose Rate (µR/hr)	Sample Exposure Rate Det.	Cpm	Conv. Factor	Dose Rate (µR/hr)	In-soil Exposure Rate Det.	cpm	Conv. Factor	Dose Rate (µR/hr)
6	95-0101	05/08/95	14:45	Equipment rinseate sample - b									G3	2300	214.6	10.7				
7	95-0130	06/13/95	14:00	Equipment rinseate sample - b					G3				G3	2300	197.3	11.7				
7	95-0131	06/13/95	14:00	Equipment rinseate sample - a					G3				G3	2300	197.3	11.7				
8	95-0160	06/27/95	12:15	Equipment rinseate sample - a									G6	2200	214.1	10.3				
8	95-0161	06/27/95	12:15	Equipment rinseate sample - b									G6	2200	214.1	10.3				
5	95-0091	04/24/95	10:45	Field blank sample for SRE pond water samples - a									G3	2300	200.4	11.5				
5	95-0092	04/24/95	10:45	Field blank sample for SRE pond water samples - a									G3	2300	200.4	11.5				
1	94-0004	11/18/94	10:00	Field duplicate of A4CM-94-0003									G2	3250						
2	95-0015	02/22/95	13:40	Field duplicate of A4CM-95-0014									G3	3000	198.6	15.1				
3	95-0036	03/07/95	13:00	Field duplicate of A4CM-95-0035									G3	2600	196.5	13.2				
4	95-0056	03/29/95	12:15	Field duplicate of A4CM-95-0055									G3	2700	195.8	13.8				
5	95-0081	04/20/95	08:15	Field duplicate of A4CM-95-0080									G3	3000	202.0	14.9				
6	95-0103	05/08/95	12:20	Field duplicate of A4CM-95-0102									G3	3200	214.6	14.9				
7	95-0123	06/12/95	10:00	Field duplicate of A4CM-95-0122					G3				G3	2900	199.0	14.6				
8	95-0159	06/27/95	09:35	Field duplicate of A4CM-95-0157									G6	3300	214.1	15.4				

APPENDIX D. SOIL AND WATER SAMPLE DATA

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Tritium Mean (pCi/g)	Tritium Error (pCi/g)	Tritium MDA (pCi/g)	Tritium Mean (pCi/L)	Tritium Error (pCi/L)	Tritium MDA (pCi/L)	Potassium 40 Mean (pCi/g)	Potassium 40 Error (pCi/g)	Potassium 40 MDA (pCi/g)	Chromium 51 Mean (pCi/g)	Chromium 51 Error (pCi/g)	Chromium 51 MDA (pCi/g)
S	94-0001	11/17/94	-0.045	0.072	0.1	-540	860	2000	18.0	0.93				1.00
S	94-0001 LD	11/17/94	-0.035	0.079	0.1				19.0	0.75				1.00
S	94-0002	11/17/94	-0.012	0.071	0.1	-130	730	1000	19.0	1.10				2.00
S	94-0003	11/18/94	-0.083	0.067	0.1	-1500	1200	2000	21.0	1.20				2.00
S	94-0004 FD(94-0003)	11/18/94	-0.050	0.072	0.1	-930	1300	2000	19.0	1.20				2.00
S	94-0005	11/18/94	-0.083	0.072	0.1	-1000	870	2000	20.0	1.30				2.00
S	94-0006	11/18/94	-0.064	0.071	0.1	-900	990	2000	18.0	1.20				2.00
S	94-0007	11/21/94	-0.036	0.075	0.1	-650	1400	2000	20.0	0.65				0.80
S	94-0007 R	11/21/94												
S	94-0008	11/21/94	-0.078	0.071	0.1	-1000	920	2000	20.0	1.30				2.00
S	94-0009	11/21/94	-0.011	0.076	0.1	-130	880	2000	18.0	1.20				1.00
S	94-0010	11/22/94	-0.035	0.075	0.1	-370	770	1000	16.0	1.10				1.00
S	94-0011	11/22/94	-0.110	0.073	0.1	-1100	780	1000	18.0	1.20				1.00
S	94-0013	11/22/94	-0.021	0.069	0.1	-240	790	1000	18.0	1.10				1.00
S	94-0014	11/23/94	0.007	0.073	0.1	67	670	1000	17.0	1.00				1.00
S	94-0015	11/23/94	0.012	0.072	0.1	120	680	1000	15.0	0.96				1.00
S	94-0015 LD	11/23/94	-0.049	0.130	0.2	-430	1200	2000	15.0	0.95				1.00
S	94-0016	11/23/94	0.110	0.079	0.1	1000	720	1000	16.0	0.63				0.90
S	94-0017	11/28/94	0.017	0.075	0.1	150	670	1000	17.0	1.20				1.00
S	94-0018	11/28/94	0.036	0.073	0.1	380	780	1000	17.0	1.10				1.00
S	94-0019	11/29/94	0.059	0.076	0.1	620	800	1000	15.0	0.96				1.00
S	94-0020	11/29/94	0.032	0.076	0.1	280	670	1000	17.0	0.68				0.80
S	94-0021	11/30/94	0.004	0.075	0.1	41	820	1000	17.0	1.20				1.00
S	94-0022	11/30/94	0.057	0.073	0.1	460	590	1000	16.0	0.98				1.00
S	95-0001A	02/15/95	0.073	0.059	0.1	360	290	500	19.0	0.50				0.40
S	95-0001A LD	02/15/95	0.041	0.056	0.09									
S	95-0002A	02/15/95	0.055	0.061	0.1	340	380	600	20.0	0.50				0.30
S	95-0003A	02/15/95	0.065	0.063	0.1	300	290	500	19.0	0.48				0.30
S	95-0004A	02/16/95	0.037	0.064	0.1	250	430	700	19.0	0.51				0.30
S	95-0005A	02/16/95	0.031	0.062	0.1	220	440	700	21.0	0.29				0.20
S	95-0006A	02/16/95	0.059	0.062	0.1	400	420	700	21.0	0.47				0.30

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Tritium Mean (pCi/g)	Tritium Error (pCi/g)	Tritium MDA (pCi/g)	Tritium Mean (pCi/L)	Tritium Error (pCi/L)	Tritium MDA (pCi/L)	Potassium 40 Mean (pCi/g)	Potassium 40 Error (pCi/g)	Potassium 40 MDA (pCi/g)	Chromium 51 Mean (pCi/g)	Chromium 51 Error (pCi/g)	Chromium 51 MDA (pCi/g)
S	95-0007A	02/16/95	0.026	0.063	0.1	170	400	700	20.0	0.47				0.30
S	95-0008A	02/16/95	0.067	0.060	0.1	590	530	900	20.0	0.49				0.30
S	95-0009	02/22/95	0.000	0.057	0.1	0	450	800	18.0	0.49				0.30
S	95-0010	02/22/95	0.067	0.055	0.09	450	370	600	22.0	0.31				0.20
S	95-0010 LD	02/22/95							17.0	0.82				0.50
S	95-0011	02/21/95	0.035	0.063	0.1	240	430	700	17.0	0.41				0.30
S	95-0012	02/21/95	0.055	0.067	0.1	340	420	700	18.0	0.26				0.20
S	95-0013	02/22/95	0.042	0.055	0.09	370	480	800	20.0	0.51				0.30
S	95-0014	02/22/95	0.008	0.063	0.1	58	450	800	18.0	0.32				0.20
S	95-0014 LD	02/22/95	0.000	0.061	0.1	0	0	800						
S	95-0015 FD(95-0014)	02/22/95	-0.013	0.065	0.1	-99	480	800	18.0	0.48				0.30
S	95-0016A	02/23/95	0.029	0.061	0.1	510	1100	2000	24.0	0.50				0.30
S	95-0017A	02/23/95	-0.003	0.062	0.1	-30	580	1000	21.0	0.32				0.20
S	95-0018	02/20/95	0.009	0.059	0.1	110	740	1000	21.0	0.52				0.40
S	95-0019	02/20/95	-0.008	0.062	0.1	-83	640	1000	22.0	0.32				0.20
S	95-0019 LD	02/20/95							18.0	0.87				0.70
S	95-0020A	02/23/95	0.004	0.071	0.1	27	530	900	17.0	0.50				0.40
S	95-0023A	02/23/95	0.030	0.066	0.1	200	430	700	20.0	0.32				0.20
S	95-0024	03/06/95	-0.037	0.056	0.1	-340	510	900	18.0	0.45				0.30
S	95-0027	03/06/95	-0.004	0.054	0.09	-47	570	1000	18.0	0.46				0.30
S	95-0028	03/06/95	-0.026	0.060	0.1	-210	490	900	22.0	0.32				0.20
S	95-0029	03/06/95	-0.015	0.067	0.1	-82	360	600	15.0	0.49				0.30
S	95-0030	03/06/95	-0.018	0.049	0.09	-61	170	300	16.0	0.45				0.30
S	95-0031	03/07/95	-0.023	0.059	0.1	-65	160	300	21.0	0.31				0.20
S	95-0032	03/07/95	-0.011	0.056	0.1	-46	230	400	22.0	0.50				0.30
S	95-0033	03/07/95	-0.008	0.070	0.1	-37	340	600	19.0	0.47				0.30
S	95-0034	03/07/95	-0.024	0.052	0.09	-98	220	400	19.0	0.50				0.30
S	95-0035	03/07/95	-0.017	0.054	0.09	-52	170	300	21.0	0.31				0.20
S	95-0035 LD	03/07/95	-0.035	0.053	0.09	-100	160	300	16.0	0.71				0.60
S	95-0036 FD(95-0035)	03/07/95	-0.044	0.049	0.09	-150	160	300	22.0	0.31				0.20
S	95-0037	03/08/95	-0.036	0.063	0.1	-300	530	900	19.0	0.51				0.30

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Tritium Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Tritium Mean (pCi/L)	Error (pCi/L)	MDA (pCi/L)	Potassium 40 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Chromium 51 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)
S	95-0038	03/08/95	-0.048	0.064	0.1	-560	750	1000	21.0	0.32				0.20
S	95-0039	03/08/95	-0.047	0.065	0.1	-490	670	1000	22.0	0.31				0.20
S	95-0040	03/08/95	-0.043	0.062	0.1	-190	270	500	20.0	0.54				0.40
S	95-0041	03/08/95	-0.038	0.055	0.1	-120	180	300	21.0	0.50				0.30
S	95-0042	03/09/95	-0.039	0.045	0.08	-140	160	300	18.0	0.56				0.40
S	95-0043	03/09/95	-0.093	0.055	0.1	-350	210	400	19.0	0.48				0.40
S	95-0044	03/09/95	-0.031	0.054	0.1	-130	230	400	20.0	0.51				0.30
S	95-0045	03/09/95	-0.039	0.069	0.1	-92	160	300	16.0	0.48				0.40
S	95-0046	03/09/95	-0.033	0.050	0.09	-100	160	300	19.0	0.45				0.30
S	95-0047	03/28/95	-0.004	0.049	0.09	-31	360	600	17.0	0.45				0.30
S	95-0048	03/28/95	0.012	0.053	0.09	73	330	600	16.0	0.42				0.20
S	95-0049	03/28/95	0.010	0.052	0.09	150	780	1000	19.0	0.43				0.30
S	95-0049 LD	03/28/95	0.014	0.054	0.09	110	430	700	19.0	0.42				0.30
S	95-0052	03/29/95	0.055	0.062	0.1	420	470	800	19.0	0.45				0.30
S	95-0053	03/29/95	0.023	0.056	0.09	230	550	900	17.0	0.29				0.20
S	95-0054	03/29/95	0.029	0.052	0.09	190	350	600	19.0	0.52				0.30
S	95-0055	03/29/95	-0.010	0.059	0.1	-92	530	900	20.0	0.46				0.30
S	95-0056 FD(95-0055)	03/29/95	0.053	0.058	0.09	470	510	800	18.0	0.46				0.30
S	95-0057	03/29/95	0.011	0.065	0.1	100	610	1000	15.0	0.44				0.30
S	95-0058	03/29/95	-0.018	0.061	0.1	-130	430	800	18.0	0.28				0.20
S	95-0059	03/30/95	0.043	0.058	0.1	330	440	700	18.0	0.44				0.30
S	95-0060	03/30/95	-0.024	0.058	0.1	-250	610	1000	18.0	0.48				0.30
S	95-0061	03/30/95	-0.002	0.056	0.1	-11	380	700	19.0	0.48				0.30
S	95-0061 R1	03/30/95												
S	95-0061 R2	03/30/95												
S	95-0062	03/30/95	0.024	0.052	0.09	120	250	400	20.0	0.51				0.30
S	95-0063	03/30/95	0.024	0.056	0.1	180	430	700	19.0	0.50				0.30
S	95-0063 LD	03/30/95	0.011	0.055	0.09	79	400	700	19.0	0.46				0.30
S	95-0064	03/31/95	0.008	0.059	0.1	68	480	800	21.0	0.52				0.30
S	95-0065	03/31/95	0.027	0.053	0.09	430	860	1000	23.0	0.33				0.20
S	95-0066	03/31/95	0.057	0.065	0.1	560	640	1000	23.0	0.31				0.20

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Tritium Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Tritium Mean (pCi/L)	Error (pCi/L)	MDA (pCi/L)	Potassium 40 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Chromium 51 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)
S	95-0067	03/31/95	-0.003	0.060	0.1	-43	760	1000	20.0	0.53				0.30
S	95-0068	03/31/95	0.020	0.054	0.09	180	500	800	22.0	0.48				0.30
S	95-0069	03/31/95	0.016	0.053	0.09	210	670	1000	20.0	0.48				0.30
S	95-0070	04/18/95				-35	250	400	21.0	0.64				0.30
S	95-0071	04/18/95				-53	470	800	20.0	0.64				0.30
S	95-0072	04/21/95				-22	190	300	22.0	0.42				0.20
S	95-0073	04/21/95				-28	160	300	18.0	0.40				0.20
S	95-0074	04/19/95				160	520	900	19.0	0.41				0.20
S	95-0074 R	04/19/95												
S	95-0075	04/19/95				68	350	600	21.0	0.26				0.10
S	95-0076	04/19/95				8500	430	500	19.0	0.67				0.30
S	95-0077	04/19/95				-160	270	500	19.0	0.66				0.30
S	95-0078	04/19/95				-72	320	600	21.0	0.43				0.20
S	95-0078 LD	04/19/95				66	400	700	18.0	0.52				0.30
S	95-0079	04/20/95				-150	480	800	23.0	0.43				0.20
S	95-0080	04/20/95				-200	430	800	23.0	0.62				0.30
S	95-0081 FD(95-0080)	04/20/95				25	450	800	22.0	0.42				0.20
S	95-0082	04/20/95				-290	530	900	23.0	0.68				0.30
S	95-0083	04/20/95				0	330	600	18.0	0.58				0.30
S	95-0084	04/20/95				0	500	900	18.0	0.59				0.30
S	95-0087	04/21/95				-110	500	900	18.0	0.61				0.30
S	95-0088	04/21/95				37	330	600	19.0	0.39				0.20
S	95-0093	04/24/95				-95	160	300	15.0	0.53				0.30
S	95-0096	04/24/95				15	180	300	19.0	0.61				0.30
S	95-0097	05/08/95				0	830	1000	21.0	0.62				0.40
S	95-0098	05/08/95				230	1500	3000	22.0	0.47				0.40
S	95-0098 LD	05/08/95				980	1400	2000	17.0	0.73				0.60
S	95-0099	05/08/95				270	740	1000	21.0	0.64				0.40
S	95-0102	05/08/95				410	480	800	21.0	0.53				0.40
S	95-0103 FD(95-0102)	05/08/95				-110	440	800	20.0	0.50				0.40
S	95-0104	05/09/95				230	1800	3000	21.0	0.52				0.40

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Tritium Mean (pCi/g)	Tritium Error (pCi/g)	Tritium MDA (pCi/g)	Tritium Mean (pCi/L)	Tritium Error (pCi/L)	Tritium MDA (pCi/L)	Potassium 40 Mean (pCi/g)	Potassium 40 Error (pCi/g)	Potassium 40 MDA (pCi/g)	Chromium 51 Mean (pCi/g)	Chromium 51 Error (pCi/g)	Chromium 51 MDA (pCi/g)
S	95-0105	05/09/95				0	1200	2000	20.0	0.57				0.40
S	95-0106	05/09/95				580	2100	4000	21.0	0.59				0.40
S	95-0107	05/09/95				220	2400	4000	20.0	0.60				0.40
S	95-0108	05/09/95				-530	870	2000	20.0	0.55				0.40
S	95-0109	05/10/95				-410	1200	2000	20.0	0.58				0.40
S	95-0110	05/10/95				-370	1300	2000	21.0	0.49				0.40
S	95-0111	05/10/95				53	860	1000	20.0	0.63				0.50
S	95-0112	05/10/95				89	330	600	17.0	0.40				0.40
S	95-0113	05/11/95				-160	1000	2000	19.0	0.49				0.30
S	95-0114	05/11/95				0	970	2000	21.0	0.62				0.40
S	95-0115	05/11/95				67	720	1000	20.0	0.64				0.40
S	95-0116	05/11/95				380	1000	2000	21.0	0.54				0.40
S	95-0117	05/11/95				-98	790	1000	20.0	0.53				0.40
S	95-0118	05/19/95				-200	450	800	21.0	0.62				0.40
S	95-0119	05/19/95				-24	380	700	16.0	0.67				0.50
S	95-0120	05/19/95				-22	710	1000	19.0	0.64				0.40
S	95-0121	06/12/95				-310	500	900	17.0	0.53				0.30
S	95-0121 LD	06/12/95				28	490	900	15.0	0.79				0.70
S	95-0122	06/12/95				-82	570	1000	19.0	0.56				0.30
S	95-0123 FD(95-0122)	06/12/95				-180	550	1000	19.0	0.63				0.40
S	95-0124	06/12/95				-120	610	1000	15.0	0.62				0.40
S	95-0125	06/12/95				-390	430	800	18.0	0.64				0.40
S	95-0126	06/13/95				-470	1100	2000	21.0	0.57				0.30
S	95-0127	06/13/95				-480	2100	4000	21.0	0.68				0.40
S	95-0128	06/13/95				-120	590	1000	19.0	0.66				0.40
S	95-0129	06/13/95				-200	1200	2000	19.0	0.65				0.40
S	95-0132	06/14/95				-200	450	800	11.0	0.59				0.40
S	95-0133	06/14/95				-290	490	900	17.0	0.35				0.30
S	95-0134	06/14/95				-290	470	800	16.0	0.42				0.30
S	95-0135	06/14/95				-160	560	1000	9.3	0.29				0.20
S	95-0136	06/15/95				-370	480	900	19.0	0.62				0.40

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Tritium Mean (pCi/g)	Tritium Error (pCi/g)	Tritium MDA (pCi/g)	Tritium Mean (pCi/L)	Tritium Error (pCi/L)	Tritium MDA (pCi/L)	Potassium 40 Mean (pCi/g)	Potassium 40 Error (pCi/g)	Potassium 40 MDA (pCi/g)	Chromium 51 Mean (pCi/g)	Chromium 51 Error (pCi/g)	Chromium 51 MDA (pCi/g)
S	95-0137	06/15/95				-1500	1400	3000	21.0	0.70				0.50
S	95-0138	06/15/95				-360	310	600	14.0	0.49				0.30
S	95-0139	06/15/95				-240	450	800	15.0	0.58				0.40
S	95-0140	06/19/95				-270	780	1000	20.0	0.62				0.40
S	95-0141	06/19/95				-200	1100	2000	23.0	0.41				0.20
S	95-0142	06/19/95				-570	760	1000	20.0	0.39				0.20
S	95-0143	06/19/95				-390	660	1000	18.0	0.38				0.20
S-BKGD	95-0144	06/20/95												
S-BKGD	95-0145	06/20/95												
S-BKGD	95-0146	06/21/95												
S-BKGD	95-0147	06/21/95												
S-BKGD	95-0148	06/22/95												
S-BKGD	95-0149	06/22/95												
S	95-0150	06/26/95				270	870	1000	21.0	0.67				0.30
S	95-0150 LD	06/26/95				430	800	1000	17.0	0.78				0.50
S	95-0151	06/26/95				-56	320	600	18.0	0.68				0.40
S	95-0152	06/26/95				240	700	1000	19.0	0.36				0.20
S	95-0153	06/26/95				430	440	700	18.0	0.59				0.30
S	95-0154	06/26/95				280	610	1000	22.0	0.43				0.20
S	95-0155	06/27/95				0	790	1000	16.0	0.39				0.30
S	95-0156	06/27/95				140	470	800	19.0	0.50				0.30
S	95-0157	06/27/95				520	740	1000	20.0	0.63				0.40
S	95-0158	06/27/95				110	780	1000	20.0	0.66				0.40
S	95-0159 FD(95-0157)	06/27/95				260	770	1000	17.0	0.63				0.30
S	95-0162	06/28/95				140	690	1000	20.0	0.41				0.20
Soil Data Table Summaries		Maximum	0.11		0.20	8500		4000	24		0	0		2.00
		Average	-0.00		0.10	20		1029	19		0	0		0.45
		Minimum	-0.11		0.08	-1500		300	9		0	0		0.10
		Std.Dev.	0.04		0.01	757		671	2		0	0		0.37
		Count	91			166			168		0	0		168

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Tritium Mean (pCi/g)	Tritium Error (pCi/g)	Tritium MDA (pCi/g)	Tritium Mean (pCi/L)	Tritium Error (pCi/L)	Tritium MDA (pCi/L)	Potassium 40 Mean (pCi/g)	Potassium 40 Error (pCi/g)	Potassium 40 MDA (pCi/g)	Chromium 51 Mean (pCi/g)	Chromium 51 Error (pCi/g)	Chromium 51 MDA (pCi/g)

Sample Type	A4CM-xx-xxxx Sample Identification	Date Sampled	Tritium Mean (pCi/g)	Tritium Error (pCi/g)	Tritium MDA (pCi/g)	Tritium Mean (pCi/L)	Tritium Error (pCi/L)	Tritium MDA (pCi/L)	Potassium 40 Mean (pCi/L)	Potassium 40 Error (pCi/L)	Potassium 40 MDA (pCi/L)	Chromium 51 Mean (pCi/L)	Chromium 51 Error (pCi/L)	Chromium 51 MDA (pCi/L)
W	95-0021(rinsate)	02/23/95				-120	160	300						
W	95-0022(rinsate)	02/23/95									20			40
W	95-0025(rinsate)	03/06/95				51	160	300						
W	95-0026(rinsate)	03/06/95									20			40
W	95-0050(rinsate)	03/28/95				130	150	300						
W	95-0051(rinsate)	03/28/95							39	31				30
W	95-0085(rinsate)	04/20/95				32	170	300						
W	95-0086(rinsate)	04/20/95									100			70
W	95-0089(SRE Pond)	04/24/95				66	170	300						
W	95-0090(SRE Pond)	04/24/95									50			60
W	95-0091(Field Blank)	04/24/95				22	160	300						
W	95-0092(Field Blank)	04/24/95									100			60
W	95-0094(SRE Pond)	04/24/95				140	170	300						
W	95-0095(SRE Pond)	04/24/95									40			30
W	95-0100(rinsate)	05/08/95				44	170	300						
W	95-0101(rinsate)	05/08/95									40			90
W	95-0130(rinsate)	06/13/95				23	160	300						
W	95-0131(rinsate)	06/13/95									50			60
W	95-0160(rinsate)	06/27/95				-120	150	300						
W	95-0161(rinsate)	06/27/95									90			50

Water Data Table Summaries	Maximum				140		300	39		100	0		90
	Average				27		300	39		57	0		53
	Minimum				-120		300	39		20	0		30
	Std.Dev.				88		0	0		32	0		19
	Count				10			1		9			10

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Manganese 54 Mean (pCi/g)	Manganese 54 Error (pCi/g)	Manganese 54 MDA (pCi/g)	Cobalt 58 Mean (pCi/g)	Cobalt 58 Error (pCi/g)	Cobalt 58 MDA (pCi/g)	Iron 59 Mean (pCi/g)	Iron 59 Error (pCi/g)	Iron 59 MDA (pCi/g)	Cobalt 60 Mean (pCi/g)	Cobalt 60 Error (pCi/g)	Cobalt 60 MDA (pCi/g)
S	94-0001	11/17/94			0.05			0.08			0.30			0.05
S	94-0001 LD	11/17/94			0.04			0.06			0.20			0.04
S	94-0002	11/17/94			0.06			0.10			0.30			0.07
S	94-0003	11/18/94			0.06			0.09			0.30			0.06
S	94-0004 FD(94-0003)	11/18/94			0.06			0.09			0.30			0.07
S	94-0005	11/18/94			0.07			0.10			0.40			0.07
S	94-0006	11/18/94			0.06			0.08			0.30			0.07
S	94-0007	11/21/94			0.03			0.05			0.10			0.03
S	94-0007 R	11/21/94												
S	94-0008	11/21/94			0.07			0.10			0.30			0.06
S	94-0009	11/21/94			0.07			0.10			0.30			0.07
S	94-0010	11/22/94			0.06			0.09			0.30			0.06
S	94-0011	11/22/94			0.07			0.09			0.30			0.06
S	94-0013	11/22/94			0.05			0.08			0.30			0.05
S	94-0014	11/23/94			0.06			0.09			0.30			0.07
S	94-0015	11/23/94			0.05			0.07			0.20			0.05
S	94-0015 LD	11/23/94			0.05			0.08			0.20			0.05
S	94-0016	11/23/94			0.04			0.05			0.20			0.03
S	94-0017	11/28/94			0.07			0.09			0.30			0.06
S	94-0018	11/28/94			0.06			0.08			0.30			0.07
S	94-0019	11/29/94			0.06			0.09			0.20			0.06
S	94-0020	11/29/94			0.04			0.05			0.20			0.04
S	94-0021	11/30/94			0.06			0.09			0.30			0.06
S	94-0022	11/30/94			0.06			0.07			0.20			0.07
S	95-0001A	02/15/95			0.02			0.03			0.09			0.03
S	95-0001A LD	02/15/95												
S	95-0002A	02/15/95			0.02			0.03			0.08			0.02
S	95-0003A	02/15/95			0.02			0.03			0.08			0.02
S	95-0004A	02/16/95			0.02			0.03			0.08			0.03
S	95-0005A	02/16/95			0.01			0.02			0.04			0.01
S	95-0006A	02/16/95			0.02			0.03			0.08			0.02

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Manganese 54 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Cobalt 58 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Iron 59 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Cobalt 60 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)
S	95-0007A	02/16/95			0.02			0.03			0.07			0.02
S	95-0008A	02/16/95			0.02			0.03			0.08			0.02
S	95-0009	02/22/95			0.02			0.03			0.08			0.03
S	95-0010	02/22/95			0.01			0.02			0.04			0.01
S	95-0010 LD	02/22/95			0.04			0.05			0.10			0.04
S	95-0011	02/21/95			0.02			0.03			0.07			0.02
S	95-0012	02/21/95			0.01			0.01			0.04			0.01
S	95-0013	02/22/95			0.02			0.03			0.08			0.02
S	95-0014	02/22/95			0.01			0.02			0.05			0.01
S	95-0014 LD	02/22/95												
S	95-0015 FD(95-0014)	02/22/95			0.03			0.03			0.08			0.02
S	95-0016A	02/23/95			0.02			0.03			0.08			0.02
S	95-0017A	02/23/95			0.01			0.02			0.04			0.01
S	95-0018	02/20/95			0.03			0.03			0.09			0.03
S	95-0019	02/20/95			0.01			0.02			0.05			0.01
S	95-0019 LD	02/20/95			0.05			0.06			0.20			0.05
S	95-0020A	02/23/95			0.03			0.03			0.09			0.03
S	95-0023A	02/23/95			0.01			0.02			0.05			0.02
S	95-0024	03/06/95			0.02			0.03			0.07			0.02
S	95-0027	03/06/95			0.02			0.02			0.07			0.02
S	95-0028	03/06/95			0.01			0.02			0.05			0.01
S	95-0029	03/06/95			0.02			0.03			0.08			0.02
S	95-0030	03/06/95			0.02			0.02			0.07			0.02
S	95-0031	03/07/95			0.01			0.01			0.04			0.01
S	95-0032	03/07/95			0.02			0.03			0.08			0.02
S	95-0033	03/07/95			0.02			0.03			0.07			0.02
S	95-0034	03/07/95			0.02			0.03			0.08			0.02
S	95-0035	03/07/95			0.07			0.02			0.05			0.01
S	95-0035 LD	03/07/95			0.04			0.05			0.10			0.04
S	95-0036 FD(95-0035)	03/07/95			0.01			0.02			0.05			0.01
S	95-0037	03/08/95			0.03			0.03			0.08			0.02

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Manganese 54 Mean (pCi/g)	Manganese 54 Error (pCi/g)	Manganese 54 MDA (pCi/g)	Cobalt 58 Mean (pCi/g)	Cobalt 58 Error (pCi/g)	Cobalt 58 MDA (pCi/g)	Iron 59 Mean (pCi/g)	Iron 59 Error (pCi/g)	Iron 59 MDA (pCi/g)	Cobalt 60 Mean (pCi/g)	Cobalt 60 Error (pCi/g)	Cobalt 60 MDA (pCi/g)
S	95-0038	03/08/95			0.02			0.02			0.05			0.01
S	95-0039	03/08/95			0.01			0.02			0.05			0.01
S	95-0040	03/08/95			0.03			0.03			0.09			0.03
S	95-0041	03/08/95			0.06			0.03			0.08			0.03
S	95-0042	03/09/95			0.03			0.03			0.09			0.03
S	95-0043	03/09/95			0.02			0.03			0.08			0.02
S	95-0044	03/09/95			0.02			0.03			0.09			0.03
S	95-0045	03/09/95			0.02			0.03			0.08			0.02
S	95-0046	03/09/95			0.02			0.03			0.08			0.02
S	95-0047	03/28/95			0.02			0.02			0.07			0.02
S	95-0048	03/28/95			0.02			0.02			0.06			0.02
S	95-0049	03/28/95			0.02			0.02			0.07			0.02
S	95-0049 LD	03/28/95			0.02			0.02			0.06			0.02
S	95-0052	03/29/95			0.02			0.02			0.07			0.02
S	95-0053	03/29/95	0.03	0.01				0.02			0.04			0.01
S	95-0054	03/29/95			0.02			0.03			0.08			0.03
S	95-0055	03/29/95			0.02			0.02			0.07			0.02
S	95-0056 FD(95-0055)	03/29/95			0.02			0.02			0.07			0.02
S	95-0057	03/29/95			0.02			0.03			0.07			0.02
S	95-0058	03/29/95	0.01	0.01				0.01			0.04			0.01
S	95-0059	03/30/95			0.02			0.03			0.07			0.02
S	95-0060	03/30/95			0.02			0.03			0.07			0.02
S	95-0061	03/30/95			0.02			0.03			0.08			0.03
S	95-0061 R1	03/30/95												
S	95-0061 R2	03/30/95												
S	95-0062	03/30/95			0.02			0.03			0.08			0.03
S	95-0063	03/30/95			0.02			0.03			0.07			0.03
S	95-0063 LD	03/30/95			0.02			0.03			0.08			0.02
S	95-0064	03/31/95			0.03			0.03			0.08			0.03
S	95-0065	03/31/95			0.02			0.02			0.05			0.02
S	95-0066	03/31/95	0.02	0.01				0.02			0.04			0.01

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Manganese 54 Mean (pCi/g)	Manganese 54 Error (pCi/g)	Manganese 54 MDA (pCi/g)	Cobalt 58 Mean (pCi/g)	Cobalt 58 Error (pCi/g)	Cobalt 58 MDA (pCi/g)	Iron 59 Mean (pCi/g)	Iron 59 Error (pCi/g)	Iron 59 MDA (pCi/g)	Cobalt 60 Mean (pCi/g)	Cobalt 60 Error (pCi/g)	Cobalt 60 MDA (pCi/g)
S	95-0067	03/31/95			0.03			0.03			0.08			0.03
S	95-0068	03/31/95			0.02			0.03			0.07			0.02
S	95-0069	03/31/95			0.02			0.03			0.07			0.02
S	95-0070	04/18/95			0.03			0.03			0.09	0.04	0.03	
S	95-0071	04/18/95			0.03			0.03			0.08			0.03
S	95-0072	04/21/95			0.02			0.02			0.06			0.02
S	95-0073	04/21/95			0.02			0.02			0.05			0.02
S	95-0074	04/19/95			0.02			0.02			0.05			0.02
S	95-0074 R	04/19/95												
S	95-0075	04/19/95			0.01			0.01			0.03			0.01
S	95-0076	04/19/95			0.03			0.03			0.09			0.03
S	95-0077	04/19/95			0.03			0.03			0.10			0.03
S	95-0078	04/19/95			0.02			0.02			0.06			0.02
S	95-0078 LD	04/19/95			0.02			0.03			0.07			0.02
S	95-0079	04/20/95			0.02			0.02			0.05			0.02
S	95-0080	04/20/95			0.03			0.03			0.08			0.03
S	95-0081 FD(95-0080)	04/20/95			0.02			0.02			0.05			0.02
S	95-0082	04/20/95			0.03			0.03			0.10			0.03
S	95-0083	04/20/95			0.03			0.03			0.08			0.03
S	95-0084	04/20/95			0.03			0.03			0.09			0.03
S	95-0087	04/21/95			0.03			0.03			0.09			0.03
S	95-0088	04/21/95			0.02			0.02			0.04			0.02
S	95-0093	04/24/95			0.03			0.03			0.07			0.03
S	95-0096	04/24/95			0.03			0.03			0.08	0.13	0.04	
S	95-0097	05/08/95			0.03			0.03			0.10			0.03
S	95-0098	05/08/95			0.02			0.03			0.09			0.02
S	95-0098 LD	05/08/95			0.04			0.05			0.10			0.04
S	95-0099	05/08/95			0.03			0.04			0.10			0.03
S	95-0102	05/08/95			0.02			0.03			0.09			0.02
S	95-0103 FD(95-0102)	05/08/95			0.02			0.03			0.08			0.02
S	95-0104	05/09/95			0.02			0.03			0.10			0.02

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Manganese 54 Mean (pCi/g)	Manganese 54 Error (pCi/g)	Manganese 54 MDA (pCi/g)	Cobalt 58 Mean (pCi/g)	Cobalt 58 Error (pCi/g)	Cobalt 58 MDA (pCi/g)	Iron 59 Mean (pCi/g)	Iron 59 Error (pCi/g)	Iron 59 MDA (pCi/g)	Cobalt 60 Mean (pCi/g)	Cobalt 60 Error (pCi/g)	Cobalt 60 MDA (pCi/g)
S	95-0105	05/09/95			0.02			0.03			0.10			0.03
S	95-0106	05/09/95			0.03			0.03			0.10			0.03
S	95-0107	05/09/95			0.03			0.04			0.10			0.03
S	95-0108	05/09/95			0.02			0.03			0.10			0.02
S	95-0109	05/10/95			0.03			0.03			0.09			0.03
S	95-0110	05/10/95			0.02			0.03			0.09			0.02
S	95-0111	05/10/95			0.03			0.04			0.10	0.04	0.04	
S	95-0112	05/10/95			0.03			0.02			0.07			0.02
S	95-0113	05/11/95			0.02			0.03			0.08			0.02
S	95-0114	05/11/95			0.03			0.03			0.10			0.03
S	95-0115	05/11/95			0.03			0.04			0.10			0.03
S	95-0116	05/11/95			0.02			0.03			0.09			0.02
S	95-0117	05/11/95			0.02			0.03			0.10			0.02
S	95-0118	05/19/95			0.03			0.03			0.09			0.04
S	95-0119	05/19/95			0.03			0.04			0.10			0.03
S	95-0120	05/19/95			0.03			0.04			0.10			0.03
S	95-0121	06/12/95			0.02			0.03			0.08			0.02
S	95-0121 LD	06/12/95			0.04			0.06			0.20			0.06
S	95-0122	06/12/95			0.05			0.03			0.10			0.03
S	95-0123 FD(95-0122)	06/12/95			0.03			0.04			0.10			0.03
S	95-0124	06/12/95			0.03			0.04			0.10			0.03
S	95-0125	06/12/95			0.03			0.04			0.10			0.03
S	95-0126	06/13/95			0.03			0.03			0.10			0.03
S	95-0127	06/13/95			0.04			0.04			0.10			0.03
S	95-0128	06/13/95			0.03			0.04			0.10			0.03
S	95-0129	06/13/95			0.03			0.04			0.10			0.03
S	95-0132	06/14/95			0.03			0.03			0.10			0.03
S	95-0133	06/14/95			0.03			0.02			0.06			0.02
S	95-0134	06/14/95			0.02			0.02			0.07			0.02
S	95-0135	06/14/95			0.01			0.02			0.05			0.01
S	95-0136	06/15/95			0.03			0.03			0.10			0.03

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Manganese 54 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Cobalt 58 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Iron 59 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Cobalt 60 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)
S	95-0137	06/15/95			0.03			0.04			0.10			0.03
S	95-0138	06/15/95			0.03			0.03			0.08			0.02
S	95-0139	06/15/95			0.10			0.03			0.09			0.03
S	95-0140	06/19/95			0.03			0.04			0.10			0.03
S	95-0141	06/19/95			0.02			0.02			0.07			0.02
S	95-0142	06/19/95			0.03			0.02			0.06			0.02
S	95-0143	06/19/95			0.02			0.02			0.06			0.02
S-BKGD	95-0144	06/20/95												
S-BKGD	95-0145	06/20/95												
S-BKGD	95-0146	06/21/95												
S-BKGD	95-0147	06/21/95												
S-BKGD	95-0148	06/22/95												
S-BKGD	95-0149	06/22/95												
S	95-0150	06/26/95			0.03			0.03			0.10			0.03
S	95-0150 LD	06/26/95			0.04			0.05			0.10			0.04
S	95-0151	06/26/95			0.03			0.04			0.10			0.03
S	95-0152	06/26/95			0.02			0.02			0.05			0.02
S	95-0153	06/26/95			0.03			0.03			0.09			0.03
S	95-0154	06/26/95			0.02			0.02			0.06			0.02
S	95-0155	06/27/95			0.03			0.02			0.06			0.02
S	95-0156	06/27/95			0.02			0.03			0.08			0.02
S	95-0157	06/27/95			0.03			0.03			0.09			0.03
S	95-0158	06/27/95			0.03			0.03			0.09			0.03
S	95-0159 FD(95-0157)	06/27/95			0.03			0.03			0.09			0.03
S	95-0162	06/28/95			0.02			0.02			0.05			0.02
Soil Data Table Summaries		Maximum	0.03		0.10	0		0.10	0		0.40	0.13		0.07
		Average	0.02		0.00	0		0.04	0		0.10	0.07		0.03
		Minimum	0.01		0.01	0		0.01	0		0.03	0.04		0.01
		Std.Dev.	0.01		0.02	0		0.02	0		0.07	0.05		0.01
		Count	3		165	0		168	0		168	3		165

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Manganese 54 Mean (pCi/g)	Manganese 54 Error (pCi/g)	Manganese 54 MDA (pCi/g)	Cobalt 58 Mean (pCi/g)	Cobalt 58 Error (pCi/g)	Cobalt 58 MDA (pCi/g)	Iron 59 Mean (pCi/g)	Iron 59 Error (pCi/g)	Iron 59 MDA (pCi/g)	Cobalt 60 Mean (pCi/g)	Cobalt 60 Error (pCi/g)	Cobalt 60 MDA (pCi/g)

Sample Type	A4CM-xx-xxxx Sample Identification	Date Sampled	Manganese 54 Mean (pCi/L)	Manganese 54 Error (pCi/L)	Manganese 54 MDA (pCi/L)	Cobalt 58 Mean (pCi/L)	Cobalt 58 Error (pCi/L)	Cobalt 58 MDA (pCi/L)	Iron 59 Mean (pCi/L)	Iron 59 Error (pCi/L)	Iron 59 MDA (pCi/L)	Cobalt 60 Mean (pCi/L)	Cobalt 60 Error (pCi/L)	Cobalt 60 MDA (pCi/L)
W	95-0021(rinsate)	02/23/95												
W	95-0022(rinsate)	02/23/95			2			3			7			2
W	95-0025(rinsate)	03/06/95												
W	95-0026(rinsate)	03/06/95			2			3			7			2
W	95-0050(rinsate)	03/28/95												
W	95-0051(rinsate)	03/28/95			2			3			6			2
W	95-0085(rinsate)	04/20/95												
W	95-0086(rinsate)	04/20/95			7			7			20			7
W	95-0089(SRE Pond)	04/24/95												
W	95-0090(SRE Pond)	04/24/95			5			6			10			7
W	95-0091(Field Blank)	04/24/95												
W	95-0092(Field Blank)	04/24/95			6			7			10			7
W	95-0094(SRE Pond)	04/24/95												
W	95-0095(SRE Pond)	04/24/95			3			3			8			3
W	95-0100(rinsate)	05/08/95												
W	95-0101(rinsate)	05/08/95			4			5			20			5
W	95-0130(rinsate)	06/13/95												
W	95-0131(rinsate)	06/13/95			4			5			10			6
W	95-0160(rinsate)	06/27/95												
W	95-0161(rinsate)	06/27/95			5			6			20			5
Water Data Table Summaries		Maximum	0		7.0	0		7.0	0		20.0	0		7.0
		Average	0		4.0	0		4.8	0		11.8	0		4.6
		Minimum	0		2.0	0		3.0	0		6.0	0		2.0
		Std.Dev.	0		1.8	0		1.7	0		5.8	0		2.2
		Count			10			10			10			10

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Zinc 65 Mean (pCi/g)	Zinc 65 Error (pCi/g)	Zinc 65 MDA (pCi/g)	Niobium 94 Mean (pCi/g)	Niobium 94 Error (pCi/g)	Niobium 94 MDA (pCi/g)	Ruthenium 103 Mean (pCi/g)	Ruthenium 103 Error (pCi/g)	Ruthenium 103 MDA (pCi/g)	Ruthenium 106 Mean (pCi/g)	Ruthenium 106 Error (pCi/g)	Ruthenium 106 MDA (pCi/g)
S	94-0001	11/17/94			0.10			0.04			0.10			0.40
S	94-0001 LD	11/17/94			0.10			0.03			0.09			0.30
S	94-0002	11/17/94			0.20			0.05			0.10			0.50
S	94-0003	11/18/94			0.20			0.05			0.10			0.50
S	94-0004 FD(94-0003)	11/18/94			0.20			0.06			0.10			0.50
S	94-0005	11/18/94			0.20			0.06			0.10			0.60
S	94-0006	11/18/94			0.20			0.06			0.10			0.60
S	94-0007	11/21/94			0.09			0.03			0.06			0.30
S	94-0007 R	11/21/94												
S	94-0008	11/21/94			0.20			0.06			0.10			0.60
S	94-0009	11/21/94			0.20			0.06			0.10			0.60
S	94-0010	11/22/94			0.10			0.05			0.10			0.40
S	94-0011	11/22/94			0.20			0.05			0.10			0.50
S	94-0013	11/22/94			0.10			0.05			0.10			0.40
S	94-0014	11/23/94			0.10			0.05			0.10			0.50
S	94-0015	11/23/94			0.10			0.04			0.10			0.40
S	94-0015 LD	11/23/94			0.10			0.04			0.10			0.50
S	94-0016	11/23/94			0.08			0.03			0.07			0.30
S	94-0017	11/28/94			0.20			0.05			0.10			0.50
S	94-0018	11/28/94			0.10			0.05			0.10			0.50
S	94-0019	11/29/94			0.20			0.05			0.10			0.50
S	94-0020	11/29/94			0.10			0.03			0.07			0.30
S	94-0021	11/30/94			0.10			0.05			0.10			0.50
S	94-0022	11/30/94			0.10			0.05			0.10			0.40
S	95-0001A	02/15/95			0.06			0.02			0.04			0.20
S	95-0001A LD	02/15/95												
S	95-0002A	02/15/95			0.07			0.02			0.03			0.20
S	95-0003A	02/15/95			0.06			0.02			0.03			0.20
S	95-0004A	02/16/95			0.07			0.02			0.03			0.20
S	95-0005A	02/16/95			0.04			0.01			0.02			0.10
S	95-0006A	02/16/95			0.06			0.02			0.03			0.20

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Zinc 65 Mean (pCi/g)	Zinc 65 Error (pCi/g)	Zinc 65 MDA (pCi/g)	Niobium 94 Mean (pCi/g)	Niobium 94 Error (pCi/g)	Niobium 94 MDA (pCi/g)	Ruthenium 103 Mean (pCi/g)	Ruthenium 103 Error (pCi/g)	Ruthenium 103 MDA (pCi/g)	Ruthenium 106 Mean (pCi/g)	Ruthenium 106 Error (pCi/g)	Ruthenium 106 MDA (pCi/g)
S	95-0007A	02/16/95			0.06			0.02			0.03			0.20
S	95-0008A	02/16/95			0.07			0.02			0.03			0.20
S	95-0009	02/22/95			0.07			0.02			0.03			0.20
S	95-0010	02/22/95			0.04			0.01			0.02			0.10
S	95-0010 LD	02/22/95			0.10			0.04			0.05			0.30
S	95-0011	02/21/95			0.06			0.02			0.03			0.20
S	95-0012	02/21/95			0.04			0.01			0.02			0.10
S	95-0013	02/22/95			0.07			0.02			0.03			0.20
S	95-0014	02/22/95			0.04			0.01			0.02			0.10
S	95-0014 LD	02/22/95												
S	95-0015 FD(95-0014)	02/22/95			0.07			0.02			0.03			0.20
S	95-0016A	02/23/95			0.07			0.02			0.03			0.20
S	95-0017A	02/23/95			0.04			0.01			0.02			0.10
S	95-0018	02/20/95			0.07			0.02			0.04			0.20
S	95-0019	02/20/95			0.05			0.01			0.02			0.10
S	95-0019 LD	02/20/95			0.10			0.04			0.06			0.40
S	95-0020A	02/23/95			0.07			0.02			0.04			0.20
S	95-0023A	02/23/95			0.05			0.01			0.02			0.10
S	95-0024	03/06/95			0.06			0.02			0.03			0.20
S	95-0027	03/06/95			0.06			0.02			0.03			0.20
S	95-0028	03/06/95			0.04			0.01			0.02			0.10
S	95-0029	03/06/95			0.07			0.02			0.03			0.20
S	95-0030	03/06/95			0.06			0.02			0.03			0.20
S	95-0031	03/07/95			0.04			0.01			0.02			0.10
S	95-0032	03/07/95			0.07			0.02			0.03			0.20
S	95-0033	03/07/95			0.06			0.02			0.03			0.20
S	95-0034	03/07/95			0.07			0.02			0.03			0.20
S	95-0035	03/07/95			0.04			0.01			0.02			0.10
S	95-0035 LD	03/07/95			0.10			0.03			0.06			0.30
S	95-0036 FD(95-0035)	03/07/95			0.04			0.01			0.02			0.10
S	95-0037	03/08/95			0.07			0.02			0.03			0.20

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Zinc 65 Mean (pCi/g)	Zinc 65 Error (pCi/g)	Zinc 65 MDA (pCi/g)	Niobium 94 Mean (pCi/g)	Niobium 94 Error (pCi/g)	Niobium 94 MDA (pCi/g)	Ruthenium 103 Mean (pCi/g)	Ruthenium 103 Error (pCi/g)	Ruthenium 103 MDA (pCi/g)	Ruthenium 106 Mean (pCi/g)	Ruthenium 106 Error (pCi/g)	Ruthenium 106 MDA (pCi/g)
S	95-0038	03/08/95			0.04			0.01			0.02			0.10
S	95-0039	03/08/95			0.04			0.01			0.02			0.10
S	95-0040	03/08/95			0.07			0.03			0.03			0.20
S	95-0041	03/08/95			0.07			0.02			0.03			0.20
S	95-0042	03/09/95			0.08			0.02			0.04			0.20
S	95-0043	03/09/95			0.07			0.02			0.03			0.20
S	95-0044	03/09/95			0.07			0.02			0.04			0.20
S	95-0045	03/09/95			0.07			0.02			0.04			0.20
S	95-0046	03/09/95			0.07			0.02			0.03			0.20
S	95-0047	03/28/95			0.06			0.02			0.03			0.20
S	95-0048	03/28/95			0.06			0.02			0.03			0.20
S	95-0049	03/28/95			0.06			0.02			0.03			0.20
S	95-0049 LD	03/28/95			0.06			0.02			0.03			0.20
S	95-0052	03/29/95			0.06			0.02			0.03			0.20
S	95-0053	03/29/95			0.04			0.01			0.02			0.10
S	95-0054	03/29/95			0.07			0.02			0.03			0.20
S	95-0055	03/29/95			0.06			0.02			0.03			0.20
S	95-0056 FD(95-0055)	03/29/95			0.06			0.02			0.03			0.20
S	95-0057	03/29/95			0.06			0.02			0.03			0.20
S	95-0058	03/29/95			0.04			0.01			0.02			0.10
S	95-0059	03/30/95			0.06			0.02			0.03			0.20
S	95-0060	03/30/95			0.06			0.02			0.03			0.20
S	95-0061	03/30/95			0.07			0.02			0.03			0.20
S	95-0061 R1	03/30/95												
S	95-0061 R2	03/30/95												
S	95-0062	03/30/95			0.07			0.02			0.03			0.20
S	95-0063	03/30/95			0.07			0.02			0.03			0.20
S	95-0063 LD	03/30/95			0.06			0.02			0.03			0.20
S	95-0064	03/31/95			0.07			0.02			0.03			0.20
S	95-0065	03/31/95			0.04			0.01			0.02			0.10
S	95-0066	03/31/95			0.04			0.01			0.02			0.10

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Zinc 65 Mean (pCi/g)	Zinc 65 Error (pCi/g)	Zinc 65 MDA (pCi/g)	Niobium 94 Mean (pCi/g)	Niobium 94 Error (pCi/g)	Niobium 94 MDA (pCi/g)	Ruthenium 103 Mean (pCi/g)	Ruthenium 103 Error (pCi/g)	Ruthenium 103 MDA (pCi/g)	Ruthenium 106 Mean (pCi/g)	Ruthenium 106 Error (pCi/g)	Ruthenium 106 MDA (pCi/g)
S	95-0067	03/31/95			0.07			0.02			0.03			0.20
S	95-0068	03/31/95			0.07			0.02			0.03			0.20
S	95-0069	03/31/95			0.06			0.02			0.03			0.20
S	95-0070	04/18/95			0.07			0.02			0.03			0.20
S	95-0071	04/18/95			0.07			0.02			0.03			0.20
S	95-0072	04/21/95			0.05			0.02			0.02			0.10
S	95-0073	04/21/95			0.04			0.01			0.02			0.10
S	95-0074	04/19/95			0.05			0.02			0.02			0.10
S	95-0074 R	04/19/95												
S	95-0075	04/19/95			0.03			0.01			0.01			0.08
S	95-0076	04/19/95			0.08			0.02			0.03			0.20
S	95-0077	04/19/95			0.08			0.03			0.04			0.30
S	95-0078	04/19/95			0.04			0.01			0.02			0.10
S	95-0078 LD	04/19/95			0.06			0.02			0.03			0.20
S	95-0079	04/20/95			0.04			0.01			0.02			0.10
S	95-0080	04/20/95			0.08			0.02			0.03			0.20
S	95-0081 FD(95-0080)	04/20/95			0.04			0.01			0.02			0.10
S	95-0082	04/20/95			0.09			0.03			0.03			0.20
S	95-0083	04/20/95			0.08			0.02			0.03			0.20
S	95-0084	04/20/95			0.08			0.02			0.04			0.20
S	95-0087	04/21/95			0.07			0.03			0.03			0.20
S	95-0088	04/21/95			0.04			0.01			0.02			0.10
S	95-0093	04/24/95			0.06			0.02			0.03			0.20
S	95-0096	04/24/95			0.09			0.03			0.04			0.20
S	95-0097	05/08/95			0.07			0.02			0.04			0.20
S	95-0098	05/08/95			0.06			0.02			0.04			0.20
S	95-0098 LD	05/08/95			0.09			0.03			0.06			0.30
S	95-0099	05/08/95			0.08			0.02			0.04			0.20
S	95-0102	05/08/95			0.06			0.02			0.04			0.20
S	95-0103 FD(95-0102)	05/08/95			0.06			0.02			0.04			0.20
S	95-0104	05/09/95			0.06			0.02			0.04			0.20

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Zinc 65 Mean (pCi/g)	Zinc 65 Error (pCi/g)	Zinc 65 MDA (pCi/g)	Niobium 94 Mean (pCi/g)	Niobium 94 Error (pCi/g)	Niobium 94 MDA (pCi/g)	Ruthenium 103 Mean (pCi/g)	Ruthenium 103 Error (pCi/g)	Ruthenium 103 MDA (pCi/g)	Ruthenium 106 Mean (pCi/g)	Ruthenium 106 Error (pCi/g)	Ruthenium 106 MDA (pCi/g)
S	95-0105	05/09/95			0.07			0.02			0.04			0.20
S	95-0106	05/09/95			0.07			0.02			0.04			0.20
S	95-0107	05/09/95			0.07			0.02			0.04			0.20
S	95-0108	05/09/95			0.07			0.02			0.04			0.20
S	95-0109	05/10/95			0.07			0.02			0.04			0.20
S	95-0110	05/10/95			0.07			0.02			0.04			0.20
S	95-0111	05/10/95			0.08			0.02			0.05			0.20
S	95-0112	05/10/95			0.05			0.02			0.03			0.20
S	95-0113	05/11/95			0.05			0.02			0.03			0.20
S	95-0114	05/11/95			0.07			0.02			0.04			0.20
S	95-0115	05/11/95			0.08			0.02			0.04			0.20
S	95-0116	05/11/95			0.06			0.02			0.04			0.20
S	95-0117	05/11/95			0.06			0.02			0.04			0.20
S	95-0118	05/19/95			0.07			0.02			0.04			0.20
S	95-0119	05/19/95			0.08			0.03			0.05			0.30
S	95-0120	05/19/95			0.07			0.03			0.04			0.20
S	95-0121	06/12/95			0.06			0.02			0.03			0.20
S	95-0121 LD	06/12/95			0.10			0.03			0.06			0.30
S	95-0122	06/12/95			0.07			0.02			0.04			0.20
S	95-0123 FD(95-0122)	06/12/95			0.07			0.02			0.04			0.20
S	95-0124	06/12/95			0.08			0.03			0.04			0.20
S	95-0125	06/12/95			0.08			0.03			0.04			0.20
S	95-0126	06/13/95			0.07			0.02			0.04			0.20
S	95-0127	06/13/95			0.09			0.03			0.04			0.30
S	95-0128	06/13/95			0.08			0.03			0.04			0.20
S	95-0129	06/13/95			0.08			0.02			0.04			0.20
S	95-0132	06/14/95			0.07			0.02			0.04			0.20
S	95-0133	06/14/95			0.04			0.02			0.03			0.10
S	95-0134	06/14/95			0.06			0.02			0.03			0.20
S	95-0135	06/14/95			0.04			0.01			0.02			0.10
S	95-0136	06/15/95			0.08			0.02			0.04			0.20

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Zinc 65 Mean (pCi/g)	Zinc 65 Error (pCi/g)	Zinc 65 MDA (pCi/g)	Niobium 94 Mean (pCi/g)	Niobium 94 Error (pCi/g)	Niobium 94 MDA (pCi/g)	Ruthenium 103 Mean (pCi/g)	Ruthenium 103 Error (pCi/g)	Ruthenium 103 MDA (pCi/g)	Ruthenium 106 Mean (pCi/g)	Ruthenium 106 Error (pCi/g)	Ruthenium 106 MDA (pCi/g)
S	95-0137	06/15/95			0.08			0.03			0.05			0.20
S	95-0138	06/15/95			0.07			0.02			0.03			0.20
S	95-0139	06/15/95			0.08			0.02			0.04			0.20
S	95-0140	06/19/95			0.08			0.03			0.04			0.20
S	95-0141	06/19/95			0.05			0.02			0.02			0.10
S	95-0142	06/19/95			0.05			0.01			0.02			0.10
S	95-0143	06/19/95			0.05			0.02			0.02			0.10
S-BKGD	95-0144	06/20/95												
S-BKGD	95-0145	06/20/95												
S-BKGD	95-0146	06/21/95												
S-BKGD	95-0147	06/21/95												
S-BKGD	95-0148	06/22/95												
S-BKGD	95-0149	06/22/95												
S	95-0150	06/26/95			0.08			0.03			0.04			0.20
S	95-0150 LD	06/26/95			0.10			0.03			0.05			0.30
S	95-0151	06/26/95			0.08			0.03			0.04			0.30
S	95-0152	06/26/95			0.04			0.02			0.02			0.10
S	95-0153	06/26/95			0.08			0.02			0.04			0.20
S	95-0154	06/26/95			0.05			0.02			0.02			0.10
S	95-0155	06/27/95			0.05			0.02			0.03			0.20
S	95-0156	06/27/95			0.06			0.02			0.03			0.20
S	95-0157	06/27/95			0.08			0.02			0.04			0.20
S	95-0158	06/27/95			0.09			0.03			0.04			0.20
S	95-0159 FD(95-0157)	06/27/95			0.07			0.03			0.04			0.20
S	95-0162	06/28/95			0.05			0.01			0.02			0.10

Soil Data Table Summaries		Zinc 65 Mean	Zinc 65 MDA	Niobium 94 Mean	Niobium 94 MDA	Ruthenium 103 Mean	Ruthenium 103 MDA	Ruthenium 106 Mean	Ruthenium 106 MDA
	Maximum	0	0.20	0	0.06	0	0.10	0	0.60
	Average	0	0.08	0	0.02	0	0.04	0	0.22
	Minimum	0	0.03	0	0.01	0	0.01	0	0.08
	Std.Dev.	0	0.04	0	0.01	0	0.02	0	0.11
	Count	0	168	0	168	0	168	0	168

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Zinc 65 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Niobium 94 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Ruthenium 103 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Ruthenium 106 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)

Sample Type	A4CM-xx-xxxx Sample Identification	Date Sampled	Zinc 65 Mean (pCi/L)	Error (pCi/L)	MDA (pCi/L)	Niobium 94 Mean (pCi/L)	Error (pCi/L)	MDA (pCi/L)	Ruthenium 103 Mean (pCi/L)	Error (pCi/L)	MDA (pCi/L)	Ruthenium 106 Mean (pCi/L)	Error (pCi/L)	MDA (pCi/L)
W	95-0021(rinsate)	02/23/95												
W	95-0022(rinsate)	02/23/95			4			2			4			20
W	95-0025(rinsate)	03/06/95												
W	95-0026(rinsate)	03/06/95			5			2			4			20
W	95-0050(rinsate)	03/28/95												
W	95-0051(rinsate)	03/28/95			4			2			3			20
W	95-0085(rinsate)	04/20/95												
W	95-0086(rinsate)	04/20/95			20			6			8			60
W	95-0089(SRE Pond)	04/24/95												
W	95-0090(SRE Pond)	04/24/95			10			5			6			50
W	95-0091(Field Blank)	04/24/95												
W	95-0092(Field Blank)	04/24/95			20			7			8			50
W	95-0094(SRE Pond)	04/24/95												
W	95-0095(SRE Pond)	04/24/95			6			3			4			30
W	95-0100(rinsate)	05/08/95												
W	95-0101(rinsate)	05/08/95			9			4			8			30
W	95-0130(rinsate)	06/13/95												
W	95-0131(rinsate)	06/13/95			8			4			6			40
W	95-0160(rinsate)	06/27/95												
W	95-0161(rinsate)	06/27/95			10			5			6			40
Water Data Table Summaries		Maximum	0		20.0	0		7.0	0		8.0	0		60
		Average	0		9.6	0		4.0	0		5.7	0		36
		Minimum	0		4.0	0		2.0	0		3.0	0		20
		Std.Dev.	0		5.9	0		1.8	0		1.9	0		14
		Count			10			10			10			10

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Tin 113 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Cesium 134 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Cesium 137 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Cerium 144 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)
S	94-0001	11/17/94			0.07			0.06			0.08			0.20
S	94-0001 LD	11/17/94			0.06			0.04	0.04	0.03				0.20
S	94-0002	11/17/94			0.08			0.07	0.08	0.06				0.30
S	94-0003	11/18/94			0.08			0.07	0.09	0.05				0.30
S	94-0004 FD(94-0003)	11/18/94			0.08			0.07	0.08	0.04				0.30
S	94-0005	11/18/94			0.10			0.08	0.16	0.08				0.30
S	94-0006	11/18/94			0.08			0.07			0.06			0.30
S	94-0007	11/21/94			0.04			0.04	0.06	0.03				0.30
S	94-0007 R	11/21/94												
S	94-0008	11/21/94			0.09			0.08			0.07			0.30
S	94-0009	11/21/94			0.09			0.08	0.06	0.06				0.30
S	94-0010	11/22/94			0.08			0.08			0.06			0.30
S	94-0011	11/22/94			0.09			0.07			0.06			0.30
S	94-0013	11/22/94			0.07			0.06			0.05			0.20
S	94-0014	11/23/94			0.08			0.07			0.05			0.30
S	94-0015	11/23/94			0.07			0.06			0.05			0.20
S	94-0015 LD	11/23/94			0.07			0.06			0.05			0.30
S	94-0016	11/23/94			0.05			0.04			0.06			0.20
S	94-0017	11/28/94			0.08			0.07			0.06			0.20
S	94-0018	11/28/94			0.08			0.07			0.05			0.30
S	94-0019	11/29/94			0.08			0.07			0.05			0.30
S	94-0020	11/29/94			0.05			0.04			0.03			0.20
S	94-0021	11/30/94			0.09			0.07			0.06			0.30
S	94-0022	11/30/94			0.07			0.07			0.05			0.30
S	95-0001A	02/15/95			0.03			0.03	0.12	0.03				0.10
S	95-0001A LD	02/15/95												
S	95-0002A	02/15/95			0.03			0.03	0.06	0.03				0.10
S	95-0003A	02/15/95			0.03			0.03	0.24	0.03				0.10
S	95-0004A	02/16/95			0.03			0.03	0.04	0.02				0.10
S	95-0005A	02/16/95			0.02			0.02	0.04	0.02				0.08
S	95-0006A	02/16/95			0.03			0.03			0.02			0.10

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Tin 113 Mean (pCi/g)	Tin 113 Error (pCi/g)	Tin 113 MDA (pCi/g)	Cesium 134 Mean (pCi/g)	Cesium 134 Error (pCi/g)	Cesium 134 MDA (pCi/g)	Cesium 137 Mean (pCi/g)	Cesium 137 Error (pCi/g)	Cesium 137 MDA (pCi/g)	Cerium 144 Mean (pCi/g)	Cerium 144 Error (pCi/g)	Cerium 144 MDA (pCi/g)
S	95-0007A	02/16/95			0.03			0.03	0.12	0.03				0.10
S	95-0008A	02/16/95			0.03			0.03	0.08	0.03				0.10
S	95-0009	02/22/95			0.03			0.03			0.02			0.10
S	95-0010	02/22/95			0.02			0.02			0.01			0.09
S	95-0010 LD	02/22/95			0.05			0.05			0.04			0.20
S	95-0011	02/21/95			0.03			0.02			0.02			0.10
S	95-0012	02/21/95			0.02			0.01			0.01			0.08
S	95-0013	02/22/95			0.03			0.03			0.02			0.20
S	95-0014	02/22/95			0.02			0.02			0.01			0.10
S	95-0014 LD	02/22/95												
S	95-0015 FD(95-0014)	02/22/95			0.03			0.03			0.02			0.10
S	95-0016A	02/23/95			0.03			0.03			0.02			0.10
S	95-0017A	02/23/95			0.02			0.02			0.01			0.10
S	95-0018	02/20/95			0.03			0.03	0.11	0.03				0.10
S	95-0019	02/20/95			0.02			0.02	0.09	0.02				0.10
S	95-0019 LD	02/20/95			0.06			0.06	0.08	0.05				0.20
S	95-0020A	02/23/95			0.03			0.03			0.02			0.20
S	95-0023A	02/23/95			0.02			0.02	0.17	0.02				0.10
S	95-0024	03/06/95			0.03			0.03			0.02			0.10
S	95-0027	03/06/95			0.03			0.03			0.02			0.10
S	95-0028	03/06/95			0.02			0.02	0.11	0.02				0.10
S	95-0029	03/06/95			0.03			0.03	0.07	0.03				0.10
S	95-0030	03/06/95			0.03			0.02			0.02			0.10
S	95-0031	03/07/95			0.02			0.02	0.17	0.01				0.09
S	95-0032	03/07/95			0.03			0.03	0.27	0.03				0.10
S	95-0033	03/07/95			0.03			0.03	0.45	0.03				0.10
S	95-0034	03/07/95			0.03			0.03	0.43	0.04				0.10
S	95-0035	03/07/95			0.02			0.02	0.43	0.02				0.10
S	95-0035 LD	03/07/95			0.05			0.04	0.30	0.05				0.20
S	95-0036 FD(95-0035)	03/07/95			0.02			0.02	0.44	0.02				0.10
S	95-0037	03/08/95			0.03			0.03	0.12	0.03				0.10

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Tin 113 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Cesium 134 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Cesium 137 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Cerium 144 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)
S	95-0038	03/08/95			0.02			0.02			0.02			0.09
S	95-0039	03/08/95			0.02			0.02			0.01			0.10
S	95-0040	03/08/95			0.03			0.03	0.08	0.03				0.10
S	95-0041	03/08/95			0.03			0.03			0.02			0.10
S	95-0042	03/09/95			0.03			0.03	0.09	0.03				0.20
S	95-0043	03/09/95			0.03			0.03			0.02			0.20
S	95-0044	03/09/95			0.03			0.03	0.17	0.03				0.10
S	95-0045	03/09/95			0.03			0.03	0.67	0.04				0.10
S	95-0046	03/09/95			0.03			0.03	0.09	0.02				0.10
S	95-0047	03/28/95			0.03			0.03	0.20	0.03				0.10
S	95-0048	03/28/95			0.03			0.03	0.10	0.02				0.10
S	95-0049	03/28/95			0.03			0.03	0.23	0.03				0.10
S	95-0049 LD	03/28/95			0.03			0.02	0.20	0.03				0.10
S	95-0052	03/29/95			0.03			0.03	0.09	0.03				0.10
S	95-0053	03/29/95			0.02			0.02	0.06	0.01				0.09
S	95-0054	03/29/95			0.03			0.03			0.02			0.10
S	95-0055	03/29/95			0.03			0.03			0.02			0.10
S	95-0056 FD(95-0055)	03/29/95			0.03			0.03			0.02			0.10
S	95-0057	03/29/95			0.03			0.03	0.14	0.03				0.10
S	95-0058	03/29/95			0.02			0.02	0.04	0.01				0.08
S	95-0059	03/30/95			0.03			0.03			0.02			0.10
S	95-0060	03/30/95			0.03			0.03			0.03			0.10
S	95-0061	03/30/95			0.03			0.03	0.04	0.03				0.10
S	95-0061 R1	03/30/95												
S	95-0061 R2	03/30/95												
S	95-0062	03/30/95			0.03			0.03	0.53	0.04				0.10
S	95-0063	03/30/95			0.03			0.03	0.08	0.03				0.20
S	95-0063 LD	03/30/95			0.03			0.03			0.03			0.10
S	95-0064	03/31/95			0.03			0.03	0.23	0.03				0.10
S	95-0065	03/31/95			0.02			0.02	0.13	0.02				0.10
S	95-0066	03/31/95			0.02			0.02	0.13	0.02				0.09

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Tin 113 Mean (pCi/g)	Tin 113 Error (pCi/g)	Tin 113 MDA (pCi/g)	Cesium 134 Mean (pCi/g)	Cesium 134 Error (pCi/g)	Cesium 134 MDA (pCi/g)	Cesium 137 Mean (pCi/g)	Cesium 137 Error (pCi/g)	Cesium 137 MDA (pCi/g)	Cerium 144 Mean (pCi/g)	Cerium 144 Error (pCi/g)	Cerium 144 MDA (pCi/g)
S	95-0067	03/31/95			0.03			0.03	0.11	0.03				0.10
S	95-0068	03/31/95			0.03			0.03	0.38	0.03				0.10
S	95-0069	03/31/95			0.03			0.03	0.09	0.03				0.10
S	95-0070	04/18/95			0.03			0.03			0.03			0.10
S	95-0071	04/18/95			0.03			0.03	0.07	0.03				0.10
S	95-0072	04/21/95			0.02			0.02	0.12	0.02				0.08
S	95-0073	04/21/95			0.02			0.02	0.23	0.02				0.09
S	95-0074	04/19/95			0.02			0.02	0.07	0.01				0.09
S	95-0074 R	04/19/95												
S	95-0075	04/19/95			0.01			0.01	0.06	0.01				0.06
S	95-0076	04/19/95			0.03			0.04	0.11	0.02				0.10
S	95-0077	04/19/95			0.03			0.04			0.03			0.10
S	95-0078	04/19/95			0.02			0.02			0.02			0.10
S	95-0078 LD	04/19/95			0.02			0.03			0.02			0.10
S	95-0079	04/20/95			0.02			0.02	0.30	0.02				0.09
S	95-0080	04/20/95			0.03			0.03	0.10	0.03				0.10
S	95-0081 FD(95-0080)	04/20/95			0.02			0.02	0.09	0.02				0.09
S	95-0082	04/20/95			0.03	0.03	0.03		0.09	0.03				0.10
S	95-0083	04/20/95			0.03			0.03			0.03			0.10
S	95-0084	04/20/95			0.03			0.03			0.03			0.10
S	95-0087	04/21/95			0.03			0.03	0.03	0.03				0.10
S	95-0088	04/21/95			0.02			0.02	0.19	0.02				0.08
S	95-0093	04/24/95			0.03			0.03	0.68	0.03				0.10
S	95-0096	04/24/95			0.04			0.03	2.40	0.06				0.20
S	95-0097	05/08/95			0.03			0.04	0.07	0.03				0.10
S	95-0098	05/08/95			0.03			0.03			0.02			0.10
S	95-0098 LD	05/08/95			0.04			0.04			0.03			0.20
S	95-0099	05/08/95			0.03			0.04	0.19	0.03				0.10
S	95-0102	05/08/95			0.03			0.03	0.44	0.03				0.10
S	95-0103 FD(95-0102)	05/08/95			0.03			0.03	0.41	0.03				0.10
S	95-0104	05/09/95			0.03			0.03	0.10	0.02				0.10

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Tin 113 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Cesium 134 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Cesium 137 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Cerium 144 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)
S	95-0105	05/09/95			0.03			0.03	0.37	0.03				0.10
S	95-0106	05/09/95			0.04			0.04	0.34	0.02				0.20
S	95-0107	05/09/95			0.03			0.03	0.51	0.03				0.10
S	95-0108	05/09/95			0.03			0.03	0.43	0.03				0.10
S	95-0109	05/10/95			0.03			0.03	0.05	0.03				0.10
S	95-0110	05/10/95			0.03			0.03			0.02			0.10
S	95-0111	05/10/95			0.04			0.04	0.53	0.04				0.20
S	95-0112	05/10/95			0.03			0.02	0.04	0.02				0.10
S	95-0113	05/11/95			0.03			0.03	0.06	0.04				0.10
S	95-0114	05/11/95			0.03			0.03	0.18	0.03				0.10
S	95-0115	05/11/95			0.03			0.04	0.15	0.04				0.10
S	95-0116	05/11/95			0.03			0.03	0.04	0.01				0.10
S	95-0117	05/11/95			0.03			0.03	0.02	0.02				0.10
S	95-0118	05/19/95			0.03			0.04	0.12	0.02				0.10
S	95-0119	05/19/95			0.04			0.05	0.38	0.04				0.20
S	95-0120	05/19/95			0.04			0.04	0.03	0.02				0.10
S	95-0121	06/12/95			0.03			0.03	0.10	0.02				0.10
S	95-0121 LD	06/12/95			0.05			0.05	0.07	0.04				0.20
S	95-0122	06/12/95			0.03			0.03	0.13	0.02				0.10
S	95-0123 FD(95-0122)	06/12/95			0.04			0.04	0.16	0.03				0.20
S	95-0124	06/12/95			0.03			0.04	0.17	0.02				0.10
S	95-0125	06/12/95			0.03			0.04	0.08	0.03				0.10
S	95-0126	06/13/95			0.03			0.03	0.15	0.03				0.10
S	95-0127	06/13/95			0.03			0.04	0.03	0.03				0.20
S	95-0128	06/13/95			0.04			0.04	0.17	0.03				0.10
S	95-0129	06/13/95			0.04			0.04	0.19	0.03				0.10
S	95-0132	06/14/95			0.03			0.04	0.29	0.04				0.20
S	95-0133	06/14/95			0.02			0.02	0.04	0.02				0.08
S	95-0134	06/14/95			0.02			0.04	0.10	0.02				0.09
S	95-0135	06/14/95			0.02			0.02	0.07	0.02				0.08
S	95-0136	06/15/95			0.03			0.02	0.11	0.03				0.10

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Tin 113 Mean (pCi/g)	Tin 113 Error (pCi/g)	Tin 113 MDA (pCi/g)	Cesium 134 Mean (pCi/g)	Cesium 134 Error (pCi/g)	Cesium 134 MDA (pCi/g)	Cesium 137 Mean (pCi/g)	Cesium 137 Error (pCi/g)	Cesium 137 MDA (pCi/g)	Cerium 144 Mean (pCi/g)	Cerium 144 Error (pCi/g)	Cerium 144 MDA (pCi/g)
S	95-0137	06/15/95			0.04			0.04	0.12	0.03				0.20
S	95-0138	06/15/95			0.03			0.03	0.03	0.02				0.10
S	95-0139	06/15/95			0.03			0.04	0.09	0.03				0.10
S	95-0140	06/19/95			0.03			0.04	0.10	0.02				0.10
S	95-0141	06/19/95			0.02			0.02	0.06	0.02				0.09
S	95-0142	06/19/95			0.02			0.02			0.02			0.09
S	95-0143	06/19/95			0.02			0.02			0.02			0.08
S-BKGD	95-0144	06/20/95												
S-BKGD	95-0145	06/20/95												
S-BKGD	95-0146	06/21/95												
S-BKGD	95-0147	06/21/95												
S-BKGD	95-0148	06/22/95												
S-BKGD	95-0149	06/22/95												
S	95-0150	06/26/95			0.04			0.04	0.20	0.04				0.10
S	95-0150 LD	06/26/95			0.04			0.05	0.15	0.04				0.20
S	95-0151	06/26/95			0.04			0.04	1.20	0.05				0.20
S	95-0152	06/26/95			0.02			0.02	0.03	0.01				0.08
S	95-0153	06/26/95			0.03			0.03	0.94	0.04				0.10
S	95-0154	06/26/95			0.02			0.02	0.51	0.02				0.09
S	95-0155	06/27/95			0.02			0.03	0.09	0.02				0.10
S	95-0156	06/27/95			0.03			0.03	0.13	0.03				0.10
S	95-0157	06/27/95			0.04			0.04	0.23	0.02				0.10
S	95-0158	06/27/95			0.03			0.04	0.12	0.03				0.20
S	95-0159 FD(95-0157)	06/27/95			0.03	0.04	0.03		0.26	0.03				0.20
S	95-0162	06/28/95			0.02			0.02	0.04	0.02				0.08
Soil Data Table Summaries		Maximum	0		0.10	0.04		0.08	2.40		0.08	0		0.30
		Average	0		0.04	0.03		0.03	0.21		0.03	0		0.13
		Minimum	0		0.01	0.03		0.01	0.03		0.01	0		0.06
		Std.Dev.	0		0.02	0.00		0.02	0.30		0.02	0		0.07
		Count	0		168	2		166	74		52	0		168

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Tin 113 Mean (pCi/g)	Tin 113 Error (pCi/g)	Tin 113 MDA (pCi/g)	Cesium 134 Mean (pCi/g)	Cesium 134 Error (pCi/g)	Cesium 134 MDA (pCi/g)	Cesium 137 Mean (pCi/g)	Cesium 137 Error (pCi/g)	Cesium 137 MDA (pCi/g)	Cerium 144 Mean (pCi/g)	Cerium 144 Error (pCi/g)	Cerium 144 MDA (pCi/g)

Sample Type	A4CM-xx-xxxx Sample Identification	Date Sampled	Tin 113 Mean (pCi/L)	Tin 113 Error (pCi/L)	Tin 113 MDA (pCi/L)	Cesium 134 Mean (pCi/L)	Cesium 134 Error (pCi/L)	Cesium 134 MDA (pCi/L)	Cesium 137 Mean (pCi/L)	Cesium 137 Error (pCi/L)	Cesium 137 MDA (pCi/L)	Cerium 144 Mean (pCi/L)	Cerium 144 Error (pCi/L)	Cerium 144 MDA (pCi/L)
W	95-0021(rinsate)	02/23/95												
W	95-0022(rinsate)	02/23/95			3			2			2			10
W	95-0025(rinsate)	03/06/95												
W	95-0026(rinsate)	03/06/95			3			2			2			10
W	95-0050(rinsate)	03/28/95												
W	95-0051(rinsate)	03/28/95			3			2			2			10
W	95-0085(rinsate)	04/20/95												
W	95-0086(rinsate)	04/20/95			8			7			7			30
W	95-0089(SRE Pond)	04/24/95												
W	95-0090(SRE Pond)	04/24/95			6			6			6			30
W	95-0091(Field Blank)	04/24/95												
W	95-0092(Field Blank)	04/24/95			8			7			7			30
W	95-0094(SRE Pond)	04/24/95												
W	95-0095(SRE Pond)	04/24/95			3			3			3			10
W	95-0100(rinsate)	05/08/95												
W	95-0101(rinsate)	05/08/95			5			4			4			20
W	95-0130(rinsate)	06/13/95												
W	95-0131(rinsate)	06/13/95			5			4			4			20
W	95-0160(rinsate)	06/27/95												
W	95-0161(rinsate)	06/27/95			6			6			5			20
Water Data Table Summaries		Maximum	0		8.0	0		7.0	0		7.0	0		30
		Average	0		5.0	0		4.3	0		4.2	0		19
		Minimum	0		3.0	0		2.0	0		2.0	0		10
		Std.Dev.	0		2.0	0		2.1	0		2.0	0		9
		Count			10			10			10			10

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Europium 152 Mean (pCi/g)	Europium 152 Error (pCi/g)	Europium 152 MDA (pCi/g)	Europium 154 Mean (pCi/g)	Europium 154 Error (pCi/g)	Europium 154 MDA (pCi/g)	Europium 155 Mean (pCi/g)	Europium 155 Error (pCi/g)	Europium 155 MDA (pCi/g)	Radium 226 Mean (pCi/g)	Radium 226 Error (pCi/g)	Radium 226 MDA (pCi/g)
S	94-0001	11/17/94			0.08			0.05			0.10	0.87	0.11	
S	94-0001 LD	11/17/94			0.07			0.04			0.10	0.85	0.07	
S	94-0002	11/17/94			0.10			0.07			0.10	0.89	0.12	
S	94-0003	11/18/94			0.10			0.06			0.10	0.97	0.14	
S	94-0004 FD(94-0003)	11/18/94			0.10			0.08			0.20	0.90	0.13	
S	94-0005	11/18/94			0.10			0.07			0.10	0.80	0.12	
S	94-0006	11/18/94			0.10			0.07			0.20	0.82	0.11	
S	94-0007	11/21/94			0.06			0.04			0.08	0.82	0.06	
S	94-0007 R	11/21/94												
S	94-0008	11/21/94			0.10			0.07			0.10	1.00	0.15	
S	94-0009	11/21/94			0.10			0.08			0.20	0.82	0.12	
S	94-0010	11/22/94			0.10			0.06			0.10	0.69	0.11	
S	94-0011	11/22/94			0.09			0.07			0.10	0.85	0.13	
S	94-0013	11/22/94			0.08			0.05			0.02	0.57	0.10	
S	94-0014	11/23/94			0.10			0.06			0.10	0.67	0.10	
S	94-0015	11/23/94			0.08			0.06			0.10	0.75	0.09	
S	94-0015 LD	11/23/94			0.08			0.06			0.10	0.67	0.09	
S	94-0016	11/23/94			0.06			0.04			0.10	0.79	0.07	
S	94-0017	11/28/94			0.09			0.06			0.10	0.77	0.13	
S	94-0018	11/28/94			0.10			0.06			0.20	0.83	0.12	
S	94-0019	11/29/94			0.09			0.06			0.10	0.71	0.11	
S	94-0020	11/29/94			0.06			0.04			0.09	0.74	0.08	
S	94-0021	11/30/94			0.09			0.06			0.10	0.79	0.12	
S	94-0022	11/30/94			0.10			0.06			0.20	0.74	0.12	
S	95-0001A	02/15/95			0.05			0.04				0.71	0.06	
S	95-0001A LD	02/15/95												
S	95-0002A	02/15/95			0.04			0.03				0.77	0.05	
S	95-0003A	02/15/95			0.05			0.03			0.08	0.70	0.06	
S	95-0004A	02/16/95			0.05			0.03			0.07	0.72	0.06	
S	95-0005A	02/16/95			0.03			0.02			0.05	0.71	0.03	
S	95-0006A	02/16/95			0.04			0.03			0.05	0.89	0.05	

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Europium 152 Mean (pCi/g)	Europium 152 Error (pCi/g)	Europium 152 MDA (pCi/g)	Europium 154 Mean (pCi/g)	Europium 154 Error (pCi/g)	Europium 154 MDA (pCi/g)	Europium 155 Mean (pCi/g)	Europium 155 Error (pCi/g)	Europium 155 MDA (pCi/g)	Radium 226 Mean (pCi/g)	Radium 226 Error (pCi/g)	Radium 226 MDA (pCi/g)
S	95-0007A	02/16/95			0.04			0.03			0.08	0.74	0.05	
S	95-0008A	02/16/95			0.04			0.03			0.06	0.79	0.05	
S	95-0009	02/22/95			0.05			0.03			0.09	1.10	0.05	
S	95-0010	02/22/95			0.04			0.02			0.07	0.87	0.03	
S	95-0010 LD	02/22/95			0.07			0.05			0.08	0.79	0.11	
S	95-0011	02/21/95			0.04			0.03			0.06	0.91	0.05	
S	95-0012	02/21/95			0.03			0.02			0.04	0.85	0.03	
S	95-0013	02/22/95			0.06			0.04			0.09	0.89	0.05	
S	95-0014	02/22/95			0.04			0.02			0.08	0.61	0.03	
S	95-0014 LD	02/22/95												
S	95-0015 FD(95-0014)	02/22/95			0.05			0.03			0.06	0.89	0.05	
S	95-0016A	02/23/95			0.04			0.03			0.09	0.81	0.06	
S	95-0017A	02/23/95			0.04			0.02			0.06	0.89	0.03	
S	95-0018	02/20/95			0.05			0.03			0.07	0.75	0.05	
S	95-0019	02/20/95			0.04			0.03			0.10	0.89	0.03	
S	95-0019 LD	02/20/95			0.10			0.06			0.10	0.69	0.10	
S	95-0020A	02/23/95			0.06			0.04			0.08	1.00	0.05	
S	95-0023A	02/23/95			0.04			0.03			0.05	0.93	0.04	
S	95-0024	03/06/95			0.04			0.03			0.05	0.74	0.05	
S	95-0027	03/06/95			0.05			0.03			0.07	0.59	0.05	
S	95-0028	03/06/95			0.04			0.03			0.05	0.78	0.03	
S	95-0029	03/06/95			0.05			0.03			0.07	0.75	0.06	
S	95-0030	03/06/95			0.05			0.03			0.07	0.64	0.05	
S	95-0031	03/07/95			0.04			0.02			0.05	0.45	0.03	
S	95-0032	03/07/95			0.05			0.03			0.07	0.83	0.06	
S	95-0033	03/07/95			0.06			0.03			0.07	0.84	0.06	
S	95-0034	03/07/95			0.05			0.03			0.07	0.83	0.06	
S	95-0035	03/07/95			0.04			0.02			0.05	0.78	0.03	
S	95-0035 LD	03/07/95			0.06			0.04			0.07	0.66	0.10	
S	95-0036 FD(95-0035)	03/07/95			0.04			0.02			0.05	0.78	0.03	
S	95-0037	03/08/95			0.05			0.03			0.07	0.74	0.06	

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Europium 152 Mean (pCi/g)	Europium 152 Error (pCi/g)	Europium 152 MDA (pCi/g)	Europium 154 Mean (pCi/g)	Europium 154 Error (pCi/g)	Europium 154 MDA (pCi/g)	Europium 155 Mean (pCi/g)	Europium 155 Error (pCi/g)	Europium 155 MDA (pCi/g)	Radium 226 Mean (pCi/g)	Radium 226 Error (pCi/g)	Radium 226 MDA (pCi/g)
S	95-0038	03/08/95			0.04			0.02			0.05	0.85	0.03	
S	95-0039	03/08/95			0.04			0.02			0.05	0.88	0.04	
S	95-0040	03/08/95			0.05			0.03			0.06	0.90	0.06	
S	95-0041	03/08/95			0.05			0.03			0.06	0.82	0.05	
S	95-0042	03/09/95			0.06			0.04			0.08	0.98	0.06	
S	95-0043	03/09/95			0.06			0.04			0.08	0.85	0.06	
S	95-0044	03/09/95			0.05			0.04			0.07	0.82	0.06	
S	95-0045	03/09/95			0.05			0.03			0.09	1.30	0.06	
S	95-0046	03/09/95			0.05			0.03			0.06	1.00	0.06	
S	95-0047	03/28/95			0.04			0.03			0.06	0.69	0.05	
S	95-0048	03/28/95			0.04			0.03			0.05	0.66	0.04	
S	95-0049	03/28/95			0.05			0.03			0.07	0.68	0.05	
S	95-0049 LD	03/28/95			0.04			0.03			0.06	0.58	0.04	
S	95-0052	03/29/95			0.05			0.03			0.07	0.77	0.06	
S	95-0053	03/29/95			0.04			0.02			0.08	0.60	0.03	
S	95-0054	03/29/95			0.05			0.03	0.06	0.05		0.83	0.05	
S	95-0055	03/29/95			0.04			0.03			0.08	0.85	0.05	
S	95-0056 FD(95-0055)	03/29/95			0.05			0.03			0.08	0.78	0.05	
S	95-0057	03/29/95			0.05			0.04	0.06	0.06		0.68	0.05	
S	95-0058	03/29/95			0.03			0.02			0.04	0.68	0.03	
S	95-0059	03/30/95			0.05			0.03			0.07	0.80	0.05	
S	95-0060	03/30/95			0.05			0.04			0.08	0.68	0.05	
S	95-0061	03/30/95			0.05			0.03			0.06	0.87	0.05	
S	95-0061 R1	03/30/95												
S	95-0061 R2	03/30/95												
S	95-0062	03/30/95			0.05			0.03			0.06	0.86	0.06	
S	95-0063	03/30/95			0.06			0.04			0.08	0.82	0.05	
S	95-0063 LD	03/30/95			0.05			0.03	0.05	0.04		0.61	0.05	
S	95-0064	03/31/95			0.05			0.03			0.08	0.83	0.06	
S	95-0065	03/31/95			0.04			0.03			0.05	0.87	0.03	
S	95-0066	03/31/95			0.04			0.02	0.04	0.04		0.85	0.03	

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Europium 152 Mean (pCi/g)	Europium 152 Error (pCi/g)	Europium 152 MDA (pCi/g)	Europium 154 Mean (pCi/g)	Europium 154 Error (pCi/g)	Europium 154 MDA (pCi/g)	Europium 155 Mean (pCi/g)	Europium 155 Error (pCi/g)	Europium 155 MDA (pCi/g)	Radium 226 Mean (pCi/g)	Radium 226 Error (pCi/g)	Radium 226 MDA (pCi/g)
S	95-0067	03/31/95			0.05			0.04	0.11	0.05		0.98	0.06	
S	95-0068	03/31/95			0.05			0.03	0.06	0.04		1.10	0.05	
S	95-0069	03/31/95			0.05			0.04			0.08	0.78	0.05	
S	95-0070	04/18/95			0.05			0.03			0.09	0.58	0.05	
S	95-0071	04/18/95			0.06			0.04			0.10	0.55	0.05	
S	95-0072	04/21/95			0.03			0.02			0.07	0.60	0.03	
S	95-0073	04/21/95			0.04			0.02			0.08	0.61	0.03	
S	95-0074	04/19/95			0.03			0.02			0.10	0.77	0.04	
S	95-0074 R	04/19/95												
S	95-0075	04/19/95			0.02			0.02			0.05	0.68	0.02	
S	95-0076	04/19/95			0.06			0.04			0.07	0.76	0.06	
S	95-0077	04/19/95			0.06			0.04			0.08	0.73	0.07	
S	95-0078	04/19/95			0.04			0.03			0.10	0.72	0.04	
S	95-0078 LD	04/19/95			0.04			0.03			0.09	0.55	0.05	
S	95-0079	04/20/95			0.04			0.03			0.08	0.78	0.04	
S	95-0080	04/20/95			0.05			0.03			0.08	0.90	0.06	
S	95-0081 FD(95-0080)	04/20/95			0.04			0.03			0.10	0.78	0.04	
S	95-0082	04/20/95			0.06			0.03			0.07	0.91	0.06	
S	95-0083	04/20/95			0.06			0.04			0.09	0.73	0.05	
S	95-0084	04/20/95			0.05			0.03			0.08	0.78	0.05	
S	95-0087	04/21/95			0.05			0.03			0.08	0.65	0.06	
S	95-0088	04/21/95			0.04			0.02			0.07	0.69	0.03	
S	95-0093	04/24/95			0.05			0.03			0.20	1.30	0.06	
S	95-0096	04/24/95			0.06			0.04			0.09	1.10	0.07	
S	95-0097	05/08/95			0.05			0.03				0.82	0.06	
S	95-0098	05/08/95			0.04			0.03			0.09	0.94	0.04	
S	95-0098 LD	05/08/95			0.07			0.04			0.01	0.780	0.069	
S	95-0099	05/08/95			0.05			0.03			0.10	0.70	0.05	
S	95-0102	05/08/95			0.04			0.03			0.08	0.78	0.05	
S	95-0103 FD(95-0102)	05/08/95			0.05			0.03			0.08	0.75	0.04	
S	95-0104	05/09/95			0.04			0.03			0.10	0.74	0.04	

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Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Europium 152 Mean (pCi/g)	Europium 152 Error (pCi/g)	Europium 152 MDA (pCi/g)	Europium 154 Mean (pCi/g)	Europium 154 Error (pCi/g)	Europium 154 MDA (pCi/g)	Europium 155 Mean (pCi/g)	Europium 155 Error (pCi/g)	Europium 155 MDA (pCi/g)	Radium 226 Mean (pCi/g)	Radium 226 Error (pCi/g)	Radium 226 MDA (pCi/g)
S	95-0105	05/09/95			0.04			0.03			0.10	0.62	0.05	
S	95-0106	05/09/95			0.06			0.04			0.08	0.74	0.05	
S	95-0107	05/09/95			0.05			0.03			0.08	0.62	0.05	
S	95-0108	05/09/95			0.05			0.03			0.10	0.74	0.05	
S	95-0109	05/10/95			0.05			0.04			0.07	0.74	0.05	
S	95-0110	05/10/95			0.04			0.03			0.08	0.91	0.04	
S	95-0111	05/10/95			0.05			0.03			0.09	0.88	0.06	
S	95-0112	05/10/95			0.04			0.03			0.08	0.86	0.04	
S	95-0113	05/11/95			0.05			0.03			0.06	0.81	0.05	
S	95-0114	05/11/95			0.05			0.03			0.09	0.78	0.06	
S	95-0115	05/11/95			0.05			0.04			0.10	0.77	0.05	
S	95-0116	05/11/95			0.04			0.03			0.10	0.850	0.050	
S	95-0117	05/11/95			0.04			0.03			0.08	0.700	0.044	
S	95-0118	05/19/95			0.05			0.03			0.10	0.780	0.053	
S	95-0119	05/19/95			0.08			0.05			0.20	1.400	0.082	
S	95-0120	05/19/95			0.06			0.04			0.08	1.400	0.070	
S	95-0121	06/12/95			0.05			0.03			0.07	0.59	0.05	
S	95-0121 LD	06/12/95			0.08			0.05			0.10	0.65	0.07	
S	95-0122	06/12/95			0.05			0.03			0.10	0.76	0.05	
S	95-0123 FD(95-0122)	06/12/95			0.06			0.04			0.08	0.76	0.06	
S	95-0124	06/12/95			0.05			0.04			0.09	0.55	0.06	
S	95-0125	06/12/95			0.06			0.04			0.09	0.67	0.05	
S	95-0126	06/13/95			0.05			0.03			0.08	0.77	0.05	
S	95-0127	06/13/95			0.06			0.04			0.10	0.86	0.06	
S	95-0128	06/13/95			0.05			0.04			0.20	0.74	0.06	
S	95-0129	06/13/95			0.05			0.04			0.10	0.91	0.06	
S	95-0132	06/14/95			0.06			0.04			0.08	0.54	0.06	
S	95-0133	06/14/95			0.03			0.02			0.07	0.70	0.03	
S	95-0134	06/14/95			0.03			0.02			0.10	0.67	0.04	
S	95-0135	06/14/95			0.03			0.02			0.06	0.40	0.03	
S	95-0136	06/15/95			0.06			0.04			0.10	0.73	0.06	

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Europium 152 Mean (pCi/g)	Europium 152 Error (pCi/g)	Europium 152 MDA (pCi/g)	Europium 154 Mean (pCi/g)	Europium 154 Error (pCi/g)	Europium 154 MDA (pCi/g)	Europium 155 Mean (pCi/g)	Europium 155 Error (pCi/g)	Europium 155 MDA (pCi/g)	Radium 226 Mean (pCi/g)	Radium 226 Error (pCi/g)	Radium 226 MDA (pCi/g)
S	95-0137	06/15/95			0.06			0.04			0.07	0.97	0.06	
S	95-0138	06/15/95			0.04			0.03			0.10	0.57	0.04	
S	95-0139	06/15/95			0.06			0.04			0.10	0.70	0.06	
S	95-0140	06/19/95			0.05			0.04			0.09	0.96	0.06	
S	95-0141	06/19/95			0.03			0.02			0.07	0.95	0.03	
S	95-0142	06/19/95			0.04			0.02			0.06	0.81	0.04	
S	95-0143	06/19/95			0.03			0.02			0.09	0.79	0.03	
S-BKGD	95-0144	06/20/95												
S-BKGD	95-0145	06/20/95												
S-BKGD	95-0146	06/21/95												
S-BKGD	95-0147	06/21/95												
S-BKGD	95-0148	06/22/95												
S-BKGD	95-0149	06/22/95												
S	95-0150	06/26/95			0.05			0.04			0.08	0.86	0.06	
S	95-0150 LD	06/26/95			0.06			0.04			0.10	0.76	0.06	
S	95-0151	06/26/95			0.07			0.04			0.09	0.74	0.07	
S	95-0152	06/26/95			0.03			0.02			0.07	0.84	0.03	
S	95-0153	06/26/95			0.05			0.03			0.10	0.81	0.05	
S	95-0154	06/26/95			0.03			0.02			0.08	0.88	0.03	
S	95-0155	06/27/95			0.05			0.03			0.07	1.60	0.05	
S	95-0156	06/27/95			0.04			0.03			0.07	0.81	0.04	
S	95-0157	06/27/95			0.05			0.03			0.10	0.85	0.05	
S	95-0158	06/27/95			0.06			0.04			0.08	0.78	0.06	
S	95-0159 FD(95-0157)	06/27/95			0.06			0.04			0.08	0.80	0.06	
S	95-0162	06/28/95			0.03			0.02			0.04	0.42	0.03	
Soil Data Table Summaries		Maximum	0		0.10	0		0.08	0.11		0.20	1.60		0
		Average	0		0.05	0		0.04	0.06		0.08	0.79		0
		Minimum	0		0.02	0		0.02	0.04		0.00	0.40		0
		Std.Dev.	0		0.02	0		0.01	0.02		0.03	0.16		0
		Count	0		168	0		168	6		161	168		0

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Europium 152 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Europium 154 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Europium 155 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Radium 226 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)

Sample Type	A4CM-xx-xxxx Sample Identification	Date Sampled	Europium 152 Mean (pCi/L)	Error (pCi/L)	MDA (pCi/L)	Europium 154 Mean (pCi/L)	Error (pCi/L)	MDA (pCi/L)	Europium 155 Mean (pCi/L)	Error (pCi/L)	MDA (pCi/L)	Radium 226 Mean (pCi/L)	Error (pCi/L)	MDA (pCi/L)
W	95-0021(rinsate)	02/23/95												
W	95-0022(rinsate)	02/23/95			4			3			5			4
W	95-0025(rinsate)	03/06/95												
W	95-0026(rinsate)	03/06/95			5			3			6			4
W	95-0050(rinsate)	03/28/95												
W	95-0051(rinsate)	03/28/95			5			3			6			4
W	95-0085(rinsate)	04/20/95												
W	95-0086(rinsate)	04/20/95			10			7			10			10
W	95-0089(SRE Pond)	04/24/95												
W	95-0090(SRE Pond)	04/24/95			10			6			10			10
W	95-0091(Field Blank)	04/24/95												
W	95-0092(Field Blank)	04/24/95			10			9			20			10
W	95-0094(SRE Pond)	04/24/95												
W	95-0095(SRE Pond)	04/24/95			6			4			7			6
W	95-0100(rinsate)	05/08/95												
W	95-0101(rinsate)	05/08/95			7			5			9			6
W	95-0130(rinsate)	06/13/95												
W	95-0131(rinsate)	06/13/95			8			5			10			9
W	95-0160(rinsate)	06/27/95												
W	95-0161(rinsate)	06/27/95			8			5			9			9
Water Data Table Summaries		Maximum	0		10.0	0		9.0	0		20.0	0		10.0
		Average	0		7.3	0		5.0	0		9.2	0		7.2
		Minimum	0		4.0	0		3.0	0		5.0	0		4.0
		Std.Dev.	0		2.3	0		1.9	0		4.2	0		2.7
		Count			10			10			10			10

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Plutonium 238 Mean (pCi/g)	Plutonium 238 Error (pCi/g)	Plutonium 238 MDA (pCi/g)	Plutonium 239/240 Mean (pCi/g)	Plutonium 239/240 Error (pCi/g)	Plutonium 239/240 MDA (pCi/g)	Strontium 90 Mean (pCi/g)	Strontium 90 Error (pCi/g)	Strontium 90 MDA (pCi/g)	Thorium 228 Mean (pCi/g)	Thorium 228 Error (pCi/g)	Thorium 228 MDA (pCi/g)
S	94-0001	11/17/94	0.000	0.009	0.020	0.002	0.004	0.008	0.044	0.100	0.100			
S	94-0001 LD	11/17/94	0.001	0.005	0.010	0.005	0.005	0.010	0.130	0.057	0.050			
S	94-0002	11/17/94	-0.006	0.006	0.010	0.001	0.002	0.004	0.220	0.096	0.090			
S	94-0003	11/18/94	0.001	0.009	0.020	0.003	0.004	0.008	0.120	0.170	0.200			
S	94-0004 FD(94-0003)	11/18/94	0.000	0.004	0.010	0.003	0.004	0.008	0.014	0.053	0.060			
S	94-0005	11/18/94	0.001	0.002	0.007	0.008	0.005	0.007	0.053	0.058	0.060			
S	94-0006	11/18/94	-0.001	0.003	0.010	0.003	0.003	0.010	-0.012	0.059	0.070			
S	94-0007	11/21/94	0.002	0.009	0.020	0.004	0.004	0.008	1.900	0.130	0.090			
S	94-0007 R	11/21/94							0.016	0.052	0.070			
S	94-0008	11/21/94	0.000	0.005	0.010	-0.002	0.005	0.010	0.015	0.064	0.070			
S	94-0009	11/21/94	0.003	0.005	0.010	-0.001	0.003	0.010	0.056	0.047	0.050			
S	94-0010	11/22/94	0.001	0.005	0.009	0.000	0.002	0.009	0.077	0.045	0.050			
S	94-0011	11/22/94	0.003	0.005	0.010	-0.001	0.005	0.010	0.110	0.051	0.040			
S	94-0013	11/22/94	0.005	0.009	0.020	-0.001	0.002	0.009	0.190	0.077	0.100			
S	94-0014	11/23/94	-0.008	0.011	0.030	-0.001	0.006	0.010	0.130	0.058	0.080			
S	94-0015	11/23/94	0.001	0.011	0.020	0.012	0.008	0.010	0.140	0.083	0.100			
S	94-0015 LD	11/23/94	-0.001	0.001	0.005	0.000	0.001	0.005	0.100	0.069	0.060			
S	94-0016	11/23/94	-0.003	0.011	0.020	-0.001	0.005	0.010	0.130	0.090	0.100			
S	94-0017	11/28/94	-0.009	0.010	0.020	0.004	0.008	0.010	0.020	0.059	0.090			
S	94-0018	11/28/94	0.000	0.010	0.020	0.002	0.005	0.010	0.091	0.067	0.090			
S	94-0019	11/29/94	-0.001	0.002	0.006	0.000	0.001	0.004	0.046	0.047	0.050			
S	94-0020	11/29/94	0.003	0.010	0.020	0.000	0.002	0.010	0.020	0.067	0.090			
S	94-0021	11/30/94	0.001	0.009	0.020	0.008	0.007	0.009	0.030	0.055	0.050			
S	94-0022	11/30/94	0.004	0.010	0.020	0.001	0.005	0.010	0.022	0.054	0.050			
S	95-0001A	02/15/95	-0.003	0.009	0.020	0.005	0.005	0.008	0.028	0.055	0.050	1.30	0.17	0.06
S	95-0001A LD	02/15/95	0.000	0.002	0.006	0.008	0.005	0.006	0.060	0.077	0.070	1.40	0.24	0.10
S	95-0002A	02/15/95	0.006	0.009	0.010	0.003	0.004	0.007	0.021	0.046	0.050	1.30	0.18	0.06
S	95-0003A	02/15/95	0.009	0.009	0.020	0.006	0.006	0.008	0.046	0.051	0.050	0.89	0.18	0.10
S	95-0004A	02/16/95	0.004	0.007	0.010	0.000	0.001	0.005	0.092	0.062	0.080	1.20	0.28	0.20
S	95-0005A	02/16/95	-0.001	0.007	0.010	0.003	0.004	0.007	0.061	0.055	0.080	1.50	0.26	0.10
S	95-0006A	02/16/95	0.002	0.002	0.007	0.001	0.004	0.007	-0.012	0.051	0.080	1.20	0.19	0.06

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Plutonium 238 Mean (pCi/g)	Plutonium 238 Error (pCi/g)	Plutonium 238 MDA (pCi/g)	Plutonium 239/240 Mean (pCi/g)	Plutonium 239/240 Error (pCi/g)	Plutonium 239/240 MDA (pCi/g)	Strontium 90 Mean (pCi/g)	Strontium 90 Error (pCi/g)	Strontium 90 MDA (pCi/g)	Thorium 228 Mean (pCi/g)	Thorium 228 Error (pCi/g)	Thorium 228 MDA (pCi/g)
S	95-0007A	02/16/95	-0.008	0.008	0.020	0.003	0.004	0.007	0.058	0.060	0.080	1.10	0.16	0.09
S	95-0008A	02/16/95	-0.001	0.003	0.006	0.001	0.001	0.005	0.001	0.056	0.070	1.20	0.21	0.07
S	95-0009	02/22/95	0.003	0.009	0.020	0.002	0.005	0.009	0.008	0.048	0.060	1.50	0.30	0.10
S	95-0010	02/22/95	0.004	0.004	0.007	0.001	0.003	0.007	0.025	0.053	0.080	1.10	0.25	0.10
S	95-0010 LD	02/22/95												
S	95-0011	02/21/95	0.000	0.001	0.005	0.000	0.001	0.005	0.190	0.064	0.060	1.30	0.19	0.09
S	95-0012	02/21/95	0.000	0.002	0.004	0.004	0.003	0.003	0.035	0.054	0.050	1.30	0.21	0.10
S	95-0013	02/22/95	0.001	0.003	0.008	0.005	0.003	0.006	0.013	0.058	0.080	1.10	0.28	0.20
S	95-0014	02/22/95	-0.001	0.001	0.004	0.000	0.002	0.006	0.026	0.099	0.100	1.30	0.26	0.20
S	95-0014 LD	02/22/95	0.002	0.005	0.009	0.001	0.004	0.007	0.026	0.055	0.070	1.20	0.15	0.06
S	95-0015 FD(95-0014)	02/22/95	0.001	0.002	0.005	0.001	0.001	0.005	0.097	0.080	0.100	1.40	0.21	0.08
S	95-0016A	02/23/95	-0.001	0.001	0.005	0.006	0.004	0.005	0.050	0.062	0.060	1.40	0.16	0.07
S	95-0017A	02/23/95	0.000	0.001	0.003	0.001	0.001	0.003	0.110	0.048	0.050	1.20	0.15	0.07
S	95-0018	02/20/95	0.002	0.002	0.004	0.000	0.001	0.004	0.045	0.057	0.080	0.93	0.12	0.04
S	95-0019	02/20/95	0.000	0.002	0.005	0.000	0.001	0.004	0.073	0.064	0.090	1.30	0.17	0.05
S	95-0019 LD	02/20/95												
S	95-0020A	02/23/95	0.000	0.003	0.007	0.001	0.001	0.005	0.120	0.070	0.090	1.20	0.19	0.09
S	95-0023A	02/23/95	-0.001	0.002	0.007	0.006	0.004	0.005	0.068	0.073	0.100	1.10	0.11	0.04
S	95-0024	03/06/95	-0.002	0.005	0.010	0.000	0.003	0.005	0.030	0.120	0.080	1.10	0.19	0.10
S	95-0027	03/06/95	0.001	0.005	0.009	-0.001	0.002	0.005	0.026	0.086	0.060	0.66	0.12	0.03
S	95-0028	03/06/95	0.001	0.006	0.010	0.005	0.003	0.003	-0.058	0.097	0.200	0.80	0.12	0.04
S	95-0029	03/06/95	0.000	0.005	0.010	0.006	0.003	0.005	0.008	0.052	0.100	0.80	0.13	0.07
S	95-0030	03/06/95	0.005	0.005	0.008	-0.003	0.003	0.008	0.056	0.039	0.050	0.96	0.12	0.05
S	95-0031	03/07/95	0.007	0.007	0.010	0.001	0.002	0.005	0.025	0.047	0.060	0.57	0.09	0.05
S	95-0032	03/07/95	0.006	0.008	0.010	0.005	0.004	0.005	0.032	0.059	0.070	0.89	0.12	0.07
S	95-0033	03/07/95	0.000	0.002	0.005	0.004	0.003	0.004	0.089	0.055	0.060	0.64	0.10	0.06
S	95-0034	03/07/95	-0.002	0.008	0.020	0.001	0.003	0.007	0.027	0.052	0.100	0.71	0.10	0.06
S	95-0035	03/07/95	-0.001	0.004	0.008	0.003	0.003	0.003	0.083	0.049	0.070	0.58	0.10	0.05
S	95-0035 LD	03/07/95	0.002	0.007	0.010	0.003	0.003	0.006	0.052	0.059	0.090	0.65	0.06	0.03
S	95-0036 FD(95-0035)	03/07/95	0.000	0.004	0.009	0.012	0.006	0.007	0.099	0.058	0.080	0.66	0.10	0.05
S	95-0037	03/08/95	0.003	0.005	0.008	0.003	0.005	0.008	0.032	0.076	0.100	0.70	0.15	0.09

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Plutonium 238 Mean (pCi/g)	Plutonium 238 Error (pCi/g)	Plutonium 238 MDA (pCi/g)	Plutonium 239/240 Mean (pCi/g)	Plutonium 239/240 Error (pCi/g)	Plutonium 239/240 MDA (pCi/g)	Strontium 90 Mean (pCi/g)	Strontium 90 Error (pCi/g)	Strontium 90 MDA (pCi/g)	Thorium 228 Mean (pCi/g)	Thorium 228 Error (pCi/g)	Thorium 228 MDA (pCi/g)
S	95-0038	03/08/95	-0.001	0.004	0.009	0.001	0.006	0.010	-0.037	0.058	0.100	0.51	0.11	0.06
S	95-0039	03/08/95	0.000	0.007	0.010	0.010	0.007	0.010	0.041	0.061	0.100	0.60	0.17	0.10
S	95-0040	03/08/95	0.000	0.004	0.009	0.004	0.005	0.007	0.025	0.052	0.080	0.92	0.17	0.09
S	95-0041	03/08/95	-0.001	0.005	0.010	0.000	0.003	0.006	0.031	0.047	0.080	0.59	0.11	0.07
S	95-0042	03/09/95	0.006	0.007	0.010	0.002	0.005	0.009	0.024	0.060	0.100	0.76	0.12	0.06
S	95-0043	03/09/95	-0.002	0.007	0.010	0.001	0.003	0.006	0.006	0.066	0.100	0.81	0.12	0.07
S	95-0044	03/09/95	0.000	0.006	0.010	0.005	0.004	0.004	0.021	0.057	0.100	0.68	0.11	0.06
S	95-0045	03/09/95	0.003	0.007	0.010	0.005	0.003	0.004	0.056	0.046	0.070	0.95	0.14	0.07
S	95-0046	03/09/95	0.002	0.007	0.010	0.000	0.002	0.005	0.046	0.061	0.100	0.85	0.12	0.06
S	95-0047	03/28/95	-0.001	0.001	0.004	0.003	0.003	0.004	0.000	0.064	0.100	1.00	0.17	0.07
S	95-0048	03/28/95	0.000	0.001	0.004	0.002	0.003	0.004	0.037	0.053	0.070	0.76	0.19	0.10
S	95-0049	03/28/95	0.001	0.002	0.004	0.008	0.004	0.005	0.044	0.045	0.070	0.62	0.16	0.10
S	95-0049 LD	03/28/95	0.001	0.005	0.010	0.005	0.004	0.006	0.042	0.045	0.040	0.80	0.11	0.06
S	95-0052	03/29/95	0.000	0.001	0.004	0.007	0.004	0.004	0.050	0.042	0.060	0.84	0.18	0.10
S	95-0053	03/29/95	0.001	0.004	0.009	0.001	0.003	0.005	0.071	0.043	0.040	0.70	0.14	0.10
S	95-0054	03/29/95	0.004	0.005	0.008	0.000	0.001	0.004	0.058	0.056	0.090	0.82	0.14	0.06
S	95-0055	03/29/95	0.004	0.005	0.008	-0.001	0.002	0.005	0.027	0.071	0.100	0.53	0.12	0.08
S	95-0056 FD(95-0055)	03/29/95	0.003	0.006	0.010	-0.001	0.001	0.005	0.013	0.083	0.100	0.54	0.12	0.10
S	95-0057	03/29/95	-0.001	0.002	0.005	0.002	0.003	0.005	0.087	0.050	0.070	0.84	0.18	0.10
S	95-0058	03/29/95	-0.001	0.003	0.006	0.002	0.003	0.005	0.028	0.053	0.080	0.72	0.12	0.07
S	95-0059	03/30/95	0.001	0.003	0.006	0.001	0.002	0.005	0.010	0.057	0.080	0.74	0.12	0.07
S	95-0060	03/30/95	0.000	0.004	0.007	0.003	0.004	0.005	0.014	0.047	0.080	0.83	0.18	0.10
S	95-0061	03/30/95	0.000	0.003	0.006	0.190	0.022	0.004	0.048	0.054	0.090	1.00	0.21	0.20
S	95-0061 R1	03/30/95	0.002	0.005	0.009	0.180	0.020	0.004						
S	95-0061 R2	03/30/95				0.003	0.004	0.007						
S	95-0062	03/30/95	-0.001	0.004	0.009	0.008	0.004	0.004	0.076	0.063	0.080	0.67	0.11	0.06
S	95-0063	03/30/95	0.000	0.005	0.010	0.001	0.003	0.005	0.016	0.054	0.080	0.71	0.11	0.06
S	95-0063 LD	03/30/95	0.001	0.003	0.006	0.002	0.003	0.005	0.007	0.053	0.050	0.77	0.12	0.07
S	95-0064	03/31/95	0.007	0.007	0.010	0.003	0.003	0.005	0.008	0.060	0.100	0.70	0.11	0.07
S	95-0065	03/31/95	0.001	0.003	0.006	0.006	0.004	0.005	0.049	0.045	0.070	0.59	0.13	0.10
S	95-0066	03/31/95	-0.001	0.006	0.010	0.003	0.004	0.007	0.017	0.050	0.070	0.73	0.16	0.10

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Plutonium 238 Mean (pCi/g)	Plutonium 238 Error (pCi/g)	Plutonium 238 MDA (pCi/g)	Plutonium 239/240 Mean (pCi/g)	Plutonium 239/240 Error (pCi/g)	Plutonium 239/240 MDA (pCi/g)	Strontium 90 Mean (pCi/g)	Strontium 90 Error (pCi/g)	Strontium 90 MDA (pCi/g)	Thorium 228 Mean (pCi/g)	Thorium 228 Error (pCi/g)	Thorium 228 MDA (pCi/g)
S	95-0067	03/31/95	-0.001	0.007	0.010	0.004	0.004	0.006	0.042	0.063	0.080	1.20	0.18	0.10
S	95-0068	03/31/95	0.002	0.006	0.010	0.003	0.004	0.006	0.095	0.052	0.070	0.73	0.14	0.08
S	95-0069	03/31/95	-0.001	0.002	0.005	0.000	0.002	0.004	0.023	0.052	0.080	0.82	0.14	0.09
S	95-0070	04/18/95	0.001	0.007	0.010	0.002	0.003	0.006	-0.016	0.059	0.090	1.20	0.14	0.07
S	95-0071	04/18/95	0.001	0.006	0.010	0.005	0.004	0.005	0.031	0.052	0.090	0.82	0.11	0.05
S	95-0072	04/21/95	0.000	0.005	0.009	0.009	0.005	0.005	0.004	0.043	0.040	0.85	0.18	0.20
S	95-0073	04/21/95	0.000	0.002	0.004	0.001	0.002	0.004	-0.003	0.066	0.100	1.10	0.11	0.04
S	95-0074	04/19/95	0.004	0.003	0.004	0.150	0.018	0.003	0.034	0.067	0.060	1.30	0.14	0.07
S	95-0074 R	04/19/95	-0.003	0.005	0.010	0.004	0.004	0.006						
S	95-0075	04/19/95	0.003	0.003	0.005	0.002	0.002	0.004	0.022	0.042	0.050	1.30	0.12	0.04
S	95-0076	04/19/95	0.001	0.003	0.005	0.006	0.003	0.004	0.020	0.047	0.070	1.30	0.16	0.09
S	95-0077	04/19/95	-0.004	0.004	0.010	-0.001	0.001	0.007	0.016	0.052	0.080	1.20	0.15	0.07
S	95-0078	04/19/95	-0.001	0.003	0.008	0.000	0.001	0.005	-0.015	0.063	0.090	1.30	0.24	0.10
S	95-0078 LD	04/19/95	0.001	0.003	0.006	0.012	0.006	0.007	-0.003	0.045	0.040	1.40	0.14	0.06
S	95-0079	04/20/95	0.000	0.002	0.005	0.000	0.002	0.003	0.029	0.049	0.080	1.40	0.15	0.06
S	95-0080	04/20/95	0.000	0.001	0.003	0.010	0.004	0.003	0.033	0.048	0.070	1.30	0.13	0.04
S	95-0081 FD(95-0080)	04/20/95	0.000	0.002	0.005	0.005	0.003	0.003	0.053	0.057	0.070	1.30	0.14	0.07
S	95-0082	04/20/95	0.000	0.001	0.003	0.000	0.002	0.004	0.021	0.051	0.090	1.40	0.14	0.07
S	95-0083	04/20/95	-0.001	0.001	0.004	0.001	0.003	0.005	0.003	0.062	0.090	1.50	0.13	0.06
S	95-0084	04/20/95	0.001	0.003	0.008	0.003	0.003	0.007	-0.004	0.047	0.070	1.10	0.10	0.05
S	95-0087	04/21/95	0.003	0.006	0.010	0.001	0.003	0.006	0.036	0.041	0.040	1.30	0.19	0.08
S	95-0088	04/21/95	0.003	0.007	0.010	0.008	0.005	0.006	0.013	0.055	0.050	1.50	0.14	0.05
S	95-0093	04/24/95	0.000	0.002	0.005	0.013	0.005	0.004	0.210	0.043	0.030	2.50	0.16	0.05
S	95-0096	04/24/95	-0.001	0.002	0.005	0.019	0.007	0.004	0.160	0.050	0.040	1.40	0.10	0.04
S	95-0097	05/08/95	0.001	0.002	0.004	0.001	0.002	0.004	0.006	0.070	0.100	1.10	0.10	0.05
S	95-0098	05/08/95	-0.001	0.001	0.004	0.001	0.002	0.003	0.001	0.088	0.100	0.93	0.10	0.04
S	95-0098 LD	05/08/95	-0.001	0.005	0.010	0.005	0.005	0.009	0.022	0.050	0.040	0.84	0.08	0.02
S	95-0099	05/08/95	-0.001	0.002	0.005	0.006	0.003	0.005	-0.008	0.063	0.100	1.00	0.09	0.04
S	95-0102	05/08/95	0.000	0.002	0.005	0.005	0.003	0.004	0.032	0.054	0.100	1.10	0.10	0.04
S	95-0103 FD(95-0102)	05/08/95	0.001	0.002	0.003	0.005	0.003	0.003	0.031	0.067	0.100	1.20	0.11	0.05
S	95-0104	05/09/95	-0.002	0.003	0.007	0.000	0.003	0.005	0.042	0.044	0.050	1.20	0.10	0.05

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Plutonium 238 Mean (pCi/g)	Plutonium 238 Error (pCi/g)	Plutonium 238 MDA (pCi/g)	Plutonium 239/240 Mean (pCi/g)	Plutonium 239/240 Error (pCi/g)	Plutonium 239/240 MDA (pCi/g)	Strontium 90 Mean (pCi/g)	Strontium 90 Error (pCi/g)	Strontium 90 MDA (pCi/g)	Thorium 228 Mean (pCi/g)	Thorium 228 Error (pCi/g)	Thorium 228 MDA (pCi/g)
S	95-0105	05/09/95	0.000	0.002	0.004	0.002	0.002	0.003	0.039	0.054	0.050	0.80	0.07	0.04
S	95-0106	05/09/95	0.000	0.002	0.005	0.002	0.003	0.005	0.050	0.062	0.060	1.00	0.09	0.02
S	95-0107	05/09/95	-0.001	0.003	0.006	0.004	0.003	0.005	0.010	0.054	0.060	0.74	0.08	0.02
S	95-0108	05/09/95	0.000	0.002	0.005	0.002	0.003	0.005	0.130	0.050	0.070	1.10	0.12	0.04
S	95-0109	05/10/95	-0.001	0.002	0.005	0.000	0.003	0.006	-0.008	0.049	0.080	1.10	0.10	0.02
S	95-0110	05/10/95	0.000	0.003	0.005	0.001	0.002	0.004	0.010	0.059	0.090	0.97	0.10	0.04
S	95-0111	05/10/95	0.000	0.002	0.004	0.013	0.005	0.004	0.056	0.053	0.080	1.10	0.10	0.03
S	95-0112	05/10/95	0.001	0.002	0.004	0.001	0.002	0.003	-0.018	0.042	0.070	1.40	0.12	0.05
S	95-0113	05/11/95	0.000	0.002	0.005	0.002	0.002	0.004	0.028	0.051	0.070	1.30	0.14	0.05
S	95-0114	05/11/95	0.000	0.002	0.006	0.003	0.003	0.006	0.023	0.054	0.070	0.85	0.24	0.20
S	95-0115	05/11/95	0.001	0.003	0.007	0.001	0.004	0.008	0.022	0.049	0.070	0.92	0.11	0.05
S	95-0116	05/11/95	0.001	0.003	0.005	0.005	0.003	0.005	0.022	0.033	0.030	1.10	0.16	0.10
S	95-0117	05/11/95	0.000	0.003	0.006	0.004	0.004	0.006	0.014	0.041	0.030	1.00	0.09	0.02
S	95-0118	05/19/95	0.000	0.002	0.004	0.009	0.004	0.005	0.008	0.049	0.040	1.60	0.14	0.03
S	95-0119	05/19/95	0.000	0.003	0.006	0.029	0.007	0.004	0.093	0.042	0.030	2.10	0.15	0.02
S	95-0120	05/19/95	0.002	0.002	0.004	0.002	0.003	0.005	0.028	0.035	0.030	0.39	0.06	0.03
S	95-0121	06/12/95	0.001	0.001	0.005	0.019	0.007	0.005	0.062	0.046	0.070	1.20	0.21	0.05
S	95-0121 LD	06/12/95	0.000	0.002	0.004	0.002	0.003	0.003	0.049	0.059	0.100	0.89	0.13	0.07
S	95-0122	06/12/95	-0.001	0.003	0.007	0.007	0.004	0.004	0.062	0.056	0.080	1.10	0.12	0.04
S	95-0123 FD(95-0122)	06/12/95	0.001	0.003	0.005	0.005	0.003	0.004	0.047	0.056	0.080	0.66	0.10	0.05
S	95-0124	06/12/95	0.002	0.003	0.004	0.005	0.003	0.004	0.130	0.057	0.080	0.89	0.12	0.06
S	95-0125	06/12/95	0.001	0.002	0.004	0.002	0.002	0.004	0.003	0.042	0.070	0.65	0.09	0.05
S	95-0126	06/13/95	0.000	0.001	0.004	0.005	0.003	0.004	0.053	0.052	0.070	0.83	0.11	0.06
S	95-0127	06/13/95	0.000	0.002	0.004	0.007	0.004	0.004	0.019	0.064	0.100	1.10	0.15	0.07
S	95-0128	06/13/95	0.000	0.002	0.004	0.006	0.003	0.004	0.052	0.056	0.090	1.40	0.10	0.03
S	95-0129	06/13/95	-0.001	0.004	0.008	0.003	0.003	0.005	0.088	0.053	0.080	1.20	0.14	0.06
S	95-0132	06/14/95	-0.001	0.003	0.007	0.012	0.005	0.005	0.110	0.057	0.080	0.90	0.11	0.04
S	95-0133	06/14/95	-0.001	0.003	0.007	-0.001	0.004	0.008	0.031	0.057	0.060	1.00	0.17	0.10
S	95-0134	06/14/95	0.000	0.002	0.003	0.004	0.003	0.005	0.120	0.070	0.070	1.10	0.24	0.20
S	95-0135	06/14/95	0.002	0.003	0.004	0.003	0.003	0.004	0.051	0.035	0.040	0.80	0.11	0.06
S	95-0136	06/15/95	-0.001	0.002	0.006	0.014	0.005	0.005	0.061	0.045	0.040	0.95	0.18	0.10

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Plutonium 238 Mean (pCi/g)	Plutonium 238 Error (pCi/g)	Plutonium 238 MDA (pCi/g)	Plutonium 239/240 Mean (pCi/g)	Plutonium 239/240 Error (pCi/g)	Plutonium 239/240 MDA (pCi/g)	Strontium 90 Mean (pCi/g)	Strontium 90 Error (pCi/g)	Strontium 90 MDA (pCi/g)	Thorium 228 Mean (pCi/g)	Thorium 228 Error (pCi/g)	Thorium 228 MDA (pCi/g)
S	95-0137	06/15/95	0.000	0.001	0.005	0.005	0.004	0.005	0.053	0.052	0.050	0.91	0.12	0.07
S	95-0138	06/15/95	0.000	0.002	0.004	0.004	0.003	0.003	0.054	0.042	0.040	1.30	0.21	0.10
S	95-0139	06/15/95	-0.003	0.002	0.007	0.001	0.002	0.005	0.080	0.055	0.090	1.10	0.11	0.04
S	95-0140	06/19/95	0.001	0.003	0.005	0.024	0.006	0.004	0.027	0.059	0.100	1.40	0.14	0.07
S	95-0141	06/19/95	0.000	0.001	0.003	0.001	0.002	0.003	0.036	0.059	0.100	1.30	0.17	0.08
S	95-0142	06/19/95	0.001	0.001	0.004	0.002	0.002	0.004	0.040	0.058	0.100	1.10	0.12	0.06
S	95-0143	06/19/95	0.000	0.003	0.005	0.002	0.003	0.004	-0.012	0.049	0.100	1.00	0.16	0.10
S-BKGD	95-0144	06/20/95										1.10	0.10	0.05
S-BKGD	95-0145	06/20/95										0.95	0.12	0.06
S-BKGD	95-0146	06/21/95										1.20	0.19	0.10
S-BKGD	95-0147	06/21/95										0.93	0.13	0.07
S-BKGD	95-0148	06/22/95										1.60	0.22	0.08
S-BKGD	95-0149	06/22/95										1.40	0.14	0.05
S	95-0150	06/26/95	0.000	0.002	0.004	0.003	0.002	0.003	0.037	0.059	0.090	0.88	0.10	0.05
S	95-0150 LD	06/26/95	-0.001	0.008	0.010	0.002	0.003	0.006	0.063	0.041	0.050	0.63	0.09	0.06
S	95-0151	06/26/95	0.001	0.002	0.003	0.026	0.006	0.003	0.024	0.051	0.060	0.49	0.07	0.04
S	95-0152	06/26/95	0.003	0.007	0.010	0.000	0.002	0.006	0.027	0.059	0.100	0.79	0.18	0.20
S	95-0153	06/26/95	0.003	0.006	0.010	0.023	0.007	0.006	0.063	0.071	0.100	0.69	0.11	0.07
S	95-0154	06/26/95	0.001	0.003	0.004	0.000	0.002	0.004	0.094	0.075	0.100	0.42	0.07	0.05
S	95-0155	06/27/95	0.000	0.003	0.005	0.004	0.003	0.002	0.053	0.072	0.100	0.97	0.23	0.10
S	95-0156	06/27/95	0.000	0.003	0.006	0.010	0.005	0.004	0.029	0.063	0.100	0.84	0.14	0.05
S	95-0157	06/27/95	0.000	0.002	0.004	0.007	0.003	0.004	0.038	0.072	0.100	0.82	0.10	0.06
S	95-0158	06/27/95	0.005	0.006	0.010	0.002	0.004	0.007	0.059	0.080	0.100	0.79	0.12	0.06
S	95-0159 FD(95-0157)	06/27/95	0.003	0.006	0.010	0.110	0.014	0.004	0.096	0.079	0.100	0.69	0.09	0.05
S	95-0162	06/28/95	0.000	0.009	0.020	0.000	0.003	0.006	0.002	0.058	0.060	0.52	0.15	0.10

Soil Data Table Summaries		Pu 238 Mean	Pu 238 MDA	Pu 239/240 Mean	Pu 239/240 MDA	Sr 90 Mean	Sr 90 MDA	Th 228 Mean	Th 228 MDA
	Maximum	0.009	0.030	0.190	0.010	1.900	0.200	2.50	0.20
	Average	0.001	0.008	0.007	0.006	0.057	0.076	1.01	0.07
	Minimum	-0.009	0.003	-0.003	0.002	-0.058	0.030	0.39	0.02
	Std.Dev.	0.002	0.005	0.024	0.002	0.149	0.025	0.32	0.04
	Count	170		171		169		151	

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Plutonium 238 Mean (pCi/g)	Plutonium 238 Error (pCi/g)	Plutonium 238 MDA (pCi/g)	Plutonium 239/240 Mean (pCi/g)	Plutonium 239/240 Error (pCi/g)	Plutonium 239/240 MDA (pCi/g)	Strontium 90 Mean (pCi/g)	Strontium 90 Error (pCi/g)	Strontium 90 MDA (pCi/g)	Thorium 228 Mean (pCi/g)	Thorium 228 Error (pCi/g)	Thorium 228 MDA (pCi/g)

Sample Type	A4CM-xx-xxxx Sample Identification	Date Sampled	Plutonium 238 Mean (pCi/L)	Plutonium 238 Error (pCi/L)	Plutonium 238 MDA (pCi/L)	Plutonium 239/240 Mean (pCi/L)	Plutonium 239/240 Error (pCi/L)	Plutonium 239/240 MDA (pCi/L)	Strontium 90 Mean (pCi/L)	Strontium 90 Error (pCi/L)	Strontium 90 MDA (pCi/L)	Thorium 228 Mean (pCi/L)	Thorium 228 Error (pCi/L)	Thorium 228 MDA (pCi/L)
W	95-0021(rinsate)	02/23/95												
W	95-0022(rinsate)	02/23/95	-0.003	0.039	0.070	0.017	0.017	0.030	0.100	0.160	0.200	0.020	0.059	0.100
W	95-0025(rinsate)	03/06/95												
W	95-0026(rinsate)	03/06/95	0.005	0.031	0.050	0.003	0.010	0.020	-0.012	0.120	0.200	0.036	0.036	0.050
W	95-0050(rinsate)	03/28/95												
W	95-0051(rinsate)	03/28/95	0.004	0.057	0.100	0.000	0.016	0.040	-0.048	0.200	0.200	-0.022	0.067	0.100
W	95-0085(rinsate)	04/20/95												
W	95-0086(rinsate)	04/20/95	-0.004	0.023	0.050	0.008	0.008	0.030	-0.002	0.092	0.200	0.000	0.062	0.100
W	95-0089(SRE Pond)	04/24/95												
W	95-0090(SRE Pond)	04/24/95	-0.007	0.014	0.040	0.000	0.007	0.030	0.140	0.130	0.200	0.035	0.070	0.100
W	95-0091(Field Blank)	04/24/95												
W	95-0092(Field Blank)	04/24/95	0.009	0.018	0.040	0.004	0.018	0.030	-0.026	0.096	0.200	0.088	0.100	0.200
W	95-0094(SRE Pond)	04/24/95												
W	95-0095(SRE Pond)	04/24/95	0.030	0.040	0.070	-0.003	0.020	0.050	0.200	0.110	0.100	0.015	0.060	0.100
W	95-0100(rinsate)	05/08/95												
W	95-0101(rinsate)	05/08/95	0.000	0.045	0.090	0.022	0.030	0.060	-0.026	0.130	0.100	0.011	0.054	0.100
W	95-0130(rinsate)	06/13/95												
W	95-0131(rinsate)	06/13/95	-0.002	0.007	0.020	0.007	0.011	0.020	0.007	0.086	0.090	0.040	0.066	0.100
W	95-0160(rinsate)	06/27/95												
W	95-0161(rinsate)	06/27/95	0.002	0.007	0.010	0.004	0.007	0.010	-0.020	0.089	0.090	-0.019	0.058	0.100

Water Data Table Summaries		Plutonium 238 Mean	Plutonium 238 MDA	Plutonium 239/240 Mean	Plutonium 239/240 MDA	Strontium 90 Mean	Strontium 90 MDA	Thorium 228 Mean	Thorium 228 MDA
	Maximum	0.030	0.100	0.022	0.060	0.200	0.200	0.088	0.200
	Average	0.003	0.054	0.006	0.032	0.031	0.158	0.020	0.105
	Minimum	-0.007	0.010	-0.003	0.010	-0.048	0.090	-0.022	0.050
	Std.Dev.	0.010	0.029	0.008	0.015	0.084	0.054	0.032	0.037
	Count	10	10	10		10		10	

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Thorium 230 Mean (pCi/g)	Thorium 230 Error (pCi/g)	Thorium 230 MDA (pCi/g)	Thorium 232 Mean (pCi/g)	Thorium 232 Error (pCi/g)	Thorium 232 MDA (pCi/g)	Uranium 233/234 Mean (pCi/g)	Uranium 233/234 Error (pCi/g)	Uranium 233/234 MDA (pCi/g)	Uranium 235 Mean (pCi/g)	Uranium 235 Error (pCi/g)	Uranium 235 MDA (pCi/g)
S	94-0001	11/17/94	1.00	0.13	0.02	1.20	0.23		0.67	0.07	0.02	0.054	0.019	0.010
S	94-0001 LD	11/17/94	0.86	0.13	0.05	1.30	0.18		0.76	0.06	0.01	0.054	0.015	0.007
S	94-0002	11/17/94	0.94	0.14	0.05	1.20	0.25		0.73	0.07	0.02	0.052	0.019	0.010
S	94-0003	11/18/94	0.90	0.14	0.06	1.20	0.27		0.79	0.08	0.02	0.049	0.021	0.010
S	94-0004 FD(94-0003)	11/18/94	1.00	0.16	0.06	1.40	0.28		0.81	0.09	0.02	0.050	0.018	0.010
S	94-0005	11/18/94	0.69	0.13	0.06	1.40	0.32		0.68	0.07	0.02	0.033	0.016	0.010
S	94-0006	11/18/94	0.75	0.14	0.05	1.10	0.27		0.66	0.07	0.02	0.034	0.017	0.010
S	94-0007	11/21/94	0.82	0.14	0.04	1.30	0.16		0.90	0.10	0.02	0.032	0.016	0.020
S	94-0007 R	11/21/94												
S	94-0008	11/21/94	0.82	0.14	0.06	1.60	0.30		0.74	0.07	0.02	0.048	0.019	0.010
S	94-0009	11/21/94	0.81	0.15	0.06	1.10	0.28		0.63	0.07	0.02	0.047	0.018	0.010
S	94-0010	11/22/94	0.72	0.14	0.04	1.20	0.26		0.66	0.07	0.01	0.035	0.015	0.010
S	94-0011	11/22/94	0.95	0.15	0.05	1.40	0.28		0.92	0.11	0.03	0.049	0.022	0.020
S	94-0013	11/22/94	0.89	0.15	0.05	1.10	0.17	0.04	0.90	0.08	0.02	0.027	0.013	0.010
S	94-0014	11/23/94	0.82	0.14	0.04	1.10	0.17	0.04	0.76	0.07	0.01	0.036	0.014	0.009
S	94-0015	11/23/94	0.90	0.13	0.04	1.20	0.16	0.03	0.74	0.07	0.02	0.034	0.014	0.010
S	94-0015 LD	11/23/94	0.80	0.15	0.04	1.00	0.16	0.04	0.74	0.06	0.01	0.032	0.014	0.009
S	94-0016	11/23/94	0.96	0.18	0.06	1.30	0.21	0.06	0.74	0.06	0.02	0.044	0.014	0.009
S	94-0017	11/28/94	0.80	0.12	0.05	0.89	0.12	0.03	0.86	0.08	0.02	0.052	0.018	0.010
S	94-0018	11/28/94	1.00	0.13	0.05	1.40	0.16	0.03	0.86	0.12	0.04	0.044	0.025	0.030
S	94-0019	11/29/94	0.77	0.11	0.05	1.10	0.14	0.03	0.74	0.07	0.02	0.051	0.016	0.010
S	94-0020	11/29/94	0.98	0.13	0.04	1.20	0.14	0.03	0.73	0.05	0.01	0.038	0.010	0.006
S	94-0021	11/30/94	0.96	0.14	0.04	1.30	0.16	0.03	0.75	0.05	0.01	0.036	0.011	0.006
S	94-0022	11/30/94	0.78	0.14	0.06	1.10	0.17	0.04	0.72	0.06	0.02	0.052	0.016	0.009
S	95-0001A	02/15/95	1.10	0.16	0.05	1.40	0.18	0.03	0.59	0.04	0.01	0.019	0.008	0.005
S	95-0001A LD	02/15/95	0.96	0.19	0.09	1.10	0.19	0.05	0.69	0.05	0.01	0.037	0.011	0.006
S	95-0002A	02/15/95	1.00	0.16	0.04	1.20	0.18	0.04	0.56	0.04	0.01	0.034	0.010	0.006
S	95-0003A	02/15/95	0.82	0.17	0.07	0.87	0.17	0.05	0.58	0.05	0.01	0.035	0.011	0.006
S	95-0004A	02/16/95	1.10	0.25	0.10	1.30	0.26	0.08	0.64	0.05	0.01	0.032	0.010	0.005
S	95-0005A	02/16/95	1.20	0.22	0.06	1.30	0.22	0.06	0.64	0.05	0.01	0.031	0.010	0.006
S	95-0006A	02/16/95	1.20	0.18	0.04	1.00	0.18	0.06	0.80	0.06	0.01	0.069	0.016	0.006

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Thorium 230 Mean (pCi/g)	Thorium 230 Error (pCi/g)	Thorium 230 MDA (pCi/g)	Thorium 232 Mean (pCi/g)	Thorium 232 Error (pCi/g)	Thorium 232 MDA (pCi/g)	Uranium 233/234 Mean (pCi/g)	Uranium 233/234 Error (pCi/g)	Uranium 233/234 MDA (pCi/g)	Uranium 235 Mean (pCi/g)	Uranium 235 Error (pCi/g)	Uranium 235 MDA (pCi/g)
S	95-0007A	02/16/95	0.97	0.14	0.06	1.10	0.14	0.03	0.61	0.05	0.01	0.037	0.012	0.007
S	95-0008A	02/16/95	0.98	0.18	0.05	1.30	0.21	0.05	0.61	0.05	0.01	0.031	0.011	0.007
S	95-0009	02/22/95	1.80	0.33	0.08	1.60	0.30	0.08	1.40	0.08	0.01	0.056	0.015	0.006
S	95-0010	02/22/95	1.20	0.25	0.09	1.40	0.29	0.09	0.96	0.07	0.01	0.057	0.014	0.006
S	95-0010 LD	02/22/95				1.30	0.24							
S	95-0011	02/21/95	0.99	0.16	0.04	1.30	0.18	0.04	0.84	0.05	0.01	0.046	0.010	0.004
S	95-0012	02/21/95	1.20	0.19	0.05	1.30	0.21	0.05	0.74	0.05	0.01	0.037	0.009	0.004
S	95-0013	02/22/95	0.95	0.24	0.10	0.75	0.21	0.10	0.86	0.07	0.02	0.050	0.014	0.008
S	95-0014	02/22/95	1.30	0.24	0.08	1.50	0.27	0.08	0.84	0.05	0.01	0.034	0.010	0.005
S	95-0014 LD	02/22/95	1.00	0.14	0.04	1.30	0.16	0.03	1.10	0.06	0.01	0.056	0.011	0.004
S	95-0015 FD(95-0014)	02/22/95	1.00	0.16	0.04	1.20	0.19	0.04	0.95	0.05	0.01	0.049	0.011	0.004
S	95-0016A	02/23/95	0.95	0.13	0.03	1.30	0.16	0.03	0.75	0.05	0.01	0.051	0.011	0.004
S	95-0017A	02/23/95	1.20	0.15	0.04	1.10	0.14	0.03	0.92	0.05	0.01	0.046	0.010	0.004
S	95-0018	02/20/95	0.74	0.10	0.03	1.00	0.13	0.02	0.58	0.04	0.01	0.039	0.009	0.004
S	95-0019	02/20/95	1.20	0.16	0.04	1.40	0.17	0.03	0.85	0.05	0.01	0.042	0.009	0.004
S	95-0019 LD	02/20/95												
S	95-0020A	02/23/95	0.92	0.15	0.04	1.10	0.17	0.04	0.79	0.04	0.01	0.051	0.010	0.004
S	95-0023A	02/23/95	1.00	0.11	0.02	1.20	0.11	0.02	0.96	0.05	0.01	0.047	0.010	0.004
S	95-0024	03/06/95	0.76	0.15	0.06	1.20	0.19	0.05	0.87	0.05	0.01	0.051	0.012	0.005
S	95-0027	03/06/95	0.48	0.10	0.04	0.60	0.11	0.03	0.58	0.04	0.01	0.027	0.007	0.004
S	95-0028	03/06/95	0.79	0.12	0.04	0.82	0.12	0.03	0.66	0.05	0.01	0.041	0.011	0.005
S	95-0029	03/06/95	0.57	0.10	0.05	0.72	0.11	0.03	0.84	0.05	0.01	0.039	0.010	0.006
S	95-0030	03/06/95	0.75	0.10	0.02	0.92	0.11	0.02	0.68	0.05	0.01	0.039	0.011	0.005
S	95-0031	03/07/95	0.42	0.08	0.02	0.54	0.09	0.02	0.50	0.04	0.01	0.026	0.008	0.004
S	95-0032	03/07/95	0.69	0.11	0.03	0.76	0.12	0.03	0.68	0.04	0.01	0.037	0.010	0.005
S	95-0033	03/07/95	0.60	0.09	0.03	0.69	0.10	0.02	0.69	0.05	0.01	0.038	0.010	0.006
S	95-0034	03/07/95	0.57	0.09	0.03	0.66	0.10	0.02	0.71	0.05	0.01	0.035	0.010	0.005
S	95-0035	03/07/95	0.41	0.08	0.03	0.57	0.09	0.02	0.55	0.04	0.01	0.033	0.009	0.005
S	95-0035 LD	03/07/95	0.55	0.05	0.02	0.58	0.05	0.01	0.54	0.04	0.01	0.032	0.009	0.005
S	95-0036 FD(95-0035)	03/07/95	0.57	0.08	0.03	0.82	0.10	0.02	0.59	0.04	0.01	0.026	0.009	0.005
S	95-0037	03/08/95	0.50	0.12	0.05	0.71	0.15	0.05	0.58	0.04	0.01	0.040	0.010	0.005

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Thorium 230 Mean (pCi/g)	Thorium 230 Error (pCi/g)	Thorium 230 MDA (pCi/g)	Thorium 232 Mean (pCi/g)	Thorium 232 Error (pCi/g)	Thorium 232 MDA (pCi/g)	Uranium 233/234 Mean (pCi/g)	Uranium 233/234 Error (pCi/g)	Uranium 233/234 MDA (pCi/g)	Uranium 235 Mean (pCi/g)	Uranium 235 Error (pCi/g)	Uranium 235 MDA (pCi/g)
S	95-0038	03/08/95	0.43	0.10	0.04	0.56	0.11	0.04	0.65	0.04	0.01	0.043	0.011	0.005
S	95-0039	03/08/95	0.56	0.17	0.10	0.61	0.17	0.08	0.66	0.04	0.01	0.036	0.010	0.005
S	95-0040	03/08/95	0.75	0.14	0.06	0.85	0.15	0.05	0.58	0.04	0.01	0.028	0.009	0.006
S	95-0041	03/08/95	0.52	0.10	0.03	0.60	0.10	0.03	0.60	0.05	0.01	0.033	0.011	0.006
S	95-0042	03/09/95	0.71	0.11	0.03	0.75	0.12	0.03	0.91	0.06	0.01	0.046	0.013	0.008
S	95-0043	03/09/95	0.66	0.11	0.04	0.81	0.12	0.03	0.62	0.05	0.01	0.022	0.009	0.009
S	95-0044	03/09/95	0.63	0.10	0.03	0.60	0.10	0.03	0.70	0.05	0.01	0.043	0.013	0.008
S	95-0045	03/09/95	0.69	0.12	0.04	0.57	0.11	0.03	1.20	0.08	0.02	0.063	0.015	0.010
S	95-0046	03/09/95	0.72	0.11	0.04	0.82	0.12	0.03	1.20	0.08	0.02	0.051	0.014	0.009
S	95-0047	03/28/95	0.79	0.13	0.04	0.86	0.14	0.04	0.67	0.04	0.01	0.036	0.010	0.005
S	95-0048	03/28/95	0.45	0.15	0.10	0.67	0.17	0.09	0.65	0.04	0.01	0.029	0.008	0.004
S	95-0049	03/28/95	0.50	0.14	0.07	0.56	0.14	0.07	0.52	0.04	0.01	0.018	0.007	0.005
S	95-0049 LD	03/28/95	0.60	0.09	0.03	0.75	0.10	0.02	0.73	0.05	0.01	0.040	0.011	0.005
S	95-0052	03/29/95	0.62	0.15	0.07	0.85	0.17	0.05	0.63	0.04	0.01	0.042	0.011	0.006
S	95-0053	03/29/95	0.61	0.12	0.04	0.77	0.13	0.04	0.73	0.05	0.01	0.039	0.011	0.005
S	95-0054	03/29/95	0.57	0.11	0.04	0.74	0.13	0.04	0.66	0.05	0.01	0.045	0.011	0.005
S	95-0055	03/29/95	0.45	0.10	0.04	0.49	0.11	0.04	0.66	0.04	0.01	0.037	0.010	0.005
S	95-0056 FD(95-0055)	03/29/95	0.48	0.10	0.05	0.40	0.09	0.04	0.67	0.05	0.01	0.032	0.009	0.005
S	95-0057	03/29/95	0.48	0.13	0.07	0.63	0.14	0.06	0.63	0.04	0.01	0.049	0.010	0.004
S	95-0058	03/29/95	0.59	0.11	0.04	0.72	0.12	0.03	0.64	0.05	0.01	0.039	0.014	0.008
S	95-0059	03/30/95	0.58	0.10	0.04	0.81	0.12	0.03	0.74	0.05	0.01	0.039	0.009	0.004
S	95-0060	03/30/95	0.63	0.15	0.05	0.91	0.17	0.05	0.56	0.03	0.01	0.022	0.007	0.005
S	95-0061	03/30/95	0.80	0.17	0.06	0.82	0.18	0.06	0.70	0.05	0.01	0.051	0.012	0.005
S	95-0061 R1	03/30/95												
S	95-0061 R2	03/30/95												
S	95-0062	03/30/95	0.59	0.10	0.03	0.74	0.11	0.03	0.77	0.05	0.01	0.036	0.011	0.007
S	95-0063	03/30/95	0.59	0.10	0.04	0.76	0.11	0.03	0.67	0.05	0.01	0.043	0.014	0.007
S	95-0063 LD	03/30/95	0.53	0.09	0.03	0.67	0.10	0.03	0.66	0.05	0.01	0.032	0.009	0.005
S	95-0064	03/31/95	0.57	0.10	0.03	0.64	0.10	0.03	0.66	0.04	0.01	0.041	0.010	0.005
S	95-0065	03/31/95	0.65	0.13	0.04	0.71	0.13	0.04	0.70	0.05	0.01	0.032	0.010	0.006
S	95-0066	03/31/95	0.58	0.13	0.06	0.68	0.14	0.05	0.62	0.04	0.01	0.027	0.008	0.004

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Thorium 230 Mean (pCi/g)	Thorium 230 Error (pCi/g)	Thorium 230 MDA (pCi/g)	Thorium 232 Mean (pCi/g)	Thorium 232 Error (pCi/g)	Thorium 232 MDA (pCi/g)	Uranium 233/234 Mean (pCi/g)	Uranium 233/234 Error (pCi/g)	Uranium 233/234 MDA (pCi/g)	Uranium 235 Mean (pCi/g)	Uranium 235 Error (pCi/g)	Uranium 235 MDA (pCi/g)
S	95-0067	03/31/95	0.96	0.15	0.05	1.10	0.16	0.04	0.95	0.06	0.01	0.040	0.010	0.005
S	95-0068	03/31/95	0.57	0.12	0.04	0.67	0.13	0.04	0.81	0.05	0.01	0.055	0.013	0.005
S	95-0069	03/31/95	0.63	0.12	0.04	0.90	0.14	0.04	0.72	0.05	0.01	0.040	0.012	0.006
S	95-0070	04/18/95	0.68	0.10	0.03	0.79	0.10	0.02	0.68	0.05	0.01	0.023	0.009	0.006
S	95-0071	04/18/95	0.68	0.10	0.03	0.64	0.09	0.02	0.54	0.04	0.01	0.035	0.010	0.005
S	95-0072	04/21/95	0.94	0.17	0.08	0.59	0.14	0.06	0.60	0.04	0.01	0.027	0.008	0.004
S	95-0073	04/21/95	0.72	0.08	0.02	0.94	0.10	0.02	0.98	0.06	0.01	0.056	0.013	0.005
S	95-0074	04/19/95	1.10	0.13	0.03	1.20	0.13	0.03	1.10	0.06	0.01	0.048	0.011	0.004
S	95-0074 R	04/19/95												
S	95-0075	04/19/95	1.10	0.10	0.02	1.20	0.11	0.02	0.72	0.04	0.01	0.042	0.010	0.004
S	95-0076	04/19/95	1.00	0.14	0.03	1.20	0.15	0.03	0.80	0.04	0.01	0.048	0.010	0.004
S	95-0077	04/19/95	1.30	0.15	0.03	1.10	0.13	0.03	1.30	0.06	0.01	0.070	0.013	0.004
S	95-0078	04/19/95	1.10	0.20	0.08	1.10	0.20	0.06	0.98	0.05	0.01	0.054	0.011	0.005
S	95-0078 LD	04/19/95	0.91	0.11	0.04	1.20	0.13	0.03	0.98	0.06	0.01	0.058	0.012	0.005
S	95-0079	04/20/95	1.00	0.13	0.04	1.30	0.14	0.03	0.84	0.05	0.01	0.058	0.012	0.005
S	95-0080	04/20/95	0.87	0.11	0.02	1.30	0.13	0.02	1.00	0.06	0.01	0.059	0.013	0.005
S	95-0081 FD(95-0080)	04/20/95	1.00	0.12	0.04	1.30	0.14	0.03	0.97	0.06	0.01	0.061	0.012	0.005
S	95-0082	04/20/95	1.30	0.13	0.03	1.20	0.13	0.02	0.98	0.06	0.01	0.052	0.013	0.005
S	95-0083	04/20/95	1.10	0.11	0.02	1.30	0.12	0.03	0.81	0.06	0.02	0.050	0.014	0.008
S	95-0084	04/20/95	0.92	0.09	0.02	1.10	0.10	0.01	0.83	0.05	0.01	0.043	0.011	0.005
S	95-0087	04/21/95	0.99	0.16	0.04	1.30	0.19	0.04	0.95	0.06	0.01	0.076	0.014	0.005
S	95-0088	04/21/95	1.10	0.12	0.02	1.30	0.13	0.02	1.20	0.07	0.01	0.057	0.012	0.005
S	95-0093	04/24/95	2.30	0.15	0.01	2.10	0.14	0.02	2.10	0.10	0.01	0.100	0.017	0.005
S	95-0096	04/24/95	1.20	0.09	0.02	1.30	0.10	0.02	1.20	0.07	0.01	0.070	0.013	0.005
S	95-0097	05/08/95	0.87	0.09	0.02	1.10	0.10	0.02	0.83	0.06	0.01	0.045	0.012	0.006
S	95-0098	05/08/95	0.59	0.07	0.03	0.81	0.09	0.02	0.80	0.05	0.01	0.036	0.010	0.005
S	95-0098 LD	05/08/95	0.63	0.07	0.02	0.87	0.09	0.01	0.76	0.05	0.01	0.041	0.010	0.005
S	95-0099	05/08/95	0.77	0.07	0.02	0.95	0.09	0.01	0.80	0.05	0.01	0.041	0.011	0.006
S	95-0102	05/08/95	0.75	0.08	0.02	0.93	0.09	0.02	0.75	0.06	0.01	0.040	0.012	0.008
S	95-0103 FD(95-0102)	05/08/95	0.67	0.07	0.03	1.00	0.10	0.02	0.64	0.05	0.01	0.046	0.012	0.007
S	95-0104	05/09/95	0.87	0.09	0.02	1.10	0.10	0.01	0.84	0.05	0.01	0.048	0.012	0.005

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Thorium 230 Mean (pCi/g)	Thorium 230 Error (pCi/g)	Thorium 230 MDA (pCi/g)	Thorium 232 Mean (pCi/g)	Thorium 232 Error (pCi/g)	Thorium 232 MDA (pCi/g)	Uranium 233/234 Mean (pCi/g)	Uranium 233/234 Error (pCi/g)	Uranium 233/234 MDA (pCi/g)	Uranium 235 Mean (pCi/g)	Uranium 235 Error (pCi/g)	Uranium 235 MDA (pCi/g)
S	95-0105	05/09/95	0.61	0.06	0.02	0.75	0.07	0.01	0.68	0.05	0.01	0.037	0.011	0.005
S	95-0106	05/09/95	0.72	0.07	0.02	0.87	0.08	0.02	0.77	0.05	0.01	0.032	0.009	0.004
S	95-0107	05/09/95	0.56	0.07	0.02	0.75	0.08	0.02	0.73	0.05	0.01	0.035	0.010	0.006
S	95-0108	05/09/95	0.89	0.11	0.04	1.10	0.12	0.02	0.96	0.06	0.01	0.042	0.010	0.005
S	95-0109	05/10/95	0.87	0.09	0.02	1.10	0.10	0.01	0.77	0.05	0.01	0.034	0.010	0.005
S	95-0110	05/10/95	0.84	0.10	0.02	0.98	0.10	0.02	0.99	0.08	0.01	0.031	0.013	0.008
S	95-0111	05/10/95	0.79	0.08	0.02	1.10	0.10	0.02	0.80	0.06	0.01	0.045	0.014	0.006
S	95-0112	05/10/95	1.10	0.10	0.02	1.40	0.12	0.02	0.80	0.06	0.01	0.037	0.012	0.009
S	95-0113	05/11/95	0.93	0.11	0.03	1.20	0.12	0.03	0.91	0.06	0.01	0.051	0.012	0.007
S	95-0114	05/11/95	0.57	0.16	0.09	0.79	0.19	0.09	0.71	0.04	0.01	0.052	0.010	0.004
S	95-0115	05/11/95	0.66	0.09	0.03	0.94	0.11	0.02	0.79	0.05	0.01	0.030	0.009	0.004
S	95-0116	05/11/95	0.91	0.14	0.04	1.10	0.15	0.03	0.87	0.05	0.01	0.041	0.010	0.004
S	95-0117	05/11/95	0.78	0.08	0.02	1.10	0.10	0.01	0.71	0.04	0.01	0.038	0.010	0.004
S	95-0118	05/19/95	1.10	0.11	0.02	1.50	0.14	0.02	0.86	0.05	0.01	0.041	0.009	0.004
S	95-0119	05/19/95	1.30	0.11	0.02	1.90	0.14	0.02	1.10	0.06	0.01	0.069	0.014	0.006
S	95-0120	05/19/95	0.61	0.08	0.03	0.42	0.06	0.02	1.30	0.07	0.01	0.082	0.015	0.005
S	95-0121	06/12/95	1.00	0.19	0.05	1.20	0.20	0.05	0.68	0.04	0.01	0.040	0.010	0.005
S	95-0121 LD	06/12/95	0.61	0.10	0.05	0.85	0.12	0.03	0.64	0.04	0.01	0.036	0.009	0.004
S	95-0122	06/12/95	0.88	0.11	0.03	0.93	0.11	0.02	0.89	0.05	0.01	0.041	0.010	0.005
S	95-0123 FD(95-0122)	06/12/95	0.59	0.09	0.03	0.71	0.10	0.02	0.83	0.05	0.01	0.044	0.011	0.005
S	95-0124	06/12/95	0.64	0.10	0.04	0.95	0.12	0.02	0.60	0.04	0.01	0.030	0.010	0.005
S	95-0125	06/12/95	0.56	0.08	0.03	0.65	0.09	0.02	0.68	0.04	0.01	0.033	0.009	0.004
S	95-0126	06/13/95	0.76	0.10	0.03	0.79	0.10	0.02	0.84	0.05	0.01	0.042	0.010	0.005
S	95-0127	06/13/95	0.79	0.12	0.03	1.00	0.14	0.03	0.88	0.06	0.01	0.053	0.013	0.005
S	95-0128	06/13/95	0.98	0.08	0.02	1.40	0.10	0.01	0.83	0.06	0.01	0.055	0.013	0.006
S	95-0129	06/13/95	1.00	0.12	0.02	1.00	0.13	0.02	0.97	0.07	0.01	0.035	0.011	0.006
S	95-0132	06/14/95	0.60	0.08	0.02	1.00	0.11	0.02	0.64	0.05	0.01	0.024	0.009	0.006
S	95-0133	06/14/95	0.50	0.12	0.04	0.83	0.15	0.04	0.69	0.05	0.01	0.025	0.009	0.005
S	95-0134	06/14/95	0.64	0.17	0.10	0.86	0.20	0.08	0.68	0.04	0.01	0.035	0.009	0.004
S	95-0135	06/14/95	0.61	0.09	0.03	0.77	0.10	0.02	0.46	0.03	0.01	0.032	0.009	0.004
S	95-0136	06/15/95	0.88	0.15	0.05	0.83	0.15	0.05	0.64	0.04	0.01	0.041	0.010	0.005

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Thorium 230 Mean (pCi/g)	Thorium 230 Error (pCi/g)	Thorium 230 MDA (pCi/g)	Thorium 232 Mean (pCi/g)	Thorium 232 Error (pCi/g)	Thorium 232 MDA (pCi/g)	Uranium 233/234 Mean (pCi/g)	Uranium 233/234 Error (pCi/g)	Uranium 233/234 MDA (pCi/g)	Uranium 235 Mean (pCi/g)	Uranium 235 Error (pCi/g)	Uranium 235 MDA (pCi/g)
S	95-0137	06/15/95	1.00	0.13	0.03	0.96	0.12	0.03	1.10	0.06	0.01	0.049	0.011	0.005
S	95-0138	06/15/95	0.88	0.16	0.05	1.10	0.19	0.05	0.63	0.04	0.01	0.043	0.011	0.005
S	95-0139	06/15/95	0.81	0.09	0.02	1.00	0.10	0.02	0.66	0.04	0.01	0.041	0.009	0.004
S	95-0140	06/19/95	1.10	0.12	0.03	1.40	0.14	0.02	1.10	0.06	0.01	0.046	0.012	0.005
S	95-0141	06/19/95	1.00	0.14	0.04	1.30	0.16	0.03	0.90	0.05	0.01	0.053	0.011	0.005
S	95-0142	06/19/95	0.81	0.10	0.03	1.00	0.12	0.02	0.80	0.05	0.01	0.042	0.011	0.004
S	95-0143	06/19/95	0.80	0.13	0.03	1.20	0.16	0.03	0.81	0.06	0.01	0.046	0.012	0.006
S-BKGD	95-0144	06/20/95	3.80	0.22	0.02	0.95	0.09	0.02	1.90	0.13	0.02	0.100	0.021	0.009
S-BKGD	95-0145	06/20/95	4.20	0.30	0.03	0.92	0.11	0.02	1.60	0.11	0.02	0.065	0.019	0.009
S-BKGD	95-0146	06/21/95	0.92	0.15	0.04	1.20	0.17	0.05	0.81	0.07	0.02	0.039	0.014	0.010
S-BKGD	95-0147	06/21/95	0.71	0.11	0.03	0.91	0.12	0.03	0.74	0.07	0.02	0.042	0.015	0.010
S-BKGD	95-0148	06/22/95	1.10	0.17	0.04	1.50	0.20	0.04	0.98	0.09	0.02	0.043	0.017	0.010
S-BKGD	95-0149	06/22/95	1.10	0.12	0.02	1.30	0.13	0.02	0.89	0.06	0.01	0.054	0.013	0.006
S	95-0150	06/26/95	0.70	0.09	0.03	0.89	0.10	0.02	0.68	0.04	0.01	0.032	0.009	0.006
S	95-0150 LD	06/26/95	0.50	0.08	0.03	0.67	0.09	0.02	0.60	0.05	0.01	0.035	0.012	0.006
S	95-0151	06/26/95	0.37	0.06	0.03	0.49	0.07	0.02	0.36	0.03	0.01	0.020	0.008	0.005
S	95-0152	06/26/95	0.69	0.15	0.06	0.76	0.16	0.06	0.74	0.05	0.01	0.053	0.013	0.006
S	95-0153	06/26/95	0.65	0.10	0.03	0.76	0.11	0.03	0.65	0.05	0.01	0.031	0.010	0.006
S	95-0154	06/26/95	0.40	0.07	0.02	0.36	0.06	0.02	0.52	0.05	0.01	0.041	0.014	0.010
S	95-0155	06/27/95	0.69	0.20	0.09	0.74	0.20	0.09	1.30	0.08	0.01	0.072	0.015	0.006
S	95-0156	06/27/95	0.86	0.14	0.04	0.84	0.14	0.04	0.68	0.06	0.02	0.045	0.014	0.009
S	95-0157	06/27/95	0.71	0.09	0.03	0.87	0.10	0.02	0.57	0.05	0.01	0.033	0.012	0.007
S	95-0158	06/27/95	0.69	0.11	0.03	0.86	0.12	0.03	0.74	0.06	0.01	0.033	0.011	0.007
S	95-0159 FD(95-0157)	06/27/95	0.60	0.08	0.03	0.67	0.09	0.02	0.61	0.04	0.01	0.034	0.009	0.005
S	95-0162	06/28/95	0.48	0.13	0.07	0.65	0.15	0.08	0.40	0.04	0.01	0.022	0.008	0.006

Soil Data Table Summaries		Th-230 Mean	Th-230 MDA	Th-232 Mean	Th-232 MDA	U-233/234 Mean	U-233/234 MDA	U-235 Mean	U-235 MDA
	Maximum	4.20	0.10	2.10	0.10	2.10	0.04	0.10	0.03
	Average	0.85	0.04	1.00	0.03	0.79	0.01	0.04	0.01
	Minimum	0.37	0.01	0.36	0.01	0.36	0.01	0.02	0.00
	Std.Dev.	0.43	0.02	0.29	0.02	0.23	0.00	0.01	0.00
	Count	174		175		174		174	

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Thorium 230 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Thorium 232 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Uranium 233/234 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)	Uranium 235 Mean (pCi/g)	Error (pCi/g)	MDA (pCi/g)

Sample Type	A4CM-xx-xxxx Sample Identification	Date Sampled	Thorium 230 Mean (pCi/L)	Error (pCi/L)	MDA (pCi/L)	Thorium 232 Mean (pCi/L)	Error (pCi/L)	MDA (pCi/L)	Uranium 233/234 Mean (pCi/L)	Error (pCi/L)	MDA (pCi/L)	Uranium 235 Mean (pCi/L)	Error (pCi/L)	MDA (pCi/L)
W	95-0021(rinsate)	02/23/95												
W	95-0022(rinsate)	02/23/95	0.049	0.039	0.050	0.015	0.020	0.040	-0.019	0.057	0.100	0.023	0.046	0.090
W	95-0025(rinsate)	03/06/95												
W	95-0026(rinsate)	03/06/95	0.036	0.036	0.050	0.030	0.036	0.050	0.020	0.100	0.200	0.073	0.073	0.090
W	95-0050(rinsate)	03/28/95												
W	95-0051(rinsate)	03/28/95	0.000	0.022	0.080	0.011	0.022	0.080	-0.025	0.074	0.100	-0.030	0.030	0.100
W	95-0085(rinsate)	04/20/95												
W	95-0086(rinsate)	04/20/95	0.062	0.062	0.080	0.010	0.021	0.080	0.036	0.054	0.090	0.000	0.022	0.080
W	95-0089(SRE Pond)	04/24/95												
W	95-0090(SRE Pond)	04/24/95	0.009	0.053	0.080	0.000	0.035	0.070	1.800	0.470	0.200	0.120	0.120	0.200
W	95-0091(Field Blank)	04/24/95												
W	95-0092(Field Blank)	04/24/95	0.050	0.075	0.100	-0.013	0.025	0.100	-0.040	0.100	0.200	0.012	0.072	0.100
W	95-0094(SRE Pond)	04/24/95												
W	95-0095(SRE Pond)	04/24/95	0.220	0.089	0.070	0.000	0.015	0.060	1.200	0.240	0.200	0.065	0.052	0.100
W	95-0100(rinsate)	05/08/95												
W	95-0101(rinsate)	05/08/95	0.027	0.043	0.050	-0.011	0.011	0.040	0.009	0.073	0.100	-0.033	0.022	0.080
W	95-0130(rinsate)	06/13/95												
W	95-0131(rinsate)	06/13/95	0.059	0.066	0.090	0.033	0.040	0.050	0.000	0.072	0.100	0.000	0.022	0.080
W	95-0160(rinsate)	06/27/95												
W	95-0161(rinsate)	06/27/95	0.160	0.097	0.100	0.010	0.039	0.070	-0.008	0.067	0.100	0.000	0.020	0.080

Water Data Table Summaries	Maximum	0.220		0.100	0.033		0.100	1.800		0.20	0.120		0.20
	Average	0.067		0.075	0.009		0.064	0.297		0.14	0.023		0.10
	Minimum	0.000		0.050	-0.013		0.040	-0.040		0.09	-0.033		0.08
	Std.Dev.	0.069		0.020	0.015		0.020	0.650		0.05	0.049		0.04
	Count	10			10			10			10		

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Uranium 238 Mean (pCi/g)	Uranium 238 Error (pCi/g)	Uranium 238 MDA (pCi/g)	Beryllium 7 Mean (pCi/g)	Beryllium 7 Error (pCi/g)	Beryllium 7 MDA (pCi/g)
S	94-0001	11/17/94	0.72	0.07	0.01			
S	94-0001 LD	11/17/94	0.66	0.06	0.01			
S	94-0002	11/17/94	0.76	0.08	0.01			
S	94-0003	11/18/94	0.76	0.08	0.02			
S	94-0004 FD(94-0003)	11/18/94	0.82	0.09	0.02			
S	94-0005	11/18/94	0.74	0.08	0.01			
S	94-0006	11/18/94	0.74	0.08	0.02			
S	94-0007	11/21/94	0.84	0.09	0.02			
S	94-0007 R	11/21/94						
S	94-0008	11/21/94	0.78	0.08	0.01			
S	94-0009	11/21/94	0.72	0.07	0.01			
S	94-0010	11/22/94	0.69	0.07	0.01			
S	94-0011	11/22/94	0.8	0.10	0.03			
S	94-0013	11/22/94	0.94	0.08	0.01			
S	94-0014	11/23/94	0.79	0.07	0.01			
S	94-0015	11/23/94	0.76	0.07	0.01			
S	94-0015 LD	11/23/94	0.80	0.07	0.01			
S	94-0016	11/23/94	0.79	0.07	0.01			
S	94-0017	11/28/94	0.85	0.07	0.02			
S	94-0018	11/28/94	0.86	0.11	0.02			
S	94-0019	11/29/94	0.79	0.07	0.01			
S	94-0020	11/29/94	0.75	0.05	0.01			
S	94-0021	11/30/94	0.81	0.06	0.01			
S	94-0022	11/30/94	0.79	0.06	0.01			
S	95-0001A	02/15/95	0.65	0.04	0.01			
S	95-0001A LD	02/15/95	0.74	0.05	0.01			
S	95-0002A	02/15/95	0.58	0.04	0.01			
S	95-0003A	02/15/95	0.59	0.05	0.01			
S	95-0004A	02/16/95	0.71	0.05	0.01			
S	95-0005A	02/16/95	0.68	0.05	0.01			
S	95-0006A	02/16/95	0.83	0.06	0.01			

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Uranium 238 Mean (pCi/g)	Uranium 238 Error (pCi/g)	Uranium 238 MDA (pCi/g)	Beryllium 7 Mean (pCi/g)	Beryllium 7 Error (pCi/g)	Beryllium 7 MDA (pCi/g)
S	95-0007A	02/16/95	0.61	0.05	0.01			
S	95-0008A	02/16/95	0.63	0.05	0.01			
S	95-0009	02/22/95	1.40	0.08	0.01			
S	95-0010	02/22/95	1.00	0.07	0.01			
S	95-0010 LD	02/22/95						
S	95-0011	02/21/95	0.93	0.05	0.01			
S	95-0012	02/21/95	0.81	0.05	0.01			
S	95-0013	02/22/95	0.89	0.07	0.01			
S	95-0014	02/22/95	0.87	0.05	0.01			
S	95-0014 LD	02/22/95	1.10	0.06	0.01			
S	95-0015 FD(95-0014)	02/22/95	1.00	0.06	0.01			
S	95-0016A	02/23/95	0.79	0.05	0.01			
S	95-0017A	02/23/95	0.88	0.05	0.01			
S	95-0018	02/20/95	0.63	0.04	0.01			
S	95-0019	02/20/95	0.85	0.05	0.01			
S	95-0019 LD	02/20/95						
S	95-0020A	02/23/95	0.77	0.04	0.01			
S	95-0023A	02/23/95	0.96	0.05	0.01			
S	95-0024	03/06/95	0.89	0.05	0.01			
S	95-0027	03/06/95	0.55	0.03	0.01			
S	95-0028	03/06/95	0.65	0.05	0.01			
S	95-0029	03/06/95	0.76	0.04	0.01			
S	95-0030	03/06/95	0.67	0.05	0.01			
S	95-0031	03/07/95	0.49	0.04	0.01			
S	95-0032	03/07/95	0.64	0.04	0.01			
S	95-0033	03/07/95	0.70	0.05	0.01			
S	95-0034	03/07/95	0.71	0.05	0.01			
S	95-0035	03/07/95	0.54	0.04	0.01			
S	95-0035 LD	03/07/95	0.53	0.04	0.01			
S	95-0036 FD(95-0035)	03/07/95	0.56	0.04	0.01			
S	95-0037	03/08/95	0.59	0.04	0.01			

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Uranium 238 Mean (pCi/g)	Uranium 238 Error (pCi/g)	Uranium 238 MDA (pCi/g)	Beryllium 7 Mean (pCi/g)	Beryllium 7 Error (pCi/g)	Beryllium 7 MDA (pCi/g)
S	95-0038	03/08/95	0.62	0.04	0.01			
S	95-0039	03/08/95	0.66	0.04	0.01			
S	95-0040	03/08/95	0.53	0.04	0.01			
S	95-0041	03/08/95	0.61	0.05	0.01			
S	95-0042	03/09/95	0.81	0.06	0.01			
S	95-0043	03/09/95	0.65	0.05	0.01			
S	95-0044	03/09/95	0.67	0.05	0.01			
S	95-0045	03/09/95	1.10	0.07	0.01			
S	95-0046	03/09/95	1.20	0.07	0.01			
S	95-0047	03/28/95	0.67	0.04	0.01			
S	95-0048	03/28/95	0.67	0.04	0.01			
S	95-0049	03/28/95	0.50	0.04	0.01			
S	95-0049 LD	03/28/95	0.73	0.05	0.01			
S	95-0052	03/29/95	0.62	0.04	0.01			
S	95-0053	03/29/95	0.75	0.05	0.01			
S	95-0054	03/29/95	0.68	0.05	0.01			
S	95-0055	03/29/95	0.66	0.04	0.01			
S	95-0056 FD(95-0055)	03/29/95	0.66	0.05	0.01			
S	95-0057	03/29/95	0.66	0.04	0.01			
S	95-0058	03/29/95	0.70	0.06	0.01			
S	95-0059	03/30/95	0.77	0.05	0.01			
S	95-0060	03/30/95	0.56	0.03	0.01			
S	95-0061	03/30/95	0.78	0.05	0.01			
S	95-0061 R1	03/30/95						
S	95-0061 R2	03/30/95						
S	95-0062	03/30/95	0.78	0.05	0.01			
S	95-0063	03/30/95	0.62	0.05	0.01			
S	95-0063 LD	03/30/95	0.62	0.04	0.01			
S	95-0064	03/31/95	0.66	0.04	0.01			
S	95-0065	03/31/95	0.70	0.05	0.01			
S	95-0066	03/31/95	0.62	0.04	0.01			

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Uranium 238 Mean (pCi/g)	Uranium 238 Error (pCi/g)	Uranium 238 MDA (pCi/g)	Beryllium 7 Mean (pCi/g)	Beryllium 7 Error (pCi/g)	Beryllium 7 MDA (pCi/g)
S	95-0067	03/31/95	0.93	0.06	0.01			
S	95-0068	03/31/95	0.86	0.06	0.01			
S	95-0069	03/31/95	0.72	0.05	0.01			
S	95-0070	04/18/95	0.59	0.04	0.01	0.44	0.26	
S	95-0071	04/18/95	0.55	0.04	0.01			
S	95-0072	04/21/95	0.58	0.04	0.01	0.50	0.16	
S	95-0073	04/21/95	0.74	0.05	0.01			
S	95-0074	04/19/95	1.00	0.05	0.01			
S	95-0074 R	04/19/95						
S	95-0075	04/19/95	0.78	0.05	0.01			
S	95-0076	04/19/95	0.78	0.04	0.01			
S	95-0077	04/19/95	1.30	0.06	0.01			
S	95-0078	04/19/95	1.00	0.05	0.01			
S	95-0078 LD	04/19/95	0.99	0.06	0.01			
S	95-0079	04/20/95	0.82	0.05	0.01			
S	95-0080	04/20/95	0.96	0.06	0.01			
S	95-0081 FD(95-0080)	04/20/95	0.89	0.05	0.01			
S	95-0082	04/20/95	0.90	0.06	0.01			
S	95-0083	04/20/95	0.82	0.06	0.01			
S	95-0084	04/20/95	0.81	0.05	0.01			
S	95-0087	04/21/95	0.81	0.05	0.01			
S	95-0088	04/21/95	1.10	0.06	0.01			
S	95-0093	04/24/95	2.00	0.10	0.01			
S	95-0096	04/24/95	1.20	0.07	0.01			
S	95-0097	05/08/95	0.80	0.06	0.01			
S	95-0098	05/08/95	0.83	0.05	0.01			
S	95-0098 LD	05/08/95	0.83	0.05	0.01			
S	95-0099	05/08/95	0.76	0.05	0.01			
S	95-0102	05/08/95	0.70	0.05	0.01			
S	95-0103 FD(95-0102)	05/08/95	0.67	0.05	0.01			
S	95-0104	05/09/95	0.80	0.05	0.01			

**** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis**

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Uranium 238 Mean (pCi/g)	Uranium 238 Error (pCi/g)	Uranium 238 MDA (pCi/g)	Beryllium 7 Mean (pCi/g)	Beryllium 7 Error (pCi/g)	Beryllium 7 MDA (pCi/g)
S	95-0105	05/09/95	0.65	0.05	0.01			
S	95-0106	05/09/95	0.76	0.05	0.01			
S	95-0107	05/09/95	0.71	0.05	0.01			
S	95-0108	05/09/95	0.91	0.05	0.01			
S	95-0109	05/10/95	0.77	0.05	0.01			
S	95-0110	05/10/95	0.98	0.07	0.01			
S	95-0111	05/10/95	0.76	0.06	0.01			
S	95-0112	05/10/95	0.78	0.06	0.01			
S	95-0113	05/11/95	0.91	0.06	0.01			
S	95-0114	05/11/95	0.69	0.04	0.01			
S	95-0115	05/11/95	0.76	0.05	0.01			
S	95-0116	05/11/95	0.90	0.05	0.01			
S	95-0117	05/11/95	0.74	0.04	0.01			
S	95-0118	05/19/95	0.86	0.05	0.01			
S	95-0119	05/19/95	1.20	0.07	0.01			
S	95-0120	05/19/95	1.40	0.07	0.01			
S	95-0121	06/12/95	0.77	0.05	0.01			
S	95-0121 LD	06/12/95	0.75	0.04	0.01			
S	95-0122	06/12/95	0.88	0.05	0.01			
S	95-0123 FD(95-0122)	06/12/95	0.84	0.05	0.01			
S	95-0124	06/12/95	0.66	0.05	0.01			
S	95-0125	06/12/95	0.74	0.05	0.01			
S	95-0126	06/13/95	0.81	0.05	0.01			
S	95-0127	06/13/95	0.91	0.06	0.01			
S	95-0128	06/13/95	0.84	0.06	0.01			
S	95-0129	06/13/95	0.92	0.06	0.01			
S	95-0132	06/14/95	0.66	0.05	0.01			
S	95-0133	06/14/95	0.79	0.05	0.01			
S	95-0134	06/14/95	0.74	0.05	0.01			
S	95-0135	06/14/95	0.51	0.04	0.01			
S	95-0136	06/15/95	0.71	0.05	0.01			

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Uranium 238 Mean (pCi/g)	Uranium 238 Error (pCi/g)	Uranium 238 MDA (pCi/g)	Beryllium 7 Mean (pCi/g)	Beryllium 7 Error (pCi/g)	Beryllium 7 MDA (pCi/g)
S	95-0137	06/15/95	1.10	0.06	0.01			
S	95-0138	06/15/95	0.68	0.04	0.01			
S	95-0139	06/15/95	0.72	0.05	0.01			
S	95-0140	06/19/95	1.10	0.06	0.01			
S	95-0141	06/19/95	0.94	0.05	0.01			
S	95-0142	06/19/95	0.85	0.05	0.01			
S	95-0143	06/19/95	0.82	0.06	0.01			
S-BKGD	95-0144	06/20/95	1.70	0.12	0.02			
S-BKGD	95-0145	06/20/95	1.40	0.10	0.01			
S-BKGD	95-0146	06/21/95	0.77	0.06	0.01			
S-BKGD	95-0147	06/21/95	0.77	0.07	0.01			
S-BKGD	95-0148	06/22/95	0.98	0.09	0.01			
S-BKGD	95-0149	06/22/95	0.96	0.06	0.01			
S	95-0150	06/26/95	0.69	0.04	0.01			
S	95-0150 LD	06/26/95	0.59	0.05	0.01			
S	95-0151	06/26/95	0.38	0.03	0.01			
S	95-0152	06/26/95	0.77	0.06	0.01			
S	95-0153	06/26/95	0.66	0.05	0.01			
S	95-0154	06/26/95	0.51	0.05	0.01			
S	95-0155	06/27/95	1.30	0.08	0.01			
S	95-0156	06/27/95	0.68	0.06	0.01			
S	95-0157	06/27/95	0.58	0.05	0.01			
S	95-0158	06/27/95	0.81	0.06	0.01			
S	95-0159 FD(95-0157)	06/27/95	0.64	0.04	0.01			
S	95-0162	06/28/95	0.42	0.04	0.01			

Soil Data Table Summaries		Uranium 238 Mean	Uranium 238 MDA	Beryllium 7 Mean	Beryllium 7 MDA
	Maximum	2.00	0.03	0.50	0
	Average	0.79	0.01	0.47	0
	Minimum	0.38	0.01	0.44	0
	Std.Dev.	0.21	0.00	0.04	0
	Count	174		2	

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Table D-1. Area IV Soil and Water Sample Data

Sample Type	A4CM-xx-xxxx Sample Identification **	Date Sampled	Uranium 238 Mean (pCi/g)	Uranium 238 Error (pCi/g)	Uranium 238 MDA (pCi/g)	Beryllium 7 Mean (pCi/g)	Beryllium 7 Error (pCi/g)	Beryllium 7 MDA (pCi/g)

Sample Type	A4CM-xx-xxxx Sample Identification	Date Sampled	Uranium 238 Mean (pCi/L)	Uranium 238 Error (pCi/L)	Uranium 238 MDA (pCi/L)	Beryllium 7 Mean (pCi/L)	Beryllium 7 Error (pCi/L)	Beryllium 7 MDA (pCi/L)
W	95-0021(rinsate)	02/23/95						
W	95-0022(rinsate)	02/23/95	-0.009	0.019	0.070			
W	95-0025(rinsate)	03/06/95						
W	95-0026(rinsate)	03/06/95	0.140	0.080	0.080			
W	95-0050(rinsate)	03/28/95						
W	95-0051(rinsate)	03/28/95	0.000	0.049	0.090			
W	95-0085(rinsate)	04/20/95						
W	95-0086(rinsate)	04/20/95	0.018	0.036	0.070			
W	95-0089(SRE Pond)	04/24/95						
W	95-0090(SRE Pond)	04/24/95	1.400	0.370	0.200			
W	95-0091(Field Blank)	04/24/95						
W	95-0092(Field Blank)	04/24/95	0.020	0.040	0.080			
W	95-0094(SRE Pond)	04/24/95						
W	95-0095(SRE Pond)	04/24/95	0.930	0.220	0.100			
W	95-0100(rinsate)	05/08/95						
W	95-0101(rinsate)	05/08/95	0.027	0.036	0.070			
W	95-0130(rinsate)	06/13/95						
W	95-0131(rinsate)	06/13/95	0.036	0.036	0.070			
W	95-0160(rinsate)	06/27/95						
W	95-0161(rinsate)	06/27/95	0.050	0.050	0.060			

Water Data Table Summaries		Uranium 238 Mean	Uranium 238 Error	Uranium 238 MDA	Beryllium 7 Mean	Beryllium 7 Error	Beryllium 7 MDA
	Maximum	1.400		0.20	0.000		0
	Average	0.261		0.09	0.000		0
	Minimum	-0.009		0.06	0.000		0
	Std.Dev.	0.491		0.04	0.000		0
	Count	10			10		

** LD-Lab Duplicate; FD-Field Duplicate (no. indicates duplicate of); R-Reanalysis

Figure D-1. Distribution of Tritium Activity.

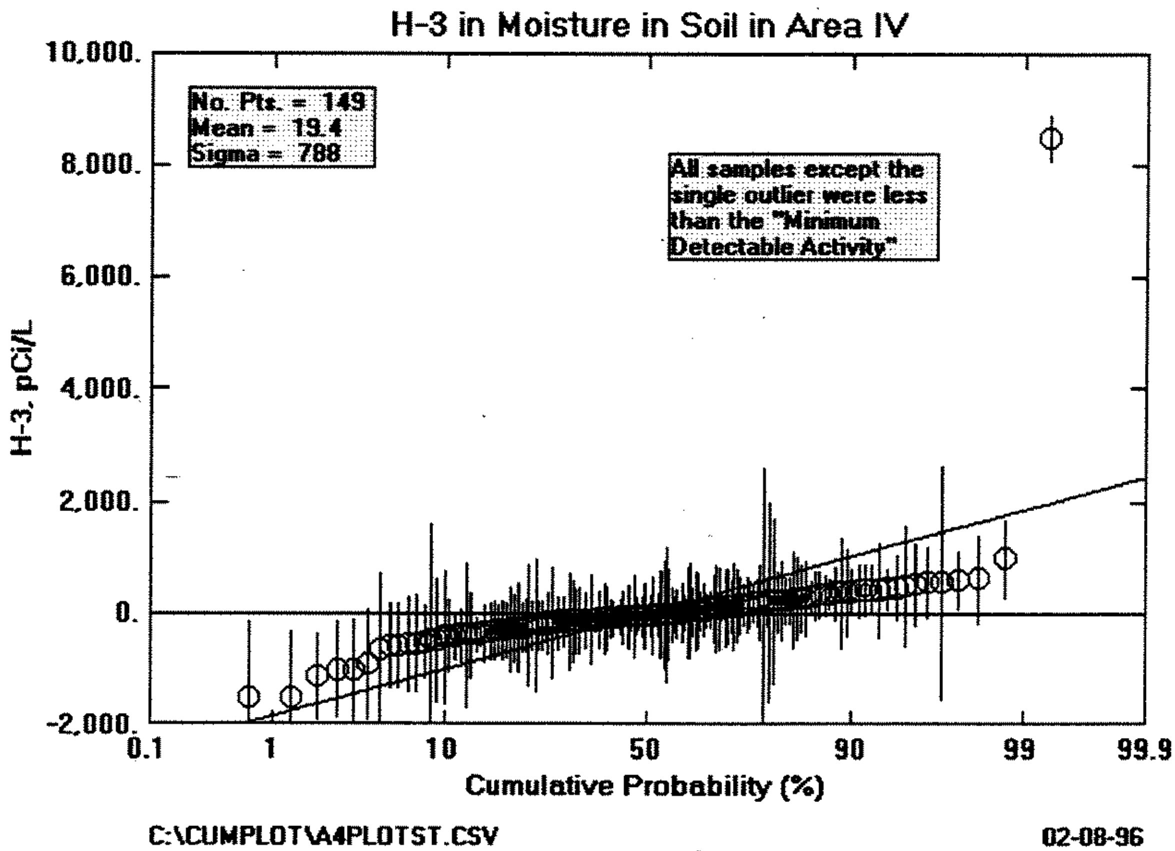


Figure D-2. Distribution of Strontium-90 Activity.

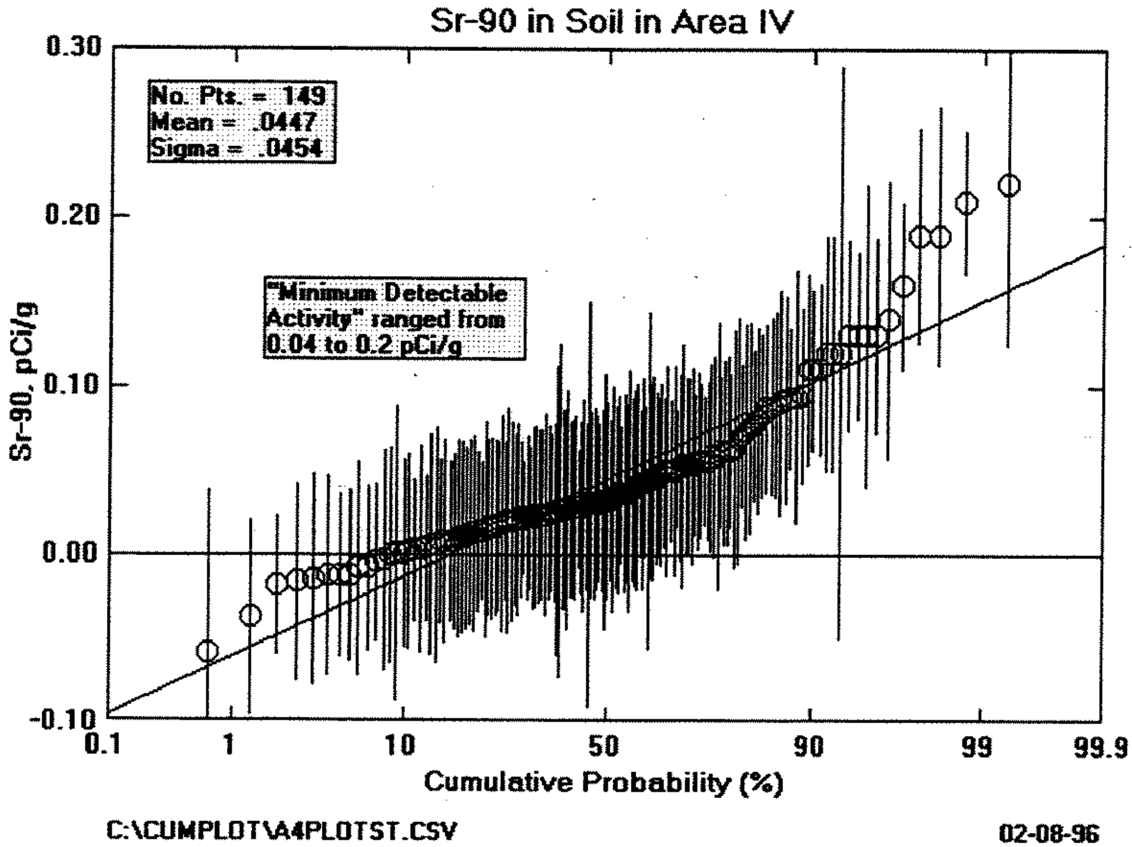


Figure D-3. Distribution of Cesium-137 Activity.

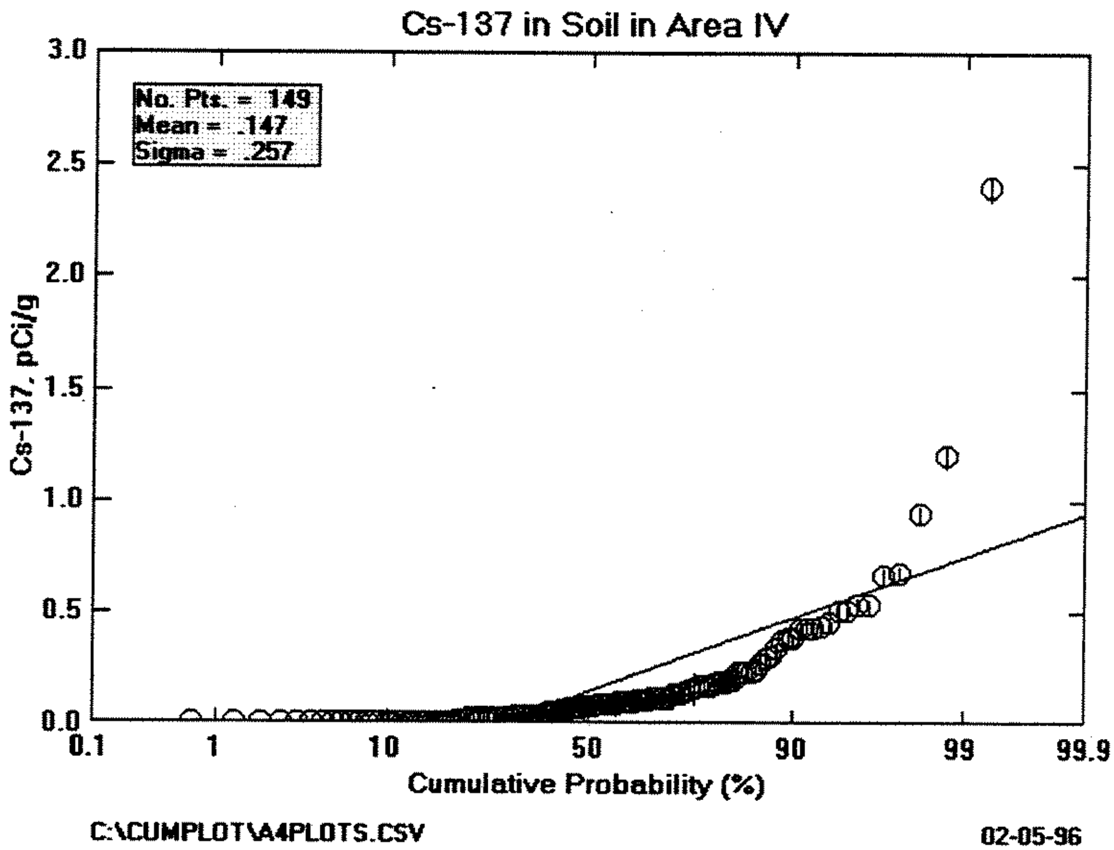


Figure D-4. Distribution of Thorium-228 Activity.

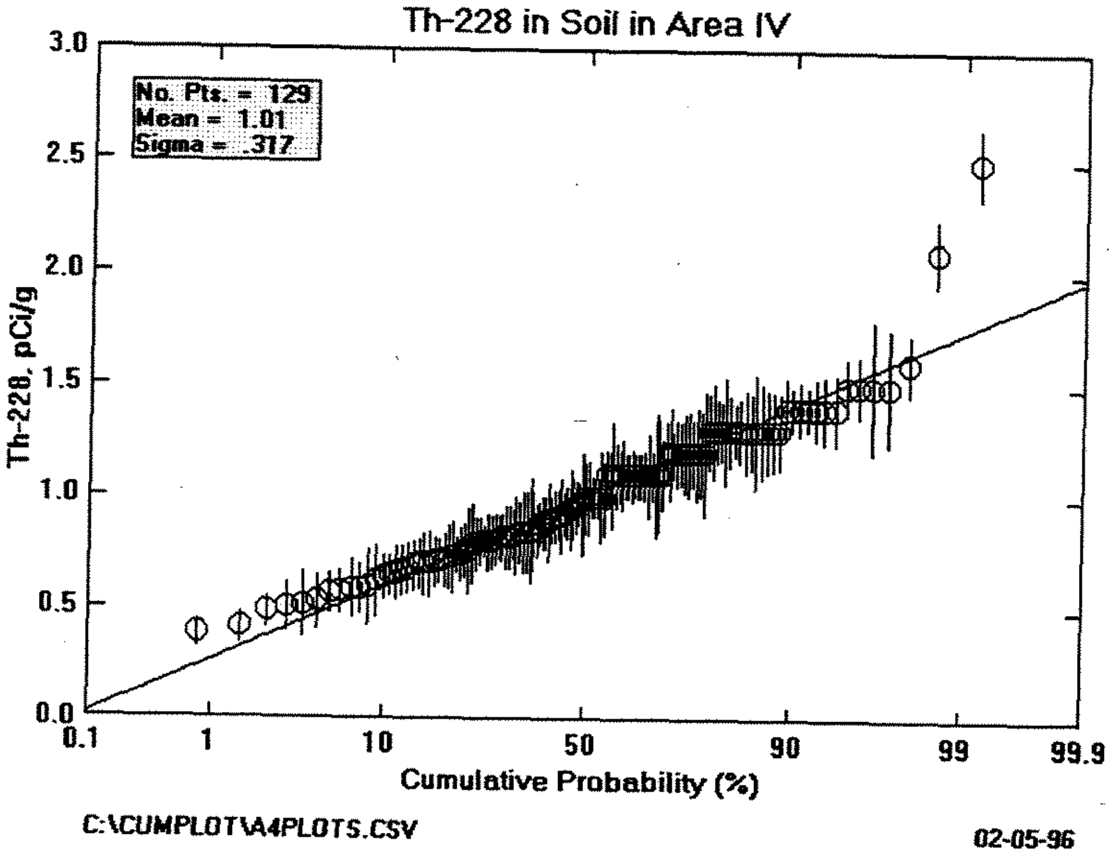


Figure D-5. Distribution of Thorium-230 Activity.

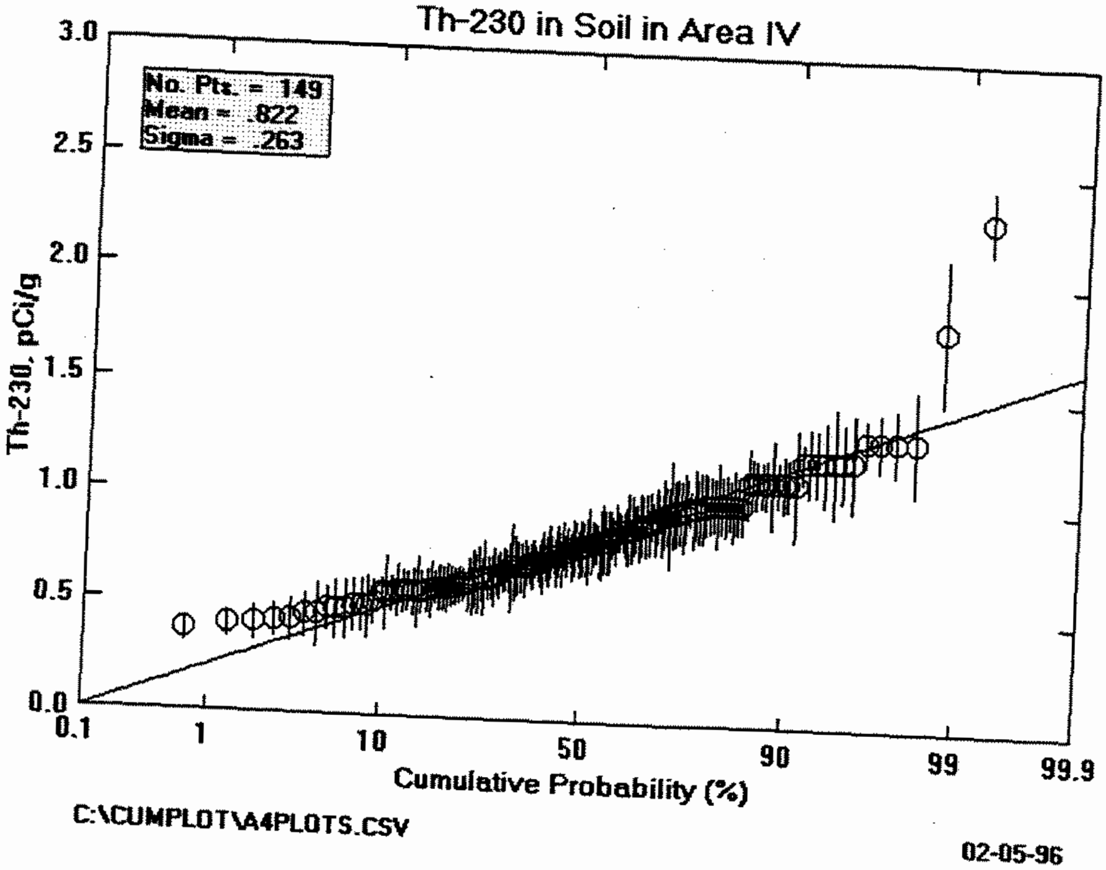


Figure D-6. Distribution of Thorium-232 Activity.

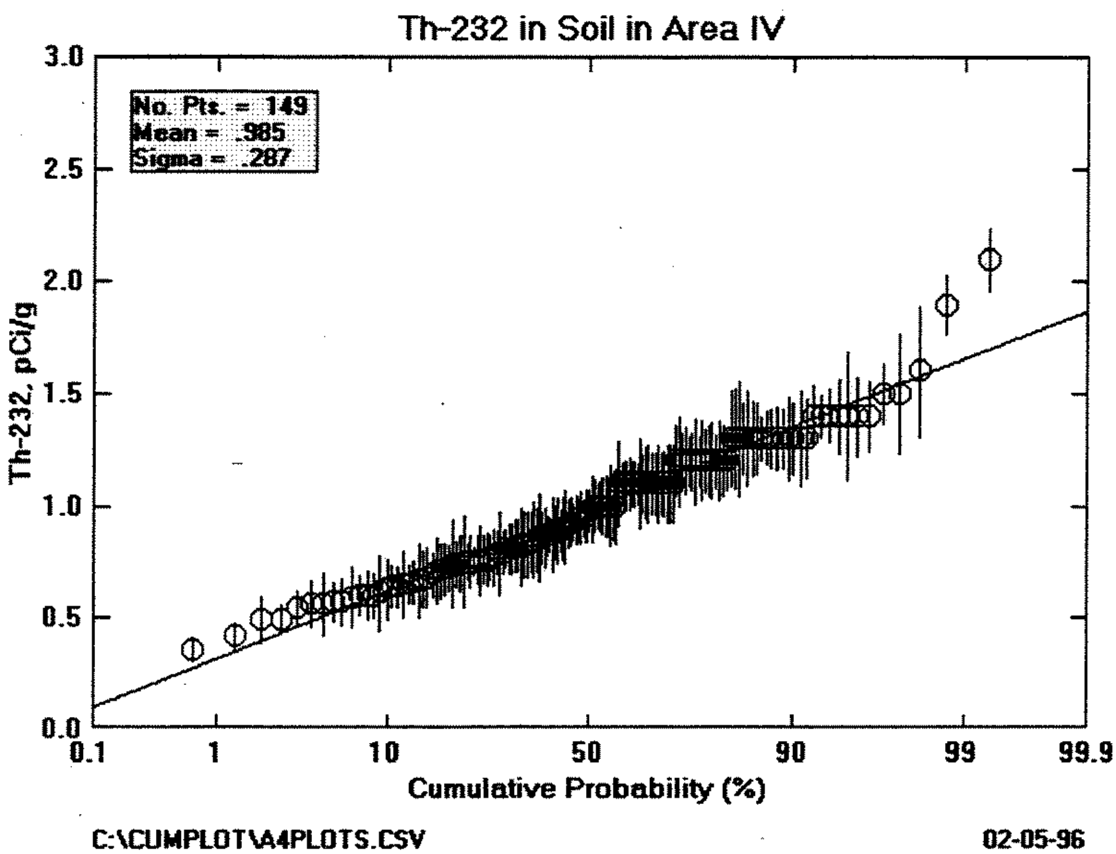


Figure D-7. Distribution of U-234 Activity.

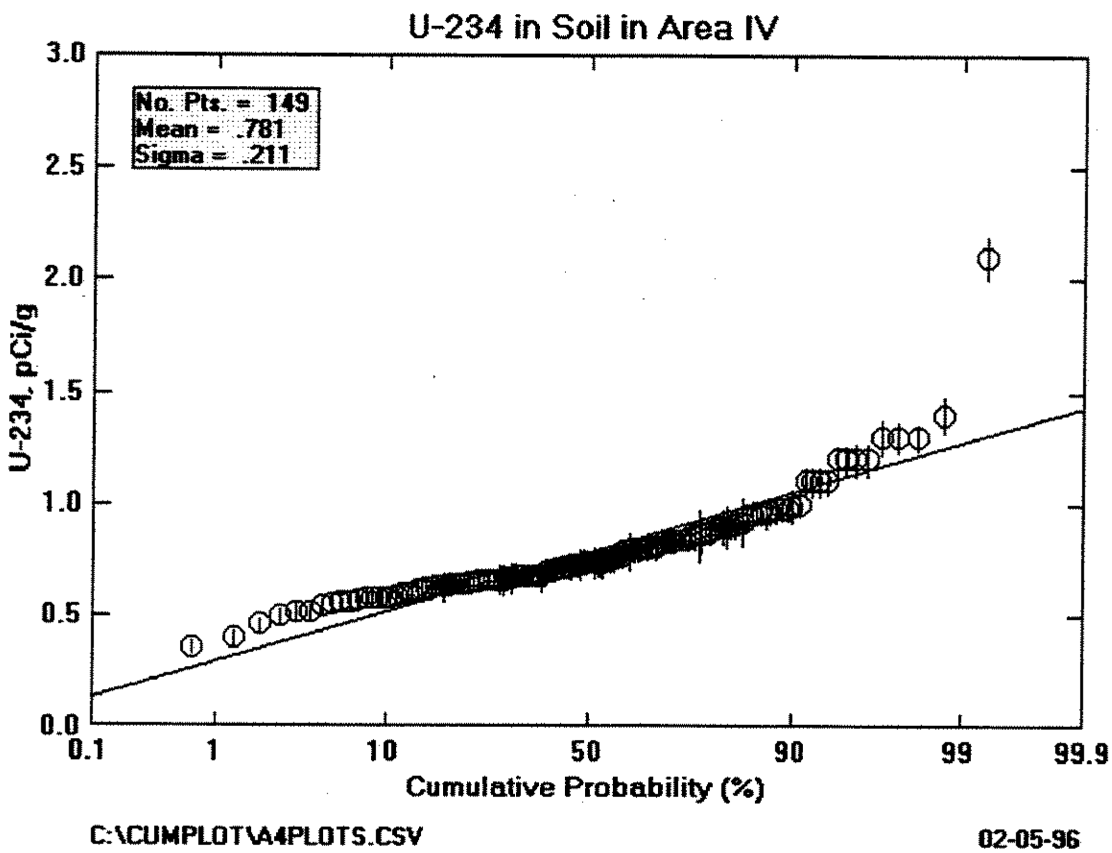


Figure D-8. Distribution of U-235 Activity.

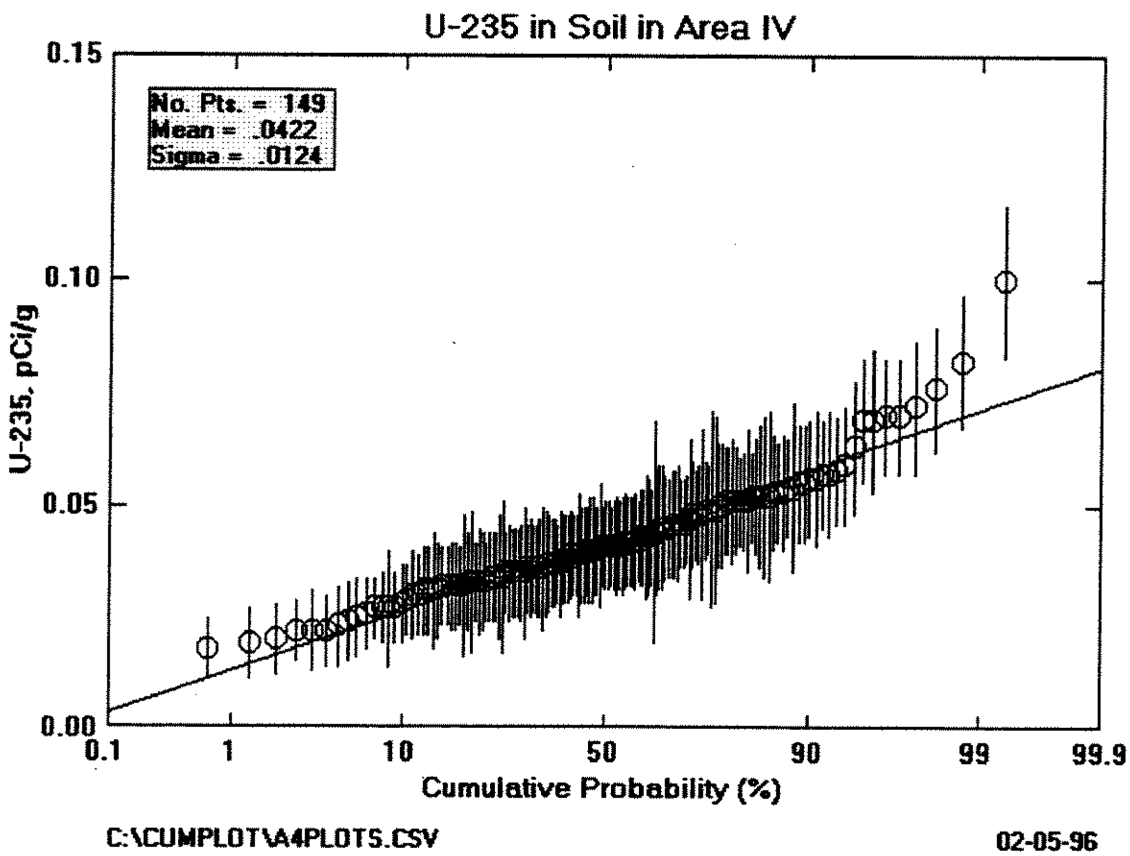


Figure D-9. Distribution of U-238 Activity.

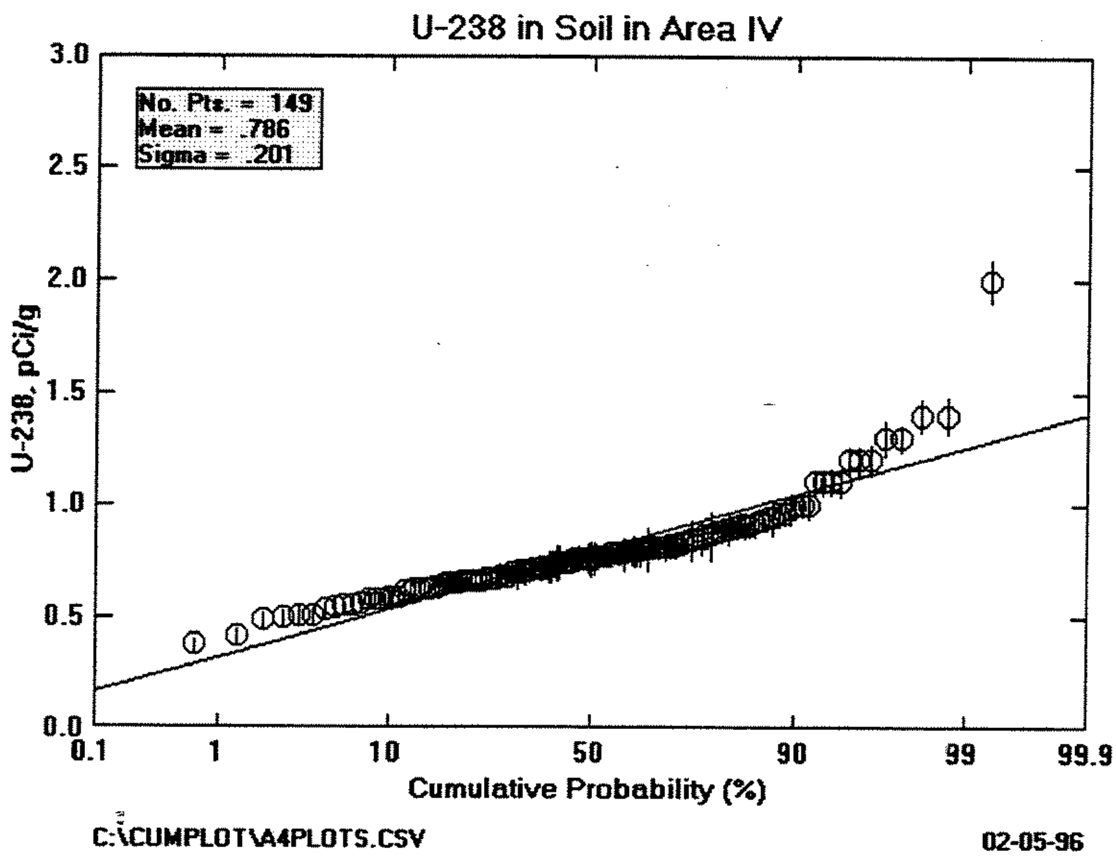


Figure D-10. Distribution of Plutonium-238 Activity.

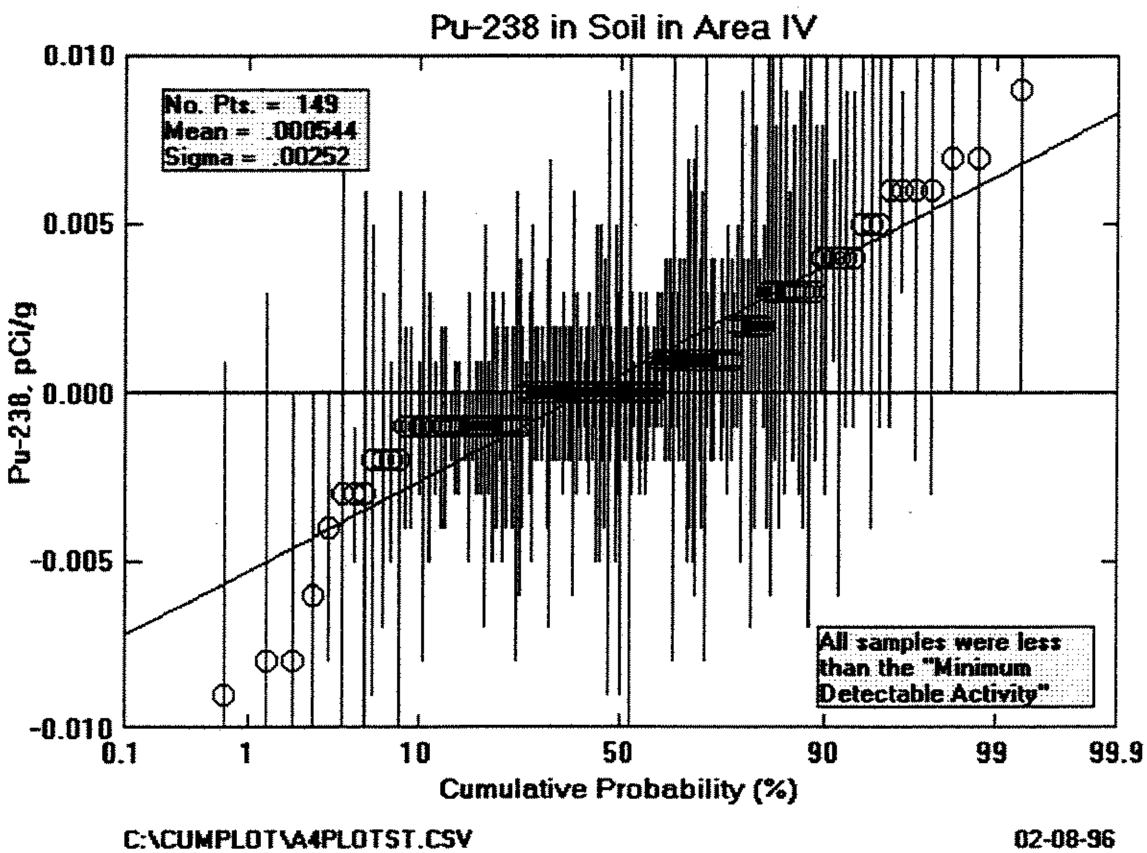
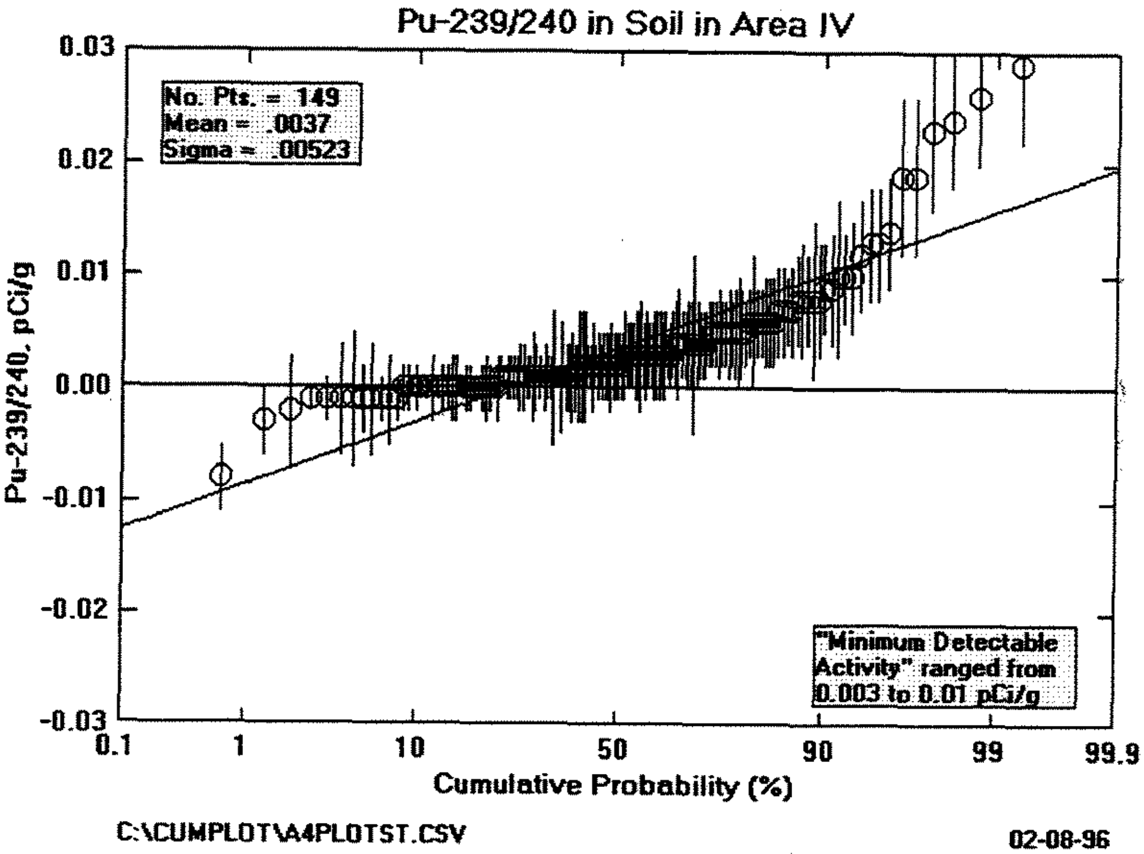


Figure D-11. Distribution of Plutonium-239/240 Activity.



APPENDIX E. BACKGROUND LOCATIONS AND DATA

The background gamma radiation and soil radioisotope concentrations for evaluation of the Area IV radiological characterization data are based on measurements taken in locations near Area IV. These proximate locations are considered to be representative of Area IV, but are not expected to be affected by activities within Area IV. The data are from two sources: measurements and sampling for the Brandeis-Bardin Institute (BBI) and Santa Monica Mountains Conservancy (SMMC) initial (1992) and follow-up (1994) multi-media studies (Ref. 2 and 3), and measurements and sampling in some of the locations of that study as part of the Area IV radiological characterization study. This appendix contains maps of the sampling and measurement locations, plots of data, and tables of data.

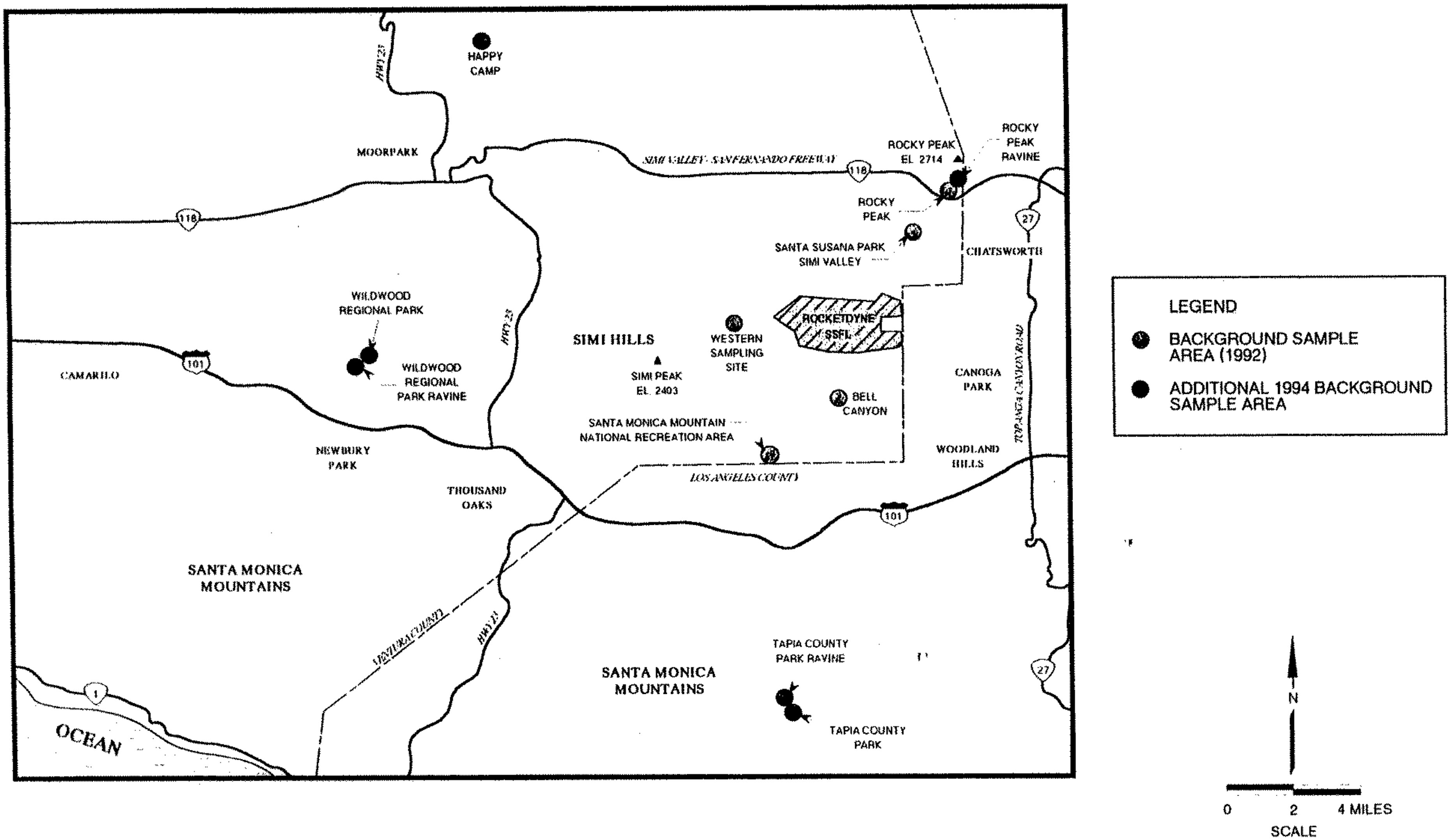


Figure E-1. Map of Background Locations

T9501017*

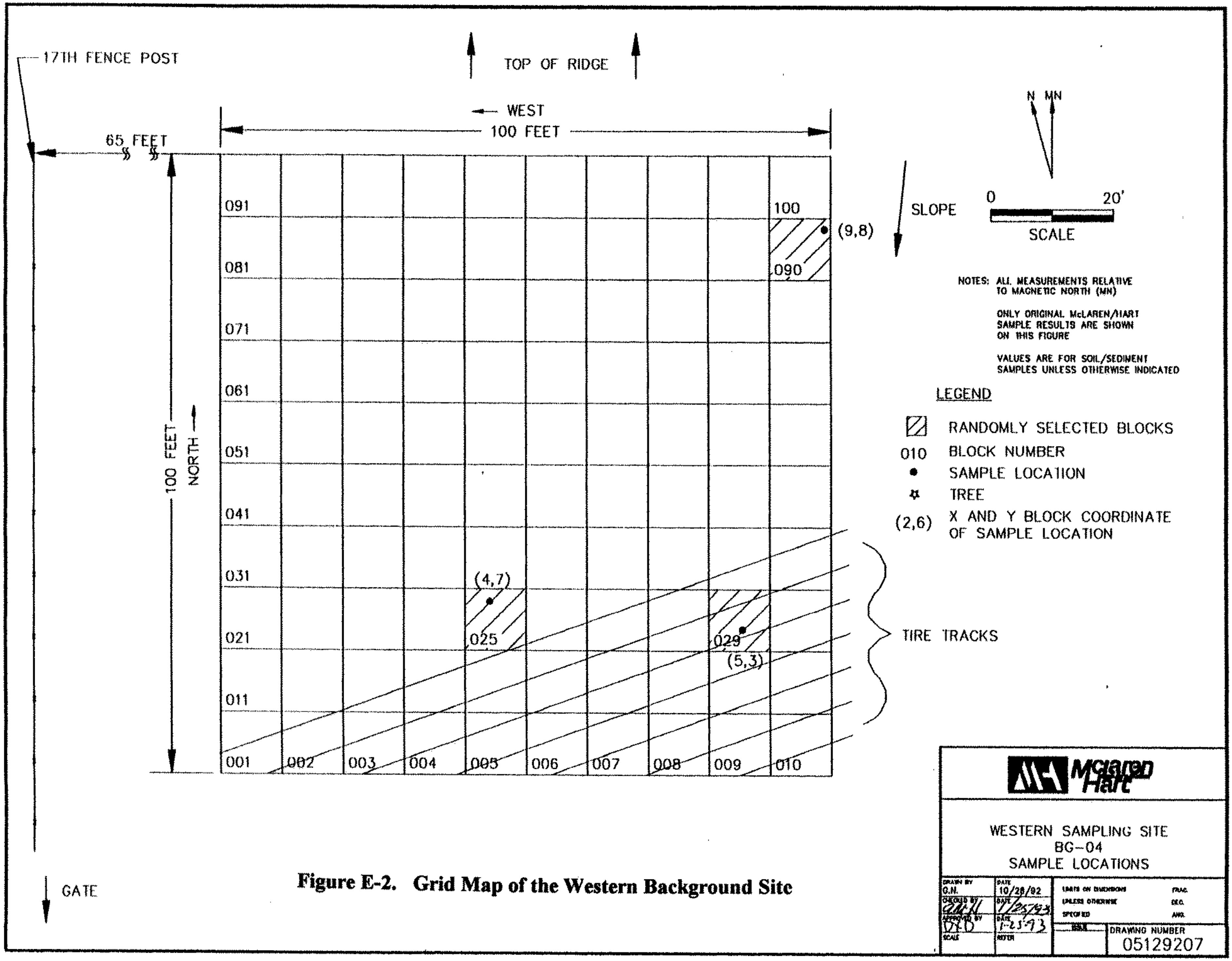
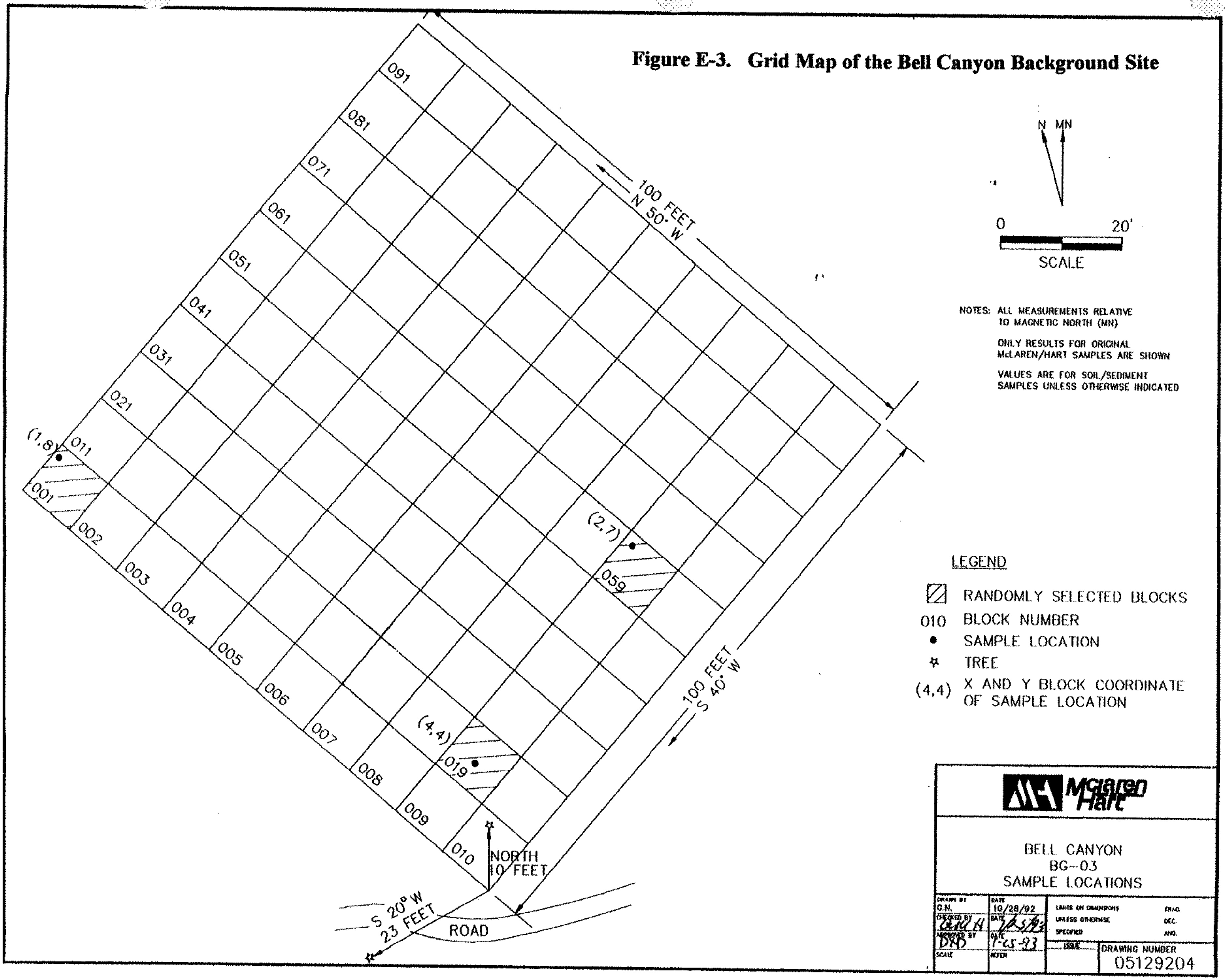


Figure E-2. Grid Map of the Western Background Site

Figure E-3. Grid Map of the Bell Canyon Background Site



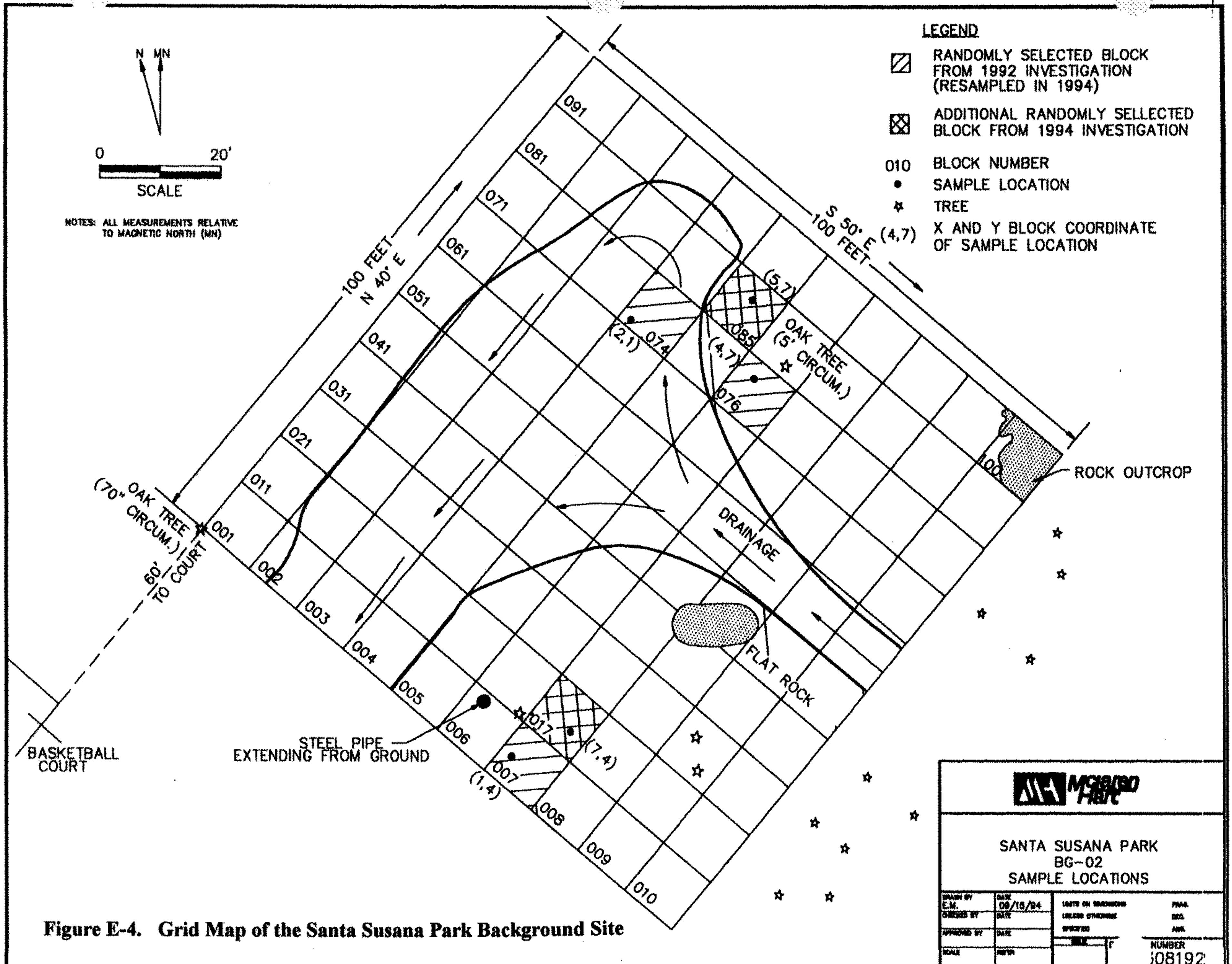


Figure E-4. Grid Map of the Santa Susana Park Background Site

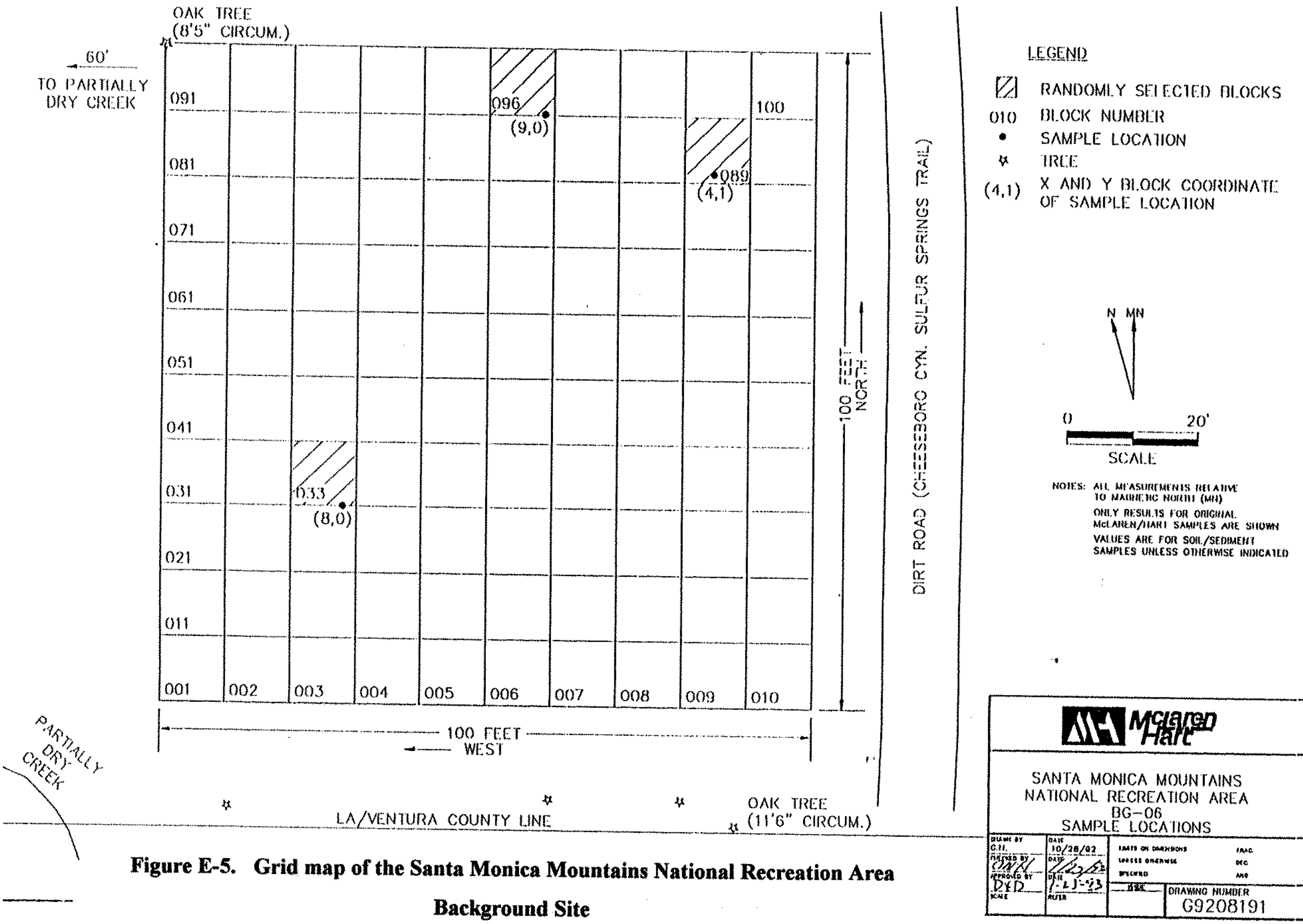


Figure E-5. Grid map of the Santa Monica Mountains National Recreation Area Background Site

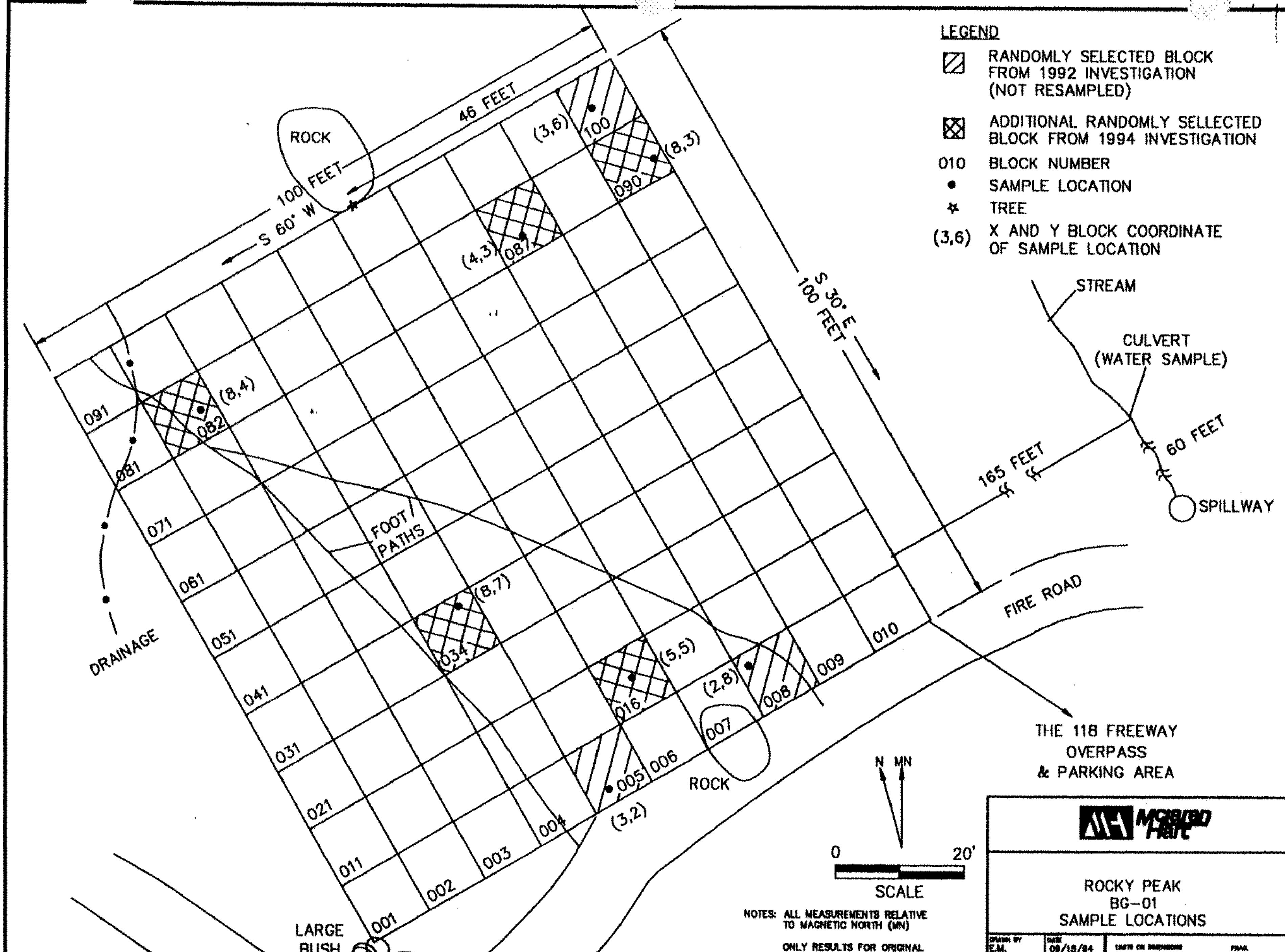


Figure E-6. Grid Map of Rocky Peak Background Site

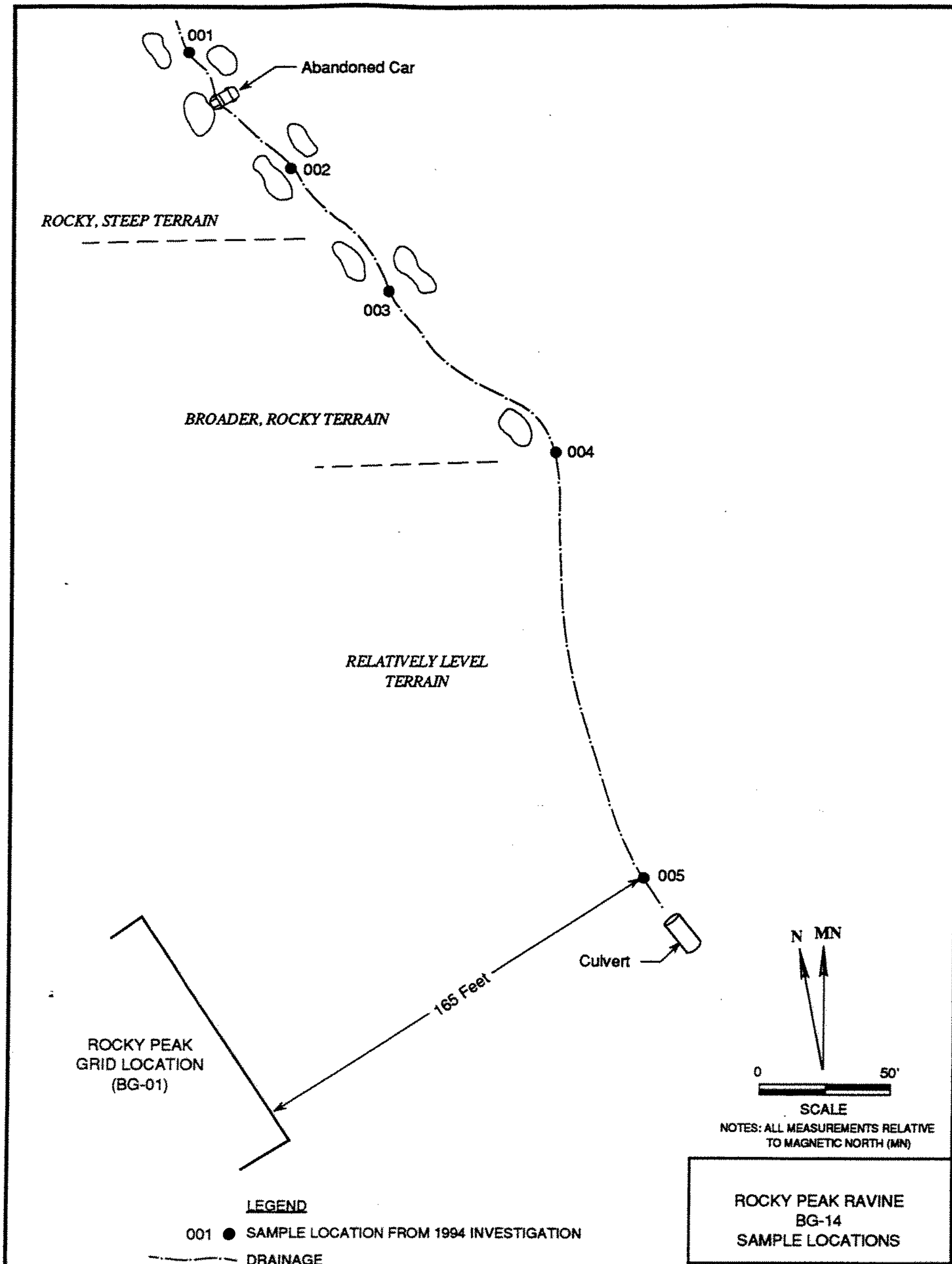


Figure E-7. Grid Map of Rocky Peak Ravine Background Site

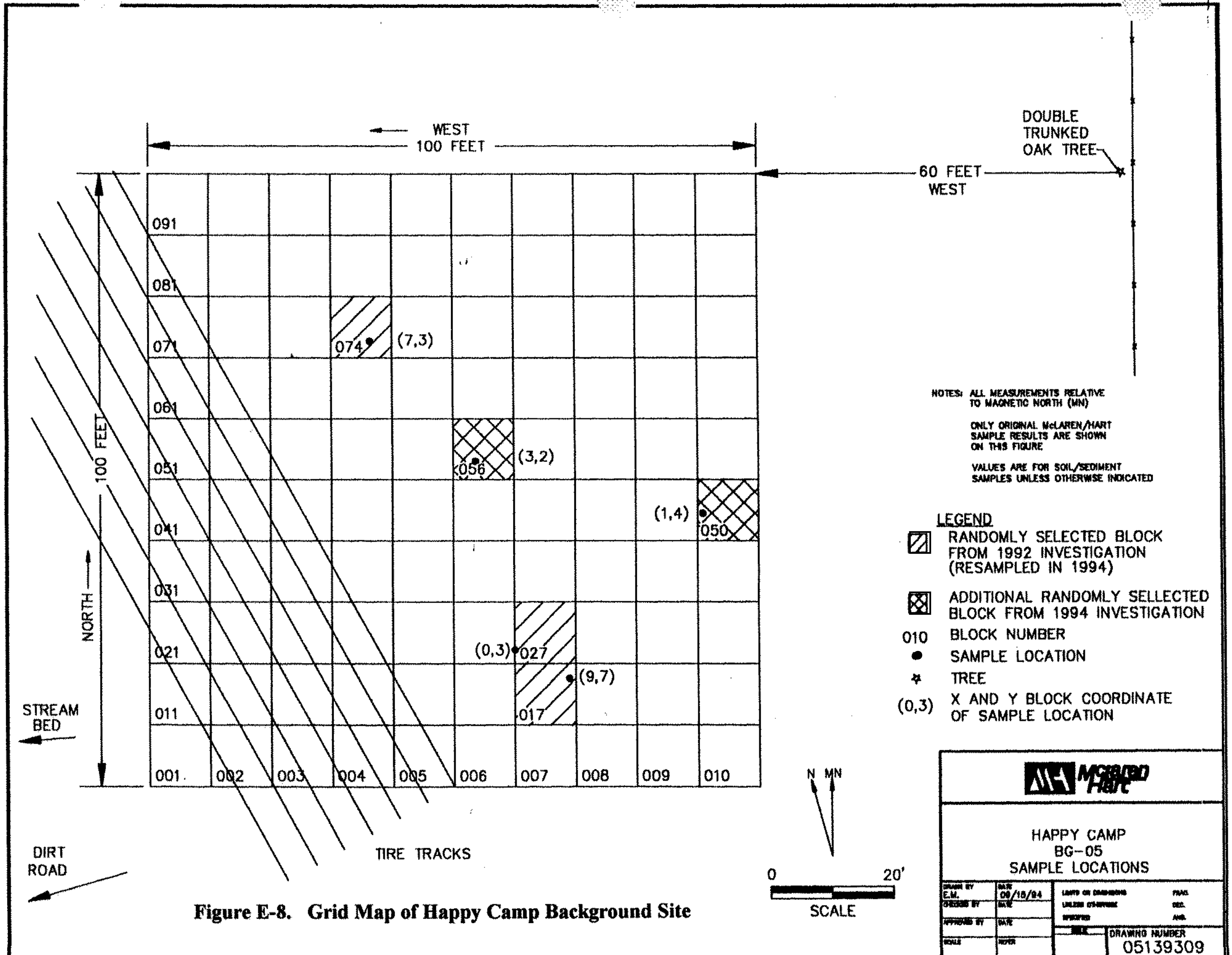


Figure E-8. Grid Map of Happy Camp Background Site

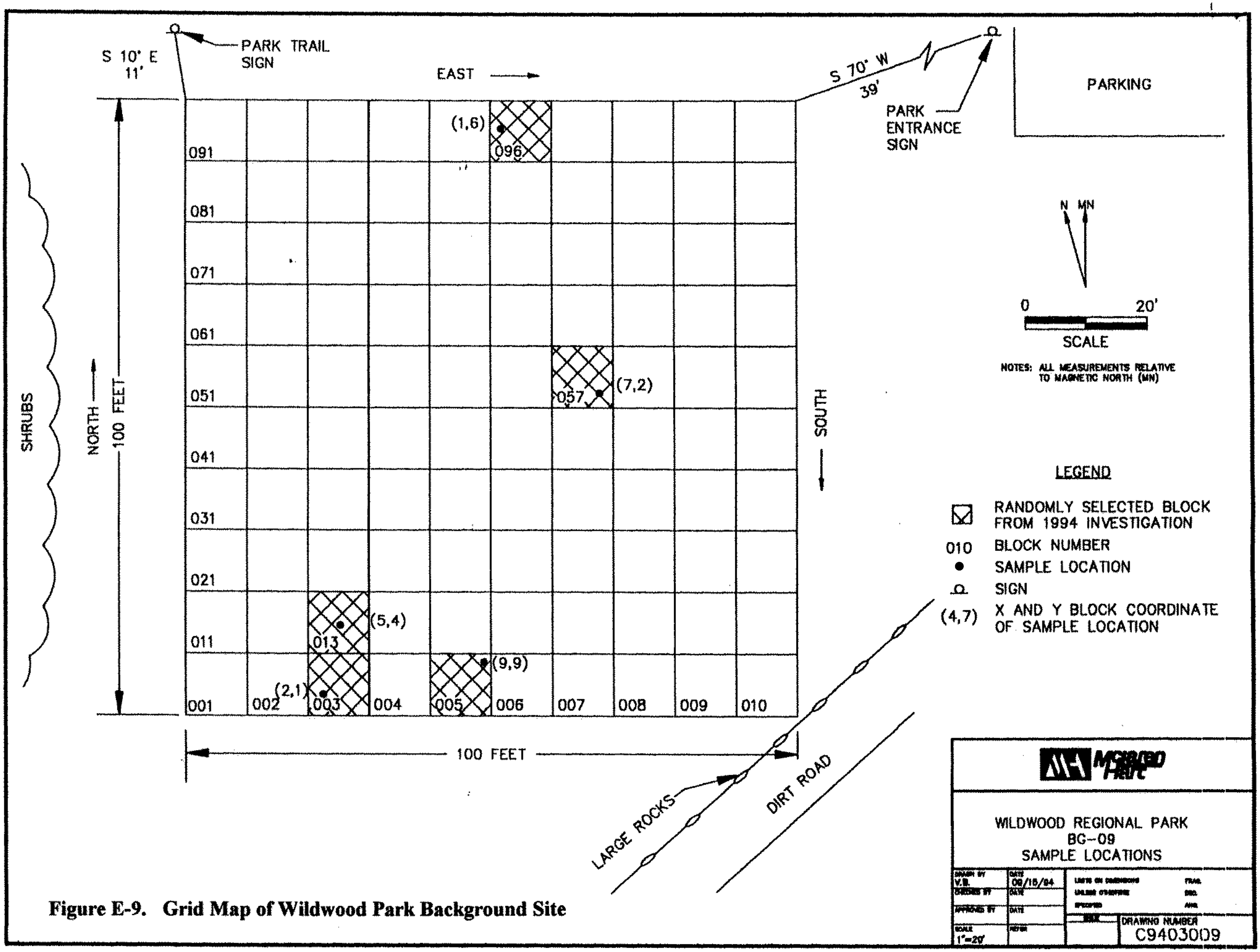


Figure E-9. Grid Map of Wildwood Park Background Site

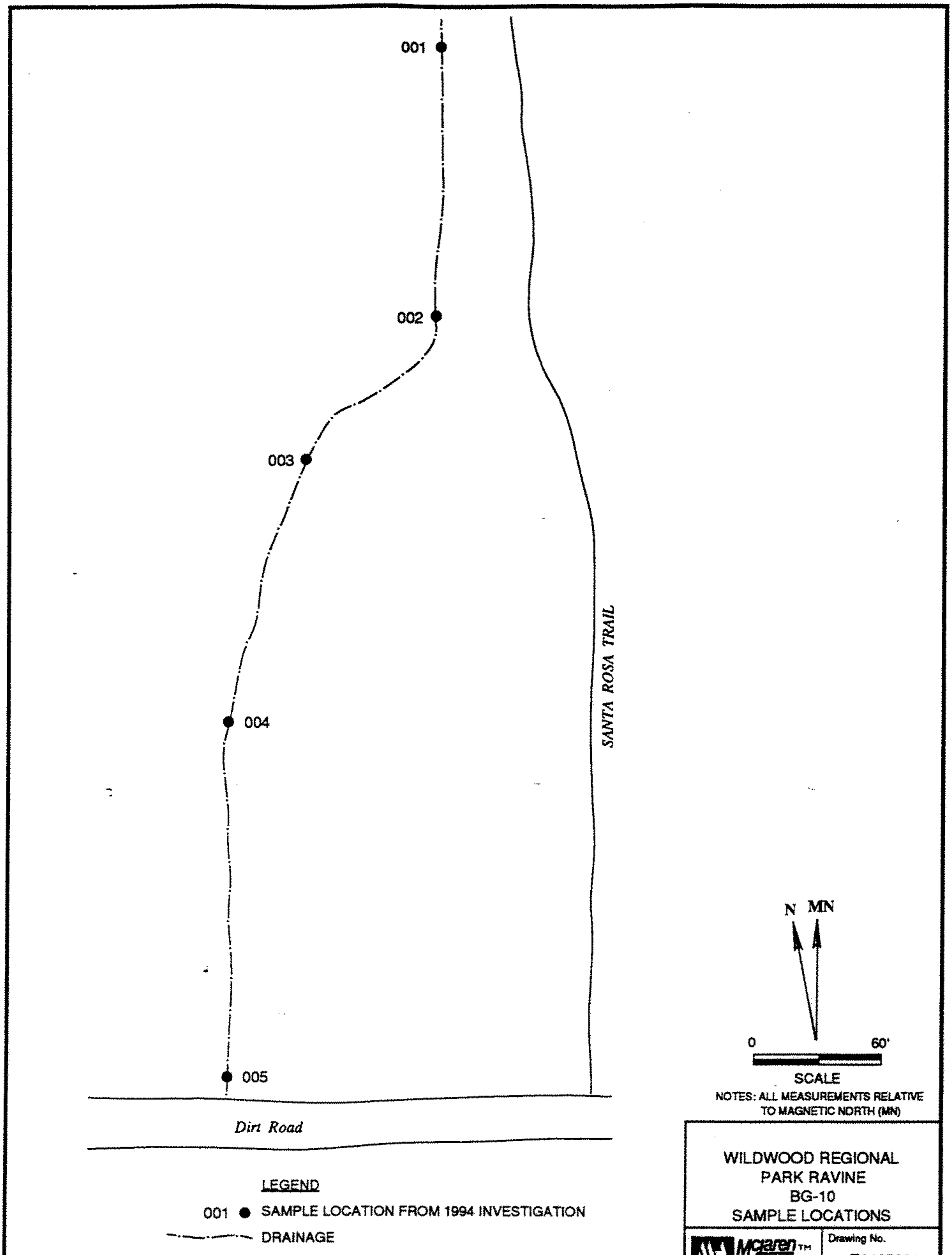


Figure E-10. Grid Map of Wildwood Park Ravine Background Site

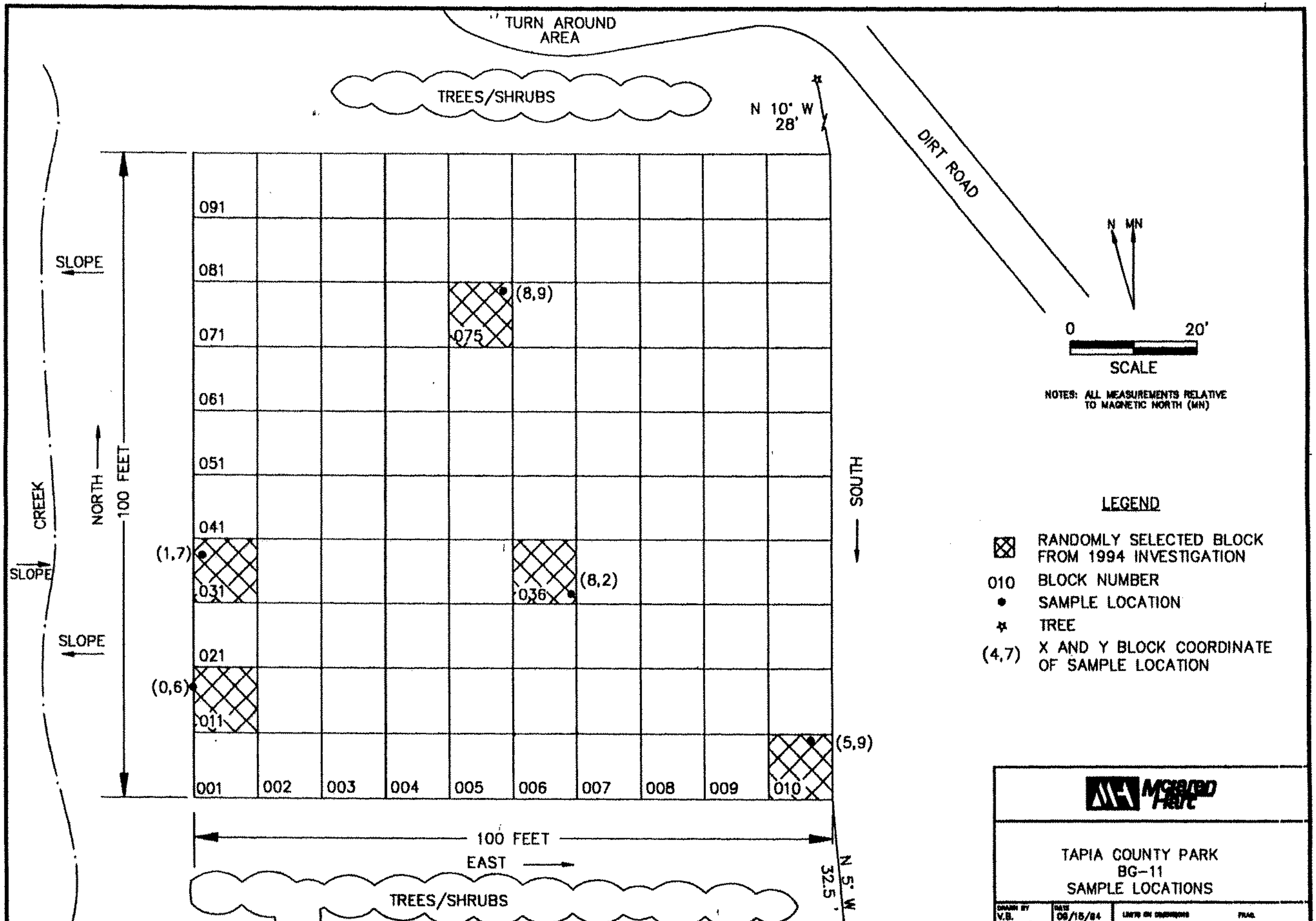


Figure E-11. Grid Map of Tapia Park Background Site

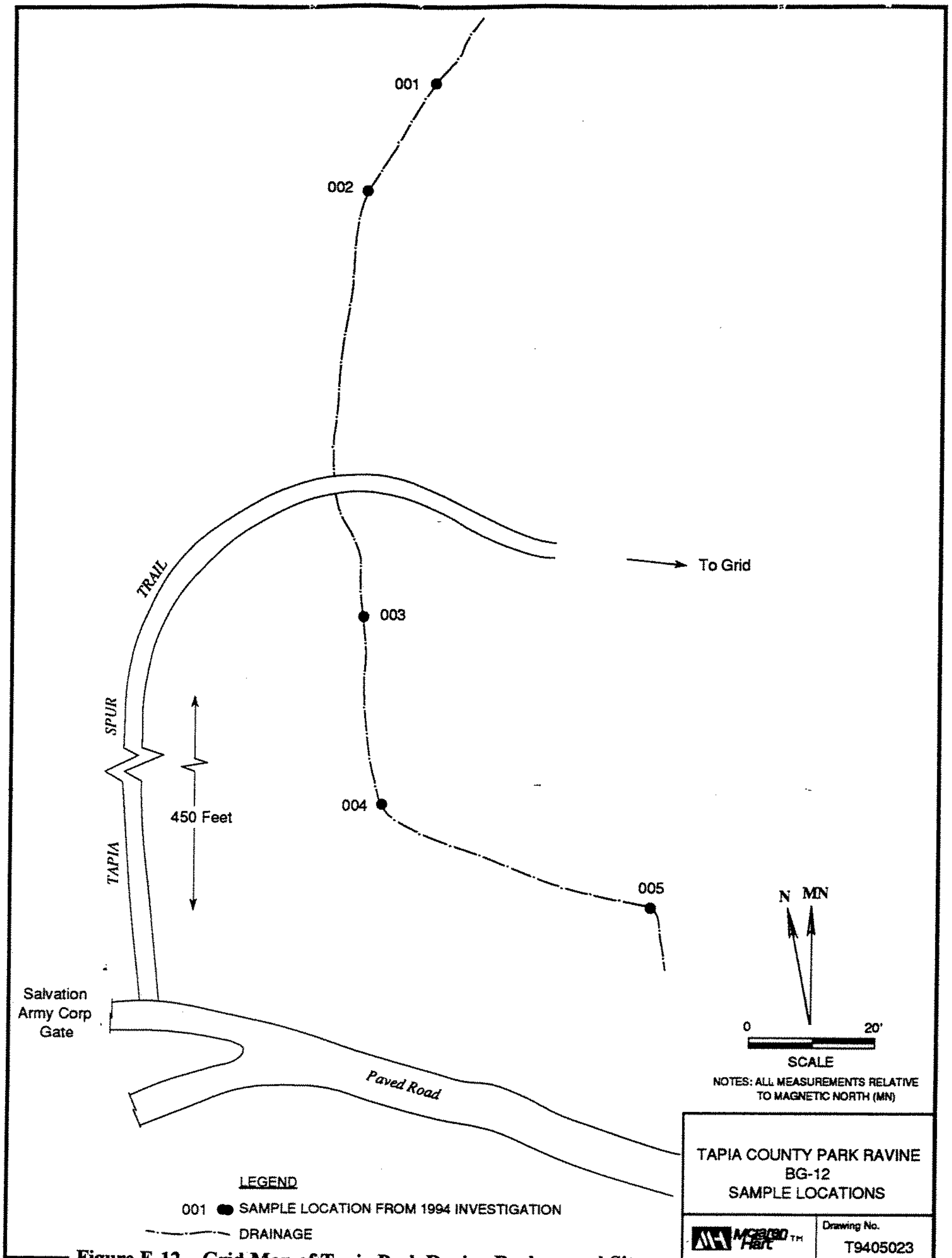


Figure E-12. Grid Map of Tapia Park Ravine Background Site

Figure E-13. Multimedia Study Background Gamma Exposure Rate (EPA

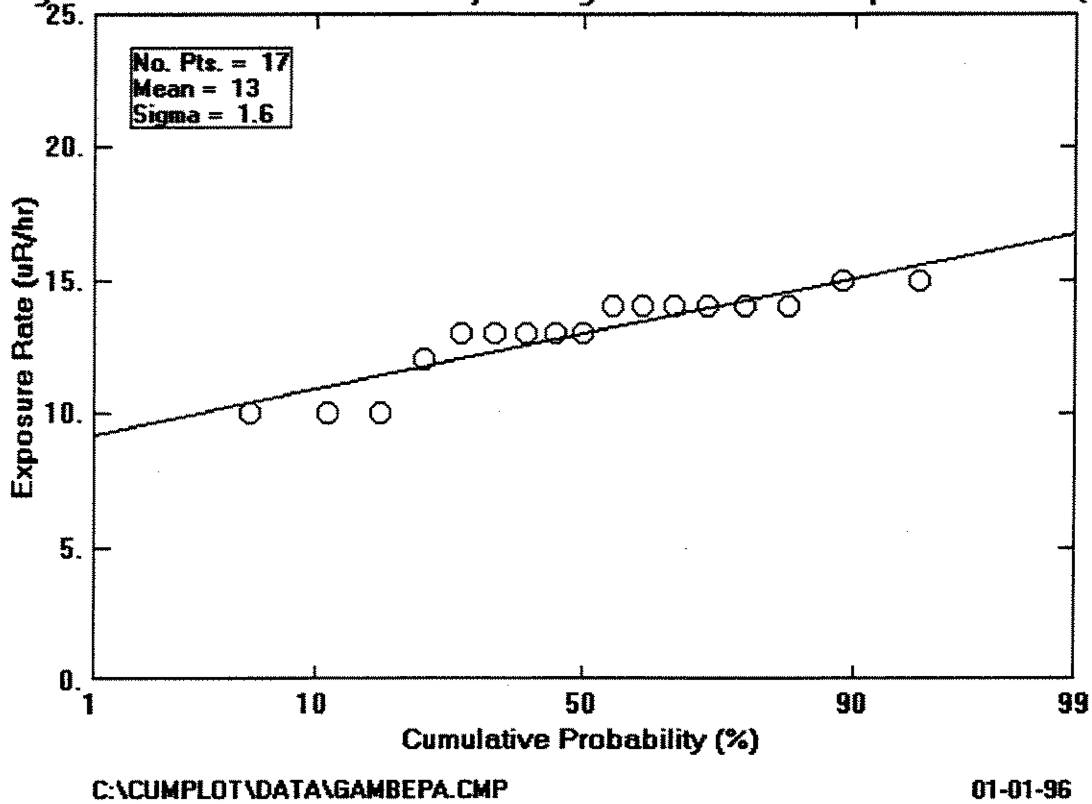


Figure E-14. Multmedia Study BBI/SMMC Gamma (EPA)

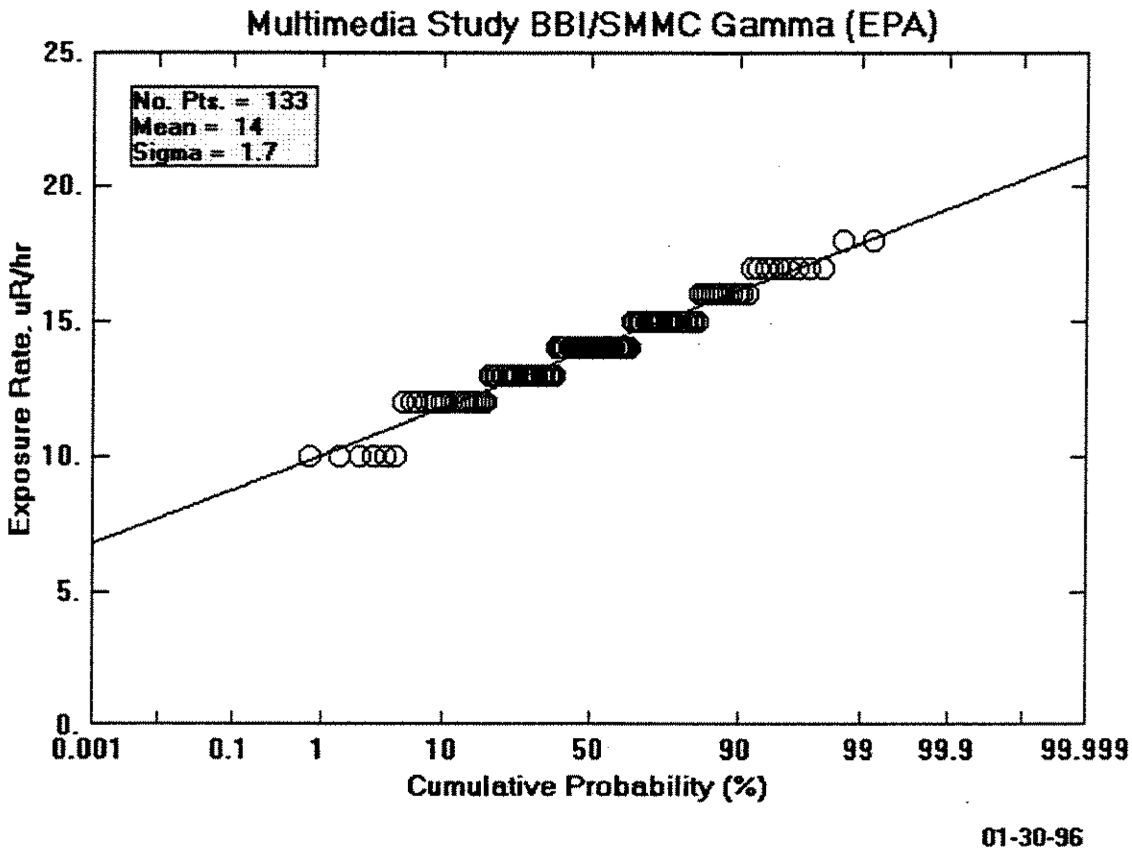


Figure E-15. Background Gamma Exposure Rate Measured for the Area IV Survey.

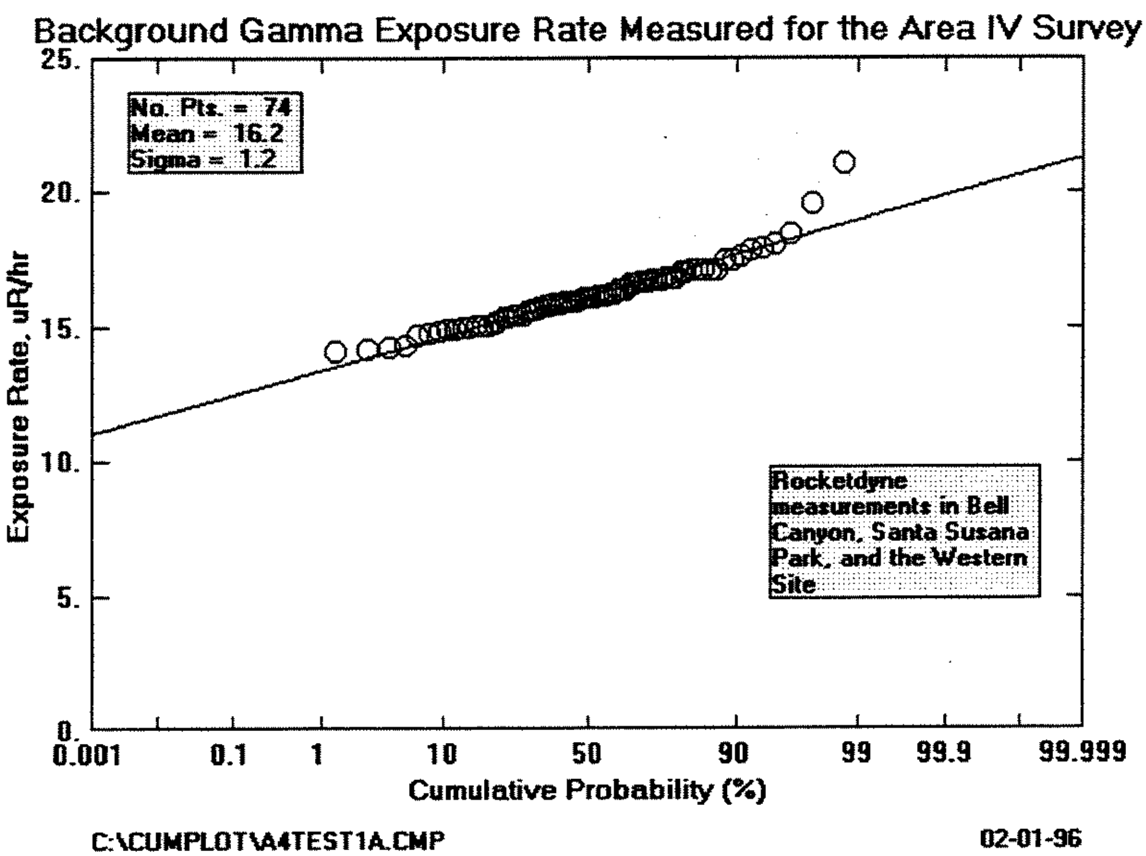


Figure E-16. Aggregate Background Gamma Exposure Rate Measurements.

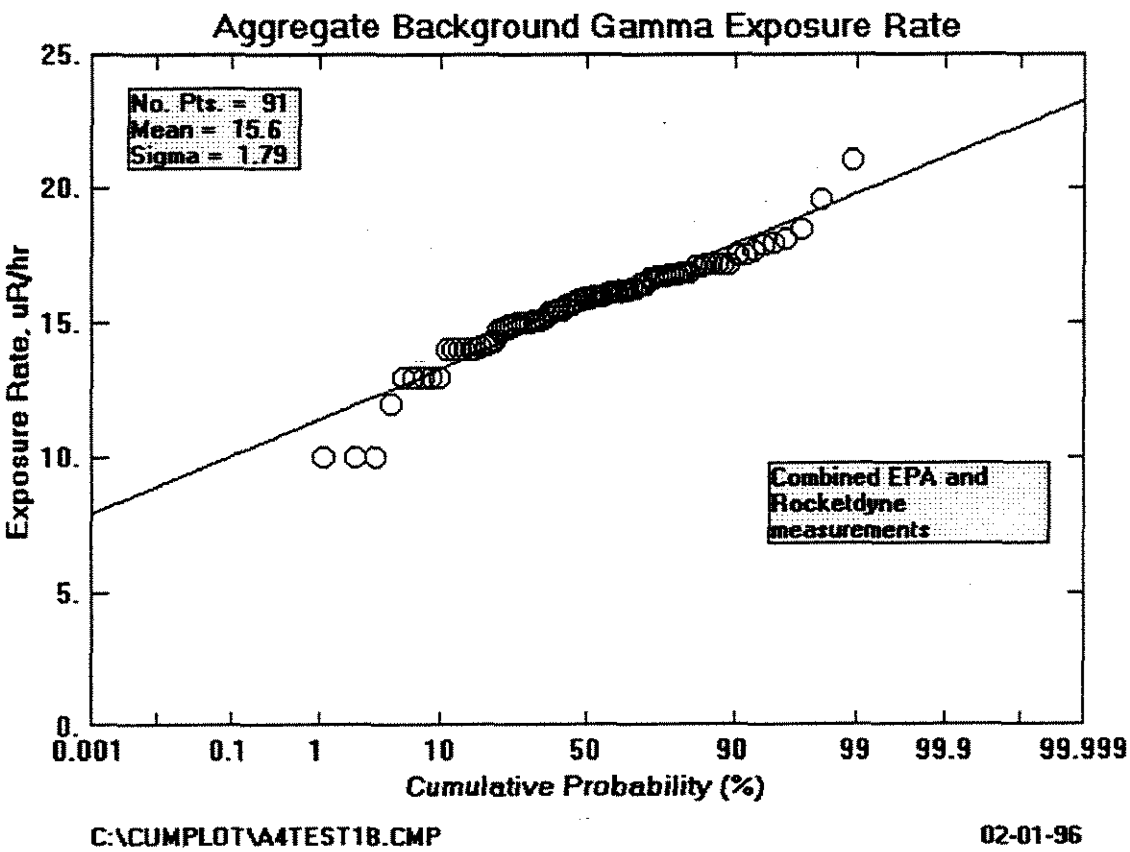


Table E-1. EPA Gamma Radiation Background Measurements (1992)

Table E-1. EPA Gamma Radiation Background Measurements (1992)

RADIATION SURVEY RESULTS
BRANDEIS-BARDIN INSTITUTE

Date of Measurement	Sample Area	Sample Area Code	Block Number	micro-R/hr
3/18/92	Perimeter of The Playground	01	038 027 041 001 056	12 15 12 12 13
3/17/92	Campsite Area 1	03	005 017 025 079 092	14 13 14 14 15
3/16/92	Campsite Area 2	04	021 026 023 082 097	15 15 14 14 14
3/18/92	Picnic Area	05	006 003 057 077 089	15 12 13 14 14
3/17/92	House of The Book	06	007 013 017 066 092	14 14 14 13 15
3/19/92	Counselor-in-Training	07	012 035 036 038 058	13 13 13 13 12
3/18/92	Potential Development Site 1	08	003 022 034 035 038	12 13 12 12 13
3/18/92	Potential Development Site 2	09	031 051 070 092 100	12 12 12 12 12
3/18/92	Avocado Grove	13	010 011 024 037 039	13 12 12 12 13
3/16/92	Old Well Campsite	14	037 041 004 079 094	15 14 14 14 14

Table E-1. EPA Gamma Radiation Background Measurements (1992) - Continued

RADIATION SURVEY RESULTS
BRANDEIS-BARDIN INSTITUTE/ROCKETDYNE FACILITY BORDER
RAVINE AREAS

Date of Measurement	Sample Area	Sample Area Code	Block Number	micro-R/hr
4/22/92	Radioactive Materials Disposal Facility	16	001A 001B 002 003 004	15 15 16 15 15
4/22/92	Building 59 Watershed	17	001 002 003 004	14 15 15 17
4/21/92	Sodium Burn Pit Watershed	18	001B 002A 003A 001	15 14 14 14
4/21/92	Sodium Reactor Experiment Watershed	19	001 002 003 004	16 15 16 13

Table E-1. EPA Gamma Radiation Background Measurements (1992) - Continued

RADIATION SURVEY RESULTS
SANTA MONICA MOUNTAINS CONSERVANCY

Date of Measurement	Sample Area	Sample Area Code	Block Number	micro-R/hr
3/23/92	The Visitor Center Parking Lot	01	008 007 004 020 021	14 15 13 14 12
3/11/92	The Existing Road System	02	044	13
3/11/92	The Orange Groves	04	003 024 026 028 041	14 14 14 14 14
3/11/92	Well Near Gate	07	006	13
3/18/92	Spring	08	001	15

Table E-1. EPA Gamma Radiation Background Measurements (1992) - Continued

RADIATION SURVEY RESULTS
BACKGROUND LOCATIONS

Date of Measurement	Sample Area	Sample Area Code	Block Number	micro-R/hr
3/12/92	Rocky Peak	01	100 005 008	15 14 15
3/10/92	Santa Susana Park	02	074 076 007	14 13 13
3/13/92	Western Site	04	025 029 090	13 13 13
3/13/92	Happy Camp	05	016 026 074	10 10 10
3/12/92	Santa Monica Mountains National Recreation Area	06	033 096 089	14 14 14

Table E-2. EPA Gamma Radiation Background Measurements (1994)

Table E-2. EPA Gamma Radiation Background Measurements (1994)
Brandeis-Bardin and Background Data

Survey Date	Sample Area	Sample Area Code	Block Number	Radiation Measurement (approximately 30 inches from the ground) μR/Hr
3/4/94	Campsite Area 2	04	21	18
		04	23	17
		04	26	18
		04	49	17
		04	62	17
		04	78	16
		04	79	16
		04	82	17
		04	84	17
		04	97	17
3/4/94	Old Well Campsite	14	04	17
		14	37	16
		14	79	15
		14	89	17
		14	94	17
3/7/94	House of The Book	06	07	16
		06	13	16
		06	17	16
		06	66	16
3/7/94	Avocado Grove	13	10	13
		13	11	14
		13	24	14
		13	37	14
		13	39	15
3/7/94	Picnic Area	05	03	15
		05	06	15
		05	57	15
		05	77	16
		05	89	16

Table E-2. EPA Gamma Radiation Background Measurements (1994) Brandeis-Bardin and Background Data - Continued

Survey Date	Sample Area	Sample Area Code	Block Number	Radiation Measurement (approximately 30 inches from the ground) μR/Hr
3/7/94	Dormitory Area	02	45	15
		02	60	15
		02	71	16
		02	75	15
		02	78	15
3/7/94	Main House Orchard	12	03	15
		12	03	15
		12	06	15
		12	19	15
		12	20	15
		12	23	14
3/7/94	Former Rocketdyne Employee Shooting Range	03	01	15
		03	04	15
		03	09	15
		03	14	15
		03	15	15
3/8/94	Campsite Area 1	03	03	15
		03	05	15
		03	17	16
		03	25	16
		03	26	15
		03	29	16
		03	79	15
		03	81	15
		03	96	16
		03	97	16

Table E-2. EPA Gamma Radiation Background Measurements (1994)
Brandeis-Bardin and Background Data - Continued

Survey Date	Sample Area	Sample Area Code	Block Number	Radiation Measurement (approximately 30 inches from the ground) μR/Hr
3/8/94	Campsite 1 Drainage	20	01	17
		20	02	18
		20	03	20
		20	04	20
		20	05	20
		20	06	19
		20	07	18
3/9/94	Building 59 Watershed	17	04	18
		17	07	18
		17	08	18
		17	09	18
3/9/94	Radioactive Materials Disposal Facility Watershed	16	06	18
		16	07	18
		16	08	17
		16	09	18
		16	10	17
3/10/94	RD-51 Watershed	15	01	17
		15	02	16
		15	03	17
		15	04	17
		15	05	17
		15	08	16
		15	09	16
		15	10	16
3/10/94	Sodium Reactor Experiment Watershed	19	06	16
		19	07	16
		19	08	16
		19	09	17

Table E-2. EPA Gamma Radiation Background Measurements (1994) Brandeis-Bardin and Background Data - Continued

Survey Date	Sample Area	Sample Area Code	Block Number	Radiation Measurement (approximately 30 inches from the ground) μR/Hr
3/10/94	Sodium Burn Pit Watershed	18	05	15
3/10/94	Santa Susana Park	02	76	12
3/11/94	Happy Camp	05	16	14
3/11/94	Wildwood Regional Park	09	05	12
3/14/94	Wildwood Regional Park Ravine	10	01	12
3/14/94	Tapia County Park	11	10	7
		11	11	7
		11	31	7
		11	36	7
		11	75	7
3/14/94	Tapia County Park Ravine	12	04	7

Table E-3. Local Background Soil Radioisotope Concentrations

Off-Site Multimedia Background Data 1992-1994

Location	Sample ID	Collection Date	Exposure Rate µR/hr	H-3 (pCi/L) Mean	H-3 (pCi/L) +/- 2σ	K-40 (pCi/g) Mean	K-40 (pCi/g) +/- 2σ	Sr-90 (pCi/g) Mean	Sr-90 (pCi/g) +/- 2σ	Cs-137 (pCi/g) Mean	Cs-137 (pCi/g) +/- 2σ	Th-228 (pCi/g) Mean	Th-228 (pCi/g) +/- 2σ	Th-230 (pCi/g) Mean	Th-230 (pCi/g) +/- 2σ
Rocky Peak	BG-01-005	3/11/92	14	220	80	NR		0.03	0.01	0.092	0.027	NA		NA	
Rocky Peak	BG-01-008	3/10/92	15	100		NR		0.01	0.01	0.04		NA		NA	
Rocky Peak	BG-01-100	3/10/92	15	380	100	NR		0.05	0.01	0.181	0.035	NA		NA	
Rocky Peak	BG-01-016	3/15/94		100		22.3	2.2	0.09		0.04		0.41	0.06	0.3	0.05
Rocky Peak	BG-01-034	3/15/94		100		22.2	2.2	0.1		0.1	0.032	0.59	0.13	0.31	0.08
Rocky Peak	BG-01-082	3/15/94		200		19.9	2	0.08		0.04		0.82	0.12	0.39	0.07
Rocky Peak	BG-01-087	3/15/94		200		21.7	2.2	0.07		0.158	0.038	0.51	0.1	0.42	0.08
Rocky Peak	BG-01-090	3/15/94		200		21.5	2.2	0.1		0.175	0.026	0.69	0.1	0.44	0.07
Santa Susana Park	BG-02-007	3/10/92	13	360	90	NR		0.02	0.01	0.17	0.04	NA		NA	
Santa Susana Park	BG-02-074	3/10/92	14	W		NR		0.01		0.04		NA		NA	
Santa Susana Park	BG-02-076	3/10/92	13	420	90	NR		0.03	0.01	0.099	0.032	NA		NA	
Santa Susana Park	BG-02-007	3/10/94		100		21.5	2.1	0.13	0.08	0.06		NA		NA	
Santa Susana Park	BG-02-017	3/10/94		200		21.4	2.1	0.12	0.05	0.213	0.04	NA		NA	
Santa Susana Park	BG-02-074	3/10/94		200		23.2	2.3	0.08		0.05		NA		NA	
Santa Susana Park	BG-02-076	3/10/94	12	200		20.9	2.1	0.09		0.04		NA		NA	
Santa Susana Park	BG-02-085	3/10/94		200		21.4	2.1	0.13	0.10	0.04		NA		NA	
Santa Susana Park*	A4CM-95-146	6/21/95		NA		NA		NA		NA		1.2	0.19	0.92	0.15
Santa Susana Park*	A4CM-95-147	6/21/95		NA		NA		NA		NA		0.93	0.13	0.71	0.11
Bell Canyon	BG-03-001	3/12/92		SD		NR		0.01		0.07		NA		NA	
Bell Canyon	BG-03-019	3/12/92		200		NR		0.02	0.01	0.07		NA		NA	
Bell Canyon	BG-03-059	3/12/92		200		NR		0.01	0.01	0.05		NA		NA	
Bell Canyon*	A4CM-95-144	6/20/95		NA		NA		NA		NA		1.1	0.10	3.8	0.22
Bell Canyon*	A4CM-95-145	6/20/95		NA		NA		NA		NA		0.95	0.12	4.2	0.3
Western Site	BG-04-025	3/13/92	13	220	80	NR		0.02	0.01	0.15	0.05	NA		NA	
Western Site	BG-04-029	3/13/92	13	750	200	NR		0.02	0.01	0.14	0.05	NA		NA	
Western Site	BG-04-090	3/13/92	13	120	70	NR		0.05	0.01	0.19	0.03	NA		NA	
Western Site*	A4CM-95-148	6/22/95		NA		NA		NA		NA		1.6	0.22	1.1	0.17
Western Site*	A4CM-95-149	6/22/95		NA		NA		NA		NA		1.4	0.14	1.1	0.12
Happy Camp	BG-05-016	3/13/92	10	260	160	NR		0.05	0.01	0.074	0.029	NA		NA	
Happy Camp	BG-05-026	3/13/92	10	380	160	NR		0.08	0.02	0.067	0.025	NA		NA	
Happy Camp	BG-05-074	3/13/92	10	490	180	NR		0.05	0.01	0.1	0.03	NA		NA	
Happy Camp	BG-05-017	3/11/94	14	200		21.0	2.1	0.088	0.056	0.147	0.033	0.2	0.05	0.41	0.07
Happy Camp	BG-05-027	3/11/94		200		20.7	2.1	0.1	0.04	0.0991	0.0214	0.11	0.06	0.34	0.06
Happy Camp	BG-05-050	3/11/94		200		22.0	2.2	0.069	0.046	0.101	0.022	0.31	0.07	0.27	0.06
Happy Camp	BG-05-056	3/11/94		200		20.6	2.1	0.097	0.055	0.148	0.028	0.2	0.06	0.52	0.08
Happy Camp	BG-05-074	3/11/94		500		20.2	2.0	0.084	0.04	0.153	0.028	0.17	0.05	0.63	0.08
SMMNRA	BG-06-033	3/12/92	14	330	80	NR		0.03	0.01	0.097	0.034	NA		NA	
SMMNRA	BG-06-089	3/12/92	14	440	90	NR		0.03	0.01	0.06		NA		NA	
SMMNRA	BG-06-096	3/12/92	14	SD		NR		0.02	0.01	0.14	0.03	NA		NA	

Table E-3. Local Background Soil Radioisotope Concentrations

Off-Site Multimedia Background Data 1992-1994															
Location	Sample ID	Collection Date	Exposure Rate µR/hr	H-3 (pCi/L) Mean	+/- 2σ	K-40 (pCi/g) Mean	+/- 2σ	Sr-90 (pCi/g) Mean	+/- 2σ	Cs-137 (pCi/g) Mean	+/- 2σ	Th-228 (pCi/g) Mean	+/- 2σ	Th-230 (pCi/g) Mean	+/- 2σ
Wildwood Park	BG-09-003	3/11/94		200		5.81	0.64	0.13	0.05	0.05		0.2	0.08	0.23	0.07
Wildwood Park	BG-09-005	3/11/94	12	200		7.84	0.83	0.1		0.188	0.061	0.25	0.09	0.22	0.07
Wildwood Park	BG-09-013	3/11/94		200		7.74	1.02	0.12	0.05	0.198	0.072	0.21	0.05	0.23	0.04
Wildwood Park	BG-09-057	3/11/94		200		5.81	6.5	0.11	0.05	0.06		0.14	0.04	0.19	0.04
Wildwood Park	BG-09-096	3/11/94		200		5.58	0.6	0.12	0.05	0.0791	0.0296	0.2		0.11	0.06
Wildwood Park Ravine	BG-10-001	3/14/94	12	100		5.92	0.59	0.098	0.048	0.245	0.037	0.058	0.027	0.069	0.022
Wildwood Park Ravine	BG-10-002	3/14/94		100		7.18	0.72	0.09		0.276	0.029	0.081	0.035	0.068	0.022
Wildwood Park Ravine	BG-10-003	3/14/94		100		3.53	0.43	0.09		0.257	0.034	0.059	0.03	0.1	0.03
Wildwood Park Ravine	BG-10-004	3/14/94		100		5.25	0.53	0.04		0.215	0.039	0.077	0.037	0.062	0.026
Wildwood Park Ravine	BG-10-005	3/14/94		100		12.0	1.2	0.09		0.456	0.052	0.12	0.05	0.16	0.05
Tapia Park	BG-11-010	3/14/94	7	200		3.12	0.49	0.089	0.041	0.158	0.035	0.05	0.031	0.033	0.02
Tapia Park	BG-11-011	3/14/94	7	100		2.85	0.35	0.1		0.109	0.029	0.08		0.031	0.022
Tapia Park	BG-11-031	3/14/94	7	1000		2.64	0.34	0.09		0.0587	0.0234	0.07		0.029	0.017
Tapia Park	BG-11-036	3/14/94	7	100		3.1	0.44	0.1		0.0667	0.0338	0.04		0.039	0.022
Tapia Park	BG-11-075	3/14/94	7	200		4.03	0.59	0.09		0.113	0.043	0.06		0.05	0.024
Tapia Park Ravine	BG-12-001	3/14/94		W		1.72	0.26	0.08		0.03		0.04		0.022	0.017
Tapia Park Ravine	BG-12-002	3/14/94		100		1.72	0.29	0.09		0.0313	0.018	0.03		0.027	0.014
Tapia Park Ravine	BG-12-003	3/14/94		100		1.62	0.32	0.09		0.0419	0.016	0.03		0.032	0.016
Tapia Park Ravine	BG-12-004	3/14/94	7	100		1.79	0.32	0.09		0.0971	0.0202	0.08	0.041	0.082	0.03
Tapia Park Ravine	BG-12-005	3/14/94		W		1.69	0.26	0.05		0.03		0.06		0.036	0.021
Rocky Peak Ravine	BG-14-001	3/15/94		100		20.5	2.0	0.082	0.043	0.04		0.53	0.08	0.3	0.05
Rocky Peak Ravine	BG-14-002	3/15/94		100		20.3	2.0	0.09		0.0845	0.0426	0.78	0.08	0.38	0.05
Rocky Peak Ravine	BG-14-003	3/15/94		300		20.3	2.0	0.08		0.0799	0.0375	0.57	0.09	0.24	0.05
Rocky Peak Ravine	BG-14-004	3/15/94		W		21.0	2.1	0.07		0.03		0.4	0.09	0.27	0.06
Rocky Peak Ravine	BG-14-005	3/15/94		W		22.5	2.3	0.05		0.04		0.27	0.07	0.2	0.05
		Statistical Summary		H-3	(pCi/L)	K-40	(pCi/g)	Sr-90	(pCi/g)	Cs-137	(pCi/g)	Th-228	(pCi/g)	Th-230	(pCi/g)
Data withdrawn by lab	W	No. of Analyses		51		40		58		58		41		41	
Not Analyzed	NA	No. of Detects		12		40		31		39		32		41	
Not Reported	NR	No. of Non-detects		39		0		27		19		9		0	
Sample Dried	SD	Minimum		100		1.6		0.01		0.03		0.03		0.02	
Rocketdyne/TMA samples	*	Average		231		12.9		0.07		0.11		0.38		0.47	
		Maximum		1000		23.2		0.13		0.46		1.60		4.20	
		Standard Deviation		171		8.7		0.03		0.08		0.41		0.86	
		Lower 2σ		0		0		0.00		0.00		0.00		0.00	
		Upper 2σ		573		30.3		0.14		0.27		1.21		2.18	

Table E-3. Local Background Soil Radioisotope Concentrations

Off-Site Multimedia Background Data 1992-1994															
Location	Sample ID	Collection Date	Exposure Rate µR/hr	Th-232 (pCi/g) Mean	Th-232 +/- 2σ	U-234 (pCi/g) Mean	U-234 +/- 2σ	U-235 (pCi/g) Mean	U-235 +/- 2σ	U-238 (pCi/g) Mean	U-238 +/- 2σ	Pu-238 (pCi/g) Mean	Pu-238 +/- 2σ	Pu-239 (pCi/g) Mean	Pu-239 +/- 2σ
Rocky Peak	BG-01-005	3/11/92	14	NA		NA		NA		NA		0.07		0.01	
Rocky Peak	BG-01-008	3/10/92	15	NA		NA		NA		NA		0.04		0.01	
Rocky Peak	BG-01-100	3/10/92	15	NA		NA		NA		NA		0.02		0.01	
Rocky Peak	BG-01-016	3/15/94		0.44	0.06	0.27	0.04	0.01		0.31	0.05	0.03		0.01	
Rocky Peak	BG-01-034	3/15/94		0.37	0.09	0.35	0.05	0.022	0.012	0.39	0.05	0.01		0.01	
Rocky Peak	BG-01-082	3/15/94		0.75	0.1	0.44	0.06	0.034	0.015	0.43	0.06	0.01		0.01	
Rocky Peak	BG-01-087	3/15/94		0.42	0.08	0.51	0.06	0.021	0.012	0.52	0.06	0.007		0.01	
Rocky Peak	BG-01-090	3/15/94		0.44	0.07	0.38	0.05	0.012	0.009	0.4	0.05	0.009		0.009	
Santa Susana Park	BG-02-007	3/10/92	13	NA		NA		NA		NA		0.02		0.01	
Santa Susana Park	BG-02-074	3/10/92	14	NA		NA		NA		NA		0.01		0.007	
Santa Susana Park	BG-02-076	3/10/92	13	NA		NA		NA		NA		0.02		0.01	
Santa Susana Park	BG-02-007	3/10/94		NA		NA		NA		NA		0.007		0.007	
Santa Susana Park	BG-02-017	3/10/94		NA		NA		NA		NA		0.007		0.007	
Santa Susana Park	BG-02-074	3/10/94		NA		NA		NA		NA		0.01		0.01	
Santa Susana Park	BG-02-076	3/10/94	12	NA		NA		NA		NA		0.01		0.01	
Santa Susana Park	BG-02-085	3/10/94		NA		NA		NA		NA		0.007		0.007	
Santa Susana Park*	A4CM-95-146	6/21/95		1.2	0.17	0.81	0.065	0.039	0.014	0.77	0.061	NA		NA	
Santa Susana Park*	A4CM-95-147	6/21/95		0.91	0.12	0.74	0.068	0.042	0.015	0.77	0.069	NA		NA	
Bell Canyon	BG-03-001	3/12/92		NA		NA		NA		NA		0.03		0.006	
Bell Canyon	BG-03-019	3/12/92		NA		NA		NA		NA		0.066	0.055	0.02	
Bell Canyon	BG-03-059	3/12/92		NA		NA		NA		NA		0.1	0.07	0.02	
Bell Canyon*	A4CM-95-144	6/20/95		0.95	0.094	1.9	0.13	0.1	0.021	1.7	0.12	NA		NA	
Bell Canyon*	A4CM-95-145	6/20/95		0.92	0.11	1.6	0.11	0.065	0.019	1.4	0.1	NA		NA	
Western Site	BG-04-025	3/13/92	13	NA		NA		NA		NA		0.009		0.006	
Western Site	BG-04-029	3/13/92	13	NA		NA		NA		NA		0.008		0.005	
Western Site	BG-04-090	3/13/92	13	NA		NA		NA		NA		0.01		0.007	
Western Site*	A4CM-95-148	6/22/95		1.5	0.2	0.98	0.086	0.043	0.017	0.98	0.086	NA		NA	
Western Site*	A4CM-95-149	6/22/95		1.3	0.13	0.89	0.06	0.054	0.013	0.96	0.064	NA		NA	
Happy Camp	BG-05-016	3/13/92	10	NA		NA		NA		NA		0.02		0.005	
Happy Camp	BG-05-026	3/13/92	10	NA		NA		NA		NA		0.03		0.006	
Happy Camp	BG-05-074	3/13/92	10	NA		NA		NA		NA		0.02		0.005	
Happy Camp	BG-05-017	3/11/94	14	0.2	0.04	0.56	0.07	0.021	0.013	0.59	0.08	0.02		0.02	
Happy Camp	BG-05-027	3/11/94		0.15	0.04	0.6	0.08	0.021	0.013	0.63	0.08	0.01		0.01	
Happy Camp	BG-05-050	3/11/94		0.31	0.06	0.36	0.06	0.008		0.33	0.06	0.02		0.02	
Happy Camp	BG-05-056	3/11/94		0.15	0.04	0.74	0.08	0.037	0.015	0.82	0.08	0.01		0.01	
Happy Camp	BG-05-074	3/11/94		0.15	0.04	0.73	0.08	0.036	0.015	0.81	0.09	0.02		0.02	
SMMNRA	BG-06-033	3/12/92	14	NA		NA		NA		NA		0.08		0.03	
SMMNRA	BG-06-089	3/12/92	14	NA		NA		NA		NA		0.07		0.02	
SMMNRA	BG-06-096	3/12/92	14	NA		NA		NA		NA		0.13	0.03	0.01	

Table E-3. Local Background Soil Radioisotope Concentrations

Off-Site Multimedia Background Data 1992-1994															
			Exposure	Th-232		U-234		U-235		U-238		Pu-238		Pu-239	
Location	Sample	Collection	Rate	(pCi/g)		(pCi/g)		(pCi/g)		(pCi/g)		(pCi/g)		(pCi/g)	
	ID	Date	μR/hr	Mean	+/- 2σ	Mean	+/- 2σ	Mean	+/- 2σ	Mean	+/- 2σ	Mean	+/- 2σ	Mean	+/- 2σ
Wildwood Park	BG-09-003	3/11/94		0.26	0.07	0.1	0.03	0.007		0.099	0.028	0.008		0.008	
Wildwood Park	BG-09-005	3/11/94	12	0.17	0.07	0.12	0.04	0.01		0.14	0.04	0.01		0.01	
Wildwood Park	BG-09-013	3/11/94		0.2	0.04	0.13	0.03	0.007		0.13	0.03	0.008		0.008	
Wildwood Park	BG-09-057	3/11/94		0.17	0.04	0.12	0.03	0.007		0.12	0.03	0.008		0.008	
Wildwood Park	BG-09-096	3/11/94		0.12	0.06	0.056	0.039	0.03		0.11	0.04	0.02		0.02	
Wildwood Park Ravine	BG-10-001	3/14/94	12	0.029	0.015	0.084	0.023	0.006		0.1	0.03	0.01		0.01	
Wildwood Park Ravine	BG-10-002	3/14/94		0.051	0.022	0.12	0.03	0.006		0.099	0.025	0.008		0.008	
Wildwood Park Ravine	BG-10-003	3/14/94		0.065	0.022	0.15	0.03	0.006		0.12	0.03	0.007		0.01	
Wildwood Park Ravine	BG-10-004	3/14/94		0.083	0.029	0.14	0.03	0.006		0.15	0.03	0.009		0.009	
Wildwood Park Ravine	BG-10-005	3/14/94		0.15	0.04	0.13	0.03	0.007		0.092	0.027	0.01		0.01	
Tapia Park	BG-11-010	3/14/94	7	0.064	0.025	0.033	0.018	0.01		0.022	0.015	0.01		0.01	
Tapia Park	BG-11-011	3/14/94	7	0.026	0.023	0.051	0.018	0.006		0.053	0.018	0.006		0.006	
Tapia Park	BG-11-031	3/14/94	7	0.027	0.016	0.027	0.017	0.009		0.058	0.023	0.007		0.009	
Tapia Park	BG-11-036	3/14/94	7	0.03		0.057	0.02	0.007		0.067	0.022	0.008		0.008	
Tapia Park	BG-11-075	3/14/94	7	0.05	0.025	0.038	0.017	0.007		0.041	0.018	0.006		0.009	
Tapia Park Ravine	BG-12-001	3/14/94		0.024	0.015	0.0089	0.0078	0.006		0.033	0.014	0.006		0.006	
Tapia Park Ravine	BG-12-002	3/14/94		0.023	0.013	0.035	0.015	0.006		0.025	0.013	0.02		0.02	
Tapia Park Ravine	BG-12-003	3/14/94		0.042	0.02	0.019	0.011	0.006		0.022	0.012	0.007		0.007	
Tapia Park Ravine	BG-12-004	3/14/94	7	0.063	0.027	0.049	0.017	0.006		0.058	0.019	0.008		0.01	
Tapia Park Ravine	BG-12-005	3/14/94		0.024	0.018	0.02		0.008		0.023	0.015	0.007		0.007	
Rocky Peak Ravine	BG-14-001	3/15/94		0.87	0.1	0.23	0.04	0.011	0.008	0.21	0.04	0.009		0.009	
Rocky Peak Ravine	BG-14-002	3/15/94		1.2	0.1	0.31	0.04	0.018	0.01	0.4	0.05	0.01		0.01	
Rocky Peak Ravine	BG-14-003	3/15/94		0.56	0.09	0.27	0.04	0.012	0.009	0.31	0.05	0.007		0.007	
Rocky Peak Ravine	BG-14-004	3/15/94		0.64	0.1	0.2	0.04	0.005		0.22	0.04	0.008		0.008	
Rocky Peak Ravine	BG-14-005	3/15/94		0.23	0.06	0.14	0.03	0.0074	0.0072	0.18	0.03	0.008		0.008	
		Statistical Summary		Th-232	(pCi/g)	U-234	(pCi/g)	U-235	(pCi/g)	U-238	(pCi/g)	Pu-238	(pCi/g)	Pu-239	(pCi/g)
Data withdrawn by lab	W	No. of Analyses		41		41		41		41		58		58	
Not Analyzed	NA	No. of Detects		40		40		18		41		3		0	
Not Reported	NR	No. of Non-detects		1		1		23		0		55		58	
Sample Dried	SD	Minimum		0.02		0.01		0.01		0.02		0.01		0.01	
Rocketdyne/TMA samples	*	Average		0.37		0.35		0.02		0.36		0.02		0.01	
		Maximum		1.50		1.90		0.10		1.70		0.13		0.03	
		Standard Deviation		0.42		0.42		0.02		0.39		0.02		0.01	
		Lower 2σ		0.00		0.00		0.00		0.00		0.00		0.00	
		Upper 2σ		1.20		1.20		0.06		1.15		0.07		0.02	

Table E-3. Local Background Soil Radioisotope Concentrations

Off-Site Multimedia Background Data 1992-1994. Detection Limits halved for Statistical Analysis

Location	Sample ID	Collection Date	Exposure Rate µR/hr	H-3 (pCi/L) Mean	H-3 +/- 2σ	K-40 (pCi/g) Mean	K-40 +/- 2σ	Sr-90 (pCi/g) Mean	Sr-90 +/- 2σ	Cs-137 (pCi/g) Mean	Cs-137 +/- 2σ	Th-228 (pCi/g) Mean	Th-228 +/- 2σ	Th-230 (pCi/g) Mean	Th-230 +/- 2σ
Rocky Peak	BG-01-005	3/11/92	14	220	80	NR		0.03	0.01	0.092	0.027	NA		NA	
Rocky Peak	BG-01-008	3/10/92	15	50		NR		0.01	0.01	0.02		NA		NA	
Rocky Peak	BG-01-100	3/10/92	15	380	100	NR		0.05	0.01	0.181	0.035	NA		NA	
Rocky Peak	BG-01-016	3/15/94		50		22.3	2.2	0.045		0.02		0.41	0.06	0.3	0.05
Rocky Peak	BG-01-034	3/15/94		50		22.2	2.2	0.05		0.1	0.032	0.59	0.13	0.31	0.08
Rocky Peak	BG-01-082	3/15/94		100		19.9	2	0.04		0.02		0.82	0.12	0.39	0.07
Rocky Peak	BG-01-087	3/15/94		100		21.7	2.2	0.035		0.158	0.038	0.51	0.1	0.42	0.08
Rocky Peak	BG-01-090	3/15/94		100		21.5	2.2	0.05		0.175	0.026	0.69	0.1	0.44	0.07
Santa Susana Park	BG-02-007	3/10/92	13	360	90	NR		0.02	0.01	0.17	0.04	NA		NA	
Santa Susana Park	BG-02-074	3/10/92	14	W		NR		0.005		0.02		NA		NA	
Santa Susana Park	BG-02-076	3/10/92	13	420	90	NR		0.03	0.01	0.099	0.032	NA		NA	
Santa Susana Park	BG-02-007	3/10/94		50		21.5	2.1	0.13	0.08	0.03		NA		NA	
Santa Susana Park	BG-02-017	3/10/94		100		21.4	2.1	0.12	0.05	0.213	0.04	NA		NA	
Santa Susana Park	BG-02-074	3/10/94		100		23.2	2.3	0.04		0.025		NA		NA	
Santa Susana Park	BG-02-076	3/10/94	12	100		20.9	2.1	0.045		0.02		NA		NA	
Santa Susana Park	BG-02-085	3/10/94		100		21.4	2.1	0.13	0.10	0.02		NA		NA	
Santa Susana Park*	A4CM-95-146	6/21/95		NA		NA		NA		NA		1.2	0.19	0.92	0.15
Santa Susana Park*	A4CM-95-147	6/21/95		NA		NA		NA		NA		0.93	0.13	0.71	0.11
Bell Canyon	BG-03-001	3/12/92		SD		NR		0.005		0.035		NA		NA	
Bell Canyon	BG-03-019	3/12/92		100		NR		0.02	0.01	0.035		NA		NA	
Bell Canyon	BG-03-059	3/12/92		100		NR		0.01	0.01	0.025		NA		NA	
Bell Canyon*	A4CM-95-144	6/20/95		NA		NA		NA		NA		1.1	0.10	3.8	0.22
Bell Canyon*	A4CM-95-145	6/20/95		NA		NA		NA		NA		0.95	0.12	4.2	0.3
Western Site	BG-04-025	3/13/92	13	220	80	NR		0.02	0.01	0.15	0.05	NA		NA	
Western Site	BG-04-029	3/13/92	13	750	200	NR		0.02	0.01	0.14	0.05	NA		NA	
Western Site	BG-04-090	3/13/92	13	120	70	NR		0.05	0.01	0.19	0.03	NA		NA	
Western Site*	A4CM-95-148	6/22/95		NA		NA		NA		NA		1.6	0.22	1.1	0.17
Western Site*	A4CM-95-149	6/22/95		NA		NA		NA		NA		1.4	0.14	1.1	0.12
Happy Camp	BG-05-016	3/13/92	10	260	160	NR		0.05	0.01	0.074	0.029	NA		NA	
Happy Camp	BG-05-026	3/13/92	10	380	160	NR		0.08	0.02	0.067	0.025	NA		NA	
Happy Camp	BG-05-074	3/13/92	10	490	180	NR		0.05	0.01	0.1	0.03	NA		NA	
Happy Camp	BG-05-017	3/11/94	14	100		21.0	2.1	0.088	0.056	0.147	0.033	0.2	0.05	0.41	0.07
Happy Camp	BG-05-027	3/11/94		100		20.7	2.1	0.1	0.04	0.0991	0.0214	0.11	0.06	0.34	0.06
Happy Camp	BG-05-050	3/11/94		100		22.0	2.2	0.069	0.046	0.101	0.022	0.31	0.07	0.27	0.06
Happy Camp	BG-05-056	3/11/94		100		20.6	2.1	0.097	0.055	0.148	0.028	0.2	0.06	0.52	0.08
Happy Camp	BG-05-074	3/11/94		250		20.2	2.0	0.084	0.04	0.153	0.028	0.17	0.05	0.63	0.08
SMMNRA	BG-06-033	3/12/92	14	330	80	NR		0.03	0.01	0.097	0.034	NA		NA	
SMMNRA	BG-06-089	3/12/92	14	440	90	NR		0.03	0.01	0.03		NA		NA	
SMMNRA	BG-06-096	3/12/92	14	SD		NR		0.02	0.01	0.14	0.03	NA		NA	

Table E-3. Local Background Soil Radioisotope Concentrations

Off-Site Multimedia Background Data 1992-1994 Detection Limits halved for Statistical Analysis.

Location	Sample ID	Collection Date	Exposure Rate µR/hr	H-3 (pCi/L) Mean	H-3 +/- 2σ	K-40 (pCi/g) Mean	K-40 +/- 2σ	Sr-90 (pCi/g) Mean	Sr-90 +/- 2σ	Cs-137 (pCi/g) Mean	Cs-137 +/- 2σ	Th-228 (pCi/g) Mean	Th-228 +/- 2σ	Th-230 (pCi/g) Mean	Th-230 +/- 2σ
Wildwood Park	BG-09-003	3/11/94		100		5.81	0.64	0.13	0.05	0.025		0.2	0.08	0.23	0.07
Wildwood Park	BG-09-005	3/11/94	12	100		7.84	0.83	0.05		0.188	0.061	0.25	0.09	0.22	0.07
Wildwood Park	BG-09-013	3/11/94		100		7.74	1.02	0.12	0.05	0.198	0.072	0.21	0.05	0.23	0.04
Wildwood Park	BG-09-057	3/11/94		100		5.81	6.5	0.11	0.05	0.03		0.14	0.04	0.19	0.04
Wildwood Park	BG-09-096	3/11/94		100		5.58	0.6	0.12	0.05	0.0791	0.0296	0.1		0.11	0.06
Wildwood Park Ravine	BG-10-001	3/14/94	12	50		5.92	0.59	0.098	0.048	0.245	0.037	0.058	0.027	0.069	0.022
Wildwood Park Ravine	BG-10-002	3/14/94		50		7.18	0.72	0.045		0.276	0.029	0.081	0.035	0.068	0.022
Wildwood Park Ravine	BG-10-003	3/14/94		50		3.53	0.43	0.045		0.257	0.034	0.059	0.03	0.1	0.03
Wildwood Park Ravine	BG-10-004	3/14/94		50		5.25	0.53	0.02		0.215	0.039	0.077	0.037	0.062	0.026
Wildwood Park Ravine	BG-10-005	3/14/94		50		12.0	1.2	0.045		0.456	0.052	0.12	0.05	0.16	0.05
Tapia Park	BG-11-010	3/14/94	7	100		3.12	0.49	0.089	0.041	0.158	0.035	0.05	0.031	0.033	0.02
Tapia Park	BG-11-011	3/14/94	7	50		2.85	0.35	0.05		0.109	0.029	0.04		0.031	0.022
Tapia Park	BG-11-031	3/14/94	7	500		2.64	0.34	0.045		0.0587	0.0234	0.035		0.029	0.017
Tapia Park	BG-11-036	3/14/94	7	50		3.1	0.44	0.05		0.0667	0.0338	0.02		0.039	0.022
Tapia Park	BG-11-075	3/14/94	7	100		4.03	0.59	0.045		0.113	0.043	0.03		0.05	0.024
Tapia Park Ravine	BG-12-001	3/14/94		W		1.72	0.26	0.04		0.015		0.02		0.022	0.017
Tapia Park Ravine	BG-12-002	3/14/94		50		1.72	0.29	0.045		0.0313	0.018	0.015		0.027	0.014
Tapia Park Ravine	BG-12-003	3/14/94		50		1.62	0.32	0.045		0.0419	0.016	0.015		0.032	0.016
Tapia Park Ravine	BG-12-004	3/14/94	7	50		1.79	0.32	0.045		0.0971	0.0202	0.08	0.041	0.082	0.03
Tapia Park Ravine	BG-12-005	3/14/94		W		1.69	0.26	0.025		0.015		0.03		0.036	0.021
Rocky Peak Ravine	BG-14-001	3/15/94		50		20.5	2.0	0.082	0.043	0.02		0.53	0.08	0.3	0.05
Rocky Peak Ravine	BG-14-002	3/15/94		50		20.3	2.0	0.045		0.0845	0.0426	0.78	0.08	0.38	0.05
Rocky Peak Ravine	BG-14-003	3/15/94		150		20.3	2.0	0.04		0.0799	0.0375	0.57	0.09	0.24	0.05
Rocky Peak Ravine	BG-14-004	3/15/94		W		21.0	2.1	0.035		0.015		0.4	0.09	0.27	0.06
Rocky Peak Ravine	BG-14-005	3/15/94		W		22.5	2.3	0.025		0.02		0.27	0.07	0.2	0.05

		Statistical Summary	H-3	(pCi/L)	K-40	(pCi/g)	Sr-90	(pCi/g)	Cs-137	(pCi/g)	Th-228	(pCi/g)	Th-230	(pCi/g)
Data withdrawn by lab	W	No. of Analyses	51		40		58		58		41		41	
Not Analyzed	NA	No. of Detects	12		40		31		39		32		41	
Not Reported	NR	No. of Non-detects	39		0		27		19		9		0	
Sample Dried	SD	Minimum	50		1.6		0.01		0.02		0.02		0.02	
Rocketdyne/TMA samples	*	Average	158		12.9		0.05		0.10		0.37		0.47	
		Maximum	750		23.2		0.13		0.46		1.60		4.20	
		Standard Deviation	153		8.7		0.03		0.09		0.42		0.86	
		Lower 2σ	0		0		0.00		0.00		0.00		0.00	
		Upper 2σ	465		30.3		0.12		0.27		1.21		2.18	

Table E-3. Local Background Soil Radioisotope Concentrations

Off-Site Multimedia Background Data 1992-1994 Detection Limits halved f

Location	Sample ID	Collection Date	Exposure Rate µR/hr	Th-232 (pCi/g) Mean	Th-232 +/- 2σ	U-234 (pCi/g) Mean	U-234 +/- 2σ	U-235 (pCi/g) Mean	U-235 +/- 2σ	U-238 (pCi/g) Mean	U-238 +/- 2σ	Pu-238 (pCi/g) Mean	Pu-238 +/- 2σ	Pu-239 (pCi/g) Mean	Pu-239 +/- 2σ
Rocky Peak	BG-01-005	3/11/92	14	NA		NA		NA		NA		0.035		0.005	
Rocky Peak	BG-01-008	3/10/92	15	NA		NA		NA		NA		0.02		0.005	
Rocky Peak	BG-01-100	3/10/92	15	NA		NA		NA		NA		0.01		0.005	
Rocky Peak	BG-01-016	3/15/94		0.44	0.06	0.27	0.04	0.005		0.31	0.05	0.015		0.005	
Rocky Peak	BG-01-034	3/15/94		0.37	0.09	0.35	0.05	0.022	0.012	0.39	0.05	0.005		0.005	
Rocky Peak	BG-01-082	3/15/94		0.75	0.1	0.44	0.06	0.034	0.015	0.43	0.06	0.005		0.005	
Rocky Peak	BG-01-087	3/15/94		0.42	0.08	0.51	0.06	0.021	0.012	0.52	0.06	0.0035		0.005	
Rocky Peak	BG-01-090	3/15/94		0.44	0.07	0.38	0.05	0.012	0.009	0.4	0.05	0.0045		0.0045	
Santa Susana Park	BG-02-007	3/10/92	13	NA		NA		NA		NA		0.01		0.005	
Santa Susana Park	BG-02-074	3/10/92	14	NA		NA		NA		NA		0.005		0.0035	
Santa Susana Park	BG-02-076	3/10/92	13	NA		NA		NA		NA		0.01		0.005	
Santa Susana Park	BG-02-007	3/10/94		NA		NA		NA		NA		0.0035		0.0035	
Santa Susana Park	BG-02-017	3/10/94		NA		NA		NA		NA		0.0035		0.0035	
Santa Susana Park	BG-02-074	3/10/94		NA		NA		NA		NA		0.005		0.005	
Santa Susana Park	BG-02-076	3/10/94	12	NA		NA		NA		NA		0.005		0.005	
Santa Susana Park	BG-02-085	3/10/94		NA		NA		NA		NA		0.0035		0.0035	
Santa Susana Park*	A4CM-95-146	6/21/95		1.2	0.17	0.81	0.065	0.039	0.014	0.77	0.061	NA		NA	
Santa Susana Park*	A4CM-95-147	6/21/95		0.91	0.12	0.74	0.068	0.042	0.015	0.77	0.069	NA		NA	
Bell Canyon	BG-03-001	3/12/92		NA		NA		NA		NA		0.015		0.003	
Bell Canyon	BG-03-019	3/12/92		NA		NA		NA		NA		0.066	0.055	0.01	
Bell Canyon	BG-03-059	3/12/92		NA		NA		NA		NA		0.1	0.07	0.01	
Bell Canyon*	A4CM-95-144	6/20/95		0.95	0.094	1.9	0.13	0.1	0.021	1.7	0.12	NA		NA	
Bell Canyon*	A4CM-95-145	6/20/95		0.92	0.11	1.6	0.11	0.065	0.019	1.4	0.1	NA		NA	
Western Site	BG-04-025	3/13/92	13	NA		NA		NA		NA		0.0045		0.003	
Western Site	BG-04-029	3/13/92	13	NA		NA		NA		NA		0.004		0.0025	
Western Site	BG-04-090	3/13/92	13	NA		NA		NA		NA		0.005		0.0035	
Western Site*	A4CM-95-148	6/22/95		1.5	0.2	0.98	0.086	0.043	0.017	0.98	0.086	NA		NA	
Western Site*	A4CM-95-149	6/22/95		1.3	0.13	0.89	0.06	0.054	0.013	0.96	0.064	NA		NA	
Happy Camp	BG-05-016	3/13/92	10	NA		NA		NA		NA		0.01		0.0025	
Happy Camp	BG-05-026	3/13/92	10	NA		NA		NA		NA		0.015		0.003	
Happy Camp	BG-05-074	3/13/92	10	NA		NA		NA		NA		0.01		0.0025	
Happy Camp	BG-05-017	3/11/94	14	0.2	0.04	0.56	0.07	0.021	0.013	0.59	0.08	0.01		0.01	
Happy Camp	BG-05-027	3/11/94		0.15	0.04	0.6	0.08	0.021	0.013	0.63	0.08	0.005		0.005	
Happy Camp	BG-05-050	3/11/94		0.31	0.06	0.36	0.06	0.004		0.33	0.06	0.01		0.01	
Happy Camp	BG-05-056	3/11/94		0.15	0.04	0.74	0.08	0.037	0.015	0.82	0.08	0.005		0.005	
Happy Camp	BG-05-074	3/11/94		0.15	0.04	0.73	0.08	0.036	0.015	0.81	0.09	0.01		0.01	
SMMNRA	BG-06-033	3/12/92	14	NA		NA		NA		NA		0.04		0.015	
SMMNRA	BG-06-089	3/12/92	14	NA		NA		NA		NA		0.035		0.01	
SMMNRA	BG-06-096	3/12/92	14	NA		NA		NA		NA		0.13	0.03	0.005	

Table E-3. Local Background Soil Radioisotope Concentrations

Off-Site Multimedia Background Data 1992-1994 Detection Limits halved f

Location	Sample ID	Collection Date	Exposure Rate µR/hr	Th-232 (pCi/g) Mean	Th-232 +/- 2σ	U-234 (pCi/g) Mean	U-234 +/- 2σ	U-235 (pCi/g) Mean	U-235 +/- 2σ	U-238 (pCi/g) Mean	U-238 +/- 2σ	Pu-238 (pCi/g) Mean	Pu-238 +/- 2σ	Pu-239 (pCi/g) Mean	Pu-239 +/- 2σ
Wildwood Park	BG-09-003	3/11/94		0.26	0.07	0.1	0.03	0.0035		0.099	0.028	0.004		0.004	
Wildwood Park	BG-09-005	3/11/94	12	0.17	0.07	0.12	0.04	0.005		0.14	0.04	0.005		0.005	
Wildwood Park	BG-09-013	3/11/94		0.2	0.04	0.13	0.03	0.0035		0.13	0.03	0.004		0.004	
Wildwood Park	BG-09-057	3/11/94		0.17	0.04	0.12	0.03	0.0035		0.12	0.03	0.004		0.004	
Wildwood Park	BG-09-096	3/11/94		0.12	0.06	0.056	0.039	0.015		0.11	0.04	0.01		0.01	
Wildwood Park Ravine	BG-10-001	3/14/94	12	0.029	0.015	0.084	0.023	0.003		0.1	0.03	0.005		0.005	
Wildwood Park Ravine	BG-10-002	3/14/94		0.051	0.022	0.12	0.03	0.003		0.099	0.025	0.004		0.004	
Wildwood Park Ravine	BG-10-003	3/14/94		0.065	0.022	0.15	0.03	0.003		0.12	0.03	0.0035		0.005	
Wildwood Park Ravine	BG-10-004	3/14/94		0.083	0.029	0.14	0.03	0.003		0.15	0.03	0.0045		0.0045	
Wildwood Park Ravine	BG-10-005	3/14/94		0.15	0.04	0.13	0.03	0.0035		0.092	0.027	0.005		0.005	
Tapia Park	BG-11-010	3/14/94	7	0.064	0.025	0.033	0.018	0.005		0.022	0.015	0.005		0.005	
Tapia Park	BG-11-011	3/14/94	7	0.026	0.023	0.051	0.018	0.003		0.053	0.018	0.003		0.003	
Tapia Park	BG-11-031	3/14/94	7	0.027	0.016	0.027	0.017	0.0045		0.058	0.023	0.0035		0.0045	
Tapia Park	BG-11-036	3/14/94	7	0.015		0.057	0.02	0.0035		0.067	0.022	0.004		0.004	
Tapia Park	BG-11-075	3/14/94	7	0.05	0.025	0.038	0.017	0.0035		0.041	0.018	0.003		0.0045	
Tapia Park Ravine	BG-12-001	3/14/94		0.024	0.015	0.0089	0.0078	0.003		0.033	0.014	0.003		0.003	
Tapia Park Ravine	BG-12-002	3/14/94		0.023	0.013	0.035	0.015	0.003		0.025	0.013	0.01		0.01	
Tapia Park Ravine	BG-12-003	3/14/94		0.042	0.02	0.019	0.011	0.003		0.022	0.012	0.0035		0.0035	
Tapia Park Ravine	BG-12-004	3/14/94	7	0.063	0.027	0.049	0.017	0.003		0.058	0.019	0.004		0.005	
Tapia Park Ravine	BG-12-005	3/14/94		0.024	0.018	0.01		0.004		0.023	0.015	0.0035		0.0035	
Rocky Peak Ravine	BG-14-001	3/15/94		0.87	0.1	0.23	0.04	0.011	0.008	0.21	0.04	0.0045		0.0045	
Rocky Peak Ravine	BG-14-002	3/15/94		1.2	0.1	0.31	0.04	0.018	0.01	0.4	0.05	0.005		0.005	
Rocky Peak Ravine	BG-14-003	3/15/94		0.56	0.09	0.27	0.04	0.012	0.009	0.31	0.05	0.0035		0.0035	
Rocky Peak Ravine	BG-14-004	3/15/94		0.64	0.1	0.2	0.04	0.0025		0.22	0.04	0.004		0.004	
Rocky Peak Ravine	BG-14-005	3/15/94		0.23	0.06	0.14	0.03	0.0074	0.0072	0.18	0.03	0.004		0.004	
		Statistical Summary		Th-232	(pCi/g)	U-234	(pCi/g)	U-235	(pCi/g)	U-238	(pCi/g)	Pu-238	(pCi/g)	Pu-239	(pCi/g)
Data withdrawn by lab	W	No. of Analyses		41		41		41		41		58		58	
Not Analyzed	NA	No. of Detects		40		40		18		41		3		0	
Not Reported	NR	No. of Non-detects		1		1		23		0		55		58	
Sample Dried	SD	Minimum		0.02		0.01		0.00		0.02		0.00		0.00	
Rocketdyne/TMA samples	*	Average		0.37		0.35		0.02		0.36		0.01		0.01	
		Maximum		1.50		1.90		0.10		1.70		0.13		0.02	
		Standard Deviation		0.42		0.42		0.02		0.39		0.02		0.00	
		Lower 2σ		0.00		0.00		0.00		0.00		0.00		0.00	
		Upper 2σ		1.20		1.20		0.06		1.15		0.06		0.01	

Table E-3. Local Background Soil Radioisotope Concentrations

Off-Site Multimedia Background Data 1992-1994   Detection Limits halved for Statistical Analysis   Excluding Wildwood & Tapia.

Location	Sample ID	Collection Date	Exposure Rate μR/hr	H-3 (pCi/L) Mean	H-3 +/- 2σ	K-40 (pCi/g) Mean	K-40 +/- 2σ	Sr-90 (pCi/g) Mean	Sr-90 +/- 2σ	Cs-137 (pCi/g) Mean	Cs-137 +/- 2σ	Th-228 (pCi/g) Mean	Th-228 +/- 2σ	Th-230 (pCi/g) Mean	Th-230 +/- 2σ
Rocky Peak	BG-01-005	3/11/92	14	220	80	NR		0.03	0.01	0.092	0.027	NA		NA	
Rocky Peak	BG-01-008	3/10/92	15	50		NR		0.01	0.01	0.02		NA		NA	
Rocky Peak	BG-01-100	3/10/92	15	380	100	NR		0.05	0.01	0.181	0.035	NA		NA	
Rocky Peak	BG-01-016	3/15/94		50		22.3	2.2	0.045		0.02		0.41	0.06	0.3	0.05
Rocky Peak	BG-01-034	3/15/94		50		22.2	2.2	0.05		0.1	0.032	0.59	0.13	0.31	0.08
Rocky Peak	BG-01-082	3/15/94		100		19.9	2	0.04		0.02		0.82	0.12	0.39	0.07
Rocky Peak	BG-01-087	3/15/94		100		21.7	2.2	0.035		0.158	0.038	0.51	0.1	0.42	0.08
Rocky Peak	BG-01-090	3/15/94		100		21.5	2.2	0.05		0.175	0.026	0.69	0.1	0.44	0.07
Santa Susana Park	BG-02-007	3/10/92	13	360	90	NR		0.02	0.01	0.17	0.04	NA		NA	
Santa Susana Park	BG-02-074	3/10/92	14	W		NR		0.005		0.02		NA		NA	
Santa Susana Park	BG-02-076	3/10/92	13	420	90	NR		0.03	0.01	0.099	0.032	NA		NA	
Santa Susana Park	BG-02-007	3/10/94		50		21.5	2.1	0.13	0.08	0.03		NA		NA	
Santa Susana Park	BG-02-017	3/10/94		100		21.4	2.1	0.12	0.05	0.213	0.04	NA		NA	
Santa Susana Park	BG-02-074	3/10/94		100		23.2	2.3	0.04		0.025		NA		NA	
Santa Susana Park	BG-02-076	3/10/94	12	100		20.9	2.1	0.045		0.02		NA		NA	
Santa Susana Park	BG-02-085	3/10/94		100		21.4	2.1	0.13	0.10	0.02		NA		NA	
Santa Susana Park*	A4CM-95-146	6/21/95		NA		NA		NA		NA		1.2	0.19	0.92	0.15
Santa Susana Park*	A4CM-95-147	6/21/95		NA		NA		NA		NA		0.93	0.13	0.71	0.11
Bell Canyon	BG-03-001	3/12/92		SD		NR		0.005		0.035		NA		NA	
Bell Canyon	BG-03-019	3/12/92		100		NR		0.02	0.01	0.035		NA		NA	
Bell Canyon	BG-03-059	3/12/92		100		NR		0.01	0.01	0.025		NA		NA	
Bell Canyon*	A4CM-95-144	6/20/95		NA		NA		NA		NA		1.1	0.10	3.8	0.22
Bell Canyon*	A4CM-95-145	6/20/95		NA		NA		NA		NA		0.95	0.12	4.2	0.3
Western Site	BG-04-025	3/13/92	13	220	80	NR		0.02	0.01	0.15	0.05	NA		NA	
Western Site	BG-04-029	3/13/92	13	750	200	NR		0.02	0.01	0.14	0.05	NA		NA	
Western Site	BG-04-090	3/13/92	13	120	70	NR		0.05	0.01	0.19	0.03	NA		NA	
Western Site*	A4CM-95-148	6/22/95		NA		NA		NA		NA		1.6	0.22	1.1	0.17
Western Site*	A4CM-95-149	6/22/95		NA		NA		NA		NA		1.4	0.14	1.1	0.12
Happy Camp	BG-05-016	3/13/92	10	260	160	NR		0.05	0.01	0.074	0.029	NA		NA	
Happy Camp	BG-05-026	3/13/92	10	380	160	NR		0.08	0.02	0.067	0.025	NA		NA	
Happy Camp	BG-05-074	3/13/92	10	490	180	NR		0.05	0.01	0.1	0.03	NA		NA	
Happy Camp	BG-05-017	3/11/94	14	100		21.0	2.1	0.088	0.056	0.147	0.033	0.2	0.05	0.41	0.07
Happy Camp	BG-05-027	3/11/94		100		20.7	2.1	0.1	0.04	0.0991	0.0214	0.11	0.06	0.34	0.06
Happy Camp	BG-05-050	3/11/94		100		22.0	2.2	0.069	0.046	0.101	0.022	0.31	0.07	0.27	0.06
Happy Camp	BG-05-056	3/11/94		100		20.6	2.1	0.097	0.055	0.148	0.028	0.2	0.06	0.52	0.08
Happy Camp	BG-05-074	3/11/94		250		20.2	2.0	0.084	0.04	0.153	0.028	0.17	0.05	0.63	0.08
SMMNRA	BG-06-033	3/12/92	14	330	80	NR		0.03	0.01	0.097	0.034	NA		NA	
SMMNRA	BG-06-089	3/12/92	14	440	90	NR		0.03	0.01	0.03		NA		NA	
SMMNRA	BG-06-096	3/12/92	14	SD		NR		0.02	0.01	0.14	0.03	NA		NA	

Table E-3. Local Background Soil Radioisotope Concentrations

Off-Site Multimedia Background Data 1992-1994 Detection Limits halved for Statistical Analysis Excluding Wildwood & Tapia															
			Exposure	H-3		K-40		Sr-90		Cs-137		Th-228		Th-230	
Location	Sample	Collection	Rate	(pCi/L)		(pCi/g)		(pCi/g)		(pCi/g)		(pCi/g)		(pCi/g)	
	ID	Date	µR/hr	Mean	+/- 2σ	Mean	+/- 2σ	Mean	+/- 2σ	Mean	+/- 2σ	Mean	+/- 2σ	Mean	+/- 2σ
Rocky Peak Ravine	BG-14-001	3/15/94		50		20.5	2.0	0.082	0.043	0.02		0.53	0.08	0.3	0.05
Rocky Peak Ravine	BG-14-002	3/15/94		50		20.3	2.0	0.045		0.0845	0.0426	0.78	0.08	0.38	0.05
Rocky Peak Ravine	BG-14-003	3/15/94		150		20.3	2.0	0.04		0.0799	0.0375	0.57	0.09	0.24	0.05
Rocky Peak Ravine	BG-14-004	3/15/94		W		21.0	2.1	0.035		0.015		0.4	0.09	0.27	0.06
Rocky Peak Ravine	BG-14-005	3/15/94		W		22.5	2.3	0.025		0.02		0.27	0.07	0.2	0.05
		Statistical Summary		H-3	(pCi/L)	K-40	(pCi/g)	Sr-90	(pCi/g)	Cs-137	(pCi/g)	Th-228	(pCi/g)	Th-230	(pCi/g)
Data withdrawn by lab	W	No. of Analyses		33		20		38		38		21		21	
Not Analyzed	NA	No. of Detects		12		20		25		23		21		21	
Not Reported	NR	No. of Non-detects		21		0		13		15		0		0	
Sample Dried	SD	Minimum		50		19.9		0.01		0.02		0.11		0.20	
Rocketdyne/TMA samples	*	Average		193		21.3		0.05		0.09		0.65		0.82	
		Maximum		750		23.2		0.13		0.21		1.60		4.20	
		Standard Deviation		166		0.9		0.03		0.06		0.42		1.09	
		Lower 2σ		0		19.5		0.00		0.00		0.00		0.00	
		Upper 2σ		525		23.0		0.12		0.21		1.50		3.00	

Table E-3. Local Background Soil Radioisotope Concentrations

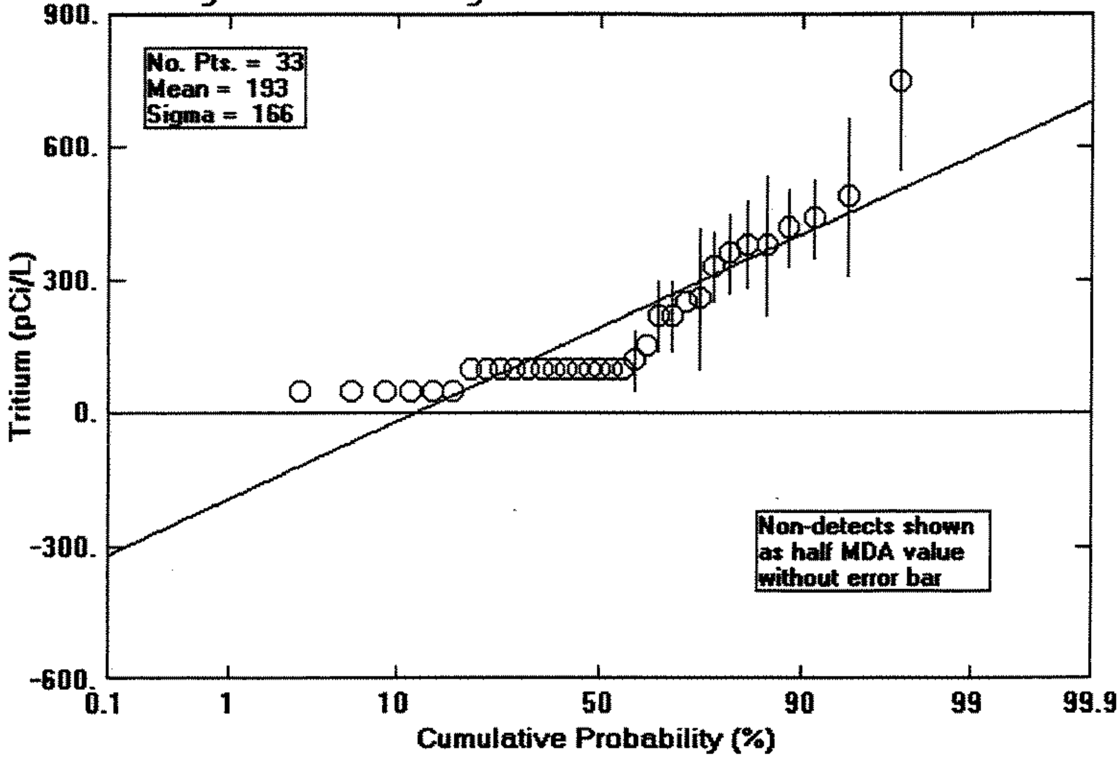
Off-Site Multimedia Background Data 1992-1994 Detection Limits halved !

Location	Sample ID	Collection Date	Exposure Rate µR/hr	Th-232 (pCi/g) Mean	Th-232 +/- 2σ	U-234 (pCi/g) Mean	U-234 +/- 2σ	U-235 (pCi/g) Mean	U-235 +/- 2σ	U-238 (pCi/g) Mean	U-238 +/- 2σ	Pu-238 (pCi/g) Mean	Pu-238 +/- 2σ	Pu-239 (pCi/g) Mean	Pu-239 +/- 2σ
Rocky Peak	BG-01-005	3/11/92	14	NA		NA		NA		NA		0.035		0.005	
Rocky Peak	BG-01-008	3/10/92	15	NA		NA		NA		NA		0.02		0.005	
Rocky Peak	BG-01-100	3/10/92	15	NA		NA		NA		NA		0.01		0.005	
Rocky Peak	BG-01-016	3/15/94		0.44	0.06	0.27	0.04	0.005		0.31	0.05	0.015		0.005	
Rocky Peak	BG-01-034	3/15/94		0.37	0.09	0.35	0.05	0.022	0.012	0.39	0.05	0.005		0.005	
Rocky Peak	BG-01-082	3/15/94		0.75	0.1	0.44	0.06	0.034	0.015	0.43	0.06	0.005		0.005	
Rocky Peak	BG-01-087	3/15/94		0.42	0.08	0.51	0.06	0.021	0.012	0.52	0.06	0.0035		0.005	
Rocky Peak	BG-01-090	3/15/94		0.44	0.07	0.38	0.05	0.012	0.009	0.4	0.05	0.0045		0.0045	
Santa Susana Park	BG-02-007	3/10/92	13	NA		NA		NA		NA		0.01		0.005	
Santa Susana Park	BG-02-074	3/10/92	14	NA		NA		NA		NA		0.005		0.0035	
Santa Susana Park	BG-02-076	3/10/92	13	NA		NA		NA		NA		0.01		0.005	
Santa Susana Park	BG-02-007	3/10/94		NA		NA		NA		NA		0.0035		0.0035	
Santa Susana Park	BG-02-017	3/10/94		NA		NA		NA		NA		0.0035		0.0035	
Santa Susana Park	BG-02-074	3/10/94		NA		NA		NA		NA		0.005		0.005	
Santa Susana Park	BG-02-076	3/10/94	12	NA		NA		NA		NA		0.005		0.005	
Santa Susana Park	BG-02-085	3/10/94		NA		NA		NA		NA		0.0035		0.0035	
Santa Susana Park*	A4CM-95-146	6/21/95		1.2	0.17	0.81	0.065	0.039	0.014	0.77	0.061	NA		NA	
Santa Susana Park*	A4CM-95-147	6/21/95		0.91	0.12	0.74	0.068	0.042	0.015	0.77	0.069	NA		NA	
Bell Canyon	BG-03-001	3/12/92		NA		NA		NA		NA		0.015		0.003	
Bell Canyon	BG-03-019	3/12/92		NA		NA		NA		NA		0.066	0.055	0.01	
Bell Canyon	BG-03-059	3/12/92		NA		NA		NA		NA		0.1	0.07	0.01	
Bell Canyon*	A4CM-95-144	6/20/95		0.95	0.094	1.9	0.13	0.1	0.021	1.7	0.12	NA		NA	
Bell Canyon*	A4CM-95-145	6/20/95		0.92	0.11	1.6	0.11	0.065	0.019	1.4	0.1	NA		NA	
Western Site	BG-04-025	3/13/92	13	NA		NA		NA		NA		0.0045		0.003	
Western Site	BG-04-029	3/13/92	13	NA		NA		NA		NA		0.004		0.0025	
Western Site	BG-04-090	3/13/92	13	NA		NA		NA		NA		0.005		0.0035	
Western Site*	A4CM-95-148	6/22/95		1.5	0.2	0.98	0.086	0.043	0.017	0.98	0.086	NA		NA	
Western Site*	A4CM-95-149	6/22/95		1.3	0.13	0.89	0.06	0.054	0.013	0.96	0.064	NA		NA	
Happy Camp	BG-05-016	3/13/92	10	NA		NA		NA		NA		0.01		0.0025	
Happy Camp	BG-05-026	3/13/92	10	NA		NA		NA		NA		0.015		0.003	
Happy Camp	BG-05-074	3/13/92	10	NA		NA		NA		NA		0.01		0.0025	
Happy Camp	BG-05-017	3/11/94	14	0.2	0.04	0.56	0.07	0.021	0.013	0.59	0.08	0.01		0.01	
Happy Camp	BG-05-027	3/11/94		0.15	0.04	0.6	0.08	0.021	0.013	0.63	0.08	0.005		0.005	
Happy Camp	BG-05-050	3/11/94		0.31	0.06	0.36	0.06	0.004		0.33	0.06	0.01		0.01	
Happy Camp	BG-05-056	3/11/94		0.15	0.04	0.74	0.08	0.037	0.015	0.82	0.08	0.005		0.005	
Happy Camp	BG-05-074	3/11/94		0.15	0.04	0.73	0.08	0.036	0.015	0.81	0.09	0.01		0.01	
SMMNRA	BG-06-033	3/12/92	14	NA		NA		NA		NA		0.04		0.015	
SMMNRA	BG-06-089	3/12/92	14	NA		NA		NA		NA		0.035		0.01	
SMMNRA	BG-06-096	3/12/92	14	NA		NA		NA		NA		0.13	0.03	0.005	

Table E-3. Local Background Soil Radioisotope Concentrations

Off-Site Multimedia Background Data 1992-1994 Detection Limits halved f															
			Exposure	Th-232		U-234		U-235		U-238		Pu-238		Pu-239	
Location	Sample	Collection	Rate	(pCi/g)		(pCi/g)		(pCi/g)		(pCi/g)		(pCi/g)		(pCi/g)	
	ID	Date	µR/hr	Mean	+/- 2σ	Mean	+/- 2σ	Mean	+/- 2σ	Mean	+/- 2σ	Mean	+/- 2σ	Mean	+/- 2σ
Rocky Peak Ravine	BG-14-001	3/15/94		0.87	0.1	0.23	0.04	0.011	0.008	0.21	0.04	0.0045		0.0045	
Rocky Peak Ravine	BG-14-002	3/15/94		1.2	0.1	0.31	0.04	0.018	0.01	0.4	0.05	0.005		0.005	
Rocky Peak Ravine	BG-14-003	3/15/94		0.56	0.09	0.27	0.04	0.012	0.009	0.31	0.05	0.0035		0.0035	
Rocky Peak Ravine	BG-14-004	3/15/94		0.64	0.1	0.2	0.04	0.0025		0.22	0.04	0.004		0.004	
Rocky Peak Ravine	BG-14-005	3/15/94		0.23	0.06	0.14	0.03	0.0074	0.0072	0.18	0.03	0.004		0.004	
		Statistical Summary		Th-232	(pCi/g)	U-234	(pCi/g)	U-235	(pCi/g)	U-238	(pCi/g)	Pu-238	(pCi/g)	Pu-239	(pCi/g)
Data withdrawn by lab	W	No. of Analyses		21		21		21		21		38		38	
Not Analyzed	NA	No. of Detects		21		21		18		21		3		0	
Not Reported	NR	No. of Non-detects		0		0		3		0		35		38	
Sample Dried	SD	Minimum		0.15		0.14		0.00		0.18		0.00		0.00	
Rocketdyne/TMA samples	*	Average		0.65		0.62		0.03		0.63		0.02		0.01	
		Maximum		1.50		1.90		0.10		1.70		0.13		0.02	
		Standard Deviation		0.42		0.45		0.02		0.40		0.03		0.00	
		Lower 2σ		0.00		0.00		0.00		0.00		0.00		0.00	
		Upper 2σ		1.49		1.52		0.08		1.42		0.07		0.01	

Figure E-17. Background Tritium Concentration in Soil



C:\CUMPLOT\DATA\H3BG.CMP 01-01-96

Figure E-18. Background Strontium-90 Concentration in Soil

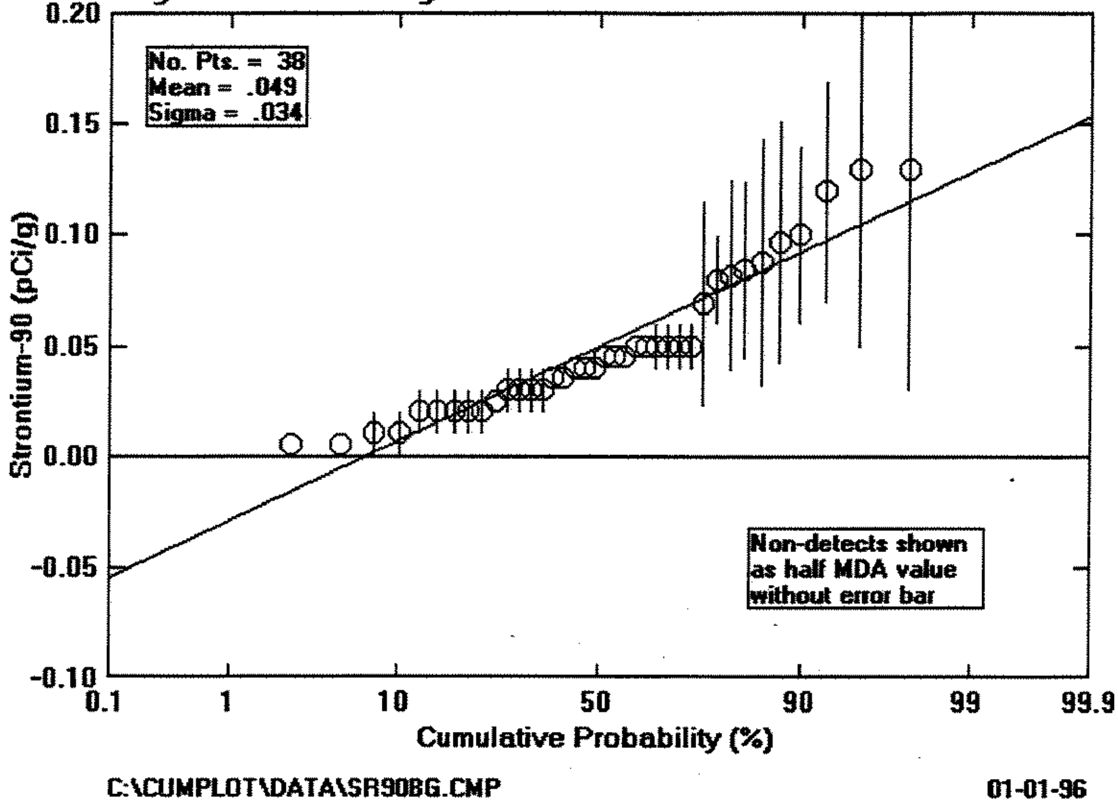
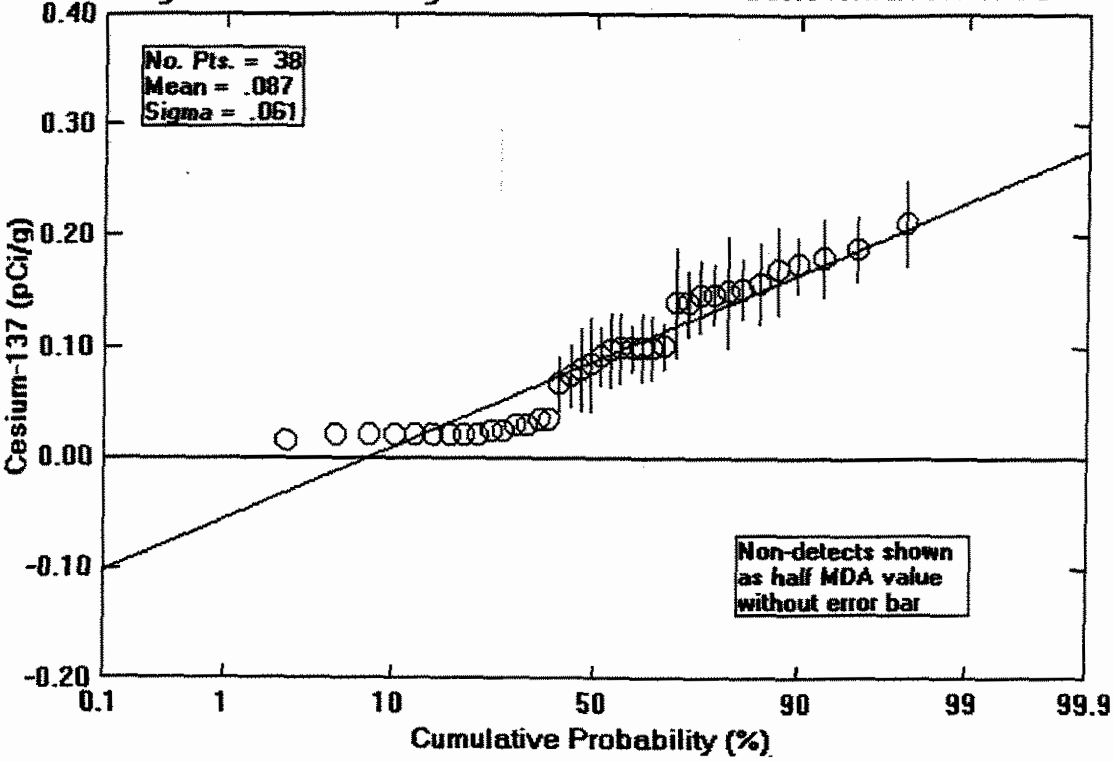


Figure E-19. Background Cesium-137 Concentration in Soil



C:\CUMPLOT\DATA\CS137BG.CMP

01-01-96

Figure E-20. Background Thorium-228 Concentration in Soil

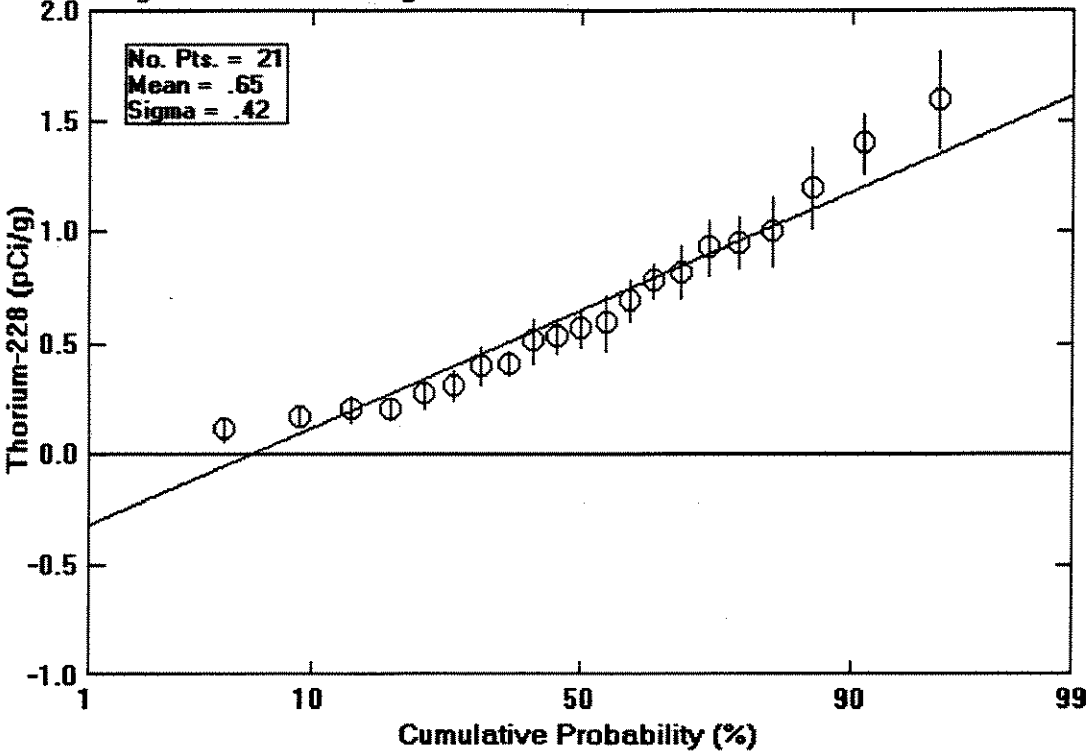


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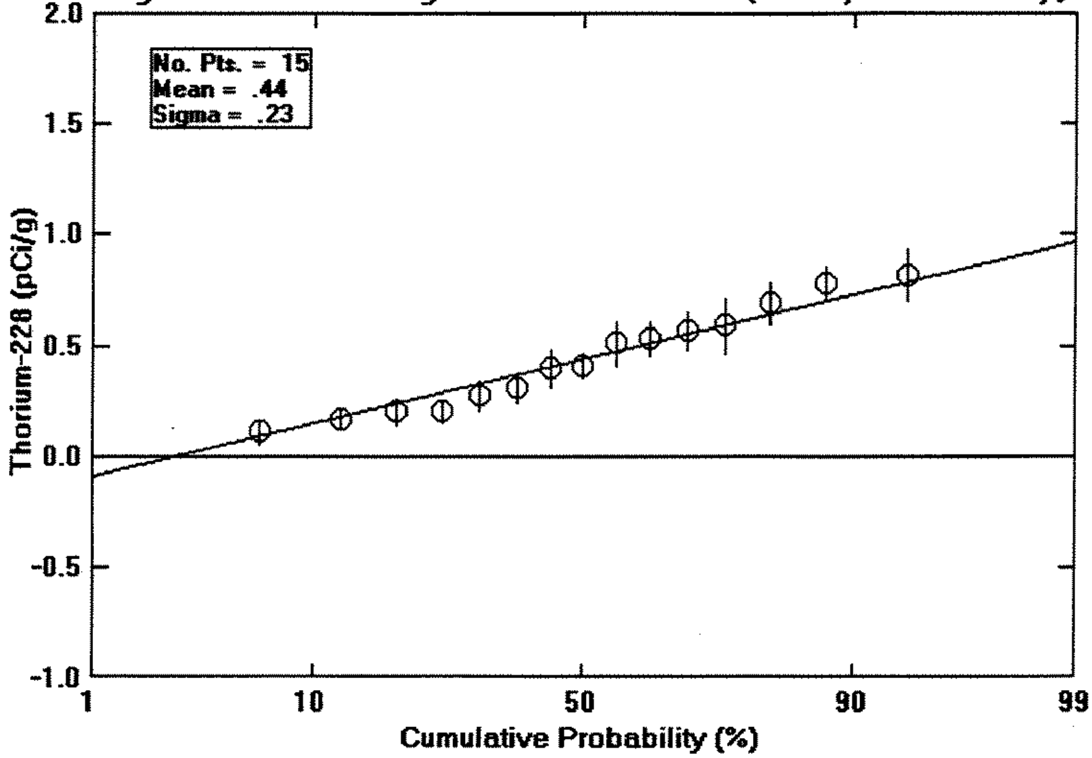
Figure E-20a. Background Thorium-228 (Teledyne data only)



C:\CUMPLOT\DATA\TH228BGE.CMP 01-01-96

Figure E-20b. Background Thorium-228 (TMA data only)

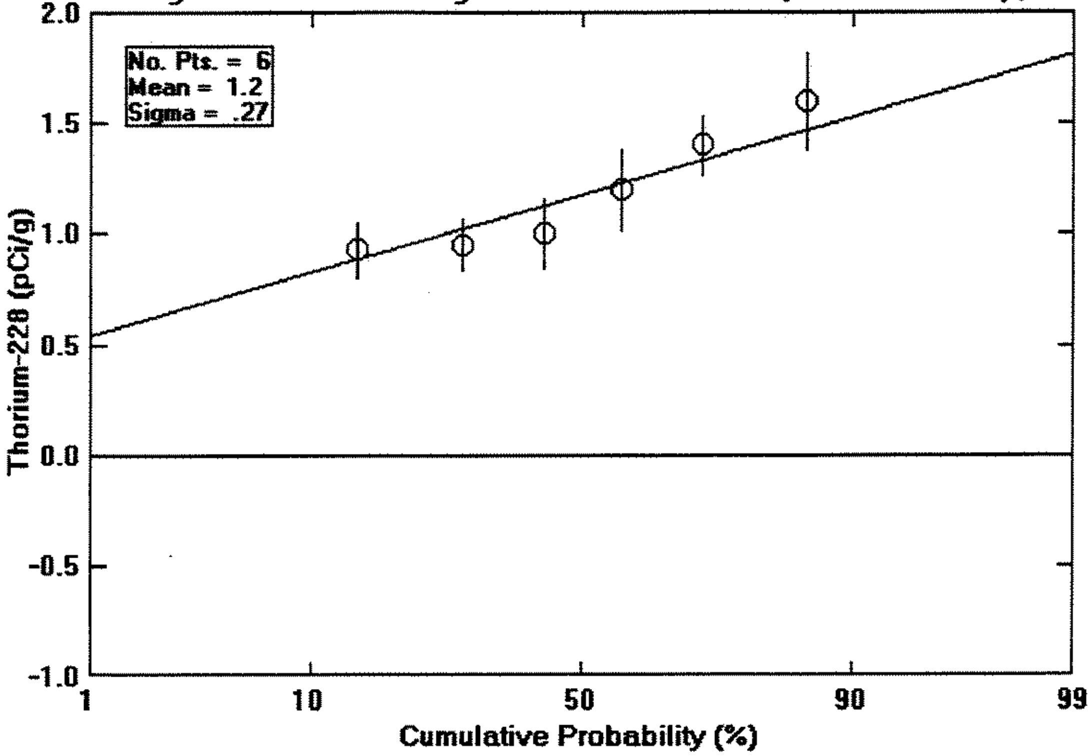


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Figure E-21. Background Thorium-230 Concentration in Soil

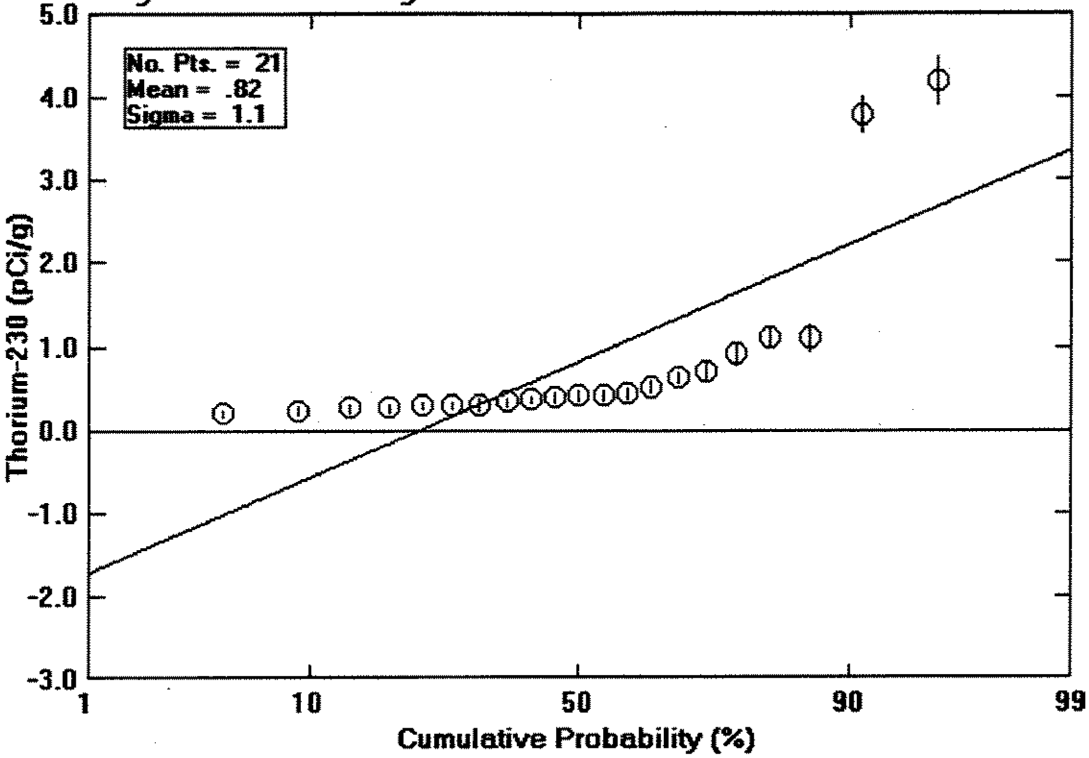

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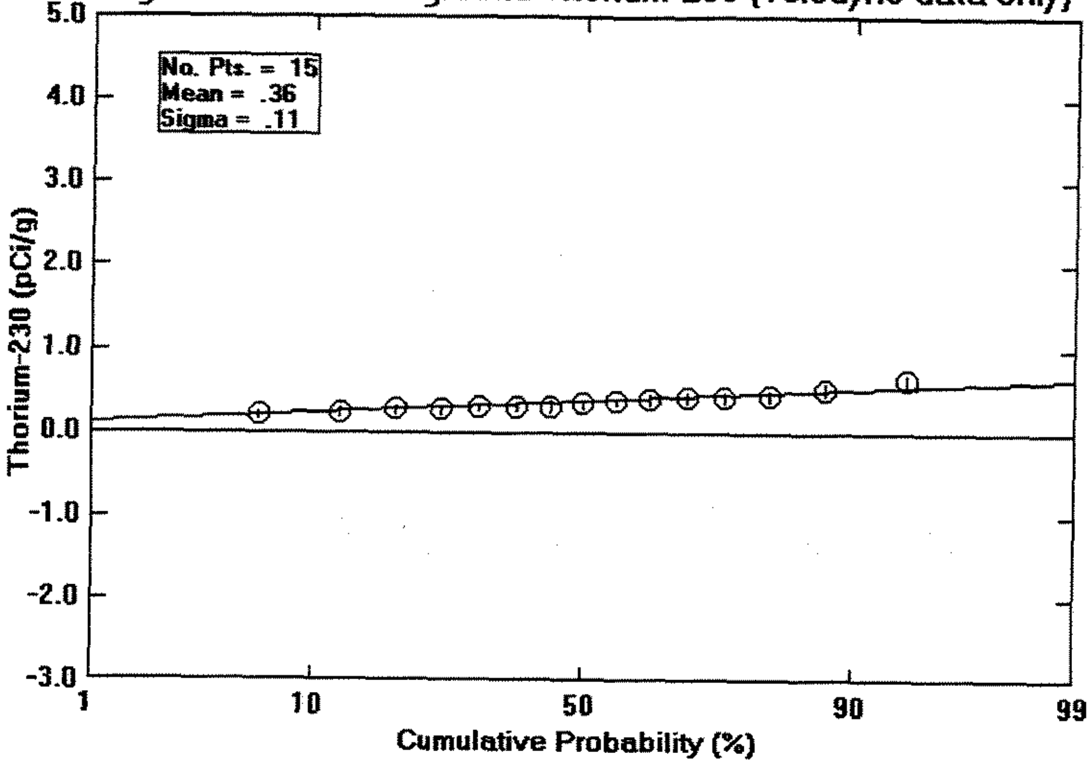
Figure E-21a. Background Thorium-230 (Teledyne data only)



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01-01-96

Figure E-21b. Background Thorium-230 (TMA data only)

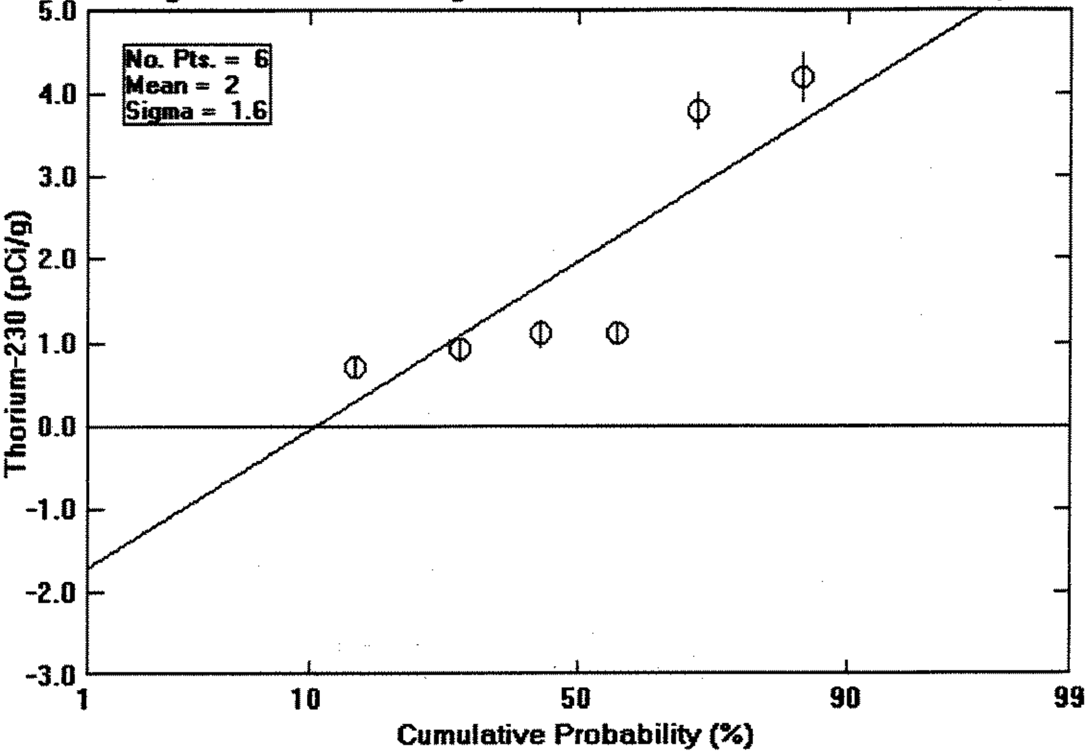

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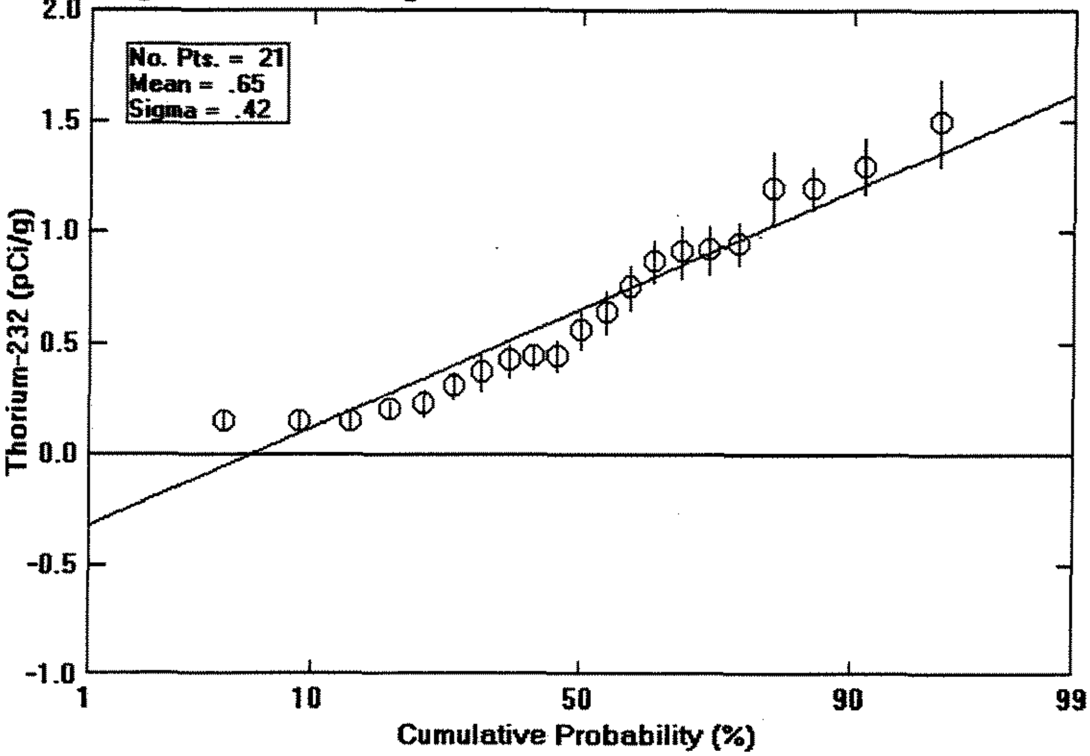
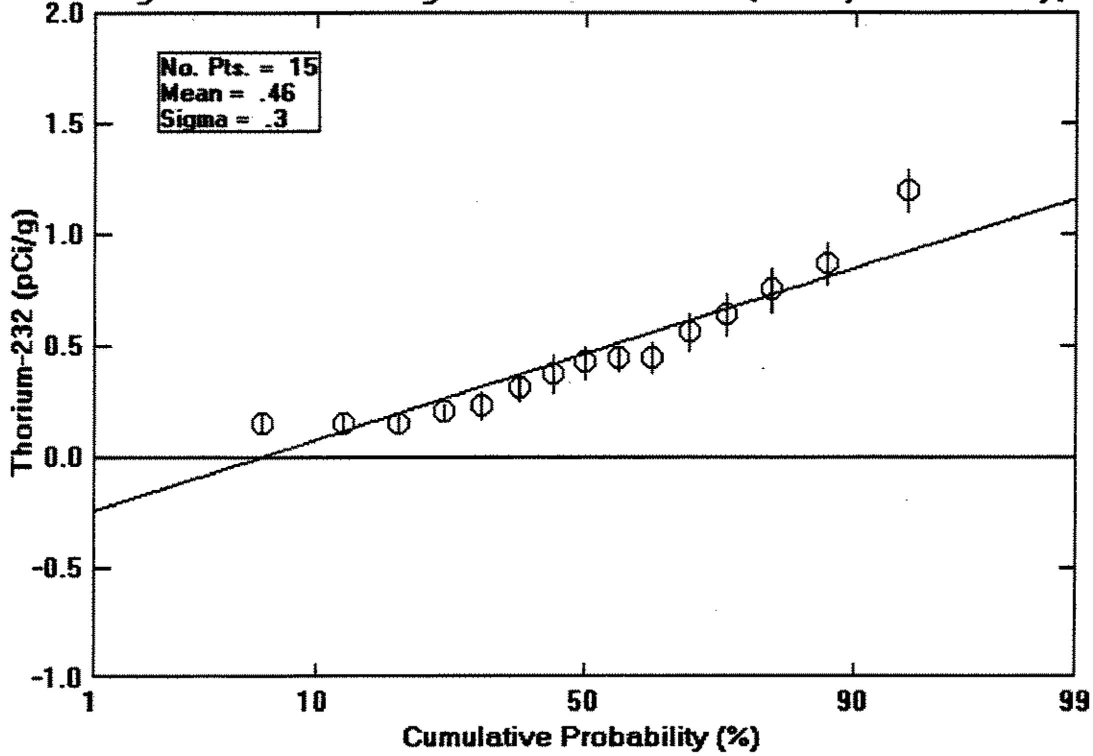
Figure E-22. Background Thorium-232 Concentration in Soil



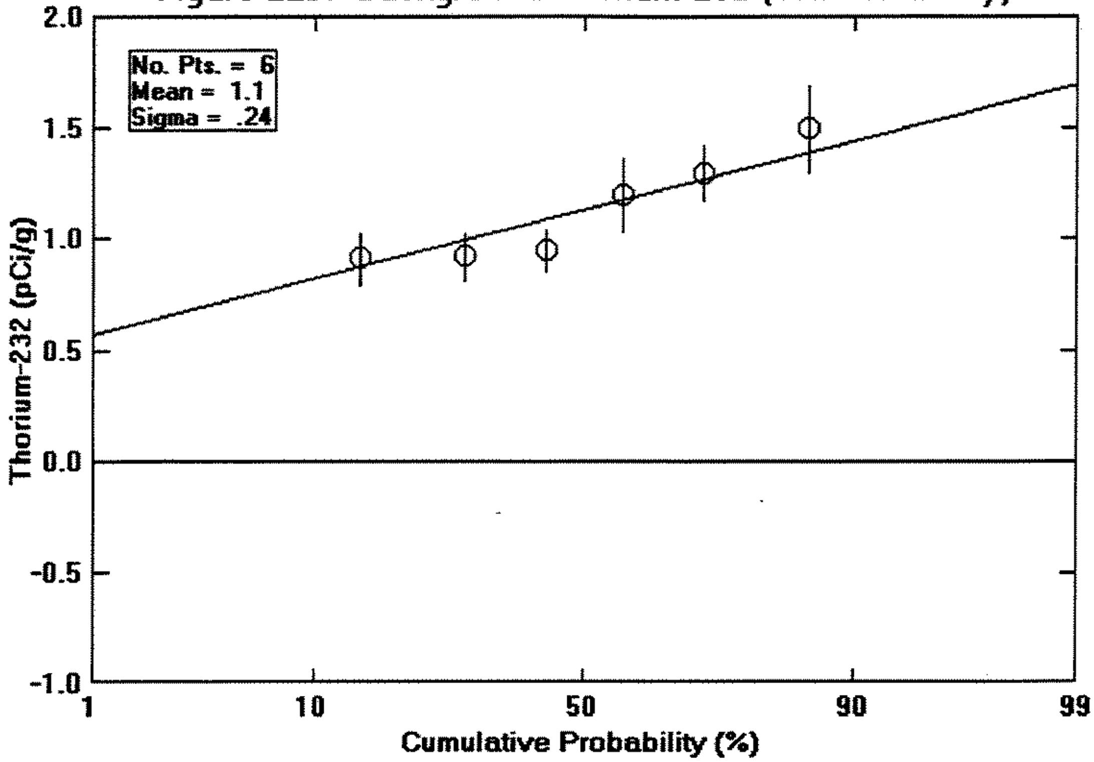
C:\CUMPLOT\DATA\TH232BG.CMP 01-01-96

Figure E-22a. Background Thorium-232 (Teledyne data only)



C:\CUMPLOT\DATA\TH232BGE.CMP 01-01-96

Figure 22b. Background Thorium-232 (TMA data only)



C:\CUMPLOT\DATA\TH232BGM.CMP 01-01-96

Figure E-23. Background Uranium-234 Concentration in Soil

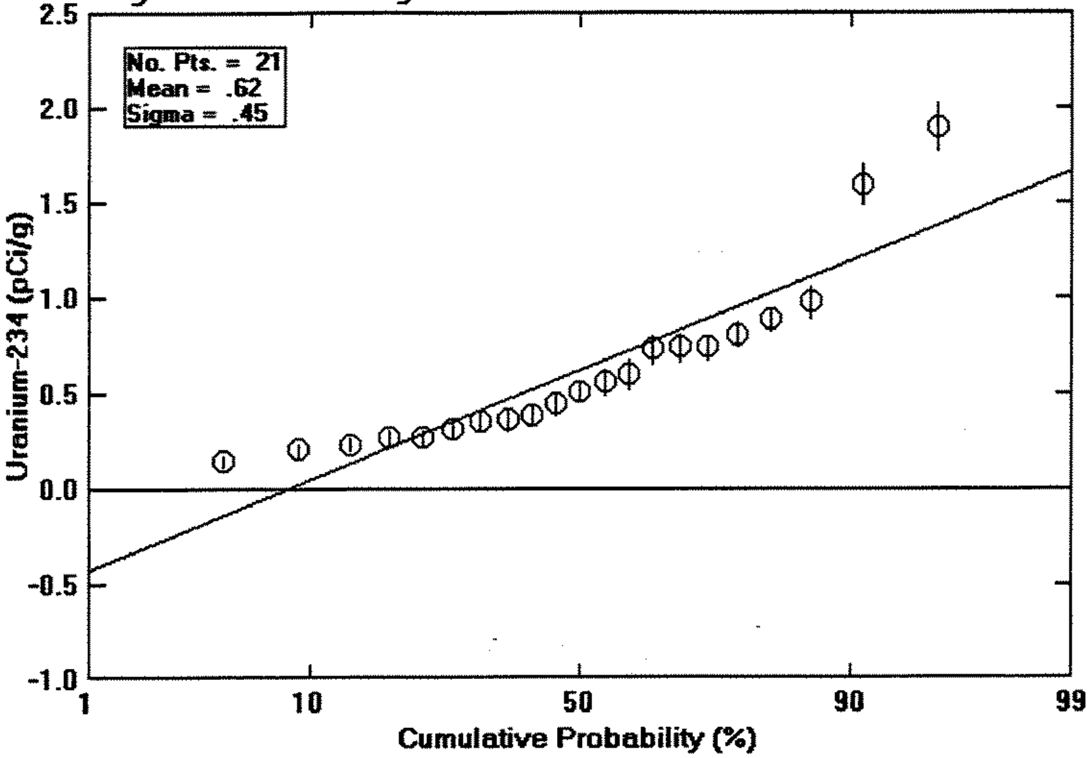


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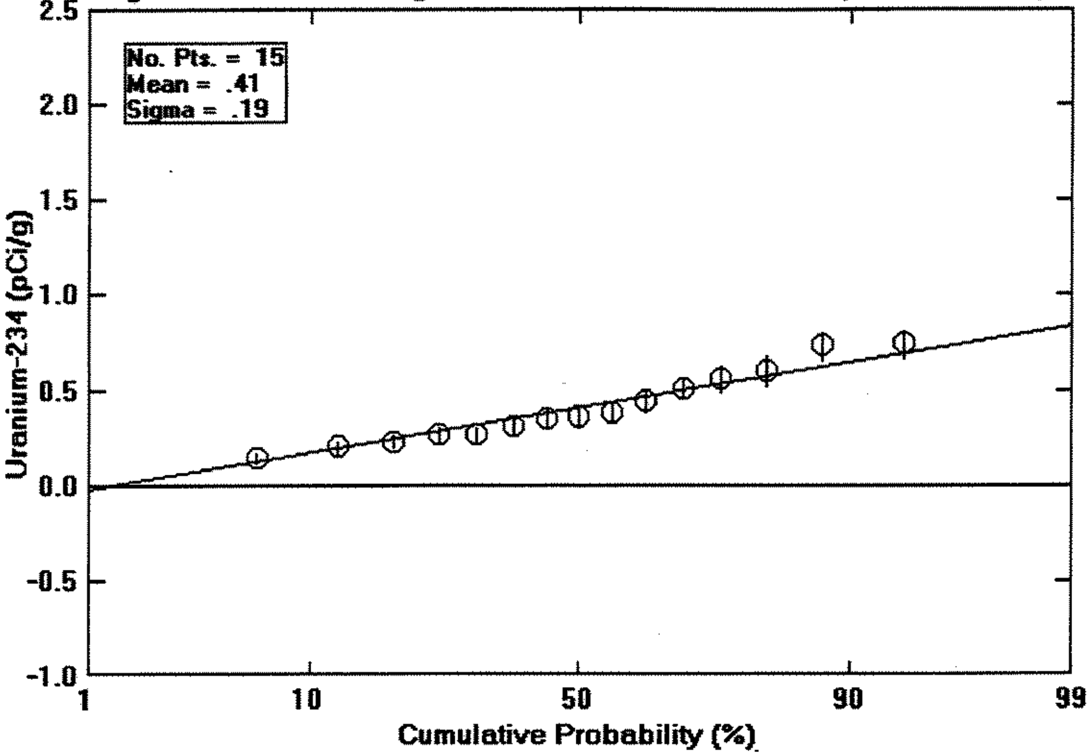
Figure E-23a. Background Uranium-234 (Teledyne data only)



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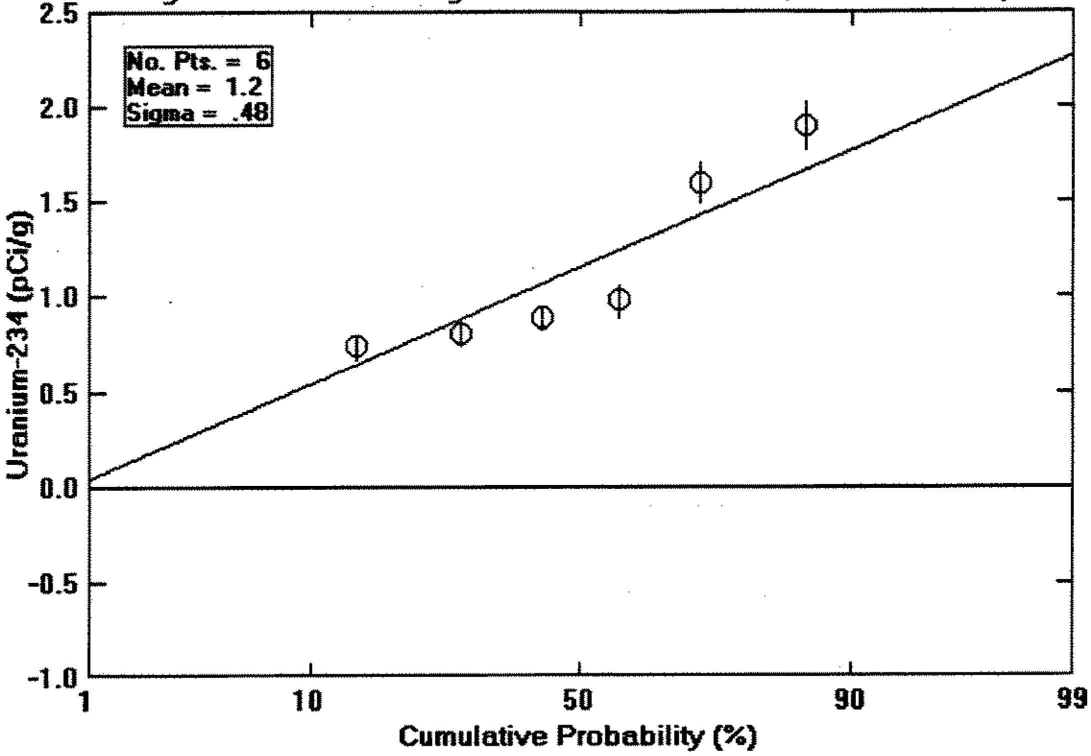
01-01-96

Figure E-23b. Background Uranium-234 (TMA data only)



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01-01-96

Figure E-24. Background Uranium-235 Concentration in Soil

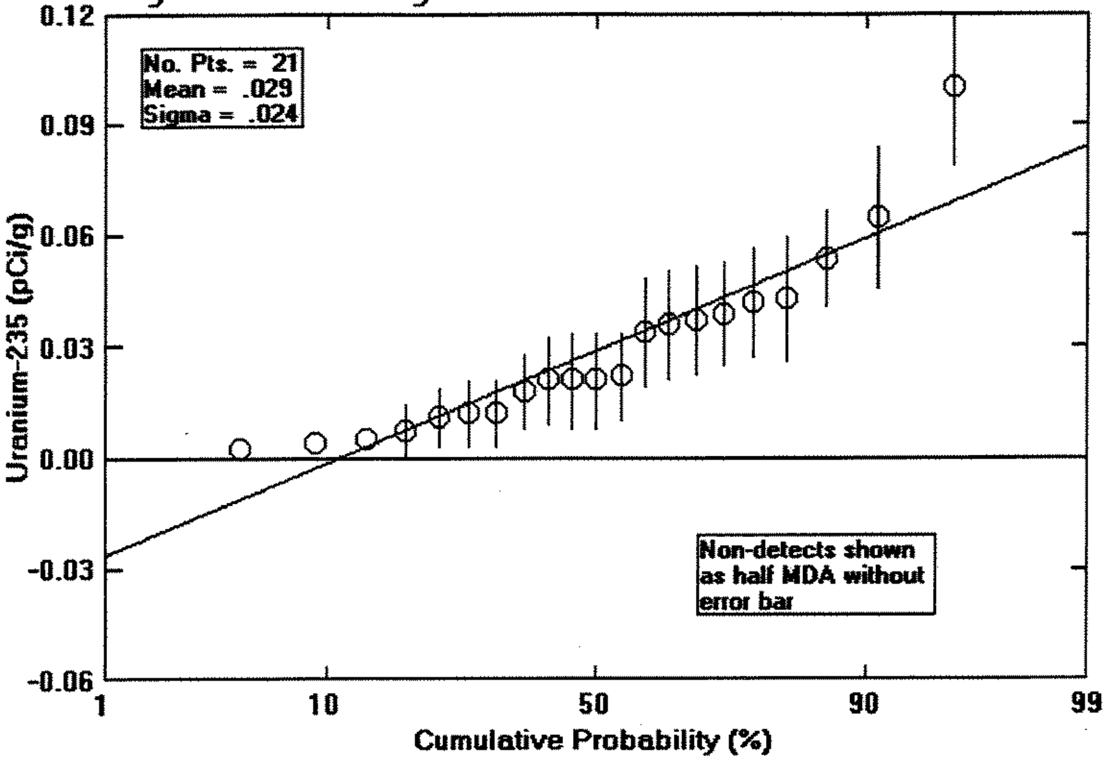

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Figure E-24a. Background Uranium-235 (Teledyne data only)

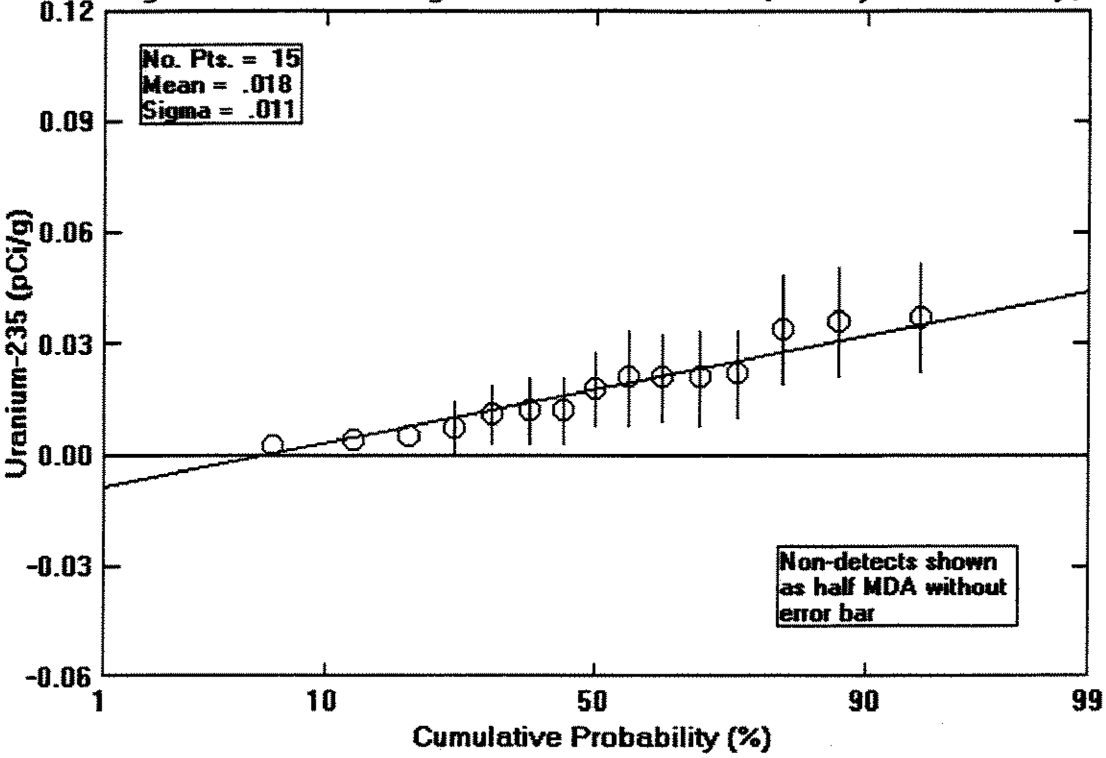

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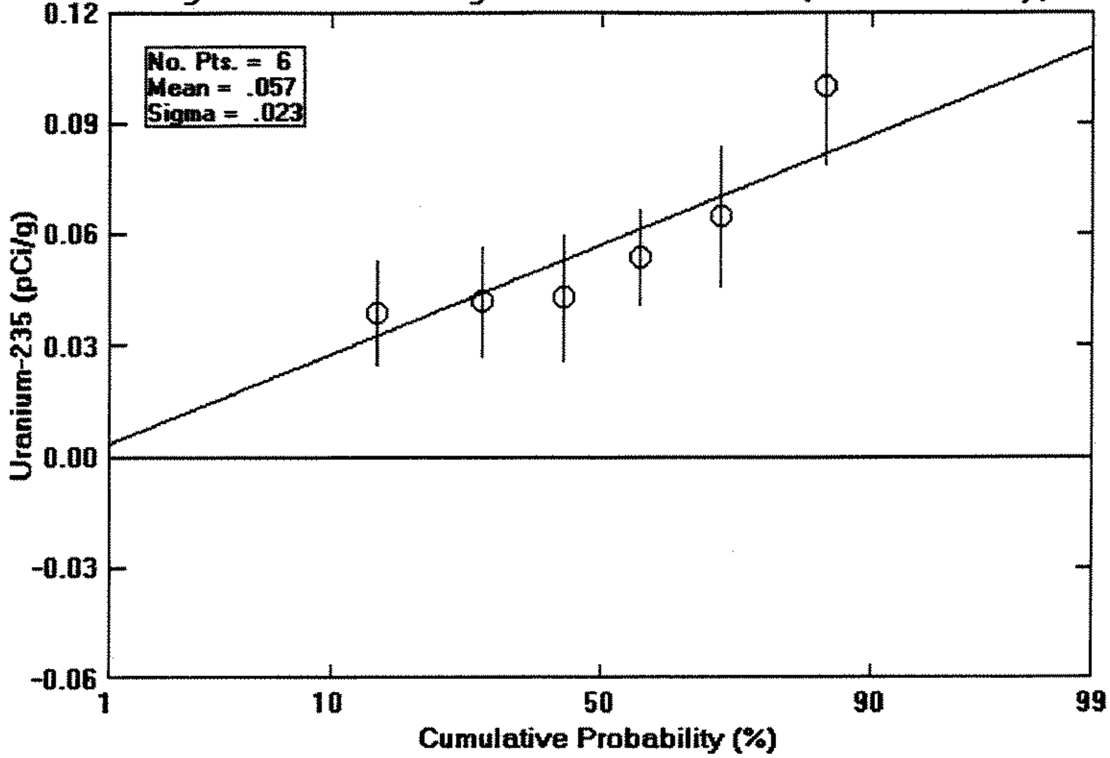
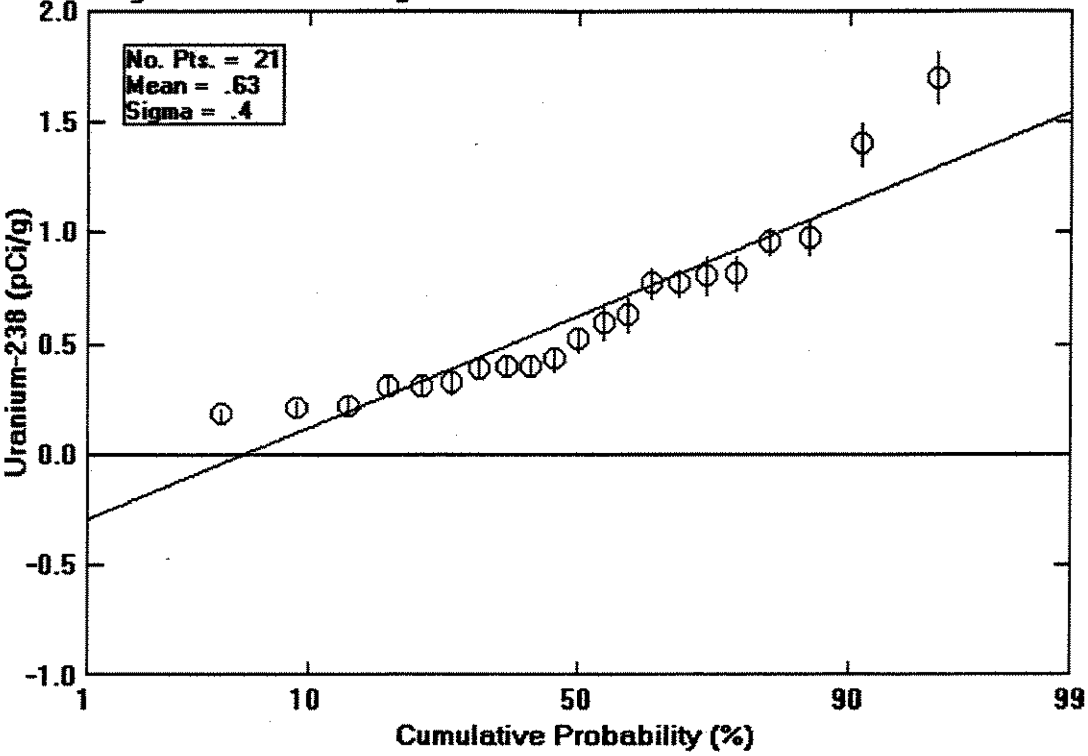
Figure E-24b. Background Uranium-235 (TMA data only)



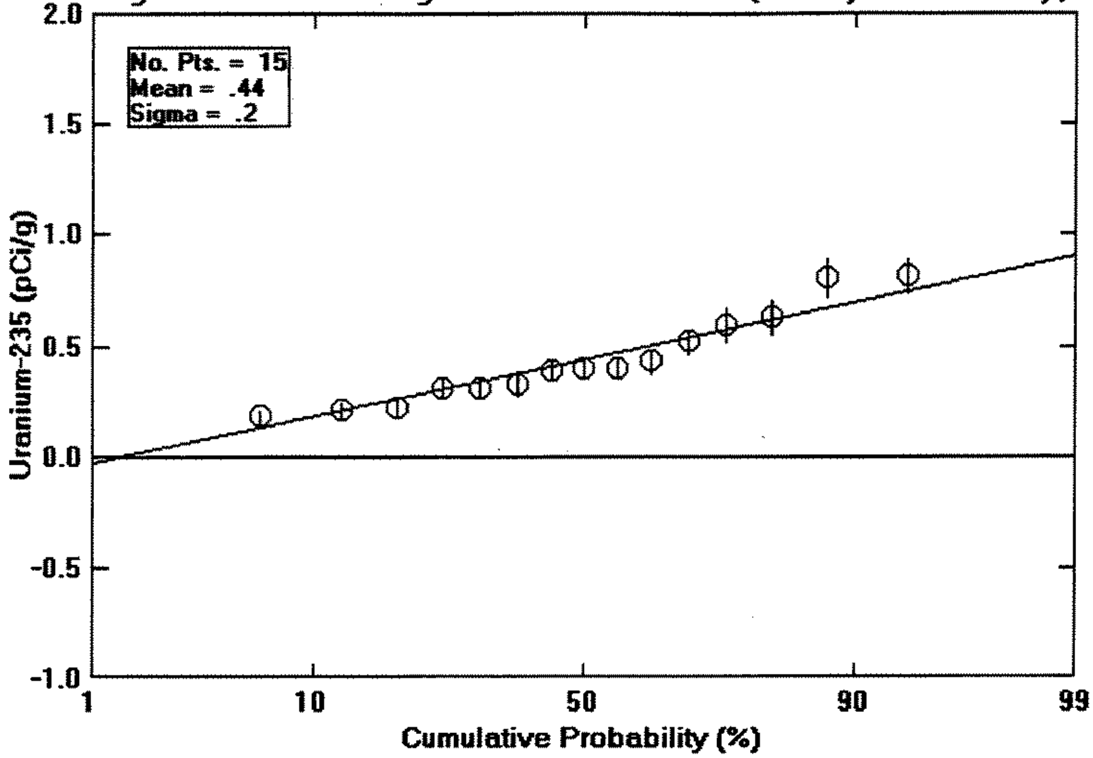
C:\CUMPLOT\DATA\U235BGM.CMP 01-01-96

Figure E-25. Background Uranium-238 Concentration in Soil



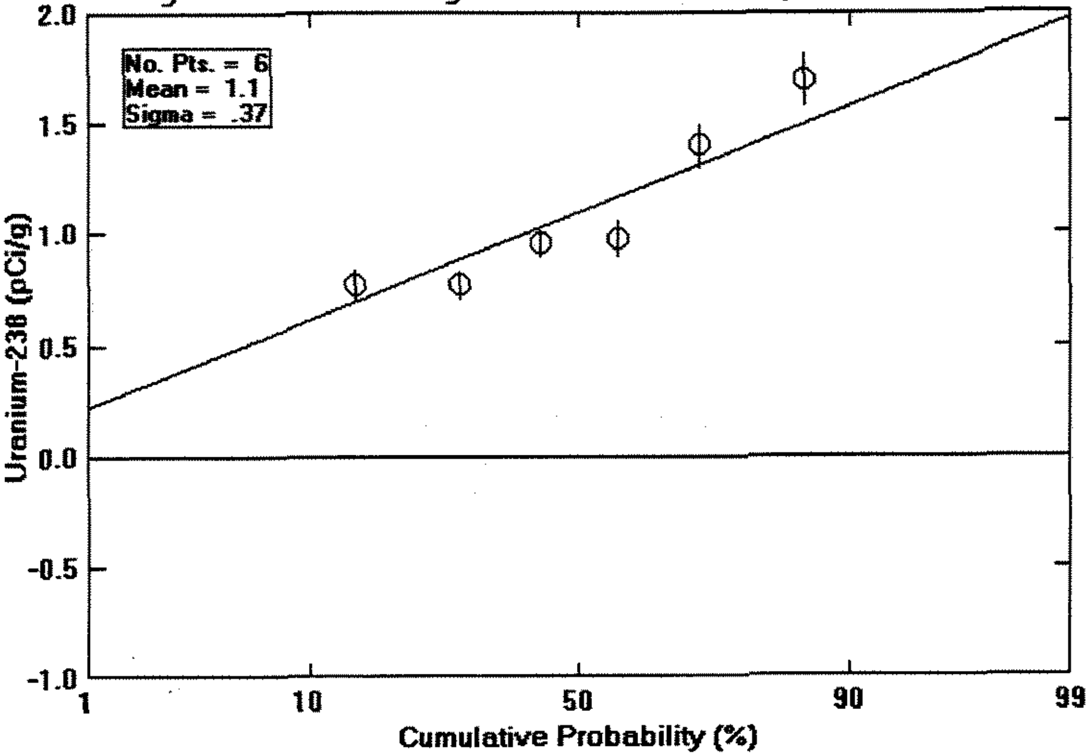
C:\CUMPLOT\DATA\U238BG.CMP 01-01-96

Figure E-25a. Background Uranium-238 (Teledyne data only)



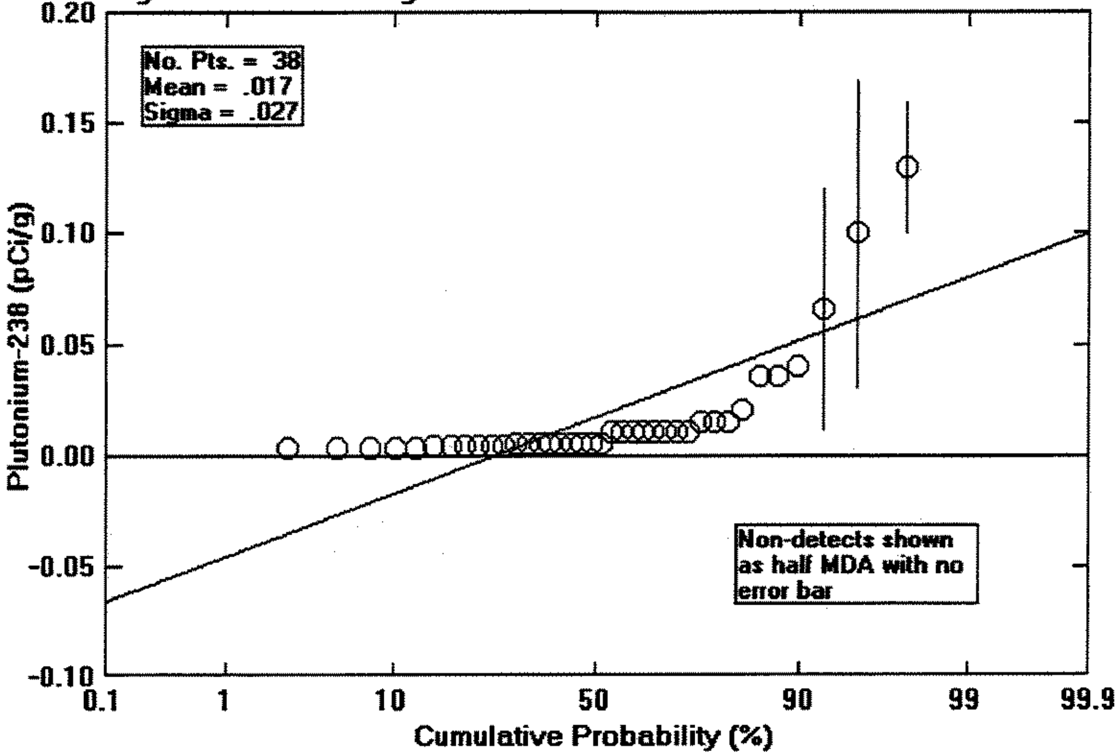
C:\CUMPLOT\DATA\U238BGE.CMP 01-01-96

Figure E-25b. Background Uranium-238 (TMA data only)



C:\CUMPLOT\DATA\U238BGM.CMP 01-01-96

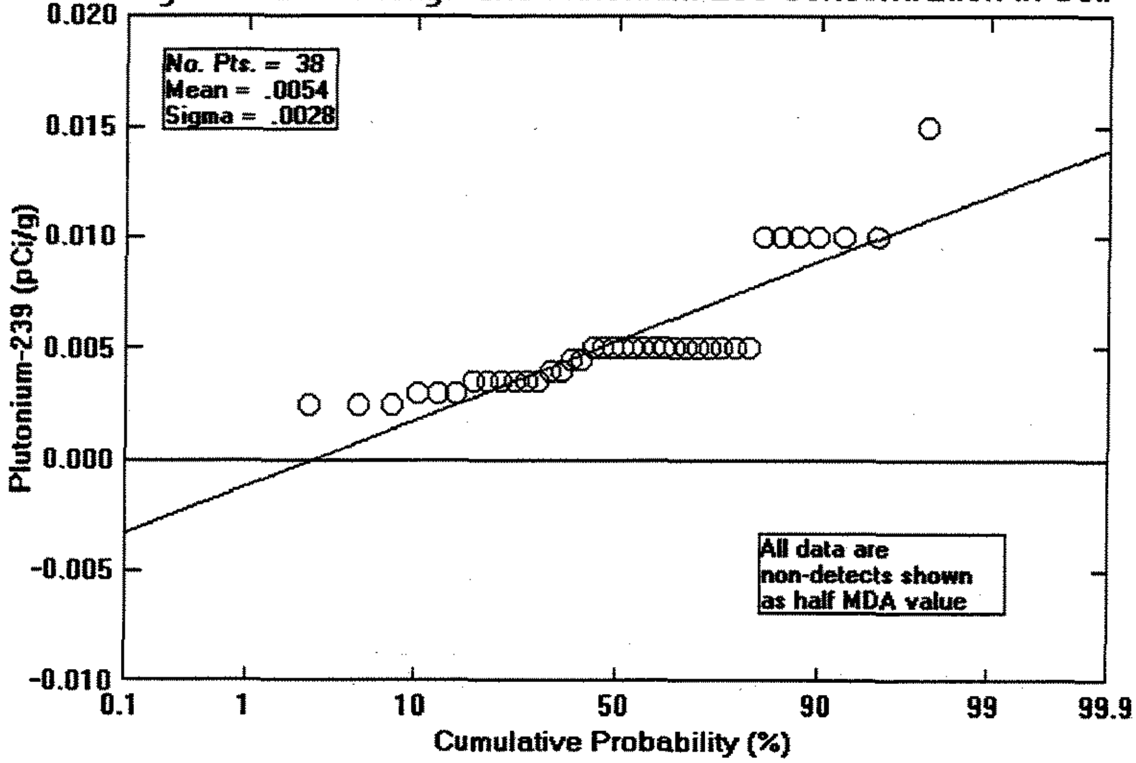
Figure E-26. Background Plutonium-238 Concentration in Soil



C:\CUMPLOT\DATA\PU238BG.CMP

01-01-96

Figure E-27. Background Plutonium-239 Concentration in Soil



C:\CUMPLOT\DATA\PU239BG.CMP

01-01-96

APPENDIX F. STATISTICAL COMPARISON OF AREA IV TO BACKGROUND

A standard statistical test has been used to judge if Area IVof the Santa Susana Field Laboratory has been significantly impacted (in a statistical sense) by the radiological operations conducted there. This test, the Behrens-Fisher modified t-test, compares the differences between the averages of radiological properties measured for Area IV and areas defined to represent background, and calculates the probability that these differences could have resulted, for identical conditions, by random variability.

The background radioactivity, including global fallout from weapons testing in the atmosphere, is variable as a result of differences in the original source rocks, weathering and leaching as soil is produced, and the atmospheric deposition of fallout, followed by bonding, leaching, and transport in the soil. The results of these differences are seen as differences in the concentrations of various radionuclides, both natural and artificial.

The random variability in analysis results also arises from sampling variability at the field locations and from analytical variability in the laboratory. These effects make the "scatter" of the data greater than the variability that is inherent in the distribution of naturally occurring (background) radioactivity.

The possible contaminants considered in this statistical comparison include all those radionuclides for which measurable results were obtained by the analyses. Specifically, the potential contaminants H-3 (tritium), Sr-90 (strontium-90), Cs-137 (cesium-137), and isotopes of thorium and uranium were considered. In addition, gamma radiation exposure rates were compared.

Data presented in this appendix includes only Area IV data for locations for which no remedial action is proposed. It does not include data for three locations for which remediation has either been completed or is in porgress. These locations are discussed in detail in section 4.2.3.2.

The results of this statistical comparison are shown in Table F-1. This table lists, for each condition measured, the average values for Area IV and the Background areas; the number of analytical results used for the test; a statistical parameter called "Degrees of freedom" that is related to the number of comparison values; the observed test values (t′) and the critical test value for a 5% chance of random effect; and the resulting statistical decision as to Area IV being statistically the same as (=), greater than (>), or less than (<) Background. If the absolute value of the number given for the observed t′ is greater than the critical value, there is a 95% confidence that the two conditions compared (Area IV and Background) are different. If the number is negative (-), the Area IV condition is less than (<) the Background condition. If the number is positive, the Area IV condition is greater than (>) the Background condition. If the absolute value of the number given for the observed t' is less than the critical value of t' then the two conditions compared (Area IV and Background) are the same (=).

The table shows a nearly even mix of decisions: 2 less than, 4 equal, 4 greater than. Thus, there is not a clear-cut answer to the question of radiological impact. Some of this ambiguity can be resolved by more detailed evaluation of the results than is afforded by the statistical test alone. To aid in this evaluation, the individual results for Area IV and Background have been plotted on cumulative probability plots, presented in Figures F-1 through F-10 in this appendix. (In these figures, measured values are marked with vertical error bars that show the estimated uncertainties (2 sigma). Results from analyses that did not produce a measured value and were reported as < MDA are plotted as one-half of the Minimum Detectable Activity (MDA). These results are shown as circles without error bars.)

Tritium (H-3)

Tritium distributions for Area IV and background areas are shown in Figure F-1. The Behrens-Fisher modified t-test shows that Area IV is less than background (though this likely due to the background results being reported as <MDA by Teledyne and the Area IV results being reported as measured (even negative) by TMA. Indeed, all the Area IV sample results were, with one exception, less than individual sample MDA (i.e. not detectable). The only detected value was

8,500 +/- 430 pCi/L from the drainage area of Bldg 010. This sample was deliberately taken in close proximity to the original location of Building 010 and upgradient of locations of elevated soil tritium observed during the off-site multimedia sampling project. A positive result was therefore expected and serves to confirm the deduced source (Reference 5) of the groundwater and soil tritium contamination to the north of the SSFL Area IV boundary. The distribution of the remaining tritium values showed a very normal (gaussian) distribution approximately centered arround zero.

Strontium-90

Strontium-90 distributions for Area IV and background areas are shown in Figure F-2. The Behrens-Fisher modified t-test shows that the Area IV distribution is equal to the local background distribution. However Area IV does exhibit several data points slightly higher than the Area IV normal (gaussian) trend line and somewhat outside the range of local background means (ND - 0.13 pCi/g). These could be due to contamination or could be due to sedimentary accumulation of weapons fallout strontium. Whatever the cause, even the higher values between 0.16 and 0.22 pCi/g are well within U.S. background and much less than regulatory cleanup limits (see section 4.2.3.5 and Table 10). It should also be noted that the relatively large error bars on all the data points results in a significant overlap of both distributions. The average sample MDA for strontium-90 were approximately 0.1 pCi/g and therefore the majority of Area IV data reported in Figure F-2 were in fact non-detects.

Cesium-137

Cesium-137 distributions for Area IV and background areas are shown in Figure F-3. The Behrens-Fisher modified t-test shows that the Area IV distribution is greater than the local background distribution. This is caused by approximately 20 data points that are significantly above the Area IV normal (gaussian) trend line. The locations of these samples are identified and discussed further in sections 4.2.3.3 and Table 6. The highest Cesium-137 was sample 95-0096 from the SRE pond sediment at 2.4 +/- 0.058 pCi/g. Other samples ranging from 0.3 to 1.2

pCi/g may be contamination or could be due to sedimentary accumulation of weapons fallout strontium. Whatever the cause, these higher values between are well within U.S. background and much less than regulatory cleanup limits (see section 4.2.3.5 and Table 10).

Thorium-232 and Thorium-228

Area IV Thorium-232 and its daughter (decay product) Thorium-228 distributions are shown in Figures F-6 and F-4. The Behrens-Fisher t-test shows that the Area IV distribution is greater than the background data analyzed by the Teledyne laboratory as part of the off-site Multimedia sampling but that Area IV is equal to the background data analyzed by the TMA-Richmond laboratory during the Area IV survey (see section 4.2.3.2). Both Area IV data and background data range up to 1.6 pCi/gm for each isotope in general. Two data points are distiguishable above the normal (gaussian) trend lines. One sample is 95-0093, SRE pond sediment with Thorium-232 at 2.1 +/- 0.14 pCi/g and Thorium-228 at 2.5 +/- 0.16 pCi/g. The other sample is 95-0119 with Thorium-232 at 1.9 +/- 0.14 pCi/g and Thorium-228 at 2.1 +/- 0.15 pCi/g. These levels are within typical U.S. background levels reported in the literature and are less than regulatory cleanup standards (see Table 10).

Uranium-238, Uranium-234 and Thorium-230

Distributions of Area IV Uranium-238 and its daughter products Uranium-234 and Thorium-230 are shown in Figures F-9, F-7 and F-5. The Behrens-Fisher t-test shows each to be the same as the respective background data sets. One data point is distinguishable above the normal (gaussian) trend line. This is 95-0093, the SRE pond sediment sample with Uranium-238 at 2.0 +/- 0.099 pCi/g, Uranium-234 at 2.1 +/- 0.1 pCi/g and Thorium-230 at 2.3 +/- 0.15 pCi/g. In addition, sample 95-0009 (Old Conservation Yard SE Drainage) had Thorium-230 at 1.8 +/- 0.33 pCi/g. These levels are within typical U.S. background levels reported in the literature and are less than regulatory cleanup standards (see Table 10). It should also be noted that all the data for *these three isotopes are in the ratio 1:1:1 which is indicative of naturally occuring* (non-processed and non-enriched) uranium.

Uranium-235

The distribution for Uranium-235 is shown in Figure F-8. The Behrens-Fisher t-test shows that Area IV is slightly greater than local background. The Behrens-Fisher t-test shows that the Area IV distribution is greater than the background data analyzed by the Teledyne laboratory as part of the off-site Multimedia sampling but that Area IV is equal to the background data analyzed by the TMA-Richmond laboratory during the Area IV survey. Comparison of the distributions in Figure F-8 shows considerable overlap and indeed the upper range (0.1 pC/g) is the same for Area IV and background. One data point is distinguishable above the normal (gaussian) trend line. This is 95-0093, the SRE pond sediment sample with Uranium-235 at 0.1 +/- 0.017 pCi/g. This level is within typical U.S. background levels reported in the literature and are less than regulatory cleanup standards (see Table 10). It should also be noted that all the data for Uranium-235 and Uranium-238 are in the approximate ratio of 0.05:1 which is indicative of naturally occuring (non-processed and non-enriched) uranium.

Gamma Exposure Rate

Distributions of gamma exposure rates are shown in Figure F-10. The Behrens-Fisher t-test shows that the Area IV distribution is less than the background distribution. The background distribution was made up of a composite of EPA background measurements taken during the both phases of the off-site Multimedia sampling project and Rocketdyne measurements taken during the Area IV survey (see section 4.1.1).

Comparison of Isotopic Ratios

In addition to the statistical tests of the means and the review of values that deviate from the expected, additional qualitative tests were applied to the data.

In Figure F-11, the results for Sr-90 and Cs-137 from both Area IV and all local background data sources are plotted together. The results are quite interspersed and show very little correlation.

In general, strontium-90 is present in both Area IV and background at lower levels than cesium-137. This scatterplot confirms that there is little difference between Area IV and background fallout.

While the statistical tests for Th-228 and Th-232 were inconclusive and seemed to depend on systematic differences in the analytical laboratories used, Figure F-12 shows that the daughter-parent ratio of 1:1 is followed closely by both the Area IV and the entire local background data set. This indicates that both sets of data represent naturally occurring thorium.

Finally, Figure F-13 shows the close agreement for the uranium chain (U-238, U-234 and Th-230), both for Area IV and background data, confirming the natural origin of the uranium isotopes. Ratios of naturally occurring U-238 and its daughters, U-238/U-234/Th-230 are 1:1:1, while the U-235/U238 ratio for naturally occurring uranium is 0.05:1. The solid diagonal lines on Figure F-13 represent these ratios while each point represents a ratio for a single Area IV or background sample. The measured data for both Area IV and background are strongly correlated to the theoretical ratios.

Conclusions

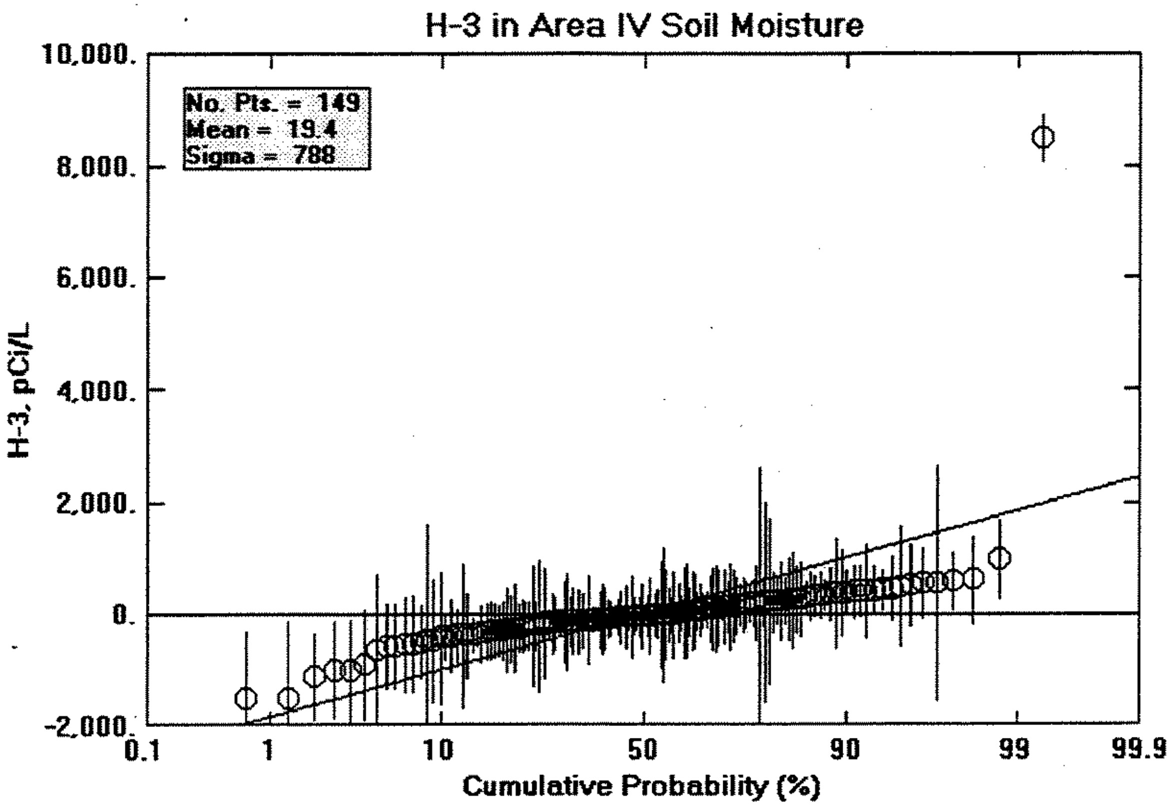
With the clear exceptions of the tritium in soil found proximate to the T010 site, and two localised areas of Cesium-137 contamination currently undergoing remediation (section 4.2.3.4), there is no evidence of significant widespread contamination of Area IV as a result of radiological operations at Santa Susana Field Laboratory.

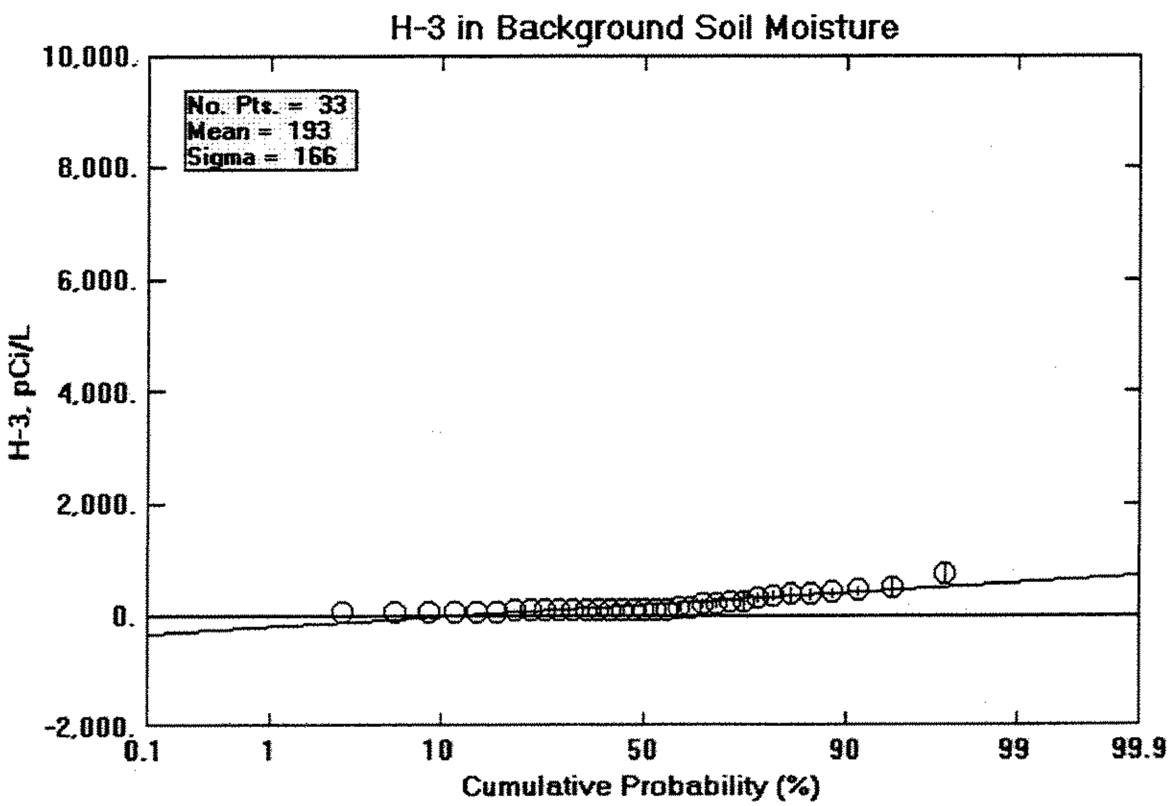
Table F-1. Statistical Comparison of Area IV Sample Analysis Results and Selected Background Measurements*

Property	Units	Average values		Number of values		Degrees of freedom	Observed t'	Critical (5%) t'	Statistical decision
		Area IV	Background	Area IV	Background				
H-3	pCi/L	19	193	149	33	179	-2.45	1.97	Area IV < background
Sr-90	pCi/g	0.045	0.049	149	38	75	-0.72	1.99	Area IV = background
Cs-137	pCi/g	0.147	0.087	149	38	184	2.58	1.97	Area IV > background
Th-228 (combined data)	pCi/g	1.008	0.654	129	21	23	3.69	2.07	Area IV > background
Th-228 (TMA data)	pCi/g	1.008	1.197	129	6	5	-1.70	2.57	Area IV = background
Th-228 (Teledyne data)	pCi/g	1.008	0.437	129	15	20	8.80	2.07	Area IV > background
Th-230	pCi/g	0.822	0.821	149	21	20	0.00	2.09	Area IV = background
Th-232 (combined data)	pCi/g	0.985	0.650	149	21	22	3.55	2.07	Area IV > background
Th-232 (TMA data)	pCi/g	0.985	1.130	149	6	5	-1.42	2.57	Area IV = background
Th-232 (Teledyne data)	pCi/g	0.985	0.459	149	15	16	6.45	2.07	Area IV > background
U-234	pCi/g	0.781	0.620	149	21	21	1.62	2.08	Area IV = background
U-235 (combined data)	pCi/g	0.042	0.029	149	21	21	2.52	2.08	Area IV > background
U-235 (TMA data)	pCi/g	0.042	0.057	149	6	5	-1.58	2.57	Area IV = background
U-235 (Teledyne data)	pCi/g	0.042	0.018	149	15	17	7.89	2.08	Area IV > background
U-238	pCi/g	0.786	0.625	149	21	21	1.82	2.08	Area IV = background
Gamma	uR/hr	14.59	15.61	10479	91	91	-5.41	1.99	Area IV < background

* For background alpha activity, the TMA data are from the Western Area, Bell Canyon, and Santa Susana Park.
The Teledyne data are from Rocky Peak, Rocky Peak Ravine, and Happy Camp.

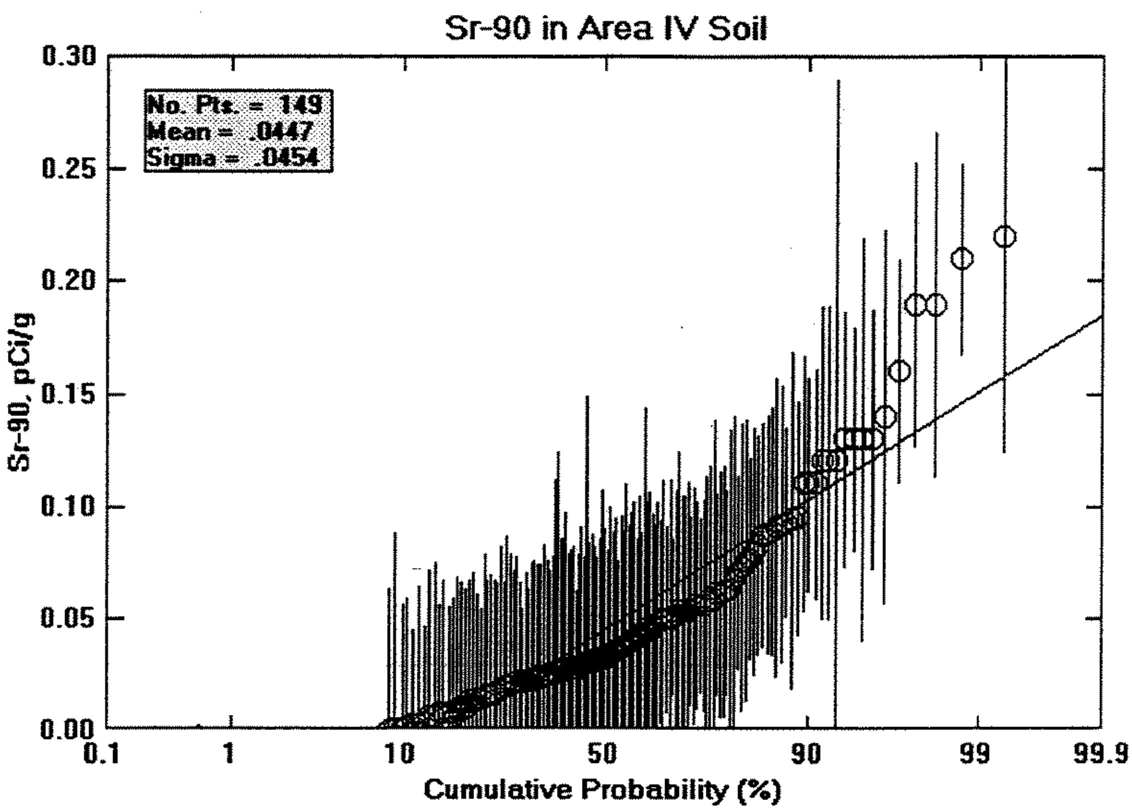
Figure F-1. Distribution of Tritium (H-3) Results in Area IV and Background Soil

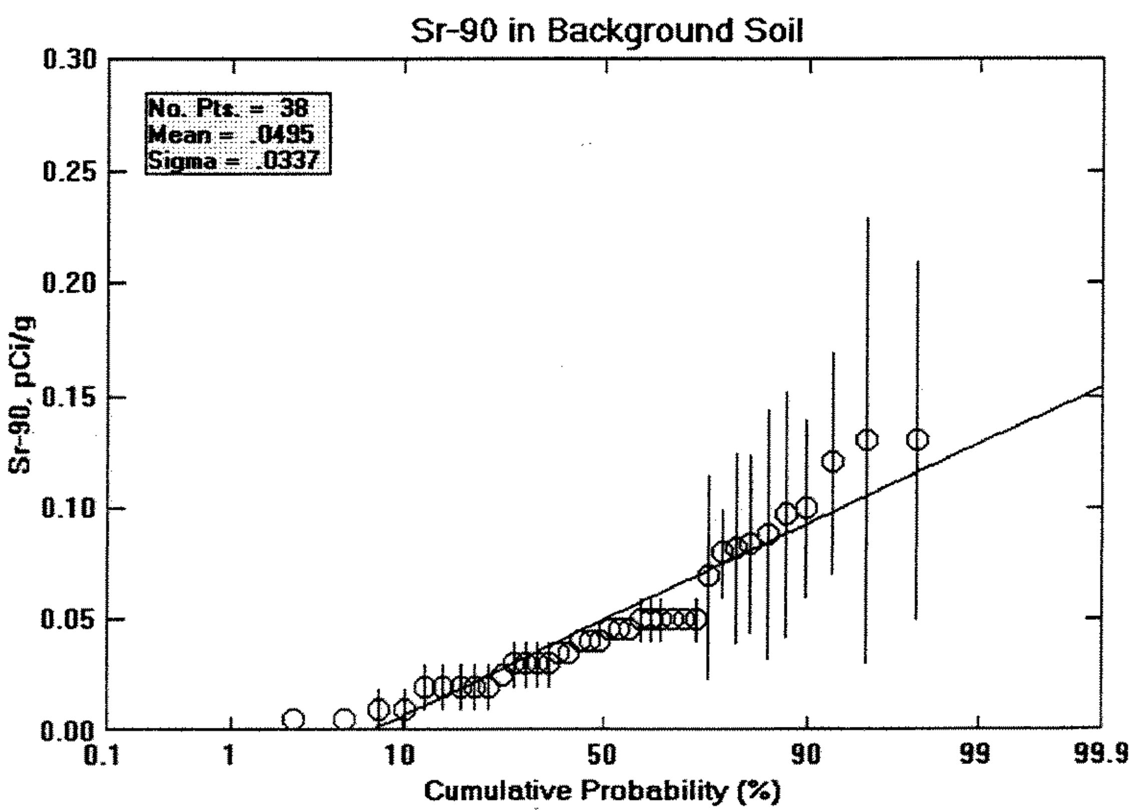




01-03-96

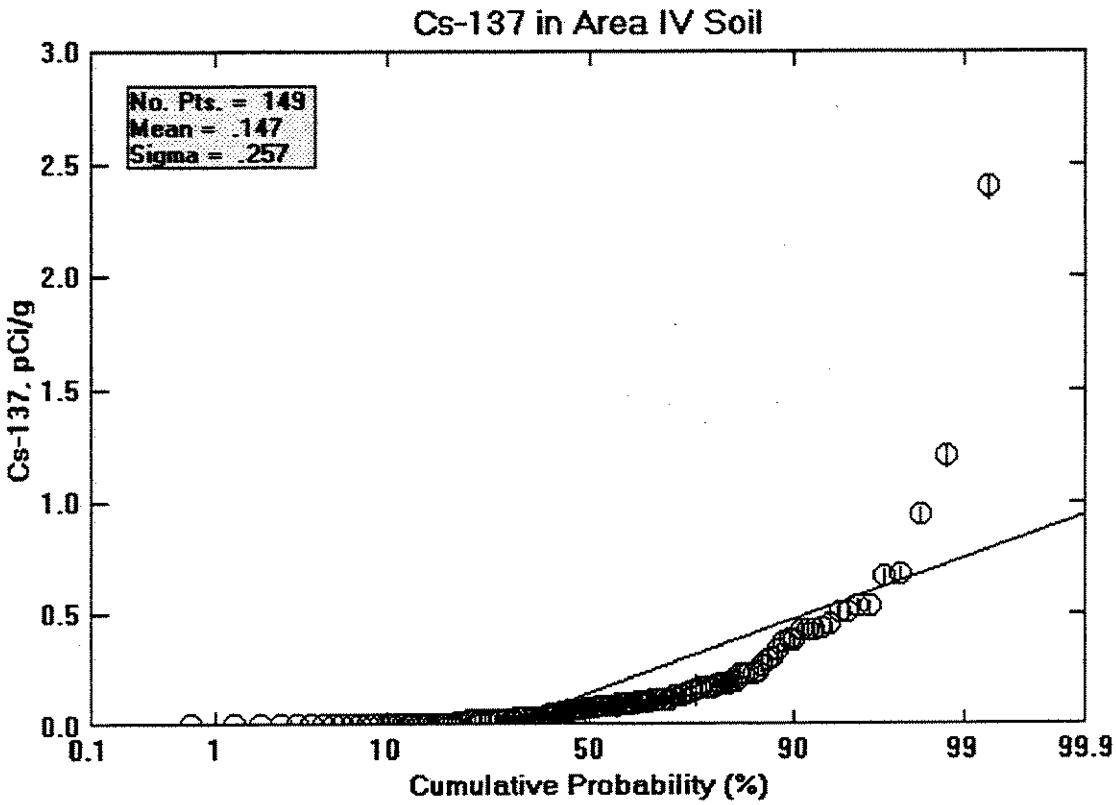
Figure F-2. Distribution of Strontium-90 Results in Area IV and Background Soil

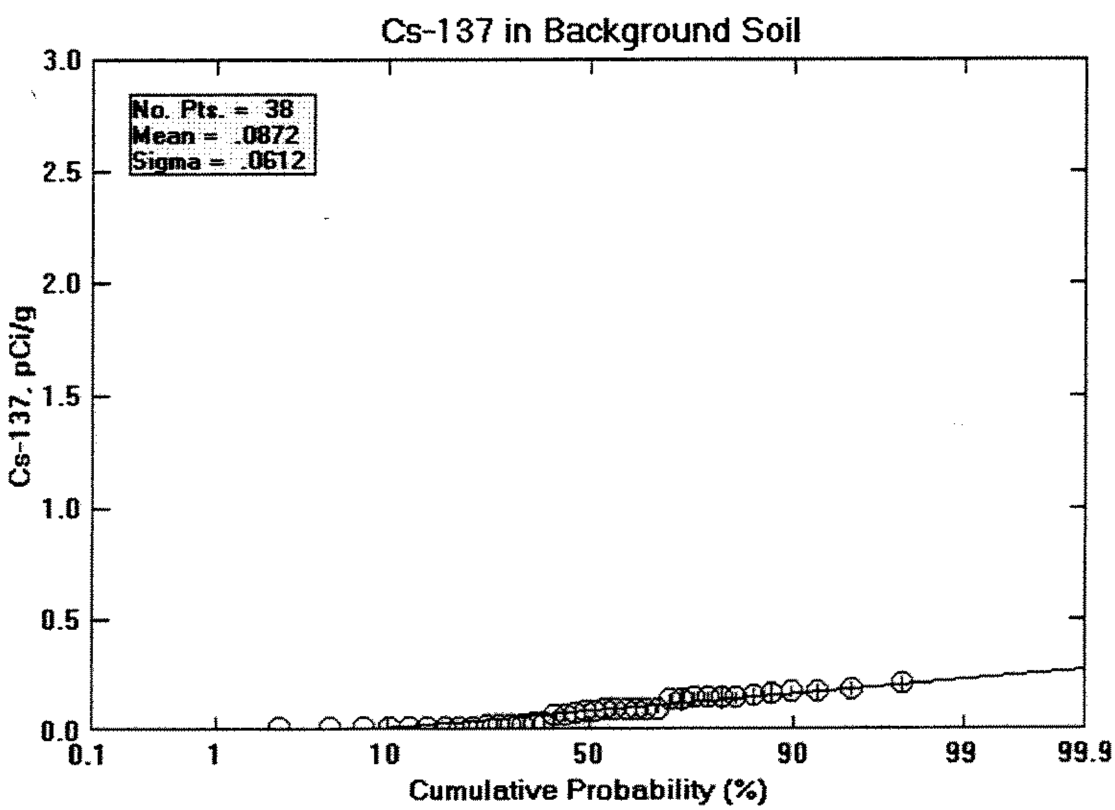




01-03-96

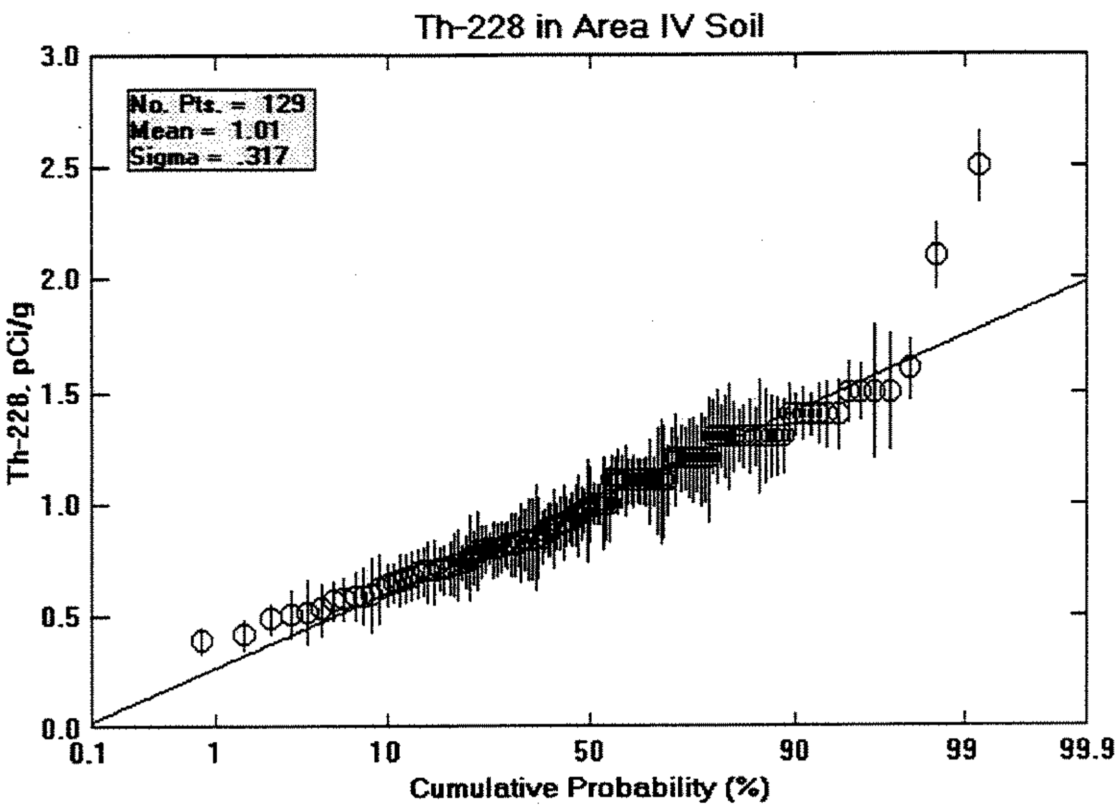
Figure F-3. Distribution of Cesium-137 Results in Area IV and Background Soil





01-03-96

Figure F-4. Distribution of Thorium-228 Results in Area IV and Background Soil



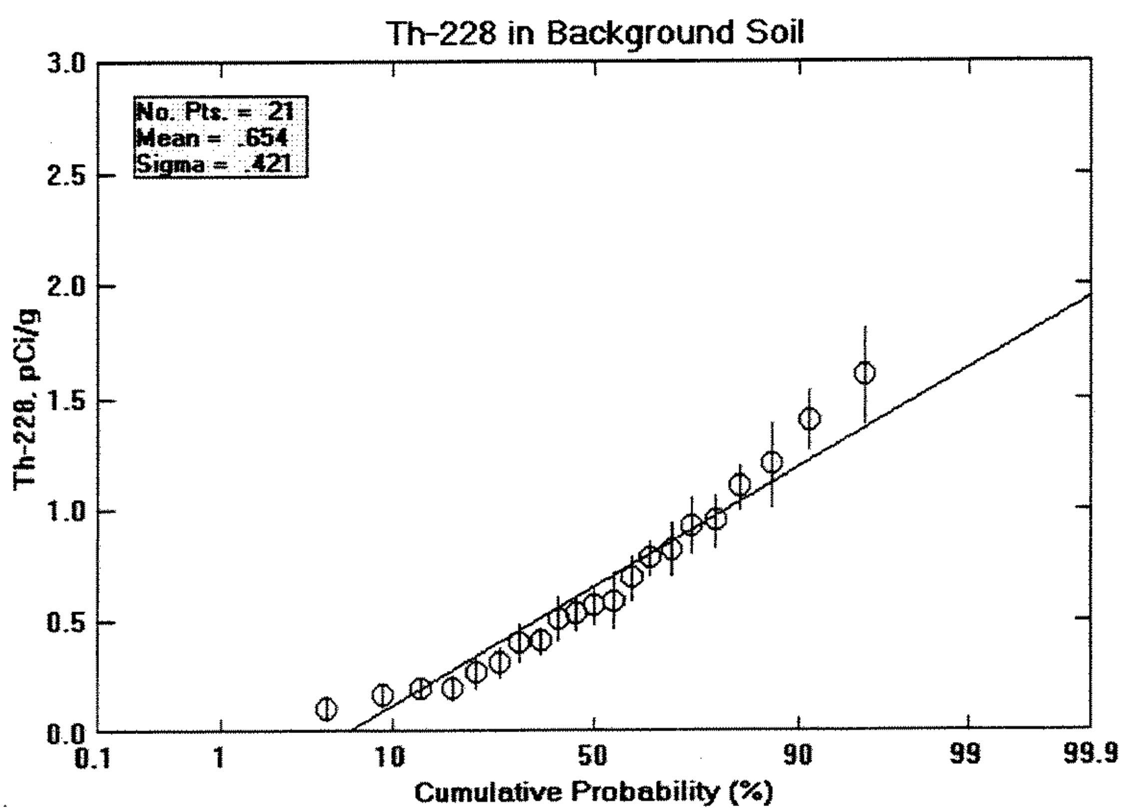


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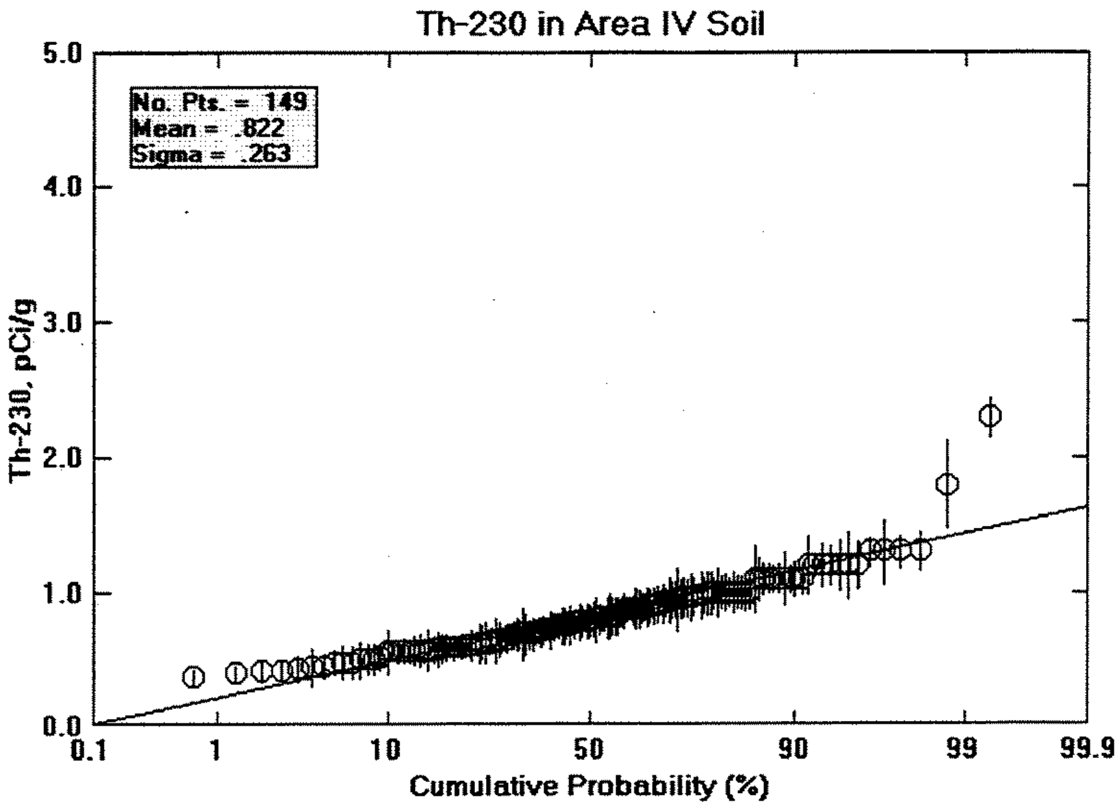
Figure F-5. Distribution of Thorium-230 Results in Area IV and Background Soil



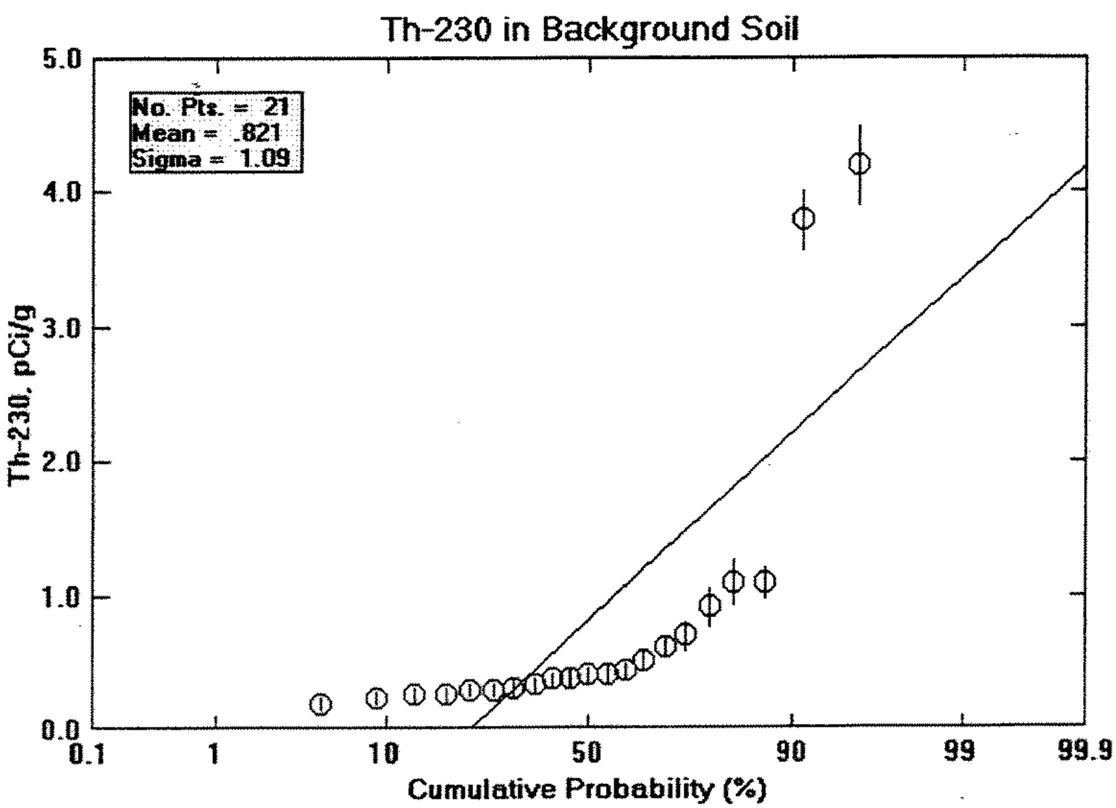


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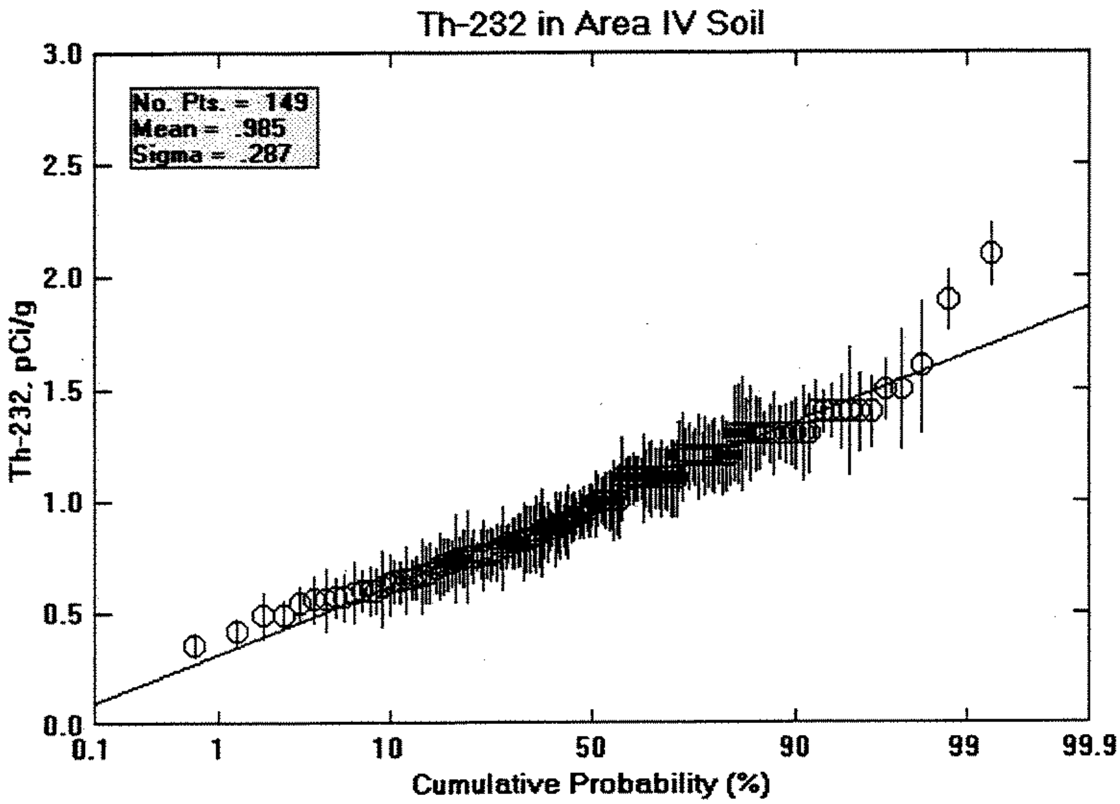
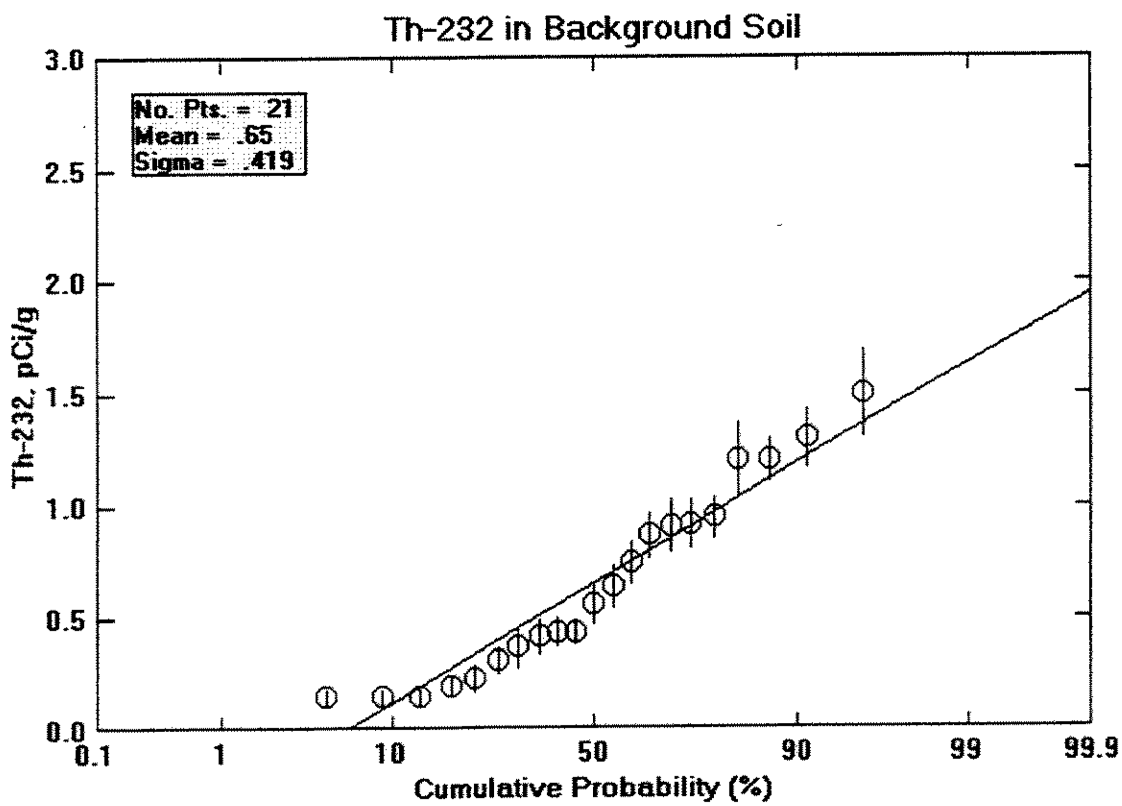
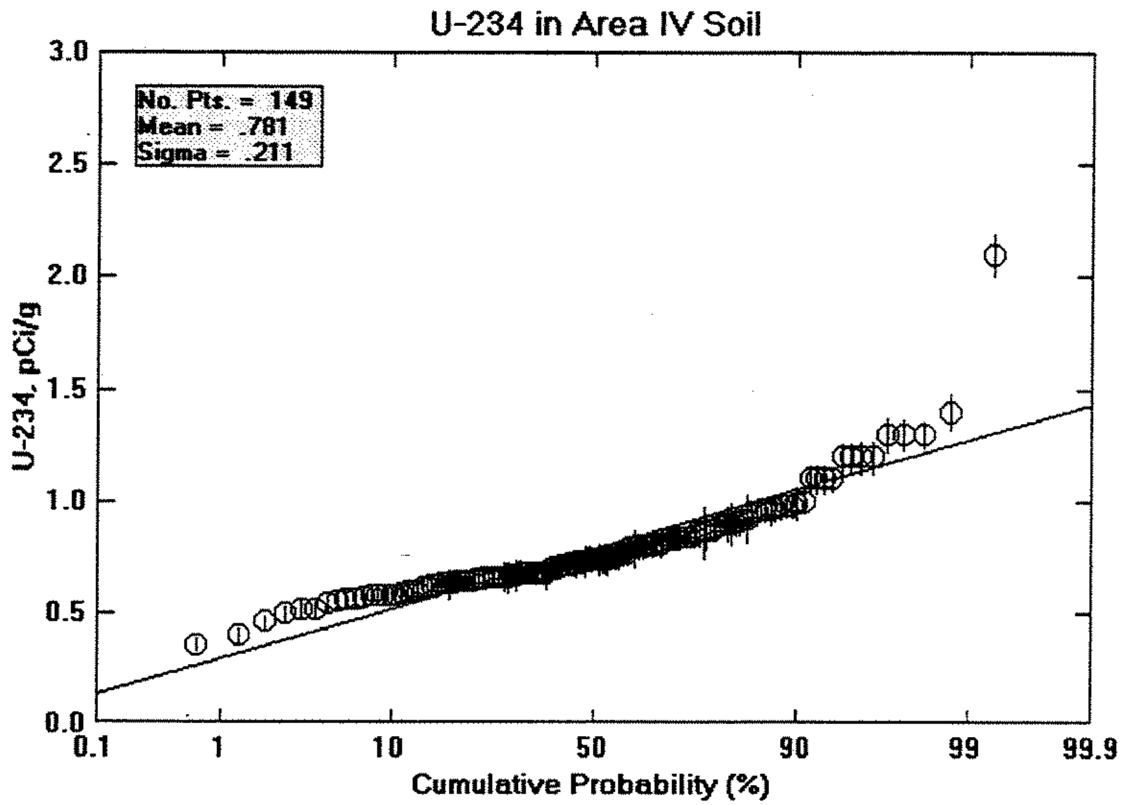
Figure F-6. Distribution of Thorium-232 Results in Area IV and Background Soil





01-03-96

Figure F-7. Distribution of Uranium-234 Results in Area IV and Background Soil



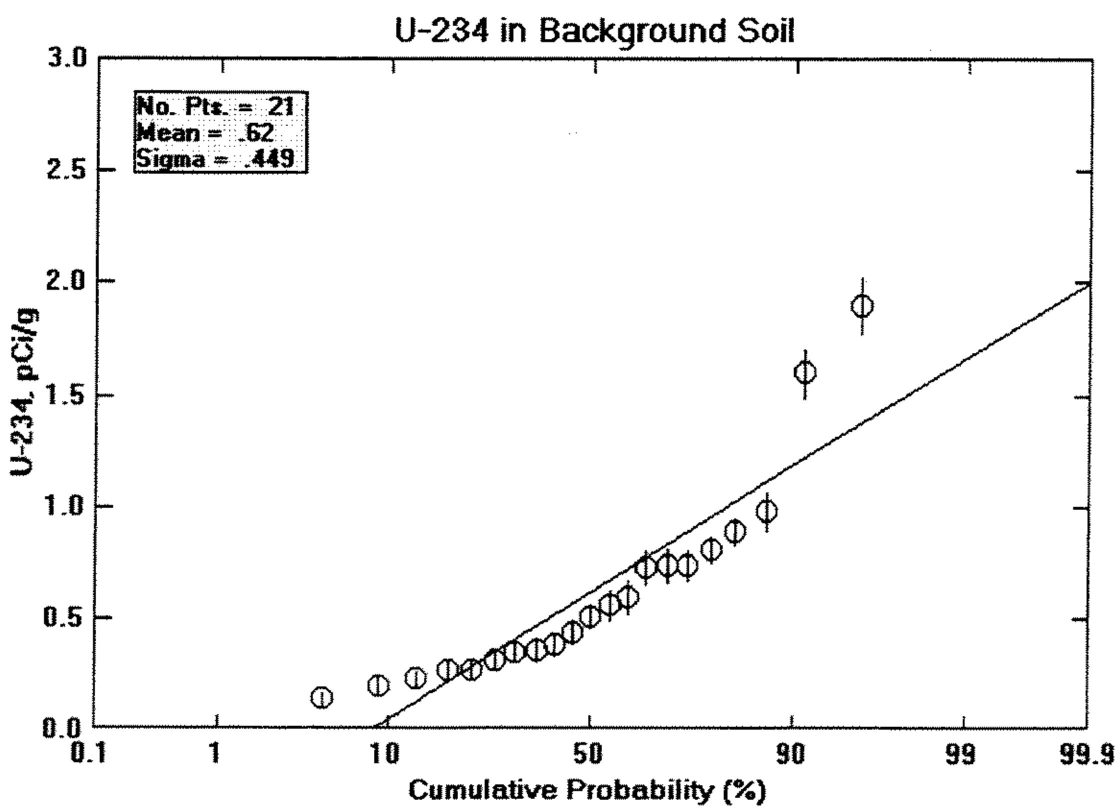


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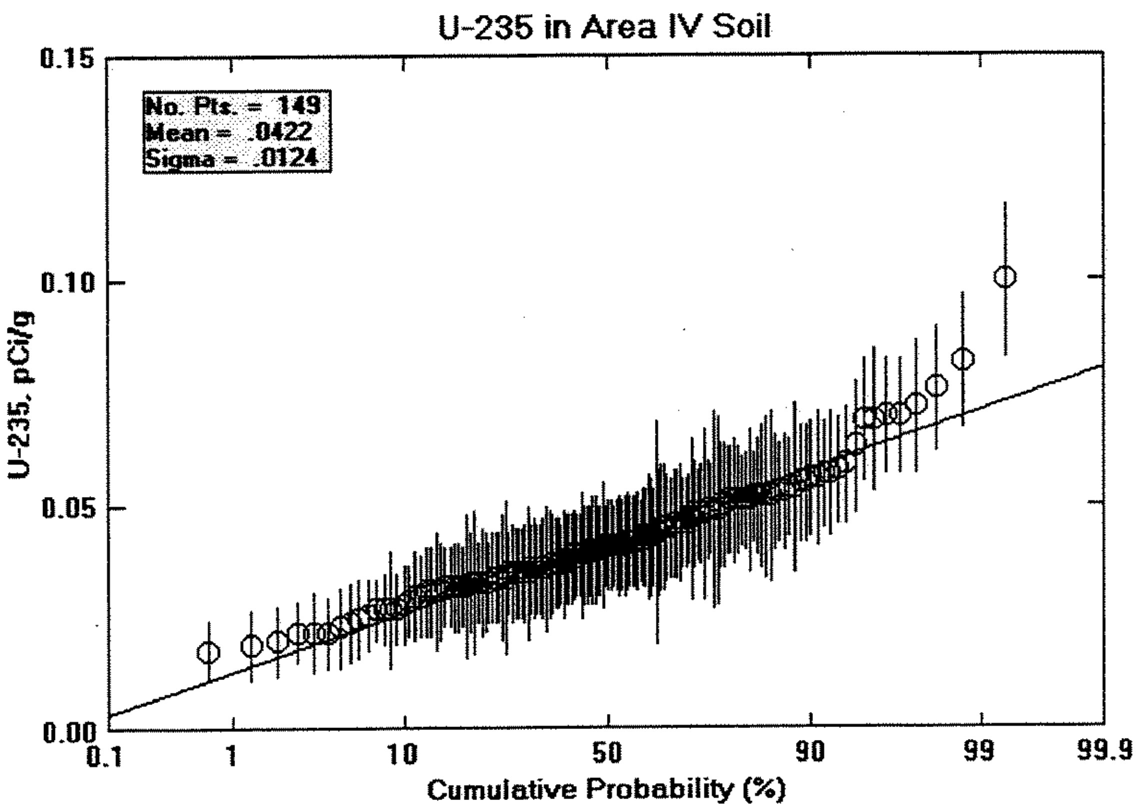
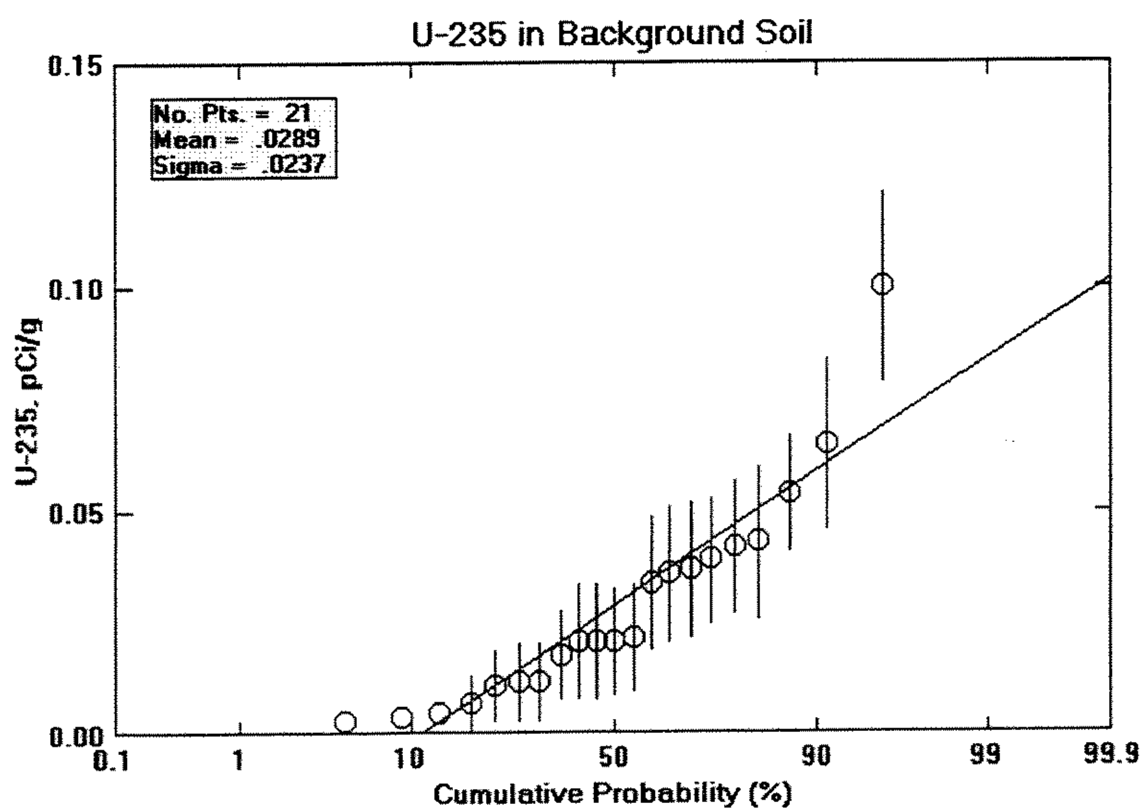
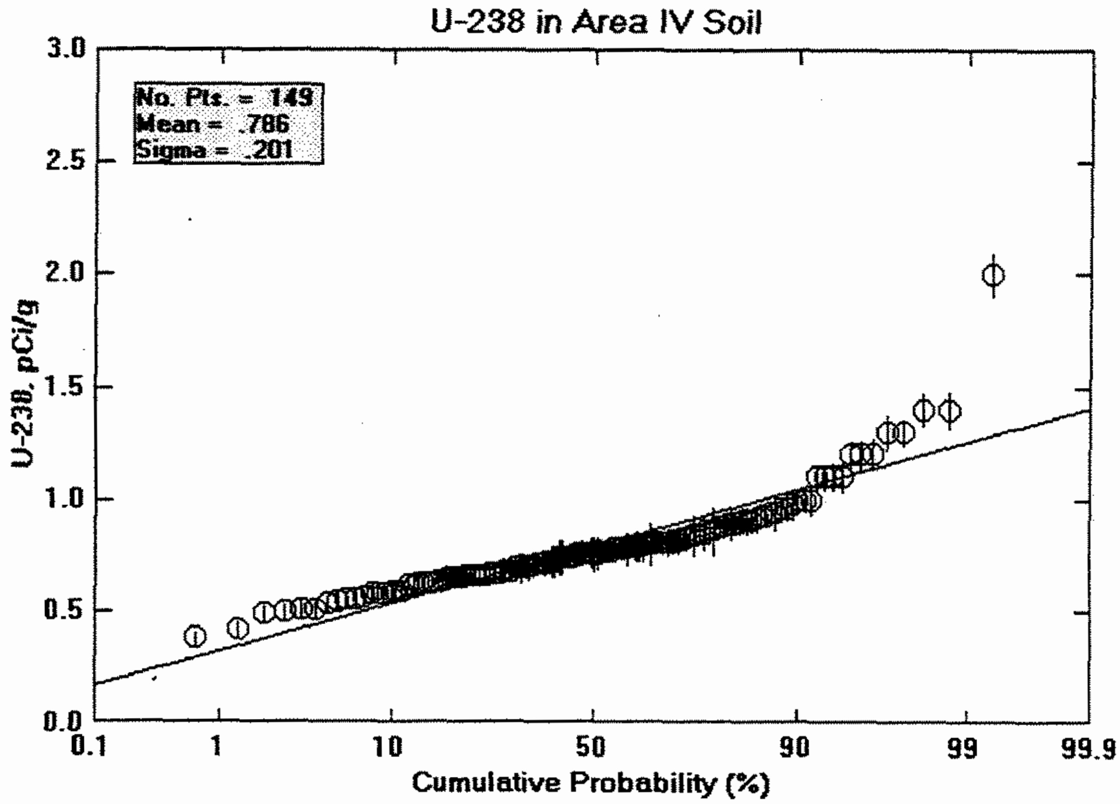
Figure F-8. Distribution of Uranium-235 Results in Area IV and Background Soil

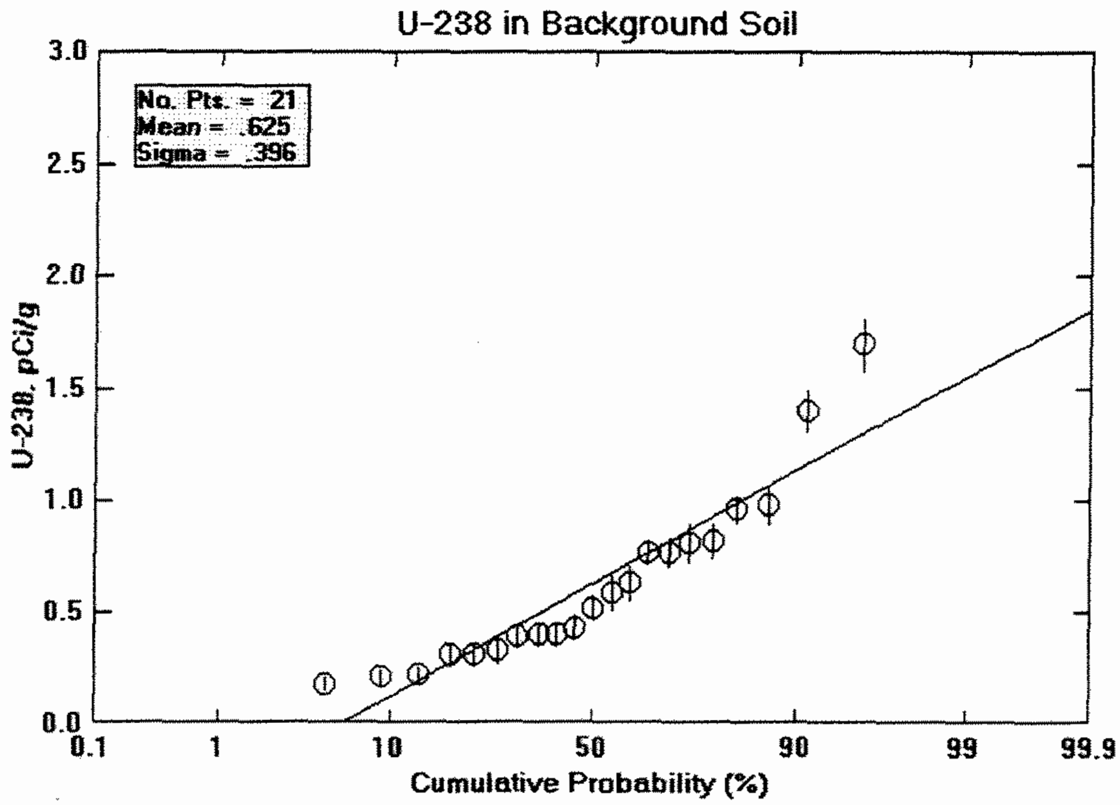




01-03-96

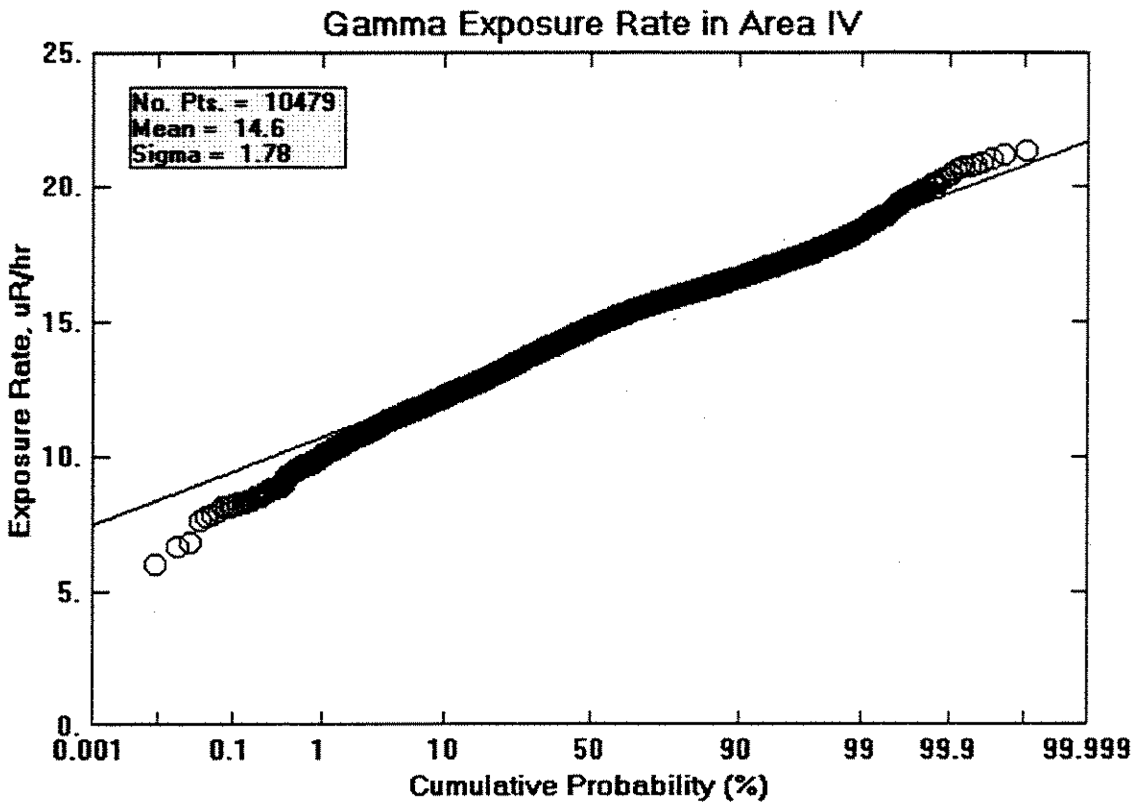
Figure F-9. Distribution of Uranium-238 Results in Area IV and Background Soil

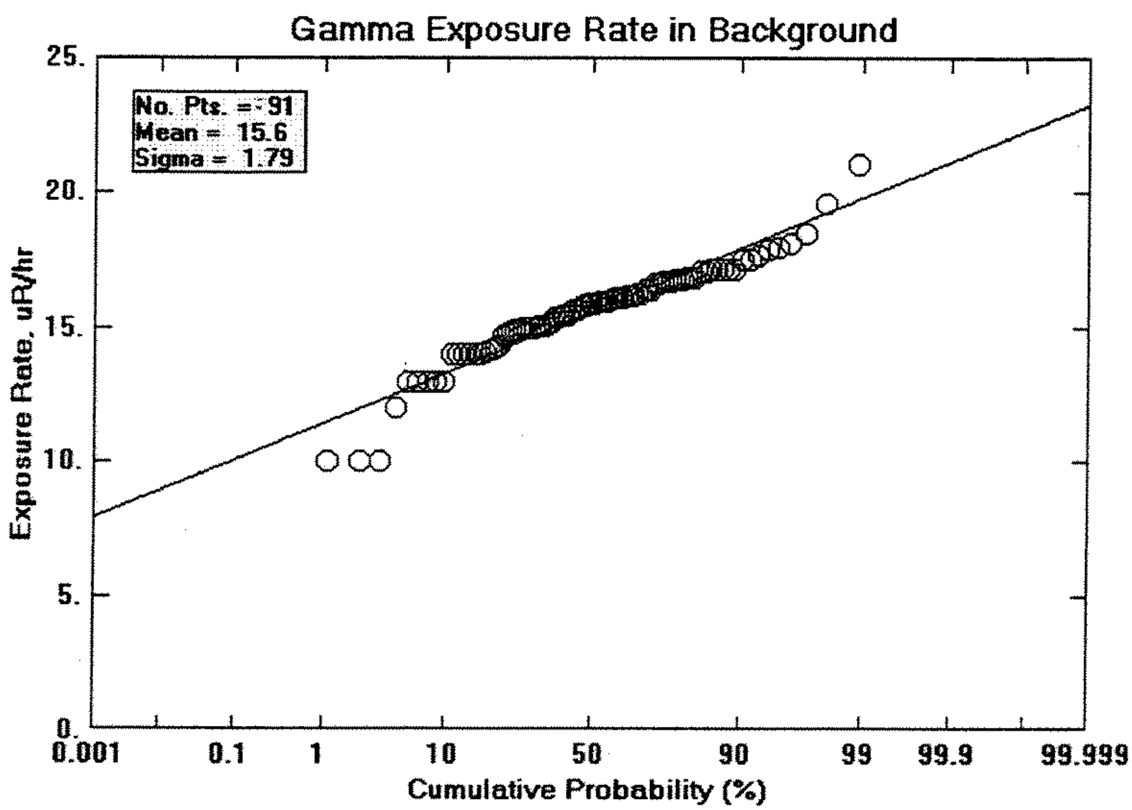




01-03-96

Figure F-10. Distribution of Exposure Rate Results in Area IV and Background





01-05-96

Figure F-11. Comparison of Strontium-90 and Cesium-137 Results in Area IV and Background Soil

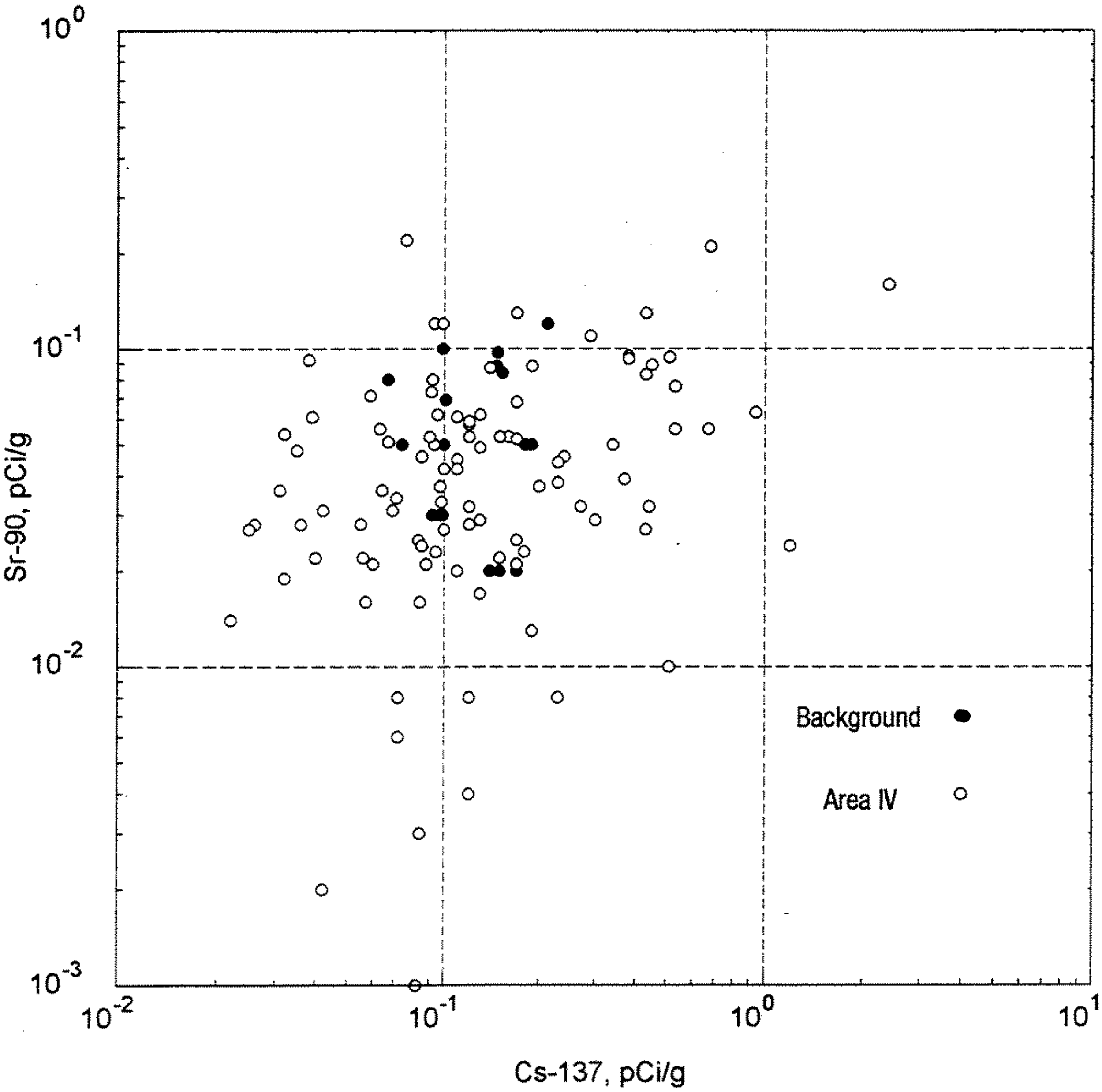


Figure F-12. Comparison of Thorium-228 and Thorium-232 Results in Area IV and Background Soil

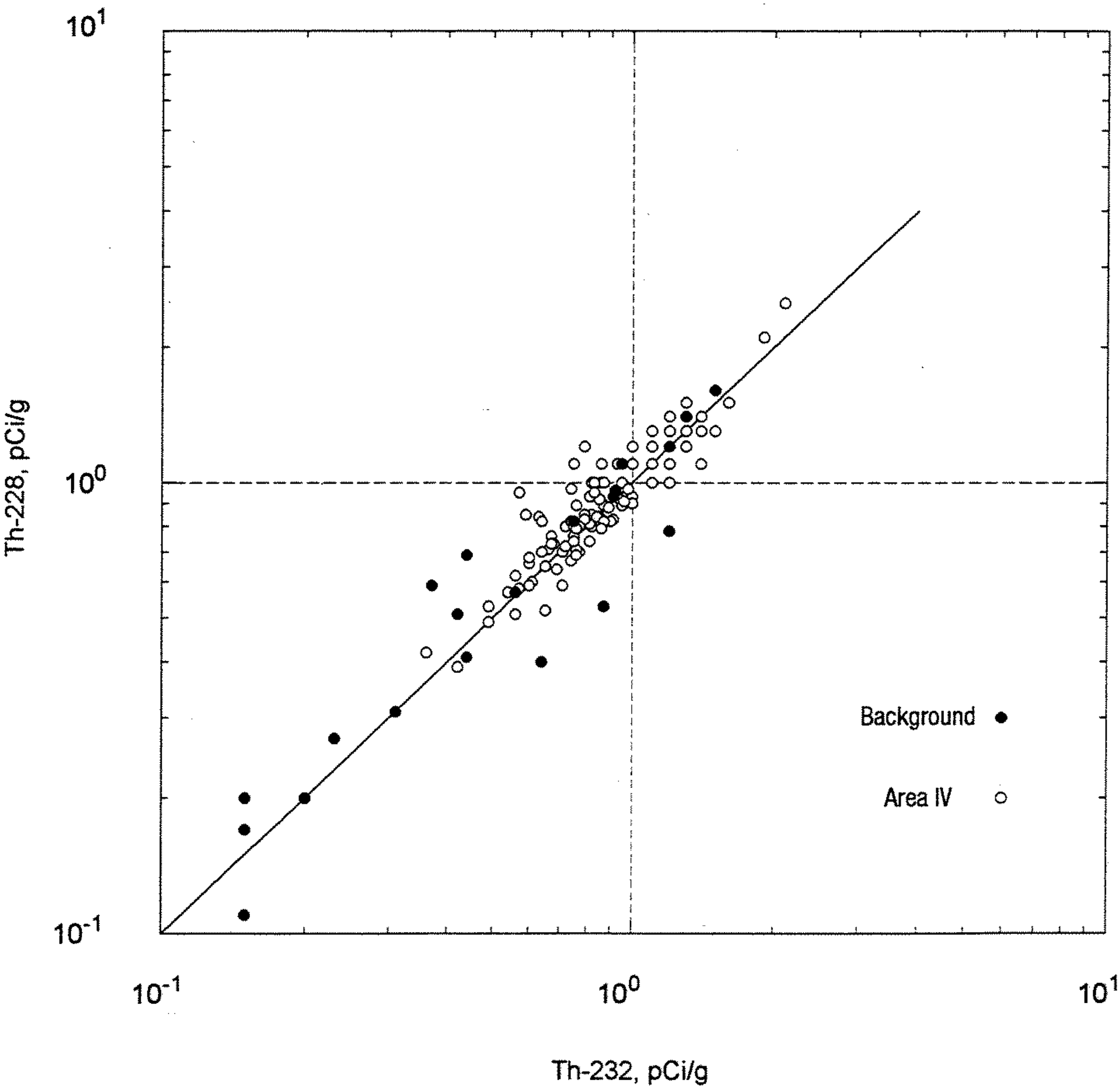
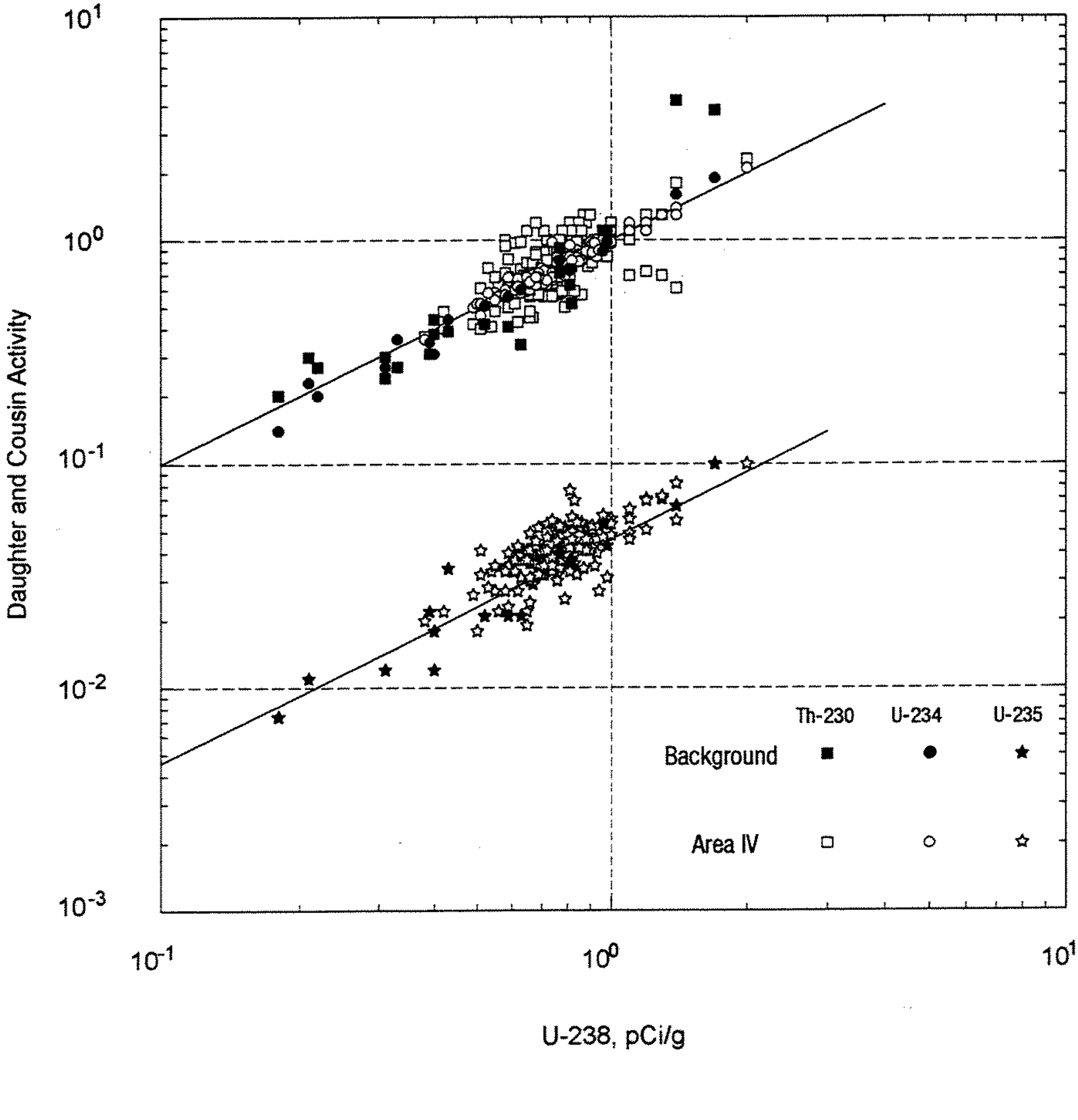


Figure F-13. Comparison of Uranium Decay Chain Results in Area IV and Background Soil



APPENDIX G. QA/QC DATA

Table G-1. Quality Assurance Summary - Soil

	Pass Rate of Quality Control Samples						
Radioisotope	Lab Duplicates	Field Duplicates	DHS Duplicates	Lab Controls	Blanks	Rinsates	Aggregate Total
Tritium	100%	100%	-	92%	100%	100%	98%
Strontium-90	100%	100%	-	100%	100%	100%	100%
Thorium-228	89%	86%	-	-	100%	100%	94%
Thorium-230	82%	88%	-	100%	56%	86%	82%
Thorium-232	100%	88%	-	-	100%	100%	97%
Uranium-234	82%	75%	-	100%	100%	100%	91%
Uranium-235	91%	100%	-	100%	100%	100%	98%
Uranium-238	82%	75%	-	100%	100%	86%	89%
Plutonium-238	100%	100%	83%	100%	100%	100%	97%
Plutonium-239	82%	100%	67%	100%	100%	100%	91%
Potassium-40	100%	75%	25%	-	100%	86%	77%
Cesium-137	100%	88%	100%	100%	100%	100%	98%
Radium-226	100%	75%	-	-	100%	100%	94%
Aggregate Total	93%	88%	69%	99%	97%	97%	90%

Table G-2. Laboratory Duplicates - Soil

	Sample Batch												
Radioisotope	1A	1B	2A	2B	3	4	5	6	7	8	Number of Lab Duplicates	Percent Lab Duplicates	Percent Acceptable
Tritium	P	P	P	P	P	PP	P	P	P	P	11	7%	100%
Strontium-90	P	P	P	P	P	PP	P	P	P	P	11	7%	100%
Thorium-228	-	-	P	P	P	PP	P	P	P	F	9	6%	89%
Thorium-230	P	P	P	P	P	PP	P	P	F	F	11	7%	82%
Thorium-232	P	P	P	P	P	PP	P	P	P	P	11	7%	100%
Uranium-234	P	P	P	F	P	FP	P	P	P	P	11	7%	82%
Uranium-235	P	P	P	P	P	FP	P	P	P	P	11	7%	91%
Uranium-238	P	P	P	F	P	FP	P	P	P	P	11	7%	82%
Plutonium-238	P	P	P	P	P	PP	P	P	P	P	11	7%	100%
Plutonium-239	P	P	P	P	P	PP	F	P	F	P	11	7%	82%
Potassium-40	P	P	P	P	P	PP	P	P	P	P	11	7%	100%
Cesium-137	P	P	P	P	P	PP	P	P	P	P	11	7%	100%
Radium-226	P	P	P	P	P	PP	P	P	P	P	11	7%	100%
										Totals	141	7%	93%

Pass (P) The relative percent difference between the two duplicates is less than 3σ
Fail (F) The relative percent difference between the two duplicates is greater than 3σ
- Not analyzed
σ Standard deviation of the two measurements

Table G-3. Laboratory Control Samples - Soil

	Sample Batch												
Radioisotope	1A	1B	2A	2B	3	4	5	6	7	8	Number of Lab Control Samples	Percent Lab Control Samples	Percent Acceptable
Tritium	P	PP	P	P	P	PP	P	P	F	P	12	8%	92%
Strontium-90	PPP	P	P	P	P	PP	P	P	P	P	13	9%	100%
Thorium-228	- - -	-	- -	-	- -	- -	-	- -	-	-	-	-	-
Thorium-230	PPP	P	PP	P	PP	PP	P	PP	P	P	16	11%	100%
Thorium-232	- - -	-	- -	-	- -	- -	-	- -	-	-	-	-	-
Uranium-234	P	P	P	P	P	PP	P	P	PP	P	12	8%	100%
Uranium-235	P	P	P	P	P	PP	P	P	PP	P	12	8%	100%
Uranium-238	P	P	P	P	P	PP	P	P	PP	P	12	8%	100%
Plutonium-238	- - P	- -	P	P	P	PPP	PPP	P	P	P	13	9%	100%
Plutonium-239	PPP	PP	P	P	P	PPP	PPP	P	P	P	17	11%	100%
Potassium-40	-	-	-	-	-	- -	-	-	-	-	-	-	-
Cesium-137	P	P	P	P	P	PP	P	P	P	P	11	7%	100%
Radium-226	-	-	-	-	-	- -	-	-	-	-	-	-	-
									Totals		118	9%	99%

Pass (P) The percent recovery is within +/- 3σ
Fail (F) The percent recovery exceeds +/- 3σ
\- Not analyzed
σ Standard deviation of the known and measured values

Table G-4. Laboratory Blanks - Soil

	Sample Batch												
Radioisotope	1A	1B	2A	2B	3	4	5	6	7	8	Number of Lab Blanks	Percent Lab Blanks	Percent Acceptable
Tritium	P	PP	P	P	P	PP	P	P	P	P	12	8%	100%
Strontium-90	PPP	P	P	P	P	PP	P	P	P	P	13	9%	100%
Thorium-228	- - P	-	PP	P	PP	PP	P	PP	P	P	13	9%	100%
Thorium-230	**FFF**	P	PP	P	PP	P**F**	**F**	**FF**	P	P	16	11%	56%
Thorium-232	PPP	P	PP	P	PP	PP	P	PP	P	P	16	11%	100%
Uranium-234	P	P	P	P	P	PP	P	P	PP	P	12	8%	100%
Uranium-235	P	P	P	P	P	PP	P	P	PP	P	12	8%	100%
Uranium-238	P	P	P	P	P	PP	P	P	PP	P	12	8%	100%
Plutonium-238	PPP	PP	P	P	P	PPP	PPP	P	P	P	17	11%	100%
Plutonium-239	PPP	PP	P	P	P	PPP	PPP	P	P	P	17	11%	100%
Potassium-40	P	P	P	P	P	PP	P	P	P	P	11	7%	100%
Cesium-137	P	P	P	P	P	PP	P	P	P	P	11	7%	100%
Radium-226	P	P	P	P	P	PP	P	P	P	P	11	7%	100%
										Totals	173	9%	96%

Pass (P) The measured value is less than the method MDA
Fail (F) The measured value is greater than the method MDA
\- Not analyzed
MDA Minimum Detectable Activity

Table G-5. Equipment Rinsates - Water

	Sample Batch												
Radioisotope	1A	1B	2A	2B	3	4	5	6	7	8	Number of Rinsates	Percent Rinsates	Percent Acceptable
Tritium	-	-	-	P	P	P	P	P	P	P	7	5%	100%
Strontium-90	-	-	-	P	P	P	P	P	P	P	7	5%	100%
Thorium-228	-	-	-	P	P	P	P	P	P	P	7	5%	100%
Thorium-230	-	-	-	P	P	P	P	P	P	F	7	5%	86%
Thorium-232	-	-	-	P	P	P	P	P	P	P	7	5%	100%
Uranium-234	-	-	-	P	P	P	P	P	P	P	7	5%	100%
Uranium-235	-	-	-	P	P	P	P	P	P	P	7	5%	100%
Uranium-238	-	-	-	P	F	P	P	P	P	P	7	5%	86%
Plutonium-238	-	-	-	P	P	P	P	P	P	P	7	5%	100%
Plutonium-239	-	-	-	P	P	P	P	P	P	P	7	5%	100%
Potassium-40	-	-	-	P	P	F	P	P	P	P	7	5%	86%
Cesium-137	-	-	-	P	P	P	P	P	P	P	7	5%	100%
Radium-226	-	-	-	P	P	P	P	P	P	P	7	5%	100%
									Totals		91	5%	97%

Pass (P) The measured value is less than the method MDA
Fail (F) The measured value is greater than the method MDA
\- Not analyzed
MDA Minimum Detectable Activity

Table G-6. Field Duplicates - Soil

	Sample Batch												
Radioisotope	1A	1B	2A	2B	3	4	5	6	7	8	Number of Field Duplicates	Percent Field Duplicates	Percent Acceptable
Tritium	P	-	-	P	P	P	P	P	P	P	8	5%	100%
Strontium-90	P	-	-	P	P	P	P	P	P	P	8	5%	100%
Thorium-228	-	-	-	P	P	P	P	P	F	P	7	5%	86%
Thorium-230	P	-	-	P	P	P	P	P	F	P	8	5%	88%
Thorium-232	P	-	-	P	F	P	P	P	P	P	8	5%	88%
Uranium-234	P	-	-	P	P	P	P	F	P	F	8	5%	75%
Uranium-235	P	-	-	P	P	P	P	P	P	P	8	5%	100%
Uranium-238	P	-	-	F	P	P	P	P	P	F	8	5%	75%
Plutonium-238	P	-	-	P	P	P	P	P	P	P	8	5%	100%
Plutonium-239	P	-	-	P	P	P	P	P	P	P	8	5%	100%
Potassium-40	P	-	-	P	F	F	P	P	P	P	8	5%	75%
Cesium-137	P	-	-	P	P	P	P	P	P	F	8	5%	88%
Radium-226	P	-	-	F	P	P	F	P	P	P	8	5%	75%
									Totals		103	5%	88%

Pass (P) The relative percent difference between the two duplicates is less than 3σ
Fail (F) The relative percent difference between the two duplicates is greater than 3σ
- Not analyzed
σ Standard deviation of the two measurements

Table G-7. Field Duplicates from Batch 1 - Soil

Sample ID	94-0003				94-0004						
Radioisotope	**Mean pCi/g**	**2σ pCi/g**	**MDA pCi/g**	**Undetect ?**	**Mean pCi/g**	**2σ pCi/g**	**MDA pCi/g**	**Undetect ?**	**RPD %**	**3σ Limit**	**Pass/ Fail**
Tritium*	-1500	1200	2000	U	-930	1300	2000	U	-	-	P
Strontium-90	0.12	0.17	0.2	U	0.014	0.053	0.06	U	-	-	P
Thorium-228	-	-			-	-			-	-	-
Thorium-230	0.9	0.14	0.06		1	0.16	0.06		11%	34%	P
Thorium-232	0.99	0.15	0.04		1.3	0.18	0.04		27%	31%	P
Uranium-234	0.79	0.084	0.02		0.81	0.086	0.02		3%	23%	P
Uranium-235	0.049	0.021	0.01		0.05	0.018	0.01		2%	84%	P
Uranium-238	0.76	0.081	0.02		0.82	0.087	0.02		8%	23%	P
Plutonium-238	0.001	0.009	0.02	U	0	0.004	0.01	U	-	-	P
Plutonium-239	0.003	0.004	0.008	U	0.003	0.004	0.008	U	-	-	P
Potassium-40	21	1.2			19	1.2			10%	13%	P
Cesium-137	0.093	0.053			0.078	0.043			18%	120%	P
Radium-226	0.97	0.14			0.9	0.13			7%	31%	P

*	All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil
Pass (P)	The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA
Fail (F)	The relative percent difference (RPD) between the two duplicates is greater than 3σ
MDA	Minimum Detectable Activity
U	Undetected. Mean < MDA

Table G-8. Field Duplicates from Batch 2 - Soil

Sample ID	95-0014				95-0015						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	58	450	800	U	-99	480	800	U	-	-	P
Strontium-90	0.026	0.099	0.1	U	0.097	0.08	0.1	U	-	-	P
Thorium-228	1.3	0.26	0.2		1.4	0.21	0.08		7%	37%	P
Thorium-230	1.3	0.24	0.08		1	0.16	0.04		26%	38%	P
Thorium-232	1.5	0.27	0.08		1.2	0.19	0.04		22%	37%	P
Uranium-234	0.84	0.051	0.008		0.95	0.054	0.009		12%	12%	P
Uranium-235	0.034	0.01	0.005		0.049	0.011	0.004		36%	54%	P
Uranium-238	0.87	0.051	0.007		1	0.056	0.008		14%	12%	F
Plutonium-238	-0.001	0.001	0.004	U	0.001	0.002	0.005	U	-	-	P
Plutonium-239	0	0.002	0.006	U	0.001	0.001	0.005	U	-	-	P
Potassium-40	18	0.32			18	0.48			0%	5%	P
Cesium-137	<0.01			U	<0.02			U	-	-	P
Radium-226	0.61	0.033			0.89	0.053			37%	12%	F

*	All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil
Pass (P)	The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA
Fail (F)	The relative percent difference (RPD) between the two duplicates is greater than 3σ
MDA	Minimum Detectable Activity
U	Undetected. Mean < MDA

Table G-9. Field Duplicates from Batch 3 - Soil

Sample ID	95-0035				95-0036						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	-52	170	300	U	-150	160	300	U	-	-	P
Strontium-90	0.083	0.049	0.07		0.099	0.058	0.08		18%	125%	P
Thorium-228	0.58	0.095	0.05		0.66	0.097	0.05		13%	33%	P
Thorium-230	0.41	0.08	0.03		0.57	0.084	0.03		33%	36%	P
Thorium-232	0.57	0.089	0.02		0.82	0.1	0.02		36%	29%	F
Uranium-234	0.55	0.04	0.009		0.59	0.041	0.01		7%	15%	P
Uranium-235	0.033	0.009	0.005		0.026	0.009	0.005		24%	65%	P
Uranium-238	0.54	0.04	0.008		0.56	0.039	0.006		4%	15%	P
Plutonium-238	-0.001	0.004	0.008	U	0	0.004	0.009	U	-	-	P
Plutonium-239	0.003	0.003	0.003	U	0.012	0.006	0.007		120%	134%	P
Potassium-40	21	0.31			22	0.31			5%	3%	F
Cesium-137	0.43	0.02			0.44	0.017			2%	9%	P
Radium-226	0.78	0.032			0.78	0.031			0%	9%	P

*	All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil
Pass (P)	The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA
Fail (F)	The relative percent difference (RPD) between the two duplicates is greater than 3σ
MDA	Minimum Detectable Activity

Table G-10. Field Duplicates from Batch 4 - Soil

Sample ID	95-0055				95-0056						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	-92	530	900	U	470	510	800	U	-	-	P
Strontium-90	0.027	0.071	0.1	U	0.013	0.083	0.1	U	-	-	P
Thorium-228	0.53	0.12	0.08		0.54	0.12	0.1		2%	48%	P
Thorium-230	0.45	0.1	0.04		0.48	0.1	0.05		6%	46%	P
Thorium-232	0.49	0.11	0.04		0.4	0.091	0.04		20%	48%	P
Uranium-234	0.66	0.044	0.009		0.67	0.045	0.009		2%	14%	P
Uranium-235	0.037	0.01	0.005		0.032	0.009	0.005		14%	58%	P
Uranium-238	0.66	0.044	0.007		0.66	0.045	0.007		0%	14%	P
Plutonium-238	0.004	0.005	0.008	U	0.003	0.006	0.01	U	-	-	P
Plutonium-239	-0.001	0.002	0.005	U	-0.001	0.001	0.005	U	-	-	P
Potassium-40	20	0.46			18	0.46			11%	5%	F
Cesium-137	<0.02			U	<0.02			U	-	-	P
Radium-226	0.85	0.051			0.78	0.049			9%	13%	P

*	All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil
Pass (P)	The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA
Fail (F)	The relative percent difference (RPD) between the two duplicates is greater than 3σ
MDA	Minimum Detectable Activity

Table G-11. Field Duplicates from Batch 5 - Soil

Sample ID	95-0080				95-0081						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	-200	430	800	U	25	450	800	U	-	-	P
Strontium-90	0.033	0.048	0.07	U	0.053	0.057	0.07	U	-	-	P
Thorium-228	1.3	0.13	0.04		1.3	0.14	0.07		0%	22%	P
Thorium-230	0.87	0.11	0.02		1	0.12	0.04		14%	26%	P
Thorium-232	1.3	0.13	0.02		1.3	0.14	0.03		0%	22%	P
Uranium-234	1	0.059	0.01		0.97	0.056	0.01		3%	12%	P
Uranium-235	0.059	0.013	0.005		0.061	0.012	0.005		3%	44%	P
Uranium-238	0.96	0.057	0.009		0.89	0.053	0.009		8%	13%	P
Plutonium-238	0	0.001	0.003	U	0	0.002	0.005	U	-	-	P
Plutonium-239	0.01	0.004	0.003		0.005	0.003	0.003		67%	100%	P
Potassium-40	23	0.62			22	0.42			4%	5%	P
Cesium-137	0.098	0.033			0.087	0.018			12%	61%	P
Radium-226	0.9	0.057			0.78	0.036			14%	12%	F

* All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil

Pass (P) The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA

Fail (F) The relative percent difference (RPD) between the two duplicates is greater than 3σ

MDA Minimum Detectable Activity

Table G-12. Field Duplicates from Batch 6 - Soil

Sample ID	95-0102				95-0103						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	410	480	800	U	-110	440	800	U	-	-	P
Strontium-90	0.032	0.054	0.1	U	0.031	0.067	0.1	U	-	-	P
Thorium-228	1.1	0.098	0.04		1.2	0.11	0.05		9%	19%	P
Thorium-230	0.75	0.077	0.02		0.67	0.074	0.03		11%	23%	P
Thorium-232	0.93	0.086	0.02		1	0.095	0.02		7%	20%	P
Uranium-234	0.75	0.057	0.01		0.64	0.045	0.01		16%	16%	F
Uranium-235	0.04	0.012	0.008		0.046	0.012	0.007		14%	59%	P
Uranium-238	0.7	0.054	0.01		0.67	0.047	0.009		4%	16%	P
Plutonium-238	0	0.002	0.005	U	0.001	0.002	0.003	U	-	-	P
Plutonium-239	0.005	0.003	0.004		0.005	0.003	0.003		0%	127%	P
Potassium-40	21	0.53			20	0.5			5%	5%	P
Cesium-137	0.44	0.029			0.41	0.028			7%	14%	P
Radium-226	0.78	0.046			0.75	0.044			4%	12%	P

*	All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil
Pass (P)	The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA
Fail (F)	The relative percent difference (RPD) between the two duplicates is greater than 3σ
MDA	Minimum Detectable Activity

Table G-13. Field Duplicates from Batch 7 - Soil

Sample ID	95-0122				95-0123						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	-82	570	1000	U	-180	550	1000	U	-	-	P
Strontium-90	0.062	0.056	0.08	U	0.047	0.056	0.08	U	-	-	P
Thorium-228	1.1	0.12	0.04		0.66	0.1	0.05		50%	27%	F
Thorium-230	0.88	0.11	0.03		0.59	0.087	0.03		39%	29%	F
Thorium-232	0.93	0.11	0.02		0.71	0.1	0.02		27%	27%	P
Uranium-234	0.89	0.053	0.01		0.83	0.054	0.01		7%	13%	P
Uranium-235	0.041	0.01	0.005		0.044	0.011	0.005		7%	52%	P
Uranium-238	0.88	0.052	0.008		0.84	0.054	0.009		5%	13%	P
Plutonium-238	-0.001	0.003	0.007	U	0.001	0.003	0.005	U	-	-	P
Plutonium-239	0.007	0.004	0.004		0.005	0.003	0.004		33%	125%	P
Potassium-40	19	0.56			19	0.63			0%	7%	P
Cesium-137	0.13	0.018			0.16	0.034			21%	40%	P
Radium-226	0.76	0.053			0.76	0.057			0%	15%	P

*	All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil
Pass (P)	The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA
Fail (F)	The relative percent difference (RPD) between the two duplicates is greater than 3σ
MDA	Minimum Detectable Activity

Table G-14. Field Duplicates from Batch 8 - Soil

Sample ID	95-0157				95-0159						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	520	740	1000	U	110	780	1000	U	-	-	P
Strontium-90	0.038	0.072	0.1	U	0.059	0.08	0.1	U	-	-	P
Thorium-228	0.82	0.099	0.06		0.79	0.12	0.06		4%	29%	P
Thorium-230	0.71	0.088	0.03		0.69	0.11	0.03		3%	30%	P
Thorium-232	0.87	0.095	0.02		0.86	0.12	0.03		1%	27%	P
Uranium-234	0.57	0.05	0.01		0.74	0.058	0.01		26%	18%	F
Uranium-235	0.033	0.012	0.007		0.033	0.011	0.007		0%	74%	P
Uranium-238	0.58	0.05	0.01		0.81	0.061	0.01		33%	17%	F
Plutonium-238	0	0.002	0.004	U	0.005	0.006	0.01	U	-	-	P
Plutonium-239	0.007	0.003	0.004		0.002	0.004	0.007	U	111%	167%	P
Potassium-40	20	0.63			20	0.66			0%	7%	P
Cesium-137	0.23	0.024			0.12	0.032			63%	34%	F
Radium-226	0.85	0.054			0.78	0.056			9%	14%	P

* All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil

Pass (P) The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA

Fail (F) The relative percent difference (RPD) between the two duplicates is greater than 3σ

MDA Minimum Detectable Activity

Table G-15. DHS Field Duplicates - Soil

	Sample Batch														
Radioisotope	5A	5B	5C	5D	6A	6B	6C	6D	7A	7B	7C	7D	Number of Field Duplicates	Percent Field Duplicates	Percent Acceptable
Tritium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium-90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium-228	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium-230	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium-232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium-234	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium-235	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium-238	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plutonium-238	P	P	P	P	F	P	P	P	P	P	F	P	12	8%	83%
Plutonium-239	F	P	P	F	P	P	P	P	F	P	F	P	12	8%	67%
Potassium-40	F	F	P	F	F	F	F	F	F	P	P	F	12	8%	25%
Cesium-137	P	P	P	P	P	P	P	P	P	P	P	P	12	8%	100%
Radium-226	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Pass (P) The relative percent difference between the two duplicates is less than 3σ
Fail (F) The relative percent difference between the two duplicates is greater than 3σ
\- Not analyzed
σ Standard deviation of the two measurements

Table G-16. DHS Field Duplicate from Batch 5A - Soil

Sample ID	Rocketdyne 95-0074				DHS R70321 & R70322						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	160	520	900	U	-				-	-	-
Strontium-90	0.034	0.067	0.06	U	-				-	-	-
Thorium-228	103	0.14	0.07		-				-	-	-
Thorium-230	1.1	0.13	0.03		-				-	-	-
Thorium-232	1.2	0.13	0.03		-				-	-	-
Uranium-234	1.1	0.056	0.009		-				-	-	-
Uranium-235	0.048	0.011	0.004		-				-	-	-
Uranium-238	1	0.054	0.007		-				-	-	-
Plutonium-238	0.004	0.003	0.004	U	<0.006		0.006	U	-	-	P
Plutonium-239	0.15	0.018	0.003		<0.005		0.005	U	-	-	F
Potassium-40	19	0.41			20.5	0.38			8%	4%	F
Cesium-137	0.071	0.013			0.069	0.01			3%	35%	P
Radium-226	0.77	0.039			NR				-	-	-

* All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil

\- Not analyzed   NR Not Reported

Pass (P) The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA

Fail (F) The relative percent difference (RPD) between the two duplicates is greater than 3σ

MDA Minimum Detectable Activity

Table G-17. DHS Field Duplicate from Batch 5B - Soil

Sample ID	Rocketdyne 95-0075				DHS R70323 & R70324						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	68	350	600	U	-				-	-	-
Strontium-90	0.022	0.042	0.05	U	-				-	-	-
Thorium-228	1.3	0.12	0.04		-				-	-	-
Thorium-230	1.1	0.1	0.02		-				-	-	-
Thorium-232	1.2	0.11	0.02		-				-	-	-
Uranium-234	0.72	0.043	0.01		-				-	-	-
Uranium-235	0.042	0.01	0.004		-				-	-	-
Uranium-238	0.78	0.045	0.007		-				-	-	-
Plutonium-238	0.003	0.003	0.005	U	0.003	0.001			0%	158%	P
Plutonium-239	0.002	0.002	0.004	U	<0.002		0.002	U	-	-	P
Potassium-40	21	0.26			22.1	0.52			5%	4%	F
Cesium-137	0.056	0.011			0.036	0.016			43%	63%	P
Radium-226	0.68	0.022			NR				-	-	-

*	All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil
-	Not analyzed
NR	Not reported
Pass (P)	The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA
Fail (F)	The relative percent difference (RPD) between the two duplicates is greater than 3σ
MDA	Minimum Detectable Activity

Table G-18. DHS Field Duplicate from Batch 5C - Soil

Sample ID	Rocketdyne 95-0076				DHS R71723 & R71722						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	8500	430	500		-				-	-	-
Strontium-90	0.02	0.047	0.07	U	-				-	-	-
Thorium-228	1.3	0.16	0.09		-				-	-	-
Thorium-230	1	0.14	0.03		-				-	-	-
Thorium-232	1.2	0.15	0.03		-				-	-	-
Uranium-234	0.8	0.043	0.009		-				-	-	-
Uranium-235	0.048	0.01	0.004		-				-	-	-
Uranium-238	0.78	0.043	0.007		-				-	-	-
Plutonium-238	0.001	0.003	0.005	U	<0.004		0.004	U	-	-	P
Plutonium-239	0.006	0.003	0.004		<0.003		0.003	U	-	-	P
Potassium-40	19	0.67			19.3	0.46			2%	6%	P
Cesium-137	0.11	0.022			0.094	0.015			16%	39%	P
Radium-226	0.76	0.06			NR				-	-	-

* All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil

\- Not analyzed NR Not Reported

Pass (P) The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA

Fail (F) The relative percent difference (RPD) between the two duplicates is greater than 3σ

MDA Minimum Detectable Activity

Table G-19. DHS Field Duplicate from Batch 5D - Soil

Sample ID	Rocketdyne 95-0077				DHS R71721 & R71720						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	-160	270	500	U	-				-	-	-
Strontium-90	0.016	0.052	0.08	U	-				-	-	-
Thorium-228	1.2	0.15	0.07		-				-	-	-
Thorium-230	1.3	0.15	0.03		-				-	-	-
Thorium-232	1.1	0.13	0.03		-				-	-	-
Uranium-234	1.3	0.063	0.01		-				-	-	-
Uranium-235	0.07	0.013	0.004		-				-	-	-
Uranium-238	1.3	0.062	0.008		-				-	-	-
Plutonium-238	-0.004	0.004	0.01	U	<0.004		0.004	U	-	-	P
Plutonium-239	-0.001	0.001	0.007	U	0.004	0.002			333%	224%	F
Potassium-40	18	0.35			20	0.42			11%	4%	F
Cesium-137	<0.01			U	ND			U	-	-	P
Radium-226	0.85	0.031			NR				-	-	-

* All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil

\- Not analyzed ND Not Detected NR Not Reported

Pass (P) The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA

Fail (F) The relative percent difference (RPD) between the two duplicates is greater than 3σ

MDA Minimum Detectable Activity

Table G-20. DHS Field Duplicate from Batch 6A - Soil

Sample ID	Rocketdyne 95-0109				DHS R71729 & R71730						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	-410	1200	2000	U	-				-	-	-
Strontium-90	-0.008	0.049	0.08	U	-				-	-	-
Thorium-228	1.1	0.099	0.02		-				-	-	-
Thorium-230	0.87	0.089	0.02		-				-	-	-
Thorium-232	1.1	0.099	0.01		-				-	-	-
Uranium-234	0.77	0.048	0.009		-				-	-	-
Uranium-235	0.034	0.01	0.005		-				-	-	-
Uranium-238	0.77	0.048	0.007		-				-	-	-
Plutonium-238	-0.001	0.002	0.005	U	0.007	0.003			267%	180%	F
Plutonium-239	0	0.003	0.006	U	<0.002		0.002	U	-	-	P
Potassium-40	20	0.58			22	0.51			10%	6%	F
Cesium-137	0.049	0.025			0.035	0.012			33%	99%	P
Radium-226	0.74	0.054			NR				-	-	-

* All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil

\- Not analyxed NR Not Reported

Pass (P) The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA

Fail (F) The relative percent difference (RPD) between the two duplicates is greater than 3σ

MDA Minimum Detectable Activity

Table G-21. DHS Field Duplicate from Batch 6B - Soil

Sample ID	Rocketdyne 95-0110				DHS R71726 & R71728						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	-370	1300	2000	U	-				-	-	-
Strontium-90	0.01	0.059	0.09	U	-				-	-	-
Thorium-228	0.97	0.1	0.04		-				-	-	-
Thorium-230	0.84	0.096	0.02		-				-	-	-
Thorium-232	0.98	0.1	0.02		-				-	-	-
Uranium-234	0.99	0.075	0.01		-				-	-	-
Uranium-235	0.031	0.013	0.008		-				-	-	-
Uranium-238	0.98	0.074	0.01		-				-	-	-
Plutonium-238	0	0.003	0.005	U	<0.007		0.007	U	-	-	P
Plutonium-239	0.001	0.002	0.004	U	<0.005		0.005	U	-	-	P
Potassium-40	21	0.49			22.6	0.51			7%	5%	F
Cesium-137	<0.02			U	ND			U	-	-	P
Radium-226	0.91	0.043			NR				-	-	-

* All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil

\- Not analyzed ND Not Detected NR Not Reported

Pass (P) The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA

Fail (F) The relative percent difference (RPD) between the two duplicates is greater than 3σ

MDA Minimum Detectable Activity

Table G-22. DHS Field Duplicate from Batch 6C - Soil

Sample ID	Rocketdyne 95-0111				DHS R71724 & R70327						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	53	860	1000	U	-				-	-	-
Strontium-90	0.056	0.053	0.08	U	-				-	-	-
Thorium-228	1.1	0.099	0.03		-				-	-	-
Thorium-230	0.79	0.082	0.02		-				-	-	-
Thorium-232	1.1	0.099	0.02		-				-	-	-
Uranium-234	0.8	0.058	0.01		-				-	-	-
Uranium-235	0.045	0.014	0.006		-				-	-	-
Uranium-238	0.76	0.056	0.01		-				-	-	-
Plutonium-238	0	0.002	0.004	U	<0.004		0.004	U	-	-	P
Plutonium-239	0.013	0.005	0.004		0.022	0.004			51%	55%	P
Potassium-40	20	0.63			21.5	0.57			7%	6%	F
Cobalt-60	0.044	0.04			ND				-	-	P
Cesium-137	0.53	0.039			0.55	0.03			4%	14%	P
Radium-226	0.88	0.055			NR				-	-	-

* All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil

- Not analyzed ND Not Detected NR Not Reported

Pass (P) The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA

Fail (F) The relative percent difference (RPD) between the two duplicates is greater than 3σ

MDA Minimum Detectable Activity

Table G-23. DHS Field Duplicate from Batch 6D - Soil

Sample ID	Rocketdyne 95-0112				DHS R70326 & R70325						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	89	330	600	U	-				-	-	-
Strontium-90	-0.018	0.042	0.07	U	-				-	-	-
Thorium-228	1.4	0.12	0.05		-				-	-	-
Thorium-230	1.1	0.1	0.02		-				-	-	-
Thorium-232	1.4	0.12	0.02		-				-	-	-
Uranium-234	0.8	0.058	0.01		-				-	-	-
Uranium-235	0.037	0.012	0.009		-				-	-	-
Uranium-238	0.78	0.057	0.009		-				-	-	-
Plutonium-238	0.001	0.002	0.004	U	<0.002		0.002	U	-	-	P
Plutonium-239	0.001	0.002	0.003	U	<0.001		0.001	U	-	-	P
Potassium-40	17	0.4			18.7	0.38			10%	5%	F
Cesium-137	0.036	0.016			0.028	0.009			25%	86%	P
Radium-226	0.86	0.038			NR				-	-	-

*	All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil
-	Not analyzed NR Not Reported
Pass (P)	The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA
Fail (F)	The relative percent difference (RPD) between the two duplicates is greater than 3σ
MDA	Minimum Detectable Activity

Table G-24. DHS Field Duplicate from Batch 7A - Soil

Sample ID	Rocketdyne 95-0136				DHS R71414 & R71415						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	-370	480	900	U	-				-	-	-
Strontium-90	0.061	0.045	0.04		-				-	-	-
Thorium-228	0.95	0.18	0.1		-				-	-	-
Thorium-230	0.88	0.15	0.05		-				-	-	-
Thorium-232	0.83	0.15	0.05		-				-	-	-
Uranium-234	0.64	0.042	0.009		-				-	-	-
Uranium-235	0.041	0.01	0.005		-				-	-	-
Uranium-238	0.71	0.045	0.008		-				-	-	-
Plutonium-238	-0.001	0.002	0.006	U	<0.003		0.003	U	-	-	P
Plutonium-239	0.014	0.005	0.005		0.004	0.002			111%	90%	F
Potassium-40	19	0.62			21.2	0.4			11%	6%	F
Cesium-137	0.11	0.027			0.13	0.014			17%	38%	P
Radium-226	0.73	0.057			NR				-	-	-

* All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil

\- Not analyzed NR Not Reported

Pass (P) The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA

Fail (F) The relative percent difference (RPD) between the two duplicates is greater than 3σ

MDA Minimum Detectable Activity

Table G-25. DHS Field Duplicate from Batch 7B - Soil

Sample ID	Rocketdyne 95-0137				DHS R71416 & R71417						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	-1500	1400	3000	U	-				-	-	-
Strontium-90	0.053	0.052	0.05		-				-	-	-
Thorium-228	0.91	0.12	0.07		-				-	-	-
Thorium-230	1	0.13	0.03		-				-	-	-
Thorium-232	0.96	0.12	0.03		-				-	-	-
Uranium-234	1.1	0.063	0.01		-				-	-	-
Uranium-235	0.049	0.011	0.005		-				-	-	-
Uranium-238	1.1	0.06	0.008		-				-	-	-
Plutonium-238	0	0.001	0.005	U	<0.006		0.006	U	-	-	P
Plutonium-239	0.005	0.004	0.005	U	0.006	0.004			18%	154%	P
Potassium-40	21	0.7			22	0.38			5%	6%	P
Cesium-137	0.12	0.033			0.099	0.012			19%	48%	P
Radium-226	0.97	0.064			NR				-	-	-

* All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil

- Not analyzed NR Not Reported

Pass (P) The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA

Fail (F) The relative percent difference (RPD) between the two duplicates is greater than 3σ

MDA Minimum Detectable Activity

Table G-26. DHS Field Duplicate from Batch 7C - Soil

Sample ID	Rocketdyne 95-0138				DHS R71418 & R71419						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	-360	310	600	U	-				-	-	-
Strontium-90	0.054	0.042	0.04		-				-	-	-
Thorium-228	1.3	0.21	0.1		-				-	-	-
Thorium-230	0.88	0.16	0.05		-				-	-	-
Thorium-232	1.1	0.19	0.05		-				-	-	-
Uranium-234	0.63	0.041	0.009		-				-	-	-
Uranium-235	0.043	0.011	0.005		-				-	-	-
Uranium-238	0.68	0.044	0.007		-				-	-	-
Plutonium-238	0	0.002	0.004	U	0.015	0.003			200%	72%	F
Plutonium-239	0.004	0.003	0.003		0.01	0.002			86%	77%	F
Potassium-40	14	0.49			14.7	0.31			5%	6%	P
Cesium-137	0.032	0.023			0.05	0.01			44%	92%	P
Radium-226	0.57	0.043			NR				-	-	-

* All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil

\- Not analyzed NR Not Reported

Pass (P) The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA

Fail (F) The relative percent difference (RPD) between the two duplicates is greater than 3σ

MDA Minimum Detectable Activity

Table G-27. DHS Field Duplicate from Batch 7D - Soil

Sample ID	Rocketdyne 95-0139				DHS R71420 & R71421						
Radioisotope	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	Mean pCi/g	2σ pCi/g	MDA pCi/g	Undetect ?	RPD %	3σ Limit	Pass/ Fail
Tritium*	-240	450	800	U	-				-	-	-
Strontium-90	0.08	0.055	0.09	U	-				-	-	-
Thorium-228	1.1	0.11	0.04		-				-	-	-
Thorium-230	0.81	0.092	0.02		-				-	-	-
Thorium-232	1	0.1	0.02		-				-	-	-
Uranium-234	0.66	0.042	0.009		-				-	-	-
Uranium-235	0.041	0.009	0.004		-				-	-	-
Uranium-238	0.72	0.045	0.007		-				-	-	-
Plutonium-238	-0.003	0.002	0.007	U	<0.005		0.005	U	-	-	P
Plutonium-239	0.001	0.002	0.005	U	0.004	0.002			120%	170%	P
Potassium-40	15	0.58			16.8	0.37			11%	6%	F
Cesium-137	0.092	0.026			0.101	0.017			9%	48%	P
Radium-226	0.7	0.057			NR				-	-	-

* All isotope units are pCi/g(soil) except tritium which is pCi/L of water extracted from soil

\- Not analyzed NR Not Reported

Pass (P) The relative percent difference (RPD) between the two duplicates is less than 3σ, or the mean of both duplicates is less than the MDA

Fail (F) The relative percent difference (RPD) between the two duplicates is greater than 3σ

MDA Minimum Detectable Activity

APPENDIX H. CUMULATIVE PROBABILITY PLOT METHOD

H.1 CUMULATIVE PROBABILITY PLOTS

Initial evaluation of each validated data set verifies whether or not the data satisfy the assumption of representing a single normal distribution with no significant contaminant component (i.e., a background distribution). This is done using a graphical presentation of the data in a special format which provides direct visual evaluation of the statistical significance of the data.

The cumulative probability plot is a method of data display that presents visually the fit of data to a normal (Gaussian) distribution. A typical plot of a normal distribution, in which the probability of occurrence, g(x), of a particular value x, is plotted against the value itself, is a characteristic bell-shaped curve (Figure H-1a). Typical statistical parameters shown in the figure are the mean (μ) and standard deviation (s). If the presentation of the distribution is changed to a plot of the cumulative probability (area under the curve to the left of the value on the horizontal axis) it becomes an S-shaped curve (Figure H-1b). If the linear cumulative probability scale is replaced by a normal probability scale, the curve becomes a straight line (Figure H-1c). The curve is usually rotated to make the probability scale the horizontal axis for ease of reading. Figure H-1d is a cumulative probability plot of data sampled from an underlying normal distribution. The plot shows the fit of the data to the expected line and demonstrates the ease of direct visual interpretation of the data.

A set of data consisting of measurements from a single distribution will give a normal cumulative probability plot which is a straight line with the mean of the data at a cumulative probability of 50% and the standard deviation of the data related to the slope of the curve.

The goodness of fit of the data to such a straight line will determine the validity of the assumption of a normal distribution for the data. Figure H-1d is an example of normally distributed samples from a single population. A set of data combining measurements from two or more distributions (e.g., background and one or more contaminated areas) will consist of a curve having two or more straight-line sections with different slopes.

The goodness of fit to a straight line in a cumulative probability plot will depend on the number of samples in the data set. Experience at has shown that a set with at least 11 values will consistently show good fits to the derived Gaussian distribution. Significant deviations from a normal distribution are not masked by random variations in data sets with 11 or more points. Smaller sample sets are subject to such masking. Therefore, the cumulative probability plot evaluation requires data sets with 11 or more points to assure visual detection of significant departures from the assumed Gaussian.

H.2 STATISTICAL COMPARISON OF TWO DATA SETS

Normal distributions which are fit to two sets of data will differ, even if the same underlying population is being sampled, as the result of sampling variability. If the data sets represent different populations (such as two different background levels, or background and background plus contamination), their difference will contain the difference between the populations as well as that from statistical fluctuations. To evaluate the difference between two sets of data, a difference that is considered significant must be defined. For this study, the significance of the difference between two data sets will be determined by a statistical comparison using the Behrens-Fisher modified t-test with a 95% confidence level (See Appendix F).

H.3 STATISTICAL COMPARISON OF A DATA SET TO REGULATORY LIMITS

If a sample data set is determined by the Behrens-Fisher t' test to be statistically different from background, the data is compared to well-established regulatory limits for ambient gamma radiation and soil radioisotope concentrations which are imposed as cleanup standards for release of property for radiologically unrestricted use.

There is a probability that a data set statistically different from background will occur even if no contamination is present. Background gamma radiation is highly variable and is influenced by soil and rock mineral content (e.g., uranium, thorium, potassium, and radium content), rock depth, topography, elevation, sunspot activity, instrument variability, etc. Soil concentration is also highly variable and is influenced by soil and rock mineral content, soil cultivation, precipitation, rainfall runoff patterns, preferential sedimentation, world-wide weapons test fallout patterns, sampling techniques, laboratory methods, etc. Because of this variability it is somewhat problematic to be able to specify exactly what "background" is. As a result it is expected that application of the Behrens-Fisher modified t-test may indicate that some Area IV data sets are different from background. This may be due to the variability described above or it may indeed be due to contamination. In such cases, a comparison to regulatory cleanup limits is performed.

The data set comparison to a regulatory limit uses a statistical method known as "sampling inspection by variables" (Ref. 14), which provides a convenient method for comparing a set of data having an approximately normal distribution with a single-valued regulatory limit. The method was developed in the quality assurance industry and has been applied successfully to radiological surveying data by Rocketdyne for the past 12 years (Ref. 15 through 19). The method uses a "test statistic" (TS) defined as follows.

$$TS = \bar{x} + ks$$

where $\overline{x}$ = mean of the distribution

s = observed sample standard deviation

k = tolerance factor

TS and x are compared with an acceptance limit (L) to determine acceptance or the need for further remediation.

The values of x and s are calculated from the data. L is defined as described in Section H.4. The value of k is based on the number of samples in the set and the choices for acceptable risk. It is calculated in accordance with the following equations.

$$k = \frac{(K_2 + K_2^2 - ab)^{0.5}}{a}$$

$$a = 1 - \frac{K_\beta}{2(n-1)}$$

$$b = K_2^2 - \frac{K_\beta^2}{n}$$

where

K_β = number of standard deviations above the mean exceeded with the probability selected for limiting the poorest quality that should be accepted in an individual lot, or Lot Tolerance Percent Defective

K_2 = number of standard deviations above the mean exceeded with the probability selected for accepting a lot of quality equal to the poorest allowed by K_β, or consumer's risk.

n = number of samples

The acceptable risk probability on which are based the values of K_2 and K_β is chosen to be 10%. The values correspond to assuring, with 90% confidence, that 90% of the area (assuming a uniform distribution throughout) has residual contamination below 100% of the applicable limit (a 90/90/100 test). The choice of values for the consumer's risk is consistent with industrial sampling practices and NRC and State of California guidelines (Ref. 20 and 21, respectively). For these choices of risk, $K_\beta = K_2 = 1.282$.

The statistical criteria for acceptance of areas as meeting the regulatory limits are presented below.

- **Acceptance:** If TS is less than or equal to L, accept the region as satisfying the requirement for release for radiologically unrestricted use and requiring no further investigation.

- **Collect additional measurements:** If TS is greater than L but $\bar{x}$ is less than L, independently resample and combine all measured values to determine if TS $\leq$ L for the combined set. If so, accept the region as satisfying the requirement for release for radiologically unrestricted use and requiring no further investigation. If not, consider the region contaminated and subject to remediation.

- **Rejection:** If TS and $\bar{x}$ are both greater than L, the region is considered contaminated and will be referred as a candidate for a remediation study as a follow-up to the characterization program.

H.4 Regulatory Limits

The regulatory limits to be used for evaluation of data sets are established to ensure that future uses of the land will not be impacted from a radiological health and safety perspective. This is done by ensuring that the annual radiation dose to a user is a sufficiently small part of the natural background dose. The regulatory limits are discussed below.

H.4.1 Ambient Gamma Regulatory Limit

DOE Order 5400.5, Chapter IV, (Ref. 22) recommends use of 20 μR/hr above background (at 1 meter above the surface) for release of land for radiologically unrestricted use. The NRC (Ref. 23) and the State of California (Ref. 21) specify a limit of 5 μR/hr above background (at 1 meter above the surface). The lower limit is used for consistency with all limits, conservatism, and application of as low as reasonably achievable (ALARA) principles.

H.4.2 Soil Isotopic Concentration Acceptance Limits

Specific acceptance limits (L) for background-subtracted soil concentrations are derived from regulatory dose limits. DOE Order 5400.5, Chapter IV (Ref. 22) specifies that site-specific soil concentration limits shall be derived from pathways dose analysis using approved models. The dose limit is specified as 100 mrem/yr. This study uses a more restrictive dose limit of 10 mrem/yr., in keeping with ALARA principles and conservatism. Isotope-specific soil concentrations based on a dose of 10 mrem/yr. for a potential residential user have been derived using the RESRAD code (Ref. 24) These soil concentration guidelines are discussed in Reference 25 and are listed in Table H-1. Where several isotopes are identified as exceeding background, then the "sum of fractions" rule is used to determine whether the regulatory limit is met. The rule requires that the following inequality be satisfied.

$$\sum_i \frac{C_i}{L_i} < 1$$

where i = all isotopes which exceed background

C_i = the single value representing the measured distribution of isotope i relative to background

L_i = the single isotope release limit equivalent to 10 mrem/yr. for isotope i

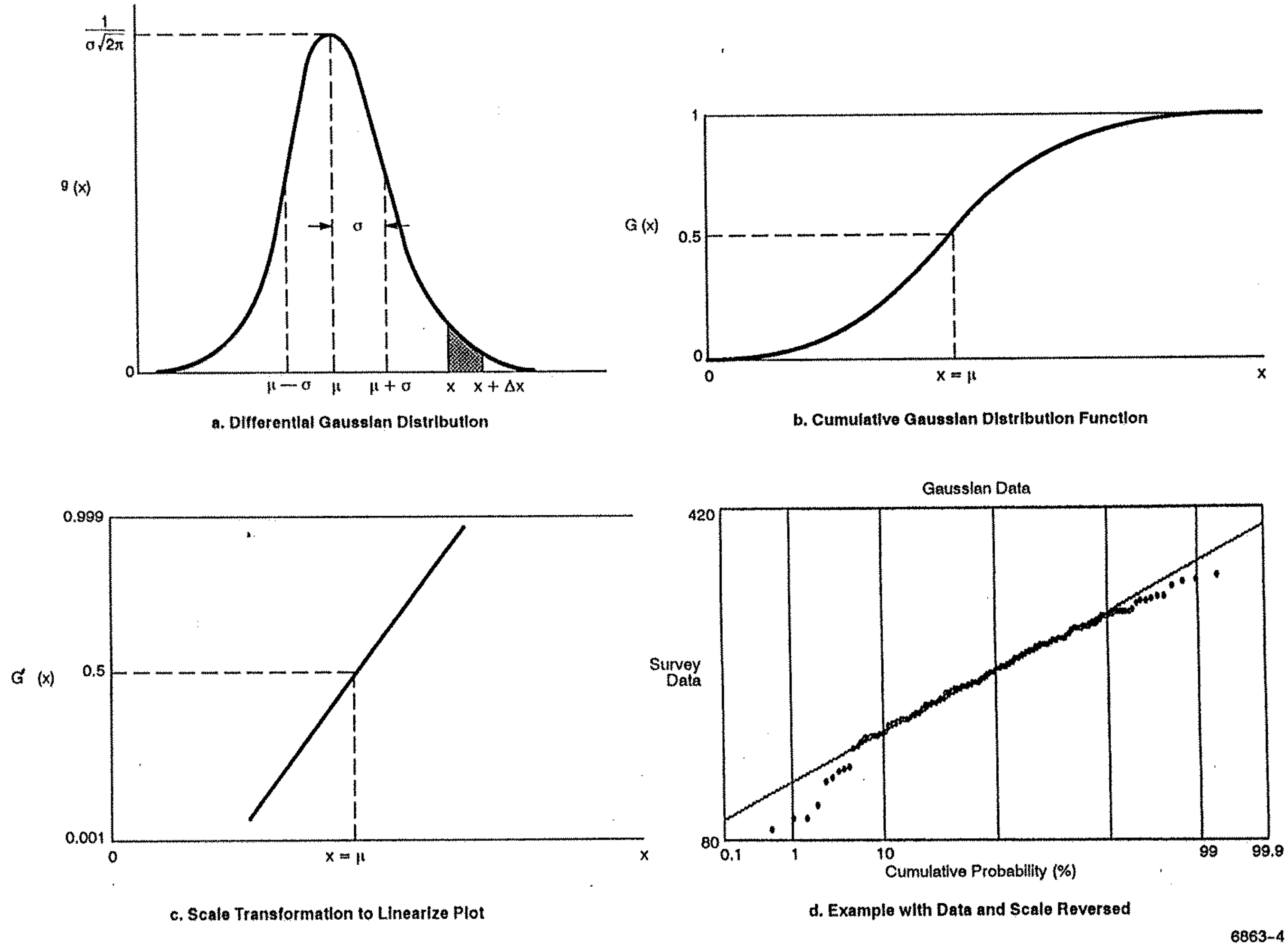


Figure H-1. Derivation of Cumulative Probability Plot

Table H-1. Generic Soil Contamination Limits*

Radionuclide	***Soil Cleanup Guidelines (pCi/g)***
Tritium (Hydrogen-3)	31,900
Potassium-40	27
Manganese-54	6.1
Cobalt-60	1.9
Strontium-90	36
Cesium-134	3.3
Cesium-137	9.2
Europium-152	4.5
Europium-154	4.1
Thorium-228	5 and 15***
Thorium-232	5 and 15***
Uranium-234	30**
Uranium-235	30**
Uranium-238	35**
Plutonium-238	37
Plutonium-239	34

* Uniform soil contamination above background at these levels would result in exposure to a residential user of 15 millirem/year from all exposure pathways including direct exposure, inhalation, ingestion, consumption of groundwater as drinking water and use of groundwater for irrigation of garden vegetables. Radiaton exposure from naturally occuring radioisotopes (potassium-40, uranium and daughter products and thorium and daughter products) in uncontaminated soil is approximately 40 millirem/year. Radiation exposure from all naturally occurring sources including soil, cosmic rays, radon and diet is 300-400 millirem/year.

** More conservative NRC limits are used for uranium isotopes.

*** DOE Order 5400.5 limits are proposed (limits for top 15 cms and below 15 cms)